

enel x

# Powering sustainable pharmaceutical manufacturing



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# Environmentally sustainable health systems

The climate emergency is also a health emergency. A recent [editorial](#) published simultaneously in over 200 health journals recognises the catastrophic harm to health caused by global temperature increases and calls for immediate action by governments alongside a shift to environmentally sustainable health systems.

Pharmaceutical companies are an integral part of our global health systems and the production of medicines is a significant contributor to carbon emissions. In its 2021 report [Delivering a 'Net Zero' National Health Service](#), the UK's NHS attributes 25% of its carbon footprint to medicines. Acknowledging that a small number of medicines account for a large portion of its emissions still leaves 20% that derives from manufacturing and freight inherent in the pharmaceuticals supply chain.

For most organisations, net-zero carbon emissions will be achieved by embarking on a journey of incremental change. Pharmaceutical manufacturing involves a complex mix of feedstocks undergoing thermal, pneumatic and electrical processes.

Where possible, manufacturers are looking to substitute more natural materials and further electrify loads. For example, converting gas-fired processes and fleets, using on-site generation and optimisation and transitioning to renewable power.

Manufacturing, operational and supply chain emissions are only part of the story when it comes to a company's carbon footprint. Emissions arising from the use of pharmaceutical products can be significant. For example, the hydrocarbon-based propellant used in asthma inhalers is a greenhouse gas that has a [1,500 times more potent](#) warming effect than carbon dioxide. Alternatives that use mechanical or electronic atomizers are, therefore, more sustainable.

In cases such as this, or similar scenarios where more sustainable alternatives are not currently viable or available, it increases the need to focus on actions within your immediate control such as the generation, procurement, optimisation and management of energy as you take steps to decarbonise your business.

# Business drivers

Stakeholder expectations concerning environmental and social governance (ESG) have grown enormously in recent years. Consulting firm McKinsey & Company has highlighted evidence that a better ESG score translates to about a 10 percent lower cost of capital, as implementing ESG measures reduces business risk.

Furthermore, of the 200 companies that make up the global pharmaceutical market, only 25 have consistently reported their emissions over the past five years.

**As of 2019, CDP, a leading organisation that rates companies on their environmental performance (formerly known as the Carbon Disclosure Project), included only three pharmaceutical companies in the list of 120 it judged to have the best climate change policies.**

Traditionally, pharmaceutical manufacturers have depended on their patented products to generate profit. However, the age of the blockbuster drug is coming to an end. Moody's analysts stated that **nine of the industry's top 20 drugs** by sales are set to lose exclusivity over the coming years. As patent protection expires, new entrants have an opportunity to compete with established manufacturers by introducing competitive products at lower prices.

The outcome of this trend is that pharmaceutical companies now focus far more on margins, and therefore manufacturing costs, than ever before. A growing contributor to manufacturing cost is energy use so reducing energy consumption is a win-win-win; it simultaneously cuts production costs, reduces emissions and enhances ESG credentials.

**Energy is not the only direct cost that pharmaceutical firms need to manage. Carbon taxes are beginning to bite; large carbon emitters in the UK will see a dramatic increase in compliance costs as a result of the change from the EU emissions trading scheme (ETS) to the UK ETS.**

Like many other businesses, pharmaceutical companies can expect their environmental practices to come under increasing scrutiny and be held to account by key stakeholders, including investors and customers. There remains a strong relationship between brand reputation and a company's bottom line.

# Integrating sustainability and energy strategy



For multinational businesses with complex manufacturing processes, getting started on the road to sustainability can be a daunting task. Even getting to grips with where your carbon emissions come from, let alone reducing them, is a complex undertaking. That's why, increasingly, organisations want to work with an experienced partner rather than make the journey on their own.

Some businesses look to tackle decarbonisation through initiatives that address a single aspect of their emissions, such as implementing energy efficiency or switching to renewables. However, considering energy strategy alongside your corporate sustainability goals will deliver a comprehensive, strategic roadmap that will have the greatest impact.

Enel X's approach to sustainability starts with data analysis, followed by strategy development before implementation. We consider sustainability and energy issues across all stages, from data gathering to execution.

## Data gathering and analysis

Gathering and analysing data builds a foundation for strategy and creates a benchmark to measure the success of actions taken. Gathering data across global locations, which can come from many different sources, is challenging. We help customers collect relevant activity information and calculate customers' entire emissions inventory through our global software. This includes their ongoing direct and indirect emissions that are under their direct control – also known as 'operational' emissions – as well as all other indirect emissions outside of the customers' direct control.

Setting up for success means having a clear strategy and roadmap. Informing strategy choice with accurate financial planning and forecasting equips organisations with the data they need to make rational decisions.

