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## Case Study

# ENGIE: Powering the Energy Transition



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This case study was written by Pal Boza, Senior Research Associate, and Theodoros Evgeniou, Professor of Decision Sciences and Technology Management, both at INSEAD. It is intended to be used as a basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation.

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*"The future is already here; it is just unevenly distributed."*

William Gibson<sup>1</sup>

## The energy transition

Robert Heinlein's sci-fi novel 'Let There Be Light'<sup>2</sup>, published in 1940, described the discovery of light panels that provided an almost free and inexhaustible energy supply – electricity from sunlight – and how the inventors clashed with the 'Power Syndicate', a group of energy companies seeking to preserve their monopoly. The inventors ultimately decide to share their know-how, allowing anyone to produce their own power, thus 'disrupting' the corporate business.

The story may have sounded utopian 80 years ago – even today renewables still do not produce electricity for free – but it could equally serve as an illustration (albeit simplified) of the technological and socio-economic changes related to the energy transition currently shaping our world – the shift from fossil-based fuels to carbon-free renewable sources. Global electricity generated by wind and solar multiplied more than 50 times between 2000 and 2019<sup>3</sup>, and in 2020 accounted for 30% of global electricity generation.<sup>4</sup> Solar systems in homes and other facilities are set to increase rapidly, which will fundamentally change the power system.

The energy transition is not simply a technological shift. It implies a fundamental shift in the way energy is produced, distributed and consumed, disrupting the traditional way in which utilities do business and pushing energy companies to develop new business models and products instead of 'just' selling energy. One example of this is the concept of 'Energy-as-a-Service'<sup>5</sup> – the provision of innovative services to help people consume energy more efficiently and curb carbon emissions.

## The future of energy is digital: ENGIE's digital products

In April 2017, Ohio State University board of trustees approved a 50-year concession to reduce the carbon footprint of its 485-building campus, one of the largest in the United States, at the end of a two-year process during which students, faculty and staff reviewed 40 different bids. The winning bid, valued at US\$1.165 billion, was made by the ENGIE-Axiom consortium,<sup>6</sup> with a commitment to increase energy efficiency by at least 25% during the first 10 years<sup>7</sup> (equivalent to US\$250 million).<sup>8</sup>

The bid was supported by ENGIE's energy and carbon emissions management product that relies on artificial intelligence to optimize campus energy consumption. Its 'Smart Institutions' platform integrates energy data, operational data, third-party data such as market and weather data, and uses advanced analytics to detect operational anomalies and erroneous data, provide real-time energy and carbon emissions analysis, support operating managers, and benchmark facilities against one another.<sup>9</sup> It also created an interactive website to enable students, faculty, and other campus residents to explore their energy

consumption patterns. According to Olivier Sala, Group VP of Research & Innovation, CEO of ENGIE Digital from 2018

*“A few years ago, we were only able to roughly estimate energy savings for a building. Today, thanks to our experience with previous projects and digitalized tools, we can model exactly how much energy we can save. This puts us in a better bidding position compared to our competitors.”*

Smart Institutions is one of a dozen digital products commercialized by ENGIE. They include platforms that supply information on the operation of renewable assets such as wind turbines and solar panels, and sustainability management services that are used internally by its business units (BU) and sold to external clients (Exhibit 1). Selling Software-as-a-Service is radically different from the traditional business model whereby utility companies produce, distribute and sell fossil fuels through a centralized network, in which data flows from the generator to consumers. It is part of the transformation of the energy sector being driven by data and technologies such as AI.<sup>10</sup>

What does it take for a utility company to become a data- and AI-driven software business? How does a company not in the software industry transform into one that develops and sells software based on data and AI – a path that is increasingly common in many industries and geographies? How does it build a data and AI product factory?

## Early push for digitalisation

ENGIE is a global reference in low-carbon energy and services. With 170,000 employees, it is committed to accelerating the transition to a carbon-neutral world by reducing energy consumption and implementing environmentally-friendly solutions. Part of its *raison d'être* is to reconcile economic performance with impact on people and the planet, building on its key businesses (gas, renewables, services) to offer competitive solutions to customers. With turnover of €55.8 billion in 2020 (Exhibit 2), the group is listed on the Paris and Brussels stock exchanges (as ENGI), and included in the main financial indexes (CAC 40, Euronext 100, FTSE Eurotop 100, MSCI Europe) and nonfinancial indexes (DJSI World, DJSI Europe, Euronext Vigeo Eiris - Eurozone 120/ Europe 120/ France 20, MSCI EMU ESG, MSCI Europe ESG, Stoxx Europe 600 ESG, and Stoxx Global 1800 ESG).

