A Financial and Market Analysis of European PPA's and their Comparison to the GO^2 Instrument

Project Report

A project to prepare for the partial fulfillment of the requirements for the degree of Master of Science (Environment and Sustainability) at the University of Michigan

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Disclaimer

Opinions expressed in this report represent a consensus of the authors and do not represent the positions or policies of ECOHZ or the University of Michigan.

Abstract

ECOHZ has created a unique product, the GO^2 . The GO^2 instrument enables commercial & industrial (C&I) customers to offset their energy use by purchasing renewable energy certificates in the form of Guarantees of Origin. In addition to the standard Guarantee of Origin instrument, GO^2 includes a project financing component which funds the construction of renewable energy projects, thereby leading to "additionality". However, as GO^2 is a new product, there is an opportunity to drive customer adoption and increase awareness of how GO^2 can provide value to customers. The objective of this project is to provide ECOHZ with financial and marketing tools to better illustrate the economic and environmental value provided to C&I customers by the GO^2 product.

Executive Summary

The Master's project client, ECOHZ enlisted the help of the University of Michigan School for Environment and Sustainability's graduate students to conduct a financial and market analysis of the European PPA's and their comparison to the GO^2. The instrument that ECOHZ has created, the GO^2 allows companies to procure renewable energy and the financing component of the product allows the funding of additional renewable energy projects. This unique attribute contributes to "additionality" of the instrument. The goal of this Master's project was to help ECOHZ increase revenues for their instrument. The year long project was broken down into four phases, with each phase helping to understand the instrument better.

The first phase was research and analysis in which the European electricity market was studied and existing Energy Project Finance (EPF) products were identified and examined. The retail as well as wholesale power markets were studied in depth and European Guarantees of Origin (GO) were understood along with Power Purchase Agreements (PPAs).

In the second phase, we compared the PPA to the GO^2 and found that the GO^2 has a competitive edge. The GO^2 allowed companies the ease of entry into the renewable energy sector. The scalability, emotional appeal, financial fluidity and ease of implementation of the GO^2 makes it an attractive and viable option for companies who do not want to be tied down by a long term contract, like the PPAs. Understanding that the GO^2 has an edge, we proposed a different approach for revenue generation to the client, in which the emotional appeal of the GO^2 will be leveraged to use it as a marketing platform. This platform will allow companies to convey their sustainability attributes to their customers and help the company as well as ECOHZ gain more visibility.The GO^2 will be used as an ecolabel which will increase visibility and allow easier recognition. The increased market visibility is closely tied into the assumption that it will drive greater sales and enhance the company's sustainability profile and most importantly give consumers the power to influence renewable energy generation.

The third phase of the project was conducting extensive research on the potential target industries and companies. Various industries and companies were researched, aiming to identify potential companies which can utilize the GO^2 instrument for their benefit.

Narrowing down the list from Fortune 500 companies to Fortune 100 companies which have a 100% renewability goals, we identified three companies which best suited the scope of our project. Nestle, AB InBev and Kerry Foods. All companies have a goal to be 100% sustainable and have promoted use of renewable energy for all their operations wherever possible. These companies are good fits for the GO^2 instrument as they are big noticeable names and have a large market presence in Europe. In addition, all three companies also focus on providing their customers information about their sustainability initiatives.These companies will benefit immensely from utilizing the GO^2 ecolabel on their products.

The fourth and final phase of the project was to research these companies in more detail and make tailored pitch decks for each. These pitch decks contain information about the company, their sustainability goals and initiatives and provide information on how they can utilize the GO^2 platform to convey the sustainability attributes of their products and the company to its customers.The client, ECOHZ can use these decks to present to the companies.

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European Electricity Markets and PPAs

Until the 1980s, the electricity sector in the European Union was organized as a regulated monopoly. In each country, one or more vertically-integrated companies were responsible for generation, transmission, distribution and supply of electricity. By means of three legislative packages (1996, 2003, 2009)[1], the European Union gradually opened this sector for competition, aiming to create an internal European electricity market.

Markets by geography, time scale and type of customer

Just like any other electricity system, the European electricity system consists of the physical infrastructure for electricity generation, transportation/distribution, and use, in addition to an organized electricity market. Similar to a typical electric grid, European grids are made of electricity generators and electricity-transport systems. These are then subdivided into systems for transmission over long distances and systems for distribution to residential and industrial consumers of electricity.

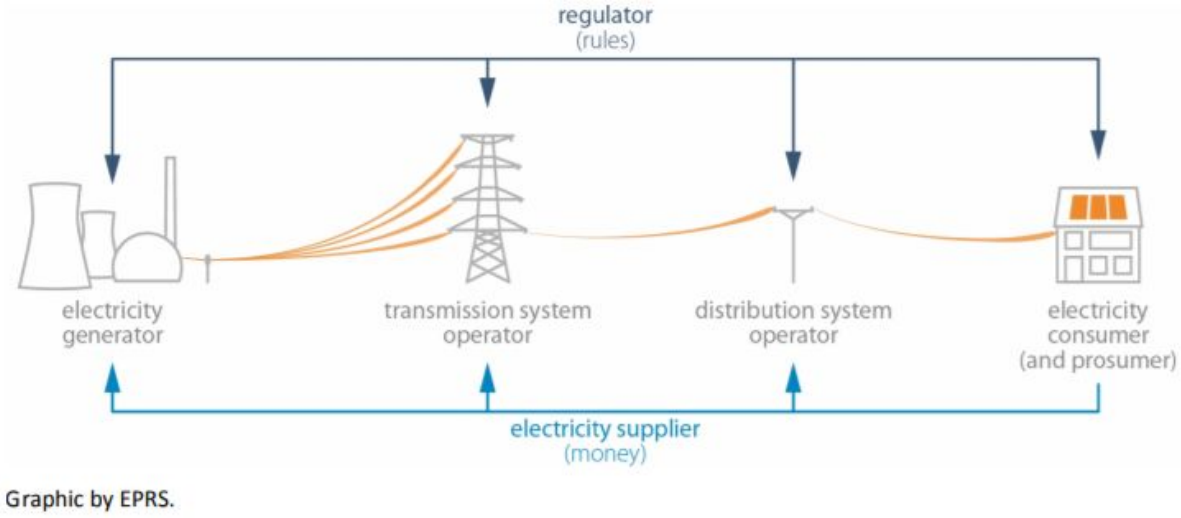

Figure 1. Schematic Overview of the Electricity System[2]

Players in the electricity market include: electricity suppliers, who buy electricity from generators and sell it to consumers; consumers, who use electricity and pay suppliers via their bills; transmission system operators (TSO), who are paid for the long-distance

[1] EI Fact sheet: The current electricity market design in Europe. KU Leuven Energy Institute
[2] EU Briefing (2016). Understanding electricity markets in the EU

transport of electricity and for ensuring system stability; distribution system operators (DSO), who are paid for delivering electricity to consumers; and regulators, who set rules and oversee the functioning of the market[3].

There exist two separate levels within the European electricity markets: wholesale markets and retail markets. The organization of the wholesale markets is vastly different from the retail markets, which cater to the end consumers. Both markets differ in geographical scope, and range from local electricity sale offers at the retail level to much larger cross-border wholesale markets spread across the whole continent. They also vary based on their time scale, with wholesale markets ranging from real-time balancing (narrow time scale) to long-term contracts (much wider time scale). Evolution of electricity markets has led to development of liberalized markets, where different parties are responsible for electricity generation, as well as for operation of the transmission system (TSO) and the distribution system (DSO).[4]

The retail market

The actors in the retail market consist of suppliers and consumers. Suppliers offer electricity contracts approved by the regulator, and consumers have the right to choose their supplier. The suppliers source the electricity from the suitable generators based on the regulatory requirements and price, and then provide it to the consumers. The suppliers manage the transactions by sending invoices explaining the price charged for the electricity delivered, including the transmission and distribution costs. This may also include any taxes and levies that may sometimes be used to support development of renewable energy sources, or promote similar public support policies. The suppliers differentiate their offers to the consumers based on the price (price sensitivity) or based on the origin of the electricity they are producing (value sensitivity). Due to the wholesale effect of the transactions, the industrial consumers generally get lower electricity prices than the domestic users. This creates further incentives by which some energy-intensive industries receive benefit from very competitive prices. They may be further partially exempted from some charges.[5]

[3] EI Fact sheet: The current electricity market design in Europe. KU Leuven Energy Institute
[4] Erbach, G. (2016). "Understanding electricity markets in the EU." Retrieved from http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/593519/EPRS_BRI%282016%29593519_EN.pdf
[5] Ibid

The wholesale market

There are 7 regional wholesale electricity markets in Europe[6]:

- Central Western Europe (Austria, Belgium, France, Germany, the Netherlands, Switzerland)
- British Isles (UK, Ireland)
- Northern Europe (Denmark, Estonia, Finland, Latvia, Lithuania, Norway, Sweden)
- Apennine Peninsula (Italy)
- Iberian Peninsula (Spain and Portugal)
- Central Eastern Europe (Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia)
- South Eastern Europe (Greece and Bulgaria)

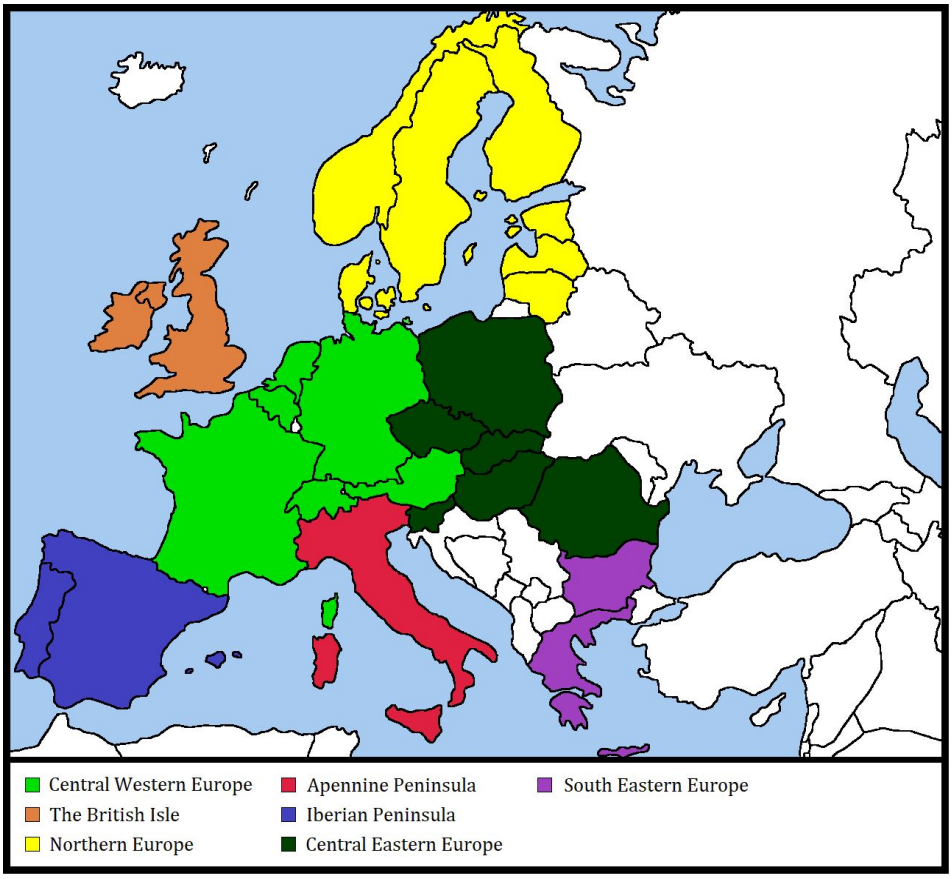

Figure 2. Regional Wholesale Electricity Markets in Europe[3]

[6] Quarterly Report on European Electricity Markets. Market Observatory for Energy. DG Energy, Vol. 10, No. 1 https://ec.europa.eu/energy/sites/ener/files/documents/quarterly_report_on_european_electricity_markets_q1_2017.pdf

There are three participants in the wholesale market. These are generators, electricity suppliers, and large industrial consumers.[7] Storage technologies are still not cost efficient for lengthy storing of electricity, so electricity must be produced at the moment when it is needed. As a result, a majority of transactions in the electricity market have deliveries that take place at a date and time to occur in the future. Different types of contracts and markets can result in transactions that have different timelines and scales as seen below:

- long-term contracts: can be up to 20(+) years
- forward and future markets: happens severals weeks or even years in advance
- day-ahead market: occurs on the day after transaction
- intra-day market: delivery happens within a predetermined time period
- balancing market: happens in real-time in order to balance of supply and demand of the market

In markets such as the "over-the-counter market", electricity is traded privately between two parties. In addition to this, electricity can be exchanged through an "energy exchange" which brings to the table a variety of buyers and sellers.[7] Supply and demand dictate these prices and on the wholesale market, peak demand can result in a price of €80/MWh[2] ($95.18/MWh), and prices can drop below zero if excess supply exists.[7]

To meet the demand for electricity, generators are dispatched in ascending order of their cost of generation. This is called '*merit order*', and customers receive the price demanded by the generator of electricity. Applying this principle has resulted in the '*merit order effect*'.[7] Because many renewable electricity generators have no fuel costs, wholesale prices fall drastically, thereby determining the price levels for the other generators.

In addition, wholesale electricity markets are integrated on a cross continental and regional level. This is called market coupling. Flow-based capacity allocation helps optimize the use of electricity between the integrated grids. Pooling of electricity across grids, helps in intergrid price convergence. When demand exceeds interconnection capacity, it creates a barrier to the efficient flow of the electricity from a lower to a higher-price region. This causes different regions to experience different prices. In the first quarter of 2017 wholesale baseload electricity prices reached 50.3 €/MWh[2]

[7] Erbach, G. (2016). "Understanding electricity markets in the EU." Retrieved from http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/593519/EPRS_BRI%282016%29593519_EN.pdf

($59.84/MWh) on quarterly average, which was 8% lower compared to Q4 2016, despite of the five-year high monthly average prices in many european countries measured in January 2017. As Figure 3 shows, there were significant price differences in the wholesale electricity prices across the European Union.