## Integrating sustainability and energy strategy

We facilitate workshops to ensure key stakeholders inform the development of the roadmap. The strategic plan proposes tailored energy solutions that support customers' sustainability goals.

## Optimising energy supply and operations

Our advisory services support roadmap implementation, including optimising behind-the-meter assets, procuring renewable energy and participating in capacity, ancillary and energy market programmes to further optimise your energy use while supporting the power grid to manage increasing levels of renewable energy more effectively.



# Emissions Management

**“Net zero” refers to the balance between the amount of greenhouse gas produced and the amount removed from the atmosphere. We reach net zero when the amount we add is no more than the amount taken away. Until then, the planet will keep heating for as long as global emissions remain more than zero.**

Measuring emissions is a big task, but one that becomes more manageable if you take a systematic approach. With so much data, it's vital to establish a methodology that captures a single source of 'the truth'. The [GHG protocol](#) is the internationally recognised standard, and breaks emissions down into three groups:

**Scope 1** Direct emissions from your own or controlled operations such as use of gas boilers or fleet vehicles.

**Scope 2** Indirect emissions from purchased energy including electricity, heat and steam from your own or controlled operations.

**Scope 3** All other indirect emissions that occur in your value chain. For example, emissions from purchased goods and services the company uses and the use of the products and services which your company produces.

It is important to consider internationally recognised GHG accounting standards or frameworks, such as [GHGP](#), [ISO 14064](#), [CDP](#), [SBTi](#) and [TCFD](#). Using a recognised standard ensures that your emissions reduction claims are credible and can withstand scrutiny. GHG accounting standards define emissions calculations and provide guidance on strategies that can be implemented and used to reduce and mitigate emissions from an accounting perspective.

Businesses can measure emissions at a market or location level. Location-based emissions enable like-for-like comparisons based on consumption and locations. Market-based emissions enable you to be rewarded for making clean energy choices. While many organisations are setting market-based Scope 2 goals, CDP requires that you report both.

Many companies choose to set targets that cover Scope 1 and Scope 2 emissions, over which they have most control.

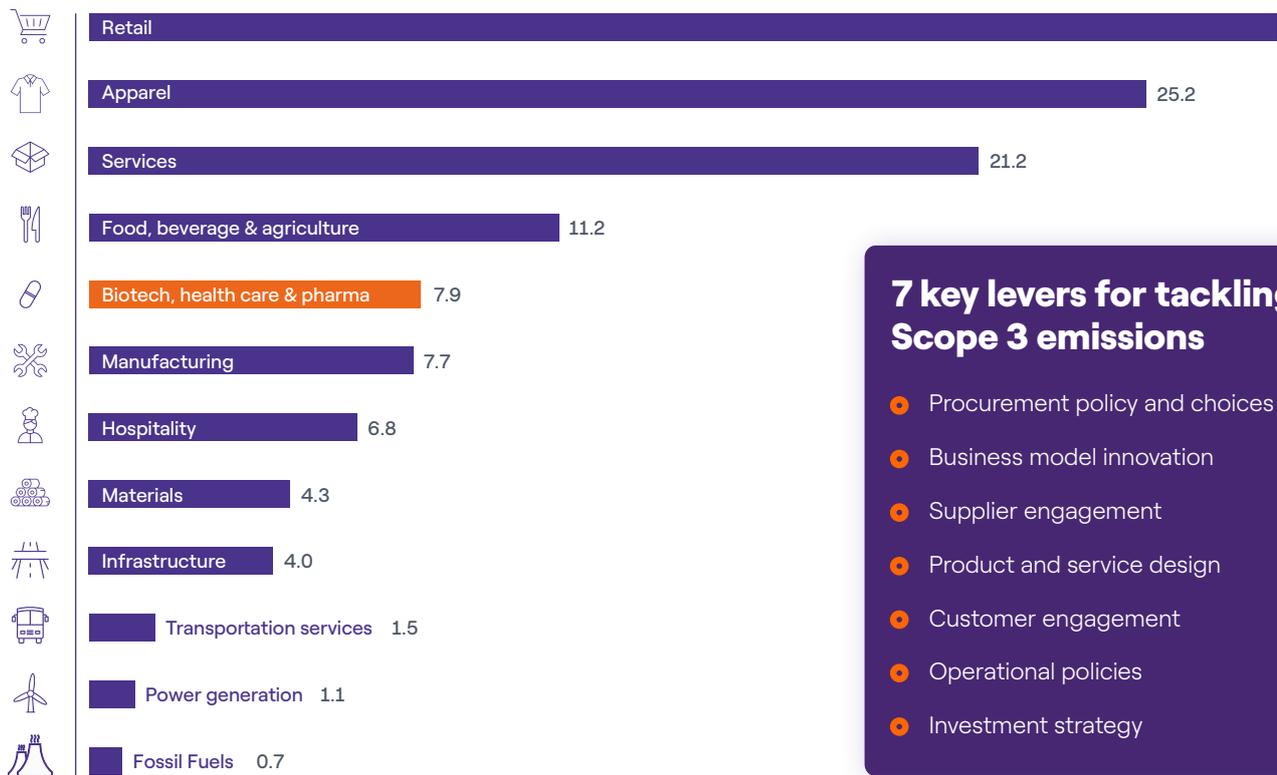
To efficiently and accurately measure Scope 1 emissions, you will need enterprise-wide energy tracking systems in place. You can measure emissions from the energy you buy, by having systems in place to collect and manage utility billing. To measure indirect Scope 3 emissions, you need a process to gather accurate disclosure from your supply chain both upstream and downstream.

