HOW DUTCH INDUSTRY CAN SAVE 6 MILLION TONNES OF CARBON EMISSIONS BY 2025

Project 6-25

6 25


CO_2: business as usual
2019
EBIT
OPEX
CAPEX
ROI
Independent opportunity scans
Project 6-25:
proven energy-saving technologies
Implemented by industry experts
Successful business cases and best practices
Funding
CO_2: -6 Mt
2025
EBIT
OPEX
CAPEX
ROI

Process efficiency key to accelerating decarbonisation

The Netherlands has set itself the target of a 49% reduction in carbon emissions by 2030 and that responsibility must be shouldered in part by industry. Dutch industrial energy consumers account for over 25% of the country's carbon emissions, so their reduction efforts will have a decisive impact.

An ambitious target has been set for industry: an additional carbon reduction of 14.3 million tonnes by 2030. Is that achievable? Yes, largely because of the sustainable technology innovation wave. Not only does technology underpin large-scale transitions that are in the pipeline, such as the hydrogen economy, electrification and carbon capture and storage, but also the most fundamental form of sustainability, which is to use less energy. After all, if energy isn't needed, it doesn't have to be generated.

Ready for use

One fact that is often overlooked is that new technology which can vastly improve energy efficiency is ready for large-scale rollout. Dutch technology companies have a wide range of proven innovations which could be implemented right now. These innovations alone could help industry achieve a 6-million-tonne reduction in carbon emissions as soon as 2025.

Removing obstacles

Of course, things are not as simple as they sound. There are many legitimate reasons why companies are slow to implement technology of this kind. Through Project 6-25, a group of companies, consisting of industrial plant owners and technology providers, facilitated by the government, aim to change this. By means of a practical programme, we remove obstacles in order to accelerate the implementation of energy-saving technologies. The programme is not based on hopeful projections and vague promises, but on hard facts and solid business cases.

Impact on society

Project 6-25 provides a unique opportunity to underline the crucial role technology will play in successfully addressing the challenges faced by society. By reducing industry's carbon footprint and facilitating large-scale implementation of innovative technologies, it can make a lasting contribution to a more sustainable society and at the same time generate economic growth. In short, there is every reason to forge ahead, and to do so quickly. We hope that the approach proposed in this brochure will convince you to join us. Together we can ensure that industry is at the forefront of making society more sustainable!

Accelerating sustainability through process efficiency

By 2030, Dutch industry has to have reduced carbon emissions by 20 million tonnes. Technology will play a key role in achieving this ambition. While some carbon reduction options have a long lead time, enhancing process efficiency can deliver fast results. By 2025, proven, innovative technology could reduce industrial carbon emissions by 6 million tonnes.

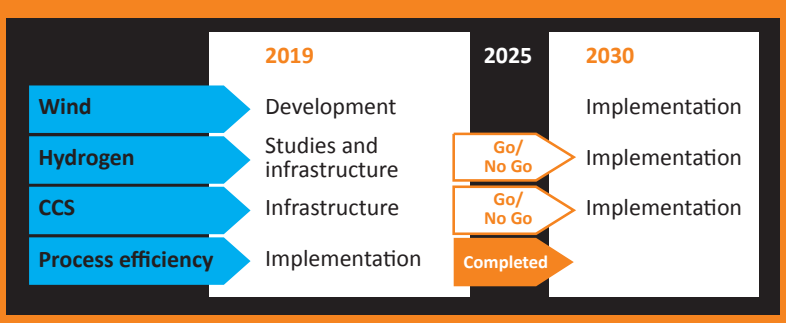
The climate targets set by the Netherlands can only be achieved if Dutch industry manages to significantly reduce carbon emissions over the next few years. By 2030, carbon emissions have to be 20 million tonnes below 1990 levels. Of this target, 14.3 million tonnes results from additional commitments made through the Dutch Climate Agreement (see the box). According to this agreement, the additional reduction in carbon emissions will have to be achieved through three strategies, all of which rely heavily on innovative technology:

1. Large-scale electrification of industrial processes and heat supply, as well as a transition from natural gas to (green) hydrogen.
2. Carbon capture and storage (CCS) of carbon produced by industry.
3. Process efficiency.

