



National energy efficiency and energy saving targets – further detail on Member States

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Note: This report complements the main report on national targets setting published by eceee 24 May 2011.

Introduction

This report should be read in parallel with the main report ‘National Energy Efficiency and Energy Saving Targets – a snapshot of status and stakeholder views’. In the main report, Appendix D provided a country-by-country summary of what was reported by contacts regarding the use of targets in most Member States. Where relevant, this was supplemented by additional information about targets taken from national ODYSSEE reports¹. Please check the introduction to the main report for a full methodology.

This companion report provides additional country-specific information. The intention is to capture all the information generated by this project, not to duplicate related efforts. The additional information includes:

- Country-specific² stakeholder views taken from the online consultation, organised under the following headings where appropriate³:
 - Effective targets;
 - Target setting and measurement;
 - Mandatory targets;
 - Targets in practice;
- Reference to, and relevant extracts from, Member States’ National Reform Programmes (NRPs)⁴;
- And reference to additional materials and links supplied by survey respondents and consultees.

The table of contents below is hyper-linked for ease of use.

¹ See http://www.odyssee-indicators.org/publications/national_reports.php

² It is important to stress that most opinions were not about the country stakeholders were discussing. Most views were broader, even Europe-wide. These have been reflected in the main report. This report focuses on country-specific statements.

³ The headings are based on the themes under which the consultation questions were grouped. See Appendix C of the main report.

⁴ Member States are expected to report on the 2020 energy efficiency objective in their National Reform Programmes (NRPs), which are submitted to the Commission every three years. NRPs describe what each country is doing to meet the EU’s shared 2020 objectives under the Lisbon Agenda, and the ‘20:20:20’ energy policy objectives are a part of this. The latest round of NRPs was more or less finalised at time of publication.



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Austria

From survey and ODYSSEE report

Austria's revised energy strategy of 2009 set the target of constraining the country's final energy demand in 2020 to the level it was in 2005. It is not clear how this relates to the ESD nine per cent target (expressed as 80,407 TJ of the annual average consumption in 2016), but it is the NEEAP's outline of how the latter will be reached which forms the basis for Austria's energy efficiency policy. The NEEAP refers to the Government Programme for 2007-10 which includes measures relating to target of improving energy intensity by at least 20% by 2020. Targets within this programme are largely in the buildings sector and are expressed as transactional targets: increase the renovation rate of buildings to at least three per cent per year during 2008-12 and five per cent per annum in the medium term; thermal renovation of all post war buildings (1950-1980) by 2020; 50% of all new buildings to reach the 'klima:aktiv' climate protection standard.

Seemingly unique amongst Member States is Austria's public-facing ESD portal, which allows for collection of bottom-up data from energy users to measure progress against the ESD target.

Mandatory targets

One consultee expects the national stance towards binding EU targets to be based on stakeholder consultation, and for a binding target not to have much of an impact in Austria because it already has a well-functioning energy efficiency market built on 20 years of policy support and high stakeholder awareness.

Targets in practice

Voluntary targets agreed between energy sectors (electricity, gas, heat and oil) and the Ministry of Economy are deemed to have been a success in 2008 and 2009. The expectation is that 2010 will emerge as successful as well.

National Reform Programme

A 'working translation' (into English) of Austria's final NRP is available at:
http://ec.europa.eu/europe2020/pdf/nrp/nrp_austria_en.pdf

In relation to the 2020 objective, the NRP reports the objective of stabilising final energy consumption at 2005 levels by 2020 (page 23). It goes on to list a series of programmes and actions (pages 26-27), but does not quantify their energy savings.

Belgium

From survey and ODYSSEE report (Flanders only)

The region of Flanders has an indicative target which is in line with the ESD – a nine per cent saving by 2016 in final energy use⁵. Separate targets linked to programmes which will deliver this saving cover a broad mix of sectors, indicators and types of stringency. Targets cover: retrofitting all homes with basic improvements by 2020 (political commitment); a 20% reduction in regional energy intensity by 2020 (indicative, results from progress in other areas); a 15% energy efficiency improvement in energy-intensive industry by 2012 (voluntary agreements); and an annual 3.5% annual primary energy saving obligation on distribution system operators (legally binding). A mixture of bottom-up and top-down methods are used to assess progress, depending on each target.

In Flanders, compliance with the ESD is a by-product of other factors – CO₂ mitigation and economic competitiveness – driving the use of the targets mentioned above. The targets are deemed to be achievable but challenging within their timeframes. The sole exception to this has been the obligation on the distribution system operators, who have since 2003 achieved surplus savings and have been allowed to carry these forward, making the 3.5% target easily achievable. One commentator has remarked that a way of making the obligation more suitably challenging would be to express it in actionable terms (such as requiring operators to offer insulation subsidies).

For the remaining targets, however, ‘challenging’ is not the same as ambitious; the same commentator cited Belgian buildings’ energy performance and Flanders’ energy intensity as being considerably worse than the EU average – as well as a study identifying 30% energy saving potential in Belgium by 2030 – justifying more ambitious targets and action. Notwithstanding concerns about the transparency of reporting progress against the voluntary agreements with industry, the Flemish Government innovatively provided EU ETS permits to industries entering into such commitments to improve their energy efficiency.

National Reform Programme (Federal)

Belgium’s final NRP is available at:

- http://ec.europa.eu/europe2020/pdf/nrp/nrp_belgium_fr.pdf (French)
- http://ec.europa.eu/europe2020/pdf/nrp/nrp_belgium_fr.pdf (Flemish)

With reference to the 2020 objective, Belgium at federal level has a target of an 18% energy efficiency improvement by 2020 (page 35). A footnote is added stating that 3.4% of this improvement is predicted to be as a result of the economic crisis. Specific programmes and actions taking place at the Flanders, Walloon, Brussels Capital and German-speaking community levels are subsequently described (pages 37-40). Predicted energy savings are sometimes quantified, using different metrics, but not linked to the headline target.

Other resources provided

- Flanders energy balance: <http://www.emis.vito.be/energiebalans-vlaanderen>
- Number of insulated homes: <http://www.energiesparen.be/node/901>
- Flemish climate policy plan progress report: <http://www.lne.be/themas/klimaatverandering/vlaams-klimaatbeleidsplan-2006-2012/voortgangsrapporten/2009/voortgangsrapport-2009>
- Flemish energy intensity: http://www.vlaandereninactie.be/nlapps/data/docattachments/7_energie.pdf
- Industry benchmarking: <http://www.benchmarking.be/en/default.asp>

⁵ Each of Belgium’s regions has set itself the indicative nine per cent target; it does not exist at federal level.



Bulgaria

From survey and ODYSSEE report

In Bulgaria, the ESD's nine per cent target was made legally binding in early 2011 for some of the sectors delivering their share of savings: large public buildings, SMEs and energy retailers respectively⁶. In public buildings and SMEs, building owners are to achieve at least 50% of the energy saving potential identified in energy audits, which is ambitious, but owners are falling short. Amongst those who have already taken action, the two groups are achieving just seven and 11 per cent of this potential respectively, thus falling quite a way short. One commentator says this is a result of a mismatch between the targets and the resources and support available to meet them. The largest share (82%) of the national target burden falls on energy retailers, and whilst this is deemed to be both challenging and achievable, it could be made more ambitious by granting retailers the ability to trade white certificates and expand it to include efficiency of conversion and transmission in their obligations.

As a country heavily dependent on energy imports, targets in Bulgaria – perhaps also their binding nature – have been driven by pressing energy security concerns. As a result of this, a new energy strategy to be adopted in 2011 is likely to strengthen the role of energy efficiency and may extend binding targets to large commercial buildings.

National Reform Programme

Bulgaria's final NRP is available at: <http://www.minfin.bg/document/9355:1>

Bulgaria is aiming for a 25% improvement in energy efficiency by 2020 (page 70 onwards), which is in excess of the 2020 objective. A series of programmes are described that contribute to this target, but the contributions have not been quantified. The accompanying action plan (available at <http://www.minfin.bg/document/9354:1>; page 61 onwards) quantifies the impact of some of these programmes, but uses a wide variety of non-comparable metrics (e.g. financial expenditure, final energy savings, primary energy savings, number of projects initiated, different time horizons etc).

Other resources provided

- Bulgaria Executive Energy Efficiency Agency: <http://www.seea.government.bg>

⁶ When first introduced in 2008, the targets were indicative (ODYSSEE NR).



Cyprus

From survey and ODYSSEE report

Current targets in Cyprus are as manifested in 2007's NEEAP prepared in compliance with the ESD. Indicative targets in the NEEAP are described and quantified for each end-use sector⁷. Together, they add up to a 10% saving over the 2008-2016 period. Prior to accession and to the NEEAP, Cyprus did not have a 'comprehensive' energy saving / efficiency policy, so the use of targets, and measuring progress against them (using the official methodology), is recent. Against the backdrop of expected electricity demand growth of 2.7% per year, possibly tripling by 2030, the question of whether Cyprus' targets are sufficiently ambitious is up for discussion. This is supported by the fact that the services and tourism sectors account for 78% of GDP, but just 10% of the savings envisaged in the NEEAP.

Only last year, six municipalities in Cyprus joined the Covenant of Mayors, providing evidence of increased activity to save energy at local level. The contribution of devolved action had not been captured in Cyprus' first NEEAP, but ought to be in the second due this year.

National Reform Programme

Cyprus' *draft* NRP is available at:

<http://www.planning.gov.cy/planning/planning.nsf/All/DC5D9FFC343969A8C225782B00204CF4?OpenDocument>

It states the following in relation to the 2020 objective, though it does not outline how much the different programmes contribute to its target (page 26):

***Energy Efficiency:** Based on a recently completed study, that assessed the projected primary energy consumption for the year 2020, **the national potential on energy saving on national primary consumption could reach 14,3% (463 ktoe) compared to the national reference scenario (business as usual scenario anticipates that in 2020 primary energy consumption will reach 3253 ktoe).** However, it is considered essential to clarify that for Cyprus, the introduction of natural gas in power generation is considered as a key energy efficiency measure and not as a business as usual situation. Otherwise, the national saving potential on national primary consumption for 2020 would not exceed the 6,4% (192ktoe).*

Other resources provided

- Ministry of Commerce, Industry and Tourism, energy conservation pages:
http://www.mcit.gov.cy/mcit/mcit.nsf/dmlindex_en/dmlindex_en?OpenDocument

⁷ Residential, tertiary, industrial and transport.

