



Monetizing Circular and
Sustainable Products
Circular value creation in
the chemical industry

Introduction	5
Principles of the circular economy	7
How to sell the green premium	14
An introduction to Deloitte's Monetizing CE Framework	18
Key takeaways for companies	20
References	21
Contacts	22



Introduction

Successfully selling products in the circular economy is not only about overcoming process-related or technical obstacles but also about articulating the benefits of circularity and the ways it can maximize value for both your customers and your bottom line. Though this concept may seem simple, many companies have failed to recognize its potential.

For several years, consumer-facing industries have been dealing with growing demands from an increasingly eco-conscious consumer base. To meet these demands, industries have made significant changes to their processes, often leading to a surge in the "green premium". The added cost to cover these new production methods and materials is usually passed onto consumers, especially where other monetization models remain untapped. This escalates consumer dissatisfaction, particularly during times of inflation, and leads companies to explore alternative methodologies, such as subscription or usage-based models. Now, the growing trend towards sustainability is gaining traction in B2B sectors, most notably the chemical sector.

Chemical companies have traditionally focused their efforts on modifying products, perfecting processes and complying with regulatory guidelines. As necessary as these changes might be, they often prevent companies from unlocking the potential of innovative business models and offerings

designed to monetize circular products and services. It is evident that players in the chemical industry will not be able to fully capture the underlying value of circularity unless they recognize the value potential in embracing circular economy principles.

Shifting focus from a product-centric to a customer-centric perspective – keeping customer opinions, decision factors and interests as focal points – is critical for chemical companies to succeed in the circular economy. This calls for an open-minded approach, starting with a circular product setup and over time transitioning from a linear, value-driven chain to a more circular, partner-based ecosystem. It is time for chemical companies to move beyond thinking in terms of individual products and to start focusing on more integrated, comprehensive solution-based approaches with transparent pricing that reflects the green premium. This Point of View sheds light on how to successfully leverage circularity by highlighting best practices in circular economy monetization.



Principles of the circular economy

In an era where environmental regulations have become the new normal, the circular economy has emerged as a transformative solution that challenges the linear “take-make-waste” model of the past. Circular economy models reimagine waste as a resource, creating a closed-loop system that fosters sustainability, economic growth and environmental stewardship. By recycling and reusing all of the materials and molecules involved, we can minimize resource consumption

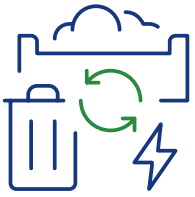
and reduce environmental footprint. Our efforts to achieve the UN Sustainable Development Goals (SDGs) and respond to increasing consumer demand for responsible resource use make circular solutions more urgent than ever before. In response, the European Union and the European chemical industry have adopted a climate neutral target for 2050. Shifting to a circular economy is not driven only by regulations, technological advancements and customer pressure; it also marks a

significant departure from conventional economic models and promises to unlock new value potential. Innovative business models that are both environmentally sustainable and economically viable are at the forefront of this transformation, promoting both technical and resource efficiency.

The circular economy is based on five fundamental principles (Figure 1).

Fig. 1 – Circular economy principles





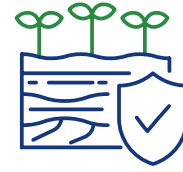
1. Eliminate waste and pollution

The principle of eliminating waste and pollution is central to the circular economy and calls for a fundamental rethinking of the way we design products and processes. Going beyond merely managing waste, this principle advocates for waste prevention at the source by designing for circularity or optimizing processes. Designing for circularity is about minimizing the environmental impact of the product across the entire lifecycle, from raw materials to the end of life, whether it is prioritizing sustainable materials or ensuring products are designed to be durable and easy to repair and recycle. Process optimization is more focused on reducing waste in production processes and using resources more efficiently, from closed-loop systems that turn the waste of one process into raw material for another to technologies that reduce energy consumption and emissions. Of all the plastic waste generated globally every year, only 9 percent is properly recycled today, while 20 percent is mismanaged (OECD 2022). There are, however, several promising initiatives in the sector designed to improve the “waste-to-value” ratio: German chemical company CHT, for example, turns recycled silicone waste into new raw material to help reduce the large energy footprint of silicone production (Chemie³, 2022).



2. Circulate products and materials at their highest value

Reusing products and materials at their highest value is aimed at maintaining and maximizing their usefulness for as long as possible. In the chemical industry, there are two types of recycling: mechanical and chemical. Mechanical recycling – the dominant industry standard – usually takes place at the end of the lifecycle, while chemical recycling offers truly circular potential (see also page 12: “The circular economy in the chemical industry”). For example, PET bottles can be mechanically recycled up to five times before the material has to be downcycled for other applications due to the increased contamination from dyes and other residues in the bottles. Chemical recycling technologies, on the other hand, allow for unlimited reuse and recycling by breaking the material down into its original molecules. If chemical recycling continues to gain momentum, the industry could potentially recover and reuse chemical materials almost indefinitely at their highest value and quality.



3. Design for circularity

Designing for circularity is the core principle of our transformation to a sustainable future. It requires a radical rethinking of the way we develop products and processes, keeping the entire lifecycle in mind. Here, we move away from traditional design methodologies and make sure every element of a product – from the raw materials to end-of-life solutions – is crafted for minimal environmental impact and maximum efficiency. That is where lifecycle assessments come in, a method of evaluating a product's environmental footprint from start to finish and then identifying opportunities at various stages to adopt circular solutions. A key aspect here – and one highly reliant on the chemical industry – is material innovation, i.e., prioritizing sustainable, durable, and recyclable materials in product design. A real-world success story here is “Revoloop”, the recycled plastic resin brand from Dow Chemical that sells post-consumer recycled (PCR) plastics as pellets for immediate reuse (DOW 2023). With this type of initiative, more manufacturers will be incentivized to select materials based on their lower environmental impact and higher potential for reuse and recycling in order to better align with the circular economy ethos.



