

Digital@Utility 2023:

What is the status of digital and green transformation in the energy industry?

June 2023

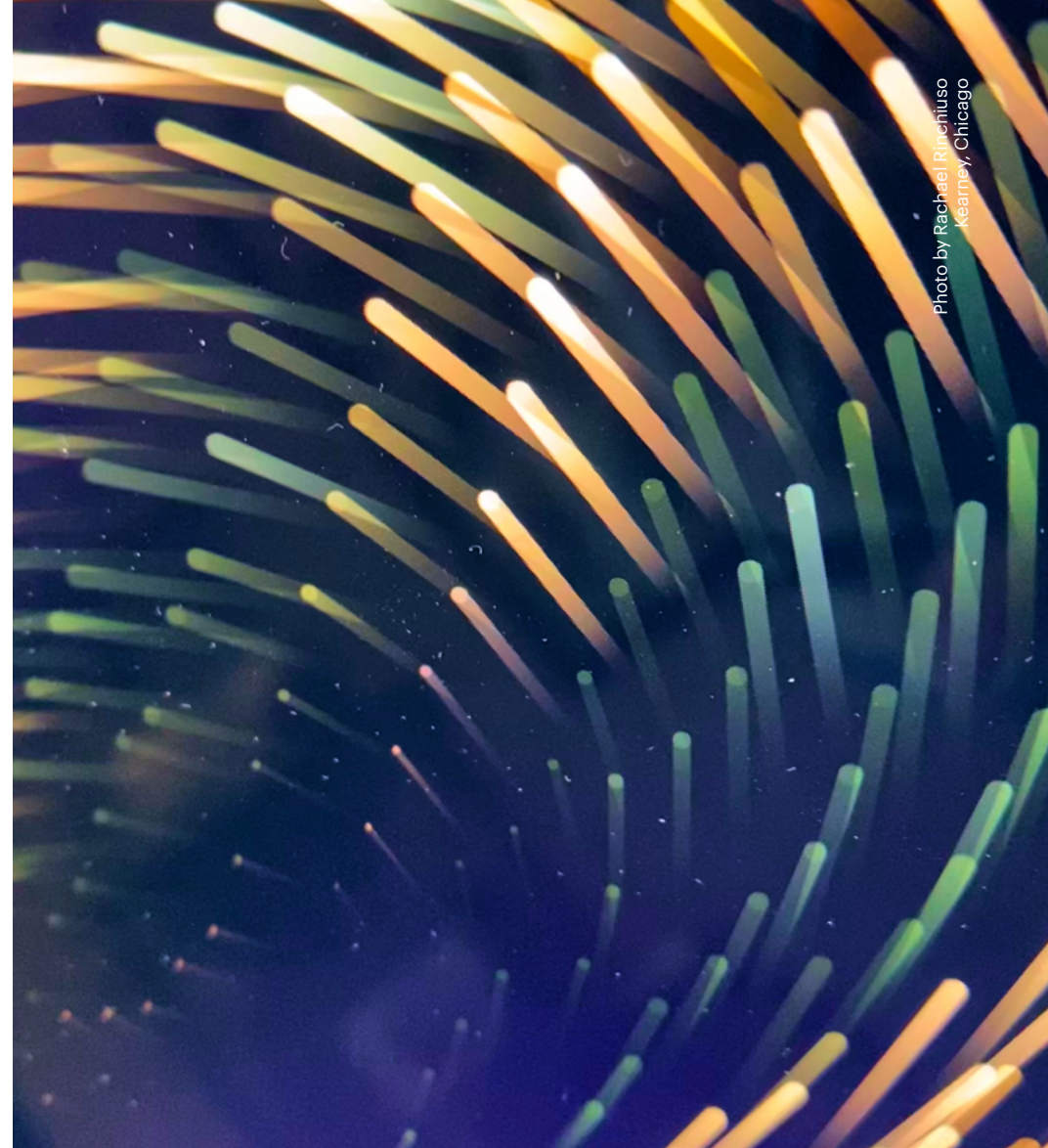


Photo by Rachael Rinchuso
Kearney, Chicago

bdeu



KEARNEY

IMP³ROVE

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Prologue

Dear Readers,

In today's ever-evolving energy industry, the twin transition—the path toward greater sustainability and higher digitization—plays a crucial role. Recognizing the importance of these factors, the BDEW, in collaboration with Swiss VSE, Kearney, and IMP³ROVE, introduced the Digital@Utility study in 2016 to help companies gain insights into industry practices and understand how they compare to the competition.

Since then, energy suppliers have had the opportunity to participate in our digitalization check, free of charge once a year, receiving valuable feedback and personalized recommendations for improvement. We have also gained exciting insights into the industry's digitalization and sustainability status, and have observed a continuous increase in the dynamics of energy suppliers.

With participants from 13 countries and all stages of the value chain, Digital@Utility 2023 provides an authentic view into industry standards. Our study not only sheds light on industry reality but also identifies trends and opportunities, empowering utilities to embrace change and adapt to the digital and sustainable age.

This year's study highlights the potential synergies between digitalization and sustainability as a key to a climate-neutral future. In this context, almost every fifth participating company already defines the goal of becoming climate neutral in terms of direct emissions by 2030. Growth in green business areas is key to realize this goal. More than 50 percent of companies expect annual revenue growth of over 10 percent by the end of 2025 in at least one green and sustainable business area they cover. Digital transformation is a key enabler to support these ambitions. Every second company aims to increase the share of the IT budget in total costs by 2025.

In order to leverage the extensive potential from new green and sustainable products, energy suppliers are facing numerous challenges. While more than 60 percent of utilities already have a digital strategy, 80 percent have not yet defined a digital north star along all steps of the value chain. In addition, about half of the companies currently lack a clear vision of the digital capabilities they will need in the future.

We would like to take this opportunity to extend our gratitude to all participating companies and wish you, dear readers, an insightful experience.



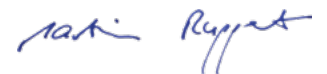
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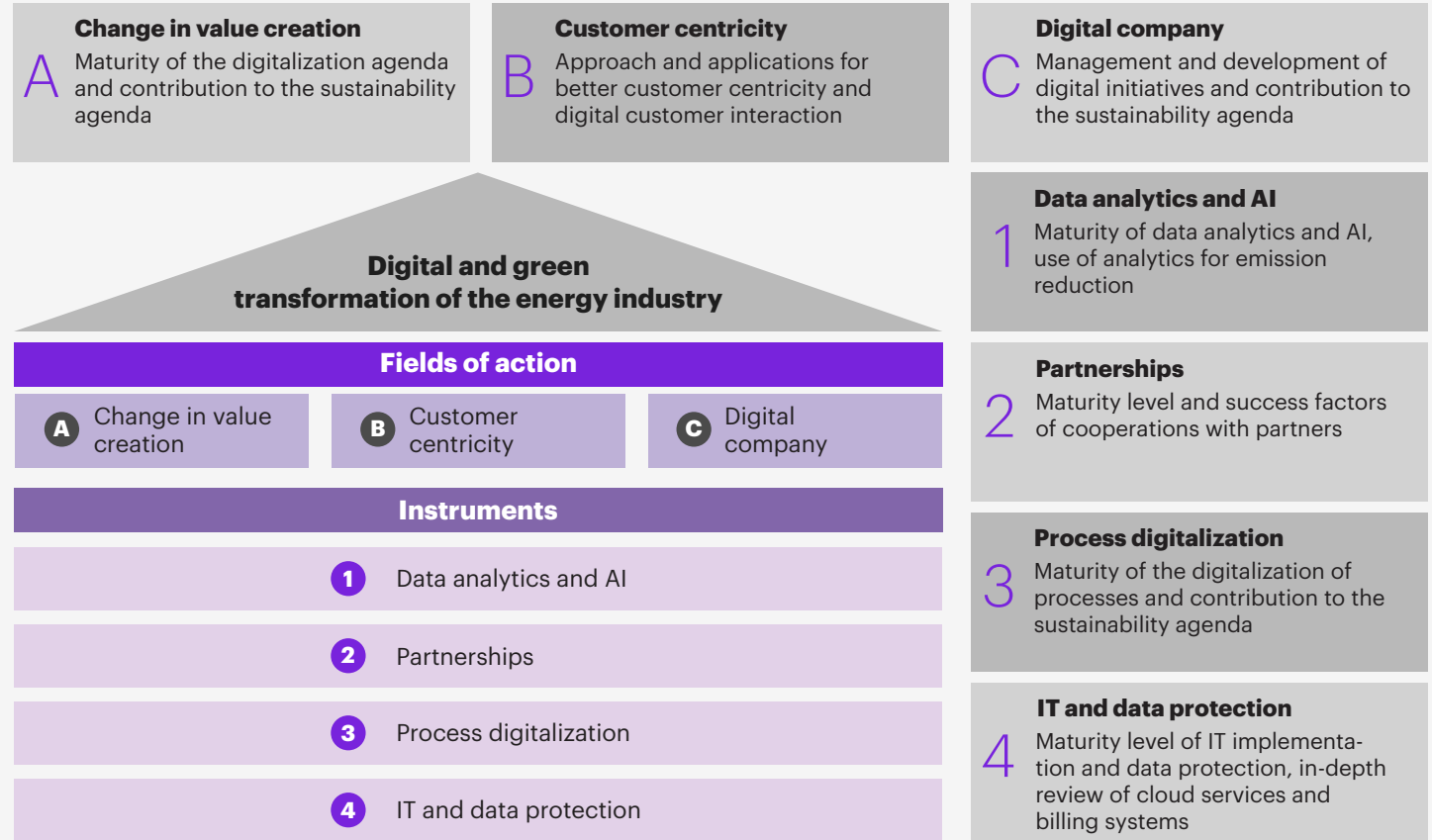
Horst Dringenberg
Partner
Kearney



Dr. Martin Ruppert
Managing Director
IMP³ROVE

Digital@Utility analyzes the digital and green transformation of energy suppliers based on three fields of action and four instruments

Topics covered in the Digital@Utility assessment



Sources: BDEW, VSE, Kearney | IMP³ROVE (2022)

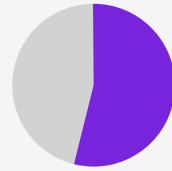
At a glance
1/2

18% of companies have a defined ambition of becoming **climate neutral** in terms of direct emissions by 2030.



28% of companies expect compound annual revenue growth of more than 10% by the end of 2025 in green and sustainable businesses.

54% of companies agree that their digital strategy contributes directly to the sustainability agenda.



1 These three digital-enabled business areas expect the strongest revenue growth:

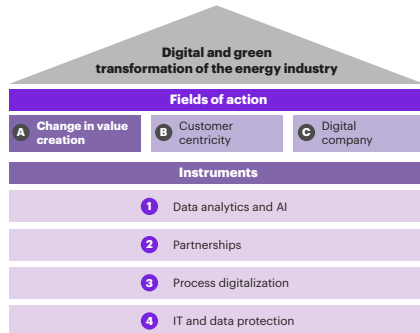
- a. PV solar and battery offerings
- b. E-mobility charging infrastructure and services (private wall box, public charging stations)
- c. Heating solutions renewables (for example, heat pump, solar thermal)



71% of companies have planned or already realized the implementation of a tenant electricity portal.

60% of companies have planned or already realized the implementation of smart heating solutions.

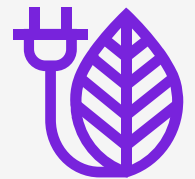
62% of companies take sustainability aspects into account when making investment decisions for digital projects.



Almost a quarter of energy suppliers are aiming for digitalization-driven cost reductions of more than 9% along the covered value chain stages by the end of 2025.



51% of companies aim to increase their IT budgets as a share of their total costs by 2025.



80% of companies do not yet have a digital north star along all covered steps of their value chain.

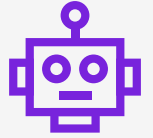
At a glance 2/2

27% of companies offer their own official company app; this currently covers a median of >5-10% of total interactions.



Predictive or prescriptive analytics are most frequently implemented in trade/risk management and power generation.

30% of companies have planned or implemented next best activity (NBA) marketing/next best offer (NBO) marketing/event-driven marketing (EDM).



51%

of companies use robotic process automation along at least one stage of the value chain with a success rate >80%.

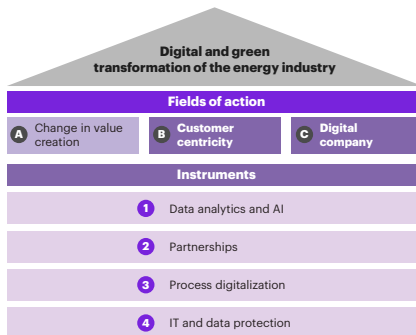
31%



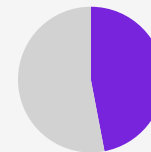
of companies align their partnerships according to their digitalization strategy.

34% of companies at least partly cover agile organizational structures such as squads, tribes, chapters, trios, and alliances.

26% of companies have planned or already implemented software to measure and analyze the carbon footprint.



66% of companies do not have a clear HR strategy for developing the digital skills required in the future.

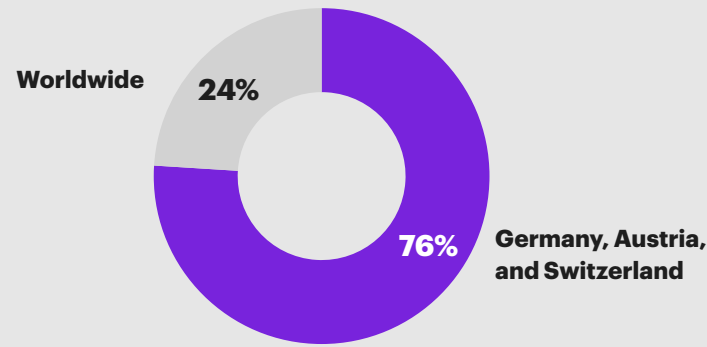


47% of companies currently do not have a clear understanding of the digital skills they will need in the future.



More than 100 utilities from 13 different countries around the world participated in this year's Digital@Utility study

Digital@Utility 2023 participants divided by origin



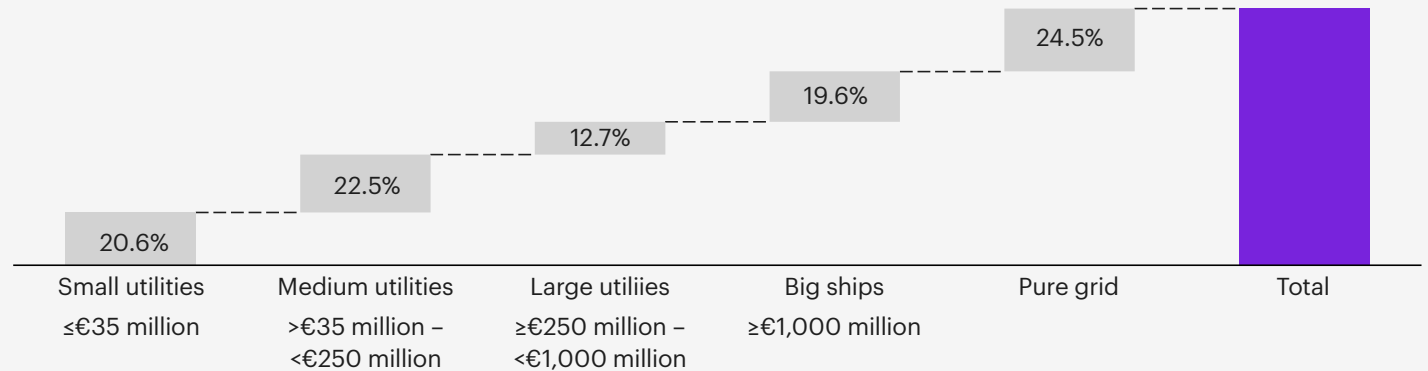
102

companies from all around the world participated in our 2023 Digital@Utility study.

13

different countries are represented by participating companies.

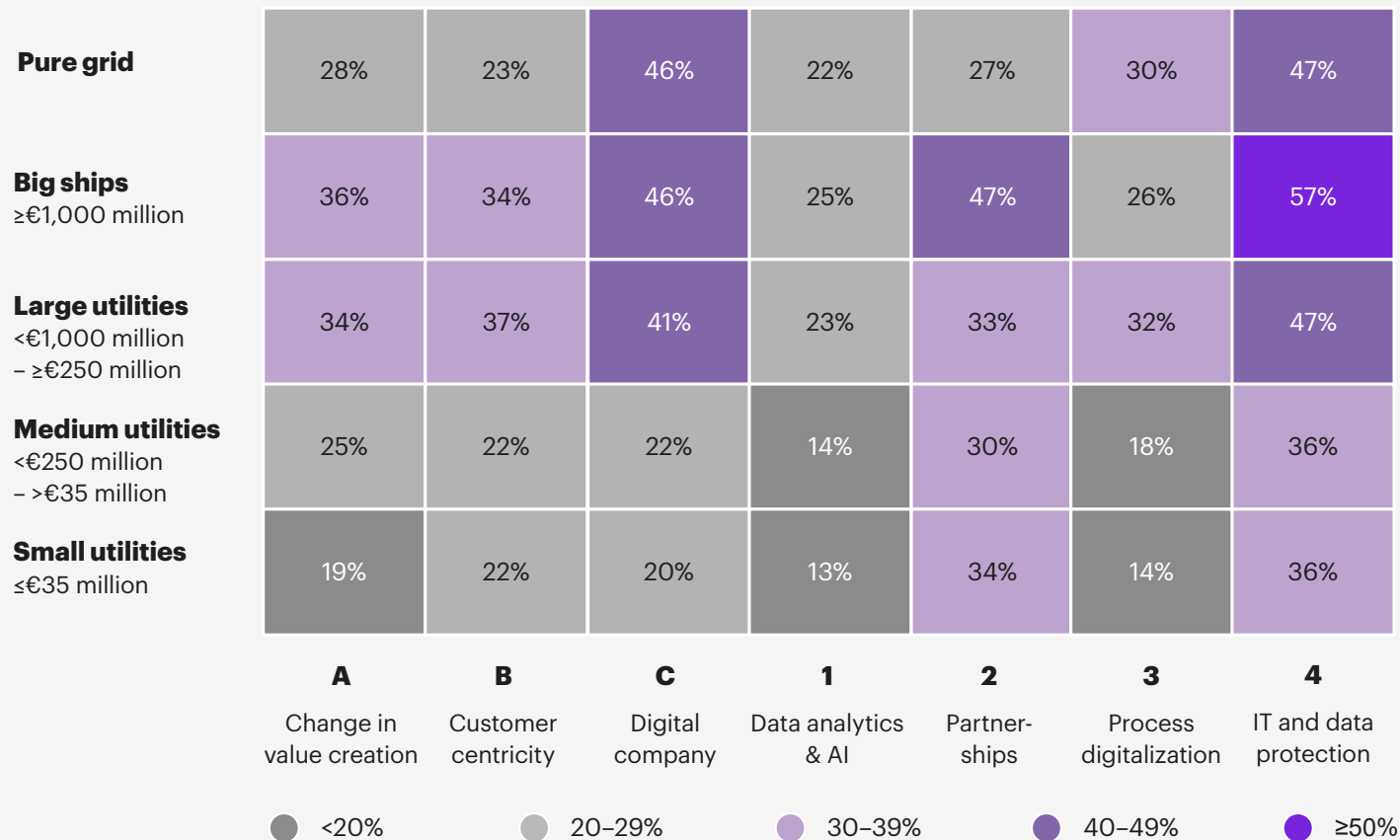
Digital@Utility 2023 participants divided by revenue