Czech Republic

From survey and ODYSSEE report

The use of targets in the Czech Republic is currently driven by the NEEAP and compliance with the ESD. The nine per cent indicative target⁸ carries with it the objective of a 1.6% saving of final energy consumption in 2010, and is broken down by sector. Other targets in place at the time the NEEAP was published include the objective of reducing energy intensity by 40% by 2020 and improving the energy efficiency of the electricity and final energy consumption sectors by 2.6% and 2.1% per year respectively. It is not clear how these different targets relate.

A study of energy saving potential in the Czech Republic – using both bottom-up and top-down assessment methods – was conducted to inform the first NEEAP, and it is said that this potential is greater than meeting the nine per cent target. The later Climate Protection Policy (2009) stated that further reducing final energy consumption had the largest contribution to make in achieving additional CO₂ abatement. In contrast, all of the activities that go toward meeting the NEEAP target were already underway in 2007, leaving some room for critique of a lack of clarity from the European Commission regarding the extent to which existing activity would count towards the ESD target. Whilst this may have resulted in a NEEAP which is lacking in ambition, it may mean that the ESD target is likely to be achieved. A second study of potential to inform the next NEEAP has been carried out⁹, and in the view of at least one commentator, the ESD has resulted in higher visibility for energy efficiency and the Czech authorities taking it more seriously.

Effective Targets

One consultee believes that the Czech Republic could achieve more than a 25% reduction in energy demand by 2020, if EU ETS finance were used more for energy efficiency projects and were used more effectively.

Mandatory targets

Legally binding targets, according to one consultee, would only be adopted in the Czech Republic if EU legislation required it. EU legislation in specific product and service areas (buildings, appliance labelling, energy services) offers the best prospect for energy efficiency in the Czech Republic. Numerous targets are in place for energy, environmental improvement and climate protection, manifested in a variety of policies, concepts, plans and acts; a sensible way forward would be to link these into one baseline, and evaluate performance against it regularly.

Another consultee sees legally binding national energy saving targets as essential for progress, but perceives a very strong defensive attitude against this prospect from government and industry. Against this backdrop, reducing the amount of EU ETS allowances would be the best way forward to motivate industry in particular to achieve cost-effective energy savings.

A further consultee disagrees with national binding targets in the Czech Republic on the basis that measuring progress and verifying energy savings would be difficult and costly. Financial support for end-users, conditional on achieving a minimum level of energy savings, would be more effective.

National Reform Programme

The Czech Republic's final NRP is available at (in Czech):
http://ec.europa.eu/europe2020/pdf/nrp/nrp_czech_cs.pdf

With reference to the 2020 objective the NRP states that, while the NEEAP provides a quantitative target for final energy efficiency improvement, a quantitative target in line

⁸ Initially, the NEEAP put quantified a seven per cent saving, which was expanded to nine per cent later.

⁹ Although neither study has been published.



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with the primary energy efficiency metric of the 2020 objective has not been set. This will be done once a detailed study of energy efficiency potential has been completed (pages 61-62).

Other resources provided

- Ministry of Industry and Trade, energy pages: <http://www.mpo.cz/en/energy-and-raw-materials/default.html>
- State of energy policy (as of 2004): <http://www.mpo.cz/dokument12265.html>
- Energy legislation: <http://www.mpo.cz/en/energy-and-raw-materials/legislation-and-regulation>
- Text of evaluation by the European Commission of the Czech Republic's NEEAP
- Intelligent Energy project on the energy savings measurement and verification protocol: <http://www.permanent-project.eu>

Denmark

From survey and ODYSSEE report

Denmark currently has two national energy efficiency targets in place. The older of the two is for gross energy consumption to be reduced absolutely by two per cent by 2013 compared to 2005. The other is for a four per cent absolute reduction by 2020 compared to 2006. The seemingly lower ambition of the latter target is made up for by the fact that final energy demand increased by 1.75% from 2005 to 2006. The ambition is increasing again with a proposal by the government this year to increase the latter target to six per cent by 2020 – in part brought about by observed reductions in gross energy consumption in 2008 and 2009 as a result of the recession. The nature of expressing an energy saving target in gross consumption terms means that an increasing share of wind power in the electricity mix has contributed to meeting the target. However, a target to save 1.5% of total final energy consumption per year has been in place since 2008 – though how this relates to the primary energy target is not clear. Nevertheless, the use of obligations on energy distributors to deliver end-use energy savings since 2006 has grown since 2008 (by 85%) to the point where these obligations were set to deliver half of Denmark's annual energy saving target. The penalties for non-compliance appear proportionate and credible¹⁰.

Late last year, the independent and official Danish Climate Commission outlined recommendations for a zero fossil fuel economy by 2050. To achieve this, the Commission envisaged that final energy demand would need to fall by nearly one fifth on 2008 levels, with large reductions in the residential and transport sectors making up for small increases in industrial and service sector demand.

National Reform Programme

Denmark's *draft* NRP is available at (in Danish):

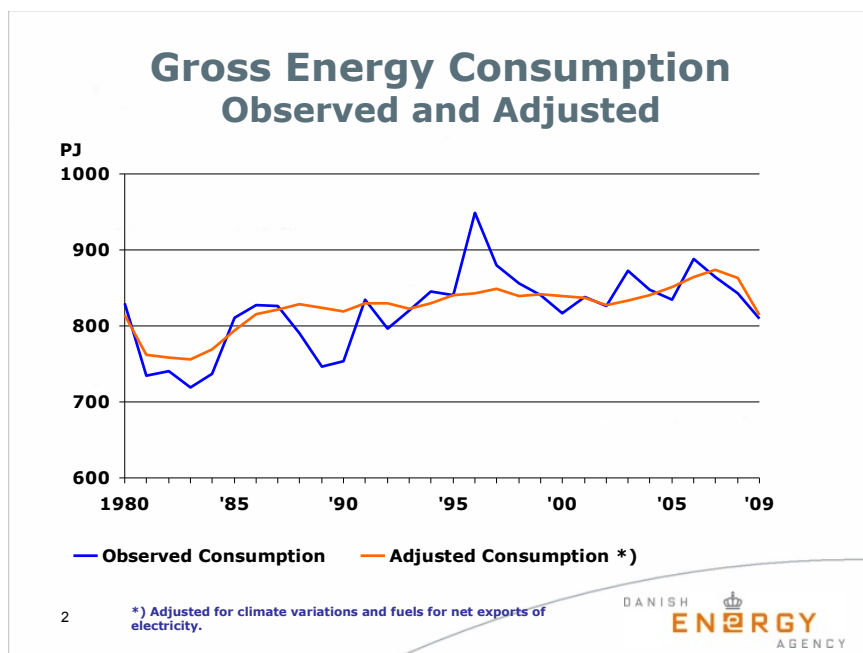
http://fm.dk/Nyheder/Pressemeddelelser/2011/01/~~/media/Files/Nyheder/Pressemeddelelser/2011/01/DK%20forel%C3%B8bige%20nationale%20reformprogram/danmarks_for_loebige_nationale_reformprogram.ashx

The NRP reports the absolute energy consumption reduction target of an absolute reduction of primary energy consumption of four per cent (0.83 Mtoe) by 2020, relative to 2006. This equates to primary energy demand of 19.52 Mtoe in 2020 (page 21). Policies and measures are described on pages 22-23.

Other resources provided

- Recommendations of the official Climate Commission to the Danish Government (policy makers' summary; English version): <http://www.klimakommissionen.dk/en-US/AbouttheCommission/TheDanishClimateCommissionreport/Documents/green%20energy%20GB%20screen%201page%20v2.pdf>
- Government estate energy consumption data: <http://data.energibesparelsestaten.dk/StateEnergyConsumption.html>
- Overview of energy consumption reduction agreements with Danish Electricity Trust / Centre for Energy Savings: <http://www.goenergi.dk/offentlig/vaerktoej-og-beregnere/kurveknaekker/liste-over-aftaler>
- Gross energy consumption (observed and adjusted):

¹⁰ Every kWh they fall short of their target by in a given year cannot be charged to consumers, and their obligation is set to increase in size the following year.



- Energy consumption by end-users in 2008 and 2050 [PJ]:

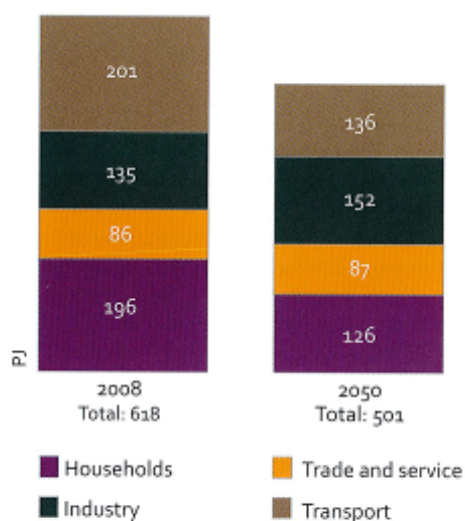


Figure 2.2: Energy consumption in PJ by the end users, today (2008) and in 2050.



Estonia

From survey and ODYSSEE report

The NEAAP forms the basis of Estonia's energy efficiency policy – and whilst it intends to meet the ESD's nine per cent target, the plan covers the 2007-2013 period. To 2013, Estonia has developed a broad range of specific indicative objectives relating to energy efficiency. Amongst these are: maintaining a downward trend in energy intensity; increasing the share of A-rated electrical appliances sold to 50%; 8,000 apartment blocks receiving retrofit support; 30% of apartment blocks to receive energy audits, and 10% to be improved to be in the top energy performance category.

However, Estonia's national audit office found in 2009 that the NEEAP did not constitute a clear, agreed objective and plan for energy saving. This has been deemed to be mainly due to shortcomings in the methodology put forward for measuring energy savings, but also due to a lack of resources for meeting the objectives outlined. Adoption of the official ESD methodology – published after the deadline for NEEAPs – should in the opinion of the audit office allow for a stronger target and plan. A review of policies and measures is planned for mid-2011.

National Reform Programme

Estonia's draft NRP is available at: <http://valitsus.ee/UserFiles/valitsus/en/government-office/growth-and-jobs/Draft%20National%20Reform%20Programme%20of%20Estonia%2012.11.2010.pdf>

The draft NRP reports the following with respect to the 2020 objective (page 34):

Maintaining final energy consumption at the 2010 level (approximately 2 747-2 794 ktoe) – i.e. reducing final energy consumption by approximately 15%, compared to the forecasts for 2020 (approximately 3 272 ktoe).

