

TOOLKIT

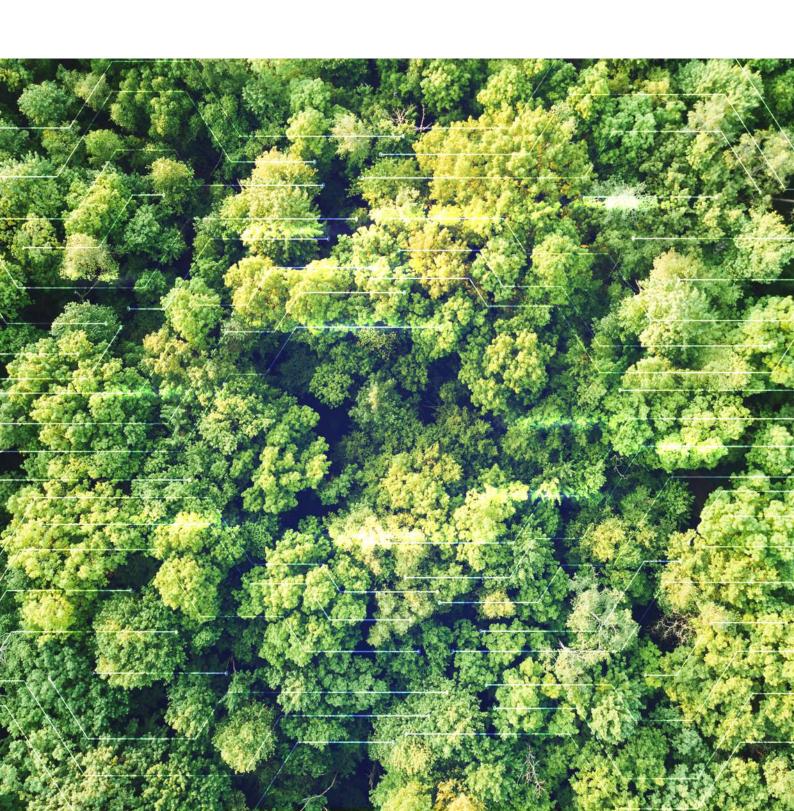
HOW DIGITALISATION CAN HELP ON ENERGY AND EMISSIONS REPORTING





TOOLKIT

How Digitalisation Can Help On Energy and Emissions Reporting



About This Toolkit

This document aims to provide guidance to energy managers looking to improve the credibility, integrity and granularity of their energy and emissions reporting. It describes the main challenges that energy managers are facing around energy data and energy certificate collection for reporting. The toolkit then showcases how digitalisation could easily help in making the process more cost-efficient, transparent and credible.

Energy reporting is becoming increasingly resource intensive, and stakeholders' high transparency and granularity requirements are making it impossible to manage all the energy data and certificates manually and in an accurate way. New digital tools can help businesses manage green energy data properly, granting a higher transparency, credibility and efficiency at the same time.

This toolkit first analyses which are the steps to follow to create an energy report. It then moves towards the main challenges and costs that energy and procurement managers face, namely data collection, data auditing and credibility issues. Finally, the toolkit will give an overview of the latest trends in sustainability reporting and what corporations should keep an eye on in the close future.

All the information disclosed is extracted from +50 interviews with energy and sustainability managers from Fortune500 companies, as well as from FlexiDAO's team expertise from the energy sector. The interviewed sample included both companies recently introduced to sustainability reporting as well as market leaders who are looking to go beyond their green targets.

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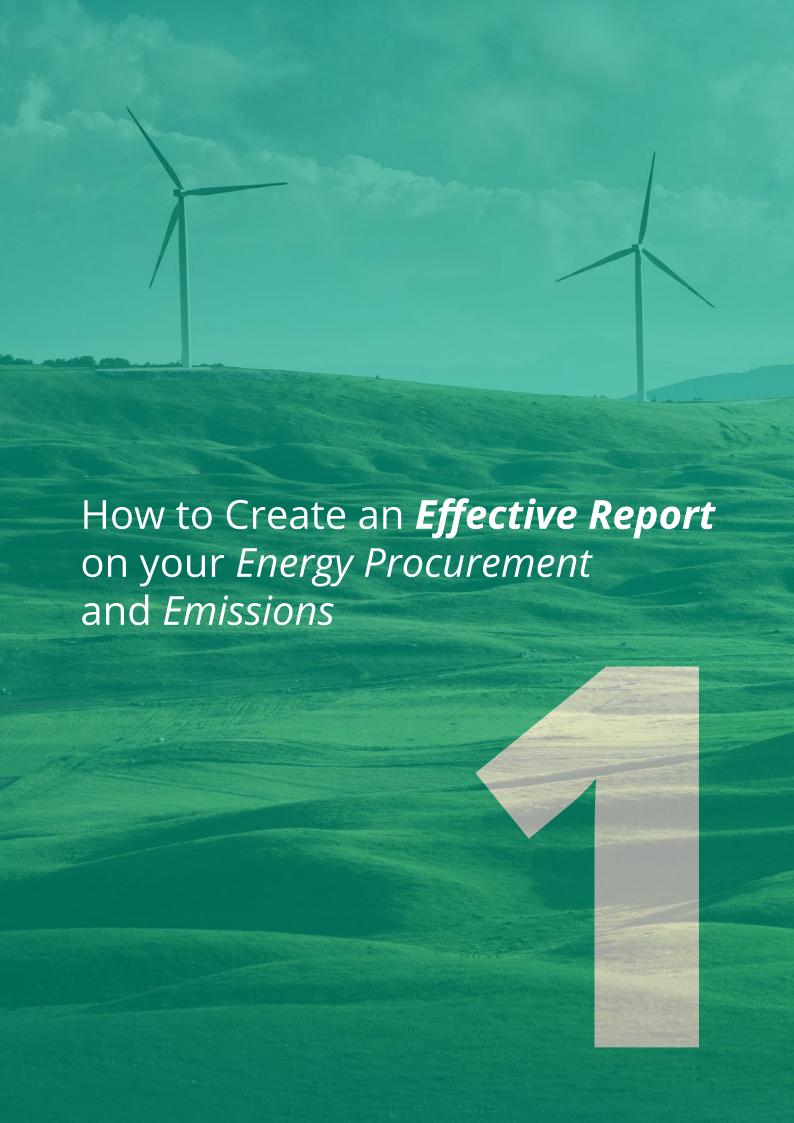