4. Adopt circular business practices

When it comes to business strategy, circular economy principles are not just an environmental consideration but also a core component of sustainable business practices. In general, circular models are designed to generate economic value while also protecting the environment, ensuring that the clients' operations adhere to circular principles. While most of the market is struggling to embrace and adopt circularity – especially when it comes to monetizing the circular economy and managing shared responsibilities and ownership across the ecosystem (see “Understand the value chain and partnering opportunities” on page 14) – we have already seen early pioneers introduce business models that prioritize resource efficiency and embrace innovative sustainable practices.

Based on our experience, there are both major players and early-stage startups acting as first movers in this area. One example in the corporate space is BASF's reciChain program, a technology-enabled ecosystem where all stakeholders on the plastic value chain work together to extend the lifecycle of plastics and incentivize recycling (BASF 2022). Among the many startups active in various eco-friendly segments, those focused on lithium recycling deserve special attention, particularly as global demand for batteries continues to soar. Innovative examples here include the US-based startup Momentum Technology that provides a unique membrane solvent extraction (MSX) technology as a service, or Lithium Technologies from Canada with its pioneering lithium-ion battery recycling solutions. These examples are quite promising, though the chemical industry as a whole still has a long way to go to become truly circular. We encourage today's companies to be bold and engage in an active debate about circular business practices with in-house staff and potential partners to kickstart their green transformation.

It is vital to embed circular business practices deeper in the organization than simply sales and production. Circular economy initiatives must become an integral part of your corporate strategy; in other words, rethinking your supply chains, manufacturing processes, and product lifecycles. Businesses need to adopt practices that not only reduce their environmental impact but also make their operations more efficient and open new avenues for growth and innovation. This could be investing in research and development for sustainable technologies, fostering collaborations for shared resource use, or engaging in proactive stakeholder communication to align business goals with sustainable practices. By adopting these practices, businesses can position themselves not only as market leaders but also as pioneers in the transition to a more sustainable and profitable future.



5. Regenerate nature and greenify cities

Lastly, beyond keeping materials within the value circle, the circular economy aims to do more than just minimize negative environmental impacts. It also aspires to actively improve the environment, regenerate nature, and greenify our cities. Composting and biodegradation, for instance, return organic materials back to the earth and help regenerate soil, increase agricultural productivity, and support biodiversity. Another key step in restoring ecosystems is a detailed review of the degradation or destruction of wetlands, forests, coasts, and other ecosystems. In terms of sustainable urban development, we can help regenerate nature by developing green infrastructure such as green roofs and walls that not only manage stormwater and reduce the effects of urban heat islands but also provide valuable habitat for urban wildlife. The chemical industry has enormous potential to contribute here with the innovative materials and so-called 'green chemicals' that make our buildings more sustainable or improve vertical farming technology. One success story here is aerated concrete, a building material with heat-storing properties for more energy efficient construction. The success of vertical farming or façade greening, to name two other examples, relies heavily on safe, sustainable substrates and fertilizers provided by the chemical industry. All the different applications in this category reflect the circular economy's commitment to not just reducing harm, but also proactively regenerating and sustaining our environment in nature and cities.

What are the key challenges for today's companies?

Despite the importance and benefits of the circular economy, there are several barriers to adoption in the chemical industry caused by factors ranging from regulatory complexity to technological feasibility (Circular Economy Initiative 2021). Figure 2 shows an overview of the eight key challenges today's companies face.

Fig. 2 – Top challenges facing chemical companies in the transition to a circular economy



1. Value chain complexity

The supply chains in the chemical sector are fragmented and complex, with stakeholders spread across the globe (e.g., extractors, retailers and manufacturers (United Nations, 2019)). Due to the complex operations, infrastructure, and supply chains, practices in the sector are often incompatible with circularity models. Managing the transformation from traditional supply chains to the circular economy, especially for niche players with highly specialized products, requires major efforts that these players cannot always afford (Chemie³, 2022).



2. Regulatory complexity and inefficiencies

With sustainability getting more attention, industries are facing an increasing set of environmental regulation and policies from different jurisdictions and with varying scopes. The impact on chemical players with their complex global supply chains is huge. Even if they decide to transition to circular economy principles, cross-border value chains are usually unavoidable and chemical companies are forced to comply with many different local regulations. Germany's Supply Chain Due Diligence Act (LkSG), for example, requires companies to account for every supplier in their global business chain, regardless of the regulations in each jurisdiction. It takes a lot of effort from chemical companies to factor in all existing and emerging legislation across all links of the circular value chain, and to apply them on a global basis. Without this extra effort on regulations, these companies might have more time to speed up the transition to a more circular business model (United Nations, 2019).