Final consumption of energy has grown with each passing year in Estonia, amounting to 3083 ktoe in 2007. In the last two years, energy consumption has decreased due to the economic decline, but this trend cannot be expected to continue. Maintaining final energy consumption at the 2010 level will require implementation of additional energy conservation measures.

Finland

From survey and ODYSSEE report

Finland has a non-binding target of a reduction in final energy demand by 11% below the projected baseline in 2020. At 37 TWh savings and corresponding to the EU's 20 by 2020 objective, this is in excess of the nearly 18 TWh saving in final energy demand required by 2016 under the ESD. Beyond this, the objective is to reduce final energy demand by a further 30% below 2020 levels by 2050. These overarching targets are complemented by sector-specific plans – in place before the ESD but adjusted to match it – which are again due for an update this year. Finland's approach is characterised by these plans which are a) each expressed in terms of the ESD's nine per cent target and timeline; b) take the form of voluntary agreements with each significant energy, industry and service sector; and c) each aim to capture at least 60% of a sector's members or energy use¹¹ with the agreements. Linked incentives are designed to entice members of each sector into agreements – by making carrots for energy audits contingent on entering into an agreement, and carrots for energy efficiency investment dependent on having an energy audit. Finland's use of voluntary targets with individual sectors has grown in coverage and ambition over the years.

Whilst these voluntary agreements have been designed to complement other instruments in Finland such as the EU ETS and domestic energy taxes and standards, compliance with the ESD has of late been the primary driver of their use. As a result, meeting the ESD target is deemed to be achievable. On the other hand, there are no indications at present that the voluntary approach will go beyond the ESD target, nor that they will overcome the primacy of efficiency and relative savings over absolute savings.

Target setting and measurement

One consultee believed that measurement which allows inter-country comparisons would encourage Finland not to be a laggard.

Government support for energy efficiency investments in industry is conditional on adopting a voluntary target, carrying out an energy audit and providing monitoring data. However, one consultee highlights a lack of third party verification of monitoring data submitted by participants. This poses a risk to the credibility and effectiveness of the voluntary arrangements.

Mandatory targets

One consultee states that mandatory targets would face fierce opposition in Finland. Another respondent echoes this 'official' view, adding that methodological issues are a major barrier, and stating that there is a worry that an EU mandatory target would not take account of Finland's national context. Despite this, there is a view that Finland, like most other Member States, can go further in saving energy at modest extra cost – by providing stronger positive and negative incentives to do so.

It is one consultee's view that Finland's national energy saving targets have resulted in fairly detailed sectoral implementation plans and activities. Furthermore, energy saving has been prioritised in Finland's energy and climate strategy. This leads the consultee to conclude that binding energy saving targets would not have much of an impact in Finland unless they were sector-specific.

National Reform Programme

Finland's final NRP is available at:

http://ec.europa.eu/europe2020/pdf/nrp/nrp_finland_en.pdf

With reference to the 2020 objective, the NRP states (page 27):

¹¹ This is a broad generalisation in the interests of brevity; the nature of each sector-specific plan and voluntary agreements for energy saving is quite variable.



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In its Climate and Energy Strategy, the Government also set Finland's energy efficiency target. In 2007, total consumption of primary energy was 411 terawatt-hours. According to the strategy, in 2020 it is expected to be 479 terawatt-hours, with the trend target figure being 430 terawatt-hours. The savings target is therefore 49 terawatt-hours, just over 10% relative to the baseline scenario, i.e. the trend without new efficiency measures.

[...]

In improving the use of energy in buildings, the goal is for consumption to be at least 30% lower in 2030 and at least 60% lower in 2050 than the present level. Energy efficiency regulations for new buildings will be tightened from the beginning of 2012 by around 20%.

A mid-term review of the National Climate and Energy Strategy will be opportune by the end of 2011.

France

From survey and ODYSSEE report

Unlike in many other Member States, not one target in place in France is linked to compliance with the ESD. Targets for buildings¹² are expressed in benchmark (e.g. 50 kWh/m²/a) and/or transactional (e.g. 400,000 retrofits per year) terms. Quite separately, there are targets for reduced overall energy intensity (two per cent lower per annum from 2005 to 2015), delivery of energy savings (white certificates) by energy providers, and CO₂ intensity of passenger cars. All of these targets, save for the white certificates scheme, have emerged as a result of one piece of environmental protection legislation, and are thus primarily driven by environmental, climate change, biodiversity and sustainable development concerns. Other factors such as competitiveness, affordability or energy security have expressly not driven energy efficiency in France.

Most of the above targets are generally seen by one commentator as ambitious, but at risk of being missed due to a combination of factors. In the case of existing buildings, this is deemed to be due to a lack of effective measurement and reporting of progress, as well as an absence of ‘sticks’ in the presence of ‘carrots’ such as low interest loans. More dramatically, the public sector and energy intensity targets are likely to be missed because they are seen to have very low political credibility. Measurement, verification, reporting and trading of white certificates, on the other hand, is judged to be thorough and precise, not least because the Ministry responsible for energy closely monitors the scheme. However, despite the fact that the scheme is set to deliver 345 lifetime TWh savings from 2011 to 2013 (up from 54 TWh for 2006-2009), the view is that it could be more ambitious.

Mandatory targets

Two respondents are in favour of a legally binding target. One states that meeting existing energy efficiency objectives would get France about four fifths of the way to meeting the EU’s 2020 objective, but highlights that arithmetically, France’s energy demand and supply policy do not appear to be well coordinated: meeting the 2020 objective and investment plans for new energy supply would result in France producing 150% of its energy needs in 2020. The other respondent goes further and suggests that France needs a binding target to achieve absolute, annual reductions in energy consumption.

Targets in practice

One consultee argues that meeting targets is most difficult in the transport sector. France’s white certificates now cover transport fuels, but the consultee highlights that fuel retailers may comply with their obligations by achieving savings in other sectors (such as supermarkets with petrol stations which can gain certificates by selling energy efficient appliances).

National Reform Programme

France’s final NRP is available at (in French):
http://ec.europa.eu/europe2020/pdf/nrp/nrp_france_fr.pdf

With reference to the 2020 objective, it reports an indicative target of limiting final energy consumption to 135 Mtoe by 2020 (page 10), approximately 17% lower than France’s business as usual (i.e. without energy efficiency programmes) projection. The NRP cites the ESD, and better consumer understanding, as its rationale for expressing its objective in final energy terms (pages 8-9). Some broad description of key programmes and actions is provided.

¹² For new buildings, existing private buildings, social housing and the public sector.

Germany

From survey and ODYSSEE report

Targets pertaining to energy efficiency and energy saving in Germany are driven by multiple factors. Economy-wide, there are three indicative and relevant targets: the climate protection target (for a 40% GHG cut by 2020 and an 80% cut by 2050 on 2008 levels), which embodies a package of programmes; the competitiveness-driven¹³ energy intensity target (for a reduction in primary energy use per unit of GDP of 20% by 2020 and 50% by 2050 on 2008 levels) which embodies a series of sectoral objectives; and the nine per cent 2016 target, driven by compliance with the ESD. Borne out of Germany's relatively new strategic energy policy¹⁴, the energy intensity target has explicit links to sectoral targets for saving electricity, and energy in buildings and transport. Forthcoming legislation to implement the *Energiekonzept* may change the sectoral targets' stringency, which is currently indicative. By 2050 compared to 2008, electricity consumption is to fall by 25%; the retrofit rate of buildings is to double to two per cent and their primary energy use to fall by 80%; and final energy use in transport is to fall by 40% compared to 2005.

Germany is one of a handful of countries using the harmonised bottom-up and top-down method to measure progress against the ESD target. In contrast, the new targets emerging from the *Energiekonzept* do not yet have agreed methods to assess progress. What slightly muddies the waters in the targets landscape is that it is not yet clear how the *Energiekonzept* targets relate to earlier objectives which emerged from the previous Government's Integrated Energy and Climate Package and have now taken a backseat.

Furthermore, it is unclear what the current status is of an older, more ambitious target to halve energy intensity by 2020 compared to 1990¹⁵. The climate and *Energiekonzept* targets are generally deemed to be ambitious, although their achievability is unclear, given that policy detail is still missing. The 2016 target on the other hand is deemed to be unambitious compared to energy saving potential and to have had barely any impact on the German market. Overall, Germany's emerging energy efficiency and energy saving objectives appear promising, but there are serious concerns about monitoring and evaluation of progress to date; the relative lack of efforts to tackle industry; and the absence of a more systemic and integrated approach to energy savings (such as white certificates).

Effective Targets

One consultee views headline targets in Germany as too abstract to result in concrete energy saving actions, but effective in maintaining a high profile for energy efficiency in national strategies and plans. Another states that the policy package announced in the *Energiekonzept* is not enough to achieve the targets it introduces – in addition to an absence of a continuous bottom-up assessment of existing policies' energy saving progress. This type of assessment process is partly in place under the NEEAP, but the ESD target is too low in comparison to the *Energiekonzept's* absolute reduction targets (deemed by the consultee to be achievable, if rather long-term) for the process to capture enough information for the latter.

Target setting and measurement

One respondent highlights how the cultural, political and historical context is very important in establishing how targets are set. In Germany's case, a target to halve primary energy intensity by 2020, requiring a three per cent per annum improvement, slowed to two per cent per annum. At this point the target was abandoned and replaced by an absolute CO₂ intensity improvement target. This experience suggested to another consultee that energy intensity targets have proven ineffective in Germany.

¹³ Which, interestingly, has been linked to extending the life of the nuclear phase-out.

¹⁴ Known as the *Energiekonzept*.

¹⁵ The earlier target implies an increase in energy productivity of 3.3% rather than 2.1% per year from now on.



Mandatory targets

In the view of one consultee (who is in favour of a legally binding EU target to give greater weight to German energy efficiency policy), Germany is unlikely to be in favour of a binding target as its own objectives are quite ambitious – and international comparisons and critique may not be meaningful in this context. On the other hand, a binding EU target, even if it is lower than Germany's own targets, may provide the means for Germany's government to justify its own energy saving ambition. Another consultee argues that a binding greenhouse gas emissions reduction target would suffice to justify greater energy saving ambition, though a further respondent says that this has resulted mainly in enhanced supply-side energy efficiency improvements, not energy end-use savings. A further consultee states that a binding target in the form of an absolute cap on energy demand is necessary for energy saving to be on an equal footing with renewables and ensure increased commitment and effort by politicians and public alike. Despite this, a binding target led by the government rather than as a response to European requirements is deemed to more desirable and acceptable in Germany.