Figure 3. Regional Wholesale Baseload Electricity Prices in Europe[8]

[8] Market Observatory for Energy (2017) "Quarterly Report on European Electricity Markets" *European Union*. Retrieved from https://ec.europa.eu/energy/sites/ener/files/documents/quarterly_report_on_european_electricity_markets_q2_2017.pdf

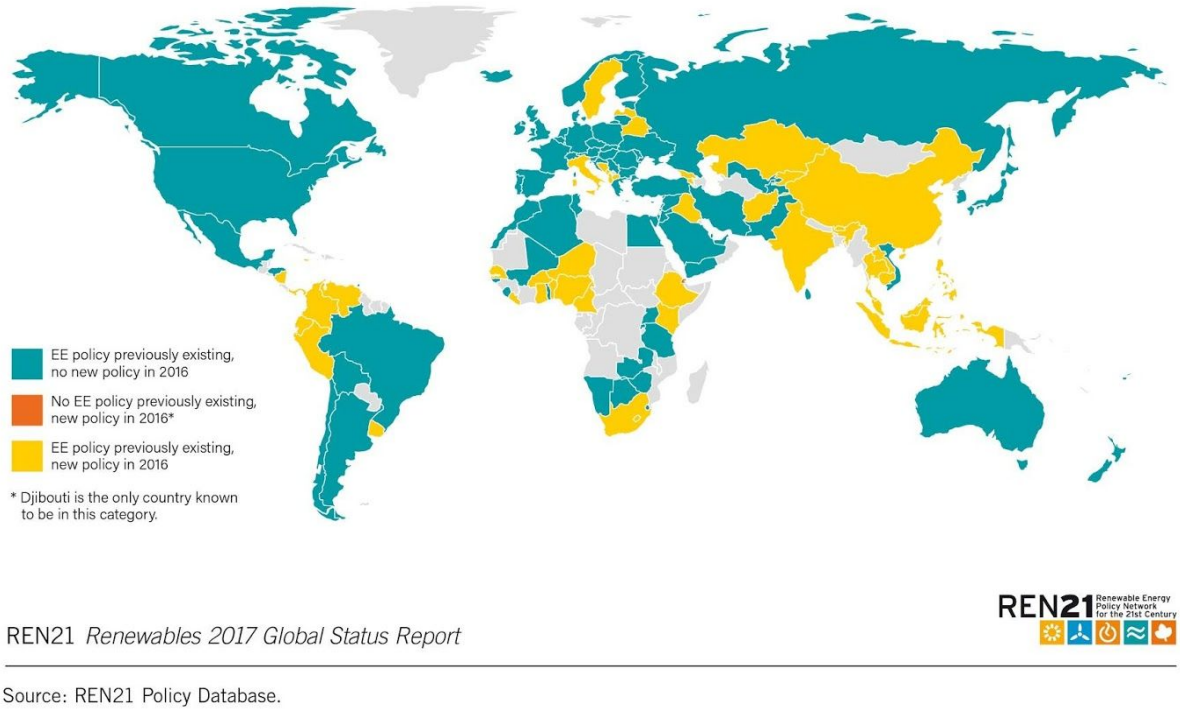

Figure 4. Status of Energy Efficiency Policies in 2016[9]

The Paris Agreement, also known as Conference Of the Parties 21 (COP21), was adopted in 2015 at the United Nations Framework Convention on Climate Change. The goal of the agreement was to establish an international legal regime aimed to create a global response towards combatting climate change.[10] Following COP21, the European Union set a list of targets to achieve within the next 5 year, such as a GHG emissions reduction of 40%, a sum of 27% for member state individual target for renewables, and a reduction in energy consumption of at least 27%[11]. These targets have led to a rapid deployment of renewable energy technologies across Europe. For both producers and consumers, this means that there is a need for an efficient and reliable method to exchange generated electricity. Procuring energy can be done through a list of ways, the most famous of

[9] REN21 Renewables 2017 Global Status Report. Retrieved from http://www.ren21.net/wp-content/uploads/2017/06/Figure_58_GSR_2017.jpg

[10] Horowitz, C. (2016). Paris Agreement. *International Legal Materials, 55*(4), 740-755. doi:10.1017/S0020782900004253

[11] The European Commission's science and knowledge services, Joint Research Center (2016) "Renewable Energy Deployment Now and in the Next Five Years" https://ec.europa.eu/jrc/sites/jrcsh/files/20160704-05-smartenergyregions-ossenbrink.pdf

which is power purchase agreements (physical PPA's). Other ways include: swap PPAs[12], virtual PPAs[13]. As of 2016, all the European countries, i.e. including those outside of EU-28, had some sort of energy efficiency policies (refer to figure 4).

Power Purchase Agreements

Renewable Power Purchase Agreements (PPAs) allow corporates to purchase renewable energy directly from an energy generator.

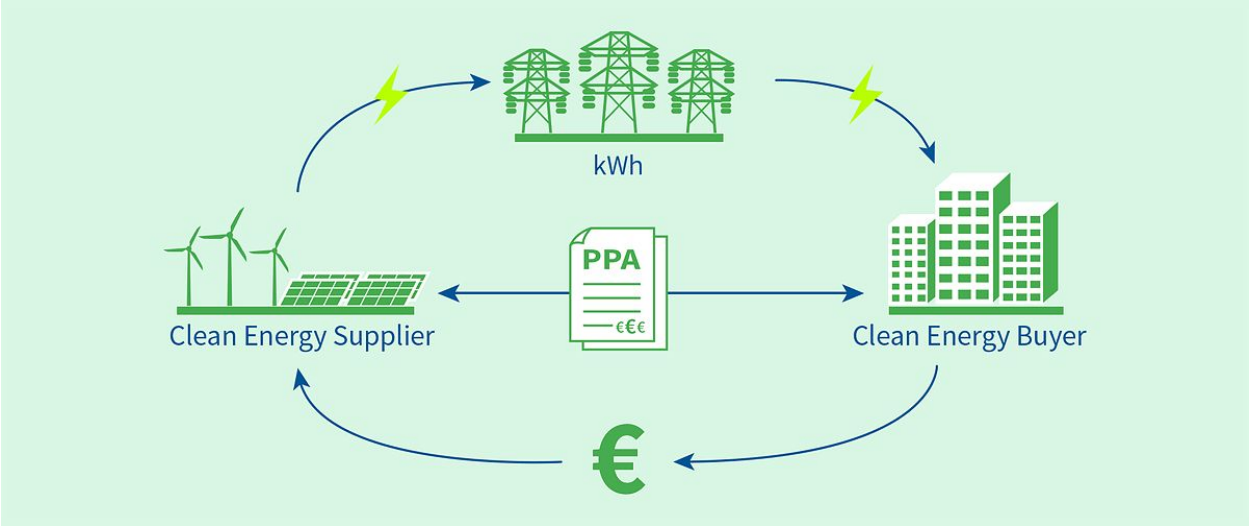

Figure 5. Power Purchase Agreements[14]

PPAs allow corporates to be more environmentally friendly and avoid volatile energy costs, while maintaining a fixed price per kW of energy over a period of years. PPAs are changing the market terrain for renewables. In 2016, the volume of PPAs in Europe tripled compared to 2015. Over 1 GW of new capacity was installed in the continent.[15] In the same year, almost half of the US installed renewable generation capacity was due to PPAs. Google, Unilever, Facebook, AB InBev, Adobe, and IKEA are just a few of major businesses looking to secure power from renewable energy. Large corporations are heavy

[12] Trabish, Herman K. "Alternative and Innovative Ways to Finance Wind and Solar." *Gtm*, Greentech Media,11Mar.2013 ,www.greentechmedia.com/articles/read/alternative-and-innovative-ways-to-finance-wind-and-solar#gs.TvVYC_U.
[13] Rocky Mountain Institute (2017a). BRC Deal Tracker. Retrieved from http://businessrenewables.org/corporate-transactions/
[14] RE-Source Event 2017. "New to PPAs?" Retrieved from http://resource-event.eu/new-to-ppas/
[15] Ibid.

energy consumers. Procuring green power would aid them to reduce the cost and risks associated with power acquired from fossil fuel generators. The reduction in technology and operating costs over the last several years helps renewable producers supply their power at below industrial retail price[16].

PPAs are physical contracts that bind a large corporate customer with an individual power plant located within the same regional wholesale market as the customer. The customer does not necessarily need to have a "physical" connection to the generator, but rather, the PPA gives the customer ownership over the energy output of the generator at a local node in the wholesale electricity market. Thus, this option may be too complex for many companies since it requires the customer to become a player in wholesale markets[17] .

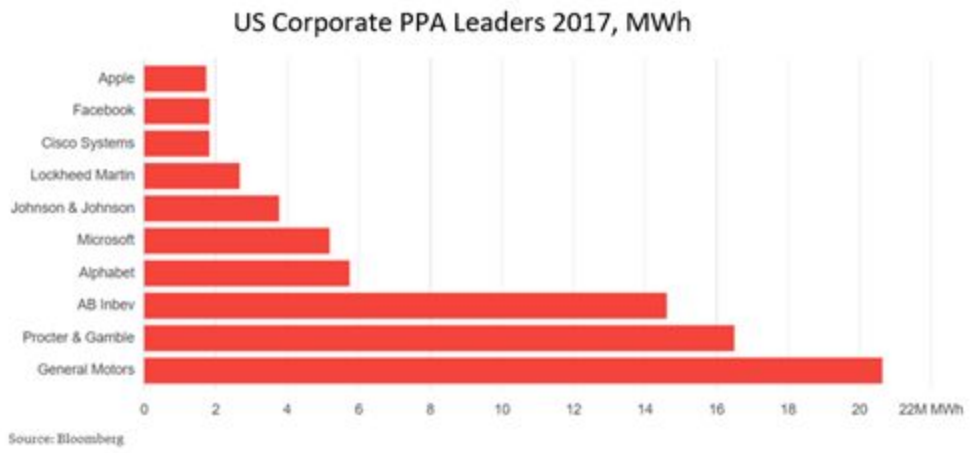

Figure 6. US Corporate PPA Leaders[18]

The advantages of PPAs are first, that their rates are typically lower than the current electric bill. In addition, they have low (or no) installation costs and no maintenance costs, since the owner of the equipment is responsible for its upkeep. Furthermore, given that the cost of producing energy is fixed, a customer may have the option to pay up front for multiple years' worth of power, hence saving money.

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[16] Ibid.
[17] Rocky Mountain Institute (2017b). An introduction to renewable energy PPAs . BRC. Retrieved from http://www.businessrenewables.org/downloads/bbb_workshop_2016/0_Buyers_Basics/0.3.Renewable_Energy_PPAs.pdf
[18] David Fickling. "The Next Big Renewable Fuel? Accountants." *Bloomberg.com*, Bloomberg, 17 Sept. 2017, Retrieved from www.bloomberg.com/gadfly/articles/2017-09-17/the-next-big-renewable-fuel-accountants

However, PPAs have many disadvantages. First of all, the cost of a PPA typically increases — sometimes dramatically — over time, to the point where power purchased through PPAs costs more than ownership. This is not helped by the fact that many incentives are based on the cost of the system, which is sometimes an incentive for the company offering the PPA to charge more expensive rates for a less expensive system. Energy producers typically use low-cost, lower-quality components. In addition, PPAs are long term contracts and are usually very costly to purchase, and require a lot of legal activity to get them done[19].

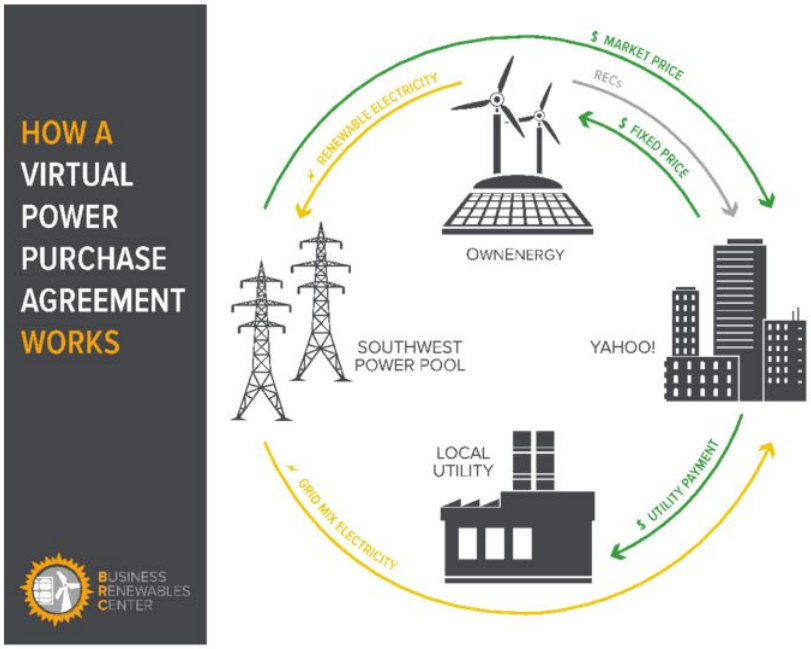

Figure 7. VPPA Structure[20]

As an alternative to physical PPAs, Virtual Power Purchase Agreements (VPPAs) have emerged as a potential option for corporates that are looking for a more convenient way to purchase renewable energy, but still with additionality claims. The "virtual" aspect is that these agreements are not really power contracts, rather a financial contract similar to a derivative. The customer also pays the project developer a fixed rate that also escalates over time at a certain rate, just like in the case of physical PPAs. In return, the project developer pays the customer a variable rate that is based on the wholesale electricity

[19] The Eco Experts. "Solar Power Purchase Agreement (PPA)" Retrieved from http://www.theecoexperts.com/solar-ppa/
[20] Rocky Mountain Institute (2017a). BRC Deal Tracker. Retrieved from http://businessrenewables.org/corporate-transactions/

market rates that the developer is receiving from selling the power produced to the grid. The twist here is that at no point is energy actually exchanged between the two parties, since once energy is exported to the grid there's no way to track how much travels where. As a matter of fact, the two parties could potentially be located thousands of miles apart in different parts of the electric grid. It's somewhat like pouring water from a cup upstream of a river and trying to collect the same water some distance downstream.

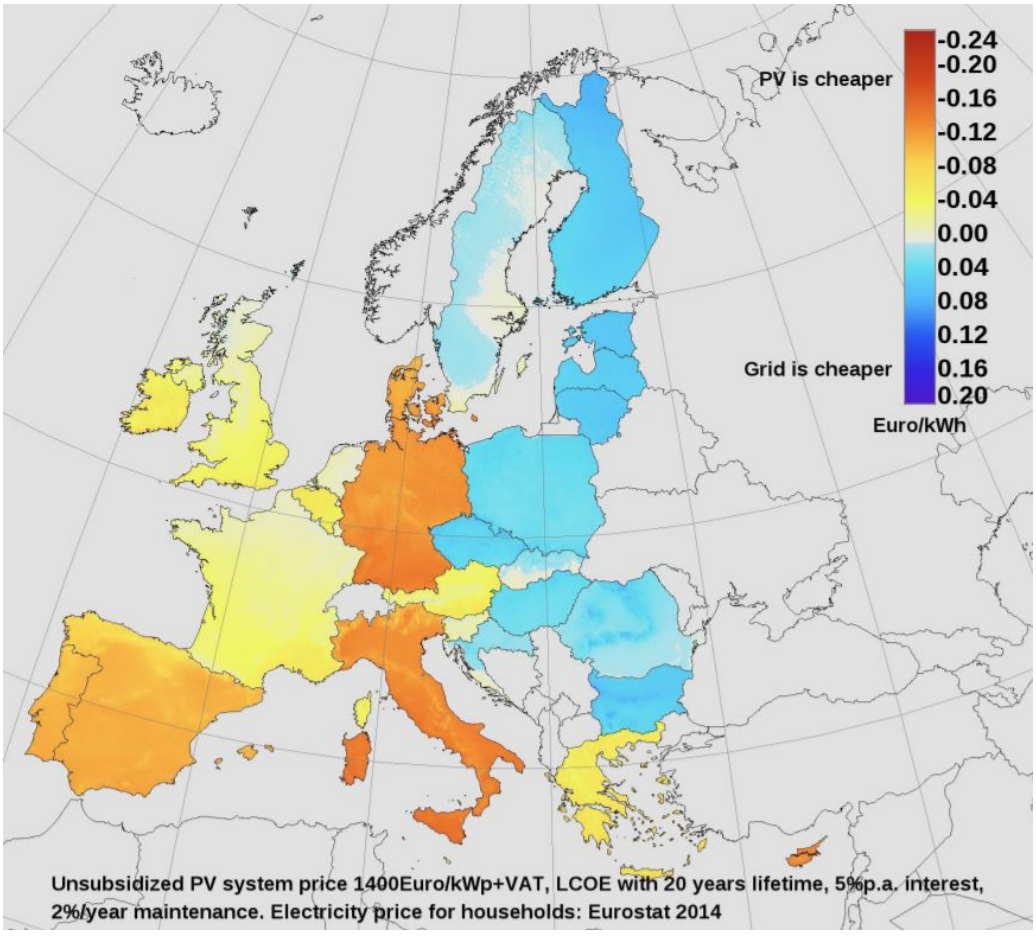

Figure 8. Electricity Price for Households[21]

The additionality benefit is that power purchase agreements provide the renewable energy project with a stable and predictable revenue stream, which allows the project to be financed and hence to come to existence. Whether or not the agreements actually saves the customers money depends on the fluctuations in wholesale electricity prices and the difference between those and the price at which electricity is bought.

