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New Buildings Energy Renovation Business Models incorporating dual energy services

NOVICE

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Collaborative Project

D7.1 New ESCO business organisation chart

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Authors	Michele Vavallo, Christof Amann, Jo Southernwood, Caroline Milne, Daniel Ring
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No & name	**Task 7.1 Identification of required organizational change processes**				
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Author(s)	Michele Vavallo				
Description of the related task and the deliverable in the DoA	This task aims to identify the changes in the organizational processes needed when an ESCO wants to roll out the dual energy services model through the new EPC template. The typical organization model of the ESCOs now operating on the market are briefly analysed first. Given the peculiarity of the dual energy services scheme, it is very important to identify, from an external point of view, roles, tasks and responsibilities of the different stakeholders involved, such as aggregators, energy suppliers, building owners/FM, TSOs/DSOs and financial institutions. The viewpoint of the building owners and end consumers, their concerns and requirements are included here. In particular, an analysis on key contractual changes required between the ESCO/Aggregator and the end consumer/building owner as well as changes in sales messages is carried out. Key legal and risk assessment changes are also reviewed. The identification of the specific functions of the different stakeholders involved requires a review of the organizational processes in order to make them suitable for the needs of the dual energy services scheme. Thus, the following are identified in this deliverable: (i) the stakeholders involved; (ii) their roles and responsibilities; (iii) the specific interests of each stakeholder; (iv) the tasks they must complete; (v) time of activation of each stakeholder in the EPC process; (vi) interconnections and bonds between each stakeholder. After having analysed the external environment, the strategic positioning of the ESCOs between the different actors is identified along with the complementary and residual functions the ESCOs must cope with. The new organization process defines roles and activities step-by-step, allowing identification of responsibilities more easily, with the aim of making information flows between each stakeholder more efficient. This particular task uses most of the output from WP4 and especially T4.1 and T4.2.				
Comments					

V	Date	Authors	Description
0.1	04/03/2019	Michele Vavallo	Table of Contents for discussion
0.2	30/05/2019	Michele Vavallo	First draft
0.3	11/06/2019	Jo Southernwood	Comments on first draft
0.4	12/07/2019	Michele Vavallo	Including comments from NLGES
0.5	16/07/2019	Michele Vavallo	Including comments from e7, KiWi, IERC, Aploeona
0.6	17/07/2019	Michele Vavallo	Final draft for review by IERC
1.0	30/07/2019	Michele Vavallo	Final version submitted

1 CONTENTS

2 ABBREVIATIONS

BOOT	Build-Own-Operate-Transfer
BRP	Balance Responsible Party
IEC	Integrated energy contract
EE	Energy Efficiency
EPC	Energy Performance Contract
ESC	Energy supply contract
ESCO	Energy Service Company
FM	Facility Manager
DR	Demand Response
DSO	Distribution System Operator
TSO	Transmission System Operators

3 INTRODUCTION

The NOVICE project aims to develop and demonstrate a new business model in building renovation to better monetize energy efficiency by consolidating services and subsequent revenue streams from both energy savings and demand response. The combination of energy efficiency and demand response services is referred to as the dual service business model. The project has already suggested a new enhanced template for energy performance contracts in *Deliverable 4.1 – The model structure of the new EPC Template*, and a Memorandum of Understanding in *Deliverable 4.2 ESCO Aggregator MOU* that would need to exist between ESCOs and Aggregators to allow the successful operation of the business model. The objective of this report is to define in more detail the new organizational chart that shows the links between both ESCOs and Aggregators working together to deploy the dual services business model.

In order to develop the organisational chart for this new business model this report first explores in detail the current organisational charts in use by ESCOs, discussing the roles, the tasks and the responsibilities of all the stakeholders involved in the business models that are in use today. Based on the experience gathered during the development of the *D4.1 – The model structure of the new EPC Template* all currently used ESCO contract types including the Energy Performance Contracts (EPC), Energy Supply Contract (ESC), Chauffage, Integrated Energy Contract (IEC) and Build-Own-Operate-Transfer (BOOT), have been reviewed. In addition, an organizational business model has been also created for each one using the business model canvas as a template.