Known as GDF Suez until 2015, ENGIE was created by the merger of Gaz de France with Suez in 2008. Its history (Exhibit 3) dates back to the 19<sup>th</sup> century, when it was involved in the construction of the Suez canal (linking the Mediterranean and the Red Sea).<sup>11</sup>

In early 2016, ENGIE announced that it would gradually stop producing electricity from coal and dispose of €15 billion worth of assets to be reinvested in low-carbon, distributed-energy assets and energy services such as heating and cooling networks.<sup>12</sup> Digitalization was seen as an opportunity to support the new strategy. This led to the creation of ENGIE Digital, providing digital services at group level. According to Yves Le Gélard, Chief Digital Officer -

*“We were the very first energy giant in the world to decide to gradually close our coal plants. This was a great decision and had a fundamental effect on the company. By selling our coal-related assets, we could now reinvest in digitalization.”*

## Phase 1: Preparing the organization (2013-18)

A few years before ENGIE Digital, the company began experimenting with algorithms and data. As the technology matured (such as that for big data) business units were encouraged to develop proof of concept (POC). By 2016 it had 300 POCs, but as Le Gélard pointed out –

*“We were pleased with this but still not fully satisfied since it was impossible to scale all 300 POCs. This was still the first step, we needed to mature.”*

Data tended to be divided into siloes, with different initiatives and systems in place, as Gérard Guinamand, Group Chief Data Officer (CEO of ENGIE Digital 2016-18) noted:

*“Before 2016, we felt that the digital level and ambitions of the company were not at the right level, especially not at the level expected by the CEO of ENGIE.”*

The creation of ENGIE Digital not only impacted the organizational structure but signaled the beginning of a new corporate approach – how the leadership perceived digitalization – loud and clear. Said Olivier Sala -

*“Back in 2016, the Group CEO asked the CEOs of the BUs about their digital ambitions. This question was raised for the first time. Most business units did not think about the issue before, but now they had to start giving answers.”*

ENGIE Digital had two key strategic thrusts. The first aimed to improve customer relationships by putting digital applications in the hands of B2B and B2C customers. The second was to transform to an industry 4.0 model by digitizing ENGIE’s industrial assets and activities, as Gérard Guinamand explained:

*“We started by improving existing pain points and developing related use cases in different parts of the company. We were trying to develop applications such as predictive maintenance or ones that would improve the availability of our assets, decrease the cost of manpower, or increase our revenues.”*

The new subsidiary won awards for developing innovative digital solutions and began cooperating with other companies, including Silicon Valley start-ups. Talent was hired with a focus on data science profiles and change-management skills, and machine learning tools started to be deployed.

Although ENGIE Digital was a cost center financed from the central budget, most decisions, including the allocation of resources, were taken by the BUs. ENGIE Digital was involved in designing and building digital projects, and then handed them over to be run by the BUs. This raised several issues.

- The main competencies of most BUs were not IT-related, so they were not equipped to manage the complex task of running digital products. “The mindset of the BUs is rather buying software, not running it,” said Julien Andrychowski, Lead Data Scientist, ENGIE Digital.
- Scalability was also an issue. Once BUs had taken ownership of a product, they would customize it for their own needs, which made replication at a corporate level too expensive. As Mathias Lelièvre, CEO of ENGIE Impact, explained, “The intersection of scalability and tailor-made tension is what makes the product management so challenging and key – you need to make trade-off calls all the time.”
- Since the BUs were accountable for digital projects, they were reluctant to take on innovation risk with data and AI, and tried to minimize the risk of IT developments, as Olivier Sala noted -

*“The financial model of operational units is not suited to risk-taking positions in terms of digital assets development. However, the differentiation through enhanced data-powered software requires taking calculated risks. If you do not take risks with IT development, you do not go anywhere in value creation. In ENGIE Digital’s new model, product management (functional roadmap, CAPEX investments, deployment at scale) is the responsibility of the business, while technical delivery and operations are under ENGIE Digital. This does not change ENGIE Digital’s ambition; in fact, it creates the conditions for the digital transformation of the group.”*

At this stage, the emphasis was more on ‘digital projects’ – with a well-defined start and end date – than ‘digital products’ that would be used, maintained and updated over a long time. Earlier projects had yielded innovative results, but few were ultimately deployed in a real business context. Projects were not always driven by clearly defined customer needs and tended to be experiments. Nor did they have P&L. However, their proliferation was an important in supporting the culture shift to a data- analytics- and AI-driven organization, paving the way for the next phase of the transformation.