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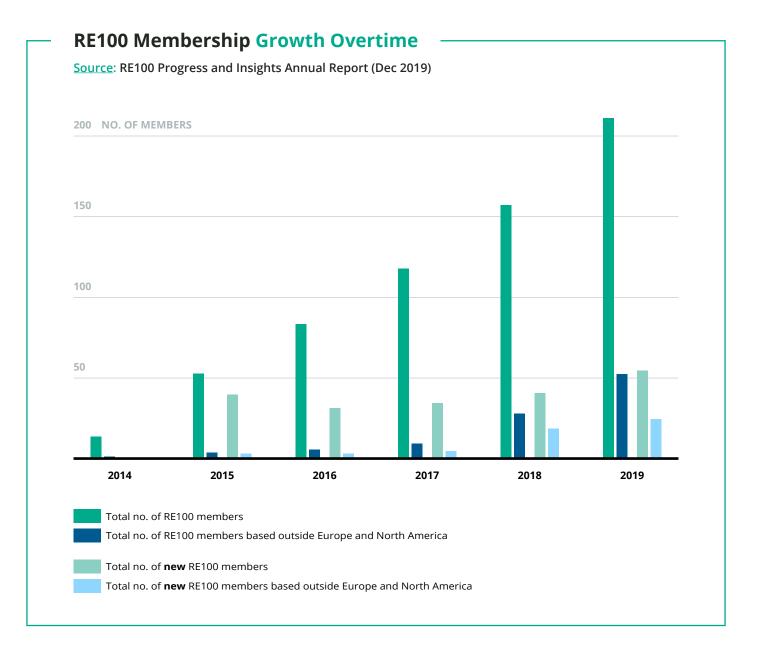




Sustainability reporting has become a mainstay in the annual reporting requirements for many companies. Historically, the need for reporting has arisen through compliance with company reporting regulations, such as in the United Kingdom and European Union, where listed companies are mandated to report on carbon each year. More recently, the financial sector has been putting increasing pressure on corporations, too. More than 90% of investors is now factoring environmental considerations into their investment decisions. As a result, climate conscious companies have taken to voluntary reporting, for example under the Carbon Disclosure Project (CDP) framework. Whatever the driver is for sustainability reporting, it's clear that having a sustainability report is something that will remain important and become even more important in the future.

An important section of a sustainability report is the one related to renewable energy. Renewable energy has been identified as a key metric when assessing a company's contribution to tackling climate change. According to the latest Eurostat figures, over three-quarters of the GHG emissions in the EU-27 are due to fuel combustion alone.

The latest annual report from RE100 – an initiative which strives to facilitate the achievement of 100% renewable energy – shows the extent of the growth in popularity of renewable energy reporting and targets.



There has been exponential growth in the number of companies signing up to these standards.

To create a proper sustainability report, energy and procurement managers are requested to disclose data on energy use, carbon emissions, and energy certificates. The process can take place annually, semesterly or quarterly, depending on the company. However, for internal reporting and management reasons, companies are iterating the process more frequently. As a consequence, global energy managers are investing more and more time and resources in creating effective reports on energy procurement.

How to *Effectively Report* On Renewable Energy

Let's look at the steps a company with no sustainability report could take to effectively report on their renewable energy.



Identify where energy is being used directly in the organization.

This requires an understanding of what fuels are used within the company. For example, a plant could use electricity, gas, fuel oil etc. in the production process. This will need to be completed for all geographical locations.



Once energy use has been identified, the next step is to retrieve data on total annual volumes used and the associated carbon emissions with each fuel.

This can be a very difficult exercise if the company uses many different energy types in a number of different countries.

To dive deeper, this step can be broken down to the following sub-steps focusing on electricity and gas use as examples:



For **ELECTRICITY**, a review of where the electricity is sourced will need to be completed. This can be through options such as on-site generation, green certificates, green tariffs or Power Purchase Agreement (PPAs). The zero carbon content of on-site renewables or a PPA is quite straightforward to quantify. The carbon content of a supply contract can be more difficult to obtain. A sustainability manager will need to contact suppliers for specific information on the carbon content of their electricity supply.