Before the defining the new organizational chart, the status, roles, tasks and responsibilities of each stakeholder involved in the deployment of the current used business models has been examined. The analysis builds on the stakeholder definitions introduced in *D4.2 – ESCO and Aggregator MoU*, by examining the concerns and requirements of the building owners and the end customers based on the practical experience of the key NOVICE project partners already working in this field and the key conclusions from other NOVICE Deliverables.

The final version of the new organizational chart also considers the impact of the key legislative changes required at national level and the new relationships that must be developed between the service providers (ESCOs and aggregators) and the clients (end consumers and building owners). In this section, the key risks to the proposed business model have been reviewed to identify the contractual changes that may be required to facilitate deployment of the new organisational business model. This activity has been supported by the work done during the development of the *D3.4 SWOT analysis* and *D4.1 - Structure of the new EPC template*.

Finally, the last part of the document is focused on the presentation of the proposed ESCO business organization chart for the new business model. The steps for its successful implementation such as the upstream process, the DR activation and the ex post processing are identified and details of the stakeholders involved, their roles, responsibilities and tasks in the process are also given.

4 OBJECTIVE OF THE REPORT

The objective of this report is to define a new organizational chart in which the ESCOs and Aggregators profiles are included to work together to deliver the dual services business model.

This document explores the changes that must be addressed in the organizational processes required for an ESCO to roll out the dual energy services model using the new enhanced EPC template. TO do this we consider the current state of the art in the market and examine the roles, tasks and responsibilities of the different stakeholders involved, such as aggregators, energy suppliers, building owners/FM, TSOs/DSOs and financial institutions.

The final chapter of this report proposes a new organisational chart that describes the connections and interactions between all the market players in terms of energy, data and money flows.

5 CURRENT ESCO ORGANIZATION MODEL

As already described in *NOVICE D4.1 – The model structure of the new EPC Template*, most ESCOs currently use one of the following contract types to provide their services:

- Energy performance contracts (EPC)
- Energy supply contract (ESC)
- Chauffage
- Integrated energy contract (IEC)
- Build-Own-Operate-Transfer (BOOT)

The rest of this chapter describes in detail the various business models that ESCOs currently employ in relation to deployment of these main contract types

5.1 SHARED-SAVINGS (EPC)

The shared savings business model is one option used to deploy energy performance contracts. In this model, the ESCO provides upfront finance to implement the energy efficiency projects within the client's building. The resulting cost savings achieved as a result of reduced energy bills are shared between the client and the ESCO for a period of time defined by the length of the EPC. Table 1 below uses the business model canvas template to describe the model in more detail.

Table 1: Shared-savings EPC organization business model

<table>
<tr><td colspan="2" rowspan="2">7 - Key partners
Financial Institutions;
Construction and technical partners</td><td colspan="2">5 - Key activities
Project preparation, development and operation</td><td colspan="2" rowspan="2">1 - Value proposition
Energy savings without prior investment or commitment;
Savings from the first moment</td><td colspan="2">4 - Customer relationships
Contractual (medium-term, 10-15 years)</td><td colspan="2" rowspan="2">2 - Customer segments
Large buildings:
Public bodies;
Corporate clients (building owners, commercial and industrial)</td></tr>
<tr><td colspan="2">6 - Key resources
Technical and financial knowhow</td><td colspan="2">3 – Channels
Public projects;
Special events</td></tr>
<tr><td colspan="5">9 - Cost structure
Construction cost; Interest rates</td><td colspan="5">8 - Revenue streams
Energy savings from the project</td></tr>
</table>

5.2 GUARANTEED-SAVINGS (EPC)

The guaranteed savings business model is another variation of Energy Performance Contract. In this model, the ESCO takes on the operational risk of the entire project by guaranteeing a minimum level of energy savings and return on investment. Usually, the investment is managed and owned by the customer, either through own funds or loans from third parties, while the ESCO guarantees the level of energy savings that will be achieved in return. If the actual savings achieved are higher than the guaranteed level, the benefits are either retained by the ESCOs or shared with the customer. If actual savings are lower than predicted, the ESCO must pay their client the difference between the actual and predicted levels. Table 2 below uses the business model canvas template to describe the model in more detail.

Table 2: Guaranteed-savings EPC business model.