National Reform Programme

Germany's final NRP is available at (in German):

<http://www.bmwi.de/BMWi/Redaktion/PDF/Publikationen/Dokumentationen/dokumentation-596-nationales-reformprogramm,property=pdf,bereich=bmwi,sprache=de,rwb=true.pdf>

In relation to the 2020 objective, the NRP refers to the *Energiekonzept's* target of reducing absolute primary energy consumption by 20% by 2020 and 50% by 2050 compared to 2008, and reiterates the other targets (discussed above) which support this (page 9).

Other resources provided

- German NEEAP (with reference to energy saving potentials on page 37): <http://www.bmwi.de/BMWi/Redaktion/PDF/E/nationaler-energieeffizienz-aktionsplan>
- 2007 Integrated energy and climate programme, implementation progress report: <http://www.bmu.de/english/climate/downloads/doc/41258.php>
- Energy and Climate Protection white paper for the city of Frankfurt am Main (can be provided on request)
- Presentation by the Federal CHP Association on the 2009 German CHP law, presented at the 2010 COGEN conference (can be provided on request)
- Intelligent Energy project assisting the European Commission in the development of harmonised measurement and evaluation methods: <http://www.evaluate-energy-savings.eu>



Greece

From survey and ODYSSEE report

Prior to the ESD process, Greece did not have a quantitative energy saving target. The ESD and EPBD in particular have been instrumental in changing this. The ODYSSEE national report cites energy efficiency as the 'second axis' of Greek energy policy, after the renewables target. The overall NEEAP target, corresponding to the nine per cent by 2016, is 18.6TWh¹⁶. It is enshrined in law, though the sectoral allocations are non-binding. The target was set, mindful of the 2020 objective, following analysis of economic potential for energy efficiency, and progress against it is measured using top-down methods. Lesson learning and evaluation is through the ESD reporting procedures, and compliance with the ESD compliance has been the primary driver.

Delays to the implementation of the NEEAP have led one commentator to suggest that the residential and tertiary targets will be difficult to meet, though still achievable. The high fuel costs and savings on offer for households mean that the achievement of these targets is politically important. In addition to the NEEAP target, a measures-based target is in place that requires all lighting outlets in public buildings have to meet a minimum energy efficiency rating of B by 2016. The target is legally binding and predicted to save 0.3 TWh by 2016. Legally binding targets for new buildings ensure that new public buildings from 2014, and all new buildings from 2019, will be required to cover all their primary energy needs using renewable energy sources, cogeneration systems, district heating systems or high efficiency heat pumps.

Effective Targets

The most effective targets are those that are linked driven by the EPBD (and its recast), since they are underpinned by legislative actions and mandatory measures. Indeed, the delivery of energy efficiency in the buildings sector is viewed as being quite successful, with special incentives and new regulations.

The transport sector is viewed as being both the most challenging, and the one where targets have been least effective, due to the heavy reliance on road transport.

Energy intensity targets have been called for, as this would take into account changes in economic activity, together with changes in energy consumption. A contributor has suggested that a target to improve primary energy intensity by 15% by the year 2020 is an achievable target.

Contributors also called for targets to support the penetration of ESCOs, in order to achieve wider energy efficiency objectives.

Target setting and measurement

A target set in terms of reduction in energy consumption or emissions per unit of economic activity, in addition to some specific sectoral targets in relation to the energy consumption in comparison to others Member States, is viewed as the optimal way of achieving the energy efficiency aims. Energy intensity is seen as the government target that is easiest to accept, and overall reduction in energy consumption is the most difficult. The transactional method is most closely aligned to the current approach. Both primary energy and final energy intensities were described as appropriate.

Whilst the harmonised method of measurement is difficult to implement, respondents agreed that it is necessary in order to reliably measure savings and allow cross-country comparisons, though there were concerns that there should be room for country specific determination of key parameters (e.g. estimation of heat pump efficiency).

¹⁶ The sectoral break down is: residential, 5.5 TWh; tertiary 5.7 TWh; industrial, 0.7 TWh; transport, 6.7 TWh.



Mandatory targets

All respondents agreed that legally binding energy efficiency targets should be enforced, using a similar burden sharing process to the RES target. The belief was that such targets would drive governments to undertake greater effort in energy efficiency policy, especially at a time of economic crisis when the focus moves to other areas.

Such a target would supplement rather than compete with the RES and EU ETS, helping to better align renewable and energy saving opportunities. More action on energy saving would reduce the absolute amount of renewable energy required, making it easier to meet that target. Respondents acknowledged the debate around a target based on primary energy demand vs. final energy demand.

Targets in practice

Respondents agreed that a mandatory target would stimulate EE investment via the legislative actions and fiscal incentives that would likely only be implemented were such targets set. Ultimate responsibility for the targets should lie with the Ministry/Government, but the monitoring process and obligation should be allocated to the relevant energy agency [the Centre for Renewable Energy Sources and Saving was suggested] with the obligation for the other public organisations/ministries to develop a structure/system for monitoring the progress.

The transport and building sectors were identified as having the highest levels of consumption at present, and the greatest potential for reductions. Mandatory ‘umbrella’ targets could firm up existing targets in these areas, and allow further regulations upon market actors (e.g. energy utilities, industry non-EU ETS).

National Reform Programme

Greece’s final NRP is available at:

http://ec.europa.eu/europe2020/pdf/nrp/nrp_greece_en.pdf

In relation to the 2020 objective the NRP reports an objective of a 15% improvement in primary energy efficiency by 2020 (page 45). No further detail is provided.

Hungary

From survey and ODYSSEE report

In 1999, Hungary set itself a target of improving primary energy intensity by 3.5%, corresponding to 1.8 Mtoe per year¹⁷. In part due to economic restructuring, it improved by an average of 2.4% per annum, while final energy use fell by over 2.5% annually between 1991 and 2007. Nevertheless, according to the ODYSSEE index (ODEX), Hungary's energy efficiency improved by 18.8% between 1998 and 2007, well in excess of the EU 27 average of 10.2%.

In accordance with the ESD, Hungary published its NEEAP in 2008, outlining the actions to achieve the nine per cent target by 2016. Progress continues to be measured using the ODYSSEE database, and responsibility for its implementation and monitoring it have been delegated to the (then) Ministry of Transport, Telecommunication and Energy (now Ministry of National Development) and the Hungary Energy Centre. The latter is awaiting assistance from Eurostat for guidance on compliant measurement and reporting of progress in the tertiary sector. Weight is given to achieving the nine per cent saving as EU targets are viewed as prestigious.

Target setting and measurement

One consultee highlighted the lack of political will in the European countries to permanently solve the problem of increased energy consumption in Member States.

Also highlighted was the difference between developing and developed economies, and that the baselines for energy efficiency targets must reflect this difference, perhaps through using a single European model such as PRIMES.

Mandatory targets

Respondents generally agreed that there was a need for mandatory targets, though these would need to come from Europe rather than be unilaterally applied domestically, particularly in the current economic situation. Such a target would help advance energy efficiency achievement.

There was some concern that the presence and size of an EE target was only part of the issue, and that the way in which the target should be met is of equal importance, with the choices presented in terms of large number of 'superficial' improvements, or fewer 'deep refurbishments'¹⁸. Others highlighted the benefit of supporting a larger number of cost effective solutions than a few very expensive ones.

The lack of EU funding on offer to support energy efficiency improvements was highlighted, as was the uncertain future of the Green Investment Scheme.

Targets in practice

There was agreement amongst consultees on the situation in Hungary that mandatory targets are important. As Hungary's (along with many other Central and Eastern European Nations') emissions are below their Kyoto protocol baseline, a mandatory target would be an important driver to ensure that decision-makers promote energy efficiency within climate and energy strategies. The confidence provided by a mandatory target that cannot be revised downward is essential. The importance of the other positive impacts of energy efficiency was also raised, with energy security and employment benefits having been important drivers of activity in the buildings sector and fuel poverty also recognised as a significant driver.

On the implementation of programmes to meet the target, the importance of both the central and local level is highlighted, with the central government holding the resources

¹⁷ Assuming an annual gross domestic product (GDP) growth of 5% and a growth rate of energy consumption of 1.5% per year

¹⁸ This issues are identified here: http://3csep.ceu.hu/sites/default/files/field_attachment/project/node-6234/englishexecutivesummary.pdf



(financial, institutional, etc.) and municipalities holding the power to decide how to allocate resources available at the local level. One respondent noted that important differences have been detected in the success of residential energy efficiency programmes in different cities, due to the differing levels of interest, expertise and capability amongst local authorities – with smaller authorities generally performing more poorly. Another respondent suggested that the target should be distributed by sectors and regions which would allow improved control of investment focus.

The sector with the greatest potential for reductions in Hungary is the buildings sector, which is the greatest emitter. However, one commentator cautioned that the transport sector has the greatest potential for emissions growth if not addressed.

National Reform Programme

Hungary's final NRP is available at:

http://ec.europa.eu/europe2020/pdf/nrp/nrp_hungary_en.pdf

The NRP refers to the 2020 objective as “reducing total energy consumption by 20 per cent”, and in contrast to the other 2020 targets as “only indicative and [...] not incorporated in EU legislation” (page 23). By 2020 compared to 2005, Hungary intends to “cut total energy consumption by 10 per cent”. A number of programmes and actions are subsequently described, but no further quantitative detail is provided.

Other resources provided:

- Ministry of National Development <http://www.kormany.hu/hu/nemzeti-fejlesztesi-miniszterium>
- Energy Centre <http://www.energiakozpont.hu/>



Ireland

From survey and ODYSSEE report

Ireland's NEEAP was published in 2009, and outlines measures to meet the nine per cent and the 20% target. The earlier Sustainable Energy White Paper (published in 2007) first outlined measures to meet the 20% target, as well as setting an indicative 30% target by 2020 to go further. Aside from the sectoral and programmatic allocation of the targets in the NEEAP, the Government has an aim to have 10% of its vehicle fleet electrified by 2020. Numerous sectoral indicators are used by the Sustainable Energy Authority to measure semi-quantitative progress of energy efficiency programmes.