3. Difficult market dynamics

It is relatively rare for a chemical company to have direct contact with end customers. However, consumers and society at large – in addition to regulatory requirements – are key factors driving growth in sustainable business. It is crucial to understand the customers' willingness to pay for the green premium. Chemical companies are often forced to invest and go through intermediaries to meet end-user demands or raise awareness about the sustainability and recyclability of their materials. Of the customers or potential partners in a circular value chain that could act as an intermediary, few have an intrinsic ambition to promote sustainability and many are extremely sensitive to prices and unwilling to pay a premium for circular chemical materials. To successfully maneuver these dynamics, companies need to invest into broader and deeper customer insights across the entire value chain.



4. Need for ecosystem approach

Collaboration is key – within and beyond company boundaries. Chemical companies need to change the way they see customers and competitors; after all, each of them could end up as a vital partner in a circular ecosystem. There are several challenges to overcome when you change these relationships, and it takes a lot of effort to coordinate and manage competing ambitions and objectives. Ecosystem partners may also hold diverging opinions on ownership and risk sharing as well as different standards in terms of quality or technology. First and foremost, however, the goal for chemical companies is to see themselves as an integral part of a broader ecosystem rather than an external enabler of industries sitting at the top of a traditional linear value chain (Circular Economy Initiative 2021).



5. High energy consumption and emission

Chemical companies are among the largest energy consumers with some of the highest carbon emissions. This is largely due to the huge amount of fuel used as feedstock for chemical products. As the demand for plastics and primary chemicals increases, the chemical sector needs more and more energy, which still mainly comes from fossil fuels. In 2022, for example, coal accounted for approximately 36% of the energy required for global primary chemical production (IEA 2022). The chemical and petrochemical industry in the European Union alone accounted for 21% (2159PJ) of the total energy used in industrial production in 2021 (Eurostat 2021). It is vital for the chemical industry to invest more effort in developing new lower-impact processes.



6. High upfront investment and volatile costs

Developing circular value chains requires significant upfront investments in new technologies, processes and infrastructures. That calls for substantial financial resources allocated to improving process technology and reducing overall energy consumption, whether it is the new machines or the new skillsets you need to make the transition from using only primary materials to recycling used materials. Novel technologies and analytics tools to help improve material traceability are also gaining traction. This sector is unique in its strong dependency on oil and energy prices, and the resulting cost volatility adds to the complexity of implementing new circular business models.



7. Technological feasibility and maturity

The technology readiness levels (TRL) of emerging technologies such as chemical recycling are low in the chemical sector. This makes it even more challenging to achieve a smooth transition to a circular economy, particularly if companies are unwilling to take on the risk of investing in circular initiatives without a guarantee of success. Not every chemical can easily be recycled, for example, adhesives that stick to other materials. Suppliers will have to test and develop alternative procedures or use alternative materials to make production more sustainable overall. Chemical companies need different skillsets and innovative technologies to recover new raw material from recycled products and ensure they are safe¹ and traceable across the entire material (and product) lifecycle (United Nations, 2019).



8. Organizational change

To make the transition to a circular economy and rethink linear supply chains, companies have to break down silos and develop a cross-functional approach. This calls for a new cultural mindset across the entire enterprise to enable collaborative practices and develop the technical and coordination skills required by the circular economy. Given the increasing importance of sustainability and circularity across the economy, access to new talent with the right skills will remain a major challenge for chemical companies (Circular Economy Initiative 2021). The transition to a circular economy will also have a significant impact on established business processes and financial indicators such as the income statement – the main driver for novel business models and cash flows to drive the circular economy forward.

¹ Depending on the type of residue, companies must consider the implications for new uses to avoid hazardous or toxic residues in products for consumer use or consumption (trade-off between recycling and product safety).

The circular economy in the chemical industry

As an enabler and solution developer for many industries, the chemical industry has a critical role to play in promoting the circular economy. However, to successfully make the transition to circularity, the industry will have to cultivate new skills and adopt transformative technologies to recover and reuse chemicals from both industrial processes and end-of-life products. Mechanical recycling of plastics, for example, is a well-established standard process used with polypropylene or other polyolefins that can be separated and recycled, such as plastic car components. The recycled feedstock of these plastics is labeled as "recycled content", which companies can use as a green claim in their marketing. As demand for recycled plastic increases, suppliers will have to find more ways to recover plastic waste and reintroduce it into the cycle as raw material. This calls for novel technologies such as chemical recycling, which breaks material down into its original molecules (or even further) for better reuse.

But what about adhesives, agrochemicals, coatings, and other specialty chemicals that cannot be separated or recovered? Finding a way to recover these chemical components is a major challenge for chemical companies. Substances that are permanently bound to other materials, disappear during use or are widely dispersed or diluted are virtually impossible to recycle. In construction, for example, self-leveling concrete can simplify the building process and reduce working time. This requires special additives diluted in the concrete mix that cannot be recovered during later demolition. The chemical industry must therefore focus on developing chemical products and processes in a way that significantly reduces or eliminates hazardous substances while also minimizing the environmental impact. For example, you cannot recover the agrochemicals used on crops, but you can make them more sustainable in terms of their production (energy use), efficiency, or residues (biodegradable or

harmless). The goal of the chemical industry is to improve efficiency and use fewer or more sustainable resources in both production and application.

Beyond their own production and product development, it is important for chemical companies to introduce sustainable materials into a truly circular value chain with sustainable supply chains and logistics. They need to engage with customers or competitors and create a partnership-based circular ecosystem. Their previous relationships with relevant stakeholders – raw material suppliers, chemical processors or packaging companies – will shift from a transactional to a truly collaborative and synergistic relationship.

Finally, the circular economy's "new normal" challenges traditional ownership and accountability by managing products across the entire lifecycle and the entire value chain. This shift calls for chemical partners to develop and adopt new business models and monetization schemes within the circular ecosystem.