[21] Arnulf Jäger-Waldau (2016) "Costs And Economics Of Electricity From Residential PV Systems In Europe" *European Commission, Joint Research Centre, Renewables and Energy Efficiency Unit.*

Because of economies of scale created through large utility-scale generation, in many countries it is cheaper to buy electricity from the grid than it is to install on site PV. Figure 8 shows the difference between PV LCOE and current household electricity prices.

Introduction and Background of ECOHZ

Mission

The mission statement of ECOHZ is "*to create value with solutions for renewable energy*". They believe that this focus has allowed them to become one the leaders in the European market and that they have one of the most diverse portfolios of renewable energy solutions in the world.[22]

History and Background[23]

ECOHZ (pronounced like "echoes") was created in 2007 when Home Capital AS acquired Enviro Energi and changed the company's name to what it is now. Enviro Energi was established in 2002 with the support of nine power companies in Norway. The business concept, which has remained the same since its establishment, is to provide customers in the European Marketplace with Guarantees of Origin and additional valuable services for their customers. The current shareholders of the company are outlined in Figure 9.

ECOHZ is an energy consulting firm out of Oslo, Norway that currently has 15 employees. The company seeks to help customers consume renewable electricity while also allowing them to contribute to the renewable market as a whole through the creation of new renewable projects. ECOHZ supports their customers on all levels by choosing, implementing, and tracking their customers' renewable energy portfolio. Although ECOHZ is based in Europe, they work with companies, organizations, and electricity providers around the world to provide renewable energy from a wide variety of sources, geographies, and levels of quality.

[22] Vision and Values - ECOHZ. Retrieved from https://www.ECOHZ.com/about-ECOHZ/vision-and-values/ on Nov. 22, 2017
[23] About ECOHZ. Retrieved from https://www.ecohz.com/about-ecohz/ on Nov. 22, 2017

Echoz Shareholder's by Percent		
Strawberry Equities AS	50.91%	
TrønderEnergi Kraft AS	12.44%	
Eidsiva Vannkraft AS	12.44%	
Nordisk Industriutvikling AS	11.77%	•
Troms Kraft Handel AS	9.95%	••
Troms Kraft AS	2.49%	

Notes: • 100% Ove Gusevik

•• 100% Troms Kraft AS

Figure 9. ECOHZ Shareholders[24]

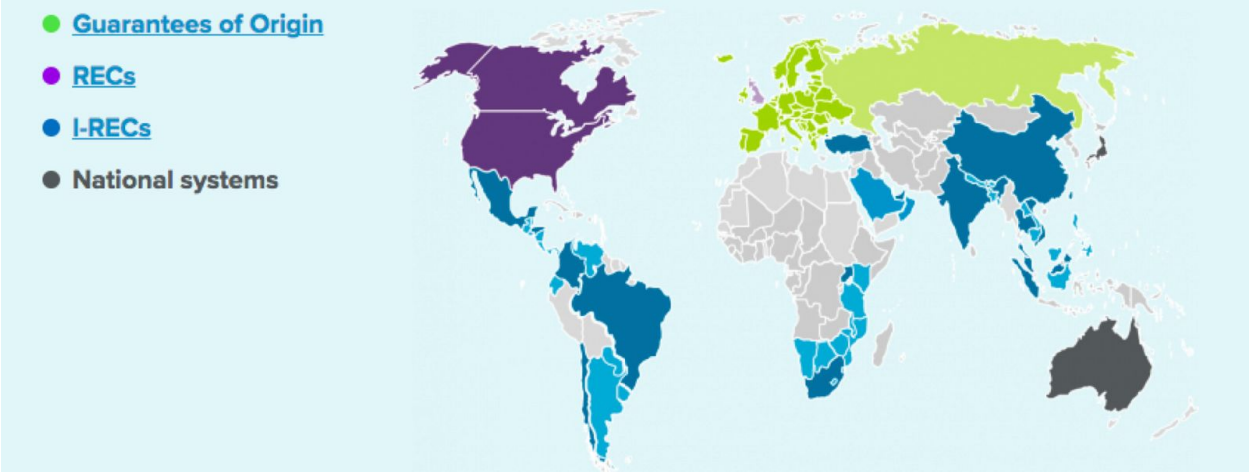

Figure 10. Renewable Electricity Documentation Type by Region[25]

The way in which renewable electricity is documented varies from region to region. Different regions document renewable electricity in different ways and therefore require different approaches. In Europe, renewable electricity is documented using Guarantees of Origin (GO's), in North America it is documented using Renewable Electricity Certificates (REC's) and in other parts of the world such as Central and South America, Africa, and Asia, they utilize International REC's (I-REC's). In addition to these documentation types, ECOHZ has created a new, innovative solution that provides renewable additionality for customers as a way to simplify the process of providing

[24] *ECOHZ 2010 Annual Report*. 7 Mar. 2011, www.ECOHZ.com/wp-content/uploads/2016/04/ECOHZ-Annual-report-2010-English-.pdf

[25] ECOHZ. "Reduce Your CO_2 Footprint" Retrieved from https://www.ECOHZ.com/renewable-energy-solutions/guarantees-of-origin/

renewable electricity, a product called GO². GOs and GO² will be discussed in detail in the following sections.

ECOHZ Vision and Values

The vision of ECOHZ is to change energy behavior, both on the production and consumption side. ECOHZ recognizes that renewable electricity is crucial to ensuring a sustainable future and one that is free from energy threats and insecurities. The company not only wants to participate in this shift, but also wants to be an innovator and driver in the field.

ECOHZ believes that in order to make this happen changes need to occur at several different levels. On the international and national level, significant changes to energy systems and infrastructure need to take place, so that existing systems are, first, less carbon intensive and, second, more focused on renewable sources.

In addition to national and global changes, changes on the local level also need to take place in order to adjust the way electricity is produced and acquired. Examples of ways in which ECOHZ envisions this is through the electrification of public transportation, utilization of solar power in remote villages in the developing world, and through education of citizens about the importance of reducing energy consumption in their own lives.

Not only does ECOHZ promote renewable energy and sustainability through their product offerings and consulting work, they strive internally to decrease their energy consumption on the company and individual levels. ECOHZ employees offer a wide range of expertise and are personally passionate about creating a energy positive future. In addition to market expertise ECOHZ employees share an overarching set of values that include trust, openness, and boldness.[26]

Sustainability at the Core of Their Business[27]

ECOHZ seeks to change the way in which people around the world use and consume energy in hopes of creating a transition to a carbon-free society in the future.

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[26] Ibid

[27] ECOHZ. "Sustainability is Core to Our Business" Retrieved from https://www.ECOHZ.com/about-ECOHZ/sustainability-is-core-to-our-business/

ECOHZ prides itself on being ambitious pursuing sustainability wholeheartedly. This can be seen through their agenda which is as follows:

- Communicate through their actions the necessity and benefits of sustainably conducting commercial activities.
- Make all decisions within the organization with sustainability at the in mind and at the forefront.
- Prioritize sustainability in order for ECOHZ to secure a "long-term competitive advantage"
- Comply with and exceed legislative and regulative environmental requirements that are established.
- Be a leading company that initiates pro-environmental activities on the local and global scale.

In addition to their general goals, ECOHZ has company specific goals relating to their operations. Some key areas that they focus on are including, but not limited to, energy consumption, purchasing, waste, cleaning, and employees' business travel. Some examples of these implementations are:

Offices: The central location of the main office Oslo encourages the use of public transportation and biking.

Technology: Extensive use of videoconferencing opens the space for an increased contact with customers and partners, while reducing travel and its environmental burdens.

Transportation: Firm culture promotes the use of public transport and trains as much as possible when travelling. However, when air travel is required, ECOHZ purchases carbon offsets. Internal processes have been put in place to ensure travel-specific CO2 reporting required for reimbursement.

Renewable energy: ECOHZ purchases renewable energy documented with GO and uses EKOenergy, and international ecolabel specifically for electricity(cite), in their own offices and all employees' homes.

Waste: Working to reduce waste in their daily activities including a reduction in food, packaging, and paper.

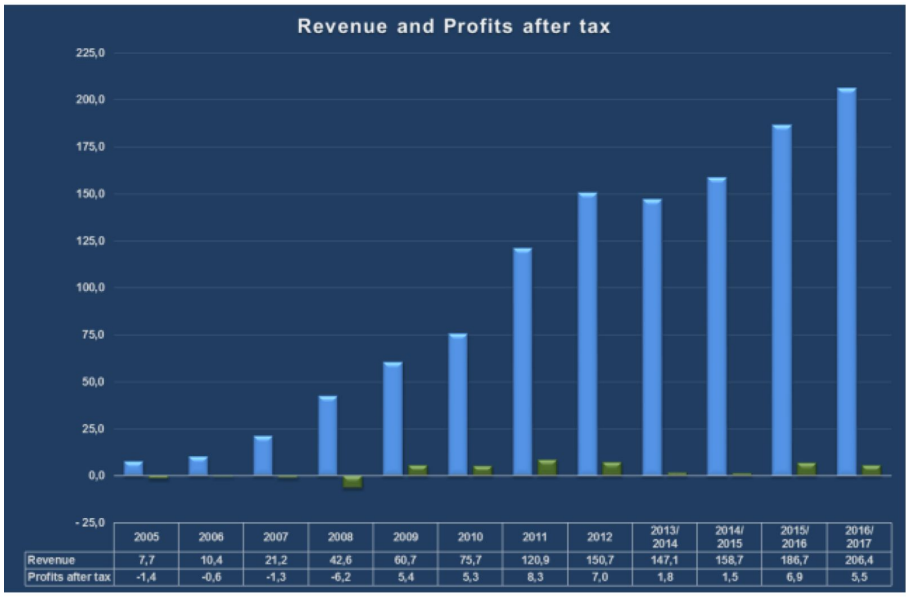
Suppliers: ECOHZ requires all new suppliers to have an "active environmental policy". Additionally, their suppliers have environmentally friendly products such as detergents, paper, and ink.

Public-private partnerships: In 2015, ECOHZ signed the City of Oslo's pact to assist in the city-wide reduction of greenhouse gas emissions.[28] The city committed to reduce their own emissions by 50% by 2030. ECOHZ is committed to not only reducing their own carbon footprint, but to help in reducing that of others.

Direct support: Over the last several years, ECOHZ has provided support for a village project in Mitandi, Uganda. ECOHZ aimed at strengthening the village's health clinic and supported a pilot project for the off-grid solar energy.

CO_2 compensation: ECOHZ calculates its carbon footprint annually basis. Their main focus is to reduce GHG emissions, but for the emissions they cannot eliminate, they purchase "*Gold Standard Carbon offsets*" to make up for it.

ECOHZ 2016 Financial Report



	2005	2006	2007	2008	2009	2010	2011	2012	2013/2014	2014/2015	2015/2016	2016/2017
Revenue	7,7	10,4	21,2	42,6	60,7	75,7	120,9	150,7	147,1	158,7	186,7	206,4
Profits after tax	-1,4	-0,6	-1,3	-6,2	5,4	5,3	8,3	7,0	1,8	1,5	6,9	5,5

Figure 11. ECOHZ Revenue and Profits After Tax from 2005 to 2016-17[29]

[28] Rikke Dahl Monsen "Næring for klima" *Oslo Kommune*. Retrieved from https://www.oslo.kommune.no/politikk-og-administrasjon/prosjekter/naring-for-klima/

[29] ECOHZ. "Annual Report 2016/2017" Retrieved from https://www.ECOHZ.com/wp-content/uploads/2017/04/Styrets-beretning-og-regnskap-for-ECOHZ-AS-2016_EN-Annual-Report.pdf

Introduction to Guarantee of Origin (GO)

RE support in Europe

Regulation

In March 2007, the European Council agreed to a mandatory European renewable energy target of 20% renewable energy in the total energy system by the year 2020 (European Union's '20-20-20' climate and energy targets). Realizing that this was a very ambitious goal, the council enacted a package of binding legislations with the following 3 targets.[30]

- 20% cut in GHG emissions (from 1990 levels)
- 20% of EU energy from renewables
- 20% improvement in energy efficiency

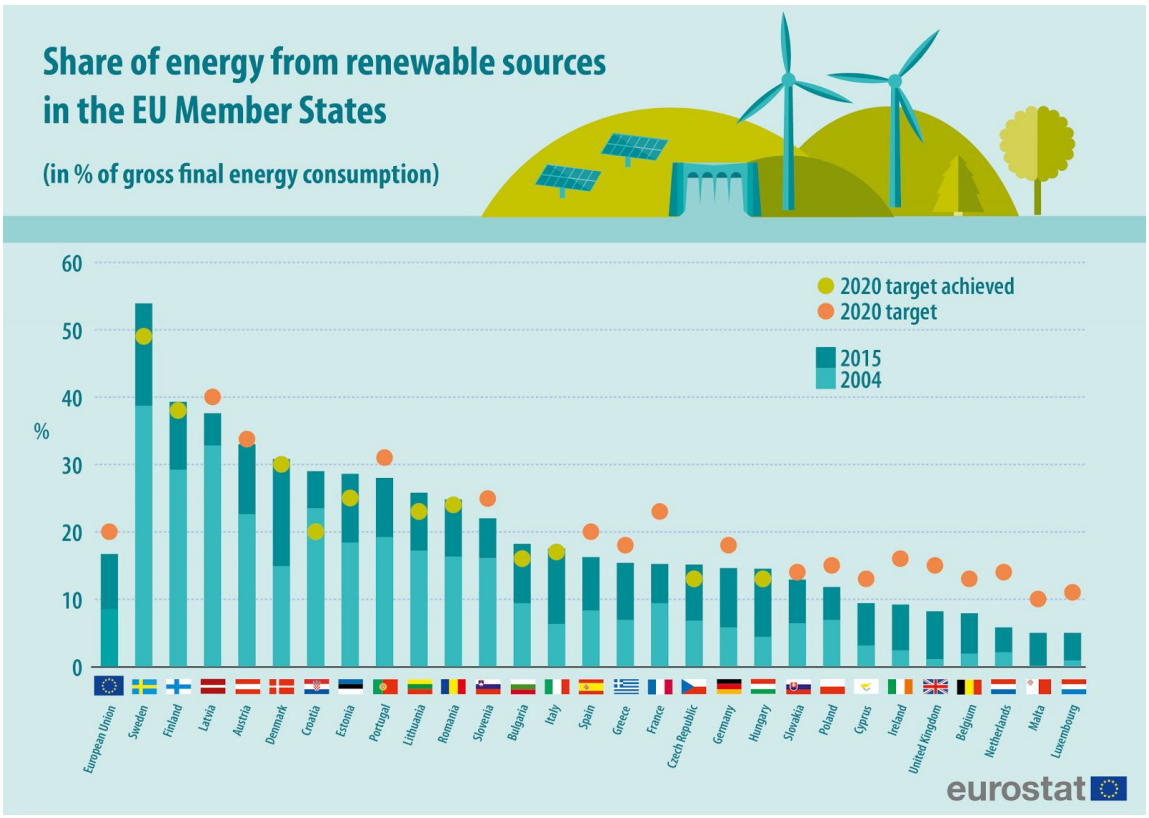


Figure 12. Share of Energy from Renewable Sources in the EU Member States[31]