<table>
<tr><td colspan="2" rowspan="2">7 - Key partners
Construction and technical partners</td><td colspan="2">5 - Key activities
Project preparation, development and management</td><td colspan="2" rowspan="2">1 - Value proposition
Guarantees energy savings; Stable cashflows</td><td colspan="2">4 - Customer relationships
Contractual</td><td colspan="2" rowspan="2">2 - Customer segments
Corporate clients willing to invest in energy efficiency projects</td></tr>
<tr><td colspan="2">6 - Key resources
Technical knowhow</td><td colspan="2">3 – Channels
Corporate projects; Special events</td></tr>
<tr><td colspan="5">9 - Cost structure
Construction cost</td><td colspan="5">8 - Revenue streams
Energy savings from the project</td></tr>
</table>

5.3 VARIABLE CONTRACT TERM (EPC)

Under a variable contract term EPC, the ESCO is responsible for the entire project design, finance, and implementation, but rather than fixing the contract length, this business model allows for the contract to be extended if the savings achieved are less predicted. This allows the ESCO to recover the full investment even if they initially overestimated the savings. A variation of this type of contract allows the ESCO to retain all the savings achieved until its initial investment has been fully repaid. Table 3 below uses the business model canvas template to describe the model in more detail.

Table 3: Variable contract term EPC organization business model.

<table>
<tr><td colspan="2" rowspan="2">7 - Key partners
Financial Institutions; Construction and technical partners</td><td colspan="2">5 - Key activities
Project preparation, development and management</td><td colspan="2" rowspan="2">1 - Value proposition
Energy savings without prior investment or commitment; Savings from the first moment</td><td colspan="2">4 - Customer relationships
Contractual (term depends on ESCO recovering its full investment)</td><td colspan="2" rowspan="2">2 - Customer segments
Corporate clients</td></tr>
<tr><td colspan="2">6 - Key resources
Technical and financial knowhow</td><td colspan="2">3 – Channels
Corporate projects; Special events</td></tr>
<tr><td colspan="5">9 - Cost structure
Construction cost; Interest rates</td><td colspan="5">8 - Revenue streams
Energy savings from the project</td></tr>
</table>

5.4 ENERGY SUPPLY CONTRACT (ESC)

In an Energy Supply Contract, the ESCO assumes the responsibility of providing the customer with a set of energy services, including the operation and the maintenance of energy generation equipment, and sells the generated energy to the customer. Costs for all equipment upgrades, renewal and repairs remain with the ESCO, however, ownership of the equipment typically remains with the customer. Table 4 below uses the business model canvas template to describe the model in more detail.

Table 4: Energy supply contract organization business model

<table>
<tr><td rowspan="2">7 - Key partners
Financial Institutions; Construction and technical partners</td><td>5 - Key activities
Project development, management and operation</td><td rowspan="2">1 - Value proposition
Guarantees energy supply (“input”); "Useful energy" service; Improvement of EE of supply;</td><td>4 - Customer relationships
Contractual: typically 10-15 years</td><td rowspan="2">2 - Customer segments
Buildings with energy saving potential: Public bodies; Corporate clients (building owners, commercial and industrial)</td></tr>
<tr><td>6 - Key resources
Technical and financial knowhow and marketing</td><td>3 – Channels
Funded projects; Special events</td></tr>
<tr><td colspan="2">9 - Cost structure
Maintenance/management cost; Construction cost (supply side)</td><td colspan="3">8 - Revenue streams
Fee for the function provided (flat/escalating rate)</td></tr>
</table>

5.5 CHAUFFAGE

The Chauffage contract is also known as “comfort contracting”, due to the fact that it is an agreement between client and ESCO that provides a basic “function”: for example, maintaining a room at 21 °C during occupied hours. Table 5 below uses the business model canvas template to describe the model in more detail.