Although ENGIE Digital ran at full capacity, cooperating on over 72 digital projects with the BUs between 2016 and 2018, scale and speed were still an issue at the corporate level, said Gérard Guinamond -

*“It is a question of speed versus bottom-up transformation. Starting transformation from the BUs is very slow and you have to count on the willingness of the people. But in terms of use and transformation it is also challenging to drive digitalisation from the centre. But changing is faster centrally and is very visible, since you hire everyone in one place. So we decided to go for speed.”*

The focus within ENGIE Digital moved from transformation to speed at the end of 2017, with 10 centralized digital platforms selected based on what he called “best-sellers across BUs”.

Another change was the shift in focus from software to data. ENGIE Digital was initially focused on the software part of the value chain, but as of the end of 2017 it became clear that the bottleneck preventing digitalization was lack of data. He added -

*“We developed a predictive maintenance system for a specific type of power plant and it was absolutely impossible to get the history of data covering all the issues relating to service interruption, maintenance, etc. Even if we had an efficient algorithm, it was impossible to put it into practice.”*

As a result, the focus shifted. Henceforth data was perceived as an essential asset.

In the first two years of ENGIE Digital’s existence they became familiar with what could be achieved with data, analytics and AI. Data skills were developed throughout the company, and POCs provided the initial seeds for transformative data products to come. The cultural change to becoming a data-driven organization had begun.

What was lacking was an inclusive leadership style and leadership skills to empower local decision makers – to forge the mindset required to change the organization. Said Yves Le Gélard -

*“Digital or data has to align with where the power is. It is very hard to progress with the wind against you. If the power is in Brazil – this was the case until now – you better sit down and find a solution with the leader in Brazil.”*

In early 2018, ENGIE Digital was still a cost centre funded by the top, playing a support function for a wide portfolio of hundreds of data and analytics POCs, yet without a measurable business impact beyond the contribution to changing the mindset. Things were moving slowly, in a decentralized way.

What the company needed was speed, data products with a clear business value, and scale. Getting there would require a new model to bring it to the next level of maturity.

## **Phase 2: From costs and software to revenues and data (2018- )**

*“We realized that the speed to deploy standardized tools and methods is key for success in order to scale the results beyond the BUs to the corporate level. This pushed us to come up with a different model, moving ENGIE Digital to become an internal software [business] company.”*

Yves Le Gélard, Chief Digital Officer, ENGIE

In the summer of 2018, Olivier Sala took over as CEO of ENGIE Digital and started implementing a new operating model. The first step was to understand how digital projects were generated and delivered, and their business impact:

*“My conclusion was that we had already some interesting results, including digital POCs and projects, but they were too local and too BU-centric and failed to leverage*

*the size of the Group. We had to take the next step and converge towards a portfolio of a dozen digital platforms.”*

Activities focused on 10 large-scale products with the highest business impact, such as Smart Institutions. These “digital platforms” (Exhibit 1) were the starting point for a new operating model that incorporated new organizational, governance and financial elements.

The *organizational* aspects involved setting up dedicated product teams to build and manage each product. They addressed specific business challenges and were accountable for P&L. The project teams included experts from the BUs and ENGIE Digital. They were supported transversally by the digital capabilities of ENGIE Digital related to technology, operations, data, and design. ENGIE Digital did not have to decide what products were needed; that was defined by market needs identified through the BUs. It was customers’ needs – those of the BUs and external clients – that drove product initiation and development.

*Governance* focused on improving collaboration between ENGIE Digital and the BUs, as Sala explained -

*“We wanted to avoid being similar to a software company with a classic customer-supplier model, the BUs being customers and ENGIE Digital being the supplier. Instead, we tried to build the best collaboration process possible, involving the people who knew the business.”*

Each digital platform had a governance team with strategic and operational layers (Exhibit 5). The board validated the strategy in line with the Group’s approach, specified the roadmap and the go-to-market priorities, decided on investment and monitored spending against budget forecasts. The operational committee prioritized features for development, validated the short-term roadmap, decided on new features based on the needs of BUs, reviewed operational deployment, and tracked value creation and KPIs.

The *financial model* was rethought “to be sure that we are economically relevant”, as Vincent Derenty, Chief Technology Officer, put it. Henceforth, ENGIE Digital had to break-even. Investments were made on behalf of ENGIE Digital and invoiced to BUs through an SaaS licensing model. The aim was to improve the BU’s financial accountability while ENGIE Digital bore most of the risk – which meant more risk taking than before.