The best-performing field of analysis constitutes IT and data protection; in contrast, the most significant potential for improvement lies in the area of data analysis & AI

Self-assessment of the companies per field of action

Scores of peer groups



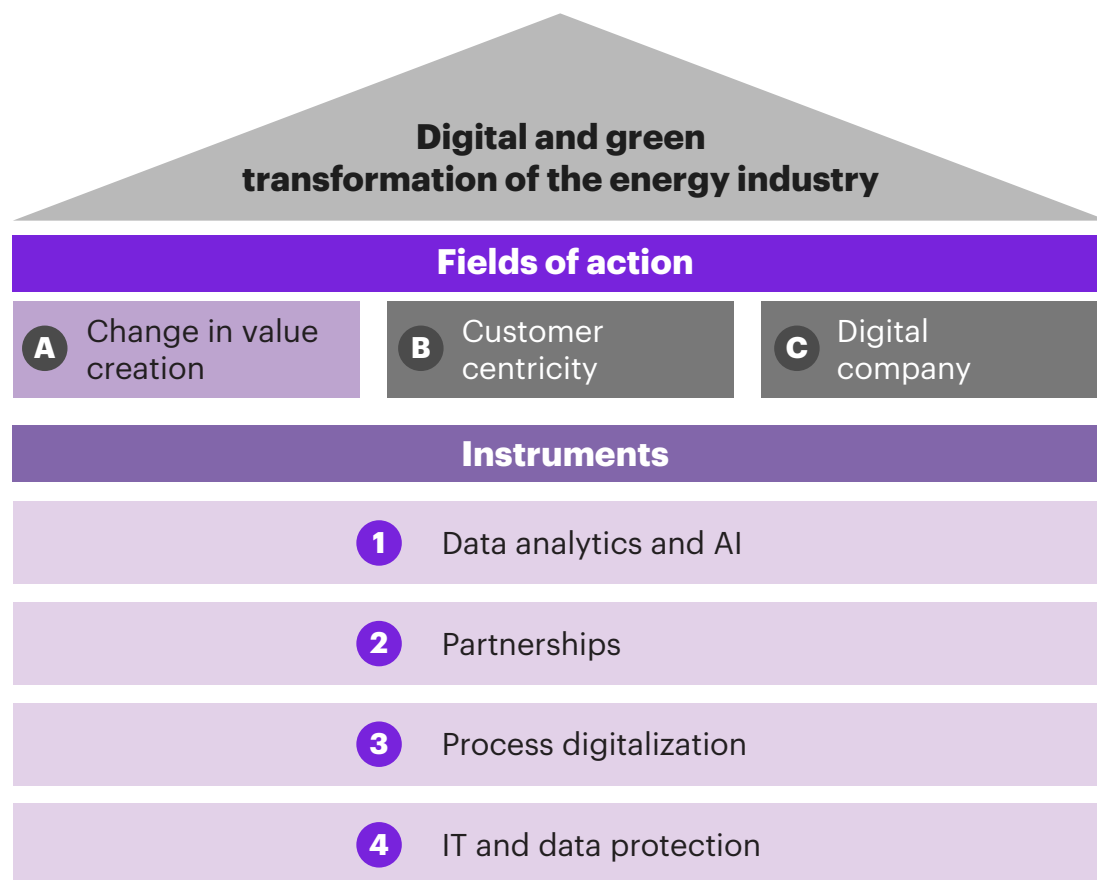
The digital and green transformation

The energy industry is considered one of the key drivers for reducing greenhouse gas emissions. The digital and green twin transformation is key to a climate-neutral future.

In “The digital and green transformation” we highlight the potential synergies between digitalization and sustainability.

Topics covered:

- The digital and green agenda
- Leadership
- Process digitalization



The digital and green twin transformation is key—yet much of this “twin” potential remains unused

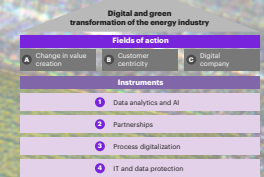
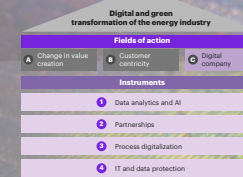
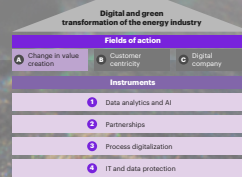
What already works...

54% of companies agree that their digital strategy contributes directly to the sustainability agenda.

86% have a clearly defined leadership for digitalization efforts.

56% stated that their process digitalization activities created a positive impact on the sustainability agenda.

Digital and green



... and what remains to be improved

46% of companies do not agree that their digital strategy contributes directly to the sustainability agenda.

37% of companies do not agree that those responsible for digitization and sustainability work together closely.

44% stated their process digitalization activities created no positive impact on the sustainability agenda.

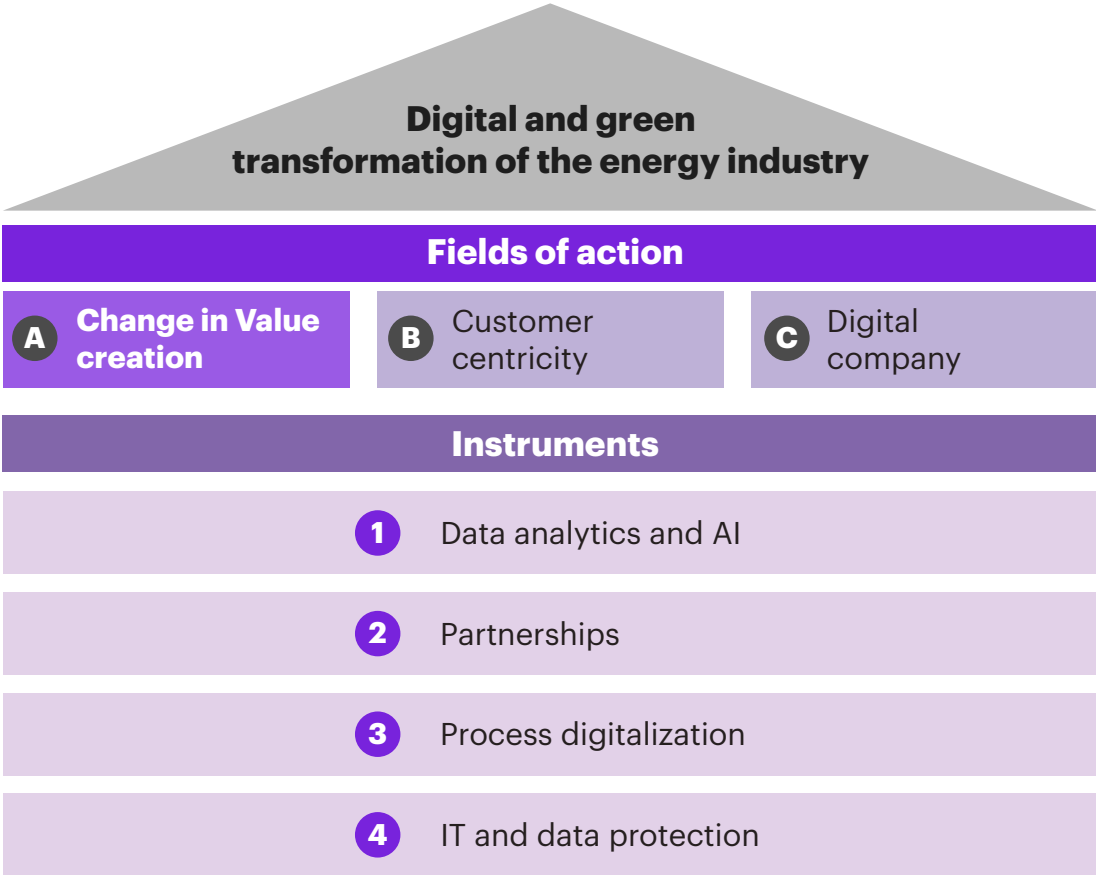
Field of action A: Change in value creation

Utility companies undergo a change in value creation, especially in the context of digitalization and the shift to new possibilities and business models.

In “Change in value creation” we look at the digital strategy that is guiding the ambitions and actions concerning digitalization. Furthermore, we are looking at the contribution of the digital strategy to the sustainability agenda.

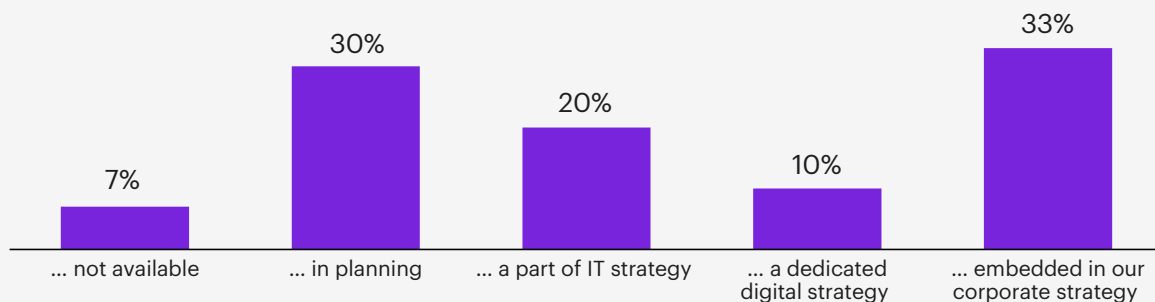
Topics covered:

- Purpose and scope of the digital strategy
- Level of ambition
- Focus areas along the value chain
- Contribution to the sustainability agenda



More than 60% of energy suppliers and grid operators have a digital strategy, yet few companies have defined KPIs to capture the impact and success of digital measures

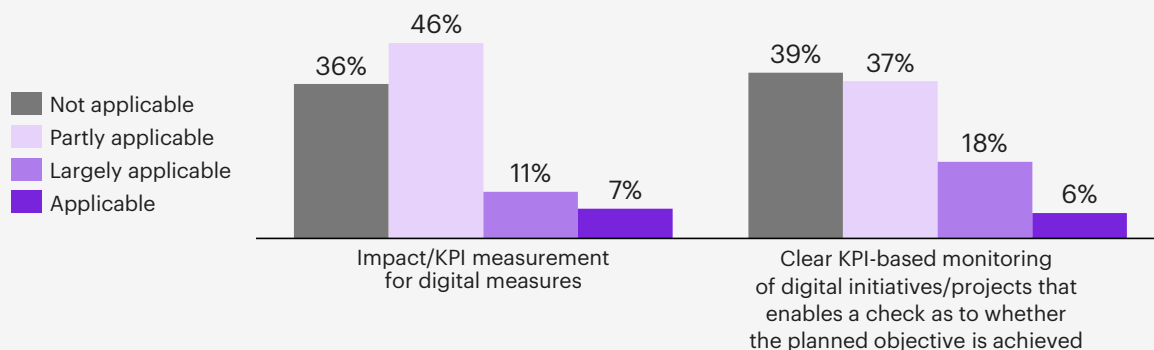
The digital strategy for our company is...



67%

of companies state that their digital strategy includes a strategy for digital products, services, and new business areas.

Measuring impact/KPIs of digital initiatives



22%

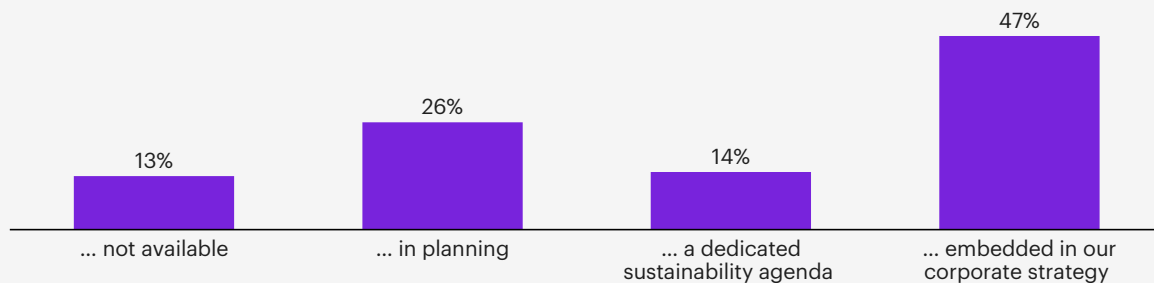
of companies have defined a digital north star along all covered steps of their value chain.

37%

of companies set financial targets as part of their digitalization strategy.

The growing significance of sustainability in the energy sector is reflected by the high number of energy suppliers and grid operators who have adopted a sustainability agenda

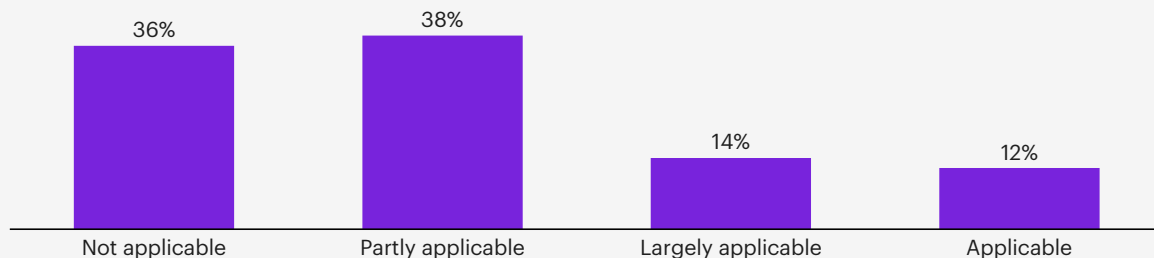
The sustainability agenda for our company is...



61%

of companies have a sustainability agenda in place.

Clear measurement of impact/KPIs for sustainability measures



62%

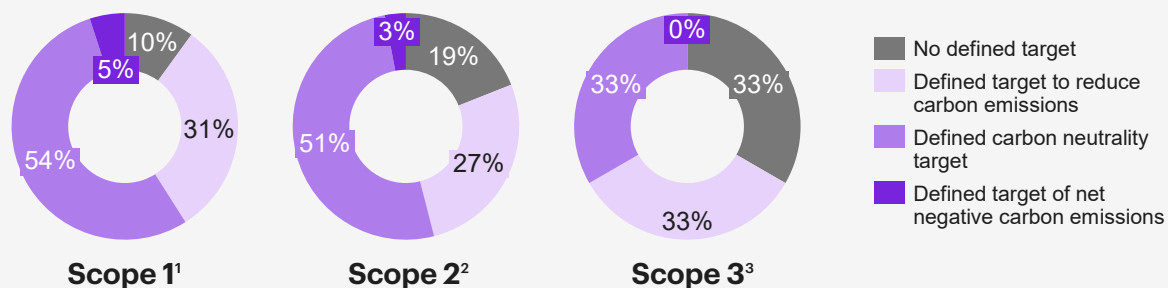
of companies take sustainability aspects into account when making investment decisions for digital projects.



26% of companies have KPIs for sustainability measures and only **18%** for digitization measures.

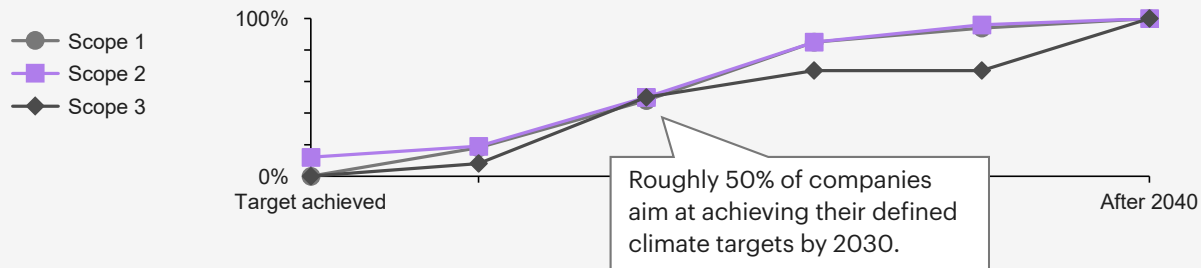
Energy suppliers and grid operators have set ambitious targets for reducing carbon emissions, with about half of them aiming to reach their defined climate targets by 2030

Target pursuit regarding future carbon emissions

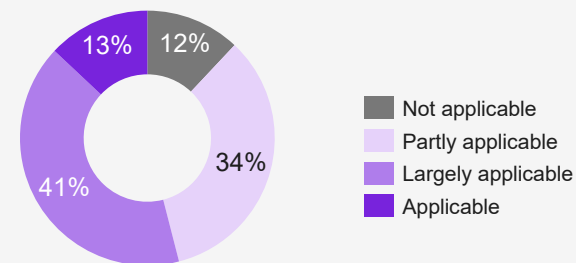


59% of companies aim at least for direct emission climate neutrality, with 18% planning to reach the target by 2030.

Cumulative time frames for achieving the target definition (%)



Our digital strategy contributes directly to our sustainability agenda



¹ Scope 1: Direct emissions from owned or controlled sources by the company (e.g., production emissions, company vehicles)
² Scope 2: Indirect emissions of purchased electricity, steam, heating and cooling consumed by the company
³ Scope 3: All other indirect emissions that occur in a company's value chain (e.g., transportation and distribution up- and downstream)



Carlo Bozzoli,
Global Chief Information
Officer – Enel S.p.A.

“The challenge and at the same time the key for successful digital transformation lies in the combination of technology, skills, and people’s attitude.”

Case study: Enel digital journey

Question 1: Why did you initiate the project?

Over the past years, major forces including decarbonization and climate change, electrification, new consumer habits, urbanization, and, last but not least, digitalization have been determining the so-called “energy transition” in the utility sector (i.e., the transition from scarce and polluting sources based on fossil fuels toward new, renewable, unlimited and „green“ ones). In this challenging context, Enel, as a leader in the energy sector, in 2016 designed the digital strategy and started the transformation journey, involving the whole Group, to lead the change and to pioneer the transition, leveraging sustainability and digital innovation as crucial points of its strategy.

Question 2: What was your approach?

The digital strategy was defined in 2016 and focused on the digitization of the „pillars“: **assets** (infrastructures for the generation and distribution of energy), **customers**, and **people**. Three technological enablers were also defined: **platforms**, **cloud**, and **cyber-security**. In 2017, two new approaches were introduced: **agile** and **data driven** and subsequently, the strategy was integrated with **digital impact**, bringing the Group’s attention to execution and therefore to the value generated by investments in digital. Today, faced with the energy transition, Enel’s vision for the future is still evolving. The great challenge, in fact, is represented by the implementation of a single global IT Platform—“**The Enel Digital Platform**”—as the first logical step to evolve toward a platform company.



Carlo Bozzoli,
Global Chief Information
Officer – Enel S.p.A.

Case study: Enel digital journey

Step 1 (2016-2018)

Set the digital foundations to enable Enel digital transformation through the definition of three **strategic pillars**: assets (infrastructures for the generation and distribution of energy), customers, and people and three **key technological enablers**: **platforms**, **cloud**, and **cybersecurity**:

- **Assets**: to achieve digitization of generation and distribution assets, to develop a smart infrastructure supporting distributed generation from renewables while improving operational efficiency and resilience
- **Customers**: to deploy the next generation of innovative and seamless customer experience while developing a new “smart” value proposition (smart home, smart city, e-mobility, and smart industry)
- **People**: to boost the adoption of a new customer-centric paradigm also to Enel’s employees, designing a new experience for them based on innovative integrated services
- **Platforms**: new Group “company standard” of applications to be properly deployed the local level, improving the level of services while reducing time to market and costs
- **Cloud**: redesigned IT operations in cloud logic to scale up and down supporting business needs; Enel is the world’s first large utility and Italian company 100 percent on the cloud
- **Cybersecurity**: a “cybersecurity by design” approach and development model to define security measures during the whole life cycle of applications, processes, and services



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Global Chief Information
Officer – Enel S.p.A.