Table 5: Chauffage organization business model

<table>
<tr><td rowspan="2">7 - Key partners
Financial Institutions; Construction and technical partners</td><td>5 - Key activities
Project development, management and operation</td><td rowspan="2">1 - Value proposition
Guarantees a function (“output”); Improvement of EE of supply; Management & optimization of energy consumption</td><td>4 - Customer relationships
Contractual (variable lengths)</td><td rowspan="2">2 - Customer segments
Buildings with energy saving potential: public bodies; corporate clients (building owners, commercial and industrial)</td></tr>
<tr><td>6 - Key resources
Technical and financial knowhow and marketing</td><td>3 – Channels
Funded projects; Special events</td></tr>
<tr><td colspan="2">9 - Cost structure
Maintenance/management cost; Implementation/construction cost (small)</td><td colspan="3">8 - Revenue streams
Fee for the function provided (flat/escalating rate)</td></tr>
</table>

5.6 INTEGRATED ENERGY CONTRACT (IEC)

The Integrated Energy Contract is, in short, a combination an Energy Supply Contract (for example implement a CHP), and an implement a CHP), and an Energy Performance Contract (for example implementing lighting upgrades).

Table 6 below uses the business model canvas template to describe the model in more detail.

Table 6: Integrated energy contract organization business model.

7 - Key partners Financial Institutions; Construction and technical partners	**5 - Key activities** Project preparation, development and operation **6 - Key resources** Technical and financial knowhow	**1 - Value proposition** Energy savings without prior investment or commitment; Savings from the first moment; Guarantees energy supply (“input”); "Useful energy" service; Improvement of EE of both supply and demand	**4 - Customer relationships** Contractual (medium to long term) **3 – Channels** Public projects; Special events	**2 - Customer segments** Buildings with energy saving potential that need large retrofits: Public bodies; Corporate clients (building owners, commercial and industrial)
9 - Cost structure Construction cost; Interest rates		**8 - Revenue streams** Energy savings from the project		

5.7 Build-Own-Operate-Transfer (BOOT)

In the Build-Own-Operate-Transfer model, the ESCO implements the entire project, owns and operates the equipment for the duration of the contract, and then transfers ownership to the client at the end of the contract. The BOOT model is similar to the ESC, in terms of the contractual conditions with the client. Table 7 below uses the business model canvas template to describe the model in more detail.

Table 7: Built-Own-Operate-Transfer organizational business model.

7 - Key partners Financial Institutions; Construction and technical partners	**5 - Key activities** Project preparation, development and operation **6 - Key resources** Technical and financial knowhow	**1 - Value proposition** Energy savings without prior investment or commitment; Guarantees energy supply (“input”); "Useful energy" service;	**4 - Customer relationships** Contractual (long-term, 20-25 years) **3 – Channels** Public projects; Special events	**2 - Customer segments** Corporate clients; Public bodies
9 - Cost structure Construction cost; Interest rates		**8 - Revenue streams** Fee for the function provided (flat/escalating rate)		

5.8 Roles, Tasks and Responsibilities of the Different Stakeholders Involved,

The roles, tasks and responsibilities of each of the stakeholders involved in the dual services business model (including aggregators, energy suppliers, building owners/FM, TSOs/DSOs and financial institutions) have already been defined in previous NOVICE project deliverables. To avoid repetition, their descriptions are not included here but are included in the Appendix to this report and can be viewed in full in *D4.2 ESCO Aggregator MOU*.

5.9 Concerns & Requirements of building owners and end consumers

The concerns and requirements of building owners and end users depends largely on the type of client that is being engaged. Key differences in the type of end user are described below.

Facilities Management Companies: It should be noted that, unless driven by their client, building owners and Facilities Management Companies do not generally prioritize building energy efficiency, and typically lack the financing capacity to support the implementation of such actions. The main responsibilities of FM companies are typically related to maintenance and smooth operation of building systems and services.

Commercial property developers: It can be difficult to engage with commercial property developers who act as landlords to tenants unless it can be shown that asset value, rental yields or compliance with legislation will become a pressing concern without action. In many cases energy efficiency upgrades are viewed as a disruptor to status quo, as empty buildings that are being refurbished do not yield any rental income and sitting tenants may demand some form of compensation for any disruption while work is undertaken. As a result, there is little incentive for landlords to undertake a disruptive energy efficiency project that may take weeks or months to complete. In cases where the property developer is seeking funding for a portion of the works or other projects energy efficiency projects can be a good way of promoting their sustainability credentials to potential investors.

Owner / Occupier: This group is more likely to engage in an energy efficiency project if it is a legal requirement, demonstrates compliance with regulations or codes of practice, improves asset value, reduces operating costs or improves brand image. Public Sector agencies are more likely to be tasked as acting in an exemplar role and therefore may be early adopters.

