

Minutes of Task Force Scenarios - Workshop 2: Flexibility of the electricity consumption 24/09/2021

Meeting

Date	24/09/2021
Organiser	Elia

Participants		Attended	Excused
Anciaux Pauline	FOD	☐	☒
Boisseleau Francois	Engie	☐	☒
Bontems Olivier	Ideta	☐	☒
Canière Hugo	BOP	☐	☒
Carnier Marc	Engie	☐	☒
Claes Peter	Febeliec	☐	☒
Cornelis Erwin	BBLV	☐	☒
de Changy Maxime	Fluxys	☒	☐
Debrigode Patricia	CREG	☐	☒
Herbreteau Sarah	CREG	☒	☐
Heylen Benjamin	FOD	☐	☒
Holtrup Hans-Jurgen	RWE	☐	☒
Lachi Simon	RESA	☐	☒
Laleman Ruben	Engie	☒	☐
Maréchal Thomas	FOD	☐	☒
Monami Eric	EDORA	☒	☐
Piret Alain	Sibelga	☐	☒
Robbelein Jo	FOD	☒	☐
Schjelderup Ina	RWE	☐	☒
Van Bossuyt Michael	Febeliec	☒	☐
Van Damme Kathy	VEB	☐	☒
Vandeburie Julien	Resa	☐	☒
Vazquez Juan	Fluxys	☒	☐
Verboomen Jody	Siemens Energy	☒	☐
Verhelst Clara	CREG	☐	☒
Wagnier Jean-Francois	Febeg	☒	☐
Wehenkel Thomas	Resa	☐	☒
Vander Mynsbrugge Jorrit	Elia	☒	☐
Hahati Bilal	Elia	☒	☐
Huertas Hernando Daniel	Elia	☒	☐
Feito-Kiczak Rafael	Elia	☐	☒
Pirlot Yunus	Elia	☒	☐
Rooijers Frans	CE Delft	☒	☐
Jongsma Chris	CE Delft	☒	☐

Report

Author	Jorrit Vander Mynsbrugge
Function	Secretary TF Scenarios
Date report	30/09/2021
Status	☐ Draft ☒ Final version

0. Welcome to the Task Force

As substitute for the Chairman, who was unable to attend this meeting, Jorrit Vander Mynsbrugge, secretary of the Task Force opened the meeting. Elia organized the workshop as a physical meeting in the Nhow Hotel in Brussels to stimulate discussions and co-creation. Elia presented the agenda as shown below. The workshop was divided into two parts. The first focused on exposition whereas the second was meant for discussion.

Elia announced that two other parties were going to present during this workshop: CE Delft & Fluxys.

Start	End	Timing	Topic
13:00	13:10	00:10	Welcome to the workshop
13:10	14:10	01:00	Overview of technology (CE Delft & Fluxys)
14:10	14:25	00:15	Coffee break
14:25	14:45	00:20	Introduction to key questions & drivers for Belgium
14:45	15:30	00:45	Brainstorm / discussion
15:30	16:00	00:30	Feedback + QA

The workshop started with a short introduction from Elia. They explained the goal of the workshop and the definition of flexibility (see accompanying presentation).

1. Overview of technology (CE Delft & Fluxys)

1.1 CE Delft

(For additional information and clarification, see accompanying presentation)

CE Delft started by presenting themselves. They explained that they are a Dutch centre of expertise that has done independent research and consultancy since 1978. They perform studies for Tennet, the Dutch government... Last year they performed a study for Tennet on electrification and flexibility.

CE Delft clarified that they have not done a study for Elia nor the Belgian situation, so the facts and the figures that they present are Dutch.

CE Delft stated the general need for flexibility will increase in the future because of the increase in integration of renewables and necessary CO₂-reductions. This will cause increased electrification and flexibility will be needed to balance production and demand. This flexibility can be found as flexible generation (dispatchable power plants), in infrastructure (imports & exports) and in consumption. The latter is the topic of this workshop.