Case study: Enel digital journey

Question 2: What was your approach?

Step 2 (2019-2020)

Boost the digital transformation leveraging **datadriven** and **agile** while measuring the **digital impact**.

- **Agile**, as an answer to the responsiveness and adaptability imposed by the external environment. The Enel Global Digital Solutions organization mirrors the business one: indeed, for every business line and staff function, Enel designed the corresponding digital hub where people with ICT background work together with people from business.
- **Data-driven**, focusing on data access and management, to empower the digital strategy through the valorization of asset, customer, and employee data for driving business decisions and actions.
- **Digital impact**: the focus on the value generated by digital investments enabled tangible results, in terms of economic performance and operating performance, which places Enel as a leading utility on the dimensions of the digital strategy.

Step 3 (2021-ongoing)

Focus on set up, industrializing, and adopting the platform model, leveraging the Enel Digital Platform.

The next big step of Enel's digital transformation is the evolution towards a platform company. From local solutions, characterized by the fragmentation of factories and high customization, we are fostering a single global standard. The factory will become global, in which authorities will orchestrate an extended ecosystem of capabilities, global as well. The delivery model will be based on a configuration logic, largely relying on a microservice approach, for application development. At the same time, this transformation will largely involve a know-how internalization, focusing on the right skills to achieve target results. As a consequence, the whole Group will benefit from higher speed and efficiency and large economies of scale.



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Global Chief Information
Officer – Enel S.p.A.

Case study: Enel digital journey

Question 3: What impact has been achieved?

Digital transformation has led to tangible results on all three pillars of Enel’s digital strategy:

- **Assets:** Thanks to the deployment of connectivity solutions (45 million smart meters, more than 13 million of which are of the latest generation) and of advanced sensors, the generation plants have been digitized. At the same time, field operators have been equipped with digital tools (e.g., wearables, smart glasses, etc.) to optimize—together with solutions such as drones and advanced robotics—the effectiveness and the efficiency of field interventions. In addition, technologies such as advanced analytics and AI have been used to extract information from assets, to elaborate it, and to simulate future scenarios, improving all processes, from business development to design, construction, and maintenance.
- **Customer:** The Group has digitized the relationship with customers by fostering the use of digital channels such as mobile, web, app, virtual assistants, and chatbots for all the main customer operations, in full phygital logic. Thanks to analytics and AI applied to data, the Group has been creating an innovative and seamless customer experience, which leverages an ecosystem of personalized and tailored services. Furthermore, the use of the IoT enabled the creation of a new offer of services with a separate brand (Enel X), with the ambition of contributing to the creation of a “smart” society (smart home, smart city, smart industry, and electric mobility), where energy is a precious commodity and therefore its use must be optimized.
- **People:** Enel has developed new integrated services for its internal customers (employees) as well, creating an “employee experience” based on the creation of value **with** and **for** them. The Group launched about 40 employee journeys (for example, coaching, mentoring, succession plan) and as many people analytics, extending the predictive logic, typically used with customers, to the professional development of its people (for example, talent development, retention, and so on).



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Case study: Enel digital journey

Question 4: What were the key success factors for the project?

One key success factor has been the **development of a new digital attitude**, both through the evolution of top management that adopted a servant leadership approach and the employees that needed to change mindset and way of working, exploring and experimenting new areas, with no fear of failure.

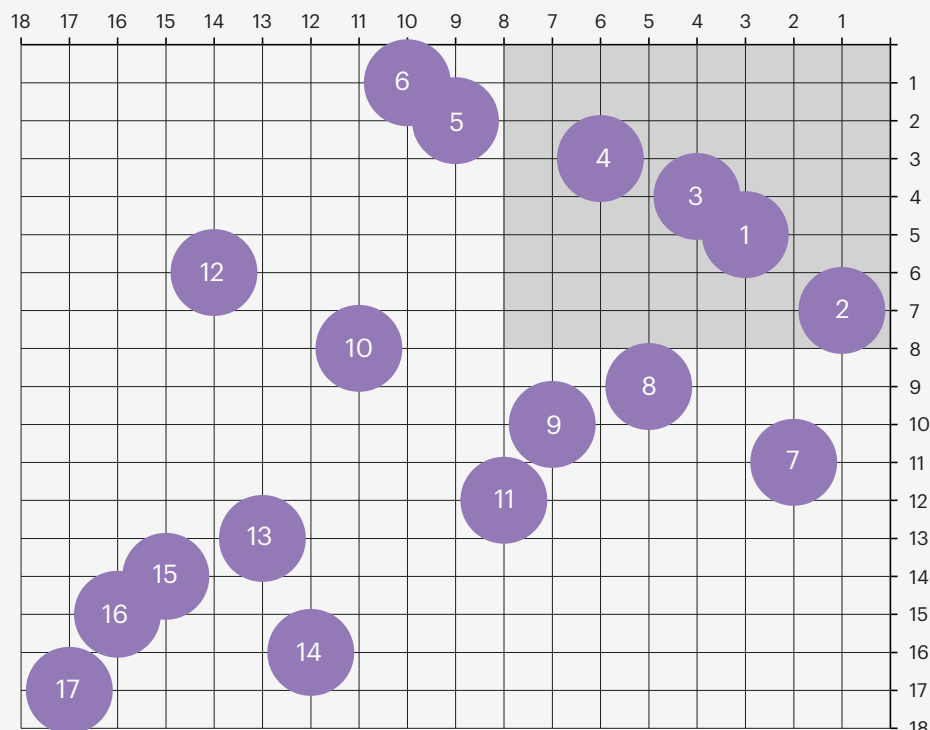
Furthermore, the **acquisition of skills and competences** is crucial to excel in a world that is changing at a greater pace than ever before. Scouting and attracting the best talents in a global competition with many other companies, often outside the energy industry's borders (for example, tech companies) has been crucial to drive the digital transformation.

Moreover, as a leading global energy company, having access to an unparalleled data heritage, the development of a **data culture** is key to properly value this strategic resource and to drive our decisions and actions. We shaped a new organization around a data culture, creating a central data governance structure and including a vertical data competence center in all digital hubs.

Finally, the past years highlighted how digital and resilient infrastructures, built on the deployment of disruptive technologies, are essential to manage challenging landscapes and to quickly respond to rapidly changing contexts (considering the COVID-19 outbreak). Technology alone is not enough to ensure a successful digital transformation. **The challenge and at the same time the key to success lies in the combination of technology, skills, and people's attitude.**

At present, electricity trading, heating solutions from renewable energies, and telecommunication and broadband are the best-positioned digitally enabled business fields in terms of average revenue generation and expected revenue growth

Positioning by average revenue generated 2022¹



Positioning by expected revenue growth¹



The most important digitally enabled business fields are electricity trading, heating solutions from renewables, and telecommunication and broadband.



Electricity and gas trading are currently the strongest revenue-generating digitally enabled product segments.



Charging infrastructure for e-mobility, PV solar, battery offerings and heating solution renewables expect the strongest revenue growth. More than 50% of companies expect compound annual revenue growth greater than 10% by the end of 2025 in at least one of these business areas.

- 1 Electricity trading renewables (for example, trading services, GoO2, PPA, P2P platforms)
- 2 Electricity trading non-renewables (for example, trading services)
- 3 Telecommunication and broadband
- 4 Heating solutions renewables (for example, heat pump, solar thermal)
- 5 E-mobility charging infrastructure and services (private wall box, public charging stations)
- 6 PV solar and battery offerings
- 7 Gas trading
- 8 Heating solutions non-renewables (for example, natural gas, and so on)
- 9 Metering
- 10 District solutions (for example, various services around spatially related building complexes)
- 11 Lighting solutions
- 12 Submetering
- 13 Smart grid services
- 14 Smart home products (for example, control and monitoring services)
- 15 Cooling solutions
- 16 Mobility services (sharing offers for e-bikes, scooters, and so on)
- 17 Smart city IT (for example, building information systems, smart traffic, smart parking, etc.)

¹ Sorted in descending order with 1 as the first rank

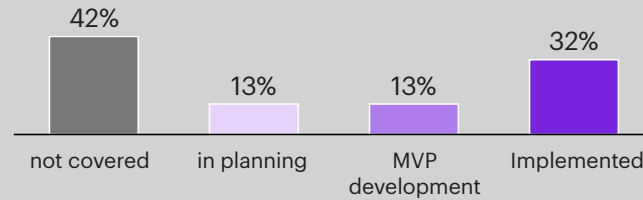
² GoO is guarantee of origin

Digital elements are key drivers and significant enablers for the growth of green businesses; here are four examples with different degrees of implementation

Virtual power plant



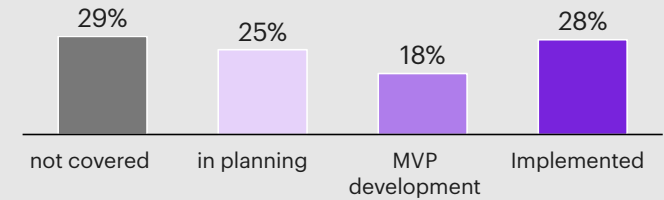
About 60% of companies have planned or already implemented virtual power plants.



Tenant electricity portal



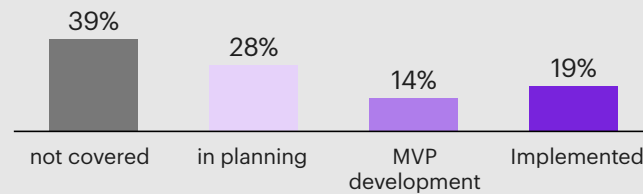
Almost three-quarters of the companies have planned or already implemented a tenant electricity portal.



Smart heating



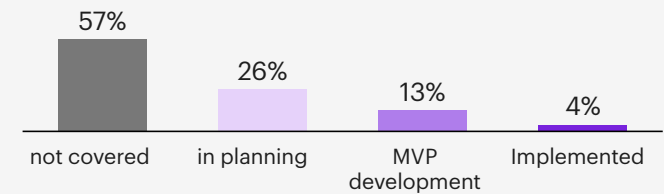
Around 60% of companies have planned or already implemented solutions in the area of smart heating.



Vehicle-to-grid services



Only 43% of the companies have planned or already implemented vehicle-to-grid services.



Utilities plan to augment their IT budgets by 2025 while almost a quarter expect more than 9% cost reductions through digitalization along all covered value chain steps

IT budget



There is a clear increase in IT budgets among the companies surveyed from 2021 to 2025.

51% of companies aim to provide their IT an increased share of the company's total budget by 2025.

Cost reduction through digitalization



The cost-saving potential of the various business areas through digitalization is significant.

22% of companies expect cost reductions of more than 9% along all covered steps of value chain by the end of 2025.

Cost reduction potentials per business area



The largest cost reductions through digitalization are expected in the areas of:

- 1 Sales and service
- 2 Finance
- 3 Metering

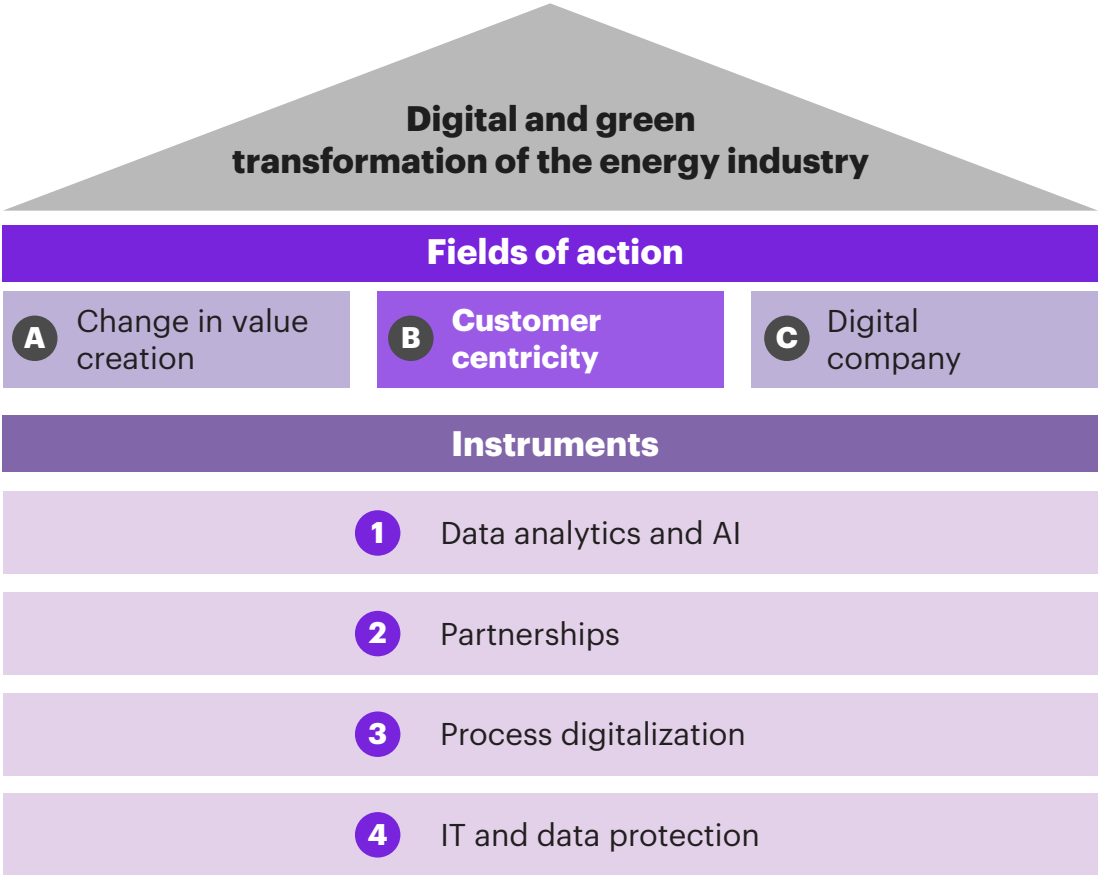
Field of action B: Customer centricity

Data enables a new level of customer centricity.

In this field of action, we assess measures to increase the customer centricity and its impact. We further deep dive into digital sales channels throughout this section.

Topics covered:

- Measures to increase customer centricity and success factors
- Customer centricity use cases
- Digital sales channels implementation and automatization

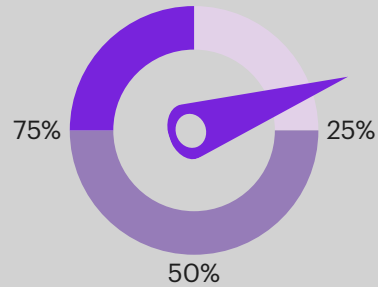


In their self-assessment, large utilities tend to score higher in customer-centricity when compared to grid operators and medium to small utilities; however, there are numerous opportunities for development in this area across all utilities

Self-assessment of customer-centricity in percent

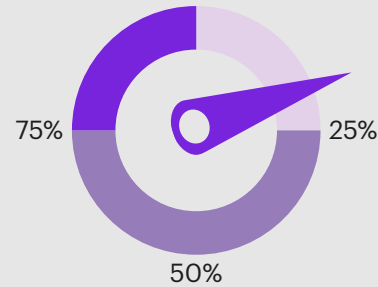
Small utilities

≤€35 million revenue



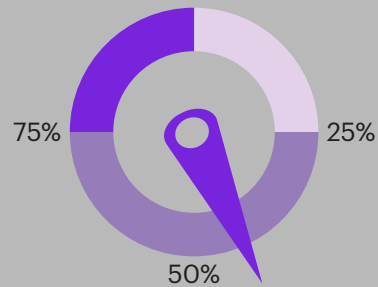
Medium utilities

>€35 million – <€250 million revenue



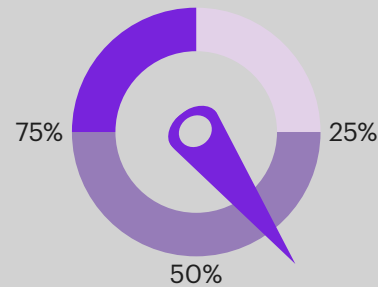
Large utilities

≥€250 million – <€1,000 million revenue

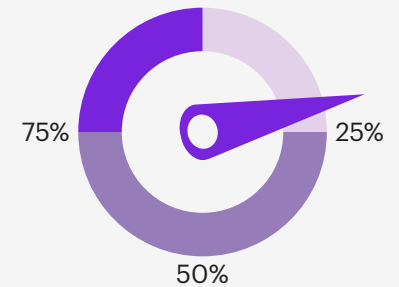


Big ships

≥€1,000 million revenue



Pure grid



Only a quarter of companies have the confidence to develop their own app; with open platform concepts, there are opportunities for the other utilities to follow suit

Customer contact channels



Five contact channels are currently used by most companies.

78% of companies use the current “fabulous” five interaction channels: face-to-face, written postal service, e-mail, phone calls, and online self-services.

Company app

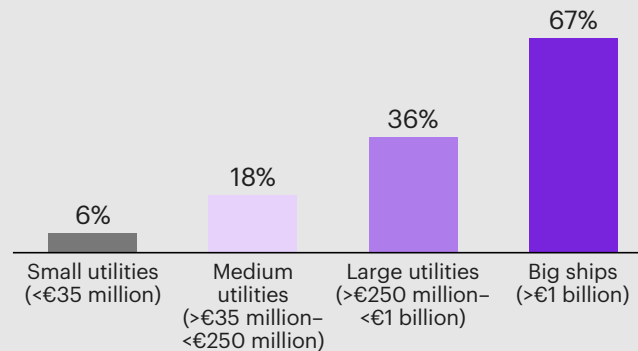


27% of companies offer their own official company app.



An official company app is used in a median of >5-10% of all customer interactions.

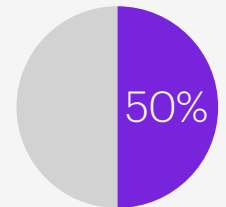
Company app usage by utility size



Other channels (for example, chat, social media)



50% of companies utilize other channels (for example, chat, WhatsApp, social media, and so on).



Many companies are currently transforming their business and increasingly implementing customer-centered applications, with the most frequent impact in “near-real-time” platforms

Personalized targeting and retargeting



50% of companies have planned or already implemented personalized targeting and retargeting.

Next best activity, next best offer, and event-driven marketing



30% of companies have planned or implemented Next Best Action (NBA) Marketing/Next Best Offer (NBO) Marketing/Event-Driven Marketing (EDM).

Near-real-time platforms



59% of companies have planned or already implemented „near-real-time“ platforms/outlets.

Digital one-stop shop



59% of companies have planned or already implemented a digital one-stop shop to cover key customer journeys for their offer portfolio.