National Reform Programme

Ireland's final NRP is available at:

http://www.taoiseach.gov.ie/eng/Publications/Publications_2011/National_Reform_Programme1.pdf

On page 18 and onwards, the NRP states the following in relation to the 2020 objective; it goes on to say that 90 actions and measures are presented in its NEEAP, and highlights five of them within the NRP itself – although it only partially quantifies energy savings:

Delivering 20% energy savings in 2020

Ireland has internalised the principle energy efficiency first, as energy efficiency is internationally recognised as the most cost effective means of reducing greenhouse gas emissions. Investments in energy efficiency help create and retain jobs, while providing an important outlet for innovation in the fledgling green tech sector.

Ireland's energy policy framework contains a longstanding commitment to deliver 20% energy savings in 2020, with a more ambitious target of 33% for the public sector as part of a drive for Government to lead by example.

Italy

From survey and ODYSSEE report

Italy has an ESD target of 9.6% reduction in final energy consumption by 2016. The residential sector sees the largest share, with 45% of the target, though this is not a legal requirement. A key contribution to this will come from a legal obligation (white certificate scheme) placed upon electricity and gas distributors to save 6 Mtoe primary energy by 2012. Changes to the scheme introduced in 2008 make a connection between the energy savings delivered and the national targets of NEEAP.

In addition, legal targets exist for RES (17% electricity by 2020, and 7.55% of energy by 2012), biofuels (4.5% by 2012), and a CHP target of 0.8 Mtoe savings per year by 2016. All targets seems to be driven by a need to comply with EU Directives, notably the ESD and the RES Directive. CO₂ mitigation, competitiveness and affordability, and energy security are all additional drivers.

Targets in practice

One consultee highlights the pragmatic nature of the measurement and verification methods used to assess progress against Italy's white certificates obligation. For well-understood and simple energy saving actions (such as compact fluorescent lamps), a standardised assumption is made about the savings achieved. For more complex but not uncommon interventions, proxy measurements such as a meter reading are combined with standardised assumptions. Finally, for innovative actions, more thorough measurements are taken to ascertain savings. There is scope for improvement in the level and frequency of verification by the energy regulator, and this is likely to happen as the scheme continues to evolve.

National Reform Programme

Italy's final NRP is available at (in Italian):
<http://www.tesoro.it/documenti/open.asp?idd=26712>

The NRP reports a target of saving 13.4% of primary energy by 2020 compared to the 'business as usual' projection – i.e. total primary energy demand of 180.9 Mtoe rather than 208.8 Mtoe (page 75). It further states that Italy's position as the world's most efficient generator of electricity from fossil fuels constrains its options for going further in saving primary energy. Programmes and actions are described from page 76 onwards.

Other resources provided:

- Authority for Electricity and Gas annual report
http://www.autorita.energia.it/it/relaz_ann/10/10.htm
- GSE – Italy's agency for the promotion, support and development of renewable energy sources holds information on the renewable energy targets
<http://www.gse.it/Eng/Pagine/default.aspx>



Latvia

From survey and ODYSSEE report

Latvia's NEEAP is classed as a 'short term planning document' and sets out how policies and measures will deliver the nine per cent target. The Environment Ministry is responsible for energy efficiency, an area of policy which in recent years has risen up the agenda relative to renewables. The 'Guidelines for Energy Sector Development for 2007-2016' cover all aspects of energy policy, and include a mixture of 'implementation benchmarks' for energy efficiency. These are to a large degree characterised by Latvia's extensive use of heat networks and encompass by 2020: final energy intensity reaching 0.22 toe/€1000¹⁹; cogeneration capacity constituting 300 MW_{th} of heat load in large cities and 100 MW_{th} in other towns; reducing buildings' heat demand to 150kWh/m²/a; increasing the average efficiency of heat generation to 80-90% (from 68%) and reducing heat transmission and distribution losses from 17% to 14% by 2016.

National Reform Programme

Latvia's final NRP is available at (in Latvian):

http://ec.europa.eu/europe2020/pdf/nrp/nrp_latvia_lv.doc

Latvia's *draft* NRP is available in English:

http://www.em.gov.lv/images/modules/items/LV_NRP_Draft_EN.pdf

The NRP (in Latvian) reports an indicative final energy savings target of 0.433 Mtoe, in accordance with the ESD methodology. In primary energy terms, the target is 0.668 Mtoe (page 33-34). This reportedly corresponds to a 0.48% contribution to the 2020 objective, continent-wide. Some further detail on key programmes and actions is provided (page 34 onwards).

¹⁹ Measured as 0.28 toe/€1000 in 2007

Lithuania

From survey and ODYSSEE report

Lithuania has a national energy saving target enshrined in law as part of the National Energy Strategy (NES). It requires a nine per cent reduction in final energy consumed by 2016, compared to 2005 levels. Achieving this target would deliver a saving of 4,700 GWh, beyond the ESD target of 3,797 GWh. A 'Plan of Implementation Measures of the NES' sets out the immediate savings for 2008-2010, with an aim to save 1.5% compared to average 2001-2005 consumption. The remaining 7.5% will be saved between 2011-2016.

The national official target is binding and is based on an assessment of energy saving potential. Savings are measured using a bottom-up approach (where possible) and reported in final energy terms; a top-down methodology is used where data are incomplete.

There are non-binding projections of savings attributed to industry (eight per cent of target), transport (10%), residential (37%), and commercial/public service (five per cent) sectors, as well as policies delivering cross-sectoral reductions (40%). It is expected that these projections will be met, with the exception of the residential sector, where one commentator suggests that a lack of funding and slow implementation of a multi-dwelling modernisation programme has hindered progress.

National Reform Programme

Lithuania's final NRP is available at:

http://ec.europa.eu/europe2020/pdf/nrp/nrp_lithuania_en.pdf

Whilst it does not express an energy efficiency target in terms of the 2020 objective, it does report potential for an absolute final energy consumption reduction as follows (page 22):

Energy consumption accruing to one unit of Lithuanian GDP is 2.5 times higher than the EU average. However, it can be significantly reduced through improvements in energy use efficiency. It is estimated that by applying saving measures, final energy consumed in 2020 can be 17% lower than it was in 2009. By successfully realising this potential, annual savings of 740 kilotons of oil equivalent (ktoe) could be achieved by 2020. Households and the transport sector have the largest propensity to save energy: total savings could amount to 65% (the potential in household and transport sectors equals 290 ktoe and 300 ktoe, respectively).

According to the 2007 data, total energy consumed per capita in Lithuania is 26% lower than the EU-27 average, while electricity consumption per capita is 2.2 times lower than the EU average. Given the projected future Lithuanian electricity consumption growth, there is a possibility that the effects of energy saving measures will be outweighed by the rise in electricity consumption. According to the macroeconomic development scenario, gradual economic recovery might increase energy consumption. Therefore, energy-saving measures that have the potential to undermine economic development should be avoided. Taking into account the overall energy saving potential in Lithuania, the key strategic goal in the field of energy efficiency is to consume 1.5% less energy each year by 2020.

Other resources provided:

- State Enterprise Energy agency annual report on state-wide energy savings (Lithuanian) http://www.ena.lt/doc_atsi/Ataskaita_sut.pdf.



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Luxembourg

National Reform Programme

Luxembourg's final NRP is available at (in French):

http://ec.europa.eu/europe2020/pdf/nrp/nrp_luxembourg_fr.pdf

The NRP cites Luxembourg's NEEAP target, calculated in accordance with the ESD method (final energy savings achieved by programmes and actions), of 10.4% below the average final energy demand of 2001-2005 by 2016. It does not make any explicit reference to the 2020 objective, although it does state that savings to 2020 could amount to 13%, but that this percentage would vary depending on whether a primary or final energy metric was used (pages 37-38).



Malta

From survey and ODYSSEE report

An indicative ESD-compliant target of a nine per cent saving in final energy consumption from 2008 to 2016 is described in Malta's NEEAP. The Plan was the result of a public consultation, which also served to ensure that the target could be accepted as realistically achievable. Malta's economy is strongly characterised by tourism, small-scale manufacturing and full dependence of non-grid imports to meet fossil fuel demand. Partly as a result of this context, Malta does not have any mandatory targets for limiting or reducing greenhouse gas emissions. Energy efficiency does constitute the first priority of its 2006 energy strategy, but the only quantified objective is the ESD target – suggesting that the use of targets is primarily compliance-driven.

National Reform Programme

Malta's final NRP is available at:

http://ec.europa.eu/europe2020/pdf/nrp/nrp_malta_en.pdf

It reports “a commitment to achieve a 22% energy or 235,254toe savings target by 2020 with an intermediate target for 2014 of 15% or 144,876toe” (page 41). Whether this is expressed in the same terms of the 2020 objective is not made explicit. Some programmes and actions are described (page 43), without quantification of their contribution to the target. Separately, a “target for efficiency improvement of government departments of 2% by the end of 2011 has also been established”.

Netherlands

From survey and ODYSSEE report

The Netherlands has a national indicative, non-binding, target of two per cent energy efficiency improvement measured in energy consumption per annum. This annual target is set within the context of the EU 20% by 2020 target. The two per cent target has never been met and, it is felt that without additional policies, instruments and political will the target will not be met.

The Energy Research Centre of the Netherlands is responsible for evaluating progress against the targets. The last evaluation dates back to 2008.

Non-binding targets also exist in the buildings sector, industrial sector and for local government. The buildings targets are coined in transactional terms: number of existing homes renovated per annum; and EPC performance of new buildings. The existing homes target is thought to be too ambitious and is expected to be substantially lowered later this year, despite the recognition that there is potential in this area and political salience.

Industry targets have been set through voluntary agreements on non-ETS and ETS businesses. The non-ETS agreement targets 30% efficiency improvements by 2020 compared to 2005, which is considered to be close to the real potential. The 30% breaks down into a 20% energy efficiency improvement within site limits and 10% outside of it. The last milestone in 2007 was successfully met. The ETS sector voluntary agreement (also to 2020) is based not on a target but on an energy efficiency plan, which commits participants to invest in cost effective measures. However, participant industry sectors have been asked to scope out plans for achieving a 50% energy efficiency improvement by 2030. Involvement enables businesses to receive a discount on energy taxes. The actuality of energy savings achieved through this agreement has been questioned.

Local government's voluntarily agreed targets are set in line with the national targets at between two and four per cent annually to 2020. Central government has committed itself further, including for all of its buildings to be 'climate neutral' from 2012.

There is reluctance to instate more mandatory policies. A proposal in 2005 for the introduction of a white certificate scheme was effectively lobbied against by utility companies.

