Competitiveness of corporate sourcing of renewable energy

Annex A.6 to Part 2 *of the Study on the competitiveness of the renewable energy sector*

Case study: METRO AG

ENER/C2/2016-501

28 June 2018

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Luxembourg: Publications Office of the European Union, 2019

ISBN: 978-92-76-09284-1
Doi: 10.2833/786958
Catalogue: MJ-02-19-626-EN-N

EUROPEAN COMMISSION

DIRECTORATE C

Renewables, Research and Innovation, Energy Efficiency

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1 Introduction

Wholesale and food specialist METRO AG is an international company that embraces the sourcing of renewable energy. They do so in different locations, from different sources and through different procurement methods. This makes them an interesting case study. METRO AG self-generates energy using solar photovoltaic, is involved in PPAs and unbundled GOs, and purchases energy from green energy suppliers. The company also makes use of heat recovery to save energy when heating their stores.

METRO operates in 36 countries and employs more than 150,000 people worldwide. In financial year 2017/18, METRO generated sales of €36.5 billion, thereof €29.5 billion were generated by METROs wholesale business. In September 2018 METRO AG initiated the divestment process for the food retail chain Real with its 34,000 employees to transform into a pure wholesale company. Specialised in wholesale and food, the company provides products and services to the hotel, restaurant and caterer business as well as to traders and SMEs. Their experience with energy sourcing can provide insights in understanding why and how companies source renewable energy.

2 Sector and Company

The retail and wholesale sector is among the largest sectors in the European economy. Retail and wholesale services make up about 11% of the EU's GDP. Wholesale is defined as the resale of goods and services to retailers, industrial users, commercial users, institutional users, professional users or to other wholesalers. In 2016 about 10 million people worked in the wholesale sector.[1]

METRO AG is primarily active in the sector classified by NACE as G 46.3.9; Non-specialised wholesale of food, beverages and tobacco. METRO AG delivers food and non-food products to professional customers such as hotels, restaurants and other businesses in the caterer branch as well as to traders and SMEs. Additionally, METRO offers services and digital solutions to its customers and is an ambassador for independent entrepreneurs. METRO's customers include many small and mid-sized independent companies. In the food-category METRO AG supplies a whole range of (local) food products, which can be delivered or bought in one of their stores. Because they sell local goods and thus support local communities, sourcing local renewable energy is an additional link that the wholesale specialist proactively seeks. The company is placed in the value chain between the industry and the professional end-consumers. METRO's competitive strategy is to deliver a large variety of products of high quality. By offering all that a restaurant or hotel owner could need – including delivery and digital services. METRO AG's main competitors are Eurocash, Brakes (Sysco), sligro, Selgros, Transgourmet and MARR.

3 Country

METRO AG is an international company, located in 36 countries worldwide. The EU countries in which METRO AG is operating are Austria, Belgium, Bulgaria, Croatia, Czech Republic, France, Germany, Hungary, Italy, Netherlands, Poland, Portugal, Romania, Slovakia and Spain as well as the two EU candidate countries Serbia and Turkey. For the purpose of this case study METRO AG focused on their experience in the EU, making a comparison between individual countries and the non-EU context whenever relevant.

The wholesale sector is evenly spread across the EU. The final energy consumption in the EU28 was 1,107.8 Mtoe in 2016. The largest share of energy consumption was conventional heating and cooling (58.6%), followed by conventional electricity (31.8%). The remaining share was taken up by renewable energy, mostly renewable electricity. Renewable electricity was mainly sourced from hydro, wind, biomass and

[1] For further details see: Broos, E., Dachs, B., Dünser, M., Hanzl-Weiss, D., Mertens, K., Schartinger, D., Stehrer, R., and Vanoeteren, V. (2016). EU Wholesale Trade: Analysis of the Sector and Value Chains, wiiw Research Report No. 415, available at: https://wiiw.ac.at/eu-wholesale-trade-analysis-of-the-sector-and-value-chains-p-4101.html

renewable wastes, and solar. Renewable heating and cooling mainly came from bioenergy.

4 Energy use

METRO AG operates its wholesale business in about 760 stores in 25 countries as well as Food Service Delivery in another 11 countries; therefore, the company is a large energy consumer. On a yearly basis around - 2 million MWh are consumed. Electricity is used for cooling and illumination, while thermal energy is used for heating.

The two main aspects of the production process in terms of energy usage are the operation of cooling equipment and illumination. Together they make up more than 80% of METRO's energy usage. Most energy is needed for cooling. Over time a trend has become visible, in which energy is increasingly needed for cooling and to a smaller extent for illumination. This is due to an increasing number of products that have to be kept cool, and to more energy efficient illumination thanks to innovations such as LED.