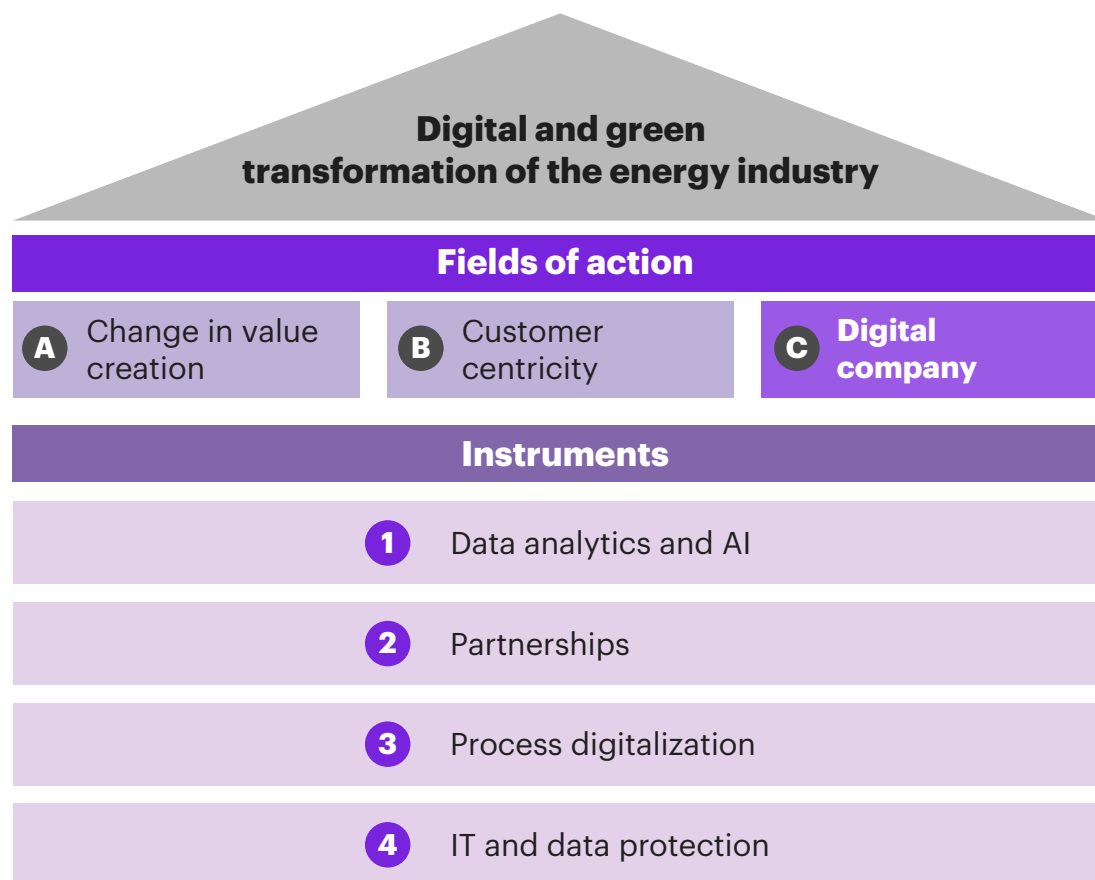
Field of action C: Digital company

Becoming a digital company is a multifaceted challenge.

In this field of action, current and planned digital skills are assessed. We further provide insights on how to organize digitalization, how to execute digital initiatives, and how digital leadership fares.

Topics covered:

- Digital organization and culture
- Digital implementation and scaling
- Digital leadership
- Use of agile methods

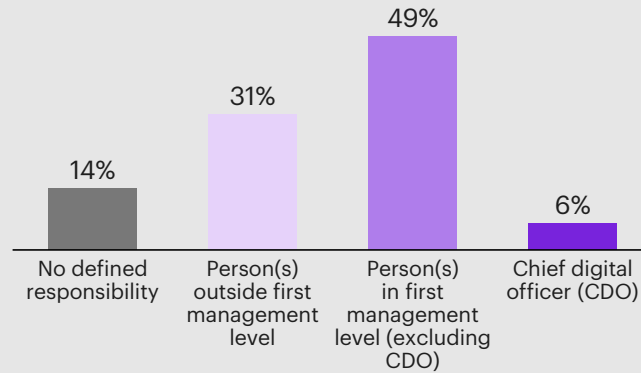


People in first management levels are predominately responsible for digitalization and sustainability efforts across companies

Leadership: digitalization



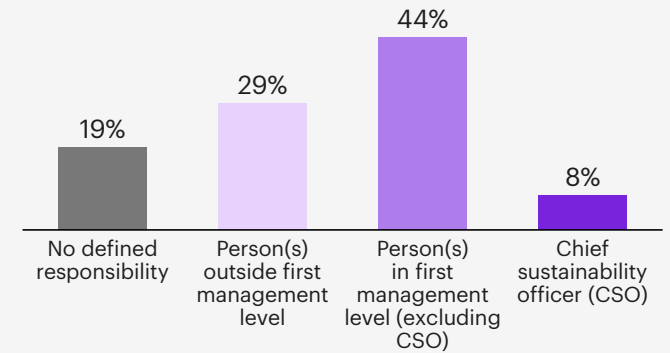
Across the companies, the person(s) leading digitalization efforts on average is/are:



Leadership: sustainability



Across the companies, the person(s) leading sustainability efforts on average is/are:



63%

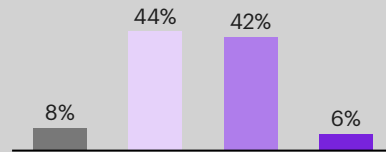
of companies agree that when “those responsible for digitization and sustainability work closely and systematically together, synergies of the respective agendas are being realized.”

About one-third of the companies have already developed new job roles to match the needed future digital skills

Future digital skills



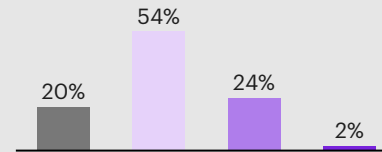
Only half of the companies have a clear picture of the digital skills needed in the future (for example, digital learning, data science, agility, design thinking, cloud).



Digital culture



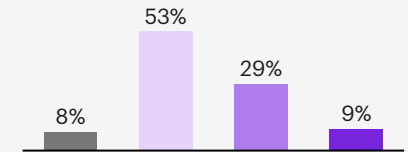
About 25% of companies have a digital culture that fosters customer-backed innovation, agile working, experimental learning, and hands-on applications.



Capabilities



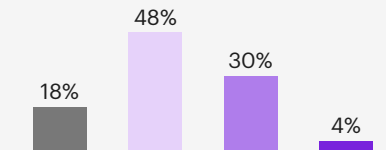
Around 40% of companies have a clear view on the capabilities they want to have in-house vs. external vs. mixed.



HR strategy



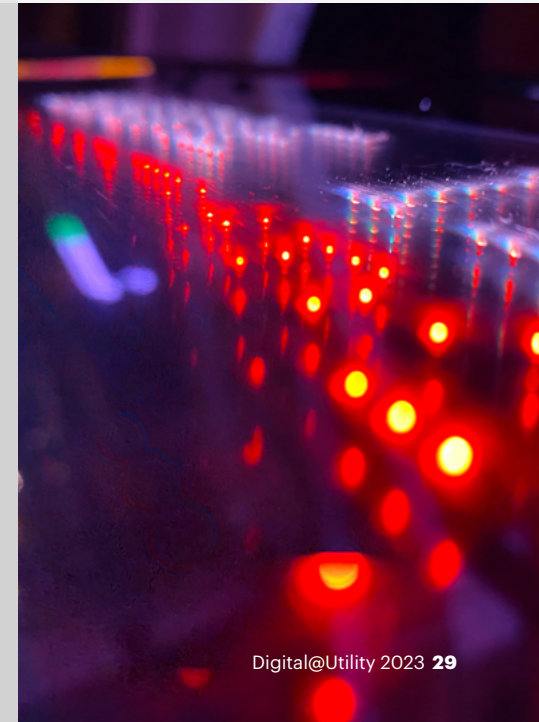
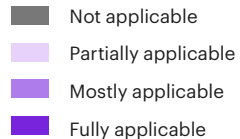
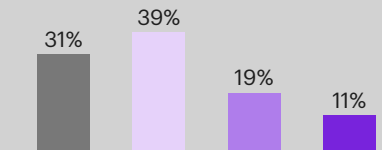
Almost 35% of companies have a clear HR strategy for developing these digital skills (for example, training in digital learning, digital data analytics).



Job roles and design



About one-third of companies have defined new job roles (for example, solution architects, UI/UX designer, and product owner) to match required skills.





Mario Pieper,
Senior Vice President Digital
Empowerment E.ON SE and
Managing Director E.ON Digital
Technology GmbH

**“Digitalization can only
succeed if we constantly
expand our digital
capabilities.”**

Case study: Digital empowerment at E.ON SE

Question 1: Why did you initiate the project?

E.ON has defined an ambitious digital strategy: we want to become an all-digital energy company by 2030. However, we know that 70 percent of all transformations fail due to human factors. In order to optimally prepare our 70,000 E.ON employees for the future and empower them for the approaching digital transformation, we have created the “Digital Empowerment” unit. With the ever-increasing level of digitalization and the current labor scarcity, it is more important than ever to focus on targeted training and development of our current employees to enhance and broaden their digital skill sets. This requires a substantial effort, but is essential for preparing ourselves for the digital future and to master the energy transition.

Question 2: What was your approach?

E.ON pursued a four-step process in implementing the project.

Step 1 Development of the vision and strategy

The Digital Empowerment team started by defining a strategic north star derived from the digitalization strategy, the internal ambition level, and external trends. This was the foundation for the development of specific and individual learning content.

Step 2 Development of a digital competence model

With the strategy as our foundation, we have defined the essential digital competencies that will be crucial for our employees and E.ON’s future success. A group-wide survey enabled us to determine the current state of knowledge across 11 competence clusters and over 60 digital skills at E.ON. The results have paved the way for targeted learning opportunities and enable us to measure our group-wide progress in digital skills.



Mario Pieper,
Senior Vice President Digital
Empowerment E.ON SE and
Managing Director E.ON Digital
Technology GmbH

Case study: Digital empowerment at E.ON SE

Step 3

Development of specific learning journeys

Based on the digital competence model, we defined 26 targeted learning journeys that cover the target competences and are tailored to the individual needs of the employees. Initially, we developed the first four out of 26 learning journeys and created a new learning platform for this purpose. The learning journeys were designed using the 70/20/10 principle which creates an interactive learning experience: 70 percent of the learning occurs directly on the job, where skills are incorporated, practiced, and consolidated in daily work. Twenty percent focuses on the social component and encourages learners to interact with each other to exchange ideas. Only 10 percent of the learning is delivered to employees in a formal setting, for instance through lectures and case studies. The development of E.ON-specific and customized content for different target groups, in combination with the new central learning platform, enables employees to meet their individual learning needs on a regular and targeted base. The offer will further be expanded and sustainably scaled in the coming months to keep our employees constantly up to date.

Step 4

Development of supportive measures

We defined further measures to support the long-term success of the learning journeys. What is the best way to motivate our employees to learn? The development of a user-friendly learning platform for employees is among the key factors for a sustainable positive learning experience—it provides a central overview of all training opportunities within the E.ON group and assists in personal development planning. Furthermore, learners are offered regular events with high-profile speakers, forums for exchange, and numerous other initiatives. To position learning sustainably in the E.ON group, we build on this momentum to transform our culture toward a continuous learning culture. Central aspects for our learning culture are sufficient time for learning, clear learning recommendations, and continuous communication. Particularly, our leaders take a central role thereby: they drive the transformation throughout the organization by promoting the learning culture within their areas of responsibility and act as learner role models themselves.



Mario Pieper,
Senior Vice President Digital
Empowerment E.ON SE and
Managing Director E.ON Digital
Technology GmbH

Case study: Digital empowerment at E.ON SE

Question 3: What impact has been achieved?

Our goal to upskill all 70,000 employees in digital can only be realized over multiple years. Yet, our project is already continuously improving the professional lives of thousands of employees. In less than a year we managed to establish a central team dedicated to Digital Empowerment, created a comprehensive concept, and activated supporters from across the group to kick off realization of the program. Since the project start, we have already achieved the following concrete results and successes:

- Publication of the first learning journeys for employees and leaders
- Launch of the new central learning platform for employees
- Start of the transition to a continuous learning culture at E.ON

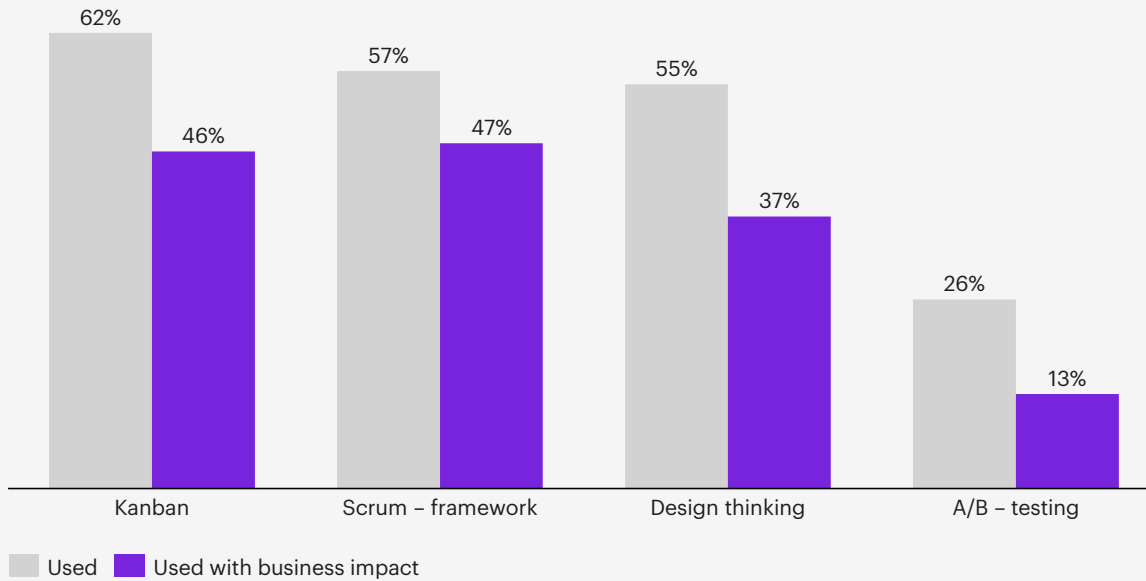
Going forward, we will need to build on that basis to sustainably engage the entire organization and extend digital upskilling to all business areas and locations.

Question 4: What were the key success factors for the project?

A key success factor was the development and definition of a clear ambition for Digital Empowerment. This is aligned with our overall strategy at E.ON and is measurable by capturing the digital capabilities at E.ON. Further, we sought buy-in from top executives and the board of management early in the process, thus ensuring a stable foundation for the later course of the project and the ongoing transformation of the learning culture. Key to success for Digital Empowerment is the dedicated team which was already actively involved in the strategy development. The team will further advance and enhance the learning journeys and platform, while also nurturing a long-term learning culture within our organization.

74% of all companies utilize at least one form of agile method; however, we observe an impact gap: less than 60% of those achieve business impact

Use of agile methods in the companies (during the past 12 months)



74% of the companies use agile methods.

62% of companies use Kanban, making it the agility method with the highest usage rate.

57% of big ships use A/B - testing, with 29% of them achieving a business impact.

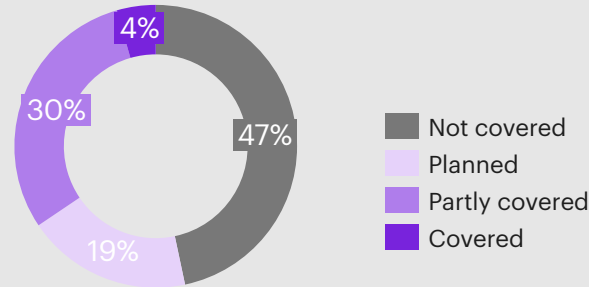


On average, agile methods are used more frequently and yield greater benefit to larger utilities.

Only a small minority share of companies already implemented agile organizational structures, yet a substantial share of companies plan to implement them

Organizational structures

Use of agile organizational structures such as squads, tribes, chapters, guilds, trios, and alliances:



34% of companies at least partly cover agile organizational structures such as squads, tribes, chapters, trios, and alliances.

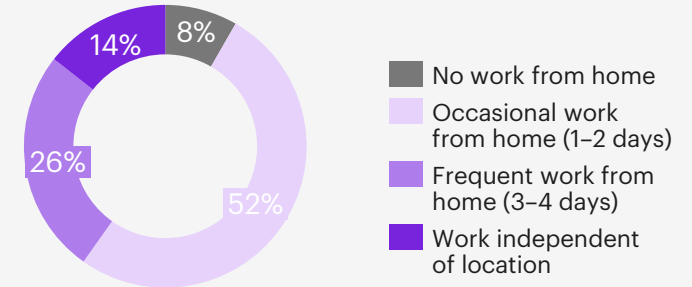


The use of agile organizational structures increases by company size.

69% of big ships have at least started to implement agile organizational structures such as squads, tribes, and so on.

Work flexibility

Work flexibility based on how flexible the (back-office) staff will be able to work in 2022 with regular operations in terms of their location:



Only 8% of companies do not offer mobile work.

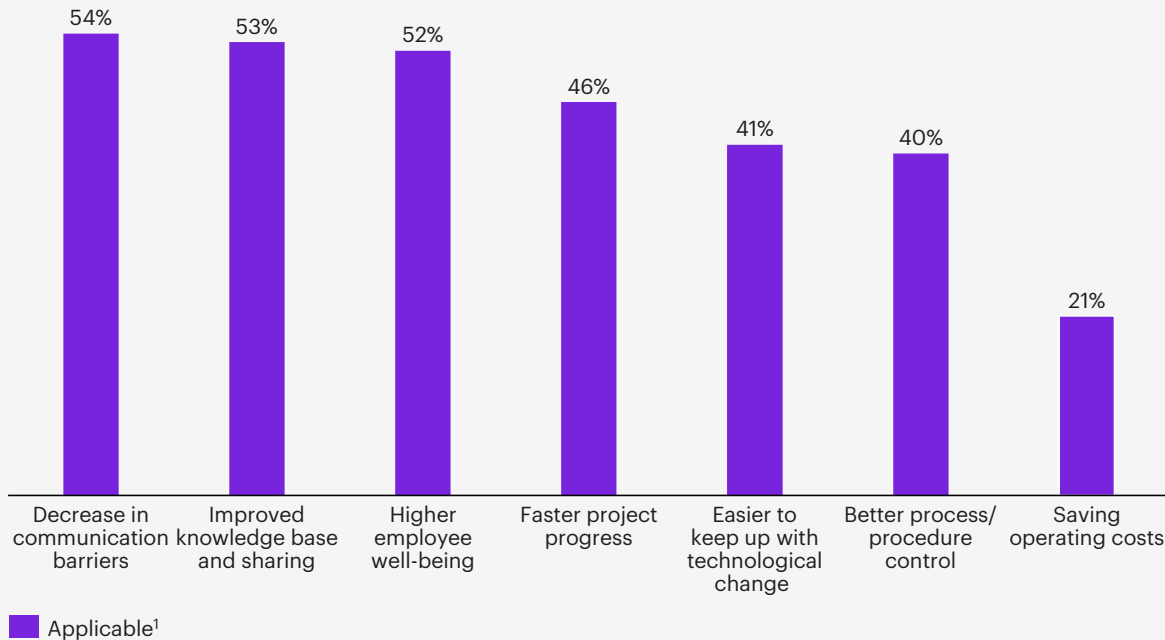
14% of companies have implemented mobile office that allows working from anywhere at all times.



The implementation of mobile offices increases by company size.

More than half of companies have reported improvements in employee well-being, a reduction in communication barriers, and an increase in knowledge sharing through the implementation of agile working methods and structures

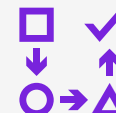
Achievements through agile working methods and structures



Agile working methods and structures offer a wide range of potential benefits.



