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Energy Transition Expertise
Centre

Terms of Reference

Multi-supplier models
and decentralized
energy systems



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Multi-supplier models and decentralized energy systems



Consortium Leader

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1 Background and objectives

1.1 Original request from EC

Currently, we have two major information gaps:

- 1) What is the economic impact on suppliers, network operators and consumers (passive & active) of enabling a multi-supplier model. This would take into account multiple sub-scenarios:
 - Retail supplier is responsible for balancing, collection of network tariffs and ensuring consumer rights (billing) for all of the energy supplied to metering point
 - Active customers and energy communities are responsible for balancing, collecting network charges and ensuring consumers rights in proportion to shared or traded electricity.
- 2) Whether current legal instruments ensuring consumer protection (contractual rights, billing etc.) in the electricity market design need to be adapted to energy sharing and peer to peer exchange arrangements.

Economic impacts in terms of:

- Costs in terms of IT infrastructure investments for system operators
- Impact on consumers' (active and passive) energy bill, administrative costs and revenue streams for active consumers and suppliers/network operators, in case the latter is responsible for balancing and other tasks (e. g. network tariff collection, billing) for entire connection point
- Costs incurred by suppliers/system operators in case of imbalances caused by final customers engaged in peer to peer trading arrangements, or an energy sharing arrangement between final customers using renewable energy sources with an installed electricity capacity of less than 400 kW (for prosumers) and 2 MW (for energy communities).

Overall, we are trying to establish how to distribute balancing responsibilities and other tasks amongst market actors in order to guarantee a cost-efficient and accessible energy transition.

Intermediate document should contain after one month:

- Mapping approaches to energy sharing (free choice of supplier (Y/N), who collects network charges, who is balancing responsible, time-intervals for self-consumption, separate consumer rights Y/N, other relevant conditions) outside of energy community context
- Outlining benefits of multi-supplier model for active consumers, estimating IT infrastructure costs incurred by system operators to enable multi-supplier models, and availability of supplier services for energy sharing schemes (balancing and collecting network charges).

We believe that a lot of this information can be quickly gathered through interviews with MS (ministries, regulators, network operators) that have energy sharing schemes already in place, and would be happy to help with identification process and relevant contacts.

1.2 Status-quo

A Dutch study of University Utrecht, TNO and Alliander on new balance responsibility models (Buijze et al, 2021) for active consumers contracting multiple energy (service) providers worked out the implications of various new use cases, including p2p and energy sharing. Furthermore, we see

parallels with the discussion around supporting independent aggregation. Buijze et al, 2021 therefore takes analyses by USEF and DNV on independent aggregation – and its implications on balance responsibility and billing - as a basis.

Buijze et al, 2021: [20210921-Power-to-the-People-rapport-TKi-1621504 \(uu.nl\)](#)

Furthermore, much can be learned from energy sharing / p2p scheme development in Member States.

1.3 Project objectives & scope

See Section 1.1.

2 Tasks and approach

We divide the work into three tasks:

2.1 Mapping of approaches to deal with responsibilities related to energy supply in a multi-energy supplier models.

A mapping of approaches to deal with the responsibilities of 1) balance responsibility, 2) collection of network charges and taxes and 3) billing will be provided as a basis for the legal and economic analysis in Task 2 and 3. The mapping will be based on a Dutch study of University Utrecht, TNO and Alliander on new balance responsibility models (Buijze et al, 2021) for active consumers.

Table 1 shows the two axes of the mapping:

- Whether or not the consumer is responsible for 1), 2) and 3)
- How to deal with dividing responsibilities 1), 2) and 3) among multiple suppliers

In Table 1, we added the text from the ToR *in italic* to illustrate that the sub-scenarios proposed in the ToR are described in a more generic manner than in the mapping of the table, so they fit in multiple boxes.

Table 1: Draft of the mapping table of supplier models

	Integrated supplier model	Contractual main-supplier model	Regulatory multi-supplier models
No-responsibility for 1) balance responsibility, 2) collection of network charges and taxes and 3) billing by passive/active consumers	Not possible to have a second energy supplier active on a connection point. The retail supplier can (by legal obligation) support p2p arrangements between his customers, however this will not be 'supply' but just administration of arrangements resulting in reduction of supply/network costs or taxes.	<i>'Retail supplier is responsible for balancing, collection of network tariffs and ensuring consumer rights (billing) for all of the energy supplied to metering point'</i> Retailer supplier has choice whether not to allow other suppliers (including p2p arrangements, energy sharing)	<i>'Retail supplier is responsible for balancing, collection of network tariffs and ensuring consumer rights (billing) for all of the energy supplied to metering point'</i> Regulator defines what other suppliers (e.g. p2p arrangements, energy sharing) should be allowed at the connection point and defines how (costs of) responsibilities should be compensated by these suppliers.
Obligatory delegation of responsibilities 1) 2) 3) for passive/active consumers	<i>Infeasible option</i>		
Responsibility for 1) 2) 3) is for passive/active consumers by default but they have the ability to delegate	<i>Infeasible option</i>	<i>Active customers and energy communities are responsible for balancing, collecting network charges and ensuring consumer rights in proportion to shared or traded electricity.</i>	<i>Active customers and energy communities are responsible for balancing, collecting network charges and ensuring consumers rights in proportion to shared or traded electricity.</i>

In this task, the mapping table will be provided, and each of the feasible options will be described. Part of this description is a **short explanation along two use cases**:

- Second supplier is an active consumer with whom the end consumer (passive or active) has a peer-to-peer arrangement.
- Second supplier is a group of active customers involved in energy sharing / (collective) self-consumption, not necessarily in an energy community). We like to discuss the exact scope and the use of concrete examples, e. g. the Italian pilot regulatory framework (Resolution 318/2020) for collective self-consumption.

