EXAMPLES OF INNOVATIVE FINANCING SCHEMES

2018

EurObserv'ER

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Examples of innovative financing schemes

CASE STUDIES
INNOVATIVE FINANCE SCHEMES

Under the current macro-economic trends, the so far abundant support system for renewables (mainly in the form of feed-in-tariffs and quota systems) has been drastically modified. In many EU countries, companies are trying to find alternative ways to secure financing for their renewable energy projects. Therefore, new ways of attracting private capital for the realisation of green energy goals have to replace the old schemes.

Some new forms of financing are coming together with the EU Cohesion Policy2014-2020 (project guarantees, packaging of small project for micro-financing schemes at the regional level, preferential loan instead of subsidies etc.). Advanced financial structures are likely to play an increasingly important role in the allocation of risk and reward among different investor classes. The finance and investment gap needs to be filled by the private sector. The challenge is to identify the appropriate policy options and financial tools to attract and scale-up private investments. There are, however, already innovative and promising business and financial models to promote the deployment of RES in the EU.

The aim of the EurObserv'ER case studies is to find such examples and describe them so as to put forward the best practices and the replicability of the future promising financing mechanisms. EurObserv'ER will aim at choosing only the most promising ones and try to describe them in order to promote replicability in other geographical areas. The selection criteria for the choice of case studies should ensure (i) diversity across regions and RES, (ii) diversity across finance instruments/mechanisms, (iii) success of approach and its potential to be replicated, (iv) and a wide range of the "size" of actors/investors and the resulting RES investments (capacity).
The current selection also takes into account the fact that there were already some case studies published in the 2014 and 2015 barometers. These are also available for download on the project website : www.eurobserv-er.org

LANDLORD-TO-TENANT ELECTRICITY SUPPLY

GENERAL CONCEPT OF LANDLORD-TO-TENANT ELECTRICITY SUPPLY

At the end of July 2017, the German act on the promotion of Landlord-to-Tenant Electricity entered into force. Landlord-to-tenant electricity supply is the provision of electrical energy by landlords to tenants. This is achieved via solar (PV) installations on rooftops of residential buildings that may be linked up to ancillary facilities. By opting into this scheme, tenants are no longer dependent on electricity supply from the public grid but can instead obtain their electricity directly from the rooftop installation. The landlord-to-tenant electricity supply is a driving force for the further deployment of renewable energy in Germany and helps to increase social acceptance towards renewable forms of energy.

ACTORS, ROLES AND CONTRACTUAL RELATIONSHIPS IN THE LANDLORD-TO-TENANT ELECTRICITY SUPPLY

In order for the mechanism to be fully implemented, several factors have to be considered and established. Firstly, the residential building itself has to be prepared prior to the PV installation. The mode of delivery of the electricity has to be determined and the manner in which the electricity is sold and consumed has to be agreed upon by all parties involved.
The diagram below provides a generic overview of the roles and contractual relationships of and between the various actors involved in the landlord-to-tenant electricity supply scheme. However, this is not a one-size-fits-all-approach. In practice, it is a complex and dynamic framework that may be altered to meet the needs of all stakeholders.

The electricity provider is responsible for the installation and operation of the solar PV systems and for the provision of electricity to the tenants. For the installation of the roof-top PV system a roof-use contract has to be drawn up and implemented between the property/house owner (also landlords) and the electricity provider. When there is an excess or shortfall of electricity generated from the installation, agreements with the provider of top-up electricity and direct marketers come into play. Top-up electricity providers help to satisfy the demand for electricity when installations are unable to meet it[1]. On the other hand, energy surplus is marketed through direct marketers and in the energy market. Furthermore, contracts with the distribution grid operators are in place to facilitate the feed-in of surplus energy and to determine the grid fees for feed-ins. Lastly, metering service providers help to apply different models that are ultimately used in the installation and implementation of smart metering schemes[2]. This ensures that the distribution and subsequent payment from tenants are done in a fair and efficient manner[3].

BENEFITS OF LANDLORD-TO-TENANT ELECTRICITY SUPPLY

Benefits to landlords

In the past, it was not profitable for landlords to sell electricity to tenants as high costs were incurred from the billing, distributing and metering processes. Furthermore, the business model for the sale of electricity was rather complex. However, this changed with the funding now available under the Renewable Energy Sources Act of 2017. Landlords presently receive a premium for providing their tenants with electricity based on statutory feed-in tariffs as identified in the Act. The premiums paid vary between 2.2 c/kWh and 3.8 c/kWh and are dependent on the size of solar installations and the national photovoltaics expansion rate. Apart from this, landlords receive income from tenants when they pay for the electricity supplied or - in the case where surplus electricity is generated and fed into the public grid – when they receive feed-in tariffs. Thus, landlords are incentivized and encouraged to participate in the scheme. The scheme is particularly attractive in cities such as Berlin and Hamburg where grid charges are rather high. Landlords can also decide if the solar installations are to be run independently or if a third party should be commissioned to carry out the works, promoting participation among those who may not have the technical know-how to do so. Lastly, landlord-to-tenant electricity supply provides new business cases for the utilities and housing sectors and provides an avenue to gain loyal customers.