More than 50% of companies achieved higher employee well-being, decreased communication barriers, and increased knowledge sharing.



The observable effects are leading indicators of the benefits of introducing agile working methods and structures.

¹ The answer options "Mostly applicable" and "Fully applicable" were considered.



Dennis Payne
Agile Lead Programm
OuterSPACE
E.ON Grid Solutions GmbH

“With our Biz-Dev-Ops approach, we are getting considerably closer to implementing an agile organization.”

Case study: Agile organization at E.ON Grid Solutions

Question 1: Why did you initiate the project?

As part of the acquisition of innogy by E.ON, it was decided to standardize the energy-related IT systems. Additionally, a collaboration model was set to be developed, utilizing the strengths of both companies and incorporating the latest knowledge from outside the group. The new IT system is being implemented continuously, and the process is tracked through achieved milestones. Simultaneously, this collaboration model empowers all employees to work effectively and efficiently. We accomplish this by pursuing the idea of an agile product organization.

Question 2: What was your approach?

We applied the traditional DevOps approach and expanded it with an additional component, “business.”

In the past IT projects, a development team often created a solution part (for example, adapting a format in market communication between power suppliers and grid operators) and subsequently handed it over to an operations team.

Even though meetings and checklists were generally incorporated, open questions could often not be resolved. As a result, know-how often remained with the development team only, leading to the operations team having to slowly build up their knowledge. The DevOps approach aims to circumvent this disadvantage by having representatives from both teams working together from the beginning.

As already mentioned, this approach was expanded by the “business” component (this department oversees software utilization). This means that now, the definition of requirements and conceptual questions, as well as the testing of potential adaptations, are carried out directly by the joint development team. Everyone works together on a product in a so-called Biz-Dev-Ops team—a team of experts in business, development, and operations.



Dennis Payne
Agile Lead Programm
OuterSPACE
E.ON Grid Solutions GmbH

Case study: Agile organization at E.ON Grid Solutions

Question 3: What impact has been achieved?

So far, we have transferred about a third of our involved teams to the structure of the final collaboration model. Even though practice often differs from theory, we found that these teams can develop faster and more suitable solutions through agile working methods such as Scrum, Kanban, or a combined variant. This is achieved, on the one hand, since agile work focuses on smaller sub-results and, on the other hand, because the teams are continuously improving. As a result, our Biz-Dev-Ops approach generates substantial advantages and creates added value for our customers.

Question 4: What were the key success factors for the project?

Staffing.

To us, more than 80 percent of project participants needed to be directly employed by our company. This way, we ensure that expertise remains within our lines.

Agile working methods and mindset.

We achieve results faster and more precisely through the mentioned agile working methods and the associated mindset.

Communication.

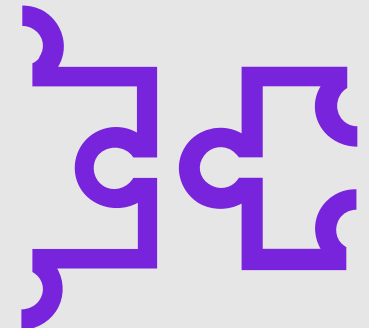
Clear communication because this is how we integrate all those involved right from the start.

Responsibilities.

Clear responsibilities set the collaboration framework and promote a focus on customers and results during implementation.

Working mood.

The positive mood in the team is enhanced by being integrated into a project with new working methods, possibilities, and responsibilities.



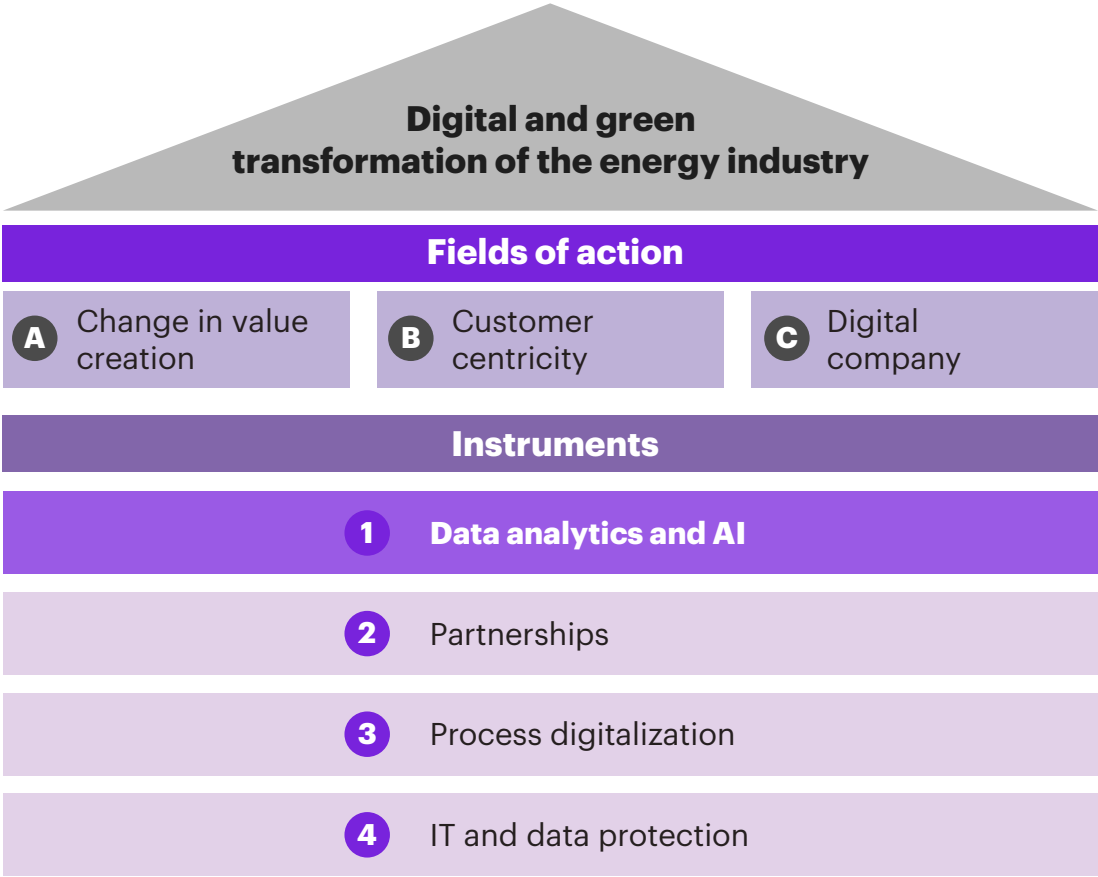
Instrument 1: Data analytics and AI

Data analytics and AI are powerful tools that promise new insights and value.

This section assesses the levers for data analytics and AI the industry addresses, and the hurdles faced. It also provides a look at the use cases.

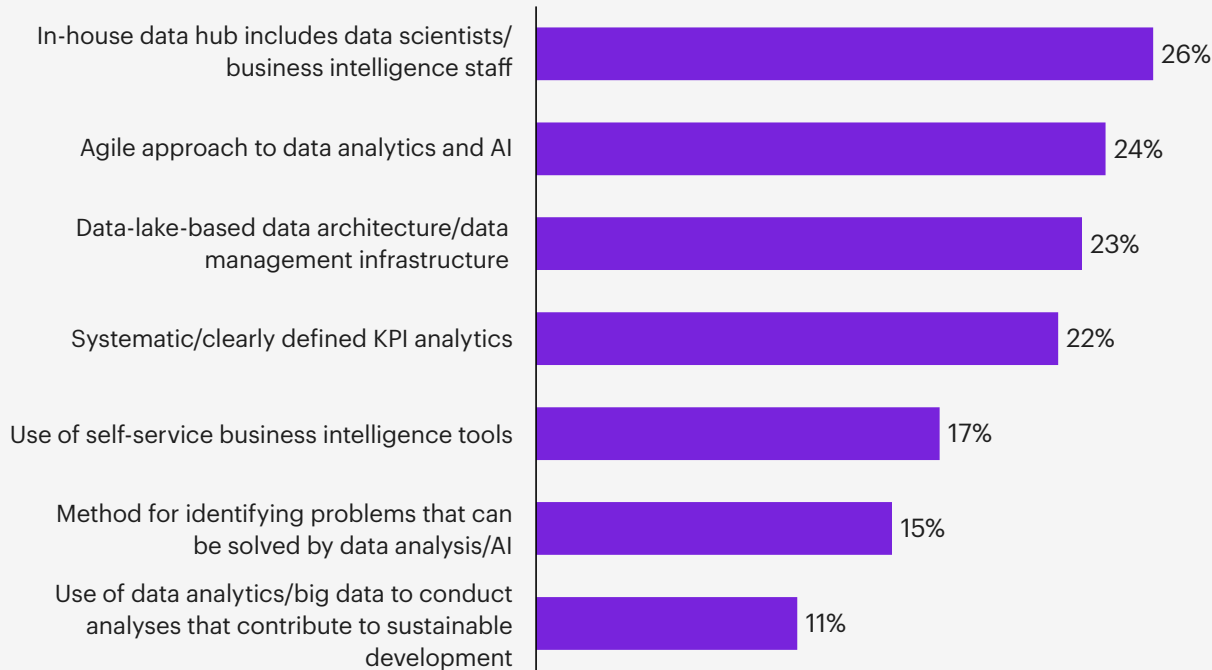
Topics covered:

- Levers for data analytics and AI
- Data analytics and AI use cases

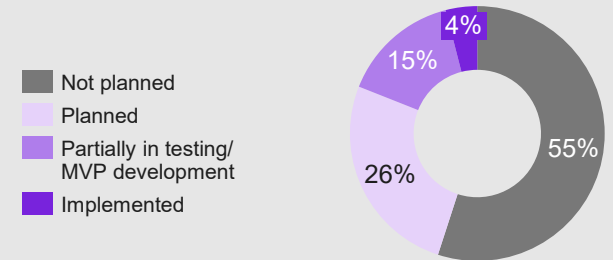


Advanced analytics and AI are still at a nascent stage in most utilities

Status quo data analysis and AI



Data analytics/AI use cases that reduce carbon emissions



4%

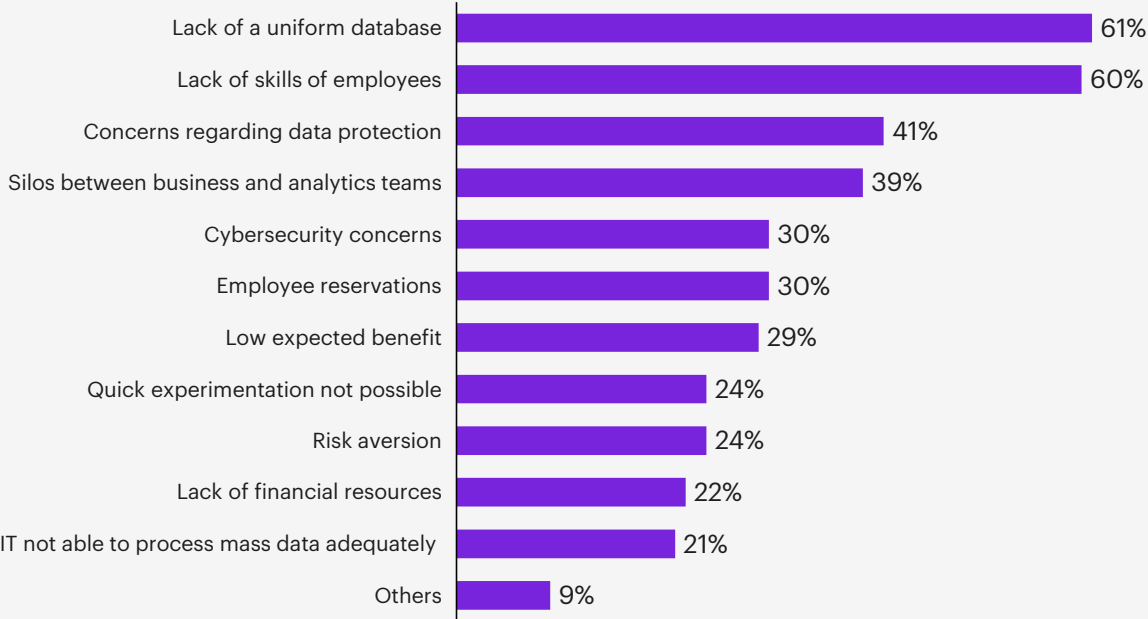
of companies have implemented data analytics or AI use cases that reduce carbon emissions.

55%

of companies do not plan to implement any data analytics or AI use cases within the next 3 years.

Many companies still face considerable hurdles that impede the advancement in the field of data analytics and AI

Major hurdles for the use of data analytics and AI



60%

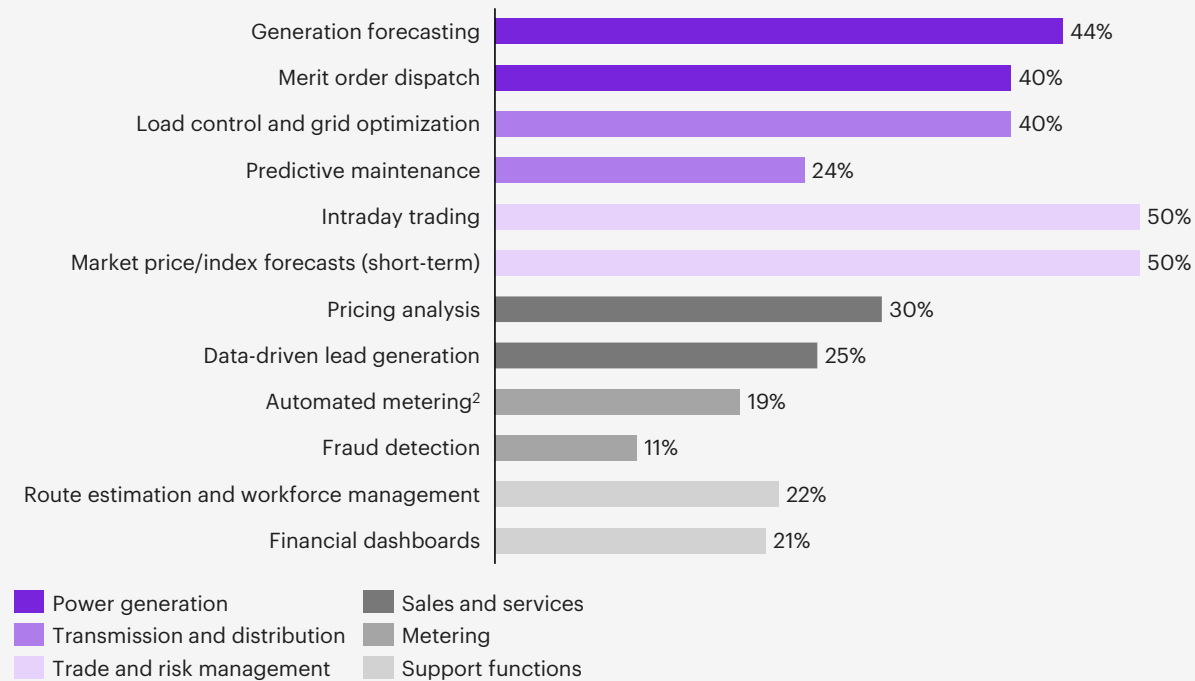
of companies identify the lack of a unified database as well as employee skills among the biggest hurdles to using data analytics/AI.



The lack of digital skills has already been identified as a weakness in the context of the HR strategy and is consequently impacting this field.

Predictive or prescriptive analytics are most frequently implemented in trade and risk management, generation, and transmission/distribution

Most frequent applications of predictive or prescriptive analytics¹



Exclusively for the use cases intraday trading and short-term market price/index forecasts, more than half of the companies use predictive or prescriptive analytics.



On average, companies have implemented predictive analytics in 17% of all queried use cases, whereas the proportion of prescriptive analytics usage is at 5%.



Trade and risk management has been found to be the area in which the utilization of predictive and prescriptive analytics is most prevalent.

¹ 35 use cases were analyzed in terms of their maturity level along different elements of the value chain

² Forecasting of system communication defaults and root cause analysis for automated metering



Michael Dammann,
Managing Director,
Gasnetz Hamburg GmbH

“Machine learning helps us make accurate forecasts even for customers with fluctuating consumption loads. The project clearly shows how digital technologies can help speed up previously labor-intensive processes and improve results. This success at Gasnetz Hamburg underscores the potential of data analytics and machine learning in the industry.”

Case study: Using machine learning to estimate consumption values at Gasnetz Hamburg GmbH

Question 1: Why did you initiate the project?

One of Gasnetz Hamburg’s tasks as a distribution network operator is energy data management. This comprises the data of all feed-ins and off-takes in the network, which is required for balancing and billing. In the case of this data, we make a fundamental distinction between customers with standard load profiles and industrial consumers with recorded power metering. Our system digitally reads the consumption data for so-called RLM customers hourly. The values recorded that way are a central basis in the multi-layered process of procuring and transporting gas.

The system cannot record any measured values if there are meter defects, backflows, or similar disruptions. In such cases, we need substitute values to maintain the processes. Based on the specifications of the DVGW (for example, G685), we calculate these values, a process yielding significant variations in accuracy. Since missing or inaccurate energy data often results in complaints from market partners and entails a high manual correction requirement, precise substitute values have an economic significance for Gasnetz Hamburg.

Question 2: What was your approach?

A distinction can be made between customers with less complex gas consumption, such as apartment buildings, and manufacturing companies. Only for the latter as RLM customers is it necessary to calculate reliable substitute values in the cases described before. Connections with lower gas consumption, on the other hand, can be estimated based on the previous year’s consumption. Particularly for RLM customers, such as a refinery, gas consumption can vary greatly depending on the order and is, thus, difficult to forecast.

For simple consumption, we continue to use an internal strategy for calculating substitute values, in which mathematical methods are used to create average values. However, we required more complex alternatives. By using machine learning, we can now make much more accurate consumption forecasts. However, there are legal limitations. The use of machine learning in substitute value formation as a network operator requires approval by the Office of Weights and Measures, a process we must adhere to.



Michael Dammann,
Managing Director,
Gasnetz Hamburg GmbH

Case study: Using machine learning to estimate consumption values at Gasnetz Hamburg GmbH

Question 3: What impact has been achieved?

Based on the load profile data of the past 10 years, we have achieved a significant increase in accuracy in the formation of substitute values by using machine learning compared to the classic mathematical method. Even in the case of fluctuating gas consumption, we can now produce significantly more precise forecasts.

The responsible Office of Weights and Measures has approved using machine learning to form substitute values. As a result, we have significantly reduced the daily effort required of our staff to manually maintain substitute values and improve the quality of the substitute data.

Question 4: What were the key success factors for the project?

The critical success factor in initiating and implementing the project was the commitment of our employees. Our teams started the project and actively engaged in the subject matter. The project was the first attempt at Gasnetz Hamburg to apply machine learning technology to existing data. The challenges in the first application of this new technology lay in the learning curve. In this regard, many test runs, failures, and new approaches accompanied the start. In addition to the commitment of our employees, a structured data basis contributed to the rapid implementation of the project.

Question 5: What impetus were you able to take away from your Digital@Utility participation?

The results of Digital@Utility provide an excellent overview and comparison of digitization topics in the industry and provide additional impetus for digital transformation. Our participation has allowed us to gain in-depth insights into practice at comparable companies. This way, we can learn from our colleagues and share our experiences simultaneously.