METRO AG spends around €190 million per year on electricity, heat and fresh & waste water, of which 10% is spent on water usage, 10% is spent on heating and 80% is spent on electricity. This means, 0.64% of the total wholesale turnover is spent on energy costs. This share differs slightly from country to country. For example, the ratio is higher in Ukraine and Germany, but lower in France. These differences can be explained by the different energy prices on country level.

The thermal energy consumption of METRO is 560,000 MWh, most of this is used for heating and cooling of the stores.

5 RE procurement method and technology

METRO AG aims to use all opportunities for renewable and sustainable energy. Out of a total of 2 million MWh consumed yearly, approximately 1.2% is sourced through self-generation (solar photovoltaic, solar PV), approximately 0.2% comes from Power Purchase Agreements (PPA) (in India), approximately 8% comes from green energy suppliers and is bought and consumed in Austria and Italy, and 100 MWh are covered by unbundled guarantees of origin (GOs).

Most of the self-generated electricity that METRO AG uses comes from solar PV, which produces 25.6 MW peak. In addition, there is a small project with small windmills on top of the street lamps in one wholesale store in China. Furthermore, some electricity is generated by combined heat and power (CHP) plants (3.4 MW peak), two located in Russia, and six located in Germany. METRO AG was able to get limited government support for CHP projects in three stores in Germany (Marienfelde, Düsseldorf and Frankfurt-Riederwald). This support comes as a reduction of the gas tax for the whole life cycle of the CHP and a surcharge for CHP for the first 5,000 operating hours as well as a reduced German renewable energy levy for own use (40% of levy).

Figure 1 Impressions of METRO AG's Photovoltaic installation

Source: METRO AG

At the moment, METRO AG only uses electricity from PPAs in four stores that are located in India. The total amount is relatively low, around 4 GWh per year. METRO is considering the possibility to also start using electricity from PPAs in Europe after 2020. However, these are still uncertain plans and therefore outside the current planning scope. Basic requirement for PPAs from METRO's point of view would be a minimum contract period of 10 years. This timespan matches the duration of METRO's lease contracts. Since their standard procurement horizon for energy inputs is 2-3 years, this would require a shift from short term to long term contracts. In both the Indian PPAs and possible future European PPAs, METRO would only consider physical PPAs. Also, only PPAs for which the generator is based in the same country would be considered, since METRO emphasizes the link between their stores and the local context. Guarantees of origin (GOs) would not be demanded by METRO, as the wholesale specialist does not presume that the usage of GOs will contribute to the overarching sustainability goals of the company. Therefore, METRO rather invests in efficiency measures instead of certificates.

METRO AG is also a bit hesitant in buying unbundled GOs, since they lack steering power (steering towards a future of renewable energy use) and the company values the additional sustainability aspect of renewable energy. Therefore, GOs are currently purely used to neutralize the energy needed to operate their electrical vehicles in Germany. This way, METRO AG is able to claim sustainable delivery. For unbundled GOs as well as all other renewable energy sources, it is very important for METRO to link to local renewable energy, because METRO is selling local goods. Therefore, METRO AG would not buy unbundled GOs from other Member States of the EU. For the required GOs, METRO demands to know the power plant, the quality and the energy

source. The GOs the wholesaler is currently using are, for example, generated via Bavarian water power.

In Austria and Italy, the company relies on green energy offers. In Austria, METRO AG buys hydropower. About 30% of the power plants from which they source hydro power are younger than 3 years, 30% are younger than 10 years and the remaining are older than 10 years. In general, METRO AG buys standard green offers. -Premium offers are mainly pure coincidence. METRO AG chooses one supplier per portfolio. Portfolios are arranged per country and contain a collection of similar products and services. Since METRO has multiple portfolios this results in multiple suppliers as well. Contracts between METRO AG and suppliers are limited to 2-3 years.

METRO does not benefit from any support schemes when it comes to PPAs, GOs and green energy offers. -However, METRO AG anticipates that the European governments might start penalising those companies using conventional energy by raising taxes on non-renewable energy. By growing investments in green alternatives, METRO AG hopes to be less vulnerable for such negative incentives.