# Supply Chain Emissions

- According to the [CDP Global Supply Chain Report 2020](#), Scope 3 emissions are on average 11.4 times higher than operational emissions
- The latest [IPCC report](#) describes how every additional degree of warming brings far greater perils – worse floods, heat waves, droughts and sea-level rise
- Scope 3 emissions, long overlooked because they were less straightforward to quantify than Scope 1 or 2 emissions, are crucial to this fight
- Many major household brands are asking suppliers to meet ESG standards, often even including RFP criteria.
- Reductions in scope 3 emissions benefit businesses by mitigating value chain risk, increasing collaboration and innovation, and improving investor response.

## Upstream emissions:

scope 3 emissions are on average 11.4 times higher than operational emissions



### 7 key levers for tackling Scope 3 emissions

- Procurement policy and choices
- Business model innovation
- Supplier engagement
- Product and service design
- Customer engagement
- Operational policies
- Investment strategy

Average of final ratio (Scope 3 [supply chain emissions] : Scope 1 +2 [operational emissions and direct emissions])

Source: Transparency to transformation: A Chain Reaction CDP global supply chain report 2020

# Science Based Targets

## The road to net zero

Science-based emissions reduction targets enable organisations to follow a clearly defined path to voluntarily reduce their emissions.

Targets are considered science-based when they are sufficient to limit global warming to well below 2°C. CDP is a carbon accounting standard that follows science-based targets because the aims are in line with what science deems necessary to meet the goals of the Paris Agreement.

Currently, 31 companies operating in pharmaceuticals, biotechnology and life sciences have set targets through the Science Based Targets initiative (SBTi). After committing to their intent to set a target, these companies must then develop an emissions reduction target in line with SBTi's criteria, present it to SBTi for validation, announce the target to stakeholders and finally report company-wide emissions against targets annually.



Science Based Targets  
partnership organisations





# Gathering and reporting data

The first step in creating a strategy is to achieve full visibility of current energy use and emissions levels. Obtaining a clear picture of a pharmaceutical company's energy landscape helps to identify the specific needs, helps to optimise energy use, highlights inefficiencies, and enables benchmarking to measure your own progress and allow comparison against similar organisations. This could be done in-house – but it is likely to be much more successful if undertaken by a partner with expertise in the field.

Voluntary reporting of GHGs through a globally recognised framework demonstrates your commitment to sustainability. CDP scores are now visible through several investor platforms, and alongside other initiatives such as **RE100** for businesses committing to use 100% renewable energy, your reports will help to drive change across your organisation as well as signalling your intent to outside stakeholders.

On the other side of the coin, as we move towards 2050, the costs of not meeting your sustainability goals will rise as carbon taxes become more punitive. Businesses that do not take steps to

improve their sustainability credentials will also find themselves marginalised in their customers' supply chains and by investors who have committed to targets based on their own Scope 3 emissions.

Enel X supplies a wide range of software-based solutions as part of Enel X Connect: an all-in-one digital platform that helps companies monitor their energy usage, costs and emissions through a single and easy-to-use access point. Enel X uses a sustainability reporting platform that also tracks energy spend, which is used to enable emissions reporting. The platform provides visibility into how and when organisations use energy, providing a baseline for further efficiency measures.

To capture the environmental benefits of renewable programmes, carbon reporting is an integral part of the platform. This allows organisations to track all data associated with the purchase, consumption and generation of renewable energy including its impact on sustainability goals and environmental benefits using market-based and location-based emission calculations.

# Implementation roadmap



Having baselined emissions, and with an integrated energy strategy in place, you need to establish measures to reduce your emissions and to record your progress. The most sustainable roadmaps should address emissions across all scopes.