National Reform Programme

The Netherlands' final NRP is available at:

http://ec.europa.eu/europe2020/pdf/nrp/nrp_netherlands_en.pdf

It states that (page 14) "the Netherlands will vigorously seek to increase energy efficiency without attaching a quantitative target", and goes on to say (page 15) in relation to the 2020 objective:

The Netherlands has not set a separate target for energy efficiency. Energy savings serve the government's other two objectives: a 20% greenhouse gas reduction relative to 1990 and 14% sustainable energy consumption by 2020. A separate savings target could lead to cost-ineffective measures having to be taken and the energy saving and sustainable energy policy becoming unnecessarily expensive.

Other resources provided:

- *Realised energy savings 1995-2002*, study carried out for the Dutch Ministry of Economic Affairs by the Energy Research Centre of the Netherlands
<http://www.ecn.nl/docs/library/report/2004/c04085.pdf>
- *Energy saving in existing homes*, study carried out by the Energy Research centre of The Netherlands (Dutch) <http://www.ecn.nl/docs/library/report/2009/e09074.pdf>
- Energy Agency sources on the non-ETS industrial sector (Dutch)
<http://regelingen.agentschapnl.nl/content/convenanttekst-meerjarenafspraak-energie-efficiency-2001-%E2%80%93-2020-mja3>



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- Energy Agency sources on Industry covered by the ETS (Dutch)
<http://regelingen.agentschapnl.nl/content/convenanttekst-meerjarenspraak-energie-efficiency-voor-ets-ondernemingen-mee>
- Information on regional authority projects on energy efficiency
<http://www.klimaatmonitor.databank.nl/>

Poland

From survey and ODYSSEE report

The indicative NEEAP target to achieve final energy consumption savings of nine per cent by 2016 compared with 2001-5 is the main energy efficiency target in Poland. This target is expected to become enshrined in law in early 2012. The savings are calculated in terms of final energy used without counting the energy used in installations covered by the EU ETS. As part of the NEEAP, an intermediate target of two per cent by 2010 was introduced. Poland's national ODYSSEE report stated that a white certificates system was to be introduced as the 'main instrument' for improving energy efficiency.

Savings are calculated through a combination of 'top-down' and 'bottom-up' approaches to identify overall savings and individual contributions. The main drivers behind the policy are compliance with the ESD, and a desire to increase productivity. No sectoral targets exist, aside from a red certification scheme to support high efficiency co-generation. A public sector target to reduce energy demand by one per cent a year was proposed, but eventually removed from the draft Energy Efficiency Law.

There is a longer term ambition to reduce the energy intensity of the Polish economy to the 2005 EU-15 average by 2030.

One commentator suggests that Poland is unlikely to meet the NEEAP target given delays in implementation and lack of progress with most of the actions within the plan. There is a view that the longer term ambition does not reflect the greater opportunities for efficiency in Poland.

The ambition is for all heat generated in Poland to be from co-generation by 2030 and a further obligation on energy companies to purchase 16% of their electricity from co-generation by 2010.

Effective Targets

One consultee indicated that, although official analysis is not available, in his opinion the most effective mechanism in Poland has been a financial mechanism - the Thermomodernisation Fund, which provides resources for the modernisation of buildings (renovating over 16,000 buildings between 1999 and 2009). This is in contrast to the implementation of the Energy Performance of Buildings Directive which has been subject to numerous failures – from difficult to understand building certificates to penetration of certificates only in new buildings and energy use of buildings remaining high (average 120 kWh/m²/a). It is hoped that the recast of the Directive will result in more impact of the building certificate on the secondary market and provoke an interest in passive buildings.

This consultee also flagged the new energy efficiency act which will come into force mid 2011 which sets indicative energy efficiency targets for 2016 as well as obligations on energy companies that sell electricity, heat and gas.

Target setting and measurement

A target based on the energy intensity of the economy has been included in the Energy Policy Act in Poland (aiming to reduce the energy intensity of the economy to the EU-15 level by 2030 on a EU-15 2005 baseline). Although this is a popular target, one respondent indicates that this might not be the most effective way of expressing the target.

Mandatory targets

A national legally binding target is being called for by the Institute for Sustainable Development and other Polish organisations. One consultee commented that voluntary agreements are not taken seriously enough and are not sufficient to stimulate investment in energy efficiency. Another respondent felt strongly that without mandatory targets Poland will not work seriously on energy efficiency. This is particularly the case as there is not much awareness of the economic and environmental benefits in both society in

general and the business community in particular. This means that there is a need for the target to be set, and for public discussion about it.

However, the Polish government is reported to be against binding targets and has the support of most of the business sector. There has not been a public consultation on binding targets but in general the public are in favour of investment in energy efficiency. All of this said, binding targets remain a controversial issue in Poland. One consultee agreed that a binding target would have an impact on Poland, although there is much opposition both at a national and European level amongst policy makers. This consultee added that only if monitoring and enforcement is introduced will investment in energy efficiency be stimulated.

This consultee felt that mandatory energy efficiency targets should not compete with renewable energy and GHG targets. However energy efficiency targets have proved controversial with the Ministry of Finance which is concerned that energy efficiency targets might harm future budgets.

Targets in practice

At present, energy efficiency sits within a number of different Ministries in Poland – for the economy, infrastructure and transport. One commentator felt that, although there are no sectoral targets for energy efficiency at present, responsibility should lie with the different Ministries for meeting sectoral targets. In addition, this consultee felt that energy companies as well as public entities should be responsible for meeting energy efficiency targets.

This commentator reported the largest potential reductions are in the building sector though the highest and fastest growth in consumption is in the transport sector. However, neither of these sectors are reflected in appropriate targets.

National Reform Programme

Poland's NRP is available at (in Polish):

http://ec.europa.eu/europe2020/pdf/nrp/nrp_poland_pl.pdf

The NRP indicates on page 49 that cumulative primary energy savings from programmes and actions will amount to 13.6 Mtoe by 2020, or 14.2% below the business as usual projection for 2020.

Other resources provided

- Government reports (Polish):
http://www.stat.gov.pl/cps/rde/xbcr/gus/PUBL_se_efektywnosc_wykorzystania_energii_1998-2008.pdf
http://www.stat.gov.pl/cps/rde/xbcr/gus/PUBL_se_efektywnosc_wykorzystania_energii_1997-2007.pdf
- Commercial report – Energy in Buildings (Polish):
<http://www.builddesk.pl/files/BuildDesk/Consultancy/PL%20BD%20Analytics/2009-12-stan-energetyczny-budownictwa-w-polsce.pdf>

Portugal

From survey and ODYSSEE report

Portugal's NEEAP outlines a national target of 10% reduction in total final energy consumption by 2015 (not 2016) – 20% higher than required under the ESD. This is not a target enshrined in law but a failure to accomplish the expectations would have political ramifications. Portugal has achieved just over 18% of this target by 2009. Compliance with the Energy Services Directive and climate change/CO₂ mitigation are the stated drivers for the energy saving measures.

The NEEAP outlines specific measures in the transport, residential and services, industry and state sectors, with three cross cutting action areas. The measures are assessed using energy saving units expressed as equivalent petroleum tonnes. The proposed measures for each sector have detailed indicators and targets that correspond to the 2010 and 2015 timescales – many of these are transactional indicators.

For example, in the transport sector and the residential and services sector incentives exist to promote the replacement of old cars or equipment with efficient version, the targets aims to achieve 30% of end-of-life vehicles in the car fleet by 2015 and to achieve 37% of household freezers with an A/A+/A++ by 2015. A 5% modal shift from private to public transport is also targeted in the transport sector.

A bottom-up methodology is used to measure energy savings and the national Energy Agency is responsible for collecting the data from all measures, reporting to the DG for Energy and Geology. Ultimate responsibility is held by the Ministry of Economy and Innovation.

Contextually, energy intensity has been increasing, primarily as a result of growth in the transport sector and electricity consumption. The National Energy Strategy outlines three priorities for 2010: renewable energy, energy efficiency and electric vehicles. It is felt that the government has not been sufficiently ambitious with its energy efficiency targets when compared to renewable energy or electric vehicles policies and has not prioritised this area. Some sector specific measures in the NEEAP are not felt to be achievable in their timeframe and it is felt that more promotion from central Government is needed. Measures in the transport and state sectors are felt to have been less successful than in the industry and residential and services sectors.

Effective targets

It is felt by one consultee that effective regulation to implement some of the measures, in particular in the residential sector, is missing. A lack of clarity around effective delivery of incentives is felt to reduce their effectiveness at driving energy efficiency in the residential sector. A tariff system to promote energy efficiency, similar to that for renewable energy production, is proposed by this commentator as a potentially more cost effective way of driving energy efficiency.

Mandatory targets

One commentator felt that a mandatory energy efficiency target would be advantageous. The example of successful mandatory obligations on energy companies is compared to the levy on the electricity tariff in Portugal which promotes the delivery of only a limited number of measures (able to be assessed through an ex-ante evaluation) is cited. However, this commentator also raises this important question: how to assess achievement and set the penalty or reward levels correctly to ensure delivery.

The need for a combination of instruments, both mandatory and voluntary, has also been called for.

The engagement of all stakeholders – not just utility companies as active partners in the delivery of the energy supplier obligation, has also been called for in order to improve creativity, innovation and the quality of projects and programmes. The importance of bottom-up instruments and a focus on information and behaviour change programmes



has been debated with the high cost and lack of assurance of results making it difficult to anticipate the energy saving per unit of intervention. A mandatory commitment is recommended in that it offers the option of ex-post evaluation using a standard procedure.

National Reform Programme

Portugal's final NRP is available at:

http://ec.europa.eu/europe2020/pdf/nrp/nrp_portugal_en.pdf

On the 2020 objective, the NRP states (page 50; pages 50-52 describe programmes and actions):

In line with the objective set for the EU, Portugal's National Energy Strategy 2020 (ENE 2020) undertook to improve its energy efficiency by 20%. The 2015 target set in the PNAEE is 9.8%.

More specifically, by 2020, Portugal aims to use 6 Mtoe less primary energy relative to BAU (Business As Usual) primary energy consumption of 30 Mtoe without energy efficiency; this means reaching 24 Mtoe primary energy consumption in 2020, after energy efficiency measures.