Benefits to tenants

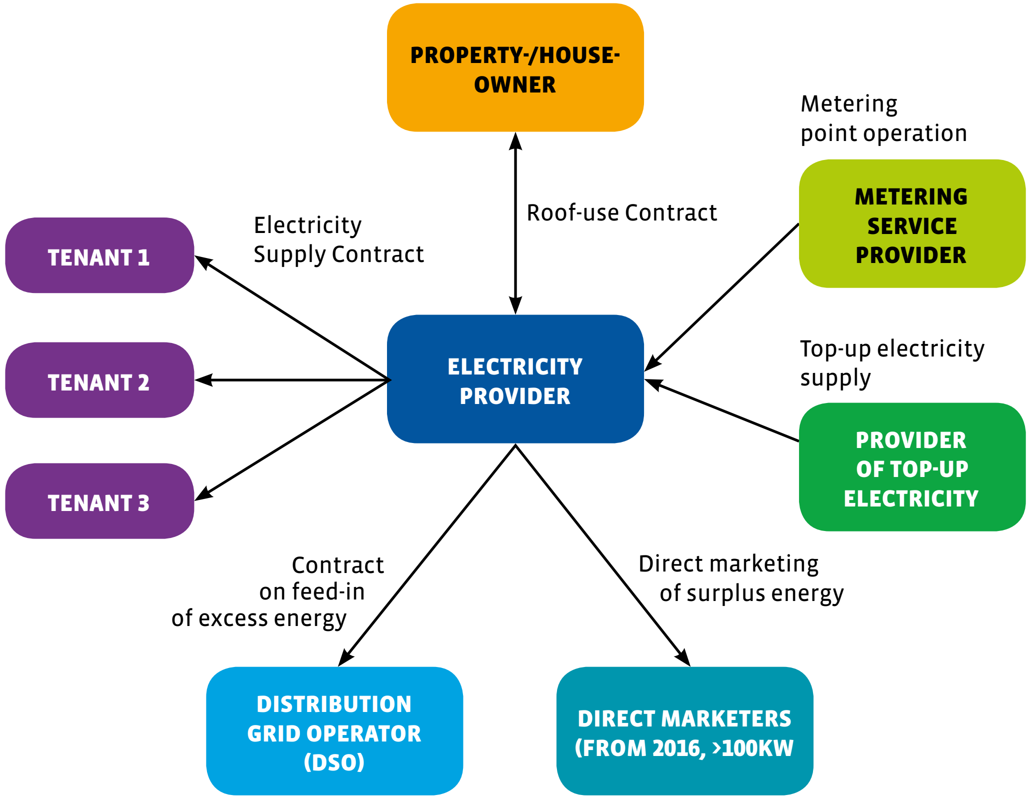
Tenants are able to benefit financially from lower costs as they do not need to pay feed-in tariffs, grid surcharges, electricity taxes and concession fees[4]. They also have the freedom to choose their energy services provider and, by opting for the landlord-to-tenant electricity supply model, directly be a part of the German energy transition "Energiewende".
The Renewable Energy Sources Act clearly delineates rules that govern the way the electricity contract between the tenant and

1) Note that as a consequence of the contract with top-up providers, Landlord-to-Tenant schemes are not fully independent from the public grid and in fact relies on it as 'backup' in cases where the energy demand cannot be met from the solar installations.

2) "Smart meters" is used to describe tools and infrastrucure employed to provide consumers with regular and up-to-date information on energy consumption within an entity. The overall aim of the use of such tools and infrastructure is to enable an efficient use of energy.

3) Note that most of the contractual relationships are channeled through the tenant's electricity provider who is responsible for providing the electricity needed by the tenant, be it from the roof top installation (primarily) or from the public grid in case of a shortfall of electricity generation by the PV installation. This means the tenants will have a single electricity supply contract with only one electricity provider who makes sure that electricity demand by the respective tenant is met.

4) However, it must be noted that tenants are not precluded from renewable energy surcharges. This surcharge is crucial as it is used to fund the expansion of renewables capacity.



Contractual relationships between actors in the landlord-to-tenant electricity supply scheme.

landlord is formulated and still tenants are free to choose their electricity provider. This to make sure that the rights of tenants are protected. The act sets out rules for the maximum price (maximum cap) that can be charged by the landlord, the duration of contracts set up between tenants and landlords (e.g. maximum of one year and would subsequently need to be renewed) and also does not allow landlords to incorporate such contracts as a fixed part of the rental contract. This ensures that tenants are never coerced into participating in the scheme.

ANALYSIS OF MECHANISM-ROOM FOR IMPROVEMENT

Although the scheme provides many benefits to both tenants and landlords, there is still room for improvement. The current framework of this policy measure particularly benefits big players such as housing companies, utilities and service providers more than smaller landlords or prosumers. On the other hand, the latter often has to deal with the multiple obligations that accompanies the implementation of the scheme and often has to rely on the help of specialized service providers. The cost of obtaining such help would inadvertently affect the final profit gained by landlords of single-, two- or multi-family homes more as compared to the "big players". Secondly, housing companies and utilities benefit from tax privileges which could be affected adversely by the revenues gained from landlord-to-tenant energy production. Therefore, legislation has to be in place to ensure that these tax privileges are not taken away, lest reducing the attractiveness of the scheme. Presently, the German Ministry of Economics and Energy (BMWi) has proposed that a threshold of up to 20% of the revenues should be taxed at the current, lower rate housing companies pay. This proposal is still at an early stage and it remains to be seen if it will be implemented.