Circular economy monetization

Developing a circular business model in the chemical sector is a nuanced but necessary endeavor in today's sustainability-driven market. The transition from the traditional linear "make-use-waste" to a circular model comes with its own set of challenges, but success depends on the effective monetization of circular practices and the realization of the "true value" of circular products. At the end of the day, the focus should be on generating value for all of the stakeholders involved in a dynamic ecosystem.

Companies have a range of options to position themselves in a circular value chain:

- 1. Use of circular materials and circular design (e.g., bio-based) to reduce downstream footprint**
- 2. End-to-end product ownership (e.g., polymers as a service) to retain control and return materials to the loop**

3. New mechanisms to share and recover resources (e.g., shared platforms and technologies)

4. Coordination of the value chain to manage local or regional loops

While all of these options raise costs in the short-term, the overall goal is to generate value not only for the company itself but also for its customers, partners, and end customers. Each stakeholder can see clear benefits and is therefore more willing to pay the "green premium". Product leasing and other innovative business models unlock additional value streams while also making the added value obvious for customers.

These models not only offer financial benefits but also align with sustainable practices and cultivate a circular mindset in chemical companies. The challenges posed by innovative business models, those that generate shared revenue across multiple stakeholders, for example, require new strategies and partnership agreements. Stakeholders can also add value by monetizing waste streams. The circular economy does not treat waste as something to be disposed of, but rather as a potential source of revenue. Chemical companies should make the most of opportunities to monetize waste, either by finding new markets for by-products or by developing innovative processes that turn waste into valuable materials. Approaching waste from this perspective shifts the paradigm from waste management to value creation.

This is not only about generating revenue, but also creating a wide range of long-term economic benefits by turning sustainability initiatives into profitable ventures. For example, the investments you have to make in the short-term have real potential to generate long-term returns, particularly because circular practices minimize raw material and energy consumption as well as waste management expenses. Solvent recovery,

material recycling, waste repurposing, and other techniques are not only eco-friendly but also financially lucrative, leading to substantial savings and higher revenues as well as profits.

**CE monetization on today's market
Companies are introducing CE monetization as a reactive rather than a proactive strategy.**

Based on the current state of the circular economy, we are seeing companies focusing more on operations-driven initiatives designed to promote sustainability and circularity. Most of these initiatives appear to be a direct reaction to regulations on CO₂ emissions, CO₂ transparency or green electricity to reduce carbon footprint. There are only a few companies already taking a proactive stance towards circularity and considering viable monetization strategies. This includes developing a circular product and service range, defining appropriate pricing mechanisms or creating a marketing strategy with a compelling message. Many chemical companies lack a mature monetization strategy because they have not acquired the knowledge about or discussed various options of transitioning to a circular economy. Without this, they are unsure whether they should add a green premium for their circular products, how exactly they should go about it, and what conditions must be met before they can proceed.

B2C companies feel increasing pressure from consumers, but rely heavily on B2B partners

When it comes to monetizing the circular economy, there are significant differences between B2C and B2B companies that make it harder for B2B players. B2C companies have the benefit of a direct relationship with end customers, which puts them in a better position to implement and control circular systems. It is also easier for them to charge a green premium for more sustainable products and services that bring pricing in line with consumer demand. As customers may be willing to pay premiums for

greener products, it is easier for B2C companies to pass on the added cost of circular practices to the customer. B2B companies, by contrast, rarely have a direct relationship with end customers. Instead, they are part of a longer, more complex value chain with several players. The direct customer base in the B2B industry is very cost-conscious and less influenced by circular economy pressures. In some industries, however, there are strong interdependencies between B2B and B2C partners in terms of aligning with circular economy principles. B2C companies looking to establish a circular value chain might be dependent on their B2B partners, because they will not be able to develop circular products without a clear sustainability commitment from their suppliers. It is vital for material manufacturers to work closely with other stakeholders to establish and maintain the value chain for circular products. Chemical companies face additional challenges besides those typical for the B2B industry, and they need to be aware of these when monetizing circular economy initiatives (see Section 3 for more detail).

Despite the chemical sector's limitations, thinking outside the box can yield competitive advantage

As just one example of the complexities and opportunities of monetizing circular economy initiatives in the chemical industry, consider the strict environmental regulations as well as health and safety standards in the life sciences sector, a major player in the chemical companies' client base. These rigorous compliance requirements may make it more difficult to monetize circularity, but chemical companies have an opportunity to pursue new and diverse alternatives with outside-the-box thinking. It is vital for them to approach circularity proactively and drive change with a targeted monetization strategy. Still in the early stages of the transition, chemical companies can use their unique circular economy initiatives to set themselves apart from competitors, gain a competitive edge, and

position themselves as innovative and sustainable pioneers.

Examples show how chemical companies can establish and monetize the circular economy

There are already a few examples in the chemical sector that give companies an idea of what is possible with circular economy monetization. One example is chemical producer BASF's reciChain program, a technology-based ecosystem designed to connect all players within the plastics value chain. With this program, BASF hopes to reduce environmental pollution by promoting the traceability of plastic waste and the circular use of plastic (BASF, 2022). Specialty materials company Eastman is also working on plastic waste in the context of the circular economy. With its carbon renewal technology, Eastman has developed an innovative technology that can recycle more plastic than conventional recycling methods (Eastman 2023). Most chemical companies, however, still face various challenges in their attempts to transition to circular solutions.