Two combinations of use case + box in the mapping table will be chosen such that the two sub-scenarios from the ToR (*all responsibilities at the retail supplier and active consumer*) will be covered. **Flow charts will be developed for the 2 selected combinations** illustrating when what actions need to be taken related to the responsibilities 1), 2) and 3).

Table 2: Work organisation Task 1

T	What	When	Deliverable	Who + Person Days
1.1	Short explanation of use cases along the mapping Table	Week 1	1	TNO (1.5)
1.2	Selection of 2 combinations of use case + box in the mapping table	Kick-off (end of Week 1)	1	TNO (0.5) all + EC involved in decision process
1.3	Explanation of use cases along the mapping Table	Week 2	1	TNO (2)
1.4	Flow charts of the 2 selected combinations	Week 3-4	1	TNO (4)
<i>total</i>				<i>8 person days</i>

2.2 Assessment of legal/regulatory instruments ensuring consumer protection in multi-energy supplier models

Using the two flow charts from Task 1, we provide:

- An exploration of existing legal/regulatory instruments ensuring consumer protection in EU and selected Member States (Italy, Netherlands)
- Detection of consumer protection risks that require additional legal instruments

The exploration and risk analysis cannot be exhaustive due to the limited time available.

Table 3: Work organisation Task 2

T	What	When	Deliverable	Who + Person Days
2.1	Exploration of existing legal/regulatory instruments for consumer protection	Week 2-5	2	TNO (2): Netherlands UU (2): Italy
2.2	Detect consumer risks in flow chart	Week 5-6	2	TNO (2) Fraunhofer (2)

T	What	When	Deliverable	Who + Person Days
2.3	Conclusion writing	Week 7	2	TNO (1) UU (1) Fraunhofer (1)
<i>total</i>				<i>11 person days</i>

2.3 Identification of additional costs in multi-energy supplier scenarios

On the basis of the flow charts developed in Task 1, we identify the costs related to the implementation of the chosen models and use cases:

- Costs in terms of IT infrastructure investments for system operators
- Impact on consumers (active and passive) energy bill, and administrative costs and revenue streams for active consumers and supplier/network operator in case the latter is responsible for balancing and other tasks (e.g. network tariff collection, billing) for entire connection point
- Costs incurred by suppliers/system operators in case of imbalances caused by final customers engaged in a peer to peer trading arrangements, or an energy sharing arrangement between final customers using renewable energy sources with an installed electricity capacity of less than 400 kW (for prosumers) and 2 MW (for energy communities).

Due to lack of (fairly comparable) cost data, we can only provide an identification of the costs: who is responsible for what and what are the associated costs. Via interviews we try to get 'numbers' and discuss this raw input in the report: what are these cost figures mentioned by interviewed stakeholders about and are they a good indicator for the expected costs in one or multiple Member States?

Table 4: Work organisation Task 3

T	What	When	Deliverable	Who + Person Days
3.1	Identification of costs along flow charts of Task 1. NL and IT will be used as example Member States to explore the type of costs.	Week 3-4	1	TNO (1): Netherlands UU (1): Italy
3.2	Collection cost figures by 8 interviews (1 hour each). Stakeholders active in all Member States can be interviewed.	Week 4-7	2	TNO (3) leads interviews Fraunhofer (2) plans interviews, second interviewer/reporter in 5 interviews. UU (1) second interviewer/reporter in 3 interviews.
3.3	Conclusion writing	Week 7	2	TNO (1) Fraunhofer (1) UU (1)
<i>total</i>				<i>11 person days</i>

3 Deliverable and reporting

Table 5: List of Deliverables and submission dates

Deliverable/meeting	Contents	Date (original)	Date (New)**	Outputs
M1	Kick-off for all tasks with EC	21/10/2022	04/11/2022	pptx
D1	Draft report (T1 + T3.1)	28/11/2022	28/11/2022	word
D2	Final report (all Tasks)	12/12/2022	16//12/2022	word

Week 1 in the tables in Chapter 2 is the week of 31th of November. The kick-off is at the end of the week so we can make already decisions on the two combinations.

** Note that the project can officially start only after the final approval of this ToR and a kick-off meeting with the Client. In the case that these two are delayed, the overall project timeline will have to be adjusted accordingly.

4 Work organisation

See tables in Chapter 3.

5 Resources

Table 6: Planned resources by task

Task/Resource	Resource needs in days	Share of total resources in percent
Project coordination	2	6%
Task 1	8	35%
Task 2	11	34.5%
Task 3	11	34.5%
Total	32	100%

6 List of tables

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