Once the clients are engaged in planning or implementing energy efficiency projects their primary technical and non-technical concerns often include:

- Whether the project can be deployed without impacting on the building occupants, their normal activities and their comfort;
- Transparency in sharing data (consumption, savings, economic flow, etc.);
- Receiving support in decision-taking;
- Receiving immediate feedback to their questions and concerns;
- Avoiding technical problems such as disruptions in energy purchasing and system failures;
- Avoiding any cost increase in building management / maintenance;
- Receiving regular reports on progress;
- User friendly and easy to use APPs or web-pages where all the information is available and refreshed in real time;
- Installation of sensors and other devices for free and without impacting normal client life;
- Access to sensor data in real time by APPs or Web-pages;
- Trustfulness of all the information shared;
- Achieving the best option for energy efficiency ranking VS cost saving, considering the implementation of the dual service,
- Possibility to access formulation justifying the best option in real time.
- Retaining control of all building systems (e.g. ability to opt out of DR events or override defaults)
- Evidence through Measurement & verification that predicted energy savings have been achieved
- The ability to adapt to changes in the business e.g. growth/shrinkage/new products

- Business interruption risk,
- Proposed savings not being delivered risk,
- Early adoption of technology upgrades that are still maturing is viewed as risky
- Risk of brand credentials negatively impacted by inaction.

6 LEGISLATIVE CHANGES & NEW RELATIONSHIPS REQUIRED

6.1 KEY LEGAL AND RISK ASSESSMENT REVIEW

A deep market analysis has been carried out in the SWOT analysis undertaken in D3.4 to understand the barriers to be tackled before the dual service model can be rolled out in the European market. Reviewing the market conditions for each of several EU countries has highlighted that no single European country currently presents the optimal conditions for implementing the NOVICE model. However, it is possible to identify the policies, regulations and market forces that are most conducive to the implementation of a combined energy efficiency and demand response service model, and list the ideal conditions under which NOVICE may be successfully implemented:

- A strong and well-established ESCO market that is trusted by their clients
- Government support for implementing EPCs such as:
    - informational schemes that promote the benefits of EPC to potential clients
    - finance for EPC feasibility studies
    - government frameworks for EPC contracts
- A DR market that is open
- Aggregation is legally allowed and defined
- Aggregators do not need permission from the BRP, TSO or DSO in order to offer their services to customers
- Both generation and demand response can be aggregated and offered to the market
- Prequalification process is less bureaucratic and relates to pooled loads rather than individual units or sites
- Government is committed to increasing energy efficiency, reducing nuclear and increasing the share of renewables on the grid
- A white or green certificate scheme with an energy obligation that encourages participation of the private sector in energy efficiency projects
- Incentives for implementing energy efficiency actions in all sectors.

As concluded in *D4.1 - Structure of the new EPC template*, the barriers to introducing the dual energy service business model can be categorized into regulatory, market, technological and financial barriers.

The most important of these for the acceleration of market uptake of the EPC model in the dual service are legal barriers (lack of government support, subsidy and policy uncertainty), structural (lack of information, trust in the ESCO, concept complexity) and financial (financial crisis, raising affordable finance). While DR markets are generally growing around Europe there are several countries where the DR market is not well supported by robust policy, and in other countries the DR market is still in its infancy.

The main barriers for the expansion of this market can be summarized as follows:

- Inappropriate or incomplete definition of roles and responsibilities in the regulation between market participants;
- Participation requirements still not adequately identified for DR market actors;
- The measurement and verification (M&V) regulated methodology is not yet harmonized. This means that there are no standardised and transparent requirements on how to control energy consumption reductions or how they should be evaluated;

- Adequate payment flow for DR is still challenging.
- The awareness around EPC needs to be significantly improved so that it becomes a mainstream project execution route to achieving energy upgrades and savings.
- There can be an underlying concern from DR providers that EE will negatively affect their site impact and hence reduce the size of the potential revenue stream.
- Lack of certainty around DR make it difficult to map out ROI as easily as other EE interventions on a site.
- The sales model is different for aggregators compared to ESCOs. For aggregators site investment is relatively small and the sales cycle is relatively short but there is a need to aggregate many sites in order to be profitable. In contrast ESCOs tend to make greater investments in each site and have a much longer sales cycle for a smaller number of sites.
- Absence of reference working models where aggregator and ESCO have successfully collaborated.
- Aggregators minimum threshold for available flexibility (in kW) excludes many smaller sites where EE projects are viable.