How to sell the green premium

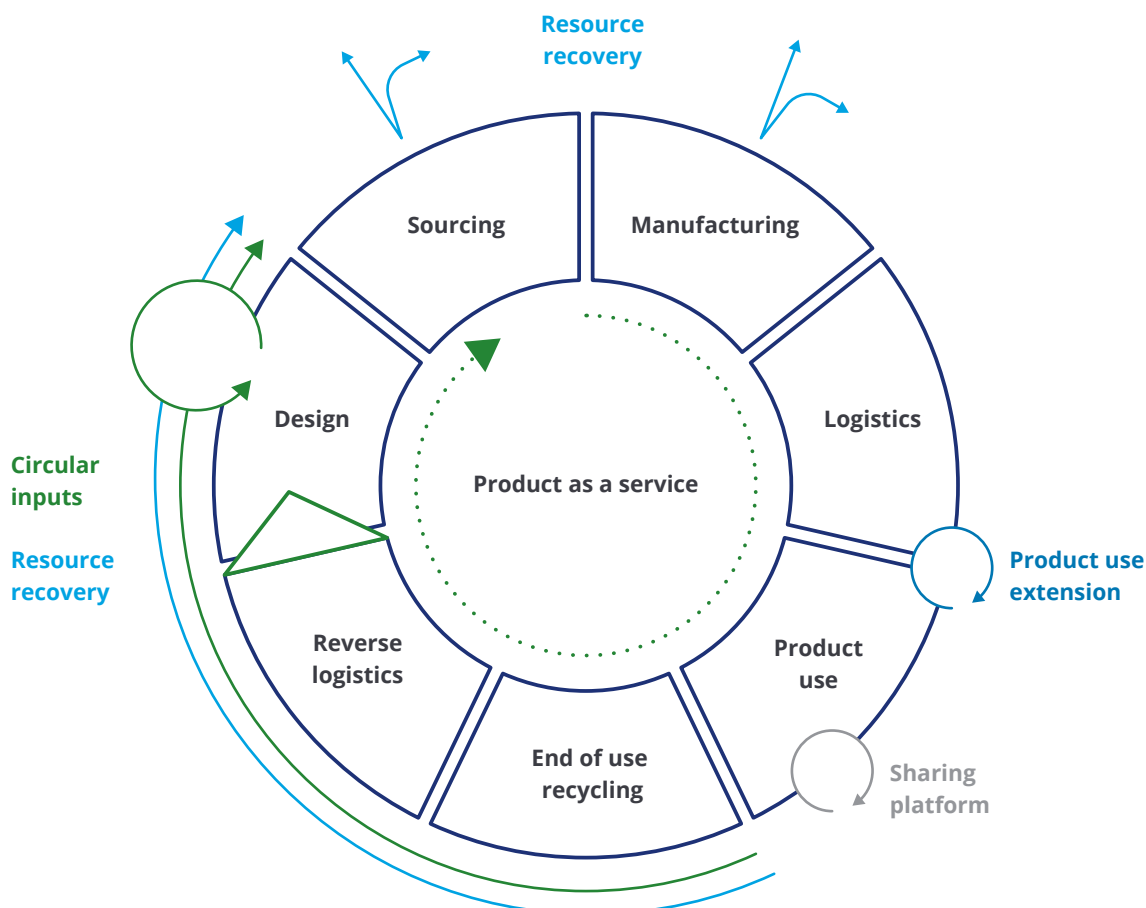
Understand the value chain and partnering opportunities

During the transition to a circular economy, you need to understand and redefine your value chain, particularly when it comes to waste products intended for reuse. The first step is to gain deeper insight into your target value chain (circle). While most companies are very familiar with their key components and materials, you will need a more detailed overview to introduce circular practices (see Figure 3 for an example

of a circular value chain in the chemical sector). One pivotal aspect in navigating and understanding the value chain (circle) is being able to identify who is in the power position. It is not always the direct customer who has the greatest influence or drives change in line with consumer demand. Depending on their particular position, it could be the chemical producers that impact key segments of the value chain and steer all stakeholders towards a joint goal. To adeptly maneuver within

different value chains, chemical companies need to gather deep insight into the main needs of the market and into the relevant strengths and potential of themselves and others. Understanding direct customers' perspectives will help you better meet their needs and create a new, circular value proposition, but it is also crucial to recognize where the most powerful stakeholders have the most influence and to identify the drivers that shape product demand and market trends.

Fig. 3 - Example of a chemical industry value circle



Incorporating your customers' "pull factor" is particularly significant in this context as well. To do so, you must acknowledge and respond to growing consumer demands for sustainable products, which can significantly shape market dynamics and product development. Chemical companies must be attuned to these customer preferences and design their products and services to meet emerging demands (perhaps even proactively before direct customers have a chance to react).

Partnering with other companies along the value chain is one solution to meet these demands or transition to a value circle. Extending beyond the traditional chemical client base, these partners could be recycling companies, companies along the chain or even competitors – all in an effort to provide customers with comprehensive solutions and greater circular value. An approach like this is about more than just improving customer relationships. It is about establishing a network of partners that works together to support and propel the circular economy forward in the chemical industry, in part driven by the influential pull of customer demand for sustainable practices.



Deep dive into customer purchasing behavior and segmentation

In addition to identifying potential partners along the value chain, chemical companies need to put themselves in their customers' shoes. Taking a closer look at their purchasing processes is a key first step to successfully monetizing the green premium. When you know your customer and the way they approach procurement, e.g., with the relevant purchasing criteria, you gain a better understanding of your key stakeholders and their decision-making practices.