Executing a plan to address Scope 1 emissions could include installing on-site generation and optimising or electrifying key processes. Addressing Scope 2 will require you to purchase energy from lower emission sources, including renewable energy through Power Purchase Agreements (PPAs), as well as managing offtake agreements with energy suppliers. Actions such as assessing your current asset base, strategic sourcing/procurement and risk management, emissions tracking and measurement, and energy efficiency, will all be central to reducing emissions across Scopes 1 and 2.

Addressing Scope 3 emissions hinges on tracking emissions from supply chain participants and communicating with them. As a CDP Gold partner, Enel X has visibility into supply chain disclosures and works with its customers to facilitate analysis of their upstream and downstream partners.

Lowering emissions, managing grid stability, maintaining resilience and coping with volatile energy prices cannot be left to chance. To effectively tackle all these

issues, pharmaceutical companies need an energy strategy that encompasses every aspect of the organisation's energy use.

## Dealing with volatile energy costs

As major electricity and gas consumers, pharmaceutical companies need to be able to accurately forecast costs and to plan their long-term growth strategies. However, predicting future energy costs is a difficult task at the best of times and has been made even trickier by recent global events.

According to the [International Energy Agency \(IEA\)](#), COVID-19 caused a "staggering" fall in energy demand in 2020. Many suppliers have been put in a perilous position as wholesale gas and electricity prices first slumped to their lowest in a decade before more recently climbing to their highest in a decade.

The future of wholesale gas and electricity prices is also affected by ongoing issues such as the global supply of gas, the amount of renewable energy in the local energy system and the level of interconnection with neighbouring countries. There is likely to be continued turbulence across the energy sector for some time, and for this reason, pharmaceutical manufacturers need a long-term energy strategy to predict costs.

# Maximising energy efficiency

## The greenest energy is the energy we don't use

Once an organisation has a clear picture of its energy use, identifying opportunities for efficiency gains becomes much easier.

The complexity of the overall pharmaceutical manufacturing process lends itself to developing a detailed analysis of current energy consumption through smart data collection and analysis. Analysing how energy is distributed and used enables the business to prioritise efficiency upgrades.

The **distribution of energy** consumed in a pharmaceutical manufacturing plant typically breaks down as: R&D (30%), offices (10%), bulk manufacturing (35%), formulation packaging and filling (15%), warehouses (5%) and miscellaneous (5%).

The electrical loads operating across these functions typically consist of plug loads and processes (25%), lighting (10%) and HVAC (65%). Cleanroom infrastructure is one of the major consumers of electrical power.

There are multiple opportunities across these functions to deploy automation and optimisation that will improve efficiency and save energy. For example, an automated system can control condenser water pumps, cooling towers and chillers to potentially reduce energy use by more than 20%. Variable frequency drives can improve control of the AC motor speed and torque, improving efficiency for air handling units, chillers, boilers, chilled and hot water pumps and cooling tower fans.

## Common actions to reduce emissions (UK)



**Invest in machinery**

**23%** invest in machinery, optimise assets, or replace or refurbish end-of-life machines to increase efficiency



**Switch suppliers**

**21%** switch suppliers or change purchase agreements



**Reduce fossil fuels**

**18%** reduce fossil fuel use or invest in on-site renewable generation



**Seek expertise**

**16%** invest in expertise and monitoring



**Switch to electric**

**11%** switch to electric vehicle fleets

Source: Enel X 2021 survey data



# Optimising co-generation for pharmaceutical plants

Combined heat and power (CHP), or cogeneration, plants provide a highly efficient way to generate on-site electricity, heating, cooling and high-pressure process steam. While cogeneration is commonly fuelled by gas, it can support grid stability and the increased use of renewables by enrolling the asset in DR programmes. The resulting revenue from DR participation can then be re-invested to support longer-term electrification projects.

CHP technology provides operational benefits for pharmaceutical manufacturing facilities such as enhancing supply resilience, as well as its mitigating energy price volatility and greenhouse gas emissions.

By using intelligent software to optimise CHP operating parameters, pharmaceutical manufacturers can realise opportunities to increase efficiencies and generate new revenues that may have not existed before.

## Implementing dynamic operating schedules

CHP units that haven't been optimised to serve variable site loads typically operate at sub-optimal performance. Generating constant heat and electricity surplus to requirements simply wastes energy, reduces site efficiency and is bad for the environment.

By introducing intelligent software controls to optimise management of a CHP plant, energy managers can improve the utilisation of these assets. Compared with deploying a static operating schedule, controlling the CHP unit dynamically minimises energy waste and maximises the value of flexible capacity.