[30] European Commission "*2020 climate & energy package*". Retrieved from https://ec.europa.eu/clima/policies/strategies/2020_en on Nov. 20, 2017

[31] Eurostat. Retrieved from http://ec.europa.eu/eurostat/statistics-explained/images/d/d9/Infographic_REN-2004-2015.png

The legislation package was approved in 2009 and named Renewable Energy Directive 2009/28/EC. Prior to this initiative, the renewable energy support in the EU-27 was mostly based on the national policies. These policies, exclusively based on their national targets set by the 2001/77/EC, utilized feed-in tariffs, quota systems and tax measures to incentivize the adoption of renewable energy by the industry and consumers. The overall EU target is based on the individual member state's national target. These national targets vary from 10% for Malta to 49% for Sweden. A target of 10% renewable energy in the transport sector was additionally set for all member states.[32]

Quota system

Several EU member states have established a quota system based on Tradable Green Certificates (TGCs). TGCs are similar to Renewable Energy Certificates (RECs) in that they are generated on the production of one unit of electricity from renewable sources and that they can be sold to create a secondary revenue source or the renewable electricity producer. Their price is generally established by the market forces of supply and demand. So, they may be quite useful in situations where administrative hurdles of running programs such as feed-in tariffs. Under the quota system, the government may establish obligation for certain industries and sectors to buy a pre-determined quantity of these certificates. Thus, it drives the demand due to which the market then determines the price.[33,34] The issue with this system is that it does not distinguish between the TGCs generated by various technologies. Therefore, the market also creates an incentive for adoption of low cost technologies, thereby creating hurdles for new and upcoming technologies which are expensive because they are not being mass adopted.[35] As we will see later, that this hurdle is overcome by the guarantees of origin system.

[32] Climate Policy info Hub. "*Renewable Energy Support Policies in Europe*" Retrieved from http://climatepolicyinfohub.eu/renewable-energy-support-policies-europe on Nov. 22, 2017

[33] Energypedia "Renewable Energy Quota and Certificate Schemes" Retrieved from https://energypedia.info/wiki/Renewable_Energy_Quota_and_Certificate_Schemes

[34] Body of Knowledge on infrastructure Regulation "Quota System for Renewables" Retrieved from http://regulationbodyofknowledge.org/glossary/q/quota-system-for-renewables/

[35] Julieta Schallenberg-Rodriguez (2017) "Renewable electricity support systems: Are feed-in systems taking the lead?" *Science Direct*. Vol. 76, pp 1422-1439

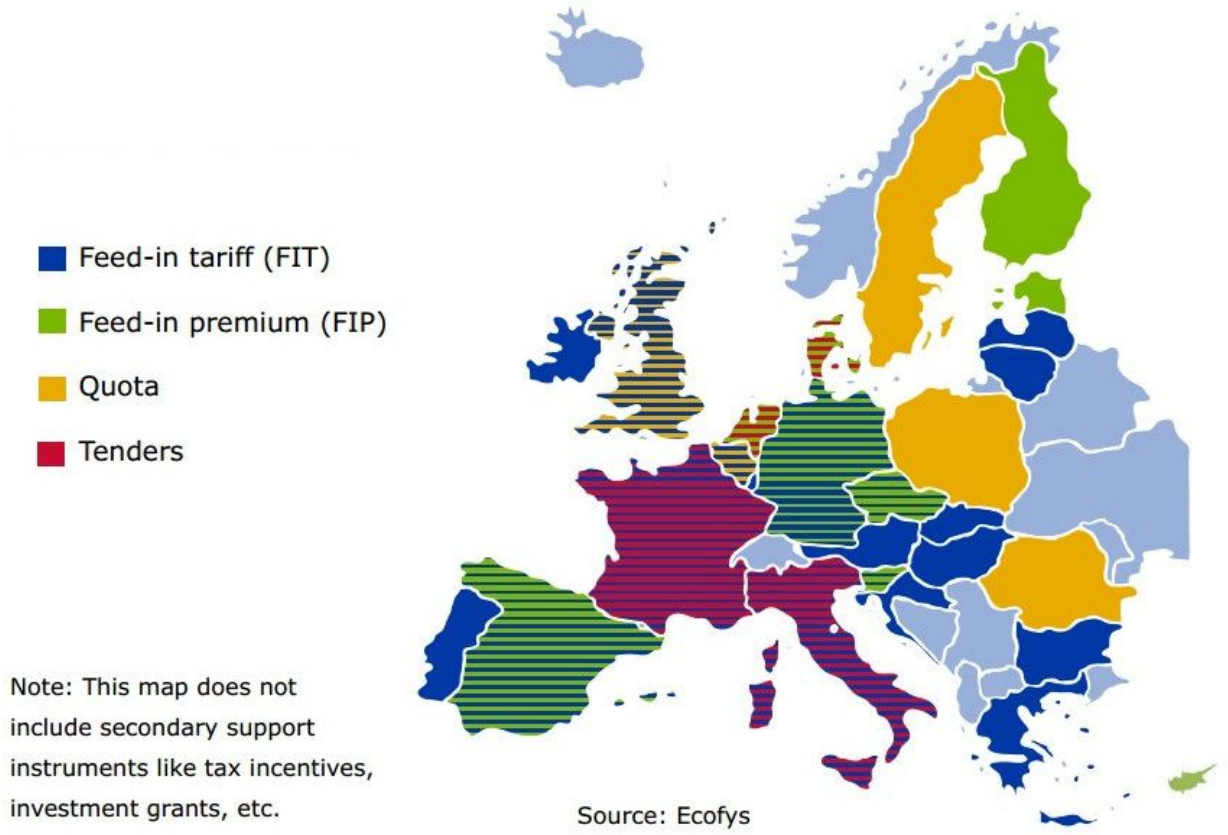


Figure 13. Diversity of RES-E Support Schemes in the EU-28[36]

Feed-in tariffs

Feed-in tariffs (FiTs) are long-term contract-based systems designed to incentivize investments in renewable energy projects. The renewable electricity generators, who could be commercial generators or those generating for self-use, are offered a cost-based price for their investments and production of renewable electricity. However, these prices vary from project to project and are generally based on the type of technology, location, size and region besides other factors. FiTs play an important role in development of diverse technologies. Renewable energy sources are location dependent. For example, some locations have high wind energy potential while some other may get good solar radiation. This may lead to increased interest in development of certain kind of projects in a region so much so that it may ultimately hurt the region.

[36] Klessmann C. (2014) "Experience with renewable electricity (RES-E) support schemes in Europe. Current status and recent trends" *Ecofys*. Retrieved from http://climatepolicyinfohub.eu/renewable-energy-support-policies-europe

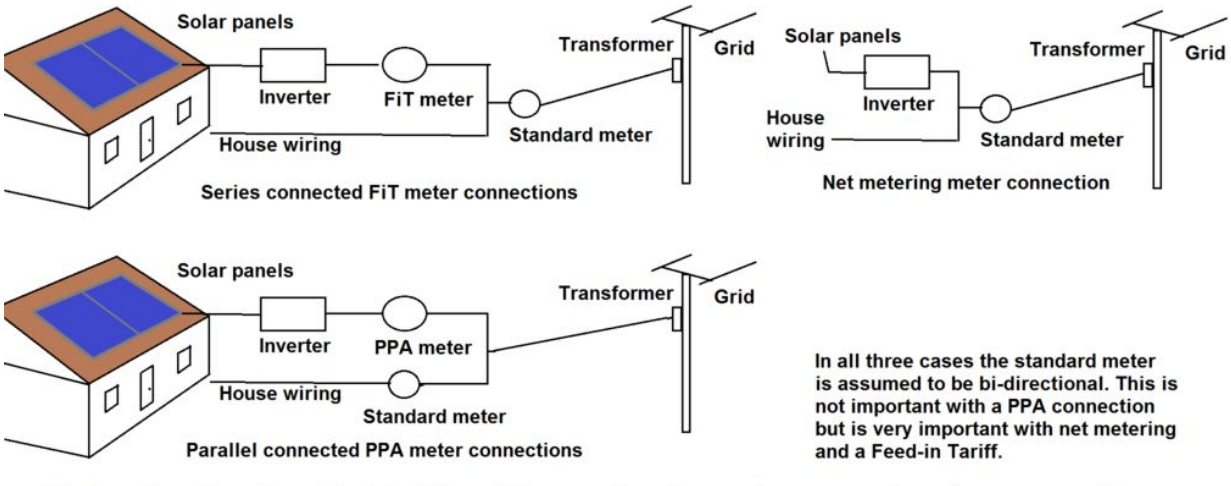


Figure 14. Understanding Fee-in Tariff and PPA Meter Connections[37]

For example, it may be required to clear trees for a wind farm. Some clearing may be okay. But if we aggressively push the development of wind farms in a region then that may affect the ecological balance of that region.[38] To avoid this some projects may need to be developed at not very efficient locations. In order to encourage the development of such projects, the government uses FiTs to cover the cost gap for a less efficient technology. It is generally agreed that FiTs are very efficient in renewable electricity development. In 2008, the European Commission concluded that "*well-adapted feed-in tariff regimes are generally the most efficient and effective support schemes for promoting renewable electricity*".[39] According to REN Global Status Report 2010, at least 50 countries and 25 states/provinces had feed-in tariffs by early 2010. However, effectiveness and efficiency of FiT systems varies across the countries. In some countries, it is quite high e.g. Germany, while in others it suffers on account of high administrative barriers, for e.g. France. The challenge also exists with regard to ascertaining the right amount of support for any given project.[40]

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[37] Wikimedia Commons. "File:Feed-in Tariff meter connections.png" Retrieved from https://en.wikipedia.org/wiki/File:Feed-in_Tariff_meter_connections.png

[38] Finon, Dominique and Menanteau, Philippe (2004) "The Static and Dynamic Efficiency of Instruments of Promotion of Renewables" *Energy Studies Review*: Vol. 12: Iss. 1, Article 3

[39] European Commission (2008) "*COMMISSION STAFF WORKING DOCUMENT - The support of electricity from renewable energy sources*" Retrieved from https://web.archive.org/web/20090509184329/http://ec.europa.eu/energy/climate_actions/doc/2008_res_working_document_en.pdf on Nov. 22, 2018

[40] Klessmann, C., Ensslin, C., Ragwitz, M., & Resch, G. (2007). "European renewable energy trade based on Guarantees of Origin (GOs)—concepts, critical issues, and recommendations for design." *A paper within the research project "Wissenschaftliche und fachliche Unterstützung des BMU bei der Diskussion der Fortentwicklung der EU Politik zur Förderung der Erneuerbaren Energien "(FKZ UM07 41 604) of the German Federal Ministry for the Environment (BMU). Ecofys.*

Where do GOs fit in this?

The potential to capture renewable energy and transform it into usable forms is distributed unevenly across the regions within Europe. Availability of instruments such as Guarantees of Origin helps European Commission meets RE 2020 targets by allowing a country with excess renewable energy potential to transfer the benefits to the country with poor renewable energy potential. Since it is generally expensive to install and run renewable energy projects, this concept makes a lot of sense if the country importing the renewable energy benefits provides financial benefits to the country exporting them. This way the importing country does not have to invest excessively on the projects in its own territory with poor potential compared to projects with better potential in exporting countries.

GOs certify the origin of a unit of energy from renewable sources. 1 GO is equal to 1 MWh of renewable energy. In other words, the owner of a renewable energy plant is issued 1 GO certificate on the production of 1 MWh from the plant. European Commission has implemented GOs under RES-E with an intention to create a Europe-wide system for accounting of renewable energy. This serves dual-purpose. First, it is easy to track the generation and sale of renewable energy. The transparent system helps in avoiding double counting and double selling of renewable energy units. Second, it enables companies to know the source of energy they are consuming.[41] This is helps them in better understanding their carbon footprint and makes them take responsibility of their sourcing decisions.

The GO certificates facilitate the trade of "benefits of renewable energy" rather than the the physical trade of the energy itself.[42] When a renewable energy plant produces a unit of electricity, it is issued GO certificate by authorized issuers. These issuers together maintain a single common electronic certificate registry. The plant sells these certificates in the open market to transfer the benefit of renewable energy to those companies and individuals who seek to reduce their carbon footprint indirectly. Once the sale of the certificates is completed and the documentation is delivered to the buyer, the GOs are cancelled in the electronic registry. This is done so as to avoid double selling of the

[41] Jaap Jansen, Eleanor Drabik and Christian Egenhofer (Nov 2016) The Disclosure of Guarantees of Origin. Retrieved from https://www.ceps.eu/system/files/Guarantees%20of%20Origin%20CEPS%20Special%20Report.pdf

[42] Landsvirkjun "Guarantees of origin" Retrieved from https://www.landsvirkjun.com/productsservices/guarantees-of-origin

certificates and to track the ownership of the certificates. A single registry enables the auditors to easily verify the claims of ownership of the certificates. This is particularly handy in Europe where one common market blurs the national borders, and the certificates are sold across the borders all the time.

Impact

An accurate and complete assessment of the carbon footprint of the entire mankind will be a very difficult task. It will require an enormous amount of data collection and analysis to accurately measure the carbon footprint of all of our activities. This is a challenge that goes beyond the scope of GOs. GOs, however, help in combating the global warming from a different front. They provide us an avenue to accurately measure the reduction of our carbon footprint via adoption of green energy. They also send out a strong signal to the market that the purchaser of GO cares about the environment it operates in. This signal combined with the changing consumer behavior creates a stronger appeal in the industry to invest more in the green projects. Thus, start a positive forward spiral in the renewable energy industry.