Chemical companies that have identified their customers' purchasing processes and answered these relevant questions will be able to identify desired behaviors within the client base. These are behaviors customers must have in order to adopt a particular circular product. To identify them, you need to understand the specific steps in the purchasing process where an intervention could change behavior and drive sales, find the stakeholders with the greatest impact, and pinpoint the specific behavior that you can reinforce or change to grow sales and use of the circular product. An example here could be the shift from simply following the market and reacting to new regulations to being a first mover with a pioneer mindset and innovative thinking.

Using the desired behaviors identified in the previous step, you can consider the brand variables needed to assign your customers into different behavioral segments. Deep insight into the relevant customer groups will help you define the needs of each group and pave the way for a successful targeting and messaging campaign. You can divide the customer base into different segments using a combination of firmographic and situational variables, for example, the percentage of recycled content in the product portfolio or the market share. This enables you to prioritize the customer segments and allocate resources more effi-

ciently. With all the relevant insights on the customer and their purchasing processes, chemicals companies can identify the key decision makers and gain a deeper understanding of customer needs – one crucial step towards successfully monetizing circular economy initiatives.

Think bigger – going beyond a traditional product-centric approach

The first step on the circular journey is to rethink your product and service portfolio. Having a product-centric, feature-focused portfolio is no longer sufficient. In a circular environment, chemical players have to provide solutions that go beyond the product itself. Let's look at polymers as an example: It is still important for polymers to be able to withstand specific temperatures for certain applications, but today's companies have to start thinking beyond product features. The focus should be more on meeting the larger need this product is serving and to do so with a full lifecycle approach. In the case of polymers, this means developing new technologies to recycle the material, but it also means coming up with a novel approach to collect data throughout the lifecycle and feed it back into system.

This kind of thinking requires chemical companies to broaden their horizons and consider the entire value chain of the product. Where is the material going next? What is the larger purpose it is serving? Where and how will the user dispose of the product? How can I access data on the full lifecycle? To answer these questions, chemical companies need to revolutionize their offerings for the circular economy by developing not only product solutions but also introducing innovative business models. Possible options here include co-creating products with value chain partners to provide a broader response to market demand, offering product-as-a-service models that lease or rent materials, and selling end-to-end solutions including

support services from training and quality management to sustainability consulting. Companies can also offer digital services linked to their products to provide performance data, recommend optimizations, and enable real-time tracking or predictive ordering. Even with the initial implementation and investment costs, this kind of approach will create additional customer value and enable chemicals companies to charge a green premium and increase ROI.