The metering scheme employed during the sale of electricity to tenants is another challenge that needs to be tackled. The model that is currently used to distribute energy supply does not compute the demand of tenants accurately. This could lead to an inefficient allocation of energy supply in the long run. However this is now being rectified by smart meter-based metering schemes that have to be aligned with the "Digitisation of the Energy Turnaround Act" of 2016 which aims to facilitate the implementation of smart meters.

Additionally, the expansion in the number of PV installations by tenants is boosted by additional funding provided by the German government. Without this, the installation of solar panels and provision of energy would not have been financially viable. In the long run, potential growth has to be fueled by other measures apart from the current government funding and herein lies the challenge of retaining long-term interest and stimulating growth in this sector.

Lastly, the landlord-to-tenant electricity framework only supports models in which tenants consume energy that is produced by the landlords or from ancillary buildings. Community and district-based supply models are excluded from this mechanism which reduces the incentive for more robust actions to be taken against the decentralization of energy in the future.

DEVELOPMENT POTENTIAL AND REPLICABILITY OF MECHANISM

Landlord-to-tenant electricity supply has great potential currently in the German market. Estimates by the Federal Ministry for Economic Affairs and Energy suggest that up to 3.8 million homes in Germany could be supplied with electricity via rooftop solar installations. Unfortunately, the growth trend for installed rooftop PV has been lagging for the most of the period between 2015-2017. Landlords play a very central role in this move towards decentralized, urban energy transition and consequently, tangible benefits/profits must be attained to retain interest. The success of landlord-to-tenant electricity supply models are highly dependant on strong stakeholder communication and participation from day one. In order to make this policy framework replicable in other countries, the process of installing PV capacities by landlords would have to be subsidized (like the premiums that are currently paid in Germany). Service providers such as electricity providers and metering service providers have to be incentivized when participating in this scheme. This is because smaller returns could be obtained initially due to hesitation from risk-adverse landlords. In addition, legislation must be in place that would protect not only landlords but the final consumers, tenants, particularly when contracts are drawn up. □

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ESCOS AND THIRD PARTY FINANCING: A NEW TOOL FOR SOLAR HEAT FOR INDUSTRIAL PROCESSES

A MARKET WITH HIGH POTENTIAL

Among the various routes followed by European professionals in the solar thermal sector in order to revitalize their market, the application of solar technologies to industrial processes (SHIP) is one of the most promising. According to the IEA, industry accounts for more than 30% of the total European energy needs and fulfils them mostly through fossil fuels. The needs vary substantially: they range from hot water at low temperature (about 40 °C) to steam at high temperature (over 250 °C). Solar thermal technologies can offer solutions to these specific needs (glazed solar collectors, vacuum tubes, parabolic collectors, or Fresnel mirrors). The European Union has launched a program that aims at accelerating the deployment of solar thermal technologies in the industry sector. As of today, about 80 sites (representing about 30 000 m2 of solar panels) are operational, which is quite low compared to the available potential. The main countries involved in this area are Germany and Austria. Barriers for a wide diffusion of solar technologies in industrial processes are not technological but rather financial combined with a lack of knowledge of the solar thermal possibilities in the industry sector. Historically, the sector has been developed in other segments (residential, tertiary) and investors believe that solar energy could not adapt to the specific constraints of an industrial plant.

ESCOS AND THIRD PARTY FINANCING

Usually, when an industrialist wants to install a renewable energy unit on one of its own plants, it bears the financing for that investment itself. The financial mechanism of third-party investment can play a role of leverage in this specific context. Such a financial scheme is already commonplace for technologies such as solid biomass or biogas, but remains very scarce in the case of solar thermal.

In a third-party investment approach, the initial investment is carried out by a company, a so-called Energy Service Company (ESCO), which is distinct from the industrialist who will benefit from the energy production. This company will be in charge of the entire investment project and operation and will sell the energy to the manufacturer for his production processes. France is at the forefront of third-party investment in solar thermal applied to the industry, with three private players active in this field (SunTi, NewHeat and Kyotherm). They claim to offer discounts of ranging from 10% to 30% on the energy price to reduce the manufacturer's CO_2 emissions significantly and to stabilize the cost of energy supply in the long term, without resorting to the internal financing capacity of their customers. The mechanism is taking off and the first plant financed thanks to such a scheme should be inaugurated at the end of 2018.

The ESCO will be in charge of the installation, operation, maintenance and decommissioning of the production plant. From the point of view of the industry, the ESCO is a heat supplier. The manufacturer will not own the solar installation nor operate it. A project goes through several stages: after the feasibility study, the client decides whether he wants to go further. The ESCO then enters a detailed conception phase and negotiates with the customer the purchasing contract for the heat produced by the solar thermal plant. Finally, construction begins.

