Europe's renewable energy policies: Too much focus on renewable electricity?

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This report details the challenges of achieving Europe's renewable energy objectives. In the context of positioning the EU on a pathway to ambitious emissions reductions and renewable energy targets for 2030, it proposes a stronger refocusing of policy action towards heating & cooling and transport sectors, in addition to developing renewable electricity sources.

Under the Renewable Energy Directive, the EU has set ambitious goals to increase the share of renewable energy (RES) to 20% by 2020.[1] National mandatory targets are established in the Directive, to ensure that the EU target is met, with National Renewable Energy Action Plans (NREAPs) setting out the necessary measures needed across sectors. Most Member States also have a mandatory target to achieve a minimum 10% renewable energy share for road and rail transport.

Analysis of progress to date[2,3] suggests that the EU-28 achieved a share of 14.1% in 2012, compared to a planned share of 12.9% in the NREAPs. As shown in Figure 1, this comprises 7% from thermal renewable energy, 6% from renewable electricity and 1% renewable transport. This encouraging position will become increasingly challenging to maintain as the target requirements become more stringent out to 2020.

Progress in recent years has been largely due to increases in renewable electricity (RES-E), with an annual growth rate of over 9%. This compares with a 5.5% growth rate required to meet the NREAP RES-E contribution by 2020. For heating and cooling (RES-H&C) and transport (RES-T) by contrast, the growth rates witnessed in recent years are below what is required according to the NREAPs, and significantly so for RES-T.

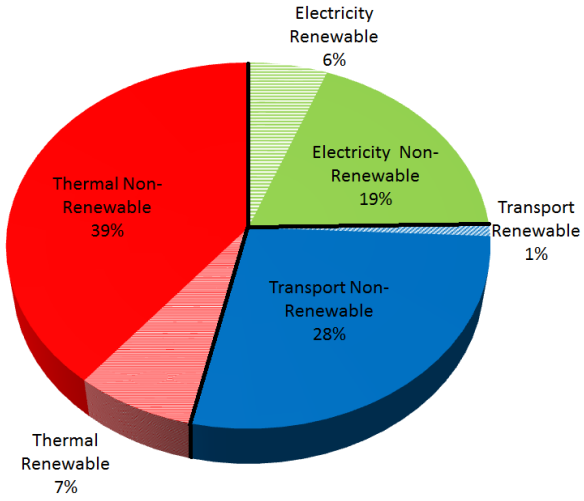

Figure 1: EU Energy Consumption (GFEC) by Modes of Energy[4]

Using a distance-to-target metric, illustrated in Figure 2, it is evident that many Member States still need to make significant additional efforts to meet the 2020 target. Projecting forward, scenarios developed in the EU funded *2020 Keep on Track* project suggest that under i) current support frameworks and

[1] Directive 2009/28/EC of 23 April 2009 on the promotion of the use of energy from renewable sources
[2] EU Tracking Roadmap 2014; www.keepontrack.eu
[3] Renewable energy progress report. European Commission. COM(2013) 175 final. Brussels, 27.3.2013.
[4] Based on SHARES 2012 estimates.

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conditions, only a 17.9% RES share will be achieved, while under ii) an alternative 'policy recommendations' case, a 21% RES can be achieved, by over-delivering in the electricity sector but missing the 10% transport target[2].

Across Member States, there are limits to what the electricity sector can achieve and in many cases, it will not be able to take up the slack of other sectors. In large part, this is because electricity only accounts for a quarter of total EU-28 gross final energy consumed (GFEC) in 2012 (see Figure 1). To illustrate this, to grow from the current 14% RES to 20% by 2020 relying only on renewable electricity, would require the share of RES-E to double from 24% to 48%. This is in contrast to current ambition of 34% RES-E under the NREAPs.