These complementary strategies are all essential. However, some will deliver results faster than others. Electrification, the transition to hydrogen and CCS all require new infrastructure. New legislation and regulatory frameworks may be needed and sometimes even entirely new business models. In such cases an actual reduction in emissions will probably not be seen until after 2025, and it is in fact uncertain whether the 2030 goals for these individual strategies will be met (see Fig. 1). The complexity of these strategies is also reflected in the cost. For CCS, the estimated price per tonne of carbon emission cuts is 50-70 euros. For electrification and hydrogen, the figure is estimated at 70-150 euros per tonne[1].

The Dutch Climate Agreement is a joint commitment by the national government, local and regional authorities, businesses, nature and environmental organisations, trade unions and other social stakeholders. It defines a set of measures that enable a 49% reduction of greenhouse gas emissions by 2030 relative to 1990. This reduction target is made up of separate subtargets for various sectors, including Industry, Energy generation & distribution, Mobility and the Built environment. The Climate Agreement will form the basis for the final Integrated National Energy and Climate Plan (NECP) which the Netherlands as an EU member state has pledged to submit. Its key elements will also be enshrined in a Climate Act.

Figure 1. Many measures proposed in the Dutch Climate Agreement (in industry and other areas) have a long lead time, meaning an actual reduction in carbon emissions will not gain momentum until after 2025, by which time process efficiency could already have met its reduction target.



[1] Source: Draft Climate Agreement, p. 93

By comparison, energy efficiency is a clear-cut and affordable way of reducing carbon emissions in the short term. If energy isn't needed, it doesn't have to be generated and paid for. Proven technology for achieving substantial efficiency gains is available, often with a very attractive ROI (see Fig. 2). Many energy efficiency technologies also have beneficial side effects, such as lower maintenance costs, more flexibility in terms of energy carriers or increased reliability and uptime.

Furthermore, there is a huge potential for energy efficiency in industry – considerably higher than often assumed. At first glance, the Climate Agreement's target of 'just' 2 million tonnes of additional emission cuts as a result of process efficiency may seem surprisingly modest. Innovative technology can help reduce emissions by:

- reducing heat loss and greenhouse gas leakage
- recovering and reusing residual heat
- making the heat supply more sustainable and flexible
- developing more efficient drive systems
- improving process performance through AI and intelligent data processing.

In all of the aforementioned areas, innovative technology with a proven track record is already available, which should enable industry to achieve at least 6 million tonnes of carbon reductions by 2025.

This goal – a 6 million tonne reduction in carbon emissions by 2025 – is the starting point for Project 6-25, a realistic programme which targets specific obstacles that often obstruct large-scale efficiency improvements. Project 6-25 provides a platform for connecting the entire chain – industry, technology providers, installation, MRO and engineering companies, financiers, the public sector, centres of expertise – to enable them to work together to achieve fast and specific results.

Profitable decarbonisation strategies

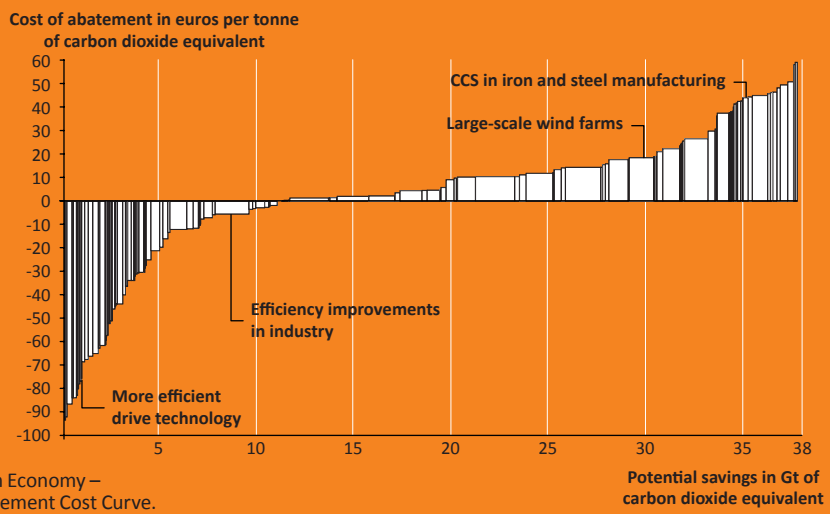


Figure 2. McKinsey's 'cost abatement curve' shows the relative impact of various carbon reduction measures in terms of costs and outcome. It is noteworthy that efficiency measures are all found in the left half of the curve, where costs are negative.

Source: McKinsey, Pathways to a Low-Carbon Economy – Version 2 of the Global Greenhouse Gas Abatement Cost Curve.

