



# Heatcube®

**A 4-step blueprint for  
decarbonizing donuts  
—and the future of food  
production**

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## If it's your job to convince management, here's your guide to removing the *gas behind the glaze!*

What if every donut you baked came with a price tag for the planet? It actually does, because of fossil fuels. Food production is responsible [for 15%](#) of the world's fossil fuel consumption. Every year. And the question now isn't if this must change, but how fast. Industrial decarbonization is a critical challenge.

As a manager tasked with figuring out how your factory can electrify food production and decarbonize operations, you might find yourself caught in a tough spot. On one side, there's pressure from ESG targets and the

need to meet sustainability standards; on the other, management expects solutions that won't compromise profitability. With limited in-house expertise on emerging energy technologies and the complexities of the energy market and no straightforward path forward, you're left to navigate complex regulatory requirements, high upfront costs, and a steep learning curve.

It's a challenging position, where every choice has long-term implications for both the environment and the business.



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## The first question to ask: Do you have to decarbonize?

- It might seem unnecessary to ask whether you have to decarbonize, but it is an eye-opening exercise.

Lars Martinussen, an industry expert from Kyoto Group, says there's a gap here. A glitch between the competencies needed to actually make a profitable energy transition—and the status quo of most industrial food and beverage producers. In many cases, there's a gas boiler on the plot, playing its part as the daily energy source.

How to get rid of it? That's why the question emerges.

- If you answer “yes” to the need for industrial decarbonization, follow up with: What is it going to take? What are the risks and benefits of acting now versus delaying? Is it possible to postpone the question for, say, five years?

- *It sounds like the only viable answer is yes—you have to decarbonize now?*

- If you continue to use gas, you'll be confronted with steep CO2 emissions costs. Also, you're at serious risk of failing to meet ESG demands from customers, investors, and partners.



STEP 1:

## Find out if emission cuts are on track

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**Set expectations accordingly.** Review your ESG reports and compare your current emissions with targets. Identify if there are shortfalls and adjust timelines or goals if needed to set realistic expectations for decarbonising your company.

### Do I have sufficient competence in-house?

Assess the expertise level within the company. If internal knowledge gaps exist in energy management or decarbonization, this is a good point to decide if you'll need to outsource certain roles or hire a dedicated energy manager. If the assessment reveals insufficient knowledge, explore hiring external consultants or a permanent energy manager.

### Find out to what extent management is invested in meeting carbon-cutting goals

Gauge management's real commitment by discussing the resource and time investments required for decarbonization.

### Use ESG reporting as a benchmark or goal

Use the company's ESG report not just as a goal statement, but as a working document to track progress

against defined targets. This keeps efforts grounded.

### KPI's

Most managers are measured purely on fiscal KPIs, not green ones. Time to change? Are there any KPIs reflecting emission reductions?

### What if we wait?

Run the exercise of calculating the financial and reputational impact if you wait to get started with the energy transition. This question is crucial to sensitize management and force them to understand that yes, sustainability costs more, but there's no way around it.

Conduct a risk assessment comparing immediate decarbonization versus deferring action. Highlight risks like increased costs, potential penalties, long lead-times and reputational impacts of delaying, investor impact.



STEP 2:

## Test first-hand technical assumptions

### Technical assessment of necessary equipment and new installations.

In simple terms: Will new energy equipment fit physically—and are you allowed to do it, or alter what you already have?

#### Determine the demand for heat

Conduct an analysis of your current heat usage to better understand production requirements and to properly size new heating solutions.

#### Conduct an energy audit

Review current energy consumption patterns for inefficiencies. An energy audit will help determine if energy use can be optimized before investing in new technology.

#### Compare possible solutions

Compare possible solutions by evaluating various technological options, such as electric boilers, thermal batteries, and hot water systems. Explore renewable energy sources like solar, wind, or geothermal to

electrify food production and identify the best fit for your facility.

Can the production process be altered to remove steam and, implicitly, gas?

#### Permits needed

Look into any required permits, especially if noise, regulatory or environmental impact assessments are needed for installation.

#### How much space do you have available onsite, for new installations?

Check if there is sufficient room at your facility for new equipment, like thermal storage systems or electric boilers, which may require designated physical space.





STEP 3:

## Reinforce the business case with an engineering and commercial study

### Validate or disprove assumptions of the previous step.

Based on your initial assumptions, order an engineering study to establish whether they can be confirmed or need to be challenged in order to make the energy transition feasible.

#### Engineering study

Conduct an engineering study that covers technical feasibility, ensuring all planned equipment and technology solutions are viable in your specific setting.

#### Financial study

Create a financial projection for the proposed decarbonization steps. Include potential cost savings, anticipated ROI, and how these investments will affect the bottom line over time.

#### Explore funding

Look into available grants, subsidies, or funding options that could offset the upfront costs of decarbonization projects. In some regions, these can cover a significant portion of the expense.



STEP 4:

## Decarbonize: It's now or later

**Decision gate for management.** That's right, it's time for management to decide if they want to go ahead with decarbonization now—or wait. Outline implications for each choice.

### Consequences short-, mid- and long-term

Clearly outline the consequences of delaying industrial decarbonization, including rising costs, financial penalties, and the risk of falling behind competitors. Address short-, mid-, and long-term impacts on market positioning, regulatory compliance, and the growing financial burden of inaction

### Costs of waiting, costs of acting

Detail the estimated costs for each approach and weigh them against potential cost increases (e.g., rising gas prices or CO2 taxes) associated with waiting.

### Position in market

Highlight how early decarbonization can enhance your market position by meeting customer and investor expectations for sustainability, compared to the risk of falling behind.

### Gas prices now—and later on

Consider current and projected gas prices in the analysis, as fossil fuels become increasingly volatile and expensive.

### CO2 taxes are not going down

Factor in the likelihood of rising CO2 taxes, which would make traditional fuel sources progressively more expensive, providing an economic argument for timely decarbonization.

### Buy heat-as-a-service (HaaS)

As an alternative to fully investing in decarbonization technologies, consider HaaS. This model allows you to meet green goals by outsourcing heat production, providing flexibility without the need for large upfront costs.

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## Decarbonizing is no longer an option—it's a financial and reputational necessity. The steps are clear, but only you can decide when to begin.

Kyoto Heatcube represents a tangible solution for the electrification of industrial process heat. Its demonstrated ability to effectively replace fossil fuels using renewable energy sources provides the industry with a concrete solution to meet the emission targets for 2030 and beyond.

Its modularity, scalability, and industry-specific plug-and-play design match the various process needs of most industrial companies requiring process heat. The proven molten salt technology additionally provides great flexibility, both when it comes to exploiting renewable energy when available and simultaneously producing heat, as well as allocating thermal storage as an asset in the balancing market.



### Cut emissions and costs with thermal storage!

Green, cost-effective process heat for your production with Kyoto's Heatcube! Scan the QR-code to learn more.



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## Ready to make your decarbonization goals a reality?

Connect with Lars Martinussen at Kyoto Group, to discover how to turn your decarbonization ambitions into concrete action.

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