They explained that there are four different flex options to be distinguished when considering the time scale on which they operate:

- Very short: minutes
- Short term: day
- Medium term: week
- Long term: season

In this workshop, the focus was on short and medium term.

They explained that when talking about flexibility, it is important to make the difference between surplus and shortage, because the flex options will not be the same for both. There are different flex options for surplus and shortage.

CE Delft then went on to provide an overview of flex in consumption technologies.

Next, they zoomed in on three different sectors:

- Industry;
- Transport;
- Building.

Industry

In the Dutch industry a lot of energy is used for heating. Currently, this is primarily achieved through burning oil and gas. For a lot of industries electrification could be an option: electric ovens, heat pumps... This electrification could be accompanied by the advent of more flexibility in consumption, by means of increased demand response, hybrid boilers & thermal storage.

Transport

Current demand for electricity in transport is very low. It is mainly focussed on railroad transportation. When looking at the potential in the coming years, the demand could grow a lot, driven by the advent of electric vehicles. This in turn leads to two additional flexibility in consumption mechanics:

- Smart charging;
- V2G vehicle to grid.

Building

At present, heating is mostly done by means of natural gas. In the future, significant electrification is expected because of the climate goals. District heating, electric heat pumps and hybrid heat pump could all play a significant role in providing flexibility in consumption.

1.2 Fluxys

(For additional information and clarification, see accompanying presentation)

Fluxys indicated that this presentation is not the result of their own research, but a gathering of different references.

They gave a small introduction to indicate that the energy system will drastically change, driven by decarbonisation. They emphasized that green molecules will be essential in the future, especially for hard-to-abate sectors.

They gave a small overview of 'what is electrolysis' and 'what are the electrolyser technologies used for today?'

They gave an overview of "what can be done with hydrogen produced?" They will help to integrate the massive renewables capacities by producing green hydrogen. They indicated that electrolyzers can bring short term flexibility to the energy system.

They gave an example of a flexibility project in Canada: Markham Energy Storage. What is important to note is that the current capacity is 2.5 MW (designed for 5 MW).

Next, they showed the evolution of the technologies over the last 20 years: the capacity is significantly increasing: from a few kilowatts to megawatts. This shows that for the future, in a relatively short time, the capacity could increase significantly.

Elia thanked both speakers for the interesting presentations. Elia remarked that it is interesting to see that, with the advent of more electrification, other technologies such as thermal storage could play a role to provide flexibility in those sectors that are not yet electrified today. Thus, Elia is reinforced in its belief that this topic, which is related to many disruptive technologies is a good topic for a workshop with such a multidisciplinary panel.

Comments:

Elia asked all participants if there were any questions for clarification on the presentations.

Febeliec commented that in both of the presentations, there is zero information on costs. They indicated that one should work towards a goal function. At present, Elia works towards decarbonisation, without using a cost goal function. Cost is however the most important factor to take into account. E.g. what if the cost becomes so high, that all of the industry is moved abroad? Then all of the problems that we are trying to tackle will disappear automatically.

Fluxys answered that the goal of their presentation was to give an overview of the possibilities of hydrogen. They added that it will be very difficult to give an answer on costs, given that they cannot predict the future towards 2040-2050.

Elia argued that, as was discussed in workshop 1, optimisation of scenarios is complicated. First, in reality there is more than 1 goal function (e.g. cost, societal acceptance, innovation...). Second, the goal of a scenario is to establish a plausible storyline. In such a scenario, the storyline is backed up by EU policy. This means policy will impact technological development (and by consequence its cost) by means of subsidies of desired technologies (e.g. green certificates), taxation of unwanted technologies (e.g. CO₂ ETS), and international trade agreements. As an example one could take the current state of the industry and wonder why not all EU production has been moved to China already? The real goal of today's workshop is to have an interesting discussion on which technologies that were presented can provide flexibility in the different scenarios for Belgium.