7 NEW ESCO BUSINESS ORGANISATION CHART

On the basis of the above analysis, and considering the results from all the deliverable and tasks mentioned above, the new ESCO business organization chart is presented and explained in this chapter.

7.1 CHART

The new business organization chart which covers the activities of both the aggregator and the ESCO in a dual service business model is presented in Figure 1. The suggested chart setup inherently implies a complex network of data interchange, requiring software platforms and monitoring tools which must be able to communicate with each other must be supported by robust technology and equally robust regulation. From this point of view, the chart represents a flexible opportunity, allowing ESCOs and aggregators to work together but also considering the possibility that the ESCOs may choose to enter in the DR market in future.

7.2 DESCRIPTION OF THE DR ACTIVATION AND DATA PROCESSING:

7.2.1 Upstream processing

- An independent aggregator (member of BRP_{Agg}) closes a contract with the energy supplier (member of BRP_{Supp}). This contract includes remuneration for DR as well as data exchange and further processes.
- DR products (aFFR, mFFR, RR products etc.) are tendered by the Control Area Manager (CAM). Depending on the market this may take place weekly, daily or for any other time period.
- The DR aggregator acts as Balancing Service Provider (BSP) and offers its flexible loads to the CAM (typically with a price for availability of power, and a price for energy for the case of activation).
- After successful tendering the load has to be available for the offered time slice.
- Availability will be rewarded with the bid-price for power.

7.2.2 Demand Response (DR) activation

- CAM requests the activation of power (switch down of technical units) from the BSP.
- The BSP/aggregator communicates with their clients (automatically or manually) and activates the respective technical units (switch down).
- The BSP aggregates all activated power and reports these data to the CAM (in real time).
- DR activation data are aggregated along balance groups and sent to BRP by CAM.
- In order to prevent contradictory balancing of the BRP which would remove the effect of the DR activation, the BSP informs the BRP of the supplier on the DR activation (in real time). BRP_{Supp} has agreed not to counterbalance the DR activation.

7.2.3 Ex post processing

- BSP provides a correction of the schedule that allows the BRP_{Supp} to be compensated for changes in energy consumption (due to DR activation) and any occurred imbalance costs. This corrected schedule (ex-post schedule) will be used for final imbalance settlement.

- The client is billed by the supplier for the energy consumption that would have occurred in the case of no DR was activated. This means metering data must be corrected by the energy supplier and DSO (grid charges).
- Revenues for DR offers and activation are separated from energy billing and are processed by the aggregator based on a bilateral agreement with the client.

Depending on the organisational setting, the ESCO could take over the role of the aggregator, at least for the management of the relation with the client (one face to the customer).