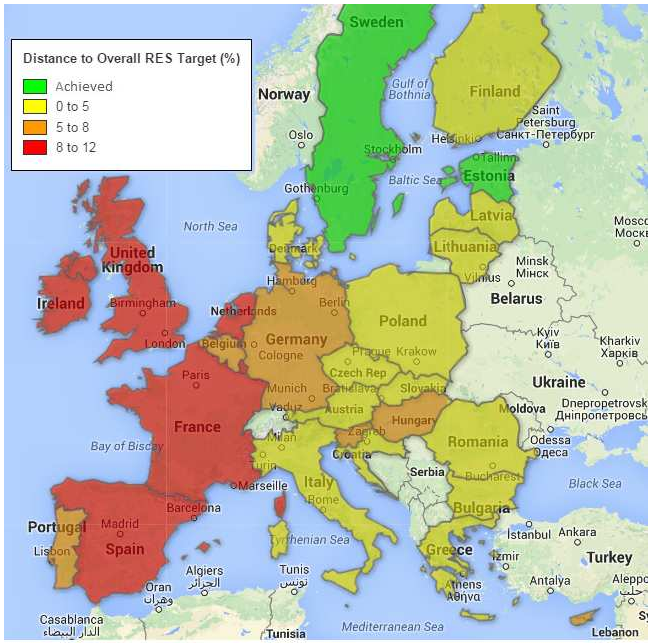

Figure 2: Distance to Member State overall Renewable 2020 target (measured in %'age points difference from target).

Therefore, it is imperative that Member States develop policies to promote the uptake of RES-T and RES-H&C and thereby bring them back on track. This issue needs to be addressed not only to enable 2020 targets to be met, but also to ensure that the recently agreed 2030 target of 27% RES can be achieved.[5]

Progress in Member States

While 22 Member States met their NREAP RES targets in 2012, of concern is slow progress on RES-H&C and lack of progress on RES-T. Analysis in the *2020 Keep on Track* project shows that only 9 Member States are likely to achieve their overall RES target in 2020[2]. Based on the distance to target analysis, the progress of selected Member States across each of the sector is examined below, highlighting key challenges to meeting 2020 objectives.

UK - In 2012, the UK met its NREAP target of 4%, with a RES share of 4.2%. Strong growth in RES-E, primarily onshore and offshore wind, has contributed significantly to staying on track, near doubling generation from 2010 levels, to 48 TWh in 2013, and accounting for 13% of total generation.[6] RES-H&C accounted for around 16 TWh in 2012, and has been growing at a much slower rate, accounting for 2% of sectoral GFEC (against a 2020 NREAP target of 12%). RES-T accounts for 3.7% of transport energy, against the 2020 target of 10%.

Offshore wind is seen as a critical renewable energy source to achieve UK carbon reduction goals, and a technology that the UK can develop strategically given the resource base and industrial capacity and expertise. It is likely that the UK will continue to strongly focus on RES-E, supporting investment via the Renewable Obligations mechanism and eventually via Contracts for Difference under the Electricity Market Reforms package, progressing towards the 31% RES-E level stated in its NREAP.

Further action is required to increase the shares of RES-H&C and RES-T. A number of

[5] 2030 Framework for Climate & Energy. Outcome of the October 2014 European Council http://ec.europa.eu/clima/policies/2030/docs/2030_euco_conclusions_en.pdf

[6] DECC (2013). UK Renewable Energy Roadmap Update 2013

mechanisms such as the Renewable Heat Incentive (RHI) are aimed at developing renewable heat options but to date have failed to substantially increase RES-H&C. This has been due to scheme changes and lack of long term certainty around this policy. Concerning RES-T, the UK has delayed developing its transport biofuel strategy due to continued concerns over sustainability issues. Unless resolved, it seems unlikely that the 10% target will be met.

Portugal – With limited access to indigenous fossil resources, Portugal has successfully exploited their renewable energy resources over the last 10-15 years. The share of RES-E was around 30% in 2004,[7] largely due to hydro generation but has seen high growth primarily due an expanding wind generation sector, to 48% in 2012. For a sustained period, the first quarter of 2013, RES-E supplied over 70% of demand, in part due to favourable resource conditions and lower demand.[8]

Portugal also has a high RES-H&C share due to the high use of biomass and growing penetration of solar thermal. At 33% share, this sector is not expected to contribute significantly to the additional RES required under the 2020 target, in part due to declining biomass use.[9] With a 2012 RES share of 24.6%, Portugal did not achieve the NREAP 2012 target of 28.6% and is 6 percentage points below the 2020 target, which will need to be achieved through continued RES-E growth and progress on RES-T.