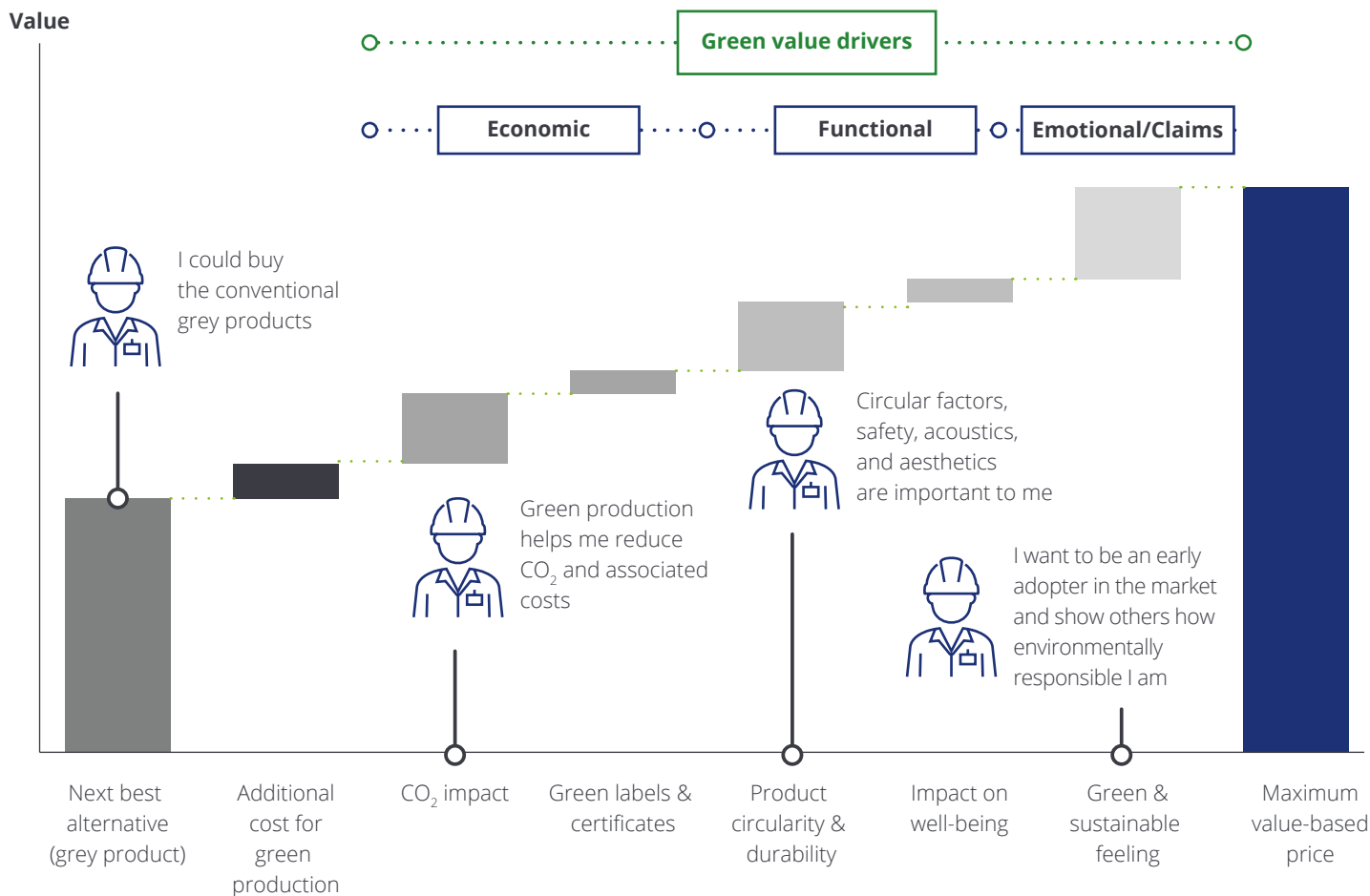
Quantify and qualify your product

There are two factors to consider if you want to successfully sell the green premium: quantifying the product and qualifying it for customers. To quantify the product, you need to rethink traditional pricing methods. Most products are priced using a cost-based approach, but you need to introduce a value-based approach to justify the green premium. One example of this is the value waterfall, as depicted in Figure 4:

Fig. 4 – The value waterfall

What are customers prepared to pay?

The value waterfall shows different drivers that can shape a price range – the value waterfall in your CE pilot programs should include green value drivers ranging from CO₂ impact to product circularity and durability.



Starting from the grey product as the next best alternative, the waterfall method adds economic, functional, and emotional value drivers, producing the maximum value-based price the customer is willing to pay. Being able to quantify all drivers is the key to success here. It may be easy to quantify economic drivers (e.g., CO₂ impact based on the price of carbon certificates), whereas functional and emotional drivers require additional effort, including market surveys, analytics, etc. Once you have input all these quantitative drivers into the waterfall, you will have a price point that you can defend on the market thanks to a tried and tested calculation model.

In addition to quantifying the circular product, it is also important to qualify it for customers, an essential aspect that is often neglected in the chemical industry. The points of contact in a conventional sales operation are usually procurement managers who are extremely price-sensitive or application engineers who focus more on product specifications. With green or circular solutions, other stakeholders become the focus: sustainability managers, product managers, or even top management to discuss joint solutions. Robust marketing initiatives are therefore crucial, as is a compelling and comprehensive story to successfully sell the product and the green premium.

An introduction to Deloitte's Monetizing CE Framework

When it comes to monetizing the circular economy, there are four key elements for selling the green premium. However, they will not reach their full potential in isolation from one another. The secret to success is integrating all four elements an end-to-end Monetizing Circular Economy Framework (see Figure 5).

The starting point in this framework is the "Assess opportunities/define strategy" phase, which is designed to clarify the key goals and challenges in your specific markets and applications. After all, it is crucial to have a detailed understanding of the problem the product is trying to solve and the reason it appeals to your customers. Here, it is crucial to identify the desirability for the application based on a green product.

In phase 2, we start to "Analyze and design the new value circle". Understanding the current value chain including the power of the different value chain steps, is fundamental to successfully design a new value circle. Concretely, understanding the industry mechanisms on how the value chain works, like the procurement behaviors in each of the value chain steps, provides the information of what needs to be changed to achieve the desired procurement behavior. When introducing circular green products, compared to the traditional approach, where the focus lies on the next immediate value chain steps, companies need to approach the value chain holistically as a whole ("grave-to-cradle"). Customer insight

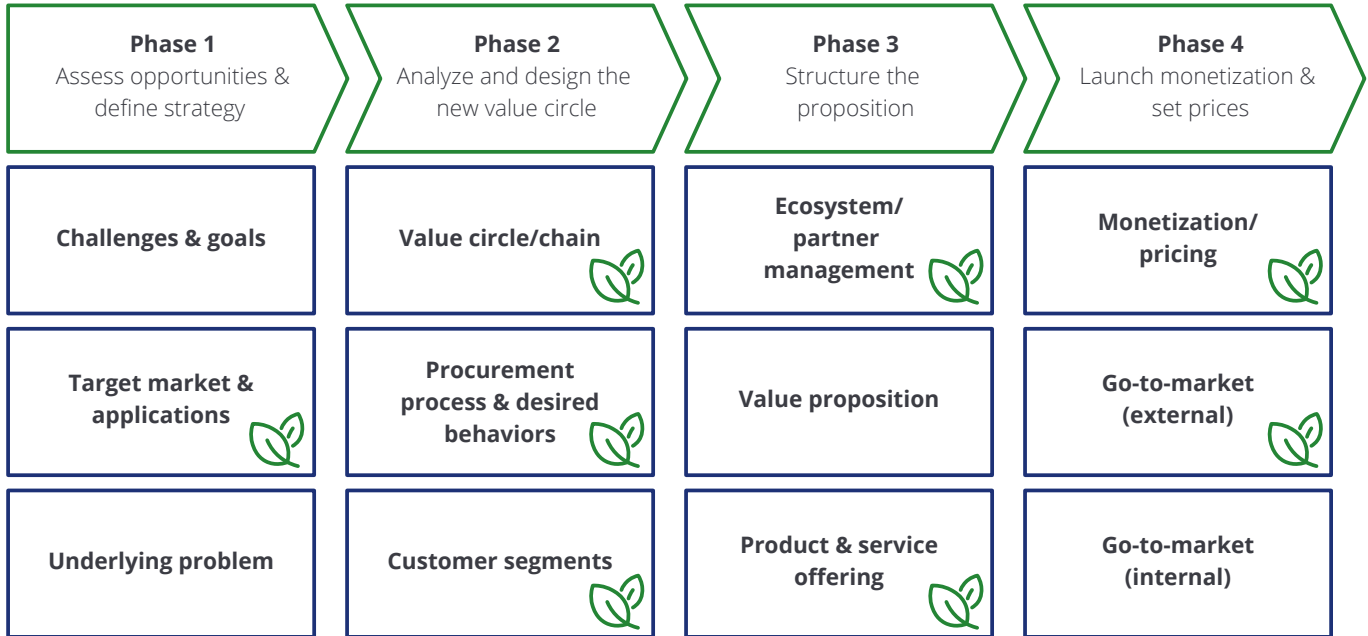
is another key element here: defining desired behaviors and assigning your customers to different segments based on these behaviors will pave the way for phases 3 and 4 in our framework.