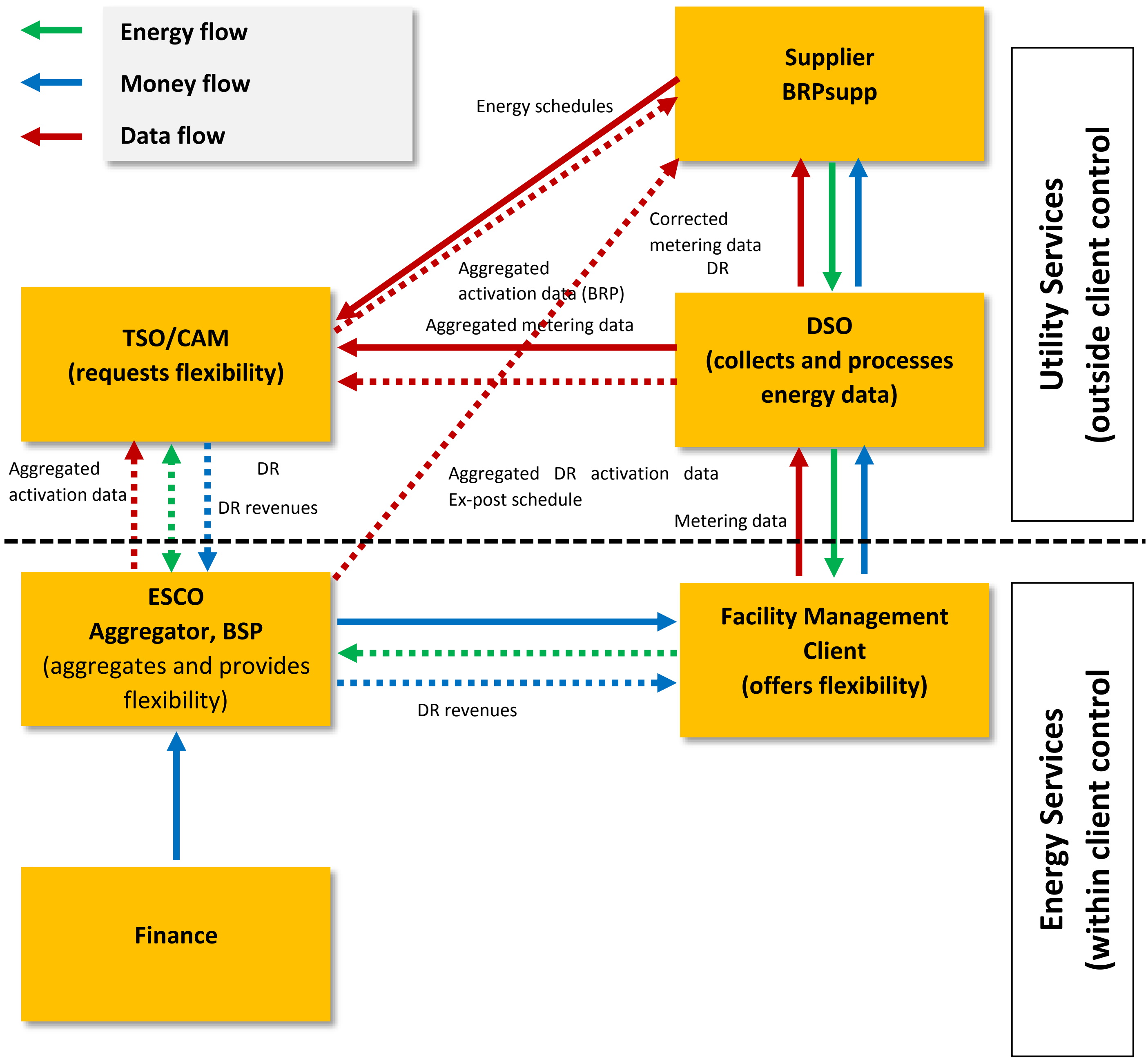

Figure 1: New Organizational Chart

7.3 STAKEHOLDERS DESCRIPTION

Table 8 summarizes all the relevant information related the proposed chart shown in Figure 1.

Table 8: Stakeholder description

Stakeholders Involved	Roles and Responsibilities	Tasks	Comments
TSO/CAM (Transmission System Operator; Control Area Manager)	Operation, maintenance and development of the transmission grid; Balancing energy demand and consumption within the control area (frequency-load control)	Collecting energy schedules from BRPs; Tendering of control energy; Re-calling control energy; Processing of aggregated metering data; Providing DR activation data to BRP	
Supplier, BRP_{Supp} (Balancing Responsible Party of energy supplier)	Selling energy to customers; Financial responsibility for balancing energy within balance group	Providing schedules to TSO/CAM; Providing energy to final consumers; Billing energy supply	
DSO (Distribution System Operator)	Connecting final customers and producers to the grid; Providing metering equipment; Processing metering data	Collecting and processing of metering data from final consumers; Providing metering data to supplier; Providing aggregated metering data to TSO/CAM;	
ESCO, Aggregator, BSP_{Aggr} (Energy Service Company, Balancing Responsible Party of aggregator)	Providing energy services; Aggregating loads to offer on control energy market;	Offering energy (efficiency) services (incl. financing) to clients; Collecting, aggregating and processing DR events (from different clients); Providing aggregated DR data to CAM Providing aggregated DR activation data to BRP_{Supp} (real time);	BRP_{Agg} acts as balancing service provider (BSP)

		Providing corrected schedule to BRP_{Supp} (ex post)	
Facility Management, Client	Operation of the building		
Finance	Providing financing for energy efficiency project (including DR)		

8 CONCLUSIONS

This report has analysed the current ESCO organization business models in use, discussing the roles, the tasks and the responsibilities of all the stakeholders involved in their deployment. The key contractual changes that should be undertaken between ESCOs, aggregators and clients to facilitate the implementation of the dual services model have been reviewed. In addition the stakeholders which are currently involved in the energy market have been summarized and reviewed in terms of their current roles and responsibilities.