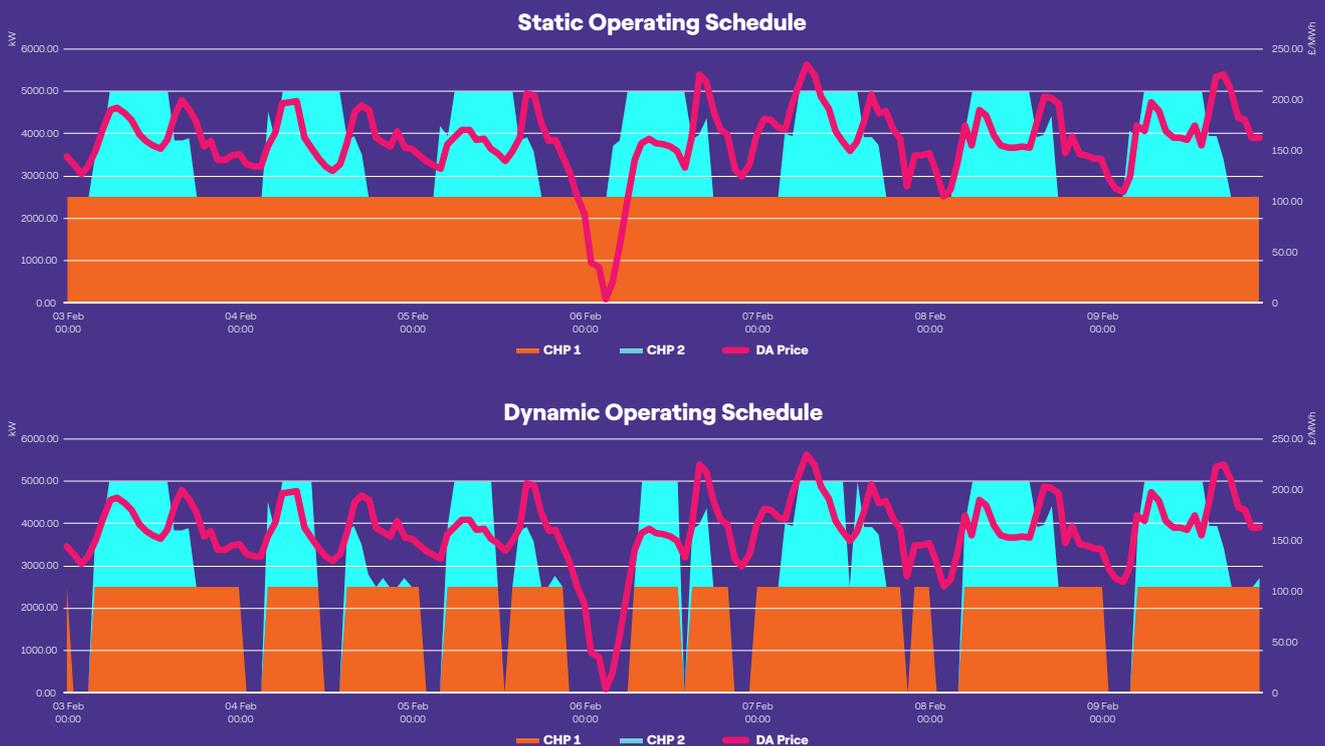
Even when your energy assets are idle, they can still be working for you. With Enel X, your CHPs, generators and battery energy storage systems become gateways to energy, capacity and ancillary market revenues. We identify your flexible energy capacity, optimise it and enter it for you into the right energy markets, at the right time. What we don't do is compromise business operations or overrule your control of your energy assets.

## Optimising flexibility trading

Global electricity systems are experiencing price spikes in spot energy markets and in balancing mechanisms. For example, GB's wholesale power prices peaked at over £500/MWh during 2021 due to a combination of low temperatures, low wind generation and high energy demand.

Using intelligent software to combine knowledge of operating parameters with grid signals and market indicators, such as energy market price information, it is possible to create the best running schedule for the CHP plant. The algorithms can then identify opportunities to trade any flexible capacity in the most appropriate markets.

CHP plants are inherently highly efficient for on-site power and heat generation. By deploying intelligent, dynamic software management technology, operators can increase control and monitoring over the whole CHP system. This enhanced level of visibility provides clarity over site energy costs; helps energy managers to understand and accommodate site and contract constraints; further minimises energy costs by reducing waste and inefficiencies and enables efficient energy trading in flexibility markets.



Scenario 1 (above), shows the static operating schedules of two CHPs. CHP 1 operates at 100% output 24x7. CHP 2 operates at 100% during business hours only. Neither CHP takes into consideration the power price or energy market conditions.