Other resources provided

- National Energy Efficiency Plan (Portuguese)
<http://www.portugal.gov.pt/pt/Documentos/Governo/MEI/PNAEE.pdf>
- Energy Agency <http://www.adene.pt/ADENE/Canais/PNAEE/Enquadramento.htm>
- Ministry of Economy, Innovation and Development National Energy Strategy
<http://www.min-economia.pt/innerPage.aspx?idCat=51&idMasterCat=13&idLang=2>

Romania

From survey and ODYSSEE report

The national target for Romania was set in the first NEEAP. The national target for 2016 was set at 13.5% of average final consumption with a baseline taken from the period 2001-5 (1.5% per year, with a 2010 target of 4.5%). The higher target (50% higher than the nine per cent objective of the ESD) was established in response to the country's high levels of energy intensity compared to the EU average. Savings potentials are outlined in the Energy Efficiency Strategy (2004, due to be updated) as a reduction in energy intensity of 40% by 2015 against 2001 levels on all economic and social activities. Annual savings are identified in this strategy by sector, and within sectors by existing and new infrastructure. Potential savings identified by sector are:

- An annual saving of 337,000 toe primary resources in the industrial sector;
- An annual saving of 823,000 toe primary resources in the residential sector;
- An annual saving of 303,000 toe primary resources, transport;
- A reduction in annual consumption of primary resources of 48,000 toe in the tertiary sector;
- An annual saving of resources by 612 thousand toe in the centralized heat supply.

Initiatives in the industrial sector include long-term agreements to adopt energy saving measures focussing on process and equipment and the efficient use of energy. Outside of these agreements measures are expressed in terms of potential savings rather than targeted savings.

The national targets are expected to be met but this is in the context of an economic downturn. Efforts in the housing sector are felt to have been consistent, while efforts in the industrial sector seem to have been insufficient.

The Ministry of Economy, Commerce and Business Environment is responsible for reporting with support from the former Energy Conservation Agency ARCE, now a department of the Romanian Energy Regulatory Authority, providing evaluation and verification support. The absorption of the Energy Agency into the Regulatory body came as a cost cutting exercise in response to the economic downturn and has resulted in a reduction of resources and the number of subsidiary organisations across the country, previously in almost every county. It is not clear whether the Energy Efficiency Regulatory Department will have the capacity to gather information/reports from relevant industrial consumers under the new circumstances.

In 2011, the Energy Research and Modernizing Institute ICEMENERG will complete top-down and bottom-up models for ex-ante and ex-post calculation of energy saving from energy saving measures. At present data is gathered using top down methodologies with the bottom-up methodology in development.

Target setting and measurement

The economic and cultural context was felt by one commentator to be essentially important in the setting of targets. In Romania, which has a history of shortages, safe energy supply is felt to be more important than GHG emissions. An energy consumption target was felt by this commentator to be most suitable and able to take into consideration aggregated factors. It is recognised that this may make comparison with other countries difficult but a suggestion was made that the discussion and contextualisation with other countries could be made using ODYSSEE indicators.

Mandatory targets

One commentator expressed their support for a legally binding national energy efficiency target, feeling that it would help to streamline the actions taken towards meeting the target. However, the public should be properly informed about the target, what it means and how it is translated at the level of different sectors of activity.



Targets in practice

There is support amongst commentators for a mandatory target (absolute final consumption target). More than one commentator felt a mandatory target is essential to send a clear message to investors and a sure way of getting results. But it is also felt that setting a target without strict monitoring is pointless and that the target must be coupled with specific measures at sectoral level. Incentives in particular are called for, with the example given of a successful programme of funds and public information for the promotion of the purchase of new cars. However these must be set on an equal basis and delivered in a responsible way. The example of the National Buildings Rehabilitation Programme was given, the failure of which is linked to the changing conditions for co-financing.

On the issue of responsibility for the target and measures, there is no clear agreement for the key roles. Some commentators call for central government to work with an energy agency and research institutes, while others call for more responsibility held at a local level. Clearly defined monitoring methods and improved cooperation would be essential to the success of any commonly held responsibility between the central and local level.

The energy saving potential in residential (and possibly public) buildings are commonly recognised but will rely on the identification and allocation of finance.

National Reform Programme

Romania's final NRP is available at (in Romanian):

http://ec.europa.eu/europe2020/pdf/nrp/nrp_romania_ro.pdf

The NRP projects, based on the PRIMES model, that Romania will achieve a 19% primary energy saving by 2020 compared to business as usual – or 10 Mtoe (page 98). A series of programmes and actions contributing to this projection are described in some detail from page 99 onwards.

Slovakia

From survey and ODYSSEE report

Slovakia's economy wide national target is set out in the Concept of Energy efficiency of Slovak Republic that covers the period nine year period 2008-2017. This indicative target is set at 4135 TJ per year over the period and is divided into sectoral targets for 2008-10 through the NEEAP²⁰. The overall drivers of the national target are compliance with the ESD and energy security considerations. Drivers for the sectoral activities include inadequate building quality, financial considerations in the public sector, competitiveness (agriculture and transport) and the reduction of CO₂ emissions. The percentages of the total target for the three years 2008-10 allocated to each sector are:

- Horizontal measures 31%
- Buildings 11%
- Appliances 3%
- Public sector 3%
- Industry and Agriculture 30%
- Transport (extending to all stakeholders in the transport sector with a focus on public transport) 22%

The targets are expected to be met with the economic benefits to the larger economy or to stakeholders groups (particularly in the agricultural sector) driving success. In particular the initiatives in the buildings sector are felt to have high political profile due to the quality of life impacts of the initiatives.

The national target and most of the sectoral targets are measured using combined methodologies consisting of measurement of energy or fuel consumption, estimation of impact, measurement of proxies, or aggregated statistical data. The buildings target is measured using a bottom up methodology. A monitoring and information system is under development by the Slovak Innovation and Energy Agency. At present, measurement is undertaken by consumers, operators or institutions. Data collection and monitoring are coordinated around the preparation of the NEEAP, with final responsibility sitting with the Ministry for the Economy.

National Reform Programme

Slovakia's final NRP is available at:

http://www.finance.gov.sk/en/Documents/1_Adresar_redaktorov/Siskovic/NRP_Slovakia_2011-2014.pdf

It does not report against the 2020 objective, but reiterates its NEEAP target (page 16), expressed in terms of the ESD's method – 11% final energy savings compared to the 2001-2005 average by 2016. Reference is made to the forthcoming second NEEAP, but no further detail is provided.

²⁰ The ODYSSEE country report adds that a long-term goal to reduce energy intensity of GDP generation down to the level of other advanced EU countries (EU-15) is also in place.



Slovenia

From survey and ODYSSEE report

Slovenia's national target is driven by the NEEAP/ESD and is set at 2.5% by 2010 and nine per cent by 2016. The economy wide target is split into specific targets for the industrial, tertiary, household and transport sectors, aside from which there are inter-sectoral and horizontal targets. The general target is fuel based though specific targets are a combination of fuel and emission based, supplemented in many sectors with transactional targets.

Though in principle energy efficiency has a position of importance in Slovenia, implementation and financial allocation is lacking which places doubt over whether the targets will be met. At an EU level, Slovenia supports a binding 20% target expressed as final energy.

Procedures for monitoring, evaluation and reporting are patchy with formal responsibility placed with different Ministries responsible for different targets and in practice many parties measure individual savings. Both bottom up and top down methodologies are used following ESD and Eurostat methodologies but to measure different parts of total energy savings. Deficiencies are recognised in this area and improvement is being made in response to EU reporting obligations.

Compliance with the ESD is the main driver for the energy efficiency targets (and the nine per cent target is seen as legally binding), although the drivers of increased employment opportunities and the potential for expansion of the energy efficiency sector are strengthening.

Activity is particularly lacking in the transport sector. Although voluntary agreements have been established between businesses and government under which investment are made in greenhouse gas emissions reductions in return for carbon tax exemptions, no overview is available indicating what investments have been made or savings can be attributed.

The general trend is for decentralisation of responsibility to municipalities, energy distributors and end users, which is expected to continue.

National Reform Programme

Slovenia's final NRP is available at:

http://ec.europa.eu/europe2020/pdf/nrp/nrp_slovenia_en.pdf

It states simply that the "20-20-20 climate/energy targets will be met" (page 39) as a result of being "firmly on track" (page 40) to do so as a result of Slovenia's 2011-2012 budget proposal, but does not provide any quantitative detail on energy savings – although reference is made to the forthcoming second NEEAP.

Spain

From survey and ODYSSEE report

In Spain the content of the NEEAP is derived from a pre-existing Saving and Energy Efficiency Strategy covering the period 2004-12. Within this strategy a savings target of 13.7% is set for 2012 measured in primary energy against a reference scenario. This target is translated in the NEEAP into an ESD target of 11% (although it is not clear if this has been calculated in compliance with the appropriate methodology).²¹ The EU targets, including the 20% reduction in primary energy use by 2020 will be included in a new Law on Sustainable Economy. The driver for energy efficiency is Spain is compliance with Directives and the Spanish greenhouse gas reduction target with co-benefits of energy independence and employment and economic benefit.

Within the 2004-12 Strategy, the 2008-12 Action Plan outlines national indicative (non-binding) targets for seven sectors and a goal for installed co-generation of 8400 MW_e. A number of legally binding targets sit below these sectoral savings covering for example share of biofuels in the transport energy mix and energy savings from public buildings. Two Ministries are jointly responsible for all of the sectoral targets. All targets are measured in ktoe and in per cent (expressed in both final and primary energy), compared to a business as usual reference scenario.

The targets for all sectors apart from Industry have been increased in the 2008-12 Action Plan from the levels initially set in the 2004-12 Strategy, with the need to reduce greenhouse gas emissions named as the driver. The savings expected from Industry have not been increased due to the fact that energy intensity in the sector increased between 2000 and 2005. Industry has the second most ambitious target and there is uncertainty if this target is achievable, although higher savings are available with better defined objectives and instruments (similar for buildings sector). The transport target is the most ambitious and similar concerns exist about its achievement with the diffuse nature of the sector and the low quality and low level of competition in the freight services named as barriers.

In general it is felt that measures implemented do not have clear enough objectives and are not results driven, suffering also from a failure to assess the impact of programmes. Energy consumption is reported annually by sector and source of energy, along with energy intensity. Nationally, primary energy, final energy, primary energy intensity, final energy intensity by source of energy are also reported. Estimations are made on the economy level structural effects of energy efficiency though the effects of the economic downturn and oil and gas prices have not been drawn out from this analysis.