Project 6-25: conditions for success

If industry plans to reduce carbon emissions by 6 million tonnes by 2025 through energy efficiency, a pragmatic approach is needed combining the efforts of the entire value chain. What obstacles currently impede large-scale efficiency improvements, and what kind of support do industrial plant owners need to quickly achieve actual savings?

In industry, the energy efficiency potential is considerable and the required technology is available. Exploratory discussions with a large group of industrial energy consumers revealed the real bottlenecks that currently often obstruct implementation. If Project 6-25 is to be successful, it is essential that industry is given maximum support in tackling these issues.

Specifically, Project 6-25 must meet the following conditions:

- **Only proven technology can be used that is ready for large-scale implementation.** The programme will therefore not focus on innovations which are still in the experimental or proof-of-concept phase. The technology used must have a proven track record as a commercial product and be ready to be scaled up.

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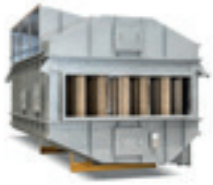

- **Where necessary, the project should facilitate close cooperation between the stakeholders.** Industrial energy consumers must have control and be able to count on maximum support from participating suppliers, independent consultants, installation companies, engineering contractors and, where necessary, financiers or government incentive schemes.

- **Independent validation of claims, energy efficiency potential and business cases.** The project's key claim (a 6 million tonne reduction in emissions by 2025) will be validated by independent experts. Independent experts will also be asked to identify promising use cases and to perform calculations for potential process improvements.

- **Industry should receive tailor-made support.** It is up to individual companies to indicate what kind of support they require. Opportunity scans? Help with implementation? Financing arrangements? Independent validation of potential reductions and a business case?

- **Central government acts as the facilitator of Project 6-25.** Government support is essential, whether in the form of developing policies and tools, or by facilitating the necessary conditions. For example, it is important that scope 2 emissions are included in industry's carbon reduction targets, and that the existing SDE++ subsidy mechanism is opened up to carbon reduction projects in industry.

To obtain a clear picture of the obstacles and limitations currently faced by industry, the project's initiators have carried out a fact-finding investigation (as referred to above). A key finding is that (contrary to the prevailing view among media and the general public), industry wishes to invest in carbon reduction. Companies take existing obligations seriously (including those in the Climate Agreement) and an increasing number of companies have committed themselves to reduction targets, which in many cases have been included as KPIs.

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The investigation revealed that many companies are enthusiastic about Project 6-25, provided they receive specific support in key areas. Before embarking on specific measures, companies indicate they need three types of assistance or assurance:

1. Business continuity. Industrial companies understandably give top priority to the safety, reliability and availability of their production processes. This may hinder innovation. After all, every adjustment to an existing process may introduce new technical and non-technical risks.

What does this mean for Project 6-25? Participating suppliers, external experts and a company's own technical experts will have to cooperate closely to identify how technology can be implemented without jeopardising process continuity. Senior management will have to monitor this process and prioritise it.

2. Time and capacity. Many industrial companies have adopted a LEAN philosophy, which means they often simply lack the personnel or specific expertise to kickstart or manage comprehensive efficiency projects (especially because other things are generally prioritised – see point 1).

What does this mean for Project 6-25? That companies require specific support in analysing potential savings (opportunity assessments) and in implementing the required technology in existing processes.

3. Funds and ROI. The available (CAPEX) budget is often insufficient to finance energy efficiency measures, even though such measures boost EBITDA and the ROI is higher than for many alternative investments (see the box). The payback period for the technology in the 6-25 portfolio is generally less than 5 years. Financial bottlenecks may also be created by other causes, such as solvency requirements.

What does this mean for Project 6-25? That new funding mechanisms or temporary additional CAPEX budget must be made available, in cooperation with private and/or public parties.

Investing in process efficiency: low risk, high ROI

Funding energy efficiency measures from a company's CAPEX budget is often difficult. However, the return on investment is considerable. In energy-intensive industries, the cost of energy takes up as much as 10 to 40% of a company's OPEX. So from an economic perspective, increasing the CAPEX budget in order to structurally lower the OPEX (and therefore the TCO) is an interesting option. In fact, it is the least risky and most profitable type of investment. Whereas the 5-year average corporate ROI for many large industrial companies fluctuates between -3% to 10%, the ROI on investments in energy efficiency (depending on energy and carbon emission prices) is between 15% and 25%.

[1] Source: Reuters, corporate ROI at 10 large (petro)chemical companies (Dutch and non-Dutch)
[2] Source: RVO, A model approach to finance industrial efficiency projects.