Fluxys added that a more nuanced view is necessary. Fluxys feels that we are trying to determine "the most appropriate path" for Belgium, while keeping in mind what is possible. Just like other fuels today, Belgium is going to need to import hydrogen, because we will not be self-sufficient. Fluxys feels that it is important to keep in mind that TSO's are also bound to a certain political framework.

Febeliec stated that the capacity of current hydrogen projects (e.g. Markham Energy: 2.5-5MW) is very low with respect to what utilities are looking for in terms of flexibility.

Siemens Energy replied that hydrogen projects of 1 to 1.5 GW are being planned in Denmark. They also indicated that every four to five years, there is a multiplication in capacity x10.

Elia remarked that the discussion was moving past clarification questions and entering debate. Elia asked that these remarks would be taken further into consideration during the workshop's brainstorm session.

2. Introduction to key questions & drivers for Belgium

(For additional information and clarification, see accompanying presentation)

Elia gave a short introduction to initiate the brainstorm and formulated a couple of key questions that could serve as the basis for the discussion.

3. Brainstorm / discussion

Elia asked the participants to split into two different groups for the discussions. Elia distributed handouts, to start the discussions. One representative from CE Delft participated in each group to facilitate the discussions. One representative from Elia participated in each group to be able to capture the discussions.

Group 1: Edora, Siemens Energy, Fluxys, Engie, CE Delft, Elia, Febeg.

Group 2: CREG, Fluxys, Engie, FOD, CE Delft, Elia

The feedback of this brainstorm session / discussion will follow in the next section: "Feedback & Q&A".

4. Feedback + Q&A

Based on the brainstorm held in the groups, the members had one representative present the main points that were discussed. Elia informed the members that they can send in additional remarks and concerns after the workshops.

Group 1

For group 1 CE Delft presented a recap of the discussions.

They presented what they see as flexibility options, when looking at shortage / surplus:

Electrolyzers:

- They indicated that electrolyzers are a game changer, but not necessarily for Belgium. They felt that there is not a very high potential for development in Belgium.

Households:

- They argued that there are flex options with EV / heat pump.
- They questioned however, whether all households will be willing to move toward PV / Batteries / HP / Smart Meter solutions.
- They argued that social acceptance and distribution infrastructure will be one of the biggest challenge when moving towards flexibility in households.
- They argued that there will have to be a shift from independent households to energy communities and that these will play a very important role in the shift to more flexibility. These energy communities will make it easier to team up and invest in energy assets.

EV's:

- They argued that EV's are a very important tool in flexibility, but that there are some important barriers. There is a need for smart metering, infrastructure and price incentives for the users.
- On the long term, there are possibilities for V2G but there are still a lot of questions surrounding this: how? When?
- They indicated that Belgium is special in that a large share of vehicles are company owned. If the company fleets move massively to EV, this might have a big on impact on 'electrification'.
 - o Fluxys added two remarks:
 - There will be a shift to car sharing and probably a shift in mobility in general
 - Also: there is a big chance that there will be issues concerning availability of supply to produce the necessary amount of EV's
 - ⇒ Due to this, the growth in EV's might not be as exponential as expected.
 - o CE Delft also added that politics want capacity for charging and that they are introducing more and more fast charging, but that this does not 'help' much in terms of flexibility in consumption.
 - o Siemens Energy complemented this by saying that fast charging however is very important, as it will pull more people into EV's, because a big issue that people have at the moment, is the inability to easily recharge their EV's. Once these people have EV's, their overnight / off-peak slow charging will contribute to flexibility.
 - o EDORA added that instead of fast charging at every individual household, the future seems to go towards a more centralized fast charging within each community and rather slow-opportunistic-smart charging at households.

The group also expressed the view that residential flexibility would be seen with two levels, the household (or energy community) will try to optimize their consumption at their level and the system operator will have to steer the flexibility by means of a tariff/prices incentives. This could be a way forward providing the technology costs do not surpass the potential gains from the tariffs.

