

RE 100

BROUGHT TO YOU BY THE °CLIMATE GROUP

IN PARTNERSHIP WITH



CONSUMER- LED ENERGY TRANSITION

Leveraging the actions
of progressive energy
consumers to deliver the EU
energy system of the future.

November 2016

Report prepared by



E3G

ACKNOWLEDGEMENTS

This report was prepared by E3G for RE100 initiative, to provide input to the current process for amending EU energy legislation. © E3G 2016

A number of RE100 member companies kindly contributed to this report. We would like to thank them for their ongoing support.

About RE100

RE100 is a global, collaborative initiative of influential businesses committed to 100% renewable electricity, working to massively increase demand for – and delivery of – renewable energy. This will accelerate the transformation of the global energy market and aid the transition towards a low carbon economy. RE100 shares the compelling business case for renewables and showcases business action, while working with others to address barriers and develop transparent reporting mechanisms. RE100 is brought to you by The Climate Group in partnership with CDP, as part of the We Mean Business coalition.

About E3G

E3G is an independent organization working to accelerate the transition to a low-carbon economy. E3G specializes in climate diplomacy, climate risk, energy policy, governance and climate finance. We work closely with like-minded partners in government, politics, civil society, science, the media, public interest foundations and elsewhere. E3G is a European organization with a global outlook and reach. We currently have offices in London, Brussels, Berlin and Washington DC, together with a regular presence in China.

Copyright



This work is licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 2.0 License.

You are free to:

- Copy, distribute, display, and perform the work.
- Make derivative works.

Under the following conditions:

- You must attribute the work in the manner specified by the author or licensor.
- You may not use this work for commercial purposes.
- If you alter, transform, or build upon this work, you may distribute the resulting work only under a license identical to this one.
- For any reuse or distribution, you must make clear to others the license terms of this work.
- Any of these conditions can be waived if you get permission from the copyright holder.

Your fair use and other rights are in no way affected by the above.

EXECUTIVE SUMMARY

Many large corporations with operations based across the EU now recognize that meeting electricity demand from 100% renewable sources represents a major strategic opportunity. Energy can be securely supplied with increased cost control, as well as helping to position businesses as progressive and forward thinking leaders in their sectors. However, it can be difficult for businesses to achieve this objective and supporting this agenda presents some real opportunities for policy makers¹.

The changes that are needed will help policy makers achieve important aspects of current EU energy policy; in particular:

- Becoming a world leader in renewable energy,
- Promoting a single market for energy, and
- Creating a consumer focused market.

Companies that currently aspire to 100% renewable supply represent the vanguard of a movement that has the potential to grow throughout the business community and beyond into other consumer sectors. This must be encouraged since the benefits are enormous. It would create a consumer led energy transition that would ultimately be self-sustaining.

Policy makers should, therefore, use the current revisions to energy legislation to support businesses with this emerging commercial imperative. The following changes are important in this regard:

Revision to Renewable Energy Directive

- The 2020 targets for the share of renewable energy as set out in the current Renewable Energy Directive must continue to apply after 2020 and should constitute the minimum baseline for the contribution of Member States to the 2030 EU RES target.
- There should be a methodology that will apply in the event of pledges not adding up to the target. For example, Member States could be required to contribute either in kind (by developing RES capacity themselves) or financially to fill an eventual gap between their pledged contribution and their expected fair contribution to the collective EU target.
- Establish basic design principles of national renewable energy frameworks and a means for ensuring the further market integration of renewables as well as setting out a process and roadmap for the progressive convergence of national renewable energy frameworks over the 2020-2030 decade.
- Establish basic principles of customer participation that include the enforceable right to individually or collectively produce and consume their own electricity, as well as the right of access to the grid to sell surplus electricity under fair conditions.

¹ 'EU policy makers' refers to EU parliamentarians, Member States, through their role on the EU Council, and the European Commission.

Market design initiative

- Renewable energy must be given the highest priority in grid planning. This means that measures such as priority dispatch for renewable generators should be maintained, or, alternatively, that Member States put in place other effective processes to avoid unnecessary curtailment of renewable generation.
- Establish templates for the procurement of renewable electricity by corporate buyers that can then be used at multiple small and large consumption sites spread across one or more jurisdictions.
- Mandate a common distribution network framework that will provide more consistency for consumers wishing to develop renewable energy projects.
- Include proposals for facilitating the free trade in renewable electricity across the EU to enable consumers to access the cheapest available renewable resources.
- Recognize the changing energy mix on the electricity system and consider ensuring renewables become the default supply option through implementing a certification scheme for non-renewable rather than renewable electricity.
- Promote a much more flexible power system by encouraging availability of services such as demand response and storage.

