

Green Restart

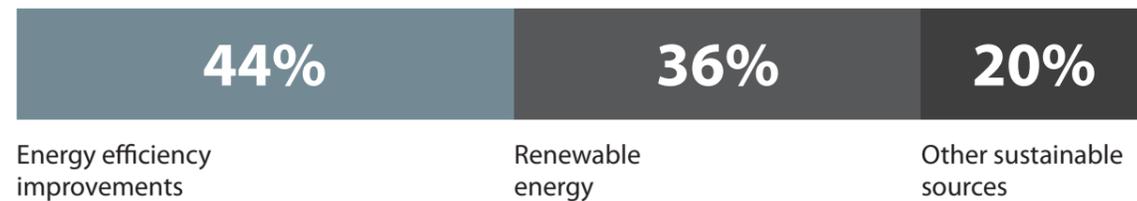
A fast forward to sustainable growth



A green restart – fueling economic opportunity and climate action

We were starting to forge a road towards carbon neutrality. Now we need to speed up on climate action while re-energizing the economy. By investing in a low-carbon world.

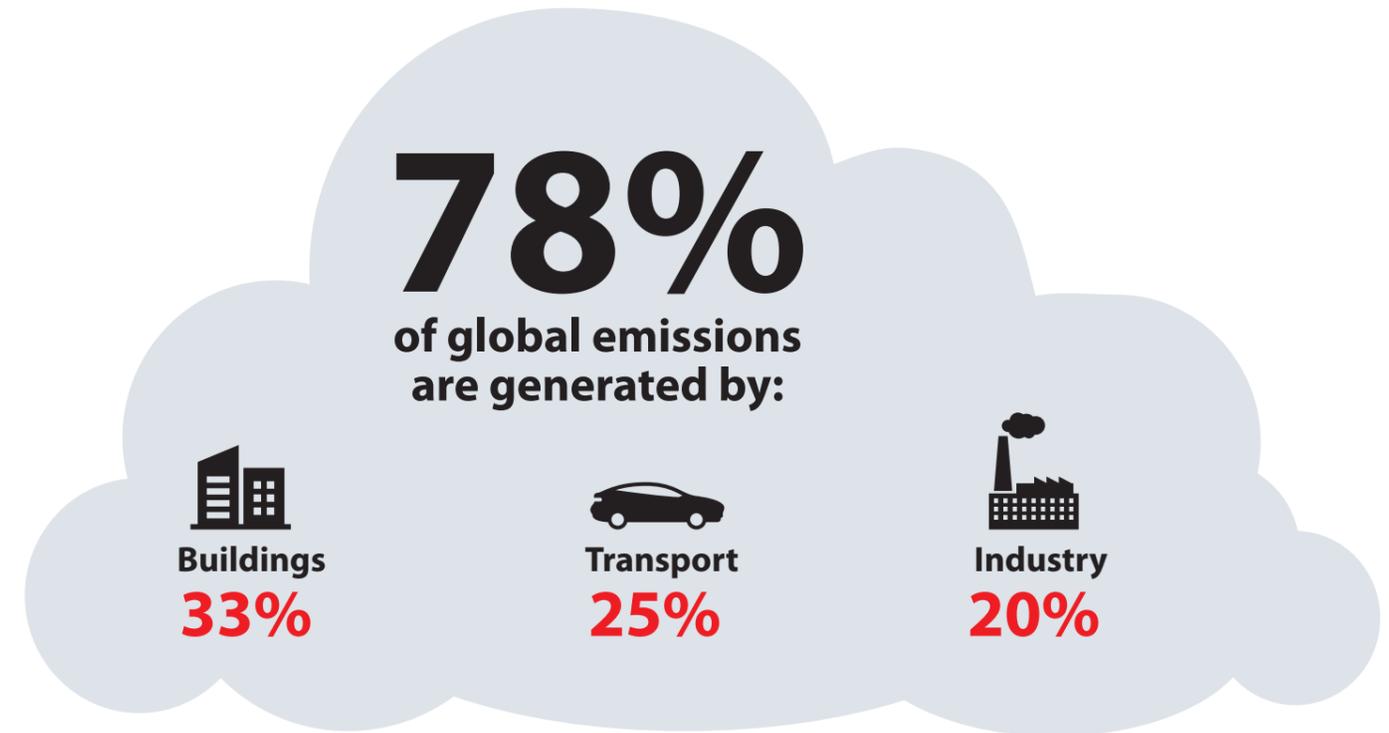
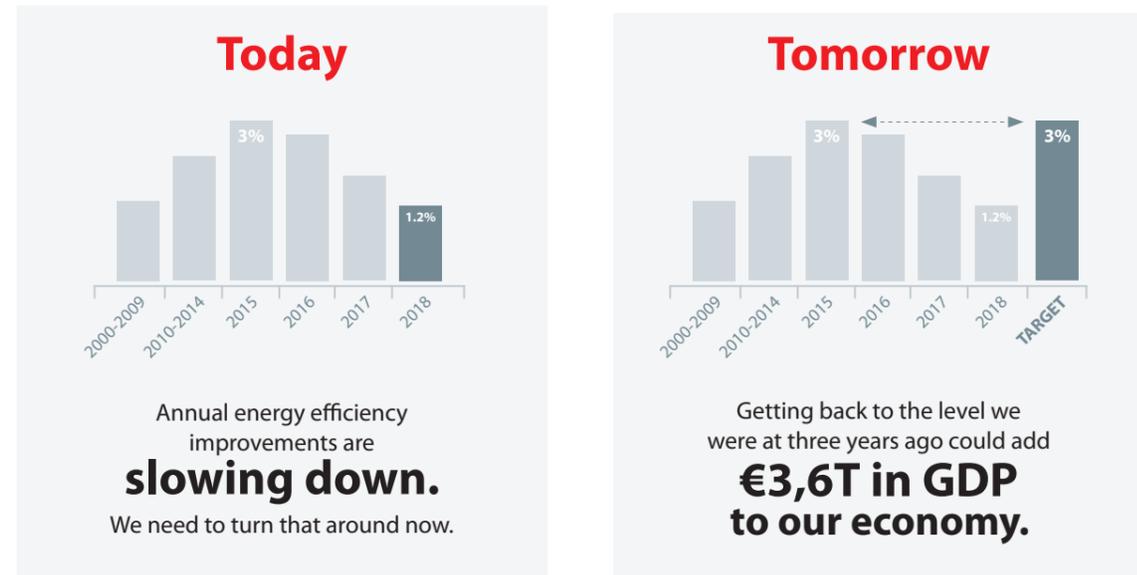
How to achieve carbon neutrality