In scenario 2 (below), both CHP's have dynamic operating schedules meaning they can react to changes in energy market prices. In this specific case, by exporting MWs on the grid during the peak pricing hours, this business earned £18k over a 7-day period in February 2022. This is revenue which could help to fund decarbonisation and electrification projects.

# With change comes opportunity

In response to the increased variability in supply that accompanies the growing adoption of energy generation from renewable sources, grid operators and utilities are now placing a premium on asset flexibility – the ability for supply and demand resources to modify their electrical production or consumption when required. This evolving market has created a complex energy landscape that requires deep expertise to navigate it.

With change comes opportunity, and the energy transition is no exception. Through more sophisticated energy market participation, flexible energy generation assets and battery energy storage solutions can earn more revenue and achieve greater performance visibility enabling them to realise investment returns and support the country in the journey to net zero.



## Sustainability and security of supply

Manufacturing medicinal products can be extremely energy intensive. Reliable and high-quality energy sources are required to convert petrochemical or other feedstocks into pharmaceutical products using processes such as chemical synthesis, or natural processes such as fermentation.

As well as reducing their carbon emissions, energy-intensive industries are increasingly concerned with grid-related issues such as security of supply and maintaining demand in times of grid stress.

Typically, on-load testing of backup systems are planned in advance, but grid outages don't occur at pre-planned times. Proving that you can respond without advanced notice is the most realistic way to test your systems. Participating in demand response programmes (DR) can provide a real-life testing environment while the grid is still available. This carries significantly less risk than discovering a problem during a real grid interruption.



Responding to DR events can prevent an actual outage of the national or regional grid system that would result in more downtime and longer time running on back-up generators. This is an example of how pharmaceutical manufacturers can be “good grid citizens” that help everyone.

DR also enables the integration of higher levels of renewable generation on the system. Increasing levels of renewable generation make the power system harder to operate in two main ways: first, their variability means that it is harder to keep supply and

demand in balance; second, because they are not synchronous generators, they do not contribute to system inertia, which makes it more difficult to manage the system frequency after any perturbation. Without large energy users such as pharmaceutical companies participating on the demand side, the grid operator would have to address these issues calling on conventional generators and by paying renewable generators to reduce their output. By participating in DR, customers are improving grid sustainability by enabling more renewable generation, without increasing costs.



As well as being a means to more robust resiliency measures, DR provides pharmaceutical companies with additional energy, capacity and ancillary payments simply for being on standby; valuable income to help offset energy costs.

Coupled with storage, on-site generation further reduces dependency on the grid and improves business resilience.

Grid stability is important to pharmaceutical producers, as they need a consistent, uninterrupted electricity supply to operate. Industry estimates put the total downtime cost of a disruption to pharmaceutical manufacturing at up to €450k for each hour of stoppage.

As well as presenting health emergencies themselves, extreme weather events and natural disasters are becoming a more

frequent cause of disruption to electricity supplies. The severe winter storms that struck Texas in 2021 – causing a massive electricity generation failure and leaving more than 4.5 million homes and businesses without power – illustrate how power systems, even within developed countries, are vulnerable to extreme weather.

To protect against power outages, pharmaceutical manufacturers require a reliable back-up supply capable of providing power within milliseconds of an outage occurring. A back-up power supply will typically consist of batteries, to provide an instant response, and diesel or gas generators to cover any outage longer than a few seconds.

Businesses can use their back-up energy supplies to operate independently of the grid to support grid stability through capacity and ancillary market mechanisms.

**Since 2015, Enel X customers received over £500 million in additional revenue from DR programmes.**

# Acting on climate change with demand response



Boston Scientific has been a 'demand on' customer with Enel X since 2015. When there is excess wind energy on the grid, Boston Scientific turns off its gas combined heat and power plant (CHP) and imports electricity from the grid instead. While CHP is an extremely efficient generation asset, by switching it off when called on to participate in demand response, Boston Scientific reduces its own emissions while at the same time facilitating more renewable energy on the grid. The transition from CHP power to grid power and back to CHP again is seamless and doesn't interrupt the company's operations.

## Fast frequency response

Another way that pharmaceutical manufacturers can work with grid operators for their mutual benefit is through ancillary programmes such as providing fast frequency response (FFR). When grid operators have a large amount of renewable energy in the mix, there is less inertia and the system is more sensitive to sudden changes in frequency – threatening the balance of supply and demand and compromising the stability of the grid. FFR solves the problem by creating a sudden reduction in demand with response times less than one second in some markets.

Enel X has pioneered its own control and management technology and works

with businesses to support the evolution of the energy system. As with other DR mechanisms, businesses are rewarded financially for their contribution, and, thanks to Enel X's technology, can participate without any capital investment.