For **GAS**, it's generally the case to request the carbon content of the gas from suppliers. This can vary slightly by region due to the quality of the gas supplied. Some companies will generate biogas on-site and purchase green gas certificates, but in general, these aren't as common as on-site electricity generation or certificates.



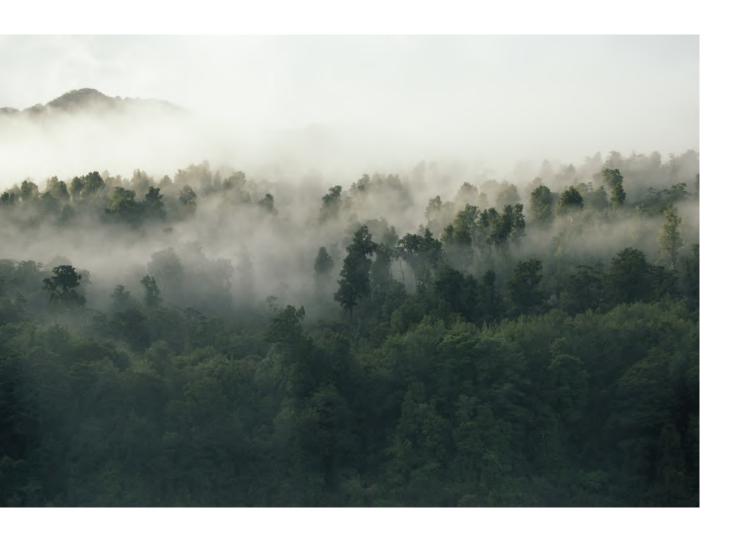
The next step is to take this data, analyze it, and present it in a meaningful manner.

The good news is that once data is collected and verified, the hard part is complete. This should be presented in such a way that it's easy for both internal and external stakeholders to understand and interpret.



The final step of sustainability reporting is recognizing the results of the report and creating a strategy with specific targets for future years.

Setting targets will help leadership and employees understand what is required to achieve those targets, both in terms of financial budgets for projects and the human resources required to take those projects to completion.



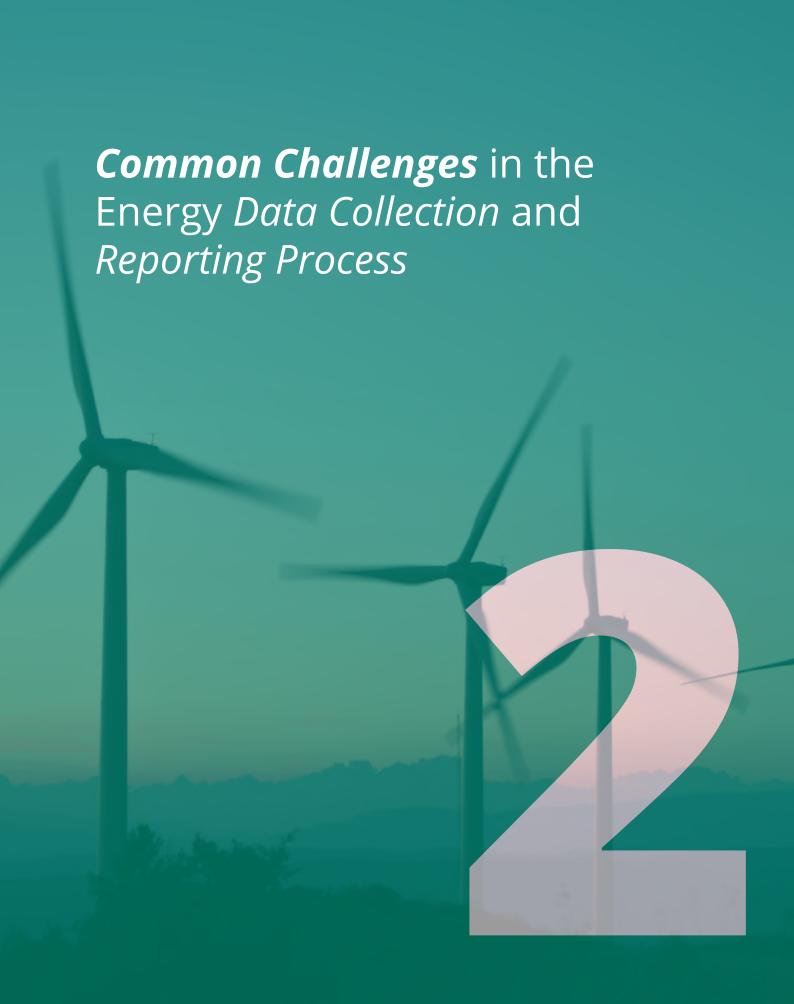
It goes without saying that collecting this information and presenting it accurately can be an arduous task. There are many different points of stakeholder interaction which increases the risk of human error in the provision or analysis of data. In addition to this, for a company, this data gathering exercise can be a massive drain on resources. If you don't have a central sustainability team, the time spent by operations managers, energy managers, engineers, senior leadership etc. in assisting with sustainability reporting detracts from the company's core business and targets.