SOURCE: International Energy Agency

By switching to more energy efficient solutions, we reduce our overall need for energy – and reduce the need for extra capacity and investments in renewables. This is the cheapest and most efficient path to long-term success.

The potential of energy efficiency is ready to be unleashed



The benefits of going green

BUILDINGS

30%

reduction in energy use through modern HVAC systems.

18

jobs created per €1 mil. invested in energy efficiency renovations on average.

TRANSPORT

28%

reduction in emissions needed to meet the Paris Agreement goals could be achieved with electric transport.

1 mil

more jobs within e-mobility industries by 2030.

INDUSTRY

40%

reduction in energy use achievable through smart technology optimizing systems.

2x

more value produced per unit of energy used in 2040.

Get more details in the white paper



The economic impact of COVID-19

All over the world, in light of COVID-19, we seek to rebuild economies. [“There’s an opportunity to help rebuild society differently and make it more resilient”](#), were the words of European Commission President Ursula von der Leyen. Meanwhile, [statements from European leaders](#) rally behind economic recovery packages that support the green transition. This means there is political consensus to grow economies again while, simultaneously, decarbonizing them.

For the past few months, we have seen a 3.8% [decline in global energy demand](#) and, therefore, a drop in CO₂ emissions. By focusing incoming investments on rebuilding economies in a sustainable way, we can keep emissions lower while promoting growth – setting a green restart in motion.

Sustainable energy infrastructure and energy efficiency retrofiting of buildings are investments that can support countries in boosting economic growth while creating jobs and fighting climate change. Ambitious climate action does not need to cost more than business-as-usual growth. We see real potential in terms of new jobs, economic savings, competitiveness and market opportunities – together with improved wellbeing for people all over the world.

