# Resource-Productive Operations

Five core beliefs to increase profits through leaner and greener manufacturing operations

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# Introduction

A decade or so ago, companies in industrial manufacturing and other process industries did not need to focus on resource productivity. If they gave any attention to the topic, it was to make small, incremental measures in the hopes of generating marginal improvements. That period is now over. Today, there is no debate: resource productivity must be among the top priorities—if not the top priority—of industrial manufacturers around the world.

Recent shifts in both supply and demand are squeezing these companies from both sides. On the supply side, raw materials are increasingly scarce, making them more difficult and more expensive to procure. At the same time, demographic changes—primarily in emerging markets—are increasing the demand for finished goods. These trends have been building over the past several years, and they will continue to gain momentum. As a result, industrial manufacturers will need to do more with less.

Compounding this problem is the fact that the easy gains have already been captured. Most organizations have already taken the obvious steps—for example, upgrading their lighting and automating their HVAC controls. Yet they are now bumping up against the limits of what they can accomplish using a traditional approach. Why? The fundamental premise of that approach—in which resource productivity is subordinate to other operational priorities—is no longer valid.

For example, many managers still assume that these measures will only serve as a hindrance to plant operations—an opposing force that makes their daily work more difficult. Others assume that they simply don't need these measures. (This is a line we hear frequently when meeting with companies: "Our plant is already as efficient as it can be.") Yet there are always opportunities to transform a process or facility, improving efficiency and yield, and generating clear financial benefits, often with little or no capital expenditure.

To capture these gains, however, organizations need a better approach to resource productivity. They need to embed new ways of thinking—core beliefs—in their management teams, workforces, and organizational cultures. We use the word "belief" deliberately, because it underscores the way that change comes from thinking about productivity in a whole new way.

Specifically, the approach that McKinsey has developed for enhancing resource productivity centers on five core beliefs:

**1. Think lean:** In the original application of lean, companies analyzed the value stream of a particular manufacturing process and ruthlessly cut away anything that did not clearly add value. This methodology is highly synergistic with resource productivity, which applies similar rigor and looks at all steps of a process, seeking to eliminate anything that leads to wasted resources, in both energy and materials.

Lean is an extremely useful way of thinking about resource productivity because it uses well-known principles—like standardization and continuous improvement—that a broad base of managers and leaders already know and likely use. Similarly, it relies on best practices such as performance meetings and integrated KPIs, which are likely to be in place already and translate easily to resource-productivity initiatives. Perhaps most important, it is extremely comprehensive and bottom up. The best ideas often come from line walks with workers who feel empowered to make suggestions and drive improvements, fostering a more inclusive process and leading to better results.

**2. Think limits:** In the traditional approach to resource productivity, companies typically start with their existing process as a baseline, and then seek to make incremental improvements from there. The second of our core beliefs, think limits, flips this concept on its head. Instead of using the current process as a baseline, it calculates the theoretical limit of that process—meaning the output from an ideal version, with no mechanical or chemical losses and perfect energy utilization—and establishes that as the baseline. Such a goal is clearly unattainable in the real world, but this approach leads to a more comprehensive means of identifying and reducing losses. It creates an ambitious, "stretch" target that companies then seek to achieve. (Often, the calculation alone identifies categories of loss and waste that the facility managers were not previously aware of.)

**3. Think profit per hour:** The third core belief—thinking in terms of profit per hour—helps align objectives for the organization. This is critical, because different productivity initiatives often have different goals, which can conflict with each other. Production managers, for example, strive for improvements in output, while energy managers focus on reducing energy consumption. Which one takes precedence? More often than not, the managers themselves don't know. Reconciling these issues requires a powerful new metric: profit per hour.

At the highest level, profit per hour calculates an operation's gross profit for any given period of time by subtracting overall costs, including energy and resources, from revenue. It is a real-time, operational metric that helps organizations break down silos, giving managers clear visibility into the relationship between different productivity measures. More important, it generates a quantitative—and thus definitive—answer to the question of which measures should be organizational priorities.

**4. Think holistic:** Despite the best intentions, many companies fall short of their resource-productivity goals. Why? Success requires a thorough change-management effort. Managers must set meaningful and achievable goals, and persuade often reluctant organizations to embrace and pursue them. They must secure the buy-in of their employees, and equip them with the skills and deploy the new management systems needed to improve the way the organization functions.

McKinsey spent three years surveying some 600,000 managers, 7,000 senior executives, and leading academics to explore why some transformations fail and others succeed. The results showed that successful transformations are based on three core elements that drive each other like interlocking gears. First are technical systems, meaning the assets and equipment a company owns and the processes people perform with those assets to create value. Second is management infrastructure—the formal structures, processes, and systems that companies use to manage people and the technical systems. Third are mindsets and behaviors, or the attitudes that drive behavior individually and collectively. Successful companies apply a holistic approach that encompasses all three, making them better able to implement and sustain changes to improve resource productivity.

**5. Think circular:** At a basic level, the global economy relies on taking raw materials out of the ground and making them into finished products, which ultimately get thrown away. It's a very linear logic—"take, make, dispose"—yet it's not sustainable in the long run. Instead, the fifth and final core belief is that organizations need to move beyond this linear approach and "think circular." That is, they should treat supply chains as circles, where they can create new value by looping products, components, and materials back into the production process after they have fulfilled their utility over the product life cycle. This is a complex endeavor—it requires designing products in a new way, adopting business models that go beyond a mere one-time sale, and revamping supplier relationships.

## Underlying tools

To help companies transform these five core beliefs into practices that generate measurable results, McKinsey has developed a comprehensive and proprietary set of tools. These are analytical models, metrics, and other concepts that companies can apply to reduce their resource consumption, decrease the unit price of resources, and optimize their product mix and pricing. Some tools apply directly to specific core beliefs, however, they are intended as a set of potential options, not prescriptions. No two companies—or even two facilities in the same company—have an identical set of resource-productivity issues. Accordingly, company leaders should pick and choose those tools that best fit their needs. The core beliefs are universally applicable, but the tools are discretionary.

In conclusion, we have been studying resource productivity for almost a decade and helping companies transform their operations for greater efficiency in both energy use and yield. Collectively, the ideas discussed in this book have already generated hundreds of millions of euros in savings. (We have also interspersed our argument with actual examples of how companies have implemented these measures.)

This publication summarizes our experience and McKinsey's thinking on resource productivity. It is intended to be a handbook for leaders of industrial manufacturers and other process industries. We're excited to put our ideas down on paper as a resource to other organizations. In addition, we believe that the business imperative is clear. Company leaders—from the executive team down to the managers and shift supervisors of individual plants—have the power to give their companies a true competitive edge. Increasingly, winning companies will seize this opportunity, starting today.