Take the example of an operations manager at a pharmaceutical plant. His/Her day-today objectives are to keep the plant operating effectively and efficiently, responding to equipment breakdowns, and managing the expectations of the leadership team. Helping to collect data from energy suppliers or downloading on-site generation statistics from metering software shouldn't be a requirement of the job. It's an unnecessary distraction from their singular objective, to ensure the plant is operating as profitably as it can at any given moment. This needs to change to allow employees to re-focus on their core accountabilities.





Common Challenges in the Energy *Data Collection* and *Reporting Process*





For most companies, the green transition has brought about cost-savings opportunities such as the ability to procure low-cost renewable power. However, it has also led to increased costs in the form of additional compliance and regulation, annual sustainability reporting, and new staffing requirements.

As said in the previous chapter, the major challenge faced by corporations when reporting is the retrieval and management of energy data, including green energy certificates, and the associated carbon emissions.

The main reason is that the management requires the involvement of many different players, both inside and outside the company. Some examples are the multiple energy suppliers, external auditors, purchasing and energy management, sustainability management.

Looking at corporate sustainability reporting, there are three main areas where costs can be incurred. These costs are in the data collection process, the auditing process, and the reporting itself.

Three Areas Where *Costs* Incur In Corporate Energy Reporting

The Data Collection Process

When creating an energy report, the energy or procurement manager needs to collect energy use, carbon emissions, energy certificates and other relevant data. The data collection process could include some of the following tasks:

- Sending requests to energy suppliers for annual electricity and gas usage data (production data)
- Collecting cancelled Renewable Energy Certificates from Issuing Bodies/Brokers/Suppliers
- Manually extracting consumption data from energy management software or invoices
- Collecting internal data regarding on-site renewable generation projects (production data)
- Looking up national energy and environmental websites for carbon emissions factors

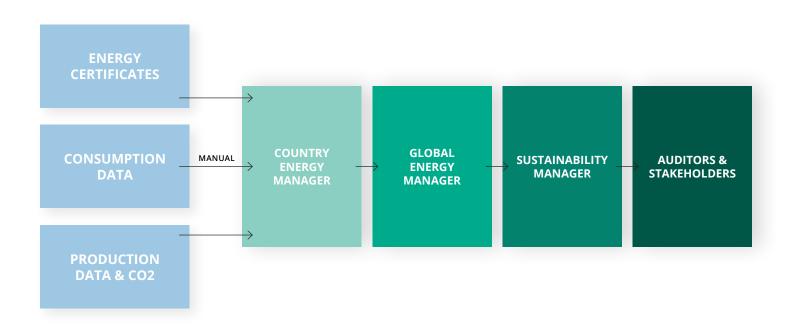


Figure 1: Manual energy data collection and reporting process inside a corporation

These tasks can take up to 1-2 months of the energy manager because they require a data exchange from many different entities.

- ENERGY CERTIFICATES, for instance, need to be requested from energy suppliers or downloaded from national registries. Energy suppliers might not send the cancelled certificates or send them with delay for auditors. If energy managers want to understand from which plant the certificate comes from, additional time needs to be invested in interviewing the energy supplier. On the other hand, downloading certificates from national registries might be very time consuming (e.g. In Spain, for instance, certificate download needs to be done one by one for each site).
- ENERGY CONSUMPTION DATA is sometimes collected manually from energy supplier invoices, a slow process prone to human errors.
- ENERGY PRODUCTION DATA from the plant needs to be delivered from the utility, especially relevant to track the origin of the energy purchased for credibility.
- ENERGY EMISSION factors need to be taken from grid operator platforms or requested to energy suppliers.

Multinationals and, in particular, Multi-Point Companies are the ones most affected by this issue. Examples of Multi-Point Companies are banks, retail or telecom firms. They all have in common a peculiar business structure: they own a considerable number of consumption points in each country where they operate, being offices, stores or antenna stations sites.

In these cases, it's very likely that the process is split on two different levels:

- **1. THE COUNTRY ENERGY MANAGER** is in charge of collecting all the data regarding the local energy procurement from the energy suppliers;
- THE GLOBAL ENERGY MANAGER collects the data from the country energy managers, checks and uniforms it, and finally makes the analysis for Management and the sustainability team.

The Auditing Process

Auditing of energy data has become standard practice. The main reasons for companies to engage in this practice are:

- Increasing data reliability and accuracy
- Improving stakeholder perception and confidence in the process
- Achieving higher scores for specific reporting standards

Audits on renewable energy can include a detailed review of how each consumption site has been covered with a cancelled energy certificate. This granular process can be very tedious for the auditor, and often certificate samples are used to simplify the process. However, this comes at the expense of credibility.

The auditing process is usually carried out by top-tier management consultancies. Using these consultancies increases the stakeholder perception of the audit and gives it greater credibility. However, this level of credibility can cost a significant amount of money for a company in high consultancy fees.

The Reporting Process

The reporting process will be different for each company. Some companies will take a more thorough approach and report internally on renewable energy and emissions progress on a quarterly basis. Other companies may choose to just report on an annual basis.

Once data has been collected and audited, it needs to be analyzed, in order to properly compare the progress made against the targets. This might require specific evaluations, such as the share of renewable energy used in each country, the type of renewable energy used (e.g. solar, wind, etc.), the origin of the energy (plant location and age), and location and market based emission reductions. For internal reporting and management reasons, companies are iterating the process more frequently. As a consequence, global energy managers are investing more and more time and resources in energy analysis and reporting.