INTRODUCTION

A large number of major corporations with business operations in the EU are now clear that the direction of travel for energy production is towards a system based on higher penetrations of renewable energy sources. This represents a significant strategic opportunity that goes beyond simply seeking to minimize corporate impact on the environment and positioning the company as a climate leader within the business sector. Energy can be securely supplied from renewable sources and their costs are declining fast. Importantly, renewables have much lower price volatility than fossil fueled alternatives, allowing much greater control of a key business cost. Therefore, many businesses are already seeking to ensure that the energy they use (initially focusing on electricity) comes from sustainable renewable sources. As of COP22, the RE100 initiative² has more than 80 members, representing many large multinational companies that are creating demand for over 100TWh of renewable electricity – with a good proportion of this in Europe. All RE100 members are committed to meeting all their electricity needs with renewable sources of energy.

This groundswell of corporate momentum represents both a challenge and an opportunity for EU policy makers. It is vital that they ensure the EU energy market is effectively designed to help businesses meet this emerging commercial imperative. Indeed, meeting the needs of business energy consumers benefits everyone since it supports the trends to empower energy consumers across Europe. A key measure of the success of the current reform agenda, in particular the Market Design Initiative and the revision to the Renewable Energy Directive, will, therefore, be the extent to which the needs of the business community are met. However, it is also important to recognize that this corporate initiative provides direct evidence of support across mainstream businesses for the need to transform the energy system and this support is important for policy makers looking to drive forward the transition. This report explores how EU policy makers can rise to the challenge and leverage this opportunity.

The first section considers how the interests of those consumers currently seeking to source their electricity with renewable energy can be better served and how this is helpful in supporting an ambitious and progressive policy agenda. The second section goes on to explore how progressive consumers can become more direct agents for change, helping to drive forward the transformation rather than simply reinforcing the actions of policy makers.

REINFORCING CURRENT POLICY

Consumers with the aspiration to source 100% of their electricity needs from renewable generation can fulfil this objective through a number of routes:

- **Production of renewable electricity** from their own facilities. These can be grid-connected and onsite or offsite, or entirely off the grid. This renewable generation would then be used to offset total demand.
- **Purchased renewable electricity** sourced from generators and suppliers in the market. This includes direct purchases from specific generators (e.g. power purchase agreements), which can be located

² <http://re100.org/>

onsite or offsite. It also includes retail purchases from suppliers and utilities, and the purchase of stand-alone (“unbundled”) REGOs³.

The first of these can involve all the activities associated with project development including a detailed understanding of local planning and permitting laws as well as the technical competence to manage potentially complex projects. These first options tend, therefore, to be restricted to the most sophisticated energy consumers (although there are simple self-generation options available for all consumers such as the installation of rooftop solar panels). The second is a more conventional energy procurement activity in which choice and competition between providers are the key drivers of value to energy consumers.

In general, consumer interests are best served by reducing the complexity and cost of meeting their energy needs. A simpler process will improve accessibility to renewable energy for a wider range of consumers whilst reducing costs is clearly important for all consumers, particularly for businesses operating in highly competitive environments.

Improving ambition and becoming a world leader in renewable energy

The most important issue for consumers wishing to procure 100% renewable electricity is that policy ambition for the growth of renewable generation remains strong across the EU. This will ensure that EU member states will remain incentivized to encourage development of renewable energy projects through a supportive planning and permitting regime and remuneration mechanisms that are stable and predictable. It should also lead to effective programs for the retirement of fossil fuelled generation assets. The greater the volume of renewable electricity that is available for sale in markets across all timescales, the greater the liquidity in renewable electricity products for consumers. This will reduce costs and drive innovation amongst intermediaries looking to improve the attractiveness of their products. It should also make it easier for those consumers wishing to directly develop their own renewable generation to establish an acceptable business case as governments seek to ensure that high level targets are achieved.

The EU has agreed a target of producing 27% of energy from renewable sources by 2030, which equates to around 50% renewable share of electricity generation, and is currently considering how to change the Renewable Energy Directive to ensure this objective is delivered. It is important for consumers wishing to procure renewable electricity cost-effectively that this initiative is successful and, ideally, leads to more ambitious targets for renewable energy being established in future.

