

1 Executive summary

This deliverable presents a novel definition focuses on the development of novel business models for energy data value chain stakeholders, which built on the principles of data and data intelligence sharing, are expected to facilitate the transition towards more digitised and data-enabled energy services. These models must enable the wide use and application of big data and AI technologies together with data sharing mechanisms by the electricity data value chain stakeholders for the more effective and evident realization of their individual and common business goals, along with the policy targets for decarbonization and resource efficiency imposed by EU and national regulations.

The main objective is to propose new business models that will be materialized in real conditions in SYNERGY pilot sites. This is important in order to understand the market value and potential of the key SYNERGY outputs and technologies, specially focusing on the value generated by the SYNERGY Big Data Platform and AI Analytics Marketplace. This is the first step towards identifying the socio-economic factors that will determine the adoption of the SYNERGY products by the electricity value chain stakeholders.

The first part of the report deals with an analysis of the state of play and the landscape analysis of the main issues that circumscribe the scope of the project. Topics addressed are (energy) data marketplaces and data hubs, new data ecosystems and big data monetization.

Opportunities and challenges identified after this study in summary are: (i) energy market stakeholders not leveraging the full potential of data as they are not yet involved in a real data-economy. (ii) lack of professional skills and also infrastructures to bear big data infrastructure and data analytics. (iii) they are reluctant on data exchange for privacy issues, or by a real fear of losing leading market positioning.

In the second part of the report an initial assessment of candidate business models for the main SYNERGY actors is provided. Our starting point is an archetype business model per each actor among the different services derived from the Horizontal Business Scenarios and Vertical Business Scenarios defined later in this document that put on value the combination of functionalities and services detailed in the Vertical Business Scenarios defined in the deliverable D2.1 'End-user and Business requirements analysis for big data-driven innovative energy services and ecosystems v1'. Firstly, in this section we explain our holistic business analysis and evaluation methodology that comprises of 5 steps:

Step 1. Generic value network generation

Step 2. Economic and business analysis of SYNERGY business scenarios.



Step 3. Creation of archetype business models properly involving the SYNERGY key outputs (Big Data Platform and Analytics Toolkit), associated energy applications and services delivered by the project, together with the respective stakeholders involved in data sharing functions and service provision.

Step 4. Cost Benefit Analysis.

Step 5. Final business models and guidelines for the successful market positioning and introduction of the SYNERGY tools.

In the context of the report we present the results of the three first steps, whereas the next two will be followed in WP10 and WP8 respectively. The generic value network in Step 1 represents the main stakeholders involved in the electricity data value chain and the likely, depending on the business case, interactions amongst them. Moreover, it introduces the main business roles involved and the contribution of each one of them in the delivery of a potential product or service, as well as the flow of information, data exchanges, service provision and money between the participants. Based on this network, the second step analysed thoroughly each business case derived from the Vertical Business Scenarios defined at D2.1 'End-user and Business requirements analysis for big data-driven innovative energy services and ecosystems v1', identifying the participating business roles and which are the actors that assume them.

Through this important process all SYNERGY partners explored the different business cases that could originate from their participation in SYNERGY and gained a more business-oriented understanding of the SYNERGY ecosystem that will help them to either introduce competitive and value adding products to the market (in the case of technical partners), or adopt the SYNERGY key outputs and relevant energy applications into their everyday operations (following the validation activities of the project), at the end of the project. This analysis resulted in the creation of 17 archetype business models (BMs). These models present how the economic value is generated for the participating stakeholders stemming from the SYNERGY core technological innovations and tools. The business models are characterized as "archetype", because they aim to account for the entire set of services in which each tool may play a role. The archetype business models are presented graphically using value networks and business modelling canvas that describe the assets/products/tools (provided by the project) to be utilized for achieving the objectives and the anticipated economic gains for each core participating stakeholder.

In this context, the list of the archetype business models analysed in this report has as follows::

1. Data Intelligence as a Service for Advanced Electricity Grid Asset Management and Planning



2. Data value as a service for Advanced Asset Management
3. Data Intelligence-driven Advanced Predictive Maintenance for RES Power Plants
4. Dynamic Enhancement Energy Performance Certificates
5. Synergetic Energy performance contracting (design)
6. Synergetic Energy Performance optimization (self-consumption)
7. Intelligence-Driven long-term Generation Planning and PPAs Advisory
8. RES Power Plant Optimizer for GPPA maximization
9. Transparent GPPA marketplace
10. RES Virtual Power Plant (VPP)
11. Objective Dynamic Pricing of Electricity
12. Retailers as Non-Energy Service Providers
13. Flexibility and portfolio analytics (sales of insights)
14. Flexibility VPP configuration for ancillary services
15. TSO-DSO Collaborative Network Management
16. Urban planning crowdsourcing marketplace
17. Synergetic Energy as a Service model (Retailer – ESCO & Retailer-Aggregator)

For all the above, our analysis has provided preliminary insights for the current state of efficiency in operations (in the absence of SYNERGY tools and technologies), and consequently the different stakeholders' increased costs or limited revenues due to their limited data outreach, lack of data management mechanisms and operational sophistication/ intelligence, as well as, their inability to advance service offerings into more innovative concepts such as the ones introduced in the SYNERGY project. This process is a prerequisite for identifying the “business as usual case”, which will be utilized as a comparison basis during the cost-benefit-analysis of the BMs later in the project, targeting to reveal the source of the added value and to quantify the potential benefits for the stakeholders.

The report proceeds with the mapping of business models at the different pilot sites. As the active end-user and stakeholders' participation and involvement in the very beginning of the project is paramount as part of the open innovation approach introduced in the project, towards co-creating shared value and directly addressing emerging end-user needs extensively presented in D2.1, this has



been an enabler for selecting the list of business models to be examined in the project and to allocate the business models to the different pilot sites. For the development of the business models and their mapping into the different pilot sites the business interests from the pilot partners have been carefully considered, together with the available (data) assets and the synthesis (size) of each pilot site. This information has been completed through the conduction of a poll aimed at getting feedback from the pilot sites business stakeholders to know their opinion about the business models defined in the project. As a result, it has been identified which business model will be tested in each of the pilot sites and providing also the reasons that led to this mapping.

The defined business models will be thoroughly evaluated by utilizing evidence (operational and economic) from the validation activities and real-life trials of the project in the pilot sites. This will allow for the Cost-Benefit Analysis and critical assessment of the viability of the defined business models in different contexts and under diverse business, regulatory and operational circumstances, and will reveal the need for further refining part of them to increase their attractiveness and safeguard their successful application during the post-project period. Furthermore, we will be able to examine the impact of some key assumptions on the results obtained, and study the need for incentive or subsidy mechanisms as part of the Business Models' realization not for a single pilot site, but for the rest as well. This will provide valuable inputs towards the definition of partner's final exploitation plans and producing final business plans fully exploiting the added value of SYNERGY core technological results.