Which Is The Cost

The total cost of energy reporting is primarily derived from two areas – the in-house human resources cost and/or external consultant fees.

For simplicity, let's assume that the energy manager is responsible for the majority of the people hours required in one country. Additional resources for independent auditing and advisory is outsourced to a third-party consultant.

For instance, an energy manager in the Netherlands receives a salary of ~€59k. Based on industry interviews, an average assumption is that these managers spend approximately 2 months per year collecting and processing data for energy reporting purposes in each country where the company is located. This gives a total in-house resource cost of ~€15-20k per country.

The additional cost of energy reporting advisory and auditing will be outsourced to a consultancy. If we assume a medium-sized company, consultancy fees could range from €10k to €50k. The pricing would typically be dependent on the number of company locations, extent of the data processing, and the quality of the consultant.

Based on these very general assumptions, the cost of energy reporting for a medium-sized company, would therefore have a total annual cost implication of €50-€75k per country. For large multinationals, with complex structures, the cost can turn into a very significant line of the P&L.





How *New Digital Tools*Can Help Overcome *Reporting Challenges Today*

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New digital tools are arising to help energy and procurement managers automating data collection, disclosing information on the type and origin of the energy they buy, and producing automated reports with more granular, transparent and credible information.

Collecting energy consumption data

In the last years, many established solutions such as Energy Management Software (EMS) have been automating the collection of energy consumption data. Usually this is done through the installation of expensive hardware devices. This has been working well in many cases, especially for companies that require real-time submetering data for internal decision making, facility management and cost reduction programs. They are mainly industrial firms with high energy consumption volumes.

Companies that have less sophisticated needs and want to save money on hardware installations usually have been automating the reading of invoices, instead of doing a manual data input, which is prone to human errors. However, this option will still require some manual work from the finance teams, resulting in delays.

The most recent innovation in data collection consists in retrieving consumption data from national data hubs. They are databases filled in daily by the energy distribution company that reads smart-meters. This data is usually provided in hourly granularity, even if with one day of delay. Upon the consent of energy buyers, service providers such as FlexiDAO can obtain consumption data, saving the cost of a hardware device.

Collecting energy certificates

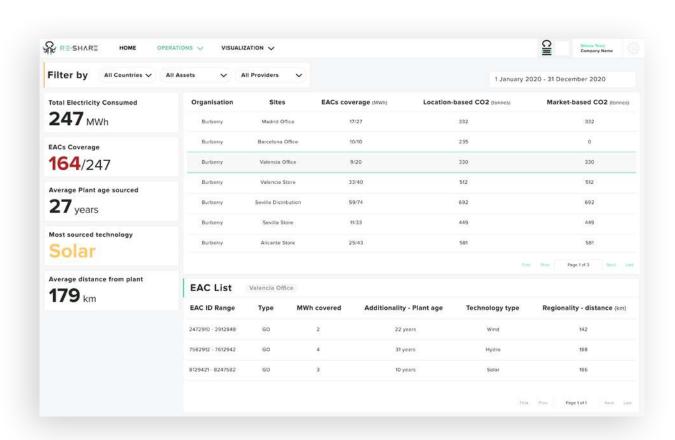
Typically, the energy certificate collection is outsourced to the energy supplier which might either not provide the service or collect the certificates with delays, due to the manual labour required to download them from the issuing bodies. The main reason is that there are very few solutions that have managed to collect green energy certificates automatically. By integrating their softwares with different issuing bodies' registries, companies like FlexiDAO can automatically gather all the certificates cancelled by a company. In addition, the cancelled certificates are collected in one unique dashboard, ready to be downloaded.

The advantages of having all the certificates automatically available in one dash-board are multiple. First, having access to the certificates in some countries is more cumbersome than others. For instance, in Spain energy consumers need to input in the webpage of the national registry their consumption point code one by one in order to download each certificate. Hence, automating the certificate download is very helpful, overall for Multi-Points companies (e.g. companies belonging to the retail, banking, telecom, sectors).

As an average figure, the automation of energy certificate collection can save around 10-15 hours of work for each country of operations.

Moreover, global energy managers working at multinational companies are facilitated by the consolidation and aggregation of energy certificates. Since certificates systems and energy contracts can be different in each country, having a single consolidated platform to access all certificates can save over 30 hours of time to a global energy manager.

Softwares collecting energy certificates can also analyse and categorise them according to the plant where they were issued. In this way, it's possible to check if the certificates are coming from newly built plants, for additionality purposes, for instance.



An aggregated certificates dashboard allows to monitor energy certificates per consumption point and download all of them in one click RESpring, FlexiDAO's RE Traceability Software



Collecting energy production data and emission factors

Energy production data are relevant to properly measure the carbon emission impact of a company. They include type of energy sourced (solar, wind, tidal, etc.), location and age of the production plant, and time at which the energy is consumed. All of these factors influence emission factors and carbon accounting.

It's possible to retrieve emissions factors in an automated way directly from the production plant, with no need to ask for this information to the energy supplier. By connecting the data software to the production plant, the CO2 footprint produced can be calculated with an hour granularity, enabling a more accurate calculation of location-based and market-based emissions.