Such a shift will require economic motivation to ensure a sustainable restart that accounts for ambitious climate goals and job creation. A stable regulatory framework – together with the right support – will be key to helping the world meet the Paris Agreement’s goal: to cap the increase in global temperature at 1.5°C

“There’s an opportunity to help rebuild society differently and make it more resilient”

– Ursula von der Leyen
European Commission President



Growth must be sustainable

Instead of just rebuilding from the economy we had before, let's put a more resilient and sustainable energy system into the heart of the very society we want for our future. [Putting green initiatives](#) at the center of recovery packages will not only help advance decarbonization but also offer the best economic returns. In addition, including strong links to ambitious climate action in these recovery packages, alongside clear policy measures, will further create new levels of prosperity.

This is not a matter of creating a new economy from scratch. Most of the technologies that can accelerate the energy transition over the coming decades are already present, proven, and ready to be accelerated. The right political decisions will increase private investments and ensure a broader adoption of green initiatives



Working together for stronger climate action

To move faster towards a strong low-carbon economy, businesses and governments need to push one another and work together: we can create a cycle where bold business commitments support bold policies – in turn, supporting even bolder business action. This dynamic will create an “ambition loop” which will unlock faster progress and decisions on climate goals, as well as create bigger market opportunities, combining climate objectives and economic recovery in a positive way.

By 2030, bold climate action is expected to have created \$26 trillion-worth of opportunities

At Danfoss, higher climate and energy ambitions have been on our agenda for many years. Today, we are ready to continue ramping up our work with progressive leaders and decision-makers, and take advantage of the new, green growth agenda. Why? Because by 2030, bold climate action is expected to have created [\\$26 trillion-worth of opportunities](#).

We have also looked at our own commitments and operations, setting an ambitious goal to become [carbon neutral by 2030](#). The levers that will get Danfoss there are an ‘energy efficiency first’ approach, coupled with our transition to 100% renewable energy sources and electric vehicles. These levers should be the same worldwide, but on a higher scale. To guide our efforts, we collected all three business action initiatives under The Climate Group, EV100, RE100 and EP100 – making us the first global technology company to do so.



Energy efficiency and sector coupling – the cheapest, most efficient way to meet our climate goals

The most cost-efficient, sustainable, and secure form of energy is the one we do not need to use. Energy efficiency improvements can account for [44% of the reduction in energy-related CO₂ emissions](#) needed to meet the targets of the Paris Agreement, while [renewables can account for another 36%](#).

Improving energy efficiency means that energy demand is reduced, and the remaining energy needs are covered in the most efficient way. As a result, the same amount of renewable energy can account for a larger share of final energy use, bringing down the need for additional, expensive energy infrastructure. In years to come, we must accelerate this synergy.

As such, an 'energy efficiency first' principle should form the backbone of our shift to a world of low-carbon economies. It will help us decarbonize our energy system, and free up electricity to make our cars, buses and ferries electric, our buildings green and our cities sustainable. But at a time where energy efficiency improvements should be rising, they are in fact slowing down: the [1.2% annual improvement rate in 2018 is around half the average seen since 2010](#), and below the 3% rate required for us to stay on track. Coordinated efforts are needed between governments and business partners to achieve and sustain annual energy efficiency improvements of 3%. We work with cross-sector coalitions like the [Three Percent Club](#) to support implementation of energy efficiency infrastructure across the economy. This supports countries and cities in developing energy-efficient buildings and district heating and cooling systems, for future-proof and sustainable societies.

To get more and more processes to run on electricity instead of fossil fuels is mandatory for decarbonizing societies. And on top of making processes sustainable, we can make them healthier, quieter and smoother.

In the case of Denmark, an [EA Energy Analyses](#) report shows that – without investments in energy efficiency – it will cost DKK30 billion to meet its 2030 goal of cutting emissions by 70%.

With energy efficiency measures in place, that number can be all but cut in half, down to DKK16 billion. The savings come from a lower demand for investments in fuel and energy, and less need for energy grid-development and energy storage.

Energy efficiency improvements can account for 44% of the reduction in energy-related CO₂ emissions





Urban areas are at the forefront of green recovery

Cities are “the world’s first responders to the climate emergency”. The world’s [cities occupy just 3% of the Earth’s land, but account for 60-80% of energy consumption and 75% of CO₂ emissions](#). And they are expanding.