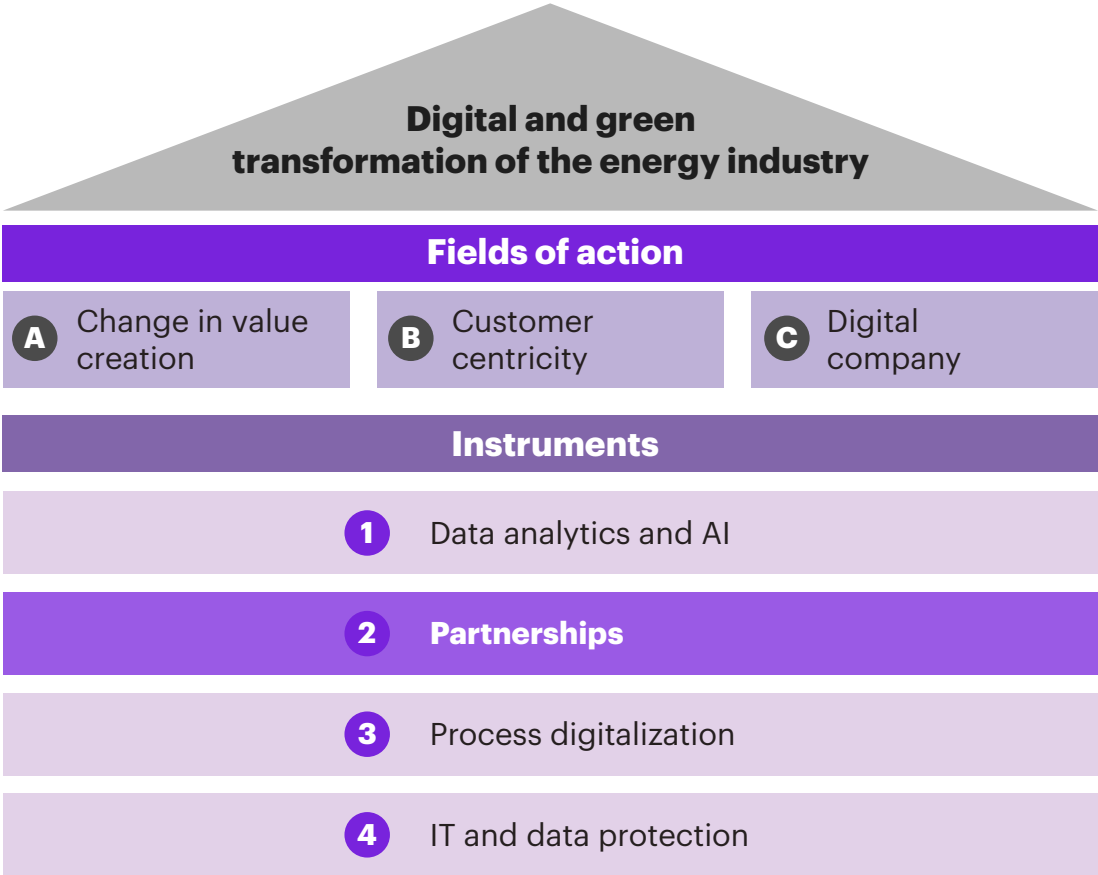
Instrument 2: Partnerships

The instrument “Partnerships” is about cooperating with other entities such as start-ups, universities, other companies, or even own customers. By collaborating with these challenging stakeholders, you can tap into new knowledge and capabilities to drive digitalization.

This section assesses partnership success factors and forms of partnerships.

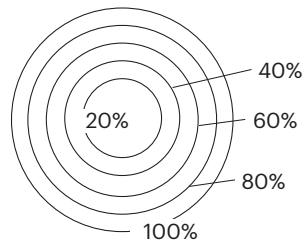
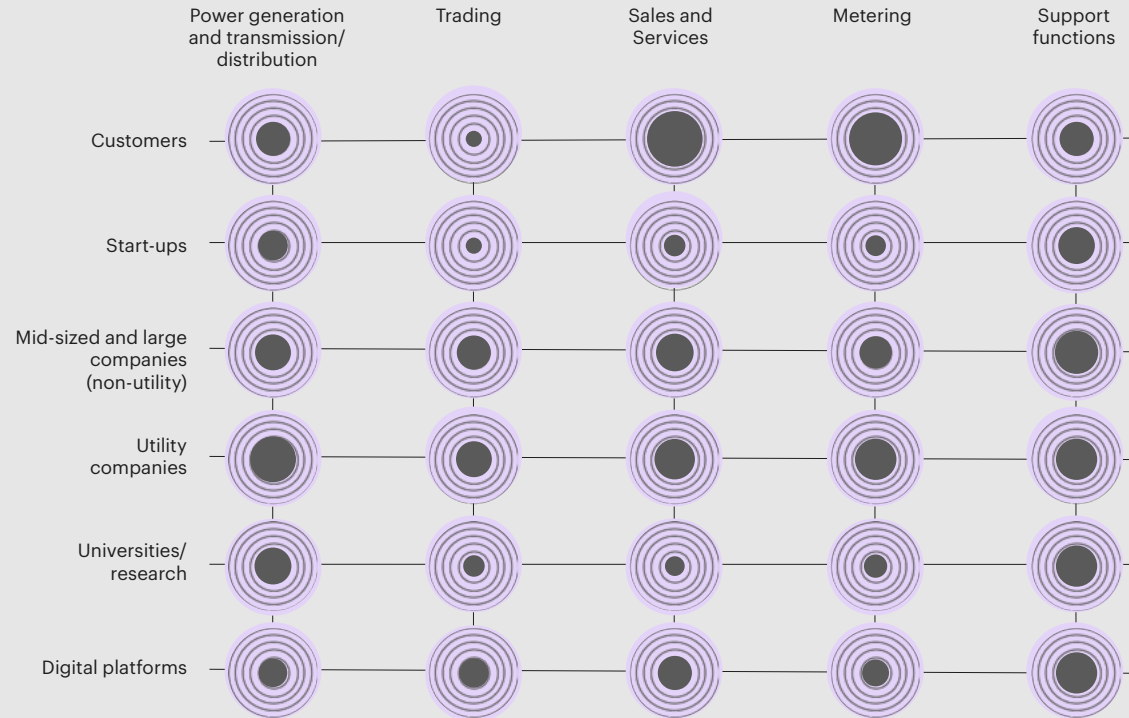
Topics covered:

- Partnership success factors
- Reasons to create partnerships
- Forms of partnerships



Partnerships are used to drive digitalization across value chain steps

Forms of cooperation within the past 3 years to foster digitalization



On average it is most common to cooperate with:

1. Utility companies
2. Customers
3. Mid-sized and large companies



Support functions as well as power generation and transmission/distribution are on average the most popular cooperation fields.

In most cases, a digital and green twin transformation driven by partner ecosystems is not yet a reality

Statements regarding partnerships

31% of companies align their partnerships according to their digitalization strategy.

25% of companies align their partnerships according to their sustainability agenda.

16% of companies identify impacts of digitalization partnerships on their sustainability agenda.

14% of companies identify impacts of sustainability partnerships on their digitalization strategy.



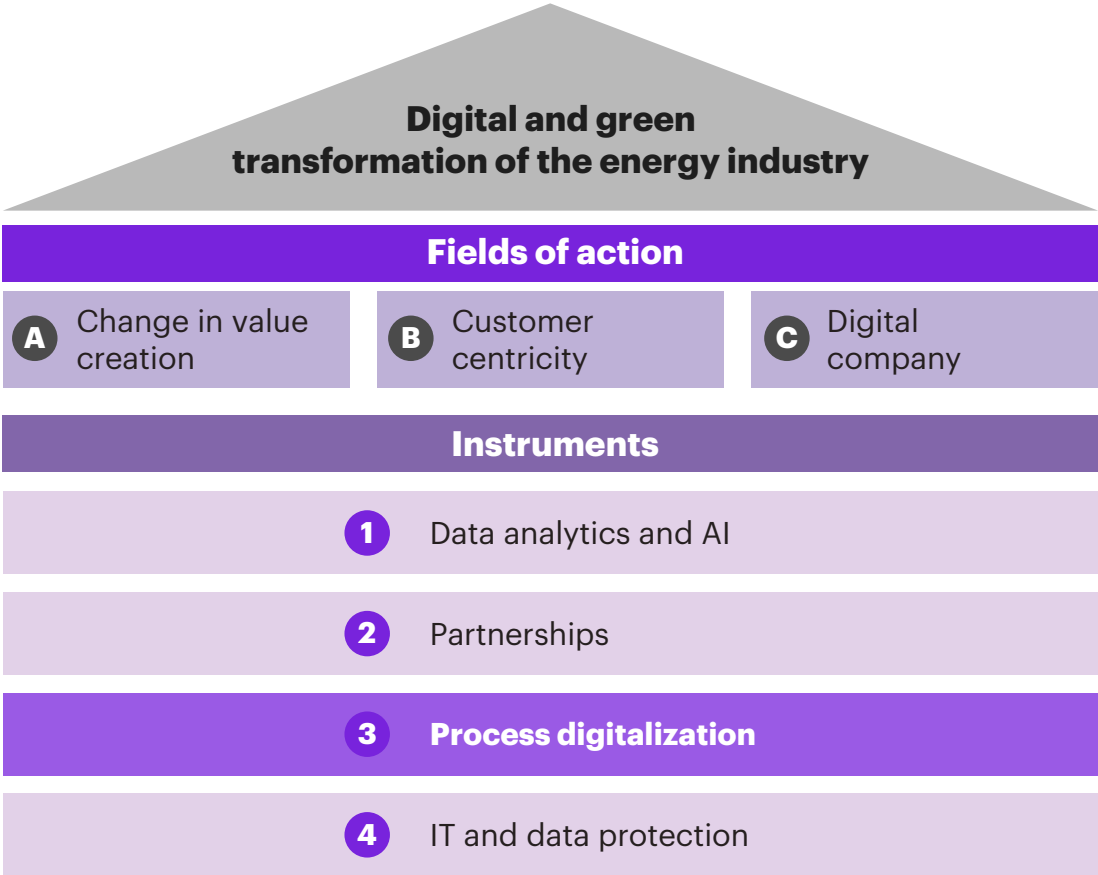
Instrument 3: Process digitalization

The instrument process digitalization examines the state and application of external process digitalization across the different parts of the value chain.

We further assess the usage of robotic process automation and the impact of process digitalization on the sustainability agenda.

Topics covered:

- Process digitalization success factors
- Degree of adoption of use cases





Thomas Leitl
Vice President Asset
Management
Germany
Statkraft Markets GmbH

“The digitization and partial automation of energy-related reporting requirements has fully paid off. The effort for our employees in commercial operations management could be reduced by up to 80 percent”

Case study: Automating energy industry reporting requirements at Statkraft Markets GmbH

Question 1: Why did you initiate the project?

As Europe’s largest producer of renewable energy, Statkraft operates plants in numerous countries. In doing so, we are constantly faced with the challenge of implementing national directives in an efficient and legally compliant manner. Above all, the energy industry framework in Germany is unfortunately characterized by a high degree of bureaucracy.

As operators of renewable energy plants, we must comply with regular reporting obligations for electricity tax, and until last year, also for the EEG levy. Particularly in the case of complicated constellations in wind farms, this represents a high level of internal effort. In addition, new obligations are constantly being added because of changes in legislation. One example is the revenue levy, which we must calculate and report as plant operators under the StromPBG.

Question 2: What was your approach?

From the beginning, it was necessary to find a clean digital solution for the energy reporting obligations that could keep pace with the changing requirements of the German energy market in terms of flexibility. Professional and legally compliant data handling was our primary requirement. Scalability was also vital to us, as we constantly expand our plant portfolio through new additions and acquisitions. Consequently, we searched for and identified an external service provider with a suitable software solution developed specifically for the needs of wind and solar parks.





Thomas Leitl
Vice President Asset
Management
Germany
Statkraft Markets GmbH

Case study: Automating energy industry reporting requirements at Statkraft Markets GmbH

Question 3: What impact has been achieved?

The decision to digitize and partially automate energy reporting requirements has paid off in full. Onboarding into the software was completed within a few weeks, and thanks to the service provider's expertise, we could also map complex operator constellations in wind farms entirely digitally. Since then, the reporting obligations have been primarily automated. They contain all the necessary forms of documentation, including those required by the main customs offices or, in the future, those for revenue levy. As a result, the workload for our employees in commercial operations management was reduced by up to 80 percent.

Question 4: What were the key success factors for the project?

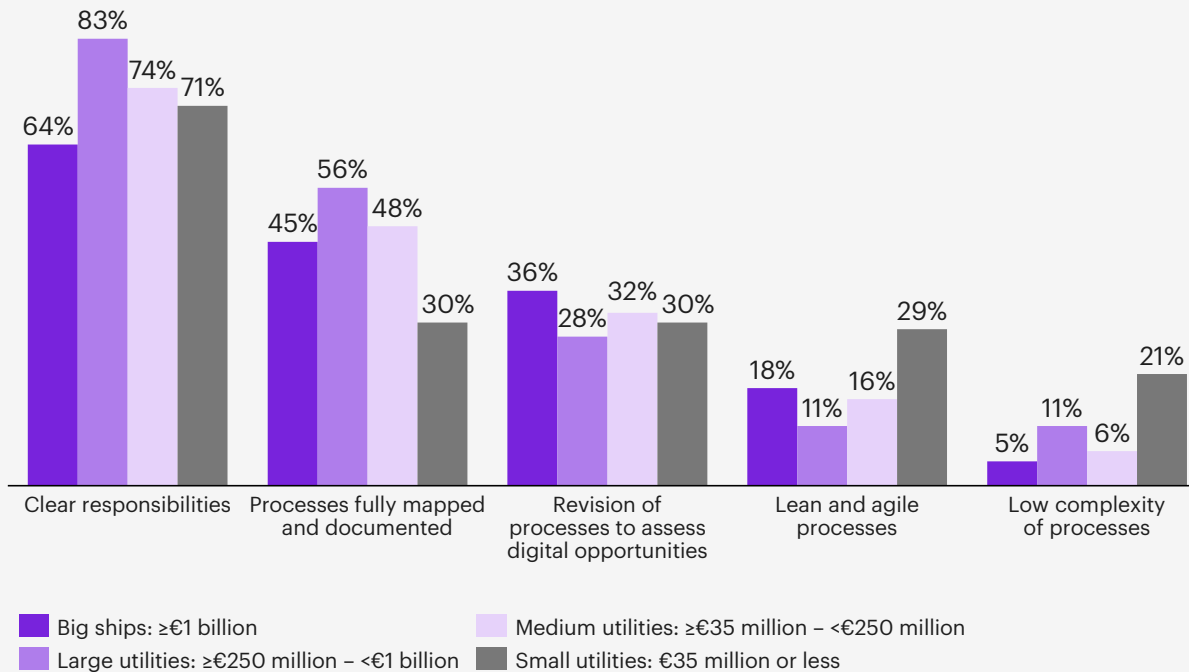
Our key success factor was the smooth setup of our plants within the service tool. Here, emphasis was placed on mapping the digital twins of our plants exactly in the software and ensuring that the measurement data was transferred correctly into the system.

In this way, the prerequisite of being optimally prepared for future requirements in commercial management was created. A few weeks after the StromPBG came into force, we can now use the service tool to calculate and report the revenue levy without much additional effort, as almost all the necessary data is already available here.



There is much room for improvement in process digitalization

Internal process digitalization



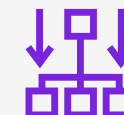
Less than 30% of all companies regularly revise their processes to assess digitalization.



Processes are frequently complex and lack agility and lean management.



Not even half of all surveyed companies have their processes fully mapped and documented.

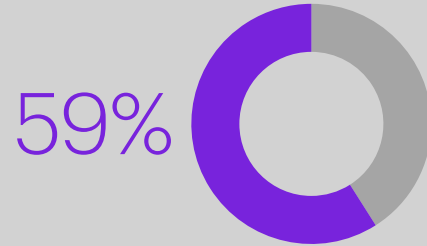


Responsibilities for processes are widely, but not always clearly, defined.

The most significant hurdles in process digitalization include soft and hard factors, which both hinder development in this field

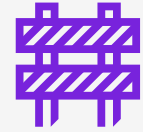
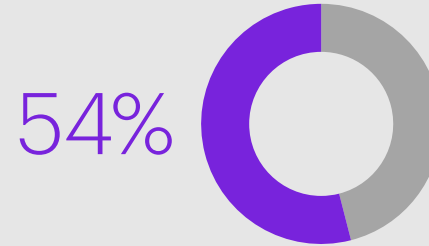
Employee reluctance

59% of companies face employee reluctance as a major hurdle for process digitalization.



Legacy systems

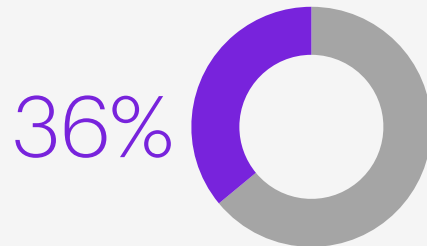
54% of companies face legacy systems as a major hurdle for process digitalization.



More than half of companies identify legacy systems and employees' reluctance as major hurdles for process digitalization.

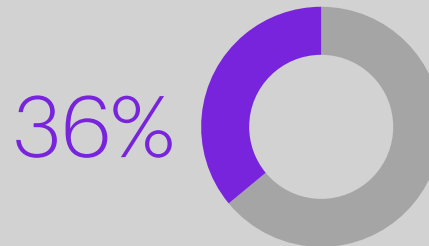
Quick experimentation

36% of companies perceive the inability for quick experimentation as a major hurdle for process digitalization.



Risk aversity

36% of companies face risk aversity as a major hurdle for process digitalization.



More than 30% of companies face problems with fast testing/experimenting new digital processes.

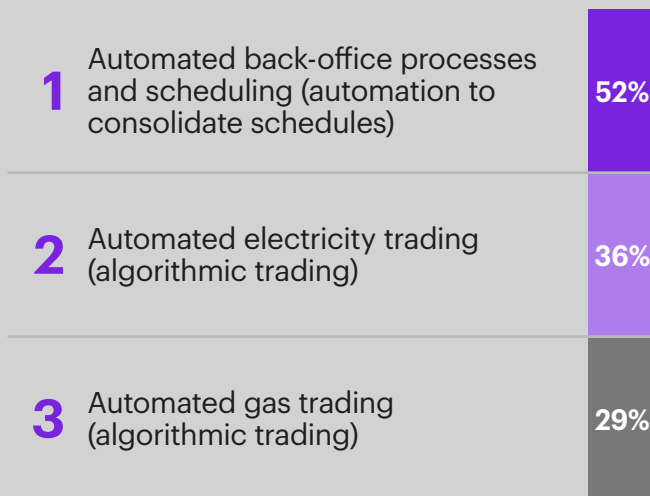


Components of management culture, for instance risk aversity, hinder process digitalization developments.