Such a project requires bringing heat to the exact point where it is consumed in the industrial process. The solar equipment is therefore completely integrated in the industrial chain. This requires a thorough feasibility study and a high level of technical know-how from the ESCO. This also implies a different approach from site to site. Moreover, it is a capital-intensive activity, that is, the initial cost of the project is significant. Currently, as the projects are still pilot projects, the banks are not intended to participate in the development of this model. Ultimately, if these drivers are conclusive, it will be likely that the banks agree to provide financing for the third-party investment in SHIP. As things stand, these projects are financed by the third party investor, who should have three characteristics: a strong technical expertise, a strong financial expertise and the ability to unlock sufficient equity for such projects.

THE HEAT SUPPLY CONTRACT AS THE KEY TO THIRD PARTY FINANCING

The contract, signed between the ESCO and the industrialist, is a long-term energy sales contract. The manufacturer purchases the heat or steam produced by the thermal installation from the ESCO who owns it. These contracts have durations of 10, 15 or even 20 years. It is important that all the heat produced is purchased and used by the manufacturer. In addition, it is essential to clearly define, which of the stakeholders owns each piece of equipment. Since the thermal plant in embedded in the industry process it is important that, in case part of the installation breaks down, the responsible party can be identified. At the end of the contract, the third-party investor is responsible for the dismantling of the installation and the return of the industrial site to its original form. However, he can propose to the manufacturer to extend the contract for a few years, provided that the equipment is considered sufficiently productive.

The main risk for the ESCO is an early exit of the contract by the manufacturer, or its bankruptcy. The contract may therefore provide for compensation in this case. Moreover, in the event of a breach of the contract, the third-party investor may seek to reuse the panels and the installation on another site in order to reduce costs. If the third-party investor goes bankrupt, the manufacturer is protected by several safeguards. Indeed, for each project, a project company is created by the third party investor. It owns the assets of the plant and independently manages the contract. Thus, even

in the event of bankruptcy of the parent company, the industrialist always has an interlocutor and an entity with whom the legal links are preserved. In addition, if third-party investment becomes a more common practice, assets may be bought back and exploited either by other companies in the sector or by banks directly.

KEY POINTS FOR A SUCCESSFUL BUSINESS MODEL

The business model of third party financing is well defined in its form, but its development still faces obstacles. For example, industrial players are reluctant to commit to a very long-term energy supply contract.

To facilitate investments in thermal renewable energy, France has a dedicated fund (named "Fonds Chaleur", i.e. "Heat Fund") that can significantly help such projects. SHIP projects are eligible to the Heat Fund. In addition, the country has introduced a tax on fossil fuels (carbon tax) which, over the years, should considerably increase the cost of fossil fuels for industrialists. Without these devices, professionals offering solar solutions to the industrial sector with a third-party financing approach could not develop their business. The gains that manufacturers will make on their heating bill will be the best argument to convince others to turn to solar technologies and the ESCOs rely on word of mouth to develop solar in the industry.

Certain industrial branches are more conducive to the solar thermal integration including agribusiness or chemistry. These sectors are growing and generally have sites that need heat at low or medium temperatures (<100 °) that solar technologies master very well. It is in these types of activities that the first solar thermal integration operations to the industry will be realized.

In France, ESCOs could be replicated at various industrial sites and could even be applied to technologies such as biogas. It seems to be the best way to integrate solar thermal industrial processes and give breath to the industry. This is the model that the manufacturers themselves are ready to accept, rather than carrying the initial investment. However, for the mechanism to develop, it is necessary to increase its appeal to the banking sector, to reduce its capital intensity, and to accelerate its deployment. In addition, a tool that would allow the development of the sector would be the standardisation of procedures and contracts allowing the

dismantling and remoulding of a plant on another site, in case of early withdrawal of the contract by the manufacturer. Finally, the Fonds Chaleur's renewable heat support mechanism can be further adjusted to ensure that the promise of savings on the heat bill made to the industrialist is sufficient to convince him to embark on this process.

The model can also be reproduced on a European scale. However, this requires strong political commitments in favor of the renewble heat sector from the countries. This commitment can be based on the French example, and rely on a fossil fuel tax (on oil, gas and coal) and on an economic support to renewable heat. □

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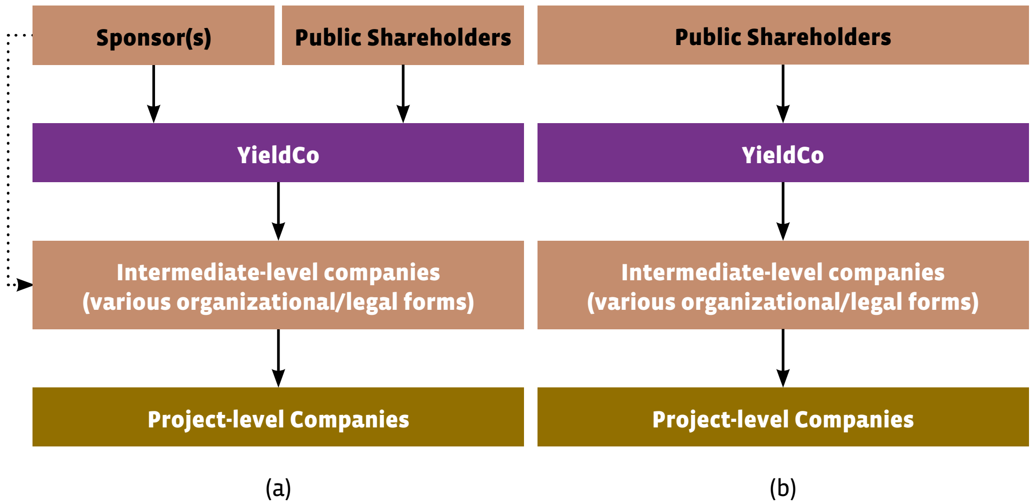
YIELDCOS IN THE EU