Tracking value creation of the digital platforms was a challenge both for the BUs and ENGIE Digital. KPIs were related to pure business impact, such as the cost of network monitoring and maintenance. Benchmarking was done across BUs. The impact on the overall business was measured:

*“When new university campuses are approached, we present the live version of our Smart Institutions platform. They can get an impression of how their future systems*

*would look like and this is very powerful. This makes it much easier to acquire new clients.” (Olivier Sala)*

The *operating* model of ENGIE Digital was re-designed with a clear purpose: design, build, and run a portfolio of software products to provide a competitive advantage for the Group at scale, as Vincent Derenty noted –

*“An important change compared to the previous phase was that the ‘running’ part was also done now by ENGIE Digital centrally. ...Before there was a project with an end, the end being when you give the project to the BU. Now it had become a product, which had a full lifecycle inside ENGIE Digital.”*

## Data projects vs industrialised data products

*“It is very different running a project from running a product or service. If you are late in a project, everyone is unhappy, but it is not a disaster. The day you go live, service comes first. If a product/service stops, we are in deep trouble.”*

Yves Le Gélard, Chief Digital Officer, ENGIE

Before the new operating model was introduced in 2018, the approach was more project-based. The transition from projects to industrialized products with P&L was a fundamental change. In line with the new organizational model, the approach was more user-centric and based on ‘design-thinking’. Industrialization also meant higher quality standards, ease of deployment and maintenance, as Mihir Sarkar, Chief Data Officer at ENGIE Digital, noted

*“Our previous digital projects became digital products, and this made a big difference. For the products we included the customer in the loop; we understood the user’s workflow and combined rules with simple machine learning – for instance, logistic regression – to develop the product. This succeeded by making sure end-users adopted the products and would give feedback to improve them.”*

Investment decisions were made through a joint iteration process involving the BUs, with several steps required for qualification. There was a ‘de-risking phase’ which allowed the products to fail fast - sometimes in a matter of weeks - before too much effort and communication were invested, making termination more difficult. The main question to be answered was whether, based on the available data, it was possible to create value. Mihir Sarkar explained:

*“The fact that the mindset changes, changes how people work. For example, there is now an investment committee which decides whether to invest or not, and we include the customer in the presentation, we do not have to make the techno-push.”*

## Data product teams: composition and skillset

ENGIE Digital is a matrix organization with digital platforms aligned with ENGIE’s business verticals or global business units (GBUs), and transversal streams organized as *practices*, such as Data, Design, Agility, Cybersecurity, and DevOps. The DevOps model, based on the “you build it, you run it” principle, monitored products for uptime, latency issues, etc. The CTO’s office monitored KPIs like deployment frequency to track and improve each platform’s software development capabilities. The Data team developed data pipelines and machine-learning use cases within the platforms. It also issued guidelines and resources to manage the end-to-end “data supply-chain” from the source to the end user.

The end users of digital platforms’ could be external (sustainability or energy managers for large corporations or institutions for instance) or internal (operators and technicians who run and maintain ENGIE’s equipment or for the benefit of customers). A digital platform was not usually sold as-is to external customers, but sold as part of a commercial offer by ENGIE’s business units.

ENGIE Digital’s Product, Design and Data teams worked with external end users and internal stakeholders to define the needs and the product roadmap. Members of product teams had diverse roles to reflect both the business and technical needs. The ‘Platform Lead’ was responsible for product delivery, the business model, the operational model and P&L of the platform. In many cases, s/he took on the role of ‘Product Manager’, handling product vision and strategy. The ‘Product Owner’ handled product features, working with the design and engineering teams, and defined the product backlog for the development and delivery teams using ‘agile’ methodology. Julien Andrychowski, Lead Data Scientist, observed,

*“We prefer to hire a product owner who has a track record on the business side and then learns the technical part, because that is the best way to get a link with the users. It is a good practice that we try to follow”*

Mihir Sarkar added:

*“There must be alignment between the people who push the data and the people who use the data. So we did a governance committee that includes the CTOs from the BUs and ENGIE Digital. We need to show them they will get value.”*

While technical expertise was necessary for a few members of the teams, the aim was to have different backgrounds – to create diverse teams with an emphasis on problem-solving skills and creative outlook, as Varun Gowda, Chief Digital Officer at ENGIE Impact, explained-

*“Energy specific knowledge is not a must-have but a nice to have. Our team members have diverse backgrounds, and we are always looking for people who ask fundamental*

*questions about what the customer is trying to achieve. This is the most important requirement for us.”*

## Centralisation vs decentralization of data products

Although the context was different for each BU in terms of geography and activities, for most digital platforms the BUs were the final customers of ENGIE Digital. Theoretically, they had three options to fulfill their needs for digital products: buy them from ENGIE Digital, or from an outside vendor, or develop data products internally. ENGIE’s trading unit, for example, considered all three options.