Regulation

In April 2009, the European Union passed a legislation called The Renewable Energy Directive 2009/28/EC. It replaces the earlier legislations 2001/77/EC and 2003/30/EC. The directive requires that by 2020, 20% of the energy consumed in the EU is generated from renewable sources.[43] It also requires that all members countries establish a mechanism for accounting for production and consumption of renewable energy units, thereby establishing accountability in the previously opaque process.[44] This is how the Guarantees of Origin came to be. The Directive requires that the GOs prove to the purchaser the authenticity of the origin of the energy units from renewable sources, and provide sufficient and necessary documentation for an independent audit. While the decision of purchase GO is completely optional for certain industries, it has increasingly become the most convenient way for the companies to signal to their customers that they

[43] Official Journal of the European Union "DIRECTIVE 2009/28/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2009 " Retrieved from http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:en:PDF

[44] EEX. "EU guideline 2009/28/EC on trading of Guarantees of Origin" Retrieved from https://www.eex.com/en/goo

care about the company's and their product's carbon footprint.[45] In an increasingly environmentally conscious consumer base, this signal may mean a lot.

The CDP (formerly, the Carbon Disclosure Project) and the Greenhouse Gas Protocol have accepted GOs as mainstream instruments for documenting and tracking renewable energy units.

Introduction to GO^2

ECOHZ has created a unique product, the GO^2. The GO^2 is a financial instrument that consists of two components: a Guarantee of Origin and a financing component that contributes to the construction of new renewable energy infrastructure. Purchased in 1 MWh increments, a GO^2 documents that energy procured by a company from the electricity grid was sourced from renewable energy resources, as opposed to coal or natural gas. The unique value provided by the GO^2 comes from the financing component.

As outlined in the beginning part of this report, it has become common practice in the EU for companies to purchase Guarantees of Origin (GOs) to show that the companies are participating in responsible use of electricity. The GO portion of the GO^2 is not different from what is currently taking place today when commercial & industrial (C&I) customers to offset their energy use by purchasing renewable energy certificates in the form of GOs. What separates ECOHZ product is the additionality component of the GO^2. In addition to the standard GO instrument, GO^2 includes a project financing component. What this means is that with the purchase of each GO^2 comes additional funding reserved for the construction of renewable energy projects. Under the project financing component, the GO^2 instrument allows companies to contribute financially to named renewable energy projects by providing top-financing.

[45] ECOHZ. "Guarantees of Origin (GOs)" Retrieved from https://www.ECOHZ.com/renewable-energy-solutions/guarantees-of-origin/

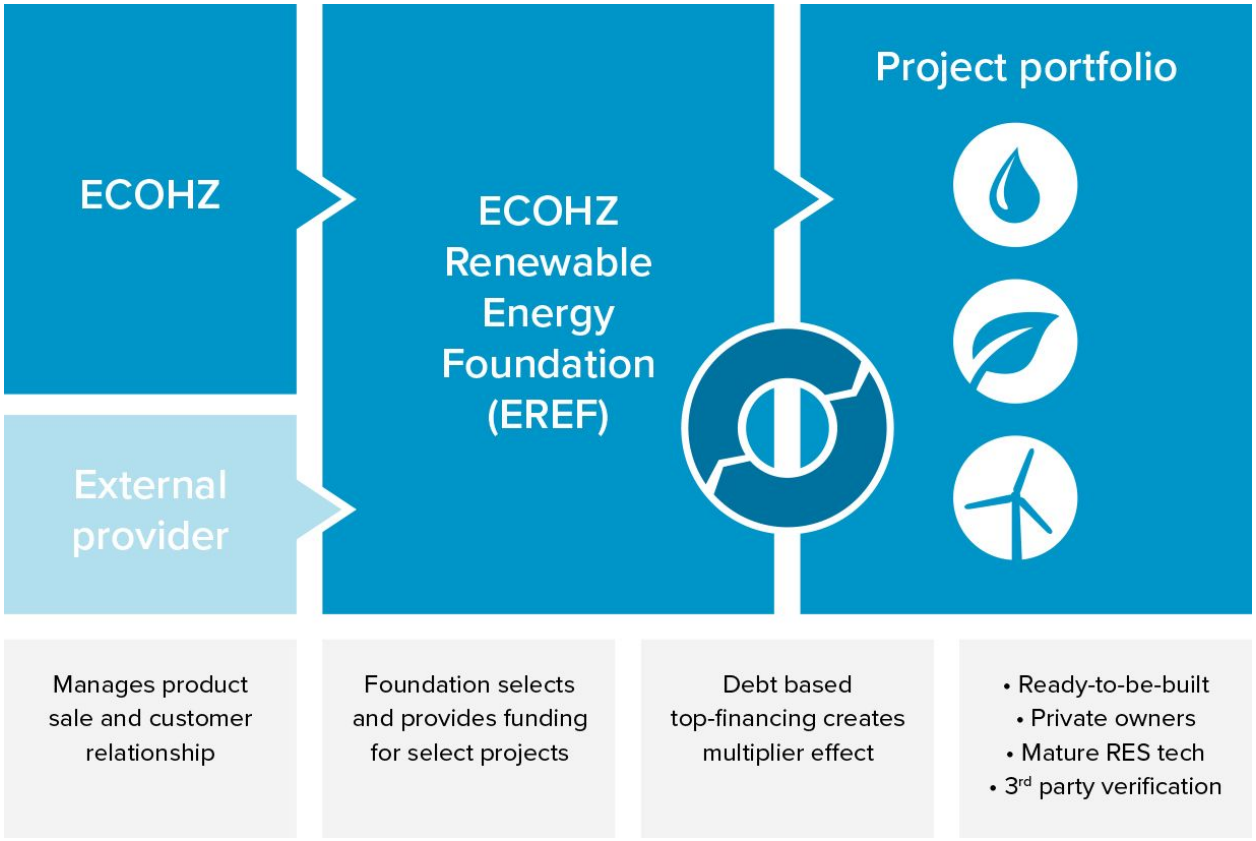

Figure 15. The ECOHZ Renewable Energy Foundation ©ECOHZ[46]

A project needs a well-defined financing package, or 'capital stack', so as to provide necessary resources to the project. In Europe, commercial and investment banks will provide up to 85-90% of the capital stack for a renewable energy project through various debt instruments. To complete a project's financing, it must raise the remaining 10-15% in the form of equity. This is called top financing. It is these investors that ECOHZ looks forward to working with by providing a contribution of 5% to 15% of the project budget. ECOHZ does it for two reasons. First, to reduce their exposure to any one project. Second, to have more impact with the finite amount of money available with the Foundation.

ECOHZ provides its clients the flexibility to choose short-term GO² purchase agreement instead of binding long-term agreements as is the case with PPAs. ECOHZ markets GO² under two options. First, GO² United. Under this product the contributions from the customers are pooled together under ECOHZ Foundation, which then uses the money to

[46] ECOHZ. "GO²" Retrieved from https://www.ECOHZ.com/renewable-energy-solutions/go2/

develop new renewable energy projects. Second, GO² Signature. Under this product the companies have a much exclusive option of contributing directly to a named project. This is normally for the clients whose engagement is so big that the money contributed by them is sufficient to finance a whole project on its own. Under both products it is possible to purchase GO^2 from an existing power plant in one country, and finance the building of a new power plant in a different European country.

GO^2's design principles

1. *Rigorous tracking and reporting procedure*

At the core of GO^2 is the system of Guarantees of Origin (GO). The same system that is known for it rigorous tracking and reporting procedures. As a key player of the industry, ECOHZ is well versed in the rules of the game. ECOHZ's GOs are issued in line with European Union's RES Directive 2001/2009.

2. *Top-financing*

As previously discussed, renewable energy credits sold under GO^2 have a component for direct contribution towards financing new renewable energy projects. Under this scheme, ECOHZ provides 5% to 15% of the total project cost as top-financing. ECOHZ has founded the ECOHZ Renewable Energy Foundation (ECOHZ Foundation) that focuses on identifying and funding the suitable project for financing. This foundation optimizes the money circulation by acting as a tax efficient investment vehicle. Among other things, one of the criteria for top-financing is that the projects should be "ready-to-be-built". This ensures that the money being spent will have an immediate impact and a quick turnaround period.

The foundation provides investment to the projects as debt instrument instead to equity, which provides it much more certainty of getting back its investments. It also makes the cash flows from an investment much more predictable as opposed to the cash flows from an equity investment.

3. *Delivering real increase*

Another criterias looked into by the ECOHZ Foundation are the technologies and location. Currently, only solar, wind, hydro, geothermal and biomass projects are eligible for GO^2 funding. The Foundation does not finance unproven technologies as their

potential to provide return on investment is not yet established. Since, the money returned is used to finance other projects, these projects would create unwanted risk in the system and are, hence, avoided. In terms of location, the Foundation finances projects located in Europe only.

Let's analyze a scenario. Current market price of 1 GO^2 certificate (equivalent to 1 MWh) is EUR 4. If a contract of 50 GWh is signed, it would lead to a commitment of EUR 200,00. According to ECOHZ, this amount when used as top-financing instrument for new projects, will typically create 5 GWh of new clean power on an annual basis.

4. *Allocation guarantee*

At the time of signing a GO^2 contract, the client makes a firm commitment to buy a certain units of GO^2 over a specified period. Based on this commitment, ECOHZ makes predefined investment contributions to a named project. The client is kept informed about the project financing, duly describing what share of the total purchase price is allocated to which projects.

5. *Representation and reporting*

ECOHZ requires that the purchaser of GO^2 units correctly "*represents and reports the percentage/volume of GO^2 purchases relative to their total power consumption*". This helps in accurately determining and representing the impact GO^2 is having on the company. Since at its core a GO^2 includes a Guarantee of Origin, a GO^2 certificate can also be used for greenhouse emission assessments. GO^2 instruments are regularly used for CO_2 accounting and reporting according to international standards such as Greenhouse Gas Protocol and CDP.

6. *Third Party verification*

ECOHZ is fully committed to ensure transparency and quality. As such they have tied up with an independent auditor TÜV Rheinland Energy GmbH (TÜV). TÜV audits and certifies ECOHZ's products, including GO^2.

7. *Multiplier effect*

The additional money generated from GO^2 for the top financing of the new renewable energy projects comes back to the ECOHZ Foundation via preferential payback scheme. The paid back funds are then recirculated via the foundation to finance new renewable

energy projects, thereby creating a multiplier effect. According to ECOHZ, the foundation aims to reinvest the the funds in this manner every three years.

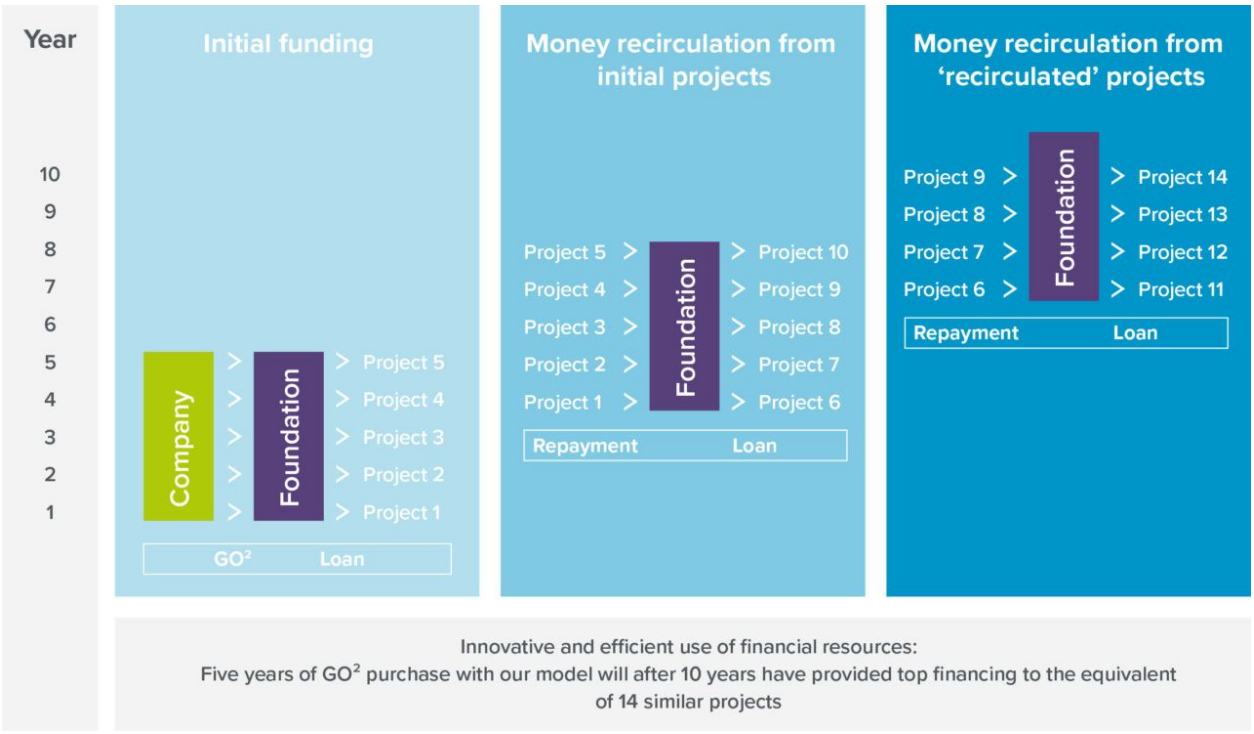

Figure 16. Multiplier Effect Through the Circular Financing Model ©ECOHZ[47]

Benefits of GO²

The GO² instrument aims to tackle the issue of energy project finance for renewable energy projects while minimizing the implementation burden for the purchaser. It is easy to see how GO² directly addresses the development of new renewable energy projects. But what is not as obvious is that by providing financing to these projects the GO² also creates a multiplier financing effect through circular financing. When ECOHZ Foundation invests in a project via top-financing, it uses debt instrument. This insures that the project will pay back to the Foundation the principal and the interest amounts based on a predetermined schedule. This money is then used to finance new projects. This way each time a company purchases a GO² they are contributing to the continuous deployment of funds to the development of even more renewable energy projects.

[47] ECOHZ. "GO²" Retrieved from https://www.ECOHZ.com/renewable-energy-solutions/go2/

To enhance the adoption of GO^2 ECOHZ pledges to handle all the administrative tasks that come with investing in GOs. This allows the purchasers of GO^2s to enjoy the benefits of the GO^2 without having to sacrifice the operations of their core business. The GO^2 also provides clear documentation about emission reductions and provides an easy and convenient way to demonstrate a company's commitment to environmental stewardship.

Lastly, unlike PPAs whose contracts are often 10-25 years long[48], GO^2 contracts are flexible, allowing the purchaser to commit to as little as a 1 year[49]. The flexibility of the GO^2 allows the purchaser, who may be weary of signing into a long-term PPA contract or who may not meet the MW requirement, the ability to commit to renewable energy solutions that are custom fit to meet their specific needs.

Impact created by GO^2

According to ECOHZ, the impact of GO^2 extends far beyond the described value creation for the businesses themselves.[50] GO^2s provide unique market-based financing and support mechanisms that complement existing industry support schemes. By providing an ever increasing fund for new renewable energy projects, GO2 further strengthens the renewable energy market and eventually all governmental incentives linked to new renewable energy projects will dry up. The GO^2 concept provides a framework for the era in Europe beyond the 2020 renewable energy policy.