This production data can then be matched hourly to the consumption data. Service providers can achieve this by partnering with the energy producer or utility that has signed a contract with the energy buyer and plugging in a software directly to the production plant. For instance, the data can be collected via API directly from the SCADA system of the plant, hence ensuring reliability and accuracy of the data.

In a way, this hourly matching of production data can be seen as a "pre-certification" of green energy - the official certificates are always linked to the hourly data. This means that, for instance, a bank could check that in March 2020 their offices in the Netherlands are being pre-assigned with energy certificates from a local wind farm from Amsterdam. By the end of the quarter, they would be getting the official Guarantee of Origin.

With this technology, an energy analyst doesn't need to request the data to suppliers or colleagues through excel files. This can reduce by more than 10 hours the time spent in production and emissions data retrieval in each country, chasing suppliers through calls and excel files.



Figure 2: Digitised energy data collection and reporting process

Better credibility on the environmental impact of energy purchased

When reporting on the renewable energy purchased, many energy buyers get asked: "But what kind of renewable energy do you buy?". The real environmental impact of the energy purchased becomes relevant, to avoid "greenwashing" claims.

But how to ensure a "dark green" energy purchase for companies that cannot cover all their consumption with PPAs and on-site generation?

Having a proof that the energy comes from a specific power plant is key.

In a way, this traceability is an intermediate step between a PPA and a normal green tariff in terms of environmental impact. By choosing a local plant, from solar or wind that is newly built, an energy buyer knows that their money spent on a green tariff is flowing into a developer that will reinvest that in more plants. It can be seen as an indirect PPA, since it's not the energy buyer but the energy supplier that is signing the bilateral agreement with the energy producer and buying certificates directly from them.

For companies that cannot sign PPAs or do on-site production, this digital traceability on top of a green energy tariff is the best possible alternative to increase credibility in front of auditors and sustainability rankings. RE100 Sustainability Leadership Guidelines establish these requirements too.



Digitising the auditing process

As discussed in the previous chapter, the auditing process is expensive and based on samples, hampering the credibility of the company. In addition, energy managers need to spend a consistent amount of time in sending the necessary data to the auditors.

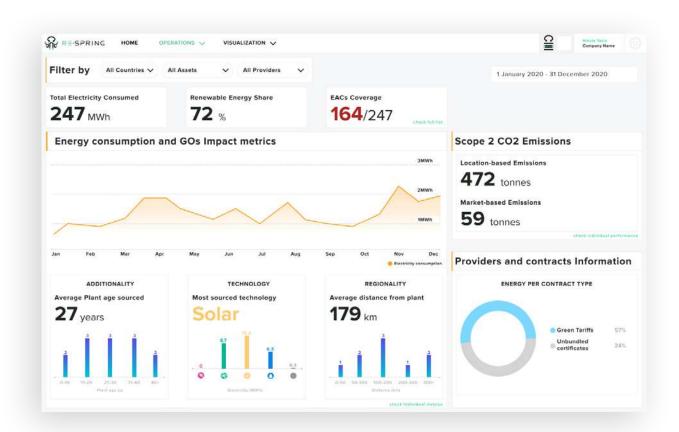
The advantage of having one dashboard automatically collecting consumption, production data and energy certificates is that energy managers can easily give access to the auditor to share the information, resulting in consistent time savings for both parts. On top of it, information is already consolidated and has a granular breakdown. This frees a considerable amount of work and time for the auditor. For instance, a fashion brand could give access to their software portal to their auditors. The auditors can then check that a store in Paris was matched with a specific Energy Certificate from a local wind farm, and therefore the carbon emission for that store is zero.

In this way auditing costs can be reduced between €15-25k, at average figures.

To strengthen the **credibility of the disclosure**, blockchain technology can be a powerful enabler: it keeps an immutable record of all the information disclosed, avoiding future mistrust or disputes of emissions reported.

Crafting the automated reports

Finally, automatic visual reports with personalised figures can be exported, which include figures as share of renewable energy achieved against the target, CO2 emitted and avoided. They can be used both for internal and external reporting purposes. For instance, some companies report quarterly on the progress of their global renewable energy strategy versus targets to management. In the case of Standards reporting (e.g. for CDP), raw data on renewables and emissions can be downloaded for internal data crunching and analysis. Automating these reports can save around 10-15 hours per quarter.



A personalised dashboard allows to monitor energy and carbon emissions performance RESpring, FlexiDAO's RE Traceability Software

These are just a couple of examples of how to reduce the cost of your annual energy reporting. Overall, it's estimated that procurement and energy managers could spend less than one month collecting and processing data for sustainability reporting purposes. It's a considerable reduction from the current situation.

It is estimated that total savings of 40-60k€ per year on average can be achieved by automating energy data collection, reporting and auditing. For multinational companies, the figure can be much larger.