To meet the target by RES-E alone would require a 70% share, which would be challenging to maintain; therefore, additional action is likely to be needed in ensure RES-H&C does not decline significantly and a strong policy framework is built to increase RES-T. In part, the current lack of progress on RES-T is due to rules around sourcing of domestic biofuels, and a limited framework for promoting electric cars.

France – France was just off track in meeting its 2012 NREAP target (14%), realising an overall renewable share of 13.4%, compared to the 2020 target of 23%. RES-H&C and RES-E have significant distance to targets at 16% and 10% respectively. Electric heating is popular in France with estimates of up to 30% of households using this form of heating. New thermal regulations (RT 2012[10]) implemented in 2013 require new residential buildings to consume less than 50kWh/m^2-yr. It is yet to be seen whether this will have a significant impact on distance to targets.

Efforts to increase renewable electricity particularly from onshore wind have been slow with much regulatory uncertainty and administrative barriers. Anti-wind groups questioned the legality of government support schemes for wind; however a judgment of the EU Court of Justice of December 2013[11] confirmed that the French support for the production of electricity from on-shore wind installations involves state aid within the meaning of EU rules.

The government also hopes to streamline the authorization process for wind and renewable developments. The ambitious New Energy Transition Bill (Loi sur la Transition Energétique) proposes a significant cut in red tape for onshore wind and other renewables such as biogas and small hydropower production. The bill is expected to face a final vote in the spring. In the absence of strong regulatory and administrative improvements it is unlikely that France will achieve the 2020 target.

Hungary – Generally speaking, most Eastern European Member States are progressing well towards targets and are positioned to meet their 2020 obligations. Hungary has little

[7] Gouveia, J. P., Dias, L., Martins, I., & Seixas, J. (2014). Effects of renewables penetration on the security of Portuguese electricity supply. *Applied Energy*,*123*, 438-447.
[8] http://theenergycollective.com/josephromm/210896/70-percent-renewable-power-possible-portugal-just-did-it-3-months
[9] Portugal NREAP

[10] http://www.rt-batiment.fr/
[11] Case C-262/12 http://europa.eu/rapid/press-release_IP-14-327_en.htm

domestic oil or gas production and relies heavily on imports. The Russian Federation is the dominant supplier for both oil and gas, and Hungary is supplied by crude, product and gas pipelines. In 2012 Hungary's shares of renewable energy were 13.6% (RES H&C), 6.1% (RES-E) and 4.6% (RES-T). An absolute increase of 5% for each of these modes will deliver their overall renewable energy target of 15% in 2020.

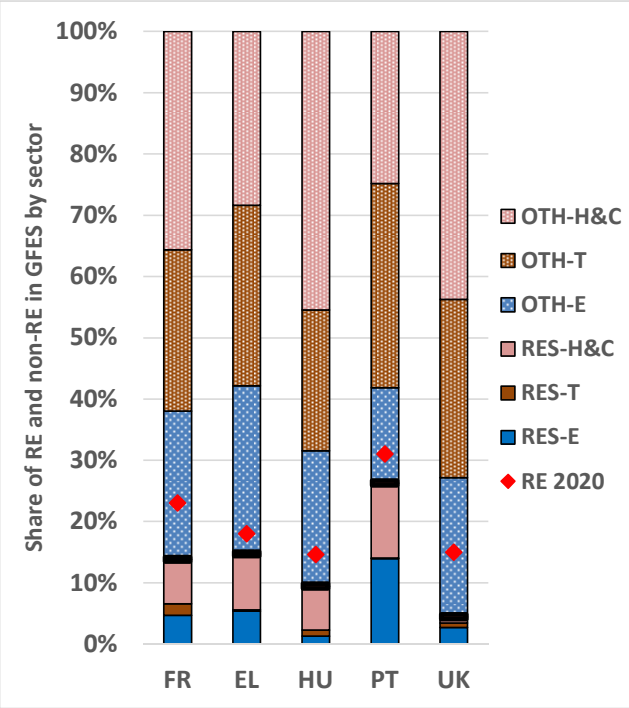

Figure 3: Share of RES in total GFEC in selected Member States, compared to 2020 targets