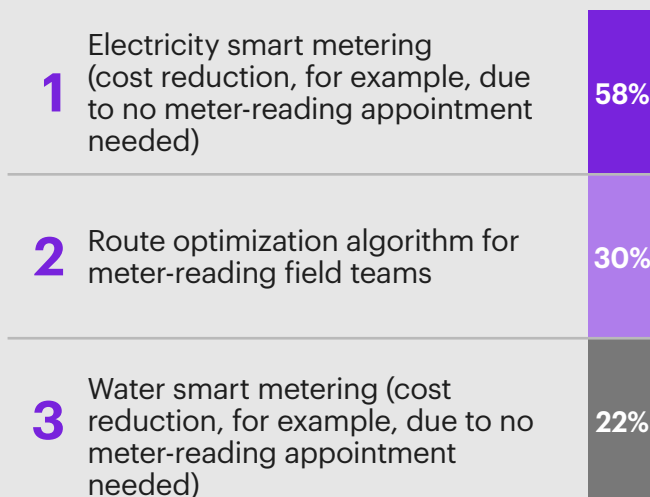
A wide range of process digitalization use cases have proven impact; however, their degree of implementation differs greatly

≥40% have experienced business impact
 ≥30% have experienced business impact
 ≥20% have experienced business impact

Trading



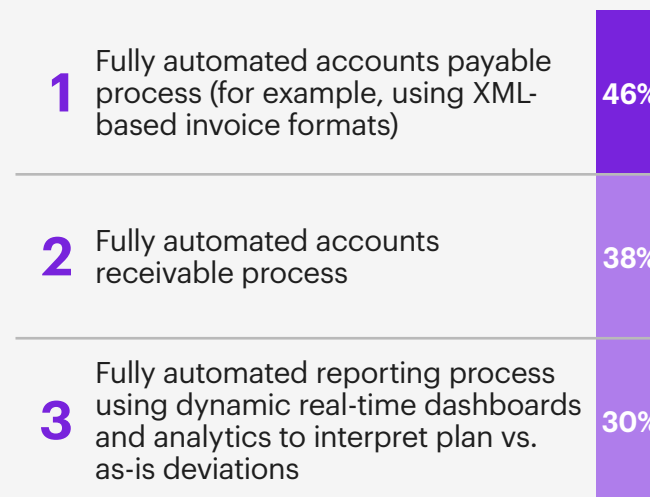
Metering



Sales and services



Support functions





Baiba Priedite
Chief Customer Officer,
AS Sadales tīkls

“Smart meters are crucial to improve efficiency, data availability, and to develop new data services and tools. The smart meter solution will allow us to continue a targeted path to improve the customer experience and digitalization.”

Case study: Smart metering implementation in Latvia at AS Sadales tīkls

Question 1: Why did you initiate the project?

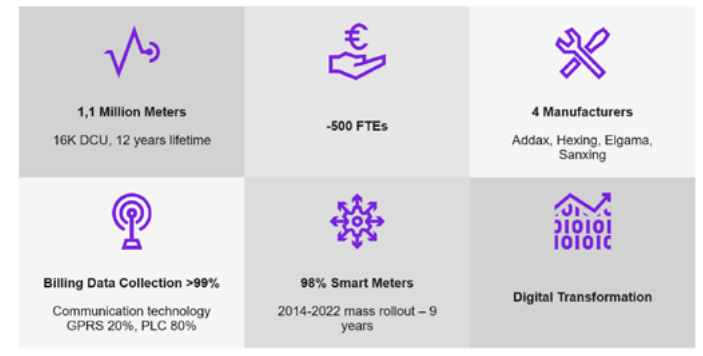
The EU Third Energy Package requires member states to implement intelligent metering systems for the long-term benefit of customers. Without a doubt, smart meters are crucial for the development of new tools and e-services and the overall improvement of customer service. Hence, the smart metering program was started in 2014. It is based on EU Directive 2019/944 (05.06.2019), Directive 2009/72/EK (13.07.2009), and the regulatory acts of the Republic of Latvia. Mass smart meter rollout took place from 2014 to 2022, serving as a basis for project initiation.

Question 2: What was your approach?

An iterative approach was utilized for the implementation of the smart meter. The procurement process was divided into several packages to reduce risks and incorporate advanced communication technologies. Initially, the cost-benefit analysis for the implementation of any smart meter was unfavorable.

However, upon implementation of the program, it was reassessed, as communication technology for the smart meter had undergone changes from PLC prime to GPRS and then from GPRS to G3 PLC. This resulted in positive cost-benefit analysis and substantial financial benefits for our company.

Smart Metering Roll-Out In “AS Sadales tīkls”



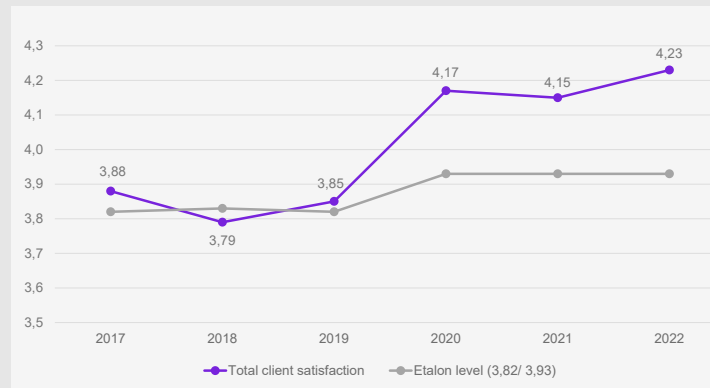


Baiba Priedite
Chief Customer Officer,
AS Sadales tikls

Case study: Smart metering implementation in Latvia at AS Sadales tikls

Question 3: What impact has been achieved?

We have made significant achievements in our operations. These include the installation of 98 percent of all AS Sadales tikls meters by the end of 2022, reducing full-time equivalent (FTE) employees by 500, and decreasing energy losses from 4.77 percent in 2014 to 3.7 percent in 2022. Moreover, the number of visits to customer sites concerning meter connection and disconnection was reduced by 47,000 per year. The use of vehicles for meter-related tasks declined by a total of 266. In contrast, client self-service activity has increased, reaching 98.6 percent. Lastly, we were able to achieve a reduction in CO2 emissions of 182,500 kg per year.



Question 4: Which benefits were the customers able to experience? Did you measure customer satisfaction or other qualitative measures? If so, what impact has the introduction of smart meters generated?

Customer satisfaction levels regarding the implementation of smart meters, the benefits, and the service provided were monitored through electronic surveys conducted during the rollout period.

The results, as illustrated in the figure below, show that client satisfaction has continuously increased throughout the years and reached 4.23 out of a maximum of 5 points in 2022. This is predominately due to more customers being able to experience the system's benefits. Furthermore, a Kantar research study was conducted. The results prove that 46 percent of individuals and 61 percent of companies utilized the electricity consumption data provided by smart meters for analysis (Kantar, inhabitant survey 18-75 age, n = 1000, 10.2021; Kantar, company survey, n = 601, 09.2020).



Baiba Priedite
Chief Customer Officer,
AS Sadales tikls

Case study: Smart metering implementation in Latvia at AS Sadales tikls

The main benefits for customers include:

1. No concerns with data reporting
2. Decreased energy consumption through improved abilities in data control and analysis
3. Costs savings of up to 20 percent for companies by using energy monitoring solutions
4. For companies only, the M2M service allows for the automatic receipt of electricity consumption data on a daily or bi-daily basis

Question 5: What were the critical success factors for the project?

Success in implementing the program was achieved through an iterative approach, conducting conformity tests before purchasing solutions, having a strong internal distribution system operator (DSO) team, proper program management, and thorough testing. The procurement process was divided into six packages and initially focused on a smaller scale of smart meter implementation to gain knowledge of new devices and technologies before being expanded. This iterative approach facilitated the evaluation of communication technology and the procurement of smart meters at more competitive prices.

Moreover, the implementation of smart meter technology positively impacted all functions associated with meter servicing, resulting in the elimination of physical visits to check consumption levels due to the abilities of remote reading. Additionally, resources for manual data processing were reduced. Besides the above-mentioned predominant functions, other units, such as network monitoring and customer service, have benefitted from the improved efficiency.

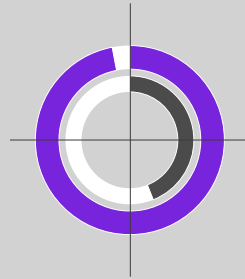
Question 6: Which impulses did you get from the Digital@Utility participation?

Participating in the Digital@Utility enabled us to benchmark our digital readiness compared to industry leaders. In that regard, we were able to reconfirm our competitive advantages in the market and our correct development pathway. Nevertheless, we acknowledge the necessity of continuously refining innovation efforts to achieve our goals for digitalization and sustainability.

Robotic process automation (RPA) has become mainstream; it is used by around half of companies on at least one step of the value chain, with an average success rate of more than 80%

Small utilities

≤€35 million revenue

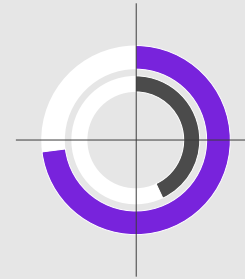


44%

97%

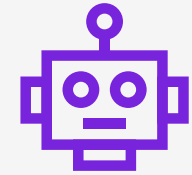
Medium utilities

>€35 million – <€250 million revenue



43%

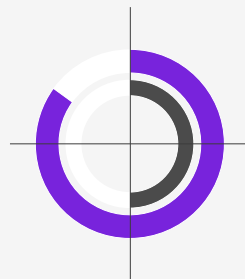
73%



RPA is most frequently used in the area of sales and services.

Large utilities

≥€250 million – <€1,000 million revenue

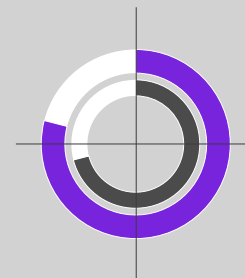


50%

85%

Big ships

≥€1,000 million in revenue



71%

79%

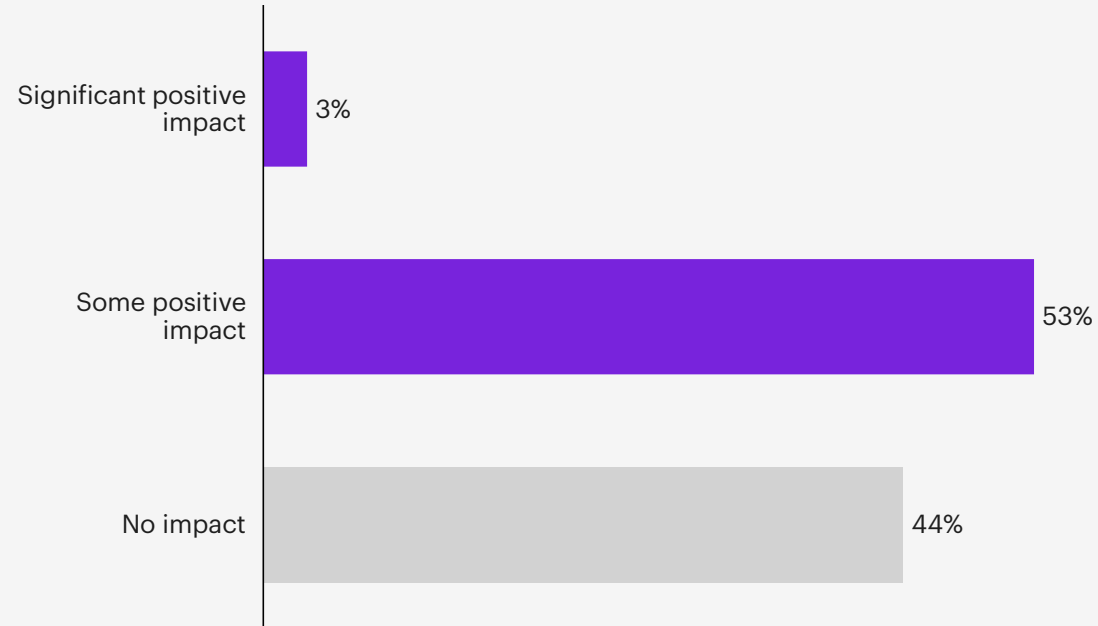


RPA usage is more widespread with big ships compared to smaller utilities.

■ Success rate (if used)
■ RPA in use

More than half of the surveyed companies create positive effects on their sustainability agenda through process digitalization

Effects of process digitalization on sustainability agenda

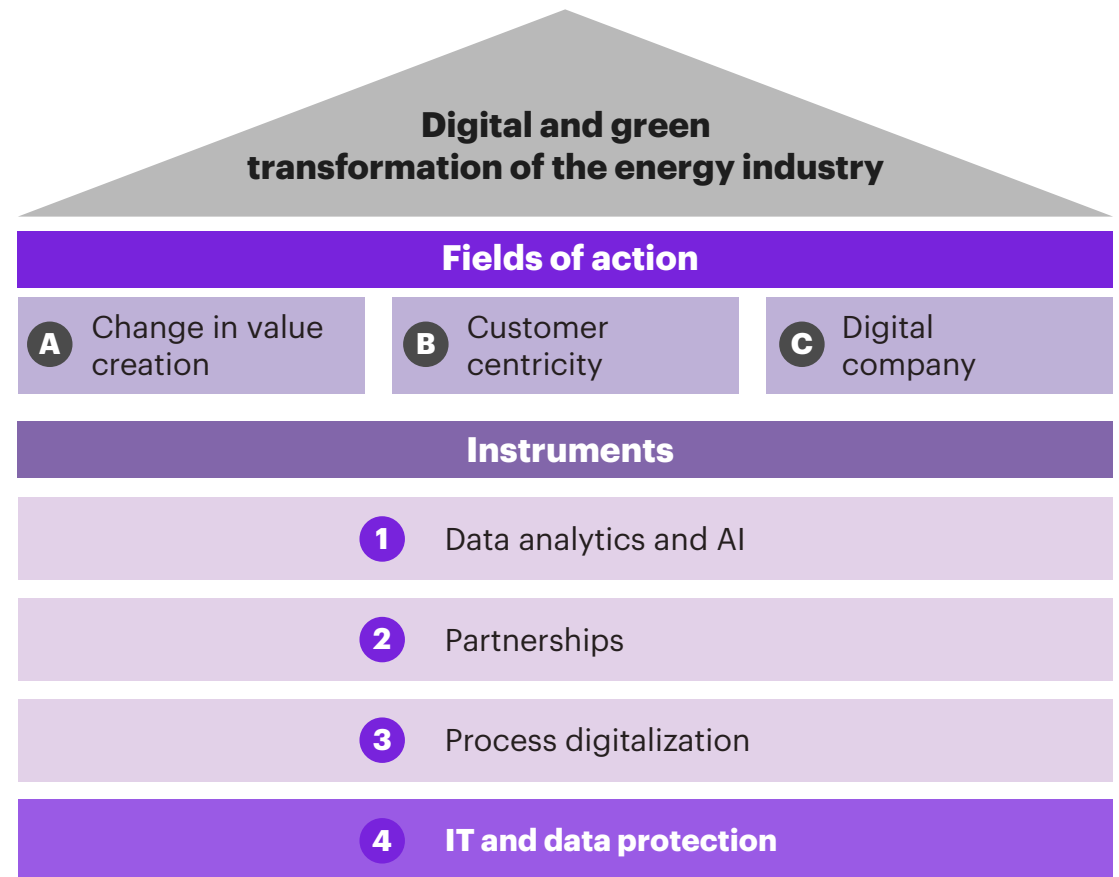


Instrument 4: IT and data protection

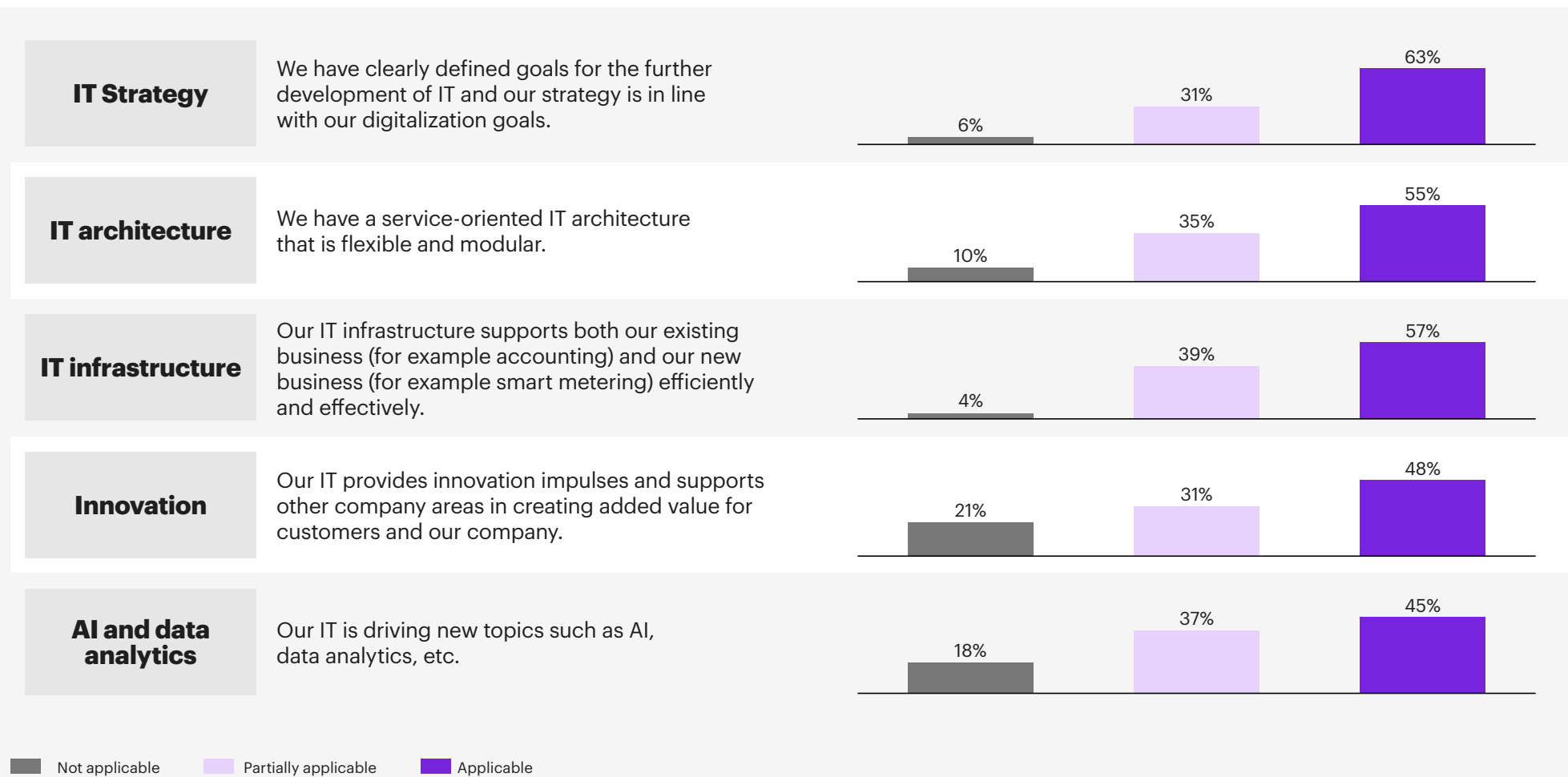
The instrument “IT and data Protection” examines the current status resulting opportunities through two perspectives – IT strategy, architecture, and organization as well as IT security and data protection. Lastly, the maturity of the cloud service and plans for handling legacy billing systems are assessed.

Topics covered:

- IT strategy and architecture
- IT development methods
- IT security and data protection



While 63% of companies agree to have clearly defined goals for further IT development, only 45% of companies agree that their IT is driving new topics

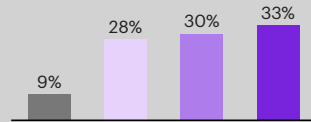


High IT security and data protection standards are a necessity for utilities; much potential moving forward is still in automation

Data governance



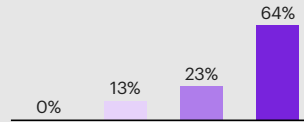
We have clearly defined data governance including clearly defined data privacy.