Due to the multiplier effect of the GO^2 product, even a small number of companies signing GO^2 contracts can have a huge impact in terms of long-term supply of new renewable energy generation and thus, the GO^2 provides more value on a per unit consumption basis than what is currently captured by the standard GO. Additionally, GO^2 purchase agreements can be customized to purchase future GOs from a renewable energy plant that has yet to be built. In some cases these projects are only 10% away from full financing and thus, the GO^2 can provide the incentives required to entice the final round investors by collateralizing a revenue stream for the product.

[48] Solar Energy Industries Association "Solar Power Purchase Agreements" Retrieved from https://www.seia.org/research-resources/solar-power-purchase-agreements
[49] Preben Munch and Stein Haugan (ECOHZ). Meeting notes dated Jan 10, 2017
[50] ECOHZ. "GO^2" Retrieved from https://www.ECOHZ.com/renewable-energy-solutions/go2/

Lastly, the ECOHZ Foundation is an independent foundation which, according to its mandate, is working to facilitate the construction of new renewable energy generators. Therefore, it provides an additional outside support to the renewable energy industry by providing project oversight and by letting outside players take benefit of the additionality offered by GO^2.

Challenges facing GO^2

However, being that GO^2 is a new product, the visibility is low. This project report focuses on enhancement of customer adoption and, thereby, increase in awareness of how GO^2 can provide value to the customers.

Comparison between PPA, GO and GO^2

To fully understand the value that GO^2 provides, it is necessary to understand the comparable energy products available. There are a number of competing renewable energy products available. One of the most commonly adopted are Power Purchase Agreements (PPAs). Largely, PPAs are the most common product in the renewable energy industry, with large corporations signing agreements to procure a portion of or all of their electricity demand from renewable resources. PPAs typically last for 10 to 25[51] years and require commitments to purchase a large volume of energy. They are also time consuming and expensive to negotiate, but they do provide stable, fixed energy pricing, ideal for customers with a stable economic outlook and substantial and predictable energy needs.

The next most common comparable energy product is the GO. A GO documents that the energy procured by a customer was generated by renewable energy sources. For the purchaser, a GO provides them with a way to track and promote their commitment to renewable energy but as earlier described in the report, the procurement of GOs may not actually lead to the construction of additional renewable energy resources.

One final alternative is procuring power through green tariffs. When purchasing a green tariff, electric utilities sell electricity produced from renewable energy resources at a

[51] Solar Energy Industries Association “Solar Power Purchase Agreements” Retrieved from https://www.seia.org/research-resources/solar-power-purchase-agreements

markup. Electric utilities may offer plans to provide up to 100% of a user's energy needs from renewable resources. However, this does not mean that the utility is increasing its energy mix from renewables when new customers sign up for green tariffs. Table 2 provides a comparable summary.

	PPAs	Green Tariffs/GO	GO^2
Procure renewable energy	✓	✓	✓
Eliminate electricity price volatility	✓	X	X
Provides 'additionality'	Sometimes	X	✓
Recirculate financing back into new renewable energy projects	X	X	✓
Cost, time, and complexity to implement	High	Low	Low
Time commitment	20 years	Normal contract	1 year minimum

Figure 17. Comparison of PPAs, Green Tariffs/Gos and GO^2s

Gap that is left between PPA and GO for renewable electricity customers - Opportunity for GO^2

Most companies that procure renewable energy do so for three primary reasons:

- To comply with regulations[52]
- To reduce operational expenses by negotiating a PPA at a guaranteed price that may be below the market rate for electricity[53]

[52] Yadda Admin (Dec 2011) "CSR in the Renewable Energy Industry" *Renewable World*. Retrieved from https://renewable-world.org/csr-renewable-energy-industry/

[53] Green Tech Media "Is the Long-Term PPA Becoming Outdated for Corporate Renewables Procurement?" Retrieved from https://www.greentechmedia.com/articles/read/corporate-renewables-procurement-must-evolve-beyond-the-long-term-ppa

- For environmental benefits that provide a 'feel good' result that they can translate into improved product sales or to meet Corporate Social Responsibility (CSR) goals[54]

During Phase 1 of our analysis, we noted that GO^2 has historically competed for customers who wanted to obtain the 'feel good' benefits associated with renewable energy but for whom PPAs represented too much risk. While the market for this segment may still be sizeable, sales of GO^2 are limited in that they do not necessarily help companies save money in the medium to long term (since companies need to buy electricity plus the GO^2) and sales of the GO^2 are not easily made visible to end consumers. This results in a challenging sales process for GO^2 that makes it difficult to quantify its marginal benefits over PPAs. Thus we determined that GO^2 is playing in a limited space where it cannot take advantage of easily quantifiable financial savings nor advertise to consumers easily.

GO^2 is ideal for companies that want to offset their electricity use through renewable energy, but don't want to engage a PPA for a variety of reasons, including to, but not limited to: (1) complexity and expense negotiating a contract, (2) operational uncertainty – electricity demand may not be stable enough to project needs 20+ years into the future and (3) potential geographic uncertainties that may arise in shifts in the firm's offices that may lead to an orphaned PPA if the new offices are outside of the PPA's delivery zone.

Recognizing this, our team developed a new hypothesis that allows the GO^2 to compete more effectively in the market for renewable energy. Instead of competing head-to-head against PPAs, we hypothesized that GO^2 should compete as a marketing platform for messaging a product's sustainability attributes directly to customers. Today, PPAs and the existing market for GO^2 are positioned at the corporate overhead level: companies buy renewable energy in their General and Administrative (G&A) budget, either saving or losing money in that area. However, the renewable energy attributes procured in this fashion are difficult to convey to consumers. This results in a market failure: corporations buying PPAs want to buy renewable energy to save money and communicate their initiative to consumers, and consumers want to buy products that align with their social values.

[54] Triple Pundit (Aug. 2016) "Why Renewable Energy Is Now a Requirement for CSR" Retrieved from https://www.triplepundit.com/2016/08/renewable-energy-now-requirement-csr/

GO^2 is uniquely positioned to fill this market need. Instead of selling renewable energy attributes (GOs) at the corporate overhead level, ECOHZ can help consumer packaged goods (CPG) companies integrate the price of GO^2 directly into the price of consumer goods. A portion of a GO^2 would be added to the cost of each good depending on the energy consumed to make the product and deliver it to customers.

This would function as follows: one 0.5-liter bottle of water consumes approximately 1 kWh[55] from production through the point of sale. GO^2 can cover the energy production needs of 1,000 bottles of water. Therefore, 1/1000 of the price of GO^2 can be incorporated into the price of bottled water (€0.004 per bottle of water), representing a negligible percentage of the retail or wholesale price.

GO^2 as an 'Impact' Label

GO^2 can then be positioned as an impact label: a GO^2 logo can be affixed to the packaging of water bottles, wine, beer, fruit drinks, and other products, informing consumers that their product was made exclusively with renewable energy and that their purchase helps lead to further construction of renewable energy infrastructure. This empowers consumers by communicating that through their purchase they are having an impact on future renewable energy development.

Slight Change of plans

In order to best accomplish our overarching goal of increasing the revenues for GO^2, our assessment has identified that GO^2 has the potential to increase sales volume by positioning it as a marketing platform for messaging a product's sustainability attributes to customers.

As a matter of fact, we have realized that GO^2's strength lies more in its emotional appeal than its financial benefits, partly because of the smaller prices to negotiate PPAs. GO^2 can capture more value as a marketing platform because it can be scalable to meet the changing needs of corporates, and it enables low cost of entry into the renewable energy market.

[55] P H Gleick and H S Cooley (2009) "Energy implications of bottled water" *ENVIRONMENTAL RESEARCH LETTERS* Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.551.889&rep=rep1&type=pdf

Corporate PPAs are a great topic now because the energy industry is at a point where the federal tax incentives and subsidies are fading away, so the energy sector has to live off of the prices it can command. Corporate PPAs have a lot of advantages for both the buyer and the seller. A company that is concerned with its energy security of supply can sign a long term contract that would guarantee its electricity at a fixed price, hence saving it from the unpredictable and volatile energy prices in the future. It would also make sense to sign a PPA if the company has sustainable goals it would want to meet, so buying renewable energy would be in line with its interests. However, our analysis has determined that, with all the aforementioned advantages, PPAs might not be the perfect solution for companies who would want to enter the renewable energy market. As a matter of fact, PPAs are very complex to negotiate, especially offsite PPAs, and they require long man-hours with developers and utilities. Moreover, because the power prices can go either way, locking into one long term PPA might not seem as attractive, since if electricity prices were to fall in the future, companies would see themselves paying more than their competitors. Therefore one of the key points that distinguish a GO^2 from a PPA is not only its flexibility, but also its scalability. The new path we're choosing for a GO^2 would allow it to be scaled up or down along with the company's changing energy demands.

We recommend focusing on two market: the existing one, where GO^2 can be sold to corporates at the overhead level, and a new market where the price of GO^2 can be integrated into the price of consumer goods.

The existing market

Just as we have mentioned above, GO^2 can be sold to companies who have sustainability goals they want to meet. The ideal customers would be companies whose energy needs are low that they don't justify going through the hassle and high costs of a PPA. In addition, an ideal company would have volatile energy loads that make it easier for them not to commit to a long term contract, it would have a low access to capital since PPAs are very expensive, it would possibly have geographic mobility in that it would have several headquarters or manufacturing and distribution centers spread across Europe. Finally, the ideal company would have limited alternatives to go to (for example green tariffs) which would make the GO^2 even more attractive. Since a huge point behind this

new path is for GO^2 to enable companies to participate in renewable energy markets by lowering the barriers to entry, GO^2 can hence be sold at a new market.

The new market

The new market suggests integrating the price of a GO^2 into the price of consumer goods. This is an ideal solution for companies that sell products with limited differentiation, for example companies that sell beverages, consumer packaged products, toiletries, food products, clothes, etc. When we position GO^2 as a marketing instrument, it would play to its strength in that it could easily be scaled to the product volume and tailored to the consumer's energy needs. it would identify sustainable products to end customers, and most importantly it would help consumers make a material impact through purchasing decisions. In other words, it would make customers feel better about the goods they buy if they know that they have not damaged the environment by choosing them. But better yet, if they know that they have benefitted it. And that's where the core of our idea lies.

We want to position GO^2 as an ecolabel, one that tells the consumers that the product they want to buy has not only been sourced with renewable energy, but has also helped lead to further construction of renewable energy projects. What makes it better than existing eco labels is that they all offer a look back on what a good that has already been done: GO^2 would on the contrary give customers the privilege of knowing that their decision will help doing good in the future. By working with CPG companies, ECOHZ can offer to incorporate the GO^2 label onto their products, which would greatly boosting the CPG company's sales.

PPA Market Size

Power purchase agreements have become increasingly popular since 2008. Two of the primary drivers behind corporate purchases of PPAs are: (1) companies looking to gain market recognition for renewable stances and (2) companies trying to meet sustainability goals. Drivers aside, the PPA market has been expanding and Rocky Mountain Institute has predicted that over 60,000 MW of renewable energy project will have to be built to meet the demand for PPAs in 2025.[56]

[56] Maloney, Peter. "Mutual Needs, Mutual Challenges: How Corporate PPAs Are Remaking the Renewables Sector." *Utility Dive*, 1 Sept. 2016, Retrieved from www.utilitydive.com/news/ mutual-needs-mutual- challenges-how-corporate-ppas-are-remaking-the-renewa/425551/

Figure 18. Aggregate PPA Deals in the C&I Sector[57]

Competitive Analysis

The certificates and labels for renewable energy play a crucial role in the electricity wholesale and retail markets as they enable consumers to acquire a green image and to explicitly sell green products.[58]

In order to better understand the market of green labels in Europe, a competitive analysis had to be performed. As mentioned before, the plan is to transform GO^2 from a financial tool to a marketing tool, through the creation of a green label, which would appear on consumer packaged products. This would create a sense of responsibility for customers to purchase products made from renewable energy, hence acting as a marketing tool for the CPG companies themselves, and helps lead to further construction of renewable energy projects.

There is a growing number of eco-labels in Europe, the most prominent of which are labels for either energy efficiency and saving, green sourcing and sustainable biomaterials, and eco friendliness. Most of the labels that revolve around renewable

[57] Ibid
[58] Mulder, M., Zomer, S. P. E. (2016) "Contribution of green labels in electricity retail markets to fostering renewable energy". Journal of Energy Policy, Vol. 99 pages 100-109

energy use in the market are ones that deal with guarantees of origin. Three prominent examples are RenewablePLUS, European Green, and Windmade.

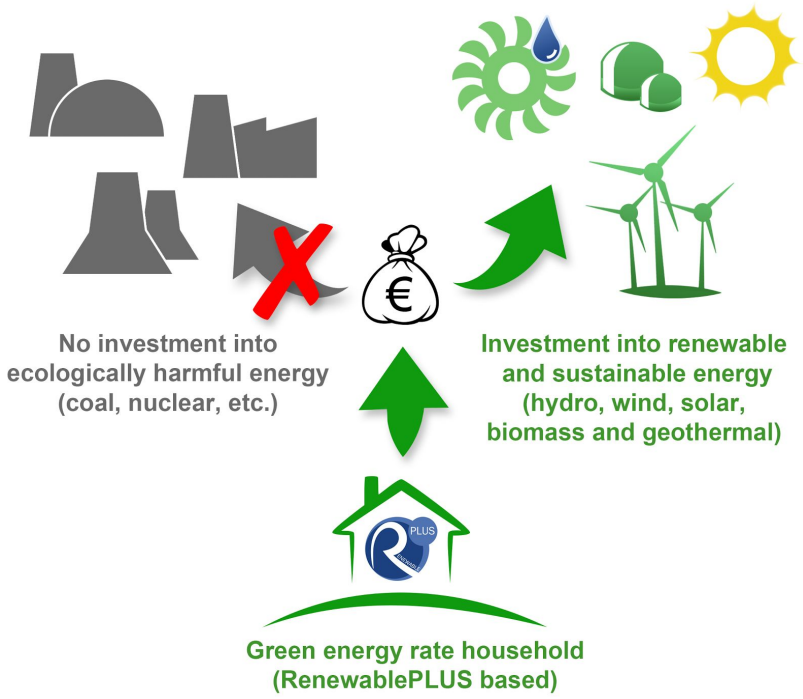

Figure 19. Investment in Sustainable Energy Cycle[59]

RenewablePLUS offers an investment either in brand new facilities and/or in expanding currently existing facilities whereas European Green is meant to support the transition of European electricity production systems into one interconnected, unified, and sustainable energy system so that an ecologically sound and future oriented energy supply system for Europe can be established[60]. These two labels differ from GO^2 in several ways. First of all, they are not restricted to commercial and industrial customers. Any residential customer or household that buys guarantees or origins is entitled to acquiring this label. In addition, all greenhouse gases that are emitted due to the production of the respective energy generation, and those emitted during the construction and operation of power plants, are offset through the use of emission reduction certificates[61].