The thermal energy consumption of METRO is 560 GWh, thereof natural gas sums up to 415 GWh, heating oil to 62 GWh, district heating to 68 GWh, LPG to 5 GWh and 10 GWh to other sources. Most of this is used for heating and cooling the stores, partially for electricity production. All stores are heated by either gas, district heating or heating oil. Only one store is currently heated with biomass (METRO Germany Brunnthal). Another store pilots a gas turbine to produce absorption cooling from heat (METRO Germany Schwelm). There are 170 stores that are using heat recovery from CO2 cooling equipment. However, the recovered heat is often only enough to sufficiently heat the stores during the warmer months of the year. Therefore, the rest of the heating comes from conventional sources. Cooling is generally done using conventional electricity. However, there are 2 stores (one in Turkey, one in Italy) where heating and cooling are powered by solar energy. The underlying principle: water is warmed in panels/parabol mirrors and subsequently, using absorption chillers, cools the store/offices. More can be seen on: https://www.youtube.com/watch?v=_14jVK9gT3g. The absolute costs for heating are around €20 million, equalling around 0.06% of the total turnover of METRO wholesale.

The wholesale specialist saves 30% on heating through heat recovery. The remaining 70% come from conventional sources. At the moment, there is some partial public support for renewable heating and cooling in Austria and Germany, but in most countries, there is no government support at all. METRO AG states that they are convinced that government support would accelerate innovation processes in the area of sustainable heating and cooling.

6 Benefits

Beyond the fact that renewable energy guarantees the responsible and sustainable use of natural resources, METRO AG expects that the use of energy from renewable sources will reduce their energy expenses and cut operation costs in the long run. Already today, the wholesale specialist experiences this effect, and saves around 0.1% of their energy costs. What might seem small, is in absolute numbers a considerable amount, which is consistently saved. These savings were expected, since METRO thoroughly reviews its decision to use renewable energies also based on factors such as cost efficiency. In the long run, cost for green energy has to be lower than for conventional energy. More specifically, the net present value over 20 years has to be higher for the sustainable alternatives than for conventional energy. METRO also sees the use of renewable energy sources as an investment in building resilience. Since no one knows how energy prices will develop, stable costs from own production or set contracts will make energy costs more predictable. Furthermore, sourcing renewable

energy contributes towards regulatory compliance, also in the future. At this moment there are no obligations to use renewable energy, but sourcing and producing energy in sustainable ways guarantees that METRO AG will be ready to cope with any future rule penalising non-renewable energy use. METRO's decision to source renewable energy is already leading to some tax savings. For instance, the German energy levies will be 40% lower when the source is renewable onsite.

Besides cost savings, the effect on Corporate Social Responsibility represents another major benefit from sourcing renewable energy. METRO's customers value sustainability, and in the coming years sustainability will likely be an increasingly important driver for competitiveness. The sustainability efforts made by METRO AG are communicated to their customers. In many stores that operate solar panels on the roof this is indicated with signs at the entrance or digital displays counting the number of sun hours and produced energy.

METRO AG has a carbon footprint of 7 million tonnes per year worldwide. Using renewable energy is also contributing to achieving the carbon target METRO set itself: . METRO AG aims to reduce its specific greenhouse gas emissions by 50% per square metre of selling and delivery space by 2030 compared to 2011. Until today, we have already managed to cut our CO2 emissions by more than 26%.

METRO does not expect to receive substantial benefits in terms of subsidies or government support. So far government support turned out to be very limited. Only in a few countries METRO received some partial support for the self-generation of renewable energy. In Austria they for example received a direct subsidy, in France they received a certain amount to cover the costs per kWh, and in Germany they received a deduction of the interest surcharge to credit (the money saved was used to finance LED measures). -

For METRO, the main drivers for choosing self-generation and PPAs are cost efficiency, stability of energy prices, reduction of emissions and the contribution to their sustainability goals. Green energy from an energy supplier is chosen when the cost is comparable to the conventional option. If green energy is used, it is clearly communicated to provide added customer value. In Austria, METRO has an ultimate green energy policy: Locally sourced green energy is always used – even if it is slightly more expensive. With this decision, METRO underlines the importance of local sourcing and regional connectedness. Overall, METRO values the fact that the net incremental renewable capacity deployed or renewable energy generated as a direct result of their decision to source renewable electricity goes beyond what would occur in the absence of their decision. Therefore, the wholesale specialist does its best to ensure additionality.

7 Costs

In general, higher energy costs form the biggest barrier that has to be overcome in order for METRO to source renewable energy. To a lesser extent regulatory barriers and market barriers are relevant. For instance, barriers were encountered in the German context, where METRO AG has to pay a levy on the own use of renewable energy. The Federal Grid Agency published a very complex set of guidelines[2]. Understanding these guidelines is important for companies like METRO, since the legal and regulatory risks might be high.