IT security responsibilities



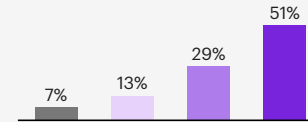
We have clearly defined and implemented responsibilities for IT security.



IT security approach



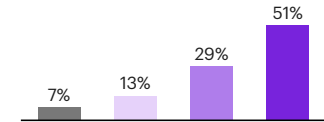
We are taking a standardized (e.g., ISO2700x, NIST) approach to information security and cyber defense



Data security/protection



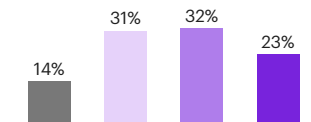
We have had data security and data protection issues within our organization.



Anomaly detection



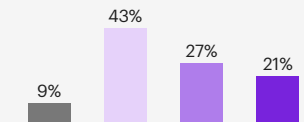
We can detect threats from user behavior anomalies in our systems in real time.



Least privilege principle



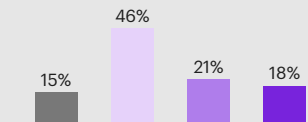
The least privilege principle in the authorization system is regularly checked and optimized with the help of tools.



Automated blocks/deletion



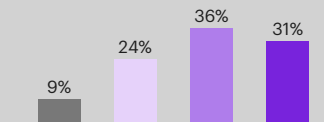
We perform regular blocks/deletions automatically across applications.



Data protection organization



The monitoring and further development of our data protection organization is IT-supported.



Case study: Implementation of holistic data management in the ERP system landscape at swb AG

Jens Schnakenberg
swb AG

The introduction of a holistic data management approach (ILM) has not only helped us to better implement data protection regulations across the organization. Today, the benefits gained through the project support us in driving forward our digital transformation strategy.

Question 1: Why did you initiate the project?

We initiated the projects to consistently implement the legal data protection requirements in all company areas for the swb Group's SAP systems.

Question 2: What was your approach?

Our approach was to implement holistic data management with the information life cycle management of our ERP system. This concerned our central ERP system, the industry solution systems for the market roll network operators and supply, as well as our analysis and statistics SAP BW system. Based on the implementation of data protection requirements, further benefits opened, which directly contributed to our digitization strategy.

To ensure a comprehensive implementation of data and information life cycle management, building a deep understanding of all processes first was essential. This was followed by developing a set of rules for locking, archiving, and destroying data.

This included a reconciliation of business perspectives and the interests of the user departments with the legal requirements concerning questions such as: At what point is data available for processing? When must they be blocked? How long may they remain in the system or an archive? When must they be finally destroyed?

In addition to the rules developed, many technical questions arise within any project. These include questions such as: How are the business processes represented in the system? Which data fields and database tables are used in the respective processes?

Access to advanced analysis tools enabled identifying relevant data within the systems and technical objects. This significantly simplified the implementation of a blocking and deletion policy.

Case study: Implementation of holistic data management in the ERP system landscape at swb AG

Question 3: What impact has been achieved?

Implementing rule-based data management not only fulfills data protection requirements. It also yields other benefits. Among other things, it makes it possible to test the data quality for the so-called lockability check (end-of-purpose) for master data or the archive ability checks on the transaction data side. These checks ensure that documents are ready for the archive and that master data can be locked. In this way, any data quality problems can be analyzed from both a technical and a business perspective and can be more easily resolved down the road.

In addition, implementing an information life cycle management system leads to a relief of the productive database. This is because expired data is removed by its relocation to an archive or its final disposal after the retention periods have expired. Almost without exception, this results in reduced costs and improved performance.

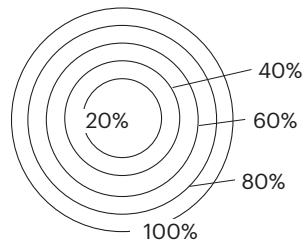
Question 4: What were the most important success factors for the project?

From the point of view of swb AG, three main factors contributed to the success of the project: ease of reporting data for consumers

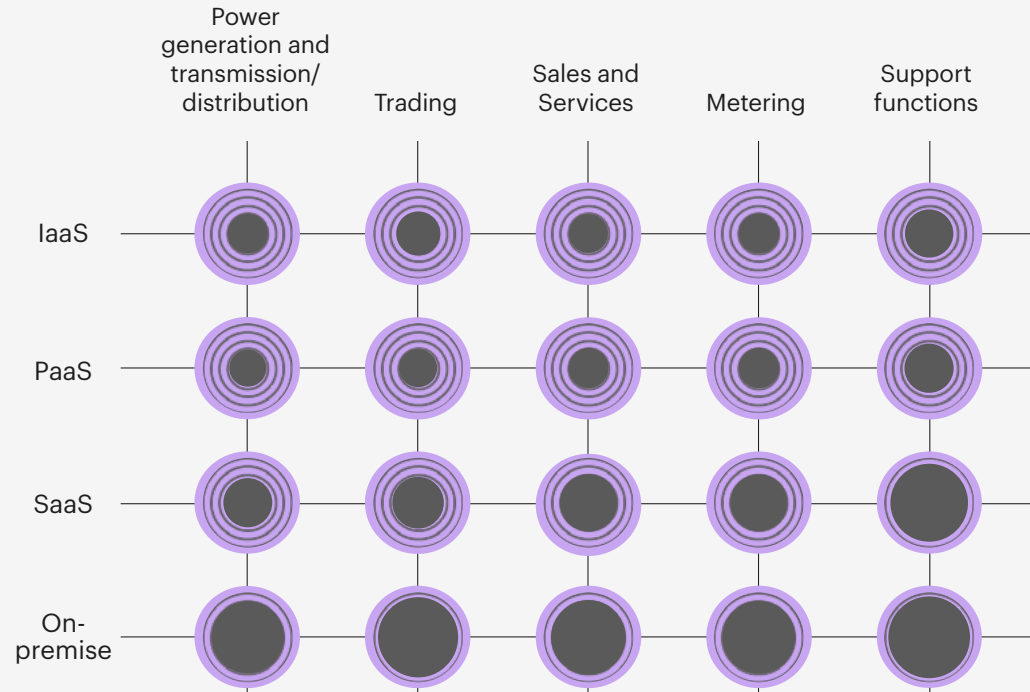
1. The early and extensive involvement of all affected departments in the project. Data management projects involve almost every department. Consequently, contrary to common perception, they are not purely IT projects and require the involvement of various groups within a company.
2. Considering all the psychological components that play a role in the locking and deleting of data. Blocking and deleting data leads to changes in the way data is handled. These ways of working must be well prepared and moderated because this is a profound change process.
3. The involvement and assignment of a suitable project partner who supports with sound experience in this subject area. It is advantageous if such a partner can accompany and support the project from start to finish. This includes conceptualizing and technical implementation of the information life cycle management system and designated change management processes.

Jens Schnakenberg
swb AG

Cloud services—IaaS, PaaS, and SaaS—are used frequently along all value chain steps



Using cloud-based services by value chain step



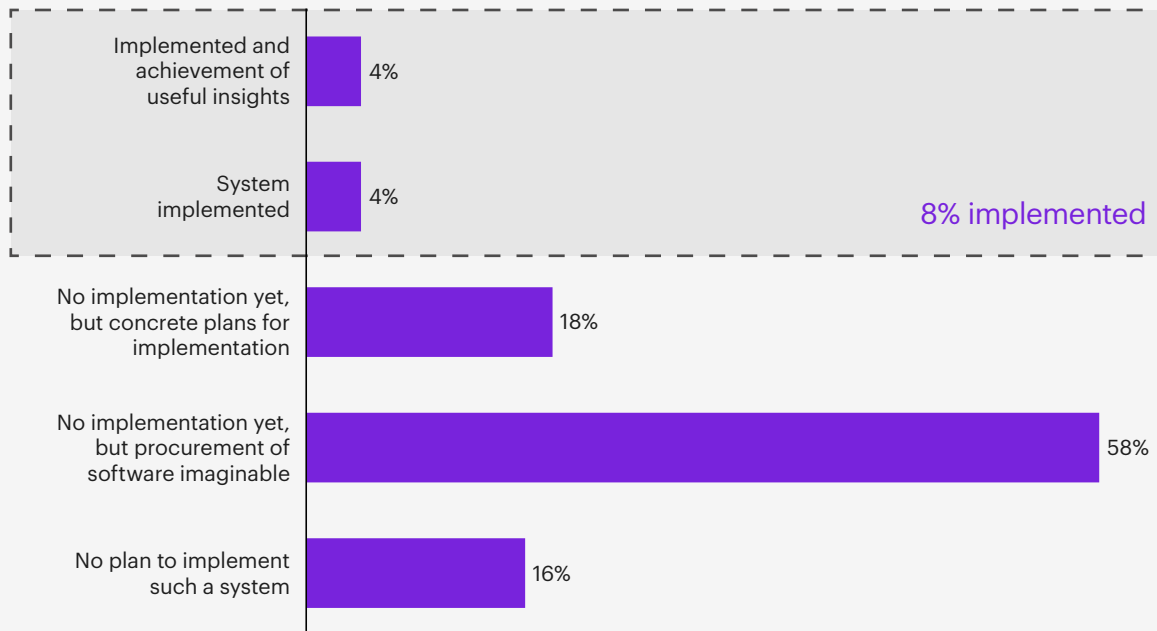
Along the value chain stages, IaaS, PaaS, and SaaS are frequently used for support functions.



On average, on-premise systems are most prevalent along the different value chain stages.

The introduction of software to measure and analyze the carbon footprint has yet to be planned in almost 75% of companies

Use of software to measure and analyze the carbon footprint



26%

of companies have planned or already implemented software to measure and analyze the carbon footprint.



It appears that there is a noteworthy discrepancy in the utilization of software for measuring and evaluating carbon footprints in relation to the size of the utility.

70%

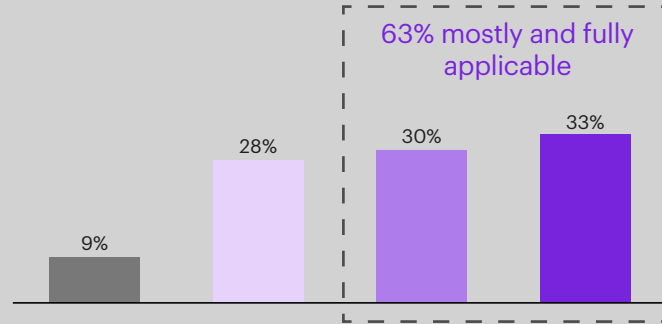
of large utilities and big ships have either already implemented software for the measurement and analysis of their carbon footprint or have concrete plans to do so in the near future.

Most companies use DevOps; further opportunities such as low code technologies frequently remain unused

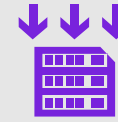
DevOps approach



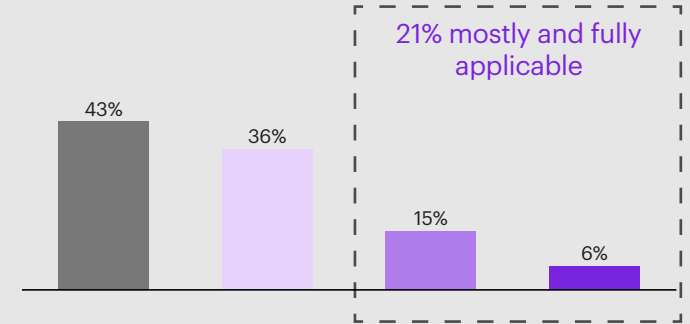
We have a DevOps approach in IT delivery, with close collaboration of operations and development



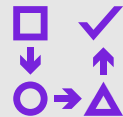
Low code technologies



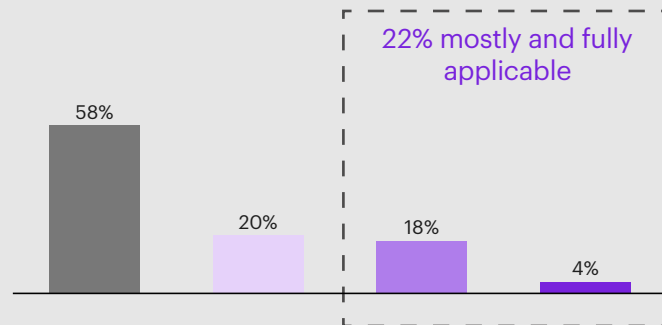
We leverage low code technologies for new developments.



Agile@Scale



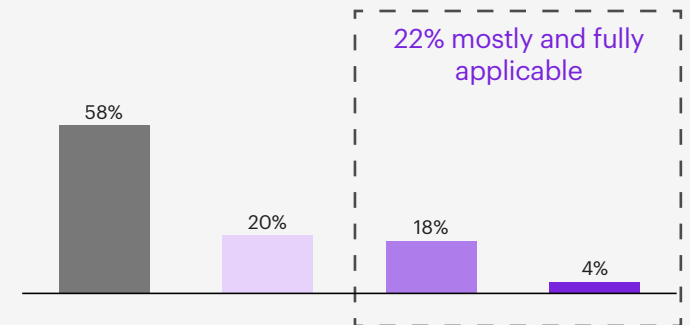
We leverage agile@scale frameworks for large team developments (LeSS, SAFe, and so on).



CI/CD pipeline



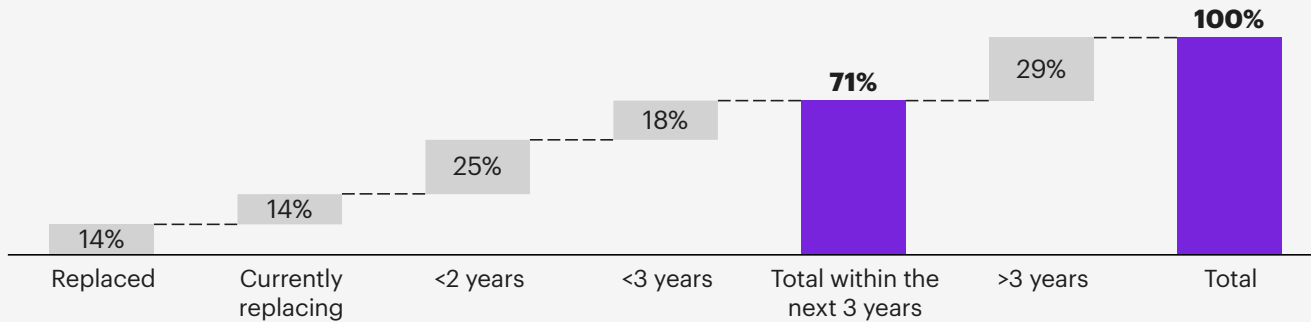
We have defined and implemented a CI/CD (continuous integration/ continuous delivery) pipeline.



- Not applicable
- Partially applicable
- Mostly applicable
- Fully applicable

>70% of utilities are in the process of replacing their outdated billing systems or have plans to do so within the next three years, with a preference for SaaS and well-established providers

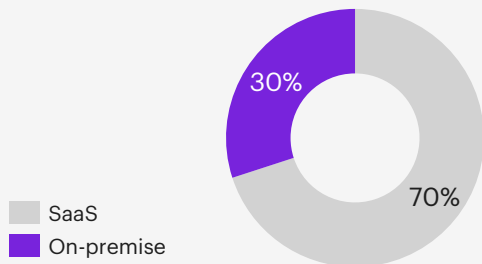
Replacement of old billing systems in the coming years



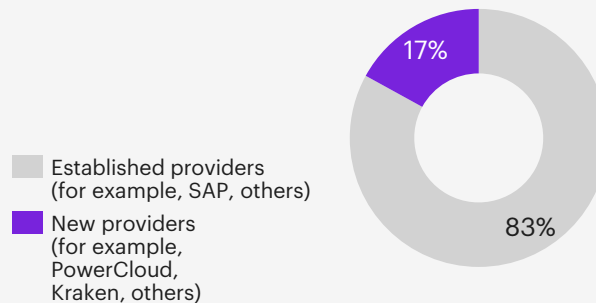
28%

of companies have already begun or are currently in the process of replacing their legacy billing system, representing a 75% increase in comparison to the results from the previous year.

Type of new billing system



Service providers for replacing billing system



70%

of companies intend to utilize SaaS systems, with on-premise systems being less favored at 30%, and primarily considered for replacement by larger utilities.

Appendix

Procedural logic to determine the overall rating

- The **overall assessment** is determined on the basis of the average of the scores in the analysis areas
- All areas of analysis are weighted as per response rates of evaluation-relevant questions
- The **evaluation in the analysis areas** is based on the average of the questions of an analysis area, with each question having equal weights
- Questions are scored from 0% to 100% based on selected choice
- Contextual questions (for example, turnover, ambitions) are not considered for scoring

Overview of the analysis structure of the overall evaluation (analysis areas, topics, number of questions)

	<p>A Change in value creation</p> <p>Topics:</p> <ul style="list-style-type: none"> — digitalization-strategy — Business impact of the digital strategy — Focus areas <p>Questions: 15</p>	<p>B Customer centricity</p> <p>Topics:</p> <ul style="list-style-type: none"> — Measures to increase customer centricity — Maturity level of use cases implementation — Digital sales channels implementation <p>Questions: 6</p>	<p>C Digital company</p> <p>Topics:</p> <ul style="list-style-type: none"> — Digital culture, digital execution, and digital leadership — Budget for digital initiatives — Agile methods <p>Questions: 10</p>
<p>1 Data analytics and AI</p> <p>Topics:</p> <ul style="list-style-type: none"> — Statements on data analysis — Maturity level of data analysis applications <p>Questions: 4</p>	<p>2 Partnerships</p> <p>Topics:</p> <ul style="list-style-type: none"> — Implementation and reasons for partner collaborations — Stakeholders and value chain steps <p>Questions: 2</p>	<p>3 Process digitalization</p> <p>Topics:</p> <ul style="list-style-type: none"> — Statements on process digitalization — Maturity level of applications for process digitalization <p>Questions: 5</p>	<p>4 IT and data protection</p> <p>Topics:</p> <ul style="list-style-type: none"> — IT strategy and architecture, IT development methods, and IT security — Cloud services — Billing systems <p>Questions: 8</p>

Thank you

BDEW

The Federal Association of Energy and Water Management (BDEW), Berlin, and its regional organizations represent over 1,900 companies. The spectrum of members ranges from local and municipal to regional and supra-regional companies. They represent around 90 percent of the electricity and over 60 percent of local and district heating sales, 90 percent of the natural gas sales, over 90 percent of the energy networks as well as 80 percent of the drinking water supply and around a third of the wastewater disposal in Germany.

[bdew.de](https://www.bdew.de)

VSE

VSE is the nationally and internationally recognized umbrella association for the Swiss electricity industry. Its members produce, transmit, distribute or trade in electricity and ensure over 90% of Switzerland's electricity supply.

[strom.ch](https://www.strom.ch)

Kearney

As a global consulting partnership in more than 40 countries, our people make us who we are. We're individuals who take as much joy from those we work with as the work itself. Driven to be the difference between a big idea and making it happen, we help our clients break through.

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IMP³ROVE

As Kearney's competence center for innovation management, IMP³ROVE is uniquely positioned to support clients in gaining a competitive edge by better management of innovation, including innovation to differentiate with digitization and sustainability.

www.imp3rove.de

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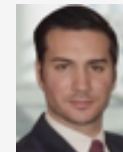
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