YIELDCOS – CONCEPT AND DEVELOPMENT

The term Yield Company (YieldCo) emerged around 2013. Generally speaking, a YieldCo is a publicly listed company with portfolios composed primarily of renewable energy projects guaranteed by long-term energy supply contracts that generate stable cash flows. The majority of the generated cash flows are distributed to shareholders as dividends. Based on this definition, there are currently about 16 YieldCos in the world[1]. Two of the EU YieldCos have more than EUR 1 million in market capitalisation in comparison to four of them in the US market as of August 2018. The development of YieldCos was rapid with many Initial Public Offerings (IPOs) in the US and the EU from 2013 to early 2015. YieldCos reached a market capitalisation of more than EUR 18 billion across the world in early 2015. In the second half of 2015 however, most of the YieldCos experienced plummet in stock prices. The crash happened as part of a broader market energy stock sell-off in addition to investors' concerns about the growth model of YieldCos. The worst performing YieldCo was trading at 48% below its listing price compared to the previous year. In the year 2017, the stock prices of many YieldCos were on the rise but performed below their historical peak. In early 2018, YieldCos such as 8point3 and Saeta Yield which were created shortly before the crash are acquired by larger YieldCos in search of scale and growth.

There are two types of YieldCos in terms of their organisation structure: the sponsored YieldCos and the independent YieldCos **(Figure 1).** In a sponsored YieldCo model, the sponsor/parent company usually contributes cash-generating assets into a Limited Liability Company (LLC)[2]. The YieldCo uses the cash raised from the public investors via IPO to purchase an interest in the LLC. Cash flow generated in the project operating companies goes up the structure to YieldCos and are then distributed to their investors. The sponsored model is prevalent in the US. In comparison, an independent YieldCo can act as a parent company and establish a portfolio holding company to investment in project-level companies such as Special Purpose Vehicles (SPVs) which implement the underlying projects. The legal form of LLC and HoldCo usually provides firms with tax benefits and are presented as intermediate-level companies in **Figure 1;** they appear as one or more companies that appear in various organisational and legal forms in the structure.

***Figure 1:** Simplified YieldCo Structure*



Note: The arrow indicates equity ownership via investment flow. This is a simplified graph which illustrates the key entities in the YieldCo structure; note that many YieldCos may differ in structure details. (a) A sponsored model is usually owned by the sponsor/parent company (Class B common stock) and the public shareholders (Class A common stock). (b) An independent model is mainly owned by the public shareholders.

In the EU, YieldCos are typically independent. Compared with the independent model, a sponsored YieldCo benefits from an assured project pipeline provided by the sponsor but conflict of interest frequently exists between the YieldCo and its sponsor(s).

The YieldCo structure is innovative because the arrangement separates the fully operational projects from early-stage projects that are subject to construction and development risks. The combination of predictable cash flow and high dividend distribution creates an attractive risk-return profile for investors, serving as an attractive investment alternative in a low interest rate environment. For project developers, the YieldCo structure allows them to quickly recover capital by selling the operational projects to YieldCos instead of waiting for revenue generation from the projects in the next 20-25 years. The YieldCo is a relatively new and complex financial vehicle. In the following, we will provide a market analysis of YieldCos in the EU and give a semi-open discussion on the potential of YieldCos to facilitate renewable energy growth in the EU.

1) Lacking a unified definition on YieldCo, there is currently no exhaustive list of YieldCos available from major database providers. We estimated the number based on public available literature.

2) Depending on the country of incorporation, the legal form of the company may differ. This also applies to the holding company in the independent YieldCo model.

ANALYSIS OF YIELDCOS IN THE EU

History

The YieldCo structure is said to be modelled on the yield-based instruments Real Estate Investment Trust (REIT) and Master Limited Partnership (MLPs). REIT, MLPs and YieldCos all consist of a portfolio of income generating assets that are guaranteed through long-term contracts. A large portion of the cash flow is distributed to shareholders. REITs were created in 1960 through REIT Act in the U.S. to enable small investors to access income-generating real estate assets. MLPs emerged in 1980s in the U.S. and are particularly prevalent in the natural resource sector because of the tax benefit the structure offers. The key difference between YieldCos and the other two vehicles is the tax treatment. REITs and MLPs are pass-through entities that are not subject to corporate tax but are restricted by income type. YieldCo does not have comparable tax merit but has no restrictions on asset composition. The majority of YieldCos in the EU were established in the year 2013 and 2014. Encavis (previously known as Capital Stage) listed in Germany and Aventron listed in Switzerland went IPO as early as 1998 and 2010.