The new renewable energy target for 2030 will be binding at EU level only and fulfilled collectively through Member State contributions towards target achievement. It is vital for businesses with operations across the EU that the absence of Member State specific targets does not lead to a destabilization in the overall efforts to achieve the targets and create pockets of low renewable penetration (or cheap, but unsustainable, options such as co-firing large volumes of biomass in coal-fired power plants). In this regard, it is important that **the 2020 targets for the share of renewable energy as set out in the current Renewable Energy Directive must continue to apply after 2020 and should constitute the minimum baseline for the contribution of Member States to the 2030 EU RES target**. Moreover, it is important to clarify that all Member States need to make a contribution towards achievement of the collective EU target. The Renewable Energy Directive should, therefore, **set out the methodology that will apply in the event of pledges not adding up to the target. For example, Member States could be required to**

³ Renewable Electricity Guarantee of Origin: All EU member states are obliged by the Renewable Directive to have an auditable REGO system in place. REGOs have no direct value but provide auditable evidence that enable consumers to trace their electricity consumption to renewable generation.

contribute either in kind (by developing RES capacity themselves) or financially to fill an eventual gap between their pledged contribution and their expected fair contribution to the collective EU target.

Alongside the revision to the Renewable Energy Directive, the EU is considering how to develop electricity markets to efficiently accommodate increasing volumes of renewable generation. **Renewable energy must be given the highest priority in grid planning. This means that measures such as priority dispatch⁴ for renewable generators should be maintained, or, alternatively, that Member States put in place other effective processes to avoid unnecessary curtailment of renewable generation.**

Promoting the single market for energy

Large consumers with business premises across the EU face a patchwork of different regulations relating to the procurement of renewable generation that add complexity and reduce the synergies available from purchasing across Europe. Those consumers wishing to develop their own renewable generation projects must understand a raft of different planning and permitting processes, network access arrangements and, importantly, a range of different support mechanisms that will be critical to individual project business cases. The current Renewable Energy Directive leaves Member States with wide discretion on how to set up and operate national renewable energy frameworks and the upcoming revision is an opportunity to put in place a more harmonized approach. The changes should, therefore, include a 'Common Rule Book' for national renewable energy frameworks. It should **establish basic design principles of national renewable energy frameworks and a means for ensuring the further market integration of renewables as well as setting out a process and roadmap for the progressive convergence of national renewable energy frameworks over the 2020-2030 decade.**

The issue of consistency across the EU is equally relevant for consumers buying power via power purchase agreements or from intermediaries. Individual contracts will always be market-specific and significant effort can be involved in finalizing each new deal. The new market design is an opportunity to reduce this complexity by **establishing templates for the procurement of renewable electricity by corporate buyers that can then be used at multiple small and large consumption sites spread across one or more jurisdictions.**

It is also important to recognize that distribution network costs are an increasingly important component of many renewable energy projects and yet the terms for connecting to, and using, the distribution system varies significantly across the EU. The market design initiative should **mandate a common distribution network framework that will provide more consistency for consumers wishing to develop renewable energy projects.**

Ultimately, the biggest value of the single energy market rests in the ability to trade electricity freely across the EU. This will ensure that electricity is produced where it is cheapest and not restricted to local markets. This is extremely important for renewable generation since the resource availability varies significantly across the continent. Wind turbines located on the north western coasts can produce many times the output of those located in the center of the continent whilst similar differentials exist for solar produced in the south compared to the north.

Consumers should be able to procure renewable electricity from the cheapest regions and easily arrange the necessary transportation contracts to ensure this electricity can be consumed where needed. At

⁴ Priority dispatch was introduced to offset the biases that exist in a market initially designed for fossil-fuelled generators and ensures that output from renewable generation is the last to be curtailed as system operators seek to maintain the stability and security of the power system. This provides assurances to renewable developers that the output from their project will be maximized.

present, this is extremely complicated and only practicable in regions where Member States share the same market arrangements (e.g. Nordpool region). One potential way to encourage more inter-state trading would be to establish long-term transmission access regimes that would enable consumers to access electricity generated elsewhere via cross-border interconnection. Financial transmission rights, which would specify the source/generation zone and sink/load zone of the electricity trade, would present an appropriate solution⁵. The new market design should **include proposals for facilitating the free trade in renewable electricity across the EU to enable consumers to access the cheapest available renewable resources.**

Consumer focused market

The electricity system was designed with the objective of ensuring sufficient electricity would be produced by large power stations connected to the transmission network to meet the demand from consumers. Whilst this still remains important, it has created a set of rules and regulations that can make it difficult for consumers to produce electricity to meet their own needs and sell surpluses to others at a reasonable rate. This issue is not only relevant for large and sophisticated business consumers, but increasingly important for the large numbers of smaller consumers seeking to generate their own renewable electricity.