The choices we make on urban infrastructure in the coming decades – on construction, housing, energy efficiency, power generation and transport – will have a huge impact on the emissions curve. The science is clear: we must stabilize temperature increases at 1.5°C. That means [reducing emissions at least 45% by 2030 and achieving climate neutrality by 2050](#). However, current national climate action plans get us nowhere near these goals.

A report from Navigant shows that urban areas can reach the 1.5°C target and fight air pollution in a cost efficient and effective way – for example, by prioritizing investment in energy efficiency technology in buildings, e-mobility and sector integration. At the same time, these technology investments would contribute more than 1/3 of the total national emissions reductions needed, ensuring better air quality and jobs. It is important that the recovery is guided by the best available science. Not only to meet the Sustainable Development Goals, but to improve the resilience of our cities and communities to protect against future threats. In addition, climate action can help accelerate economic recovery and enhance social equality, through new technologies, industries and jobs. These will drive wider benefits for citizens, businesses, cities and governments.

The world’s cities occupy just 3% of the Earth’s land, but account for 60-80% of energy consumption and 75% of CO₂ emissions

Let's not go back
to what we had,
**but forward to
what we want**

This is how we do it...

Directing investments to buildings, manufacturing and transport

Today, roughly 70% of energy investments are conditioned on government action. To move forward on both agendas – job-creation and green transition – we need concrete targets, followed by close observation of implementation – to ensure we make the transition happen. There are three main areas of intervention:

Buildings

Buildings are a crucial starting point. In the [EU, the buildings and construction sector makes up around half of total energy consumption and CO₂ emissions](#). Sustainable and binding annual renovation targets for different categories of buildings will ensure they pollute as little as possible. At the same time, the construction sector is labor intensive and local, resulting in quick job creation.

Manufacturing and industry

What is also vital is manufacturing and industry. This is responsible for 25% of the final energy consumption and for about 20% of total greenhouse gas emissions. The Danish climate partnership for the manufacturing industry has announced an ambitious but realistic target: to become the world's first climate-neutral industry by investing heavily in energy efficiency and electrification. Introducing higher energy efficiency standards for manufacturing processes will allow industries to become cleaner and more competitive – and offers massive – and largely untapped – potential.

Transport

And finally, there is no way around transport. [Road transport alone is responsible for around 70% of EU greenhouse gas emissions in transport and around 20% of total EU emissions](#). We are currently benefitting from quieter roads and less air pollution. Let's not return to what we had, but seize the moment to really push forward an ambitious plan. Let's implement charging infrastructure across our countries to support electrical car and bus uptake. We were on a good path before the pandemic. Let's find our way back.





Buildings are the starting point for the energy transition

Investing in decarbonizing buildings is key to reaching climate objectives and economic recovery. It will lead to an increase in economic activity by retaining and creating jobs: in 2019, [7% of total global employment – or 220 million jobs](#) – depended on such investments. The building sector presents an untapped opportunity to respond to the climate crisis. [Buildings account for nearly 40% of global energy and about 1/3 of global greenhouse gas \(GHG\) emissions – and have massive potential for energy savings.](#)

Energy efficiency opportunities in new and existing buildings should focus on efficient heating and cooling, as this accounts for [up to 80%](#) of a building's energy consumption. One of the most cost-effective measures to reduce energy demand is optimizing Heating Ventilation and Air Conditioning and technical building systems, which [on average leads to energy savings of 30%](#) – and with a short payback time of 2-4 years.

Smart solutions such as demand-response can further increase efficiency and enable the building to play an active role in the wider energy system. Its potential can be unleashed by setting high energy efficiency standards for retrofits and new buildings, and by introducing measures to increase the overall renovation rate. Following the global financial crisis of 2008, a United States stimulus program focused on building renovation created [over 200,000 jobs](#). This shows the power political decisions can have in supporting and activating local value chains, driving both economic recovery and environmental sustainability.

In order to decarbonize our buildings, we also need to look at heating and cooling supply. By moving from fossil fuels to sustainable solutions, such as [district energy](#) and heat pumps, we can reduce emissions and improve air quality in cities. In Europe, expanding district heating from 12% – where it stands today – to 50% in 2050 [could create 200,000 local jobs](#).