EU Market Overview

Based on publicly disclosed data, we have identified 8 major YieldCos in Europe **(Table 1)** according to the YieldCo concept described above. The country coverage of YieldCos is not diversified: 6 YieldCos are listed in the UK, 1 listed in Germany and 1 in Switzerland. Bluefield Solar Income Fund, Foresight Solar Fund and NextEnergy Solar Fund focus exclusively on the acquisition and management of solar assets. Greencoat UK Wind invests solely in wind farms in the UK. The remaining 4 YieldCos have a diversified portfolio consisting of investments in wind, solar, battery storage, water & waste management. The underlying assets of EU YieldCos are primarily electricity-generating assets. In 2017, the portfolio generation capacity of the identified 8 YieldCos ranges from 259 MW to 1578 MW, summing up to 5369.3 MW. In total, they have generated more than 6000 GWh electricity in the year 2017.

The UK YieldCos adopt a dividend strategy that links annual dividend with the UK Retail Price Index (RPI) inflation rate. As an example, the YieldCo Greencoat UK Wind aims to “provide investors with an annual dividend that increases in line with RPI inflation while preserving the capital value of its investment portfolio in the long term on a real basis through reinvestment of excess cash flow and the prudent use of gearing.” Non-UK YieldCos Encavis and Aventron aim for moderate dividend growth. In the US, the YieldCos have more aggressive dividend strategies which seek and promise continuous and high dividend growth to investors.

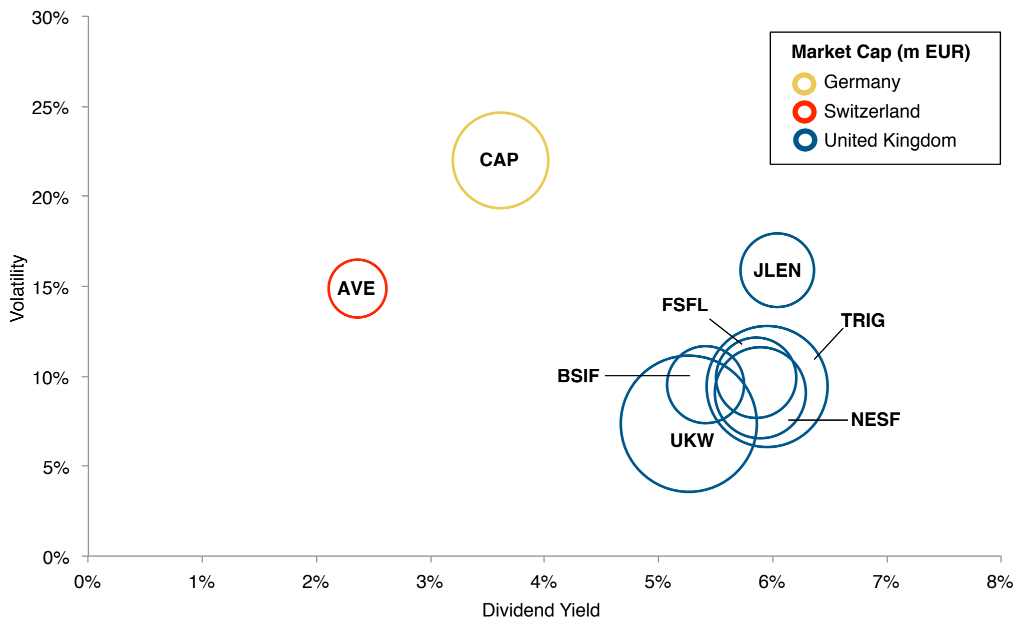
Figure 2 shows the recent market capitalisation, price volatility and dividend yield profile of EU YieldCos in the recent year. In terms of the current market capitalisation, the biggest and smallest player in the EU market is the Greencoat UK Wind and the Swiss-listed Aventron. From the figure, we see that the UK-listed YieldCos are rather homogenous with dividend yield of about 5%-6% and price volatility of 10%-15%. YieldCos listed in Germany and Switzerland show a different profile with higher volatility and lower dividend yield.

Table 1: *Overview of Identified YieldCos in the EU*

YieldCo	Listed	Symbol	IPO Date	Sector focus	Dividend Strategy	Portfolio Generation Capacity, 17
Encavis (previously Capital Stage)	DE	CAP	07.1998	Onshore wind Solar PV	Moderate growth	1578 MW
Aventron	CH	AVEN	11.2010	Onshore wind Solar Water Power	Moderate growth	386 MW
Greencoat UK Wind	UK	UKW	03.2013	Onshore wind Off-shore wind	Inflation-linked	694 MW
The Renewables Infrastructure Group	UK	TRIG	07.2013	Onshore wind Offshore wind Solar PV Battery storage	Inflation-linked	821 MW
Bluefield Solar Income Fund	UK	BSIF	07.2013	Solar PV	Inflation-linked	442 MW
Foresight Solar Fund	UK	FSFL	10.2013	Solar PV	Inflation-linked	621 MW
John Laing Environmental Assets Group	UK	JLEN	03.2014	Onshore wind Solar PV Water & waste management	Inflation-linked	259 MW
NextEnergy Solar Fund	UK	NESF	04.2014	Solar PV	Inflation-linked	569 MW

Source: Clean Energy Pipeline (2015); individual company websites accessed on 06.07.2018; individual company annual reports accessed on 12.07.2018.
Note: Due to different accounting practices, JLEN and NESF report generation capacity on 31.03.2018 while other companies report on 31.12.2017. Saeta Yield previously listed in Spain has been acquired by the US YieldCo TerraForm Power at the time of this analysis.