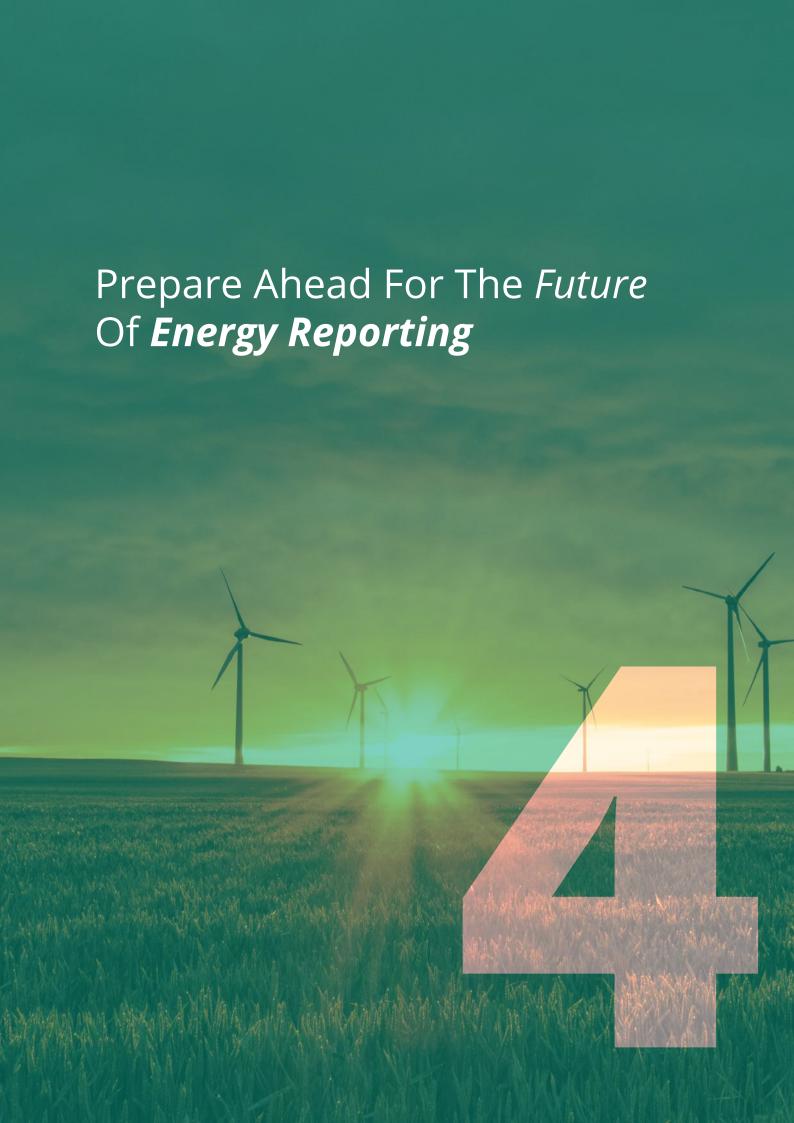




Prepare Ahead For The Future
Of **Energy Reporting**



Prepare Ahead For The *Future* Of *Energy Reporting*



It's worthwhile to remember that for many businesses, the cost of energy reporting didn't exist 10 years ago. It's a cost that has been created out of companies' recognition to climate change. And it's ever-evolving.

Each year, companies that are on the leading edge of climate change response strive to take further steps. This raises the bar for all companies and will in most cases lead to increased cost of energy reporting. To tackle this, companies need to stay ahead of the game which will be impossible to achieve with outdated processes. The aforementioned areas of energy data collection and auditing are two key areas that all companies will need to address. What if energy certificates are considered greenwashing in the future and companies cannot report zero emissions just with them? Data is needed today, to decrease risks for the future.

Investors are already putting pressure on corporations to disclose more accurate information. They are requesting for an "adequate context" of the data, including geospatial and asset-level data to enable a highly granular analysis of environmental risk. More granular data are essential to evaluate the real impact of a company. For this reason, leaders in sustainability disclosure are already moving towards an hourly carbon accounting granularity. For example, *Energy Tag* is a newly born initiative to define and build a market for hourly electricity certificates that enables energy users to verify the source of their electricity and carbon emissions in real time. More than 60 market leaders joined the initiative, including Google, Microsoft, Pwc and Accenture.

Adopting a 24/7 hour-by-hour accounting period for certificates enables energy managers to understand exactly where their energy is coming from and what their carbon emissions are at any given moment. This benefits them in several ways. First of all, linking production to consumption of renewable energy in 'real-time' builds trust. Secondly, it enables accurate carbon accounting by tracking hourly carbon data.

Blockchain is a cost-effective tool for companies looking to audit hourly energy certificates (24/7 matching). No issuing body is currently in charge of that level of hourly certification, hence the only alternative is to validate it with an audit to avoid double counting of those hourly certificates. Using human auditors is possible but very expensive due to the high level of granularity. Instead, blockchain is much more cost efficient when acting as a digital notary.

Leaders in the renewable energy transition and carbon accounting are also moving towards Scope 3 emissions disclosure. The reason is that emissions along the value chain often represent a company's biggest greenhouse gas impacts, up to 90% in some industries. Not taking them into consideration means considerably underestimating the corporate environmental impact. Soon, energy and procurement managers will be asked to expand the data collection on carbon emissions to some or all the suppliers

in the value chain. As previously discussed, data collection is already a resource-intensive process, resulting in a total in-house resource cost of ~€15-20k per country. Scope 3 data collection would multiply this cost considerably.

Automating and integrating all the data collection in a unique platform is acquiring increasing value.