*“The underlying question is whether the product we need is a trading know-how or not and is it a trading know-how that everyone has or a more specific one. Based on these questions we can choose from the three options.”*

Alexandre Cosquer, Board Member, ENGIE Global Energy Management Solutions

The trading unit had financial oversight of the energy-generation assets of the company and was a client of ENGIE Digital for the platforms ‘Robin’ and ‘Darwin’, which provided information about the operation of thermal and renewable plants. Cosquer added:

*“This is not trading know-how. We do not want to learn how to connect renewable power plants to a platform and we believe ENGIE Digital can do this much better than we could, so we buy this service from them.”*

*Weather forecasting, for example, was important to estimate the volume of renewable energy production – one needed by all market players in relation to energy trading. Several companies provided these tools, as Cosquer explained.*

*“There are dozens of companies out there with several PhDs providing weather forecasting tools, so we would never develop such a tool for ourselves. However, in our very specific activity we were trying to buy as much as possible from very simple digital products from external vendors, because we believed they can do a better and cheaper job compared to us developing our own tools.”*

## Data@ENGIE

In parallel with the introduction of the new operating model for ENGIE Digital, a new entity Data@ENGIE was created in 2018 to be in charge of the data transformation of the group. It provided a centrally-financed corporate support service, similar to the model used for ENGIE Digital before 2018.

Data@ENGIE started to build data skills and data practice to support the BUs with a bottom-up approach. Before local data products could be run, specific skills and organization needed to be in place, but as Gérard Guinand explained,

*“Entities were not prepared at the beginning of 2018, so we started to train people and to create the local organizations with chief data officers in place. Data offices were established to build the data strategy and the links with the business to identify the data products. Data@ENGIE also built so-called data garages, including the local team with data scientists and engineers, etc., to build and run local data products.”*

In parallel to facilitating the data transformation at a local level, Data@ENGIE set up the Common Data Hub (CDH), a centrally managed, distributed data lake that contained all data sources used by the different BUs (catalogue, ownership, roles, etc). Each BU owned the data of their customers and provided access to other entities inside ENGIE to that data. Maintenance of the CDH was free of charge for the BUs, and centrally financed. Its use (data storage and compute) was paid for by the BUs.

As Data@ENGIE evolved, Yves Le Gélard also pointed out the changing KPIs Data@ENGIE was reporting over time:

*“Today, I challenge Data@ENGIE on what is the feature that will cut costs or create value. Initially, I was challenging Data@ENGIE on the fact that my CDH is almost empty.”*

Mihir Sarkar confirmed the changing expectations:

*“At the beginning the metric for CHD was ‘data volume’ not ‘data quality’, but this is now changing.”*

The CDH was a ‘centralized way’ to solve the increasingly complex issues around data, but tackling data quality at a centralized level was very challenging. One approach to solve data quality problems was to embed as many filters at the source of the data at the BU level as possible, but as Varun Gowda pointed out -

*“What we now recognize is that we need to internalize data quality at the platform level, not only at the source, since at the source the data was not made for the product.”*

‘Data stories’ were also used by some of the BUs to increase data quality by connecting data quality to storytelling. He added -

*“People need to understand why data quality is so important, what it means from a data product/use-case specification point of view.”*

## What next?

How will data be leveraged by ENGIE in the future? Is there an ‘optimal’ organizational setting to support digital/data products? Clearly data-related issues are crucial to support digital products and there is already a dedicated central organizational unit to deal with these, but many questions remain unanswered. For example, CDH is not the only existing data

infrastructure inside the company and can be bypassed if the products/platforms were done before it existed, as Mihir Sarkar pointed out:

*“Not every customer is linked to CDH. We did a lot of it ad hoc. But now it is mandatory to use CDH for new platforms, and the old ones need to migrate.”*

The relationship between the Global BUs and Data@ENGIE was also evolving.

*“Currently we depend on the willingness of the different business entities to provide data. We don’t have any group-level governance of data – but this is about to change. Four Vertical Data Hubs (VDH) including data strategy, governance and use cases managed globally will be linked to the 4 Global BUs of the company, and operational entities will have to provide data through the CDH. This is a very important change.”  
(Gérard Guinamand)*

*“[This change] will result in the development of a Group Performance Cockpit, which is meant to enable data-driven decision making by reporting KPIs from operational units to top executives, and then form actionable plans based on executive decisions.”(Mihir Sarkar)*

To increase at-scale deployment and attain financial sustainability for the Platforms, ENGIE Digital is evolving to a model where it works hand-in-hand with the Group’s Global Business Units, which carry the product responsibility. There are some similarities between the evaluation of ENGIE Digital and Data@ENGIE. Both started from an “experimenting” mode, provided support services for the whole organization and were initially financed centrally.