[59] Mertens, Malte. "RenewablePLUS: Sustainable Green Energy." *RenewablePLUS: Sustainable Green Energy. - Bischoff & Ditze Energy GmbH*, www.bd-energy.com/en/renewables/renewableplus/

[60] Ecolablel Index "European Green" Retrieved from http://www.ecolabelindex.com/ecolabel/european-green

[61] Bischoff & Ditze Energy GmbH "RenewablePLUS: sustainable green energy" Retrieved from https://www.bd-energy.com/en/renewables/renewableplus/

Since these two labels are very broad and can be acquired by any company/residence, they do not represent a serious competition for GO^2, which targets more of a niche and a smaller and more specific market segment.

On the other hand, Windmade is a belgium based nonprofit that introduced a label for products made from at least 75% renewable energy in their total consumption, with wind power representing the highest share. Just like GO^2, Windmade adopts a lifecycle approach, which means that the label will cover the entire energy consumption of the product stages, starting from the extraction of raw materials and material manufacturing all the way to the product leaving the factory gate[62]. Until now, more than 50 major global corporations have adopted the WindMade label for their products, including Motorola, Deutsche Bank, Bloomberg, and Becton Dickinson and Co[63]. Windmade has plans to expand to other renewable sources, such as solar, hydro, biomass, and geothermal[64].

However, despite the fact that Windmade is very close to what GO^2 will stand for, it still lacks something that gives GO^2 the upper hand: a multiplier factor. GO^2 is a combination of the three aforementioned labels, in the sense that it acts as a marketing tool and serves as a proof that companies are employing renewable energy to manufacture their products, that they're employing assisting in the creation of new renewable energy projects, but they're doing so not only once, but several times through the circular financing model, leading to continuous deployment of funds to the development of even more renewable energy projects.

H&M Case Study

In order to better understand the work that ECOHZ does and the GO^2 product they offer, we sought out a company to investigate that had worked with ECOHZ in the past and purchased GO^2. The GO^2 product is relatively new in Europe, but one major apparel

[62] Anne Marie Mohan (July 2013) "Label launches for products made with wind energy" *Greener Package*. Retrieved from https://www.greenerpackage.com/clean_manufacturing/label_launches_products_made_wind_energy

[63] Vince Font (Dec 2012) "WindMade Label to Expand to Other Renewables" *Renewable Energy World*. Retrieved from http://www.renewableenergyworld.com/articles/2012/12/windmade-label-to-expand-to-other-renewables.html

[64] Hobby Farms (2011) "Label to Certify Wind-made Products" Retrieved from http://www.hobbyfarms.com /label-to-certify-wind-made-products/

company, H&M felt that the product and company fit their renewable energy needs and aspirations.

Background of H&M

H&M group is one of the world's largest fashion companies selling primarily apparel and products for the home. Originally a women's clothing store, H&M started in Västerås, Sweden in 1947. However, the concept of their business remains the same- provide "frequently updated fashion at an affordable price" to their customers.[65]

Today H&M group is comprised of the following brands: H&M and H&M Home, COS, & Other Stories, Monki, Weekday, Cheap Monday, and ARKET.[66] The goal of the company is to increase their markets by 10-15% (in local currency) on a yearly basis while still maintaining a high level of profitability. In 2017, they are expecting to open 475 physical stores around the world.

In 2016, H&M group reported nearly $13 million in gross profits.[67] Additionally the company created 13,000 in 2016 making the company total at the end of the year 161,000 employees.

Sustainability at H&M

In addition to providing fashionable products to customers worldwide, H&M also commits itself to conducting business in an environmentally sustainable fashion. Their website states, "fashion is what makes us tick, but how we affect the planet and the world around us is just as important."[68] H&M recognizes the need for sustainability in the fashion industry, an industry that is notoriously resource and energy intensive.

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[65] H&M. "The History of H&M Group." *H&M Group | History*, Retrieved from http://about.hm.com/en/about-us/history.html

[66] H&M. "Markets & Expansion." *H&M Group | Markets*, Retrieved from http://about.hm.com/en/about-us/markets-and-%20expansion.html

[67] H&M. *H&M Full Year Report*. Retrieved from http://about.hm.com/content/dam/hmgroup/groupsite/documents/master%20language/cision/2017/01/1869818.pdf

[68] H&M. "The H&M Group Sustainability Highlights 2016." *Sustainability Highlights 2016*, Retrieved from https://about.hm.com/en/sustainability/sustainability-highlights-2016-en.html#overlay-1

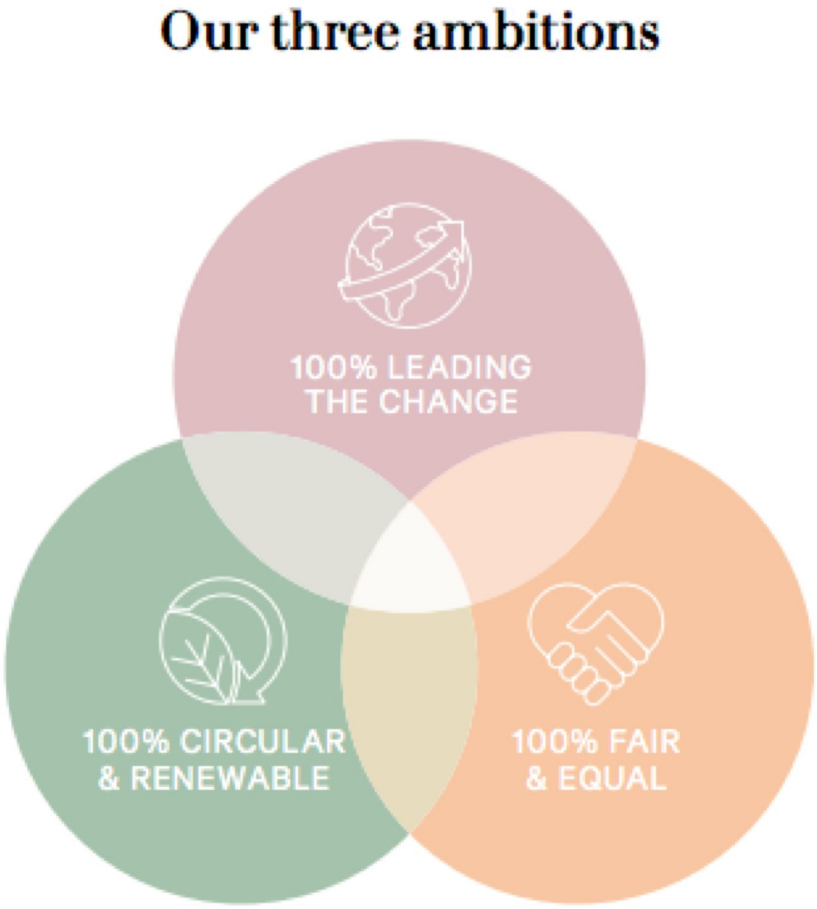

Figure 20. Three Pillars of H&M's Vision and Strategy[69]

Sustainable Resource Use

H&M tries to decrease their environmental impact with a multifaceted approach. First and foremost, they try to extract necessary natural resources in the most sustainable way possible. Additionally, they use recycled and reused materials needed for clothing manufacturing. H&M collects garments at their stores, and since 2013 when the program was created they have collected 39,000 metric tonnes (85,980,282 pounds) of clothing.[70] Another way in which H&M reduces their natural resource needs is they utilize recycle and reuse post-consumer products in the creation of their new products. They use recycled cotton, polyester, wool, cashmere and plastic. Presently, 25% of the products are

[69] H&M. "Vision and Strategy" Retrieved from https://about.hm.com/en/sustainability/vision-and-strategy.html

[70] H&M. "The H&M Group releases new goals in Sustainability Report 2016" Retrieved from https://about.hm.com/en/media/news/general-2017/hm-sustainability-report-2016.html

created from either recycled or sustainably sourced materials. By doing this, H&M reduces three things in various phases of clothing production:

1. Waste
2. Need for virgin materials
3. Chemicals, water, and energy needed to make new materials[71]

Figure 21. H&M and the Circular Economy[72]

H&M is one of the world's leading companies when it comes to utilizing recycled materials, specifically polyester. In 2016, they utilized the equivalent of 180 million PET bottles of polyester for their manufacturing.

Sustainable Collections

In addition to utilizing sustainably sourced materials for its standard brand, H&M has a collection that features multiple items that use BIONIC® polyester, a material made from recovered plastic pollution from oceans and shorelines. The name of the collection is

[71] H&M. "The H&M Group Sustainability Highlights 2016." *Sustainability Highlights 2016*, about.hm.com/en/sustainability/sustainability-highlights-2016-en.html#overlay-8.
[72] H&M. "The H&M Group Sustainability Report" *Sustainability Report 2016*, Retrieved from http://sustainability.hm.com/content/dam/hm/about/documents/en/CSR/2016%20Sustainability%20report/HM_group_SustainabilityReport_2016_FullReport_en.pdf

Conscious Exclusive and can be found in 160 stores and online. In addition to using recycled materials, they also use organic cotton to create the products in the collection.[73]

Recently H&M has added Conscious Beauty to its line of products. This collection includes hair, hand, and body care products and is verified by a third party ecolabel, Ecocert. This ensures that the products are truly organic and planet-friendly.

Figure 22. Logo of Ecolabel, Ecocert[74]

Energy at H&M

The main reason we chose H&M as our case study is that it has progressive energy reduction and renewable energy goals. In fact, 96% of the energy used for operations at H&M is from renewable sources.[75] Additionally, they have committed, through the RE100 program, that they will utilize 100% renewable energy by the year 2025. The RE100 program that brings together over 100 leading businesses through a committed to achieving 100% renewable energy.[76] One of the ways in which H&M has achieved over 90% renewable energy is through the purchasing of the GO^2 product from ECOHZ.

[73] H&M. "The H&M Group Sustainability Highlights 2016." *Sustainability Highlights 2016*, Retrieved from http://about.hm.com/en/sustainability/sustainability-highlights-2016-en.html#overlay-2
[74] Retrieved from http://www.stephensonpersonalcare.com/admin/resources/ecocert-logo.jpg
[75] ibid.
[76] "RE100." *RE100*, there100.org/re100.

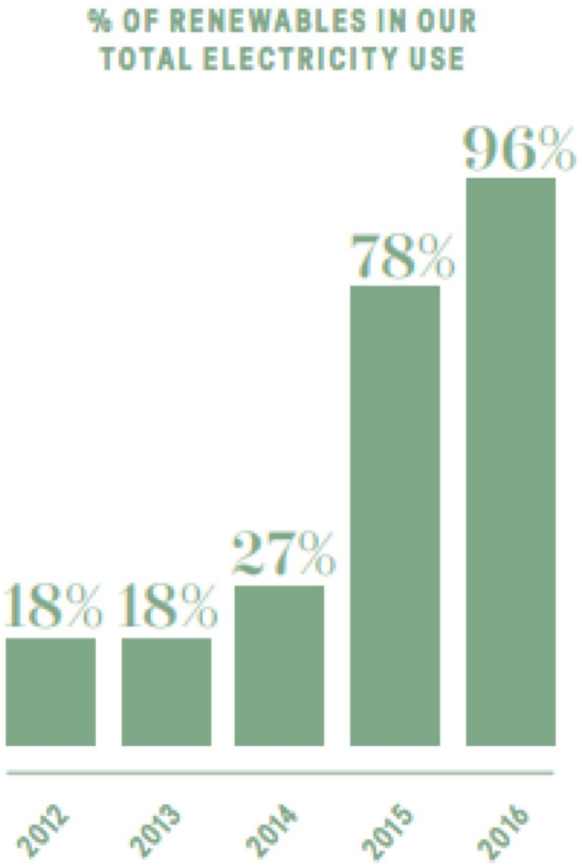

Figure 23. Evolution of H&M's Energy Sourcing[77]

ECOHZ and H&M

In 2015 H&M made the decision to team up with ECOHZ to advance their goal of achieving 100% renewable energy. The agreement included Guarantees of Origin and GO^2 in Europe and Renewable Electricity Credits in the United States. This agreement helps to ensure that H&M's stores, warehouses, and offices use an increased amount of energy and that H&M will contribute to the creation of additional renewable sources. Through the purchasing of GO^2 H&M has made itself a leader in the world of renewable energy. H&M was the first company to purchase GO^2 and this purchase will provide critical financing for renewable power projects. In recent years many large companies such as Google and Apple have committed to renewable electricity and this decision not only benefits themselves, but the renewable market as a whole. When large, well-known companies such as Google, Apple, and H&M make these sustainable decisions, they lead

[77] H&M. *H&M Full Year Report*. Retrieved from http://about.hm.com/content/dam/hmgroup/groupsite/documents/master%20language/cision/2017/01/1869818.pdf

the path so that other companies and businesses can follow.[78] Additionally, these actions inform the market that companies want, and are willing to pay for renewable sources of energy.[79]

Figure 24. A View of H&M's Top-financed Wind Farm, Tågeröd[80]

Although GOs and RECs are crucial components to building the renewable market across the globe, GO^2, as stated previously, is more impactful as it adds additional renewable sources to the grid. GO^2 was a component of the agreement between H&M and ECOHZ and has allowed H&M to finance/help finance multiple renewable projects in Scandinavia. The first project that H&M has financed is a small hydropower plant in Norway.[81] In addition to this, GO^2 has allowed H&M to finance a wind farm project in Sweden. This renewable project in Sweden called Tågeröd was stalled due to a lack of financing. However, through the GO^2 product H&M was able to provide the support to allow construction to commence again. Construction is currently for the wind farm and will bring significant power to the local municipalities.[82]

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[78] "Corporate Demand for Renewable Electricity: Interview with Dov Brachfeld and Tom Lindberg." *ECOHZ*, 25 June 2016, www.ECOHZ.com/news/interview- corporate-demand-renewable-electricity/

[79] "H&M Top-Finances Tågeröd Wind Farm through ECOHZ GO²." *ECOHZ*. Retrieved from https://www.ECOHZ.com/renewable-energy-solutions/GO2-Projects/hm-top-finances-tagerod-wind-farm/

[80] Ibid

[81] "Corporate Demand for Renewable Electricity: Interview with Dov Brachfeld and Tom Lindberg." ECOHZ, 25 June 2016, Retrieved from https://www.ECOHZ.com/news/interview-corporate-demand -renewable-electricity/

[82] "H&M Top-Finances Tågeröd Wind Farm through ECOHZ GO²." *ECOHZ*. Retrieved from https://www.ECOHZ.com/renewable-energy-solutions/GO2-Projects/hm-top-finances-tagerod-wind-farm/

Fortune 100 Research

After we decided to position GO^2 as an impact label, our next step was to identify the company criteria for which GO^2 would be best positioned as well as identify the companies that would be willing to pay for GO^2. We decided that for the impact label to succeed that the target companies would have the following criteria: (1) defined renewable energy goals, (2) demonstrated interest in other sustainable initiatives, (3) be in a competitive industry with minimally undifferentiated products, and (4) had products that would benefit from an eco-label marketing campaign.

The first criteria, defined renewable energy goals, was set to identify companies that are interested in using renewable energy. This is an important criteria because the underlying goal of the GO^2 is to support renewable energy projects and we felt that a strong candidate would not only embrace the GO^2 instrument but would also be willing to pay for the eco-label.

The second criteria was set to identify companies that theoretically have a customer base that is interested in sustainability and thus, the company would benefit from positioning their product as a renewability enhancing product and thus, be able to draw more market share.