Using all this background information and drawing on the research undertaken in previous deliverables, a new organizational chart which identifies the changes in the organizational processes that will be required for an ESCO to roll out the dual energy services model has been prepared. The chart is the final output of this work and combines the experience from earlier results such as *D3.4 SWOT analysis*, *D4.1 The model structure of the new EPC Template* and *D4.2 ESCOs and Aggregator MoU*. Through the study of these deliverables, the range of ESCO organization business models currently in use has been defined and then used to define the interactions between all of the market actors for the dual services model. For each of the stakeholders identified in the chart, their roles and responsibilities, specific interests, activities, involvement into the EPC process and their interconnection has been also described.

9 References

(1) U.S. Department of Energy. “Benefits of Demand Response”

10 APPENDIX

For reference, the following descriptions of key market actors in the NOVICE model have been included in this appendix. These descriptions have been taken from the report D4.2 ESCO Aggregator MoU, where they have already been fully defined.

10.1 AGGREGATORS

Demand Side Response Aggregator (DSR Aggregator) is a third party company specializing in electricity demand side participation. In practice, DSR Aggregator contracts with the individual demand sites (industrial, commercial or residential consumers) and aggregate them together to operate as a single DSR provider to:

- Transmission System Operator (TSO)
- Balance Responsible Party (BRP)
- Distribution System Operator (DSO)

The individual demand sites can use a combination of increasing on-site generation and/or process shutdown or reduction to deliver the active power demand reduction service. The DSR Aggregator receives a percentage of the value created by the avoided consumption to reduce peak demands, balance intermittent generation, provide a balancing service or increase security of supply.

10.2 ENERGY SUPPLIERS

The energy supplier is the company to which the energy bills are paid. Their responsibility is ensuring the supply of electricity or natural gas to their customers in the terms stipulated in the contract. Most contracts are renewed annually and define tariffs and other compliance fees (quality, distribution, levies etc.) in line with national regulations.

10.3 BUILDING OWNERS/FM,

Facilities Management (FM) integrate the principles of the administrative, management, architectural, engineering and human science factors around building administration. Their functions include: planning and steering the overall activities related to the correct and efficient global building management; leading the effective integration of corporate strategies for building resources (e.g. implementing a space optimization policy); coordinating building and retrofit projects; contracting all the services, utilities and products related to smooth operation of the building (e.g. energy, water, security, asset management etc); and maintenance and conservation of equipment.

Clients (building owners) are private or public individuals or entities which are entrusted to manage the building. They are responsible for paying any taxes related to the property and operating and maintaining the building.

10.4 TSOS/DSOS

The Transmission System Operator (TSO) is responsible for transporting electrical power on a national or regional level, from the point of generation to the local DSO in each area, using fixed infrastructure like high voltage power lines and substations. As TSOs are of critical importance to the national distribution and delivery of energy and due to the high costs involved in managing the transmission infrastructure, the TSO is usually a monopoly and is often totally or partially owned by state or national government. TSOs are not involved in upstream generation of power or downstream distribution of power and are financed by charging a fee in proportion to the amount energy they transport.

The Distribution System Operator (DSO) has the responsibility of building and maintaining connections and substations for end users (buildings) and manages the power transmission (at voltage levels of 150 kV or less). The DSO also installs, preserves and manages the transmission and distribution grids to ensure that energy suppliers can always deliver the energy demanded by customers at any given moment.

10.5 Financial institutions

In the energy context, the role of the financial institution is to invest in large scale energy efficiency projects, providing all or part of the required upfront capital required. Finance can be provided to either the ESCOs, the FM or directly to the building owner depending on the requirements of the projects.