Where would Data@ENGIE evolve? Would it ultimately be similar to ENGIE Digital and become a profit centre, with the BUs paying for its services? Should ENGIE Digital and Data@ENGIE be restructured or potentially merged? How will the two evolve as ENGIE itself, and the energy sector, change over time? What capabilities need to be further developed and how will ENGIE’s data products factory impact the company going forward?

## Exhibit 1

### Digital Platforms of ENGIE Digital

RENEWABLE ENERGY	THERMAL PRODUCTION & ENERGY SUPPLY	ENERGY SOLUTIONS
<p><b>Renewables O&amp;M</b> <i>(Darwin)</i></p>	<p><b>Thermal O&amp;M Management</b> <i>(Robin / Robin Analytics)</i></p> <p><b>Digital Supply Chain</b> <i>(BeeWe)</i></p> <p><b>Round &amp; Safety Management</b> <i>(Mobile Operator)</i></p> <p><b>Energy Management Services</b> <i>(eCare)</i></p>	<p><i>For operational excellence:</i></p> <p><b>DHC Optimization</b> <i>(Nemo)</i></p> <p><b>Predictive Maintenance</b> <i>(Agathe)</i></p> <p><i>For differentiated offers:</i></p> <p><b>Urban Service Management</b> <i>(Livin)</i></p> <p><b>Campus Energy Management</b> <i>(Smart Institutions)</i></p> <p><b>Energy Management Services</b> <i>(Smart O&amp;M)</i></p> <p><b>Sustainability Management</b> <i>(Ellipse)</i></p>

Source: ENGIE Digital

## Exhibit 2

### ENGIE Financial 2020

**Progress at pace on new strategic direction towards accelerating the energy transition  
Strong recovery from Q2 levels, with H2 organic performance similar to previous year**

#### Business Highlights

- Major capital projects delivered with €4.0bn growth Capex<sup>1</sup>
- Strong growth in Renewables with 3 GW commissioned and 2 GW acquired
- Sale of 29.9% shareholding in SUEZ completed
- Client Solutions and further strategic reviews launched towards Group simplification
- Employee representatives consultation launched for potential creation of new leader in multi-technical services
- New ExCom announced
- Continued ESG progress, with commitment to finalize coal exit in Europe by 2025 and globally by 2027
- Decision to stop preparation works that would allow for the 20-year extension of two nuclear units beyond 2025
- Update on new strategic direction alongside Q1 results, on 18 May 2021

#### Financial Performance

- 2020 NRIGs in line with guidance, EBITDA and COI<sup>2</sup> above expectations
- Significant impact of Covid-19 in 2020 mainly on Client Solutions and Supply, with c. €1.2bn total Group impact at COI level
- Negative FX impact of €0.3bn at COI level, mainly due to BRL depreciation
- Net financial debt at €22.5bn, down €3.5bn versus last year, strong liquidity and strong investment grade rating maintained
- Impairment of nuclear assets, partially offset by capital gains on disposals, leading to a NIIGs of €-1.5bn
- 2020 proposed dividend of €0.53 per share
- 2021 guidance<sup>3</sup>: NRIGs expected in the range of €2.3-2.5bn

**Catherine MacGregor, CEO said:** “*ENGIE successfully adapted its operations in the face of the unprecedented Covid-19 crisis. In the second-half, activity levels progressively improved leading to H2 organic performance similar to H2 2019. Alongside ensuring delivery of essential services, the Group announced a new strategic direction to simplify the Group and strengthen ENGIE’s role in the energy transition.*

*We have had a good start to the year and we expect financial performance in 2021 to improve significantly. In addition to driving a recovery in performance, we will focus on completing the strategic reviews underway to create value and re-allocate capital towards growth, particularly in Renewables, Networks, and Asset-based Client Solutions. I am delighted to have joined ENGIE at such an exciting time for the Group and for this industry. My leadership team and I are looking forward to turning our new strategic orientation into action, towards further simplification, performance and importantly, towards accelerating the planet’s transition to carbon-neutrality.”*