Viatrix (formerly Pfizer) has been a demand response customer with Enel X since 2014. The company participates in frequency response services in Ireland (known locally as DS3) – the fast-acting demand reduction programme that helps maintain the quality of power on the grid. Grid operators need more flexible loads on the grid to successfully balance generation from intermittent renewable sources. By participating in DS3, Viatrix helps to stabilise the frequency on the grid. This type of fast frequency response allows the grid operator to accommodate more renewable generation.

Pharmaceutical companies that have UPS or energy generation systems on-site as part of their critical response setup have further options to implement flexibility. The latest generation of UPS systems are capable of maintaining a 'floating' capacity in the battery, over and above that needed for critical load response, which can be enrolled in the flex markets through Enel X's technology platform. UPS systems are ideally placed to fulfil the need for fast-responding assets to help stabilise grid frequency.



# Battery energy storage solutions

Driving value in the energy transition

With technology costs falling rapidly, battery energy storage systems (BESS) are becoming pivotal in the energy transition as they can provide the flexibility and resilience needed to accommodate the increased penetration of renewables on the grid. Battery energy storage systems typically drive three main sources of value for large energy users such as pharmaceutical manufacturers:

## Sustainability Value

Battery energy storage can improve your ROI for on-site solar power, and storage also enables the grid to support increasing amounts of renewable power, which will drive down wholesale power costs over time.

## Resiliency Value

The system will improve your ability to operate critical equipment in the case of a grid power outage, especially if installed as part of a microgrid.

## Economic Value

A battery energy storage system has the ability to capture all flexibility opportunities. You earn a share of the value captured by the battery system each month, with immediate positive cash flow impact to your business.

## Energy Cost Savings And Sustainability Through Solar-Plus-Storage Project At San Diego Blood Bank

By combining onsite solar generation with a battery storage system, San Diego Blood Bank can self-generate and store renewable energy to be used when electricity costs are highest, providing the facility with cost savings, while also reducing their environmental footprint.

The 668 kWh battery system is paired with a 976 kW rooftop and carport solar photovoltaic (PV) system. This provides shade and 100% renewable energy generated by PV and stored in the battery system to charge the Blood Bank's new electric blood mobile fleet. The system can generate 1,500,000 kWh annually of renewable energy.

*"Utilizing solar and battery storage is simply a smart business decision" said David Wellis, CEO of San Diego Blood Bank. "It benefits our environment and our community."*



## Procuring low-carbon energy

Measures that improve efficiency and optimise your energy use using DR can only go so far. Once it has been maximised, the next step is to look at sourcing green electricity for power.

Good procurement of renewable contracts is a complex issue. A typical requirement is to make a long-term agreement with an energy company that can guarantee to deliver a supply of clean electricity sufficient to meet an organisation's growing needs.

Switching to clean sources of power has a dramatic impact on emissions. For example, French pharmaceutical giant Sanofi sources 30% of the power it requires to manufacture medicines from a [wind turbine](#) adjacent to its plant in India. The source of renewable energy has enabled Sanofi to reduce its GHG emissions by about 3,600 tonnes each year, while also improving energy security.

Like other energy-intensive businesses, pharmaceutical companies are choosing to become off-takers using power purchase agreements (PPAs) to buy renewable energy and to complement the use of on-site generation and storage. This further increases the percentage of energy which is renewable and thus reduces emissions. As well as guaranteeing supply, this approach allows them to reliably predict future costs. Above all, purchasing renewables through a PPA signifies a long-term commitment to zero carbon.

However, negotiating PPAs can be technically complex. Some key PPA parameters include the term of the agreement; whether the PPA is a corporate arrangement; if it is purchased directly from the generator or a supplier; if it includes a private wire and/or storage; and how risk is allocated between procurer and generator or supplier, including the volume risk. Optimising these parameters to deliver a bespoke agreement that suits both generator or supplier and off-taker requires depth of knowledge and experience.



**Enel X helps pharmaceutical companies simplify their energy purchases through a holistic, three-step process:**



**1. Strategy**

Understanding how different renewable energy resources and product options accomplish different objectives is the cornerstone of an effective renewable energy strategy. Enel X helps pharmaceutical companies prioritise their goals across reducing costs and emissions, budget stability, contractual complexity, speed to market and contract duration.



**2. Implementation**

Given the complexity of renewable energy contracts, RFP (request for proposal) definition is a critical step for apples-to-apples comparisons. Enel X helps pharmaceutical companies structure RFPs to manage market, basis, counterparty, and contractual risks effectively. For example, COD (commercial operation date) guarantees, production guarantees, and energy attribute certificate deliveries should all be consistent across bidders so that organisations can evaluate deals on equal terms.