Figure 2: *Recent Market Capitalisation, Price Volatility and Dividend Yield of EU YieldCos*



Source: Bloomberg database, accessed on 05.07.2018
Note: The figure reflects the recent market and financial indicators as specified below. The figure would look different if a different historical period is chosen. Dividend yield is calculated in Bloomberg as most recently announced dividend amount, annualized and then divided by the current market price as of 05.07.2018. Volatility (price change risk) is calculated in Bloomberg between 05.07.2017-05.07.2018. Market capitalisation is displayed in local currency, converted in $ at date 05.07.2018. Exchange rate used: GBP/EUR= 1.13288.

Similar to the US counterparts, the YieldCos in the EU experienced falling stock prices in 2015[3]. The price drop happened roughly between 4th quarter, 2015 and 1st quarter, 2016. The price difference for most EU YieldCos between the highest point in 2015 and the lowest point in the price falling period is about 27%, with the exception of Encavis which has a high-low price difference of about 49%. The stock prices of most EU YieldCos stabilized in the 4th quarter, 2016 and end of 2017. The average price change for most of the YieldCos in this period is about 6% (Encavis: 16.5%)[4]. A research analysis by the Imperial College in London finds that UK-listed YieldCos performed better than a comparable group of oil and gas companies between July 2013 and July 2016.

Financing Mechanism

YieldCos have underlying projects whose revenue generation mechanisms and associated risks are relatively well understood. The dividend growth of YieldCos was previously seen as a sign of organic growth which are usually linked with new product development and customer expansion. However because the operating stage energy projects have limited sources for new value generation, the dividend growth in YieldCos is primarily realized through adding new projects to the existing portfolios with the equity funding obtained in the times of high investor confidence[5]. YieldCos have retained earnings, new equity from public issuing and/or debt as three main financing sources. Because YieldCos distribute most of the generated cash flows to shareholders, they have limited capacity to fund acquisition from retained earnings. The primary financing sources of YieldCos are new equity obtained from IPO and the follow-on public issuing combined with some debt financing.

To give a simplified example on how YieldCos could increase dividend per share without organic growth, assuming that the YieldCo has issued 1,000 shares with EUR 10 per share in the IPO. One year later, the YieldCo issues 1,000 new stocks in the follow-on public issuing. In times of high investor confidence, investors purchase the new shares with EUR 15 per share. Assuming that the new project has the same project return as the previous ones (assuming to be 10%), projects invested with IPO capital and follow-on capital gives annual cash in-flows of EUR 1,000 and EUR 1,500 respectively. Assuming that the YieldCo distributes all cash flow to investors directly after cash flows generated achieved each year, the dividend per share for investors after IPO and after follow-on issuing is EUR 1 (EUR 1,000 / 1000 shares) and EUR 1.25 (EUR 2,500 / 2000 shares), a dividend growth of 25%. Soaring prices and high dividend growth can reinforce each other for a while as observed before the 2015 YieldCo stock market crash.

In times of high valuations for YieldCos, YieldCos need constant new project pipelines to achieve high dividend growth. Without proper governance and investment prudency, YieldCos in sponsored models may suffer from conflict of interest with their parent companies. The parent company with Incentive Distribution Rights (IDR) can obtain increasing additional cash if the dividend growth of the YieldCo exceeds certain threshold. SunEdison, the parent company of two YieldCos in the US fuse growth in their YieldCos by feeding YieldCos' project pipelines to collect an increasing share of dividends from the IDR rights. SunEdison invested heavily in new project pipeline development which eventually led to a debt level rising from EUR 8 billion to EUR 14.2 billion between 2014 and 2015. Excessive borrowing of SunEdison led to bankruptcy, leaving its YieldCos with no more project pipeline from the sponsor. The YieldCos had to face rising debt financing costs from the increased risks. Generally, YieldCos can be caught up in a downward spiral with low investor confidence, leading to decreasing share price and low to negative dividend growth.

Comparing EU and US YieldCos, YieldCos in the US are evaluated as growth stocks which provide the parent company with incentives to expand project pipeline rapidly to feed into their YieldCo(s). In the EU, the stocks of YieldCos are seen as lower-risk investments for fairly risk-averse investors. EU YieldCos are less aggressive and expanding their portfolios at a much slower pace.

3) Please find a graph on the stock price evolution of EU YieldCos during 2014, 2015 and 2016 on page 189 in the 2017 annual overview barometer, downloadable at https://www.eurobserv-er.org/category/barometer-2017/. The next issue of annual overview barometer with updated YieldCo stock price development will be published in early 2019.

4) Price changes are measured with standard deviation of the stock prices over the stated period.

5) Note though limited, YieldCos can theoretically find opportunities to increase its value by acquiring projects with high returns or generate other extra values; the premiums should also be priced accordingly.

EU YieldCo – Greencoat UK Wind

We take the largest YieldCo currently in the EU: Greencoat UK Wind PLC as an example to provide some insight into YieldCo financials. Greencoat UK Wind PLC is an independent YieldCo that invests predominantly in wind farms with over 10 MW which sells electricity under long-term Power Purchase Agreements (PPA). The company has a subsidiary HoldCo which invests in SPVs that hold the underlying wind farm assets. In 2017, UKW added 10 new wind farms reaching a portfolio of 29 wind farms including both onshore and offshore wind.