Industry

- Theoretically, there are many flex options. But here as for households, price incentives are very important. For now, the flexibility market opportunities from the industrial point of view are rather marginal.

Elia asked a follow-up question, based on the recap given by CE Delft: what we can take away from your recap is that one of the issues will be infrastructure. Is this referring to distribution grids (transport of energy) and/or communication infrastructure (transport of data)?

Fluxys indicated social acceptance and distribution infrastructure as the biggest challenges.

Elia asked another follow-up question: are the barriers being indicated for both 2040 and 2050 or do you expect them to be resolved by 2050? The overall response was that these barriers will ideally have to be resolved rather by 2040.

Group 2

For group 2 CE Delft presented a recap of the discussions:

- They argued that there is a possibility for fuel switch capabilities and that it is important to assess the potential for Belgium (f.e. a residential customer could switch from a natural gas heating system to electrical heat pump).
- The main topic that this group discussed was the customer acceptance of high prices: are customers willing to accept real-time pricing and thus be exposed to price-peaks? The overall opinion is that customers will not be willing to deal with high/volatile prices. They feel that consumers will prefer fixed-price contracts in order to

lock in risk. In addition, this group thinks that politics will try to protect consumers from the volatile nature of spot markets.

- This is why the focus for flexibility should be more at the industry side, rather than at the residential side.
- CE Delft also explained that Demand Side Management is very low on the list of industry priorities. They focus primarily on: safety, quality & reliability. Only when all of these are ok, they will start looking at energy efficiency and marginal gains through DSM.

Elia asked a follow-up question related to the sentiment that politics will try to limit high energy prices: will this be for industries as well as households?

- CE Delft indicated that in Great-Britain for example, there's a political desire to shield the customers to high prices.
- Engie complemented that in Spain there was an idea to go more to a market-based approach for residential consumers, but that this is totally backfiring. Spanish consumers are faced with huge costs in the current energy crisis. They indicated that households would like to know what the price of energy will be in the coming month. Industries are more rational and aware of the need to hedge against risks. Households on the other hand are less rational and for them energy is a commodity that should be affordable.

Elia asked the following question: if we say that politics would like to shield customers against high prices, if you were to put a price cap, what would it be?

- Engie responded that they do not think there will be a price cap but that politics will push retailers to provide people with flexible or a fixed contracts. Currently, due to the high and volatile prices, next year more people might chose a fixed contract. Thus, as market volatility increases in the long run, more people would choose a fixed contract. The flexibility will be there (people will still have heat pumps, ...), but we will not be able to use it (no price incentive for consumers with fixed price contracts). We should move the flexibility to the producer side. Lastly, GDPR-wise it will much more difficult if you contract households.
- EDORA informed us that, indeed, the Walloon minister wants to shield small (vulnerable) consumers from flexible tariffs, but at the same time they believe there will be an increase in flexible ("advanced") users (EV owners, Heath pump users). The minister is willing to make the bet that households who already have EV's and heath pumps will be flexible users.
- Engie however believes that consumers that have EV's, heath pumps... might be the ones with sufficient money. These consumers would care less about the cost gains of activating flexibility options.
- Fluxys is worried that this Wallonian strategy might lead to discrimination. There are risks connected to splitting customers in this way.

5. After action review

CREG wanted to know what the next steps are for this Task Force.

Elia answered that the minutes and the presentations of the two meetings will be sent to all of the participants (including those who were not able to join the two workshops) and that feedback on these minutes is welcomed. Elia emphasized that it is important to give feedback on these minutes, given that there will be no 'formal approval' before the public consultation of the scenarios.

Elia indicated that the information received during the two workshops will be taken into account when quantifying the scenarios. After this, a public consultation of the scenarios will follow; the timing of this public consultation will depend on the availability of the TYNDP scenarios data. After the public consultation, the feedback on the consultation will again be taken into account and a scenario report will be drafted.

The secretary closed the meeting and thanked all participants for their active collaboration and interesting feedback.