The third criteria, identify companies in competitive industries with relatively little product differentiation, was established to give ECOHZ a compelling edge. By focusing on companies whose products are undifferentiated, the GO^2 eco-label could serve as a point of differentiation and help the clients gain a competitive advantage.

Lastly, the final piece of criteria was set to identify companies who could most most easily implement the GO^2 eco-label. Companies such as CPG or beverage companies can take advantage of labels on their products to differentiate towards consumers at point of purchase. The point of purchase for undifferentiated products is sometimes the most important step.

Our research has found that with the ever-changing retail landscape due to e-commerce that companies like Hershey's are researching ways to fight back and attract impulse customers once again.[83]

Understanding that the GO^2 has more of an emotional appeal informed our decision to use it as a marketing platform for companies interested in conveying their products sustainability attributes.

Our assessment identified that GO^2 has the potential to increase sales volume by positioning it as a marketing platform for messaging a product's sustainability attributes to customers. GO^2's strengths lie in its emotional appeal and less in its financial benefits. The GO^2 is scalable and can help to meet the changing needs of corporates. It allows companies to enter into the renewable energy market with a low cost entry.

To expand the reach of the GO^2, the focus should be on two markets- the existing markets in which the GO^2 can be sold to the corporate heads at the overhead level, and a new market in which the price of the GO^2 will be integrated into the price of the consumer goods.

In the existing market, the ideal customer of the GO^2 will be a company which has sustainability goals and does not have the energy needs to justify having a PPA and has limited alternatives, ex green tariffs. A volatile energy load and having low access to capital will also qualify companies to buy the GO^2. The GO^2 will allow these companies to participate in procurement of green energy by lowering the barriers for entry.

To avail a new market, the ideal companies will be the ones which want to integrate the price of the GO^2 into the price of their products. These companies will ideally be those which sell products with little differentiation like beverages, paper products, prepared food products, essentially consumer packaged goods. This new market is important as these companies play to the strengths of the GO^2. The customers will be able to make a material impact through their purchasing decisions and these products are easily tailored to meet the consumers energy needs. CPG companies allow the easy identification of sustainable products to end consumers and find it easier to scale the product volumes.

[83] Harwell, Drew. (Jan 2015) "Hershey's Plan to Hook Americans onto Impulse-Buying Chocolate Again."*The Washington Post*. Retrieved from https://www.washingtonpost.com/news/business/wp/2015/01/29/fast-checkouts-are-crushing-impulse-candy-sales-heres-hersheys-plan-to-change-that/

How will the price of the GO^2 be incorporated in the products?

The consumer packaged goods company will integrate the price of the GO^2 into its products. To understand this better, let us take the example of bottled water. A bottled water company buys the GO^2 instrument and will now integrate the cost of the GO^2 into their product which is a single bottle of water. One GO^2 is equal to 1000 kWh of renewable energy. One 0.5 litre bottle of water consumes 1 kWh of energy from production to the point of sale. A single GO^2 can cover the energy costs of 1000 water bottles. The company will now incorporate the price of 1/1000 of a GO^2 into the price of the bottled water. This price calculates to be €0.004 per bottle of water

Target Companies

With the criteria established, we used reports from PWC, BCG and McKinsey as a starting point and began to filter the companies. After our initial screening, we had over 100 companies and decided to revise our criteria. The revision we made was to filter companies based on whether they were part of the RE 100. The RE 100 is a group of more than 100 influential businesses that are committed to running their operations from 100% renewable electricity.[84] After revising this criteria, we were able to narrow our list down to around 75 companies, across 15 industries. From here, we conducted extensive rounds of due diligence and were able to arrive at our final list, from which we chose our top three companies: Nestle, AB InBev and Kerry Foods

Nestle

Overview of the company

Nestle is the world's largest food and beverage company with a presence in 191 countries over the world. Nestle has over 2000 brands under the company which span across food, beverages, healthcare nutrition and pet care. Nestle states that its purpose is to enhance the quality of life and contribute to a healthier future and supports the Sustainable

[84] "The World's Most Influential Companies, Committed to 100% Renewable Power." *RE100*, there100.org/re100.

Development Goals (SDG). To help meet these goals the company has set three goals which it aims to accomplish by 2030: (1) help 50 million children live healthier lives, (2) help improve the livelihood of 30 million communities directly related to its operations and (3) achieve Zero environmental impact.

Why is Nestle a good partner for GO^2

Nestle has a commitment to sustainability and is a market leader in water bottles and hence makes for an attractive launch partner for ECOHZ. The company has over 50 brands of bottled water and with a 30% market share, is the world's largest producer of bottled water. The water sales produced CHF of 7.4 Billion in 2016. Nestle produces an average of 22.5 billion litres each year and sells 45 billion bottles each year. The environmental goals tie in with GO^2's offerings. Nestle factories in select states source 86-100% of their renewable energy through GO purchases.

Of the brands within Nestle for bottled water, the San Pellegrino premium brand is a viable launch platform. The brand sold 1,470 million bottles in 2015. The energy use for a single bottle is estimated at 1 kWh and a total of 1,470,000 MWh of energy was consumed. The GO^2 will cost Euro 5,880,000 and the brand accounted for 0.65% of the total revenues.

Benefits to Nestle

The company is seeking to differentiate its consumer food products in order to meet the changing consumer demands. The revenues from bottled water increases by 5% with a 12.2% increase in the operating profit margin. San Pellegrino is a leading premium brand with strong consumer recognition. The GO^2 provides Nestle with a platform to differentiate its products from competition and allowing it to achieve its environmental goals.

AB InBev

Overview of Company

Anheuser-Busch InBev (AB Inbev) is a world leader in Beer Manufacturing, accounting for 25% of the global market share. It is headquartered in Leuven, Belgium and has a

portfolio of more than 400 brands.[85] The company was formed in 2008 when leading North American beer manufacturing Anheuser-Busch was bought by leading European beer manufacturer In Bev.[86] Together, the company has pledged to embed sustainability within every step of their supply chain and strives to be a global leader in pushing sustainability. [87]

Why AB Inbev is a good partner for GO^2

AB InBev is a growing company projected to continue growing at 3.5% over the next 5 years with a healthy operating margin of 36.4%.[88] This growth in conjunction with their strong sustainability initiatives make it an attractive partner for GO^2. Additionally, as beer is a highly undifferentiated product, specifically in the light beer category, it is realistic to believe that AB InBev would be interested in pursuing a contract with ECOHZ for the GO^2.

Using the financials provided in their 10K and their Better World report, we have projected that ECOHZ can expect to achieve $58M in annual revenues from AB Inbev if they were to capture 100% of the energy required to produce their beverages while impacting the cost per 12 oz can by less than $0.01.

Kerry Group

Overview of the company

Kerry Group (ISEQ: KRZ, LSE: KYGA) is a public food company headquartered in Ireland. In 2015, Kerry employed more than 24,000 people globally, including 800 scientists, and produced 15,000 products across 100 plants.[89] Their wholly owned consumer foods business, known as Kerry Foods, is supplies value-added food products. Kerry markets food products across three subdivisions: Dairy, Meat & Savoury, and Meal Solutions.

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[85] Stivaros, Chrstalleni (June 2017) "C1121-GL: Global Beer Manufacturing". IBISWorld
[86] Merced, Michael J. De La. "Anheuser-Busch Agrees to Be Sold to InBev." *The New York Times*, The New York Times, 13 July 2008,www.nytimes.com/2008/07/14/business/worldbusiness/14beer. html.
[87] *AB InBev: A Better World Report 2016*. 2016, www.ab-inbev.com/content/dam/universaltemplate /ab-inbev/BetterWorld2/reporting/better_world_report/ABInBev_2016BWR.pdf.
[88] Stivaros, Chrstalleni (June 2017) "C1121-GL: Global Beer Manufacturing". IBISWorld
[89] Ray Ryan (Oct. 2015) "Kerry's cathedral of discovery" *Irish Examiner*. Retrieved from http://www.irishexaminer.com/business/kerrys-cathedral-of-discovery-358796.html

Why is Kerry Group a good partner for GO^2

Kerry has shown its commitment to environmental stewardship by adopting "1 Kerry Sustainability Program - Towards 2020".[90] The program is based on four principles - Environment, Marketplace, Workplace and Community and is further divided into three levels - Aspirations, Five year strategic plan and 2017 goals (this are updated each year).[91] This program develops a set of very aggressive milestones to reach the 2020 goals, such as 'Zero Waste to Landfill'.[92] As such Kerry is an ideal partner to work with for ECOHZ because of its sustainability focus. Kerry is an international player with 150+ products and very high visibility within the EU. By working with Kerry, ECOHZ can fast forward its network effects and establish its GO^2 based marketing platform as a well recognized brand. Secondly, since Kerry is a mature company with steady cash flows, it will be able to be good on its contractual commitments.

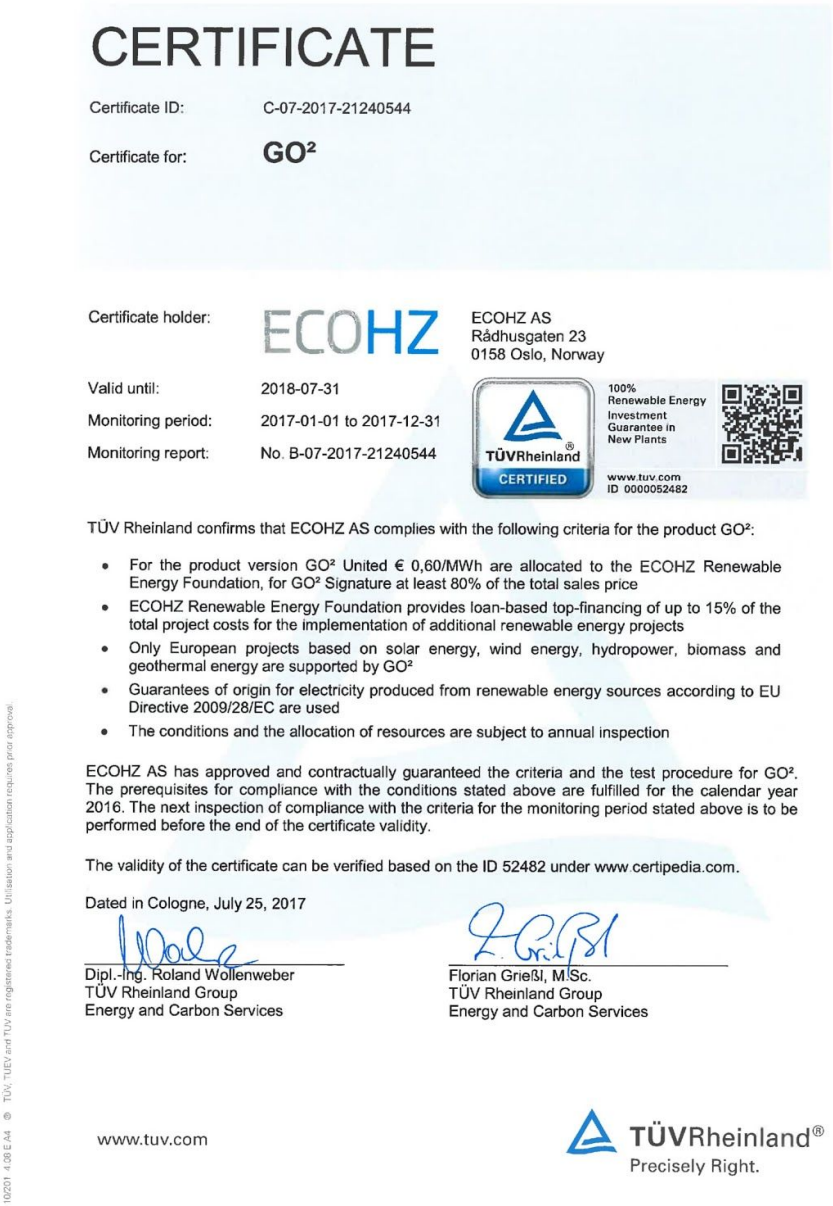
Benefits to Kerry Group

As discussed above, Kerry's sustainability program is very aggressive in nature. From the program charter and the targets, it is quite apparent that Kerry is making updates to its global supply chain to make tangible reduction in its carbon footprint. Most of these updates are related to adoption of more efficient systems. However, system updates are costly and take significant time to be implemented. As such, Kerry will not be able to meet its targets. This is apparent from their sustainability report which shows that they are slacking on their annual targets.[93,94] Buying GO^2 from ECOHZ would allow Kerry to not only offset its carbon emissions in short term but would also make Kerry 'energy positive'[95] in long term leading to construction of a renewable energy power plant. These would ease pressure on Kerry to meets its immediate targets and allow it to invest in more useful long term efficiency improvement projects.

[90] Kerry Group "'Towards 2020'" Retrieved from http://kerrygroup.com/sustainability/towards-2020-1/
[91] Kerry Group "1 Kerry Sustainability Programme - 'Towards 2020'" Retrieved from http://kerrygroup.com/sustainability/towards-2020-1/Updated-Sustainability-Programme.pdf
[92] Kerry Group "Environment" Retrieved from http://kerrygroup.com/sustainability/environment/
[93] Kerry Group "Climate" Retrieved from http://kerrygroup.com/sustainability/environment/climate/index.xml
[94] Kerry Group "Water" Retrieved from http://kerrygroup.com/sustainability/environment/water/index.xml
[95] ECOHZ. "Energy Positive" Retrieved from https://www.ECOHZ.com/news/energy-positive/

Appendix - I

A typical GO^2 certificate. ©ECOHZ[96]



CERTIFICATE

Certificate ID: C-07-2017-21240544

Certificate for: GO²

Certificate holder: ECOHZ

ECOHZ AS
Rådhusgaten 23
0158 Oslo, Norway

Valid until: 2018-07-31

Monitoring period: 2017-01-01 to 2017-12-31

Monitoring report: No. B-07-2017-21240544

TÜVRheinland® CERTIFIED

100% Renewable Energy Investment Guarantee in New Plants

www.tuv.com
ID 0000052482

TÜV Rheinland confirms that ECOHZ AS complies with the following criteria for the product GO²:

- For the product version GO² United € 0,60/MWh are allocated to the ECOHZ Renewable Energy Foundation, for GO² Signature at least 80% of the total sales price
- ECOHZ Renewable Energy Foundation provides loan-based top-financing of up to 15% of the total project costs for the implementation of additional renewable energy projects
- Only European projects based on solar energy, wind energy, hydropower, biomass and geothermal energy are supported by GO²
- Guarantees of origin for electricity produced from renewable energy sources according to EU Directive 2009/28/EC are used
- The conditions and the allocation of resources are subject to annual inspection

ECOHZ AS has approved and contractually guaranteed the criteria and the test procedure for GO². The prerequisites for compliance with the conditions stated above are fulfilled for the calendar year 2016. The next inspection of compliance with the criteria for the monitoring period stated above is to be performed before the end of the certificate validity.

The validity of the certificate can be verified based on the ID 52482 under www.certipedia.com.

Dated in Cologne, July 25, 2017

Dipl.-Ing. Roland Wollenweber
TÜV Rheinland Group
Energy and Carbon Services

Florian Grießl, M.Sc.
TÜV Rheinland Group
Energy and Carbon Services

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