National Reform Programme

Spain's final NRP is available at:

<http://www.meh.es/Documentacion/National%20Reform%20Programme%202011%20Spain.pdf>

The NRP reports (page 24; followed by a description of measures pages 27-29):

A target reduction of two percentage points in energy intensity in terms of final energy. This represents a 20% decline by 2020 with respect to 2009; in terms of primary energy consumption, it is a reduction of close to 25.2 Mtoe with respect to the baseline projection for 2020.

Other resources provided

- Energy efficiency and renewable energy bulletins from the Institute for the Diversification and Saving of Energy (IDEA)
<http://www.idae.es/index.php/mod.pags/mem.detalle/idpag.481/relcategoria.1368/re.lmenu.162/lang.uk>

²¹ Commission synthesis of the NEEAPs



Sweden

From survey and ODYSSEE report

Sweden has a long-term target of 20% energy efficiency improvement by 2020 (expressed as inter-sectoral target of 20% lower energy intensity between 2008-2020). Indicative targets for reduced energy use in 2010 and 2016 have also been adopted, outlining that final energy use will decrease by 6.5% by 2010 and nine per cent by 2016.

These targets exist within the context of the integrated energy and climate policy and its long-term goal for reducing emissions under which three action plans guide activity. One of these action plans is for energy efficiency. Initiatives under the plan include: a focus on locally and public sector driven activity in part through agreements entered into by public sector bodies with the Swedish Energy Agency which set targets for energy efficiency; energy audits for high energy using businesses; efforts to promote energy efficiency technologies; and smart metering for hot water and electricity.

Another driver for activity comes within Sweden's 16 objectives for a sustainable environment, which are to be met within a generation (set in 1999). One of the 16 objectives outlines that the total energy use per unit area heated in dwellings and public/commercial premises should be reduced by 20% by 2020 and by 50% 2050 on 1995 levels.

The Swedish Energy Agency has the responsibility for evaluating the activities under the NEEAP and is charged with creating the second action plan. It will develop a calculation method using both bottom-up and top-down methodologies. To date evaluations of policy instruments in respect to their effects on energy efficiency have been only rarely performed in Sweden. More common are evaluations on the effects on carbon dioxide emissions in respect to the climate strategy.

Effective targets

One commentator identified achievable potential reductions of 10%-15% in Sweden's industrial energy consumption and 30% in the residential sector, assuming proper legislative and financial support. Support for investment and political focus are seen as key factors to the success of achieving the targets but, in comparison to renewable energy production, CO₂ emission reduction and energy efficiency have not received the same attention.

Target setting and measurement

A combination of defined and transactional targets is felt by one commentator to be most suitable. Stronger standards for residential energy use, via lower kWh/m² limits for both new buildings and refurbishment of existing buildings, was given as an example of the acceptable potential that is not being utilised. There is a feeling that the discussion about energy efficiency is centred more on counting than on action than on direct activity.

In the view of one consultee, potential savings are not being made because of insufficient cooperation between building owners and users, in both the residential and industrial sectors. This could be addressed through increasing the awareness of the cost savings, legislation that supports cooperation, financial support and perhaps legislation that requires energy companies, shopping malls, office buildings and so on to act.

Mandatory targets

One commentator feels strongly that voluntary targets will not be successful at achieving the goals. This commentator identified the activities and separate goals of different departments as not only lacking coordination with each other but even conflicting, resulting in confusion for the energy user. There is a call for one department (perhaps the Swedish Energy Agency) to provide a clear voice for energy users.



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National Reform Programme

Sweden's final NRP is available at:

<http://www.sweden.gov.se/content/1/c6/16/75/04/dfeb4c9f.pdf>

The NRP reports a target an economy-wide target for energy efficiency expressed as a reduction in primary energy intensity of 20% by 2020 relative to 2008 (page 42). Given GDP growth assumptions, meeting this target is assumed to save primary energy of between 11.6-14.7 Mtoe. With specific reference to the 2020 objective it states (on page 44):

As far as energy efficiency is concerned, it is the Government's view in the Spring Fiscal Policy Bill for 2011 that the target can be met within the framework for the policy adopted and the measures announced.



United Kingdom

From survey and ODYSSEE report

In its National Energy Efficiency Action Plan the UK adopts a nine per cent target for 2016, but indicates that it expects savings from key policies and measures to be equivalent to 18% by 2016 without formally committing to this higher target. The UK has however adopted a nine per cent intermediate energy savings target for 2010.

The UK has historically set itself binding targets for energy efficiency. The Home Energy Conservation target required Local Authorities to improve energy efficiency in the housing stock by 30% over the period 1996 to 2011 however reporting against this target has lapsed and Government have been seeking to repeal the Act that set the target. In addition, approximately 10 years ago the Government set a target to double CHP installed capacity to 10 GW_e by 2010 but the failure to obligate a party meant the target remained aspirational and was not met. Recent activity is driven by the legally binding carbon targets the UK has set itself under the Kyoto protocol and has focused on the buildings public sectors. In 2010 central government set itself a non-binding target to reduce carbon emissions by 10% in 12 months but the trend currently is to move away from binding targets.

The UK has three different schemes placing requirements on businesses to deliver energy savings (measured in Carbon) in the commercial and domestic sectors.

The first is a target of 293MtCO₂ of lifetime savings over the programme is placed on all energy suppliers over a threshold size. The primary aim of the target is to make a contribution to the UK's legally binding target under the Kyoto protocol but secondary drivers also include reducing energy demand, energy security, household energy bill reduction, alleviation of fuel poverty and green jobs. The target is achievable through energy saving measures installed in homes to which an ex-ante score is applied. Similar energy company obligations date back to 1994, though these were measured in GWh. The target is enshrined in legislation, it is monitored and reported on (quarterly) by the national regulator Ofgem and fines are payable to the government if the target is not reached unsurprisingly therefore all historic targets have been met by suppliers, individually and collectively. The targets have been increased over the years, responding to the known deliverables in the previous scheme meaning that the targets are considered to be ambitious.

The second scheme is another mandatory scheme, the CRC Energy Efficiency Scheme (commenced in 2010), placing responsibilities on all large public and private sector organisations (measured through annual electricity consumption). Individual targets are set on qualifying companies and cover all CO₂ emissions (energy use converted to CO₂) except those from domestic accommodation, transport, those included under a Climate Change Agreement (CCA, see below) or the EU ETS or consumption outside the UK. The savings are self-certified by the participating companies with audits carried out by the Environment Agency (a Government Agency) and penalties for companies failing to meet the reporting requirements. The overall target for the scheme is consistent with the aim of meeting the five-yearly carbon budgets. It is too early yet to make any conclusions on success or effectiveness but it is expected that the scheme administration will be simplified following consultation in 2011.

The third scheme is a long running scheme introduced in 2001 which focuses on energy intensive industry. Sector associations or facility operators can negotiate a voluntary CCA with government (Department of Energy and Climate Change) on a challenging energy efficiency target using a business as usual baseline and based on technical potential and individual assessment. The targets are revised every two years. Through this agreement participants can benefit from an 80% reduction in the energy tax (Levy). Energy use is converted to CO₂ to form the metric for the target. Annual savings from the sectors covered by agreements ranged from 14.4 MtCO₂ to 16.4 MtCO₂ between 2004 and 2006. Initial targets have been criticized for being too lenient but have been tightened with experience. Current agreements are set to expire in 2013 though there is commitment to continue them until 2017, contributing additional savings.

Target setting and measurement

On the subject of how to best set a target, the importance of the objectives behind the target was raised. If the objective is to stimulate energy efficiency for economic or social reasons then an efficiency target is the most obvious driver. If the objective is environmental or for energy security then a consumption-based target is more suitable: for this purpose, whether the reduction is made by efficiency improvement or energy service demand reduction does not matter. One commentator felt that a consumption based target is preferable as environmental (climate change) and security goals are at the heart of energy policy, and would provide clarity around the distinction between efficiency and conservation. Efficiency improvement at the whole economy level is very difficult to measure and policy makers struggle with understanding 'efficiency targets'.

To illustrate the complexity, the example of US programme evaluation is used and discussed by a number of commentators. Allowing for free riders, rebound, double counting, multiplier effects etc adds so much complexity that transparency is lost and the information becomes impenetrable to all but the specialist. There is some agreement between consultees around the complexity of these terms and concepts and the need to be able to communicate them effectively. Simplicity in the setting of the target and evaluation system is felt to be key.

One commentator suggested that the most useful results come from policy evaluation (theory based), not from impact evaluation. For the monitoring of impacts, a system no more complicated to that currently used for white certificates schemes was felt to be sufficient. It was also felt that comparing one system with another is not helpful, as policy objectives differ.

The achievability of targets was also raised, as unrealistic targets can discourage the actors involved. One commentator feels governments set targets without an understanding of how and if they can be met, and cites the example of the UK's renewables target to illustrate this. This has been set for 15% of final energy demand (and 30% of electricity) to be supplied by renewables by 2020, from a starting point of 2-3% in 2011 (and 6% electricity) – all in the context of large anticipated increases in electricity demand (for the electrification of transport and other uses) to illustrate this.

Mandatory targets

One commentator felt that a harmonised methodology across Europe is an impossible dream, policies and measures are important and the high level indicator should be change in demand - either reduction or mitigating the rate of increase. Another commentator felt a harmonised system was not necessary, but shared feedback from actual experience is more useful to support improvement.

Targets in practice

The distinction between, and the interdependence of, 'targets' and 'policies and measures' were highlighted. Targets do nothing in isolation. However, targets are important in this commentator's opinion to drive activity, with the 15% renewable target in the UK again given as an example.

This commentator felt that central government should be responsible for setting the target and the overall framework, but can delegate responsibility for the policies and measures necessary to achieve the target.

National Reform Programme

The UK's final version is available at:

http://ec.europa.eu/europe2020/pdf/nrp/nrp_uk_en.pdf

No mention is made of the 2020 target, although a selection of programmes and actions are described.



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Other resources provided

- Quarterly updates on the supplier obligation
<http://www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/CU/Pages/CU.aspx> and further documentation
<http://www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/Pages/EnergyEff.aspx>
- Guide to the CRC Energy Efficiency Scheme by the Environment Agency
http://www.decc.gov.uk/assets/decc/what%20we%20do/a%20low%20carbon%20uk/crc/1_20100406154137_e_@@_21934crcpdfawv9.pdf
- Analysis for the Climate Change Agreements, published by the Department of Energy and Climate Change
http://www.decc.gov.uk/en/content/cms/what_we_do/lc_uk/ccas/cca_analysis/cca_analysis.aspx