The regulatory framework must recognize this changing situation and ensure appropriate rights and obligations are in place. The revised Renewable Energy Directive **should establish basic principles of customer participation that include the enforceable right to individually or collectively produce and consume their own electricity, as well as the right of access to the grid to sell surplus electricity under fair conditions.**

AGENTS FOR CHANGE

Increasing policy ambition for renewable energy deployment will remain important over the coming decades and progressive businesses have a key role to play in encouraging and supporting moves by policy makers in this direction. However, it may be possible for consumers to play a more direct role in driving forward the energy transition through their demand for renewable electricity and the associated products and services that will form part of a modern, clean and efficient energy system. This would require that the demand from consumers for renewable electricity begins to drive deployment at a level that would go beyond the targets being set by governments.

Whilst RE100 members are leading the way in demonstrating the business imperative and achievability of sourcing electricity exclusively from renewables, now is the time to make this opportunity accessible to a

⁵ Currently, in line with the cross-border European market design (i.e. Target Model), countries that exchange renewable energy are required to specify individual cross-border interconnectors along a “hypothetical” route of the electricity flow between country of export and country of import. Then, the appropriate capacity on all the interconnectors specified would need to be reserved for this trade to be firm, through purchasing Physical Transmission Rights (PTRs). It is well recognized that this approach is inherently inefficient and will create barriers for market integration, particularly in the context of renewable energy exchange. As argued in a recent report for the European Union (“Physical and Financial Capacity Rights for Cross-Border Trade”, report for EU Commission, Sept 2011), Financial Transmission Rights (FTRs) could provide a solution to this problem, as they present an obligation between trading parties which would only specify the source/generation zone and sink/load zone of the electricity trade, but not all multiple interconnectors that might link these zones together. One of the key advantages of FTRs over PTRs is that contracts for exchange of power in different directions can be netted, so that the absolute value of the total volume of contracts from one country to the other can greatly exceed the actual cross-border network capacity, considerably enhancing competition in each market.

much broader range of consumers. The easiest way to encourage wide appeal across all categories of consumers would be by ensuring that meeting electricity needs from renewable sources becomes the cheapest and simplest option. Currently, it generally requires more effort to seek 100% renewable electricity supplies than to procure a standard product derived from a mix of renewable and non-renewable sources. This situation could be reversed.

Rather than relying on a certification scheme for renewable electricity (REGOs), it would be possible to create a certification scheme for non-renewable electricity. This would enable the sale of renewable electricity to become the 'default' option for consumers, with those wishing to purchase non-renewable electricity having to actively 'opt-in'. This could create a hugely significant customer-led drive for the decarbonization of the electricity system since the market for non-renewable electricity could decrease significantly. EU policy makers should, therefore, **recognize the changing energy mix on the electricity system and consider ensuring renewables become the default supply option through implementing a certification scheme for non-renewable rather than renewable electricity.**

However, the transformation of the electricity system will need to go beyond simply increasing the proportion of renewable electricity supplies. The system will need to become far more flexible to ensure all the renewable electricity is efficiently utilized. This flexibility can arise from a number of sources including storage technologies (e.g. batteries) and increasing the ability to transfer power between regions (including interconnections between countries). However, perhaps the largest potential new source of flexibility will arise from consumers actively shifting their electricity demand in response to instruction or short term prices (so-called demand side response).

As the ability to meet demand from 100% renewable generation becomes a credible aspiration for a wide range of consumers, there is the opportunity for the more progressive and sophisticated consumers to help drive the wider electricity system transformation and encourage a much more flexible energy system. Currently, consumers attempting to meet demand from 100% renewable generation will achieve balance over timescales of typically around a year since this fits well with annual company reporting cycles. However, this inevitably means that for most of the time, the consumer will either be 'topping up' electricity supply in the shorter term markets, using a mix of renewable and non-renewable electricity, or 'spilling' excess purchases of renewable generation.

It is possible for consumers to target 100% renewable electricity supply over much shorter timescales and, ultimately, in every individual settlement period. However, this requires that robust systems for the automated adjustment of demand are widely available, along with liquid short term markets in products (e.g. storage) that will allow supply and demand to be balanced.

Progressive electricity consumers have the opportunity to take the next step and seek 100% renewable electricity supply at each moment in time. In doing so, they would become agents for change in helping to drive forward the deployment in smart building technologies that will significantly increase the flexibility of demand. However, it is important for policy makers to recognize that consumers can be encouraged to take this next step by using the market design initiative to **promote a much more flexible power system by encouraging availability of services such as demand response and storage.**