In phase 3, "Structure the proposition", the focus shifts to the product and service offering. Here you should, on the one hand, determine which partners are best-suited to bringing your value circle to life. Currently, there is still scatter plot of willingness to pay for the green premium across the customer industries. The secret lies in finding the right partner that shares the same ambition and mindset towards circularity. We saw that this is possible in almost all industries, and at the same time provides a better starting point to create a true and fruitful partnership with a high willingness to invest in green. Ideally, the partner should be selected from a value chain step that is central for the success of the future value circle - most of the time closer to the end-market. On the other hand, it is also important to change your product and service offering using more solution-oriented thinking rather than a conventional product-driven strategy. Especially, since additional services might become necessary in order to set up a functioning value circle. This might include services traditionally not common to the chemical industry, such as offering recy-

cling management or integrating sensors for tracking into the circular products. Another indispensable step in this phase is defining the value proposition and the USP of your final product or solution.

In the "Launch monetization & set prices"-phase, new monetization strategies, from subscriptions to product-as-a-service should be openly considered. In this phase, you need to be open-minded and consider new monetization strategies, from subscriptions to product-as-a-service. Traditionally, products are sold in specs. For circular products however, companies need to develop a compelling story for customers that speaks to their emotions and offers a clear message on product benefits. And finally, this fourth phase also includes the corporate perspective by creating a clear roadmap for bringing the product to market, bearing in mind all the internal resources, capabilities, and tools you need.

Fig. 5 – Monetizing CE Framework



Especially relevant for CE monetization

All in all, the Monetizing CE Framework follows a marketing approach that is similar to conventional models with its focus on market research before offering the product to consumers. What makes this approach different is the inclusion of sustainable or circular factors in selected steps, as indicated by the green leaf symbols in the above framework.

Across all parts of the framework, customer insight and contacts are the key elements, paving the way for product development and commercialization. Understanding the customer perspective, needs, and preferences enables you to gain valuable insights and align your product and service portfolio with sustainability-driven customer demands.

“The new CE monetization framework stays close to the traditional industrial marketing approach including only selected new elements, but changes the interpretation of several existing elements towards a circular mindset.”

Kai Goebel, Chemicals Expert for Commercial Excellence

Key takeaways for companies

To successfully monetize the circular economy, chemical companies must first understand their position in the circular value chain. This – along with cultivating a circular mindset – is fundamental for making more informed decisions about partnerships in the circular ecosystem. What is more, chemical companies should engage in wide-ranging conversations with potential customers and partners early on in their transformation journey to ensure a smooth transition to a thriving circular economy in the chemical industry. This collaborative approach is the foundation of a successful circular economy and the key to understanding what it will take to meet customer needs across the value chain.

As new technologies and innovations emerge, it is also essential to constantly challenge and improve your business models and find a successful monetization strategy that aligns with your corporate values and offers a long-term return on investment. The main investments you should consider during the transition to a circular economy are upskilling your staff and upgrading your technology, so that you have what you need to create circular value effectively. Another sure way to drive customer engagement is to tell a cohesive and compelling story about your transition from a product-driven strategy to solution-centric products and services.

Fig. 6 - Monetizing the circular economy checklist



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Meet the team



Amadeus Petzke

Partner
Product & Pricing Market Offering Lead
Tel: +49 151 12684029
apetzke@deloitte.de



Mark Reimer

Director
Energy & Chemicals sector Lead Germany
Tel: +49 151 58005933
mreimer@deloitte.de



Kai Goebel

Director
Chemicals Expert for Commercial Excellence
Tel: +49 171 7617450
kgoebel@deloitte.de



Alexander Keller

Specialist Director
Chemicals Specialist
Tel: +49 151 58071406
alekeller@deloitte.de



Vera Maag

Manager
Tel: +49 151 58077994
vmaag@deloitte.de



Mirella Clever

Senior Consultant
Tel: +49 151 18295948
mclever@deloitte.de



Philipp Haessler

Senior Consultant
Tel: +49 151 12683070
phaessler@deloitte.de



Ayla Yilanci

Consultant
Tel: +49 151 19175572
ayilanci@deloitte.de



Daniel Strafe

Consultant
Tel: +49 151 40679482
dastrafe@deloitte.de

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