[2] https://www.bmwi.de/Navigation/EN/Home/home.html

METRO encounters the largest obstacles when it comes to self-generation of renewable electricity. In that case, they have to find the right store, have to deal with a broad range of technical issues and then build and operate at the relevant store. This requires a large up-front investment, which needs to result in an adequate return. Furthermore, it is important that METRO owns the building or that the renting contract is sufficiently long. For PPAs the long-term contracts are problematic, since METRO generally works with a 2-3-year procurement horizon. Taking up more PPAs would require an adjustment from short-term to long-term procurement plans. If the electricity costs in a PPA are more expensive than the electricity from the grid, this will make such contracts unattractive from a business perspective. A specific disadvantage for unbundled GOs is that this is much harder to communicate to customers or to use for marketing purposes. Also, GOs generally do not have a steering function (steering towards more sustainable energy production) and are troublesome in terms of additionality. This is a big disadvantage as far as METRO AG is concerned. On top of that comes the fact that unbundled GOs are always more expensive than electricity from the grid, since they have to be purchased on top of the electricity. Combined with a lack of trust and regulatory barriers this makes GOs relatively unattractive. For electricity obtained from a green energy supplier the biggest obstacle is represented by the price, which is often higher than prices charged for conventional electricity. Another, smaller hurdle to purchasing green energy is the desk research that has to be performed to evaluate the existing green standards and the quality of the different energy sources. METRO demands that the energy has to be produced in the region and they prefer to see a direct impact on the number or size of renewable energy plants installed.

8 Policy recommendations

There is a big potential for corporate sourcing of renewable energy, however there are still barriers in terms of costs and technologies. Governments could play a role by offering more support and recognition.

METRO for example advocates for the introduction of carbon pricing, together with other policy measures, such as the reduction of electricity tax and the abolition of the renewable energy levy, so that companies with less climate impact or relying on climate-friendly technologies are rewarded. At the end of 2016, METRO decided to introduce a company-specific CO2 price in the internal investment profitability calculation with the goal of prioritizing energy-saving projects. By combining profitability efforts with the best possible CO2 saving, METRO works to achieve its climate protection goal. Since the end of 2016, METROs internal CO2 price has been 25 Euros per tonne. Now, almost three years later, the wholesaler is about to double its internal CO2 price to tighten the incentive effect.

With regards to energy production, lowering the initial investment costs, for instance through subsidies or tax deductions would make self-generation of renewable energy more attractive. Also stimulating innovations would be helpful to many businesses. Cheaper technological solutions would result in more sustainable energy sourcing. New technology and innovations are often prototypes and more expensive than conventional standards. To bring such technology into real life subventions would be helpful, e.g. for solar tubes or frequency transformers. At the moment, these options are very expensive.

STUDY ON THE COMPETITIVENESS OF THE RENEWABLE ENERGY SECTOR

Case study: Metro AG

Source: Metro, 2019

Introduction

Company

- METRO AG is a large company, active in the wholesale sector. They provide food and services to the hotel, restaurant and caterer business and operate in 35 countries.
- METRO AG self-generates energy using solar photovoltaic, is involved in PPAs and unbundled GOs, and purchases energy from green energy suppliers. The company also makes use of heat recovery, to save energy when heating their stores.

Sector

- METRO AG is primarily active in the sector classified by NACE as G 46.3.9; Non-specialised wholesale of food, beverages and tobacco.
- The company is placed in the value chain between the industry and the professional end-consumers.
- Due to their long history and extensive experience in numerous countries METRO AG can be considered a leader in their sector.
- METRO's competitive strategy is to deliver a large variety of products of high quality.

Country

- METRO AG is an international company, located in 35 countries both within and outside the European Union.
- The EU countries in which METRO AG is operating are Austria, Belgium, Bulgaria, Croatia, Czech Republic, France, Germany, Hungary, Italy, Netherlands, Poland, Portugal, Romania, Slovakia and Spain.

Energy use,procurement, costs and benefits

- Energy use
  - On a yearly basis about 1.753.000.000 2 million MWh are consumed.
  - The two main aspects of the production process in terms of energy usage are the operation of cooling equipment and illumination. Together they make up more than 80% of METRO's energy usage.
  - The thermal energy consumption of Metro is 560,000 MWh, most of this is used for heating and cooling of the stores.
- Energy procurement
  - METRO AG aims to use all opportunities for renewable and sustainable energy.
  - Approximately 1.2% is sourced through self-generation (solar photovoltaic)
  - Approximately 0.2% comes from PPAs (in India)
  - Approximately 8% comes from green energy suppliers (only in Austria and Italy)
  - Approximately 100 MWh are covered by unbundled guarantees of origin (GOs).
- Benefits
  - METRO AG expects that renewable energy will reduce their energy expenses and cut operation costs.
  - The net present value of an investment over 20 years has to be higher for the sustainable alternative than the conventional energy.
- Costs
  - In general, higher energy costs form the biggest barrier that has to be overcome in order for METRO to source renewable energy.