The Likely Impact of Mechanism Change on Renewables Targets in the UK:
The Reform of the RO and the Introduction of Feed-in Tariffs to the Policy Landscape

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Scope

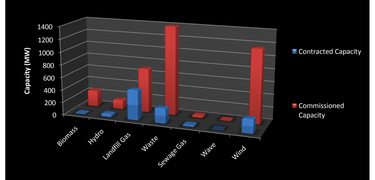
Although the United Kingdom has had a specific delivery programme for RES-E since 1990, the Non-Fossil Fuel Obligation (NFFO) and the Renewables Obligation (RO), the set targets for 2010 (10%), 2015 (15%) and 2020 (30-35%) are unlikely to be achieved and the UK continues to lag behind other EU countries with regard to renewable deployment levels. In response, the Government reformed the RO mechanism in 2009 with further reforms proposed, including the possible introduction of large-scale feed-in tariffs. This research examines the likely impact such mechanism changes will have on the deployment of renewable energy with regard to the set targets. In particular, this research process was carried out by (1) Analysing historical UK renewable energy policy – the NFFO/RO (1990-2008) to determine the failures of both mechanisms and identify the impact that such failures had on mechanism performance, (2) Examining the actual reforms that constitute the reformed RO to identify potential failures of the reformed RO, and (3) Evaluating the likely impact of the reform of the RO on renewable energy deployment levels for the 2015 and 2020 RES-E targets.

This was done by re-examining the Oxford Energy Research Associates (OXERA, 2007) modelling projections by analysing the impact that the internal and external failures of the proposed mechanism changes are likely to have on UK renewable energy deployment levels. ***Internal*** *(or structural) Failures are those failures (barriers) due to the design of the mechanism itself (e.g. price/financial risk, volume risk, mechanism complexity).* ***External*** *Failures are those barriers out with the mechanisms direct control (e.g. planning, grid, market design and policy uncertainty)*

The Past

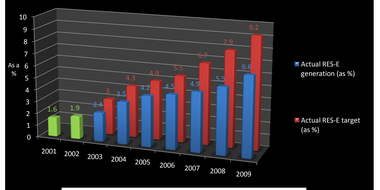
Historical Analysis of UK Renewable Energy Policy: the NFFO and the RO

Figure 1 Performance of the Non-Fossil Fuel Obligation



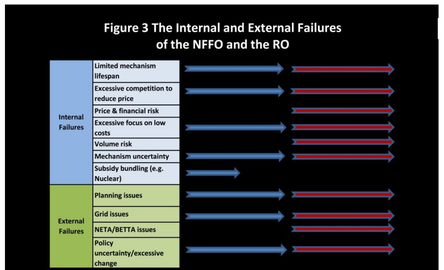
Only 30% of commissioned capacity is operational under the NFFO

Figure 2 Performance of the Renewables Obligation



The RO has consistently under-performed with regard to the Obligation targets

Figure 3 The Internal and External Failures of the NFFO and the RO



The RO Mechanism introduced 3 new failures

Internal Failures of the RO

•Price/financial risk: typically short-term contracts and generators not know what they will be paid for each contract; difficult to obtain financing – value of wholesale electricity and ROC values depend on supply and demand)
•Volume risk: ROC value and buy-out premium decrease the closer to meeting the Obligation targets; in-built incentive to not achieve set targets
•Left technology choice to the market, thus promoted the cheapest technologies (onshore wind / landfill gas) and priced other RETs out of the mechanism thus exacerbating planning problems
•Highly complex mechanism that strongly supported large, vertically-reintegrated companies (that could take on the RO risks themselves) over smaller independent or community-based projects that have been proven to improve public acceptance/reduce planning failures
•Excessive focus on low costs exacerbated problems for UK renewable industry sector that developed under the NFFO

External Failures of the RO

•Planning permission problems still not resolved
•Electricity transmission network / grid problems still not resolved
•Policy uncertainty / Excessive Mechanism Change: Setting carbon trading as the key policy tool and notifying intention to review the RO in 2003 (one year after the mechanism started); Obligation targets set late / aspirational; RO to be significantly altered (reformed) in 2009
•NETA / BETTA increased balancing risks and forcing additional costs to renewable generators

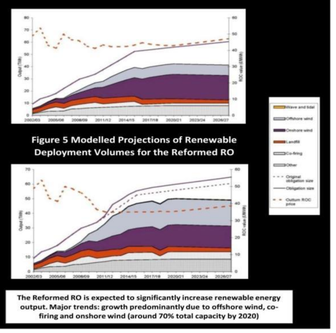
The Present

The Internal and External Failures of the Reformed RO

The Reform of the Renewables Obligation

•Technology Banding: 5 bands established to provide differentiated levels of support for different technologies (from 0.25 to 2.0 ROCs/MWh)
•20 year maximum support period (up to 2037) and the move from Obligation levels to a headroom mechanism from 2015/16
•Extension of the RO mechanism up to 2037
•Review process occurring every 3-5 years (but can be triggered early)
•Electricity market reform; Planning and electricity network reforms

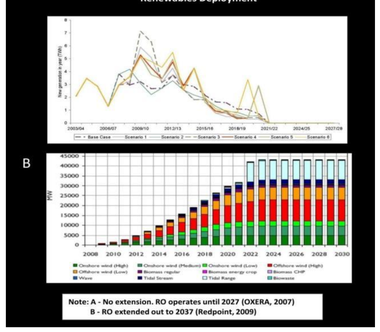
A Figure 4 Modelled Projections of Renewable Deployment Volumes for the Non-Reformed RO



B Figure 5 Modelled Projections of Renewable Deployment Volumes for the Reformed RO

The Reformed RO is expected to significantly increase renewable energy output. Major trends: growth predominantly due to offshore wind, co-firing and onshore wind (around 70% total capacity by 2020)