The RES-E share has dropped by 1 percentage point from a high of 7.1% in 2010, mainly due to lower biomass use in generation. In Hungary, electricity generated from renewable energy sources and waste is promoted through feed-in tariffs. The eligibility period and the maximum amount of eligible electricity are determined for each eligible electricity producer by the Hungarian Energy and Public Utility Regulatory Authority (HEA). For biomass, biogas and landfill gas, there are benchmarks feed-in periods. The feed-in tariffs are fixed and adjusted every year with inflation or inflation minus one percentage point.

While progress in RES-H&C is strong in Hungary, growth in the RES-E share was negative from 2011-2012. This trend needs to be reversed in order to maintain the overall favourable situation.

Greece **–** Greece exceeded its NREAP target in 2012, with a RES share of almost 14% against the target of 9.5%. To an extent, the economic downturn helps show a stronger performance against targets due to lower energy demand. For example, electricity demand had dropped by 10% in 2012 against 2008 levels.[12]

Across the sectors, RES-H&C was at a level in 2012 (24%) that exceeded the projected NREAP share in 2020 of 20%. Like Portugal, this is due to the large contribution of biomass fuels and solar thermal. Like all the Member States covered here, RES-T is very low, at 1%. RES-E had a share in 2012 of 16%, with a distance-to-target of 23%. However, due to the balance of the energy system, in other words the relatively large H&C sector, Greece is currently only 4 percentage points below its target of 18%.

No strategy exists for increasing RES-T, while a limited strategic framework for RES-H&C and no real scope for increasing biomass energy use requires increased efforts in the electricity sector. Serious challenges remain in increasing confidence in existing mechanisms and incentivising investment in an already challenging economic environment.

The challenges to achieving European RE objectives

Renewable energy forms a critical part of the European Union's ambition to transition towards a low carbon economy. The RE Directive forms a key legislative framework for enabling Member States to develop measures and attract the necessary investment in different technology options. However, as identified in this brief, a number of key

[12] http://greece.greekreporter.com/2013/02/18/greece-cuts-energy-use-in-crisis/

challenges need to be addressed at the Member State level;

- Efforts in the RES-H&C and RES-T sectors are often less developed, and need long term, stable and comprehensive policy frameworks.
- RES-T action is particularly weak, due to sustainability concerns and supply issues. It is not obvious how Member States will or intend to close the gap to meet the mandatory 10% target.
- It is likely that some Member States will exceed their NREAP shares of RES-E, particularly given the attractiveness of scale, economics and resources in many Member States.
- However, it is also evident that RES-E action alone to 2020 will not be sufficient, due to issues around system operation, the capital intensity of technologies and infrastructure, particularly in the current economic climate, and other barriers including those around planning.

In the context of positioning the EU on a pathway to ambitious emissions reduction and renewable energy targets for 2030, it is imperative that there is a strong refocussing of policy attention towards the RES-H&C contribution and RES-T targets. It is not necessarily that there is too much focus on RES-E but that there is not enough focus on RES-H&C and especially RES-T.

For further reading or information, please visit www.insightenergy.org

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Appendix: Distance to target by modes of energy for each Member State