Ambitious policies and standards for buildings should be developed in parallel, to ensure a lasting transformation of the building sector. To unlock the potential of new and existing buildings, governments need a framework that will greatly increase the annual global renovation rate from less than 1% to 3%. All this should be accompanied by knowledge transfer and the development of local sustainable building and construction skills.

The building sector presents an untapped opportunity to respond to the climate crisis

Tomorrow's industry is competitive, green and sustainable

Demand for industrial products has grown considerably in recent years, along with energy consumption and greenhouse-gas emissions. Industry is responsible for 20% of greenhouse gas emissions.

To ensure stimulation of economic growth does not lead to a return in pre-COVID emissions, it is essential to separate economic growth from growth in emissions. And it's possible: since the 1980s Denmark's GDP has more than doubled – while emissions have decreased.

To achieve that and more, decarbonized industry rests on a combination of increasing energy efficiency, electrification, sector integration and scaling up renewable energy. To drive this change, ambitious political action is required. That's why we are advocating for higher national and EU targets for energy efficiency to create pressure and incentives to act boldly. Energy efficiency is not a strategic focus area in most industrial sectors and investments in energy efficiency are competing with many other potential industry investments. Therefore, to unleash the potential, a strong legislative framework, incentives and funding are required.

In putting that framework together, it is essential that businesses, especially energy intensive ones, are given a real opportunity to adapt. This will help them remain competitive and maintain their growth while implementing green changes.

The potential is significant: by making cost-effective, energy efficient opportunities available today, industries could produce nearly twice as much value per unit of energy use in 2040, compared to current levels. There are more examples: by 2040, increased energy efficiency in electric motor systems based on a total system approach (compared to an individual component approach) could also save 8% of total global electricity consumption and reduce industry application emissions up to 40%.

Only industries that succeed in bringing down emissions, in addition to creating products for our societies, can be sure that they are fit for the future. With competitive, sustainable jobs that benefit both our economies and our planet.

By 2040, increased energy efficiency in electric motor systems save 8% of total global electricity consumption and reduce industry application emissions up to 40%





Modernizing and electrifying urban mobility

To meet the ambitions of the Paris Agreement and improve air quality, electrification of public and private transportation on land and at sea is inevitable. Transport currently accounts for around 30% of global final energy demand and the effects of pollution from transport are especially important in cities, where large numbers of people and vehicles move within a small geographical area.

As a result, air pollution is an increasing challenge, but one we can address. Currently available electrification technologies have the potential to reduce NOx emissions by 90% per passenger kilometer by 2050. Additionally, if all urban areas in Europe, China and the US electrified their private and public transport, they could cover 28% of the emissions reductions needed between today's total emissions and a 1.5°C scenario.

[Electric vehicle sales in Europe jumped 57% in the first quarter of 2020](#), before the COVID-19 pandemic swept across the region. As Europe returns to a new normal, investments in e-mobility are a strong basis to relaunch the economy. At the same time, this has the potential to create an additional 1,000,000 jobs within vehicle manufacturing, charging infrastructure deployment and batteries. Let's use this opportunity now.

But electrification of transport is not limited to land. The potential is also substantial on water, both in terms of electric-powered vessels and shore supply.

Shore supply provides vessels with electric power from the land grid – while in port – to charge batteries for fully electrical and hybrid vessels. It also supplies electricity from local grids to fossil fuel powered vessels, instead of using the diesel generators on board to power everything from the ship's coffee machines to the lights.

Using shore supply means no consumption of diesel while at berth, which in turns means significantly less local air and noise pollution. As ports are often located close to urban environments, this has a significantly positive impact on local residents.

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Conclusion

The opportunity is here: to accelerate towards carbon neutrality and mark this moment as a historical turning point. The solutions are ready and proven. Now, it all comes down to the scale and speed of implementation.

The economic upside of investing in a low carbon economy is clear. So, let's focus on driving energy efficiency in our buildings and industry. To accelerate electrification of transport systems – moving goods and people on land and at sea, while also enabling smart sector integration in our cities. All in addition to creating the green jobs of the future, and ensuring we move closer to achieving our goals.

This is where the transformation starts

Join the transformation and continue the conversation on danfoss.com