A Figure 6 The Impact of Extending the RO out to 2037 on UK Renewables Deployment



Note: A - No extension. RO operates until 2027 (OXERA, 2007)
B - RO extended out to 2037 (Redpoint, 2009)

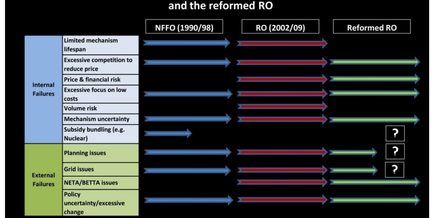
Internal Failures of the Reformed RO

•Price/financial risk of previous non-reformed RO still exists; potentially worse due to banding uncertainty
•Banding expected to significantly increase deployment overall but heavily dependent on onshore and offshore wind and co-firing only
•Review criteria too wide / vague – increases uncertainty
•Uncertainty over future band allocations for RETs
•Uncertain whether increased subsidies will be enough to build up UK industry growth / employment; compounded by emphasis on low cost and scale of proposed deployment (particularly for less mature RETs)
•Increased mechanism complexity – supporting large, typically multi-national companies

External Failures of the Reformed RO

•New Planning Act aims to streamline/speed up the process but recent changes threaten to stall progress (e.g. IPC abolished/move to local system) and cut-off limit for projects
•Significant changes to grid should alleviate transmission problems (e.g. enduring socialised Connect & Manage) but issue of escalating costs; also still uncertainty over the offshore transmission regime and unprecedented scale of grid work required to meet 2020 targets; Problems could be increased over new planning changes
•BETTA problems still exist
•Policy Uncertainty: Still characterised by change / lack of focus/clarity and getting worse (e.g. large-scale FITs; carbon tax; nuclear power; market reform)

Figure 7 The Internal and External Failures of the NFFO the RO and the reformed RO



The reformed RO Mechanism fails to address the main internal failures but provides a more comprehensive'renewables package'

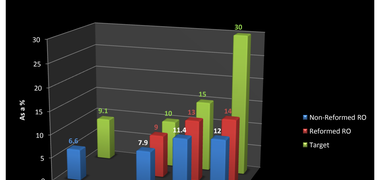
Problems for onshore wind ,offshore wind and co-firing (the 70%)

•Build-rate constraints; (dedicated) equipment shortages; dock facilities
•Technical challenges and unknown future costs (offshore wind)
•Time delay in accumulated subsidies from increased ROCs (offshore)
•12.5% cap on co-firing triggering emergency review

The Future

The Targets: 2015 (15%) and 2020 (30-35%)

Figure 8 Modelling Outcomes for the non-reformed RO and Reformed RO



Despite reforming the RO, the 2020 target is unlikely to be achieved

The Target: 2015 (15%)

•The findings of this research are in agreement with modelled projections (but see Conclusions below)
•Likely that the 15% aspirational target could be achieved due to: more time
•Positive impact of the proposed RO extension
•However uncertainty over the first review process
•Uncertainty over the co-firing cap being reached

The target: 2020 (30-35%)

•The findings of this research are contra modelled projections
•Highly likely that deployment levels will be significantly higher in large part due to the proposed RO extension and increased subsidies
•Negative: co-firing cap likely be reached during this period and occurrence of the second review (2018)
•Success depends primarily on untested improvements / changes to the external failures
•2020 target highly unlikely to be achieved

Reforming the Renewables Obligation: Conclusions

•Will increase renewables deployment
•By not addressing the high price / financial risk and uncertainty and increasing overall mechanism complexity the internal failures have not been resolved
•Increased deployment will again be heavily dependent on a select few technologies (onshore wind, offshore wind and co-firing) and new / untested measures to combat external failures
•Single most import factor – the extension of the RO mechanism out to 2037 (and move to a headroom mechanism)

The Introduction of a Large-Scale Feed-in Tariff Mechanism to the Policy Landscape

(i) A UK Feed-in Tariff Mechanism?

•Despite reforming the RO, the UK is unlikely to meet the EU 2020 legally-binding target
-15% total energy from renewables (from ~3% in 2009)
- 30-35% electricity generation from renewables (6.6% in 2009)
•Feed-in Tariff: The most successful support mechanism so far in terms of
-Renewables Deployment: e.g. Germany >25 GW of wind installed.
- Supporting deployment of more expensive less mature RETs (e.g. solar photovoltaics)
- Cheaper costs (p/kWh)
-Growth of domestic /export markets, less complex mechanism

(ii) The Likely Impact of a Large-Scale FIT?

•By design a FIT should address the main internal failure of the RO (high price / financial risk) and improve investor confidence
-But this will be critically dependent on appropriate tariff settings / future changes

•External failures will still need to be resolved

•Different FIT designs: Those that work in one country might not 'fit' another country

(iii) Between a ROC and a FIT? Potential areas for mechanism conflict

•If both mechanisms deal with the same technologies / different projects (e.g. Crown Estates offshore Leasing Rounds 1 and 2 (RO) and Round 3 (FIT)
-Without addressing the internal failures of the RO, will lead to RO mechanism under-performance and leakage to the FIT 'projects'

•If both mechanisms deal with different technologies
- Without addressing the internal failures of the RO, this could lead to reduced deployment for those technologies

(iv) Introducing a Large-Scale FIT

•Increase policy uncertainty

•Lead to a hiatus in development of 2+ years(not an unreasonable assumption) as developers / investors wait for information / implementation of the new mechanism (or not, possibly)

•Overall, the introduction of a large-scale FIT for renewable electricity generation and retaining the RO (to whatever extent) will likely negatively impact renewable deployment levels at least in the short term and thus the attainment of the 2020 targets

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