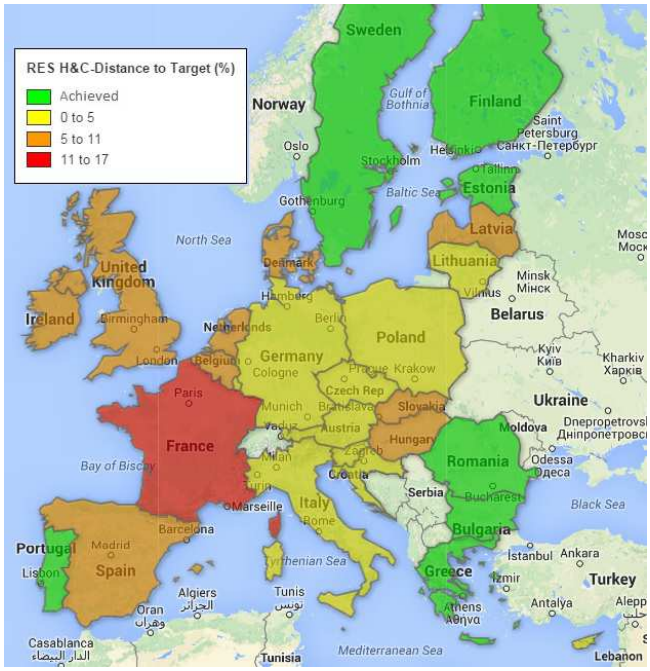

Figure 4: Distance to Member State RES-H&C 2020 target (measured in %'age points difference from target)

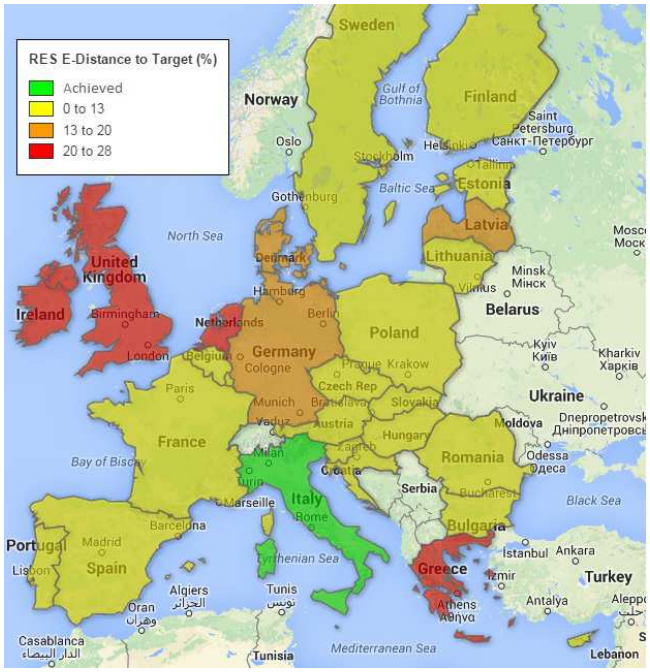

Figure 5: Distance to Member State RES-E 2020 target (measured in %'age points difference from target)

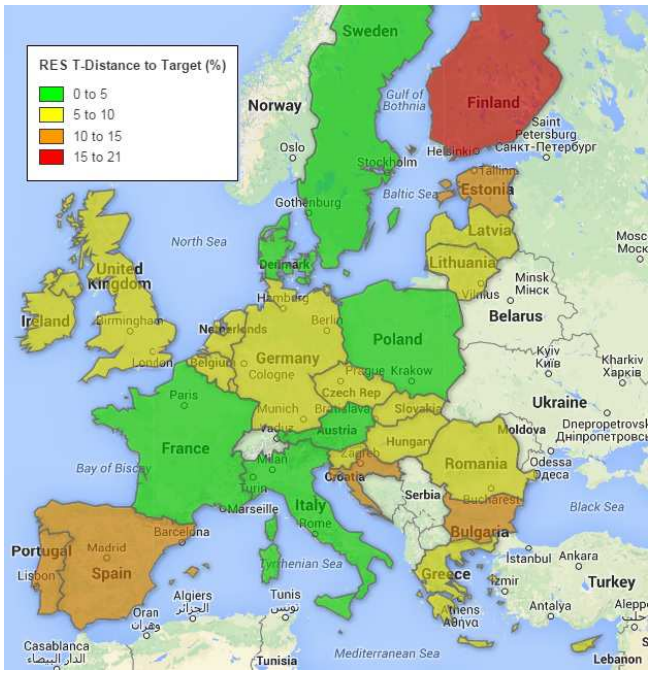

Figure 6: Distance to Member State RES-T 2020 target (measured in %'age points difference from target)