#### Key financial figures as of December 31, 2020

In € billion	12/31/2020	12/31/2019	Δ 2020/19 gross	Δ 2020/19 organic <sup>4</sup>
Revenues	55.8	60.1	-7.2%	-5.7%
EBITDA	9.3	10.4	-10.5%	-6.5%
Current operating income (COI)	4.6	5.8	-21.3%	-16.4%
Net recurring income Group share (NRIGs)	1.7	2.7	-36.5%	-34.3%
Net income Group share	(1.5)	1.0		
Capex	7.7	10.0		
Cash flow from operations <sup>5</sup>	7.1	7.6		
Net financial debt	22.5	25.9		

<sup>1</sup> Net of DBSO (Develop, Build, Share and Operate) and US tax equity proceeds

<sup>2</sup> Current Operating Income (COI) definition excludes the non-recurring share in net income of equity method entities

<sup>3</sup> Main assumptions for these targets and indications: average weather in France for 2021, full pass through of supply costs in French regulated gas tariffs, no major regulatory or macro-economic changes, no change in Group accounting policies, market commodity prices as of 12/31/2020, average forex for 2021: €/£: 1.23; €/BRL: 6.27, up to 100 M€ dilution effect at the COI level from c. €2bn disposals in addition to previously signed transactions. Projections assumes no additional stringent lockdowns and a gradual easing of restrictions over 2021

<sup>4</sup> Organic variation: gross variation without scope and foreign exchange effect

<sup>5</sup> Cash flow from operations = Free Cash Flow before maintenance Capex

Source: [www.ENGIE.com](http://www.ENGIE.com)

### Exhibit 3

#### *Brief history of ENGIE*

The history of ENGIE begins in the first half of the 19th century at the height of the Industrial Revolution in France and Belgium. Since then, the Group has diversified in response to changes in society, including population growth, urbanization, higher standards of living and environmental protection to become a global energy industry leader.

The history of the ENGIE Group is one of merger between many of the biggest names in European industry over a period of more than 180 years; companies like Société Générale de Belgique, Compagnie Universelle du Canal Maritime de Suez, Société Lyonnaise des Eaux et de l'Éclairage, Gaz de France and International Power.

The origins of the Group in the first half of the 19th century were marked by the enormous expansion in transportation, with the rush to build canals, railroads and tramways. The period between 1946 and 1955 was dominated by the need for industrial unity in France, which in turn led to the nationalization of Gaz de France. The discovery of natural gas in 1951 led to nothing less than the transformation of the Group between 1956 and 1967 to become a natural gas transporter, supplier and trader. The 1980s marked the beginning of extensive internationalization of the Group's business interests, culminating in the merger between SUEZ and Gaz de France in 2008 to create a global energy group.

#### Key dates in the history of ENGIE

**1834:** Société du Canal de la Sambre à l'Oise, the first subsidiary of Société Générale de Belgique, opens its office in Paris to bring coal from Charleroi to Paris.

**1858:** Ferdinand de Lesseps founds the Compagnie Universelle du Canal Maritime de Suez in Paris, with plans to cut a 100-mile canal to connect the Mediterranean with the Red Sea.

**1880:** Société Lyonnaise des Eaux et de l'Éclairage is formed in Paris.

**1946:** The French state nationalizes the assets of private gas and power companies, creating Gaz de France and changing the name of Société Lyonnaise des Eaux et de l'Éclairage to Lyonnaise des Eaux.

**1965:** The LNG carrier Jules Verne carries the first cargo of liquefied natural gas from RG area to the new gas terminal at Le Havre.

**1967:** Compagnie de Suez becomes a shareholder in Lyonnaise des Eaux.

**1972:** Gaz de France opens the Fos-sur-Mer LNG terminal on the Rhône delta.

**1980:** Major international expansion of Gaz de France and Compagnie de Suez begins.

**1986:** Compagnie de Suez becomes a shareholder in La Générale de Belgique as the Belgian group refocuses on its original core business of energy.

**1997:** Suez Lyonnaise des Eaux emerges as the world leader in the provision of local services out of the merger between Compagnie de Suez Lyonnaise des Eaux.

**2001:** International activities now contribute 15% of Gaz de France revenue. Suez Lyonnaise des Eaux changes its name to SUEZ.

**2004:** SUEZ focuses on 5 core businesses: power, gas and energy, water and environmental services. Gaz de France is privatized to become a French limited liability company operating in energy sectors other than gas.

**2005:** Gaz de France is floated on the stock market. International activities now contribute 30% of its revenue.

**2008:** GDF SUEZ is born out of the merger between SUEZ and Gaz de France. SUEZ Environnement is floated on the stock market.

**2009:** Cofely-GDF SUEZ is created out of the merger of Elyo with Cofathec to become the world's largest provider of energy services.