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A programmatic approach

Step by step, participants in Project 6-25 work towards a shared, ambitious goal. This means more is needed than a list of individual energy efficiency projects. The project's success depends on a programmatic approach underpinned by the commitment of all parties involved.

Project 6-25's initiators wish to take the following steps:

1. **Independent validation of the energy-efficiency and carbon-reduction potential of the various innovative technologies.** This is a crucial first step. Independent experts need to assess the potential of the project's technology portfolio, both from a technical perspective (carbon reductions) and from an economic angle (assuming a maximum payback period of 5 years), in synergy with other corporate goals.

2. **Establishment of a 6-25 project organisation.** The project team will be responsible for approaching potential participants, coordinating the validation process and facilitating knowledge sharing. It will also take the lead in the dissemination of information on the various technologies, applications, validated business cases and successful pilot projects. Another important task is to initiate innovative financing arrangements.

3. **Transparent agreements on building business cases.** Each efficiency project starts with an opportunity assessment. This focuses on the applicability and potential gains of innovative technology and results in an integrated assessment of costs, benefits and other effects. To enable a transparent comparison of business cases, it is essential to agree beforehand on the methodology and assumptions to be used.

4. **Tailor-made opportunity assessments.** A crucial aspect of this programme is that industrial companies need to receive maximum support, and that such support is tailored to a company's specific needs. Agreement is needed on how opportunity assessments will be organised for companies of different sizes and who will take the lead (a company's own technical experts or external industry experts).

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5. A programmatic method for implementing technology. The opportunity assessments will analyse which technological solutions are feasible for a particular company. A programmatic approach implies that a team then prioritises these solutions and implements them in phases, in synergy with all other production and maintenance-related activities and with the support of the company's senior management.

6. Finance mechanisms. If an opportunity assessment shows that substantial efficiency gains are possible but the required funds are not available from existing budgets, alternative finance mechanisms should be available. Possible solutions include a government-supported incentive fund or new finance propositions from private investors. A solid business case in Project 6-25 (i.e. with a payback period of less than five years) should never be frustrated by a lack of funds alone.

7. More flexibility in risk assessment. External funding of efficiency projects requires risk assessments. Currently investors often rely on expensive due diligence models, which focus on financial risks and do not differentiate between investments of different sizes. In cooperation with financiers and other partners we need to examine ways of including technical and operational risks, in order to enable standardisation. This should allow smaller investments to be financed in a cost-effective manner.

8. Inspiration and communication. The goal of our programmatic approach is to give promising initiatives a chance. However, such initiatives start with ideas, inspiration, enthusiasm and people who share knowledge and experiences. The 6-25 project organisation will support this with a range of initiatives, including road shows and webinars/short videos on best practices and the results of successful projects.

Additional CAPEX

An idea that still has to be developed is to combine energy efficiency projects in an earmarked traunch which the company's management can assign as additional CAPEX to those responsible for the projects. Such additional CAPEX budget can be financed either from a company's own resources or by external funding. The advantage of a traunch is that it reduces administrative costs. Since the traunch is specifically allotted to Project 6-25, the authorisation process can be expedited. Responsibility for the projects can then be assigned to lower organisational echelons for an agile approval process.

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Partners in 6-25

Dutch industry could set to work almost immediately with implementing measures that both speed up emission cuts and yield attractive financial returns. The first step is to build a coalition of partners committed to getting Project 6-25 underway. What can your organisation contribute?

Project 6-25 requires the commitment of:

...industrial companies determined to reduce their own carbon emissions – and who are interested in a well-substantiated approach which makes the most of new technological opportunities.

...technology providers with innovative solutions for reducing carbon emissions. Solutions which have a proven track record as a commercial product, with a payback period of less than five years. Solutions which are ready for large-scale implementation.

...installation companies and consultancies which can support participating companies in identifying and implementing energy-saving technology.

...financiers with the resources to develop innovative contracts, finance mechanisms and/or a revolving investment fund – based on the knowledge that, on balance, Project 6-25 generates a profit.

...supporting partners, including trade associations and governmental departments, that are willing to contribute knowledge, time and resources since they recognise the huge societal benefits of a successful energy transition.

Do any of these descriptions fit your organisation? If so, we would like to invite you to find out more about Project 6-25. Please contact the project secretariat at FME (energy@fme.nl) or call Hans van der Spek at +31 (0)6 54 25 39 91. More information will be made available soon at www.6-25.nl.

6-25

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