The investment portfolio of Greencoat generated 1457 GWh in 2017. In the same year, the company generated a net cash of EUR 90 million from the projects portfolio and distributed dividends of EUR 59 million to shareholders, reaching a cash pay-out ratio of about 65%. In 2017, the company has outstanding debts of EUR 298 million, equal to 19% of its gross asset value.

Since obtaining EUR 295 million from IPO in March 2013, Greencoat has 5 follow-on public offerings with a total of 316.62 million shares offered, raising an additional sum of EUR 1.06 billion. Greencoat was able to increase offer price by 2%, 0%, 4% and 0.5% each time in the first four follow-on offerings. During the crisis in May 2016, the price dropped by 2% in the fifth round. The other type of financing source for Greencoat is primary term loans of EUR 0.7 billion over 2013-2015. From 2013 to 2016, Greencoat had yearly dividend per share growth of 37.1%, 1.6% and 1.3%.

From the financial indicators of Greencoat UK Wind between 2014 and 2017, it is seen that the profitability indicators of Greencoat yield an average net margin of 80.8% and a 7.2% average return on equity. In terms of dividends, Greencoat has an average dividend yield of 5.5% and a rather consistent average dividend payouts ratio of 79% over the four year period.

YIELDCOS - POTENTIAL AND CHALLENGES

Existing YieldCos in the EU see stability and market growth but there is rarely any new entrant. Since 2015 the number of YieldCos in the EU has not increased. The market capitalization of the existing YieldCos in the EU in 2018 nevertheless has all increased compared to their 2016 values. YieldCos' revenues depend on cash generation guaranteed by long-term contracts such as FiT and PPA. With renewable energy policy change, e.g. the cut-down of feed-in-tariff in the UK in the recent years, there may be less attractive projects suitable for YieldCo companies to buy and hold, which may concern companies that are recently considering entering the market. Another contributing factor could be the lasting effect of low investor confidence in and after the 2015 crash; concerns over the YieldCo business model and its value creation mechanism have not completely disappeared.

The potential of YieldCos should not be neglected. The relative low risk and high dividends secured by underlying long-term projects can fulfill the investment needs of dividend-seeking investors who have less appetite for risky investments and institutional investors that seek risk diversification. Utilities that have YieldCos can benefit from lower financing cost from the separation of projects in early stage developments and de-risked projects in operation (lower risk generally leads to lower financing costs). Nevertheless, it remains to be seen how YieldCos in the EU develop in the mid-to long term; whether the complexity of YieldCos can be understood by investors and the risk factors affecting YieldCos can be mitigated.

Several remarks can be made to YieldCos for future development. Firstly, a convincing strategy responding to a potential change in the interest rate environment is needed as a shift to high interest rate environment will lead to higher cost of capital that increase financing costs and lower share prices for the market. This is less relevant in the short term in the euro area given European Central Bank (ECB)'s open commitment to a prolonged low interest rate environment but is relevant in the mid to long term. Secondly, YieldCos need to stabilize funding sources for acquisition of new projects because equity funding is subject to stock price change risks. Consensus on YieldCo stock price evaluation is crucial[6]. It is also important to balance pay-out ratio to investors and retain excessive cash flow for new projects. Thirdly, YieldCos' underlying assets depend on new attractive project pipelines that are subject to external factors including the regulatory support policies (e.g. lower FiT will affect project revenues) and the investment environment condition. Last but not the least, the US YieldCos have shown that the strategy of aiming for both high dividend growth and high dividend payout is unsustainable; and excessive borrowing in hope of fast project pipeline growth could lead the parent firm and their YieldCo(s) into financial distress. □

6) In terms of YieldCo stock price evaluation, there is currently no universally agreed evaluation method; this is especially apparent in the vast differences between US YieldCos evaluation and EU YieldCos evaluation methods. A suggestable method is to focus on the collection of projects in the YieldCo portfolios.

Glossary	
Cash flow	The net amount of cash and cash equivalents transferred in and out of a company.
Dividend	Portion of earnings distributed to shareholders; amount is decided by the board directors of the company.
Dividend yield	Annual dividends per share divided by price per share.
Feed-in tariff (FiT)	Fixed prices guaranteed to renewable energy producers through long-term contracts.
Follow-on public offerings	Issuance of shares by a public company currently listed on a stock market exchange.
Initial public offering (IPO)	A company offers stocks to the public for the first time to raise capital.
Market capitalization	Total market value of a firm's outstanding shares calculated by shares outstanding multiplied by the current market price of one share.
Net margin	Net income divided by total revenue.
Pay-out ratio	Percentage of earnings paid out as dividends to shareholders.
Power purchase agreement (PPA)	A legal contract between an electricity provider and a power buyer which defines the terms of electricity sales between them.
Retained earnings	Net earnings after dividends for reinvestment or debt repayment.
Return on equity	Net income divided by shareholders' equity.
Special purpose vehicles (SPVs)	An entity set up by a parent company to isolate assets by holding them off-balance sheet in order to isolate risks.

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