**2011:** GDF SUEZ acquires 70% of International Power to become the world's largest independent power generator.

**2013:** GDF SUEZ ends its shareholder agreement with SUEZ Environnement to remain a leading shareholder in the global water and waste management group.

**2014:** The GDF SUEZ Group employs more than 152,900 people worldwide with operations in 70 countries generating annual revenue of €74.7 billion. The Group continues implementation of its commitment to promote the energy transition worldwide.

**2015:** GDF SUEZ becomes ENGIE.

Source: [www.ENGIE.com](http://www.ENGIE.com)

### Exhibit 4

#### Comparing Phases 1 and 2 of Maturity at ENGIE Digital

	<b>Situation before the operational model change at ENGIE Digital in 2018 (Phase 1)</b>	<b>As a result of the model change at ENGIE Digital (Phase 2)</b>
<b>Financing of digital operations at ENGIE Digital</b>	ENGIE Digital was a cost center, financed from centrally dedicated budget	P&L is made at ENGIE Digital to sustain investment, not to make profit
<b>Customer involvement</b>	Data projects were launched without demand initially evaluated from customers, customers were not part of the development process either	Customer needs drive the data products' initiation and development
<b>Decision making to start a project</b>	Focus was more on technological innovation No preliminary financial assessment was made of the data project	Financial feasibility of the products' needs to be proved in advance
<b>Teams and tools</b>	Mainly data scientists worked on the projects, "heavy" machine learning tools used	Mainly Business people are driving the development process, diverse teams work on the development of data products, "simple" machine learning tools used
<b>Data</b>	Several different source used to get data. Bad data quality, because of many different platforms, formats, no coordination on data	Data quality is still an important issue to be solved, initiative for coordination on data
<b>Technical features versus value creation</b>	Emphasis on adding and experimenting with new features on existing platforms	Looking for direct value creation with new features
<b>Number of platforms</b>	30+ different platforms, deployment is with BUs	Approximately 10 digital platforms deployed as digital products, deployment is with ED

## Exhibit 5

### Structure of Product Teams after 2018

	<b>Strategic</b> <i>3-year to 6-month vision</i>	<b>Strategy Execution</b> <i>0 to 6-month vision</i>	<b>Tactic</b> <i>3-month vision</i>
	<b>BOARD</b>	<b>OPERATIONAL COMMITTEE</b>	<b>PI PLANNING</b>
Frequency	Every 3 to 6 months	Every 6 to 12 weeks	Every 3 months
Members	<ul style="list-style-type: none"> <li>• BU Sponsors</li> <li>• ENGIE Digital Director</li> <li>• GBL Director</li> <li>• Client Solution Lead</li> <li>• Platform Lead</li> <li>• Business Owner Representative</li> <li>• ATF Representative</li> <li>• GBL Operational representative</li> </ul>	<ul style="list-style-type: none"> <li>• Client Solution Lead / GBL representative</li> <li>• Platform Lead</li> <li>• Business Owner Representative</li> <li>• Business developers (optional)</li> <li>• BU operational representatives (optional)</li> </ul>	<ul style="list-style-type: none"> <li>• Platform Lead</li> <li>• Product owners</li> <li>• Product manager</li> <li>• Technical Lead</li> <li>• Developers</li> <li>• Designers</li> <li>• Release manager</li> </ul>
Lead	Main BU Sponsor	Client Solution Lead or GBL representative	Platform Lead
Objectives and Key Decisions	<ul style="list-style-type: none"> <li>• Validate the platform's strategic orientations</li> <li>• Provides business development strategy &amp; go-to-market priorities</li> <li>• Validates product orientations &amp; development of strategic features</li> <li>• Validates the platform's roadmap</li> <li>• Decides investments: monitors spending &amp; budget forecast</li> <li>• Prioritizes commercial target</li> <li>• Tracks value creation</li> </ul>	<ul style="list-style-type: none"> <li>• Prioritizes features for development</li> <li>• Validates roadmap &amp; short-term developments (3 to 6 months)</li> <li>• Decides to scope new features based on BU needs</li> <li>• Monitors BU/ED mutual engagements</li> <li>• Reviews the operational deployment</li> <li>• Pilots commercial pipeline and RFP go/no-gos</li> <li>• Manages qualification &amp; framing process</li> <li>• Tracks KPIs and value creation</li> </ul>	<ul style="list-style-type: none"> <li>• Commits PI Objectives per team</li> <li>• Validates tactical improvements that need to be made to product</li> <li>• Aligns teams on shared mission and 3-month vision</li> <li>• Communicates development capacity / workload</li> </ul>

Source: ENGIE Digital

## Endnotes

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