This is where the market is going and regulation is following the path close. As previously discussed, green energy certificates aren't providing enough granular information to report on carbon emissions, and manual collection comes at a high resource cost. New tools are needed to overcome it, and block-chain-based softwares could easily enable an enhanced and granular transparency, including hourly carbon accounting and Scope 3 emissions reporting.

"RESpring allows a further step in real-time knowledge of the origin of the energy consumed. It also implies an advance in the traceability and reporting process"

Carlos Cabanas

Director of Institutional Relations, El Corte Inglés

Key Takeaways

Sustainability reporting is gaining importance. Corporations are facing an increasing pressure not only from customers and regulation, but also from investors to issue a proper sustainability report depicting the real corporate environmental impact. Reporting on renewable energy and carbon emissions has become a mandatory metric, since over three-quarters of the GHG emissions in the EU-27 are due to fuel combustion alone (*Eurostat*).

For most companies, the green transition has brought about cost-savings opportunities such as the ability to procure low-cost renewable power. However, it has also led to increased costs in the form of additional compliance and regulation, annual sustainability reporting, and new staffing requirements. The areas of major impact are data collection, data auditing and creation of the report(s).

Digitalisation has been helping in automating these manual processes for energy data collection and reporting. However, the collection of green energy certificates and energy production data has not been automated until recently. Today, softwares can automatically collect data on the renewable energy procurement and ensure a high granularity and transparency. They enable energy buyers to monitor their renewable energy procurement on an ongoing basis, as well as have an aggregated dashboard to track their energy certificates per consumption point. Since the process is automated, no time investment is needed.

As regards auditing, there's a general lack of trust in corporates' data and performance. Due to the massive work, audits are only performed on a sample basis, hampering the credibility of energy reports.

By applying blockchain technology, RE Traceability Softwares increase data reliability and accuracy, as well as the company's credibility, since all data is digitally audited, not only a sample.

Investors are requesting for an "adequate context" of the data, including geospatial and asset-level data to enable a highly granular analysis of *environmental risk*. More **granular data** are essential to evaluate the real impact of a company. The market is already moving in this direction: Energy Tag is a newly born initiative to define and build a market for hourly electricity certificates. More than 60 market leaders joined the initiative, including Google, Microsoft, Pwc and Accenture.

Carbon accounting should be expanded throughout the entire value chain, since Scope 3 emissions can represent a company's biggest greenhouse gas impacts. Soon, energy and procurement managers will be asked to expand the data collection on carbon emissions to some or all the suppliers in the value chain, resulting in an increased resource investment.

Corporations should stay ahead of the trends and get ready to transition to a newly accurate data request from the market. Human check has already become extremely expensive. Digitalization and blockchain application is what can enable companies to take control over their data. Digitalisation is allowing this to happen.

For more information about FlexiDAO, visit https://www.flexidao.com/

or email us:

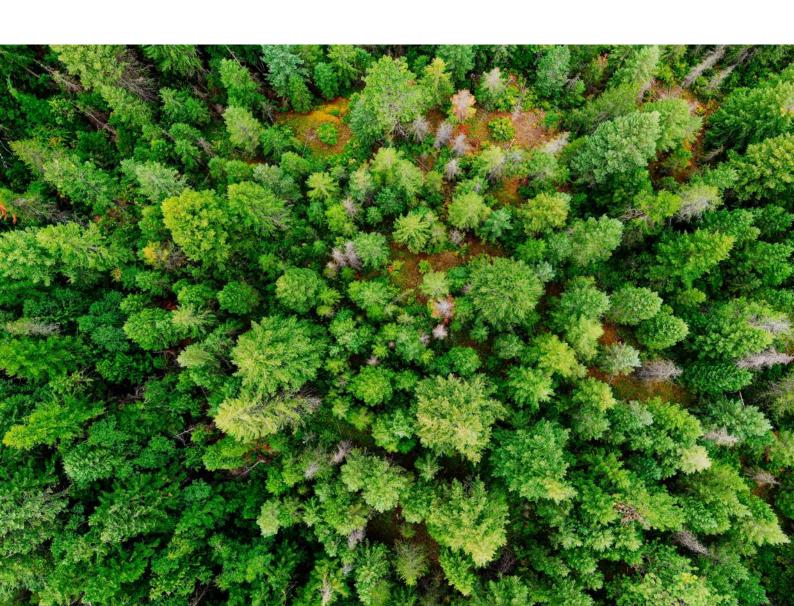
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About FlexiDAO

FlexiDAO is a Dutch service provider born in 2017 from energy engineers Simone Accornero, Grzegorz Bytniewski and economist Joan Collell.

It's mission is to help companies reach zero carbon energy goals leveraging digitalisation.

FlexiDAO's software RESpring offers intelligence on energy sourcing. It collects and processes energy consumption data, production data and energy certificates. This enables energy managers to save time on data collection, increase credibility and transparency of the green energy reporting and monitor the entire energy procurement for decision making.

RESpring has been officially recognized with several awards, such as the SET Award and Innoenergy Award. It is now deployed in 9 countries in Europe and South America, thanks to the collaboration with energy retailers like Acciona, Iberdrola, Orsted, EDP, Tauron, Alperia. It's been used by Fortune 500 companies, tracking more than 3 TWh of energy per year.

Photo Credits

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