**3. Continuous optimisation**

Throughout the life of the PPA, Enel X continues to support through activities such as energy attribute certificate retirement and integration with wider energy risk management strategy.

## Accelerating renewable energy purchase through auctions

In 2018, a leading global technology business matched 100% of its global electricity consumption with renewable energy for the second year in a row. Looking to the future, the company recognised that sustaining a 100% match would require thinking beyond its historical procurement methods. To continue meeting its users' needs in a sustainable way, it decided to streamline its renewables procurement process by running reverse auctions (where energy sellers bid for a buyer's business) for wind and solar

projects. Its goal was to find a way to source, negotiate, and sign a large wave of renewable energy deals in a single, global push.

The customer used Energy Exchange, Enel X's proprietary reverse auction technology integrated in Enel X Connect, to support its industry-leading commitment to sustainability. As a result of the auctions, it signed 10 agreements comprising more than 1.2 GW of renewable energy. Running digital reverse auctions accelerated its procurement process and allowed it to meet its cost optimisation goals.



## Holistic energy measures

Energy management initiatives extend beyond the matter of supplying power to the manufacturing plant itself. Increasingly, businesses are seeking holistic approaches to manage their energy needs.

Today, battery energy storage systems and on-site generation assets are used extensively to support short and longer-term business continuity in the event of power outages. Increasingly, renewable generation is combined with storage to deliver low-carbon backup.

Enel recently completed a [solar-storage hybrid project for Lily at its site east of Dallas, Texas](#). The project combines 181 MW of solar PV with 55 MWdc of battery energy storage.

As the use of electric vehicles grows, workplaces are integrating charging infrastructure for employee and visitor use. Smart EV charging can play a role in optimising your energy use by integrating a battery energy storage solution and even participating in DR programmes.

# Conclusions

**With a comprehensive energy strategy, pharmaceutical businesses can reduce carbon emissions, maintain resilience, predict future energy costs and enhance their ESG performance. An effective strategy must include optimising energy use, planning and implementing a procurement strategy, and exploring ways to co-operate with energy companies and grid operators. By committing to PPAs with clean energy suppliers and participating in DR programmes, manufacturers can help maintain the stability of the grid and find valuable new sources of income.**

For most organisations however, sustainable energy, in itself, is not a core business competence and implementing an energy strategy that addresses all of these priorities takes knowledge and expertise and a current understanding of regulatory and compliance issues.

As a global organisation, Enel X is uniquely placed to work with multinational businesses, including pharmaceutical manufacturers, to deliver advisory services, energy strategies, assets, market access and solutions that are informed by data analysis.

The Enel Group of companies has been on its own sustainability journey for more than 20 years. Enel has fundamentally changed its business model and invested in renewables, networks and digitisation. The company has a core value embedded into its purpose and strategy, which is to **create lasting value for society** and work for sustainable progress. Our aim is to become a leader in shared value and sustainability. Enel recently brought forward its target commitment to fully **decarbonise** by 10 years, to 2040.



**In 2021, we asked 234 advisors, influencers and direct decision-makers in the area of greenhouse gas emission policy from a range of UK based businesses about their journey to net zero.**

**Big Takeaway:**

## Success starts at the top

If you really want to make a significant reduction in your greenhouse gas emissions, success starts at the top with clear commitment and a clear plan. Put someone in charge, give them the resources to get things done, and champion change as a priority.

# Renewable Energy Credentials

**Converting ESG goals into decarbonisation impact requires energy and regulatory expertise, and a comprehensive portfolio of solutions everywhere you do business.**

Enel X is **Enel Group's** global business line offering services that accelerate innovation and drive the energy transition. A global leader in the advanced energy solution sector, Enel X manages services such as demand response for 7.7 GW of total capacity at global level and 375 MW of storage capacity installed worldwide. The Enel Group has 15+ years of inclusion in major sustainability indexes, including the FTSE4Good, DJSI, CDP, ECPI, Euronext and STOXX, and the Group is committed to achieving 100% carbon neutrality by 2040.

**60,000,000**  
MWh

Renewable energy  
transacted

**3.5**  
GW

Long-term PPAs  
procured

**16,000,000**  
RECs & I-RECs

Awarded across North America,  
Europe and Asia



Enel X is a CDP Gold Partner. In this capacity, we can help you:

- > Organise and report your environmental data
- > Develop and implement an emissions reduction strategy
- > Procure and advise on renewable energy products
- > Measure and understand your environmental impact
- > Analyse the benefits and costs of setting different emissions reduction targets
- > Benchmark your company against your peers

For more information about Enel X decarbonisation, storage and energy management solutions, contact:

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