

**ESG: LAST CALL TO
TAKE EFFECTIVE ACTION**

How innovation unlocks
economic opportunities
in a volatile world



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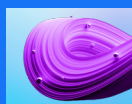
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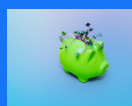
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FOREWORD

Environmental, social, and governance (ESG) factors are urgently redefining the business landscape across many industries. They threaten traditional models and sectors, making them obsolete seemingly overnight. But, more importantly, they provide vast new opportunities for those that can successfully understand and act in a volatile, fast-moving world, enabling them to redefine the rules of the game. Achieving excellent ESG performance and improving competitive differentiation is not simple or predictable. Hence, Arthur D. Little (ADL) offers this collection of seven articles to share our experience and help organizations embrace ESG and its benefits.

**“WE’LL GO DOWN IN HISTORY AS THE FIRST
SOCIETY THAT WOULDN’T SAVE ITSELF
BECAUSE IT WASN’T COST-EFFECTIVE.”**

Kurt Vonnegut

WHY ESG RISKS ARE ACCELERATING RAPIDLY

The pace of change and pressure on companies around ESG are increasing exponentially. It is impossible to overstate the speed of transformation in ESG and the different manifestations of risk — from consumer boycotts and citizen action to investor lawsuits and reduced access to capital. Public opinion, in particular, has propelled companies to divest themselves of businesses deemed unethical, change strategy, or close previously profitable plants due to outside pressure, whether directly from consumers/citizens or via litigation and legal challenges.

ESG is a fundamental threat to revenues and regulatory/public license to operate if action isn’t taken. Meeting regulations is not enough — as these are behind the ESG curve and can even prevent the innovation required to become more sustainable as a planet. We see explosive growth in requirements for ESG screening in every due diligence transaction we undertake as well as accelerating demand for portfolio sustainability screening and externality assessments as organizations scramble to reduce risk and deliver on ESG.

UNDERSTANDING & SEIZING ESG OPPORTUNITIES

ESG is more than compliance. It provides an unparalleled opportunity that companies need to embrace. Those that build the right capabilities early to detect and correctly interpret sustainability trends and “translate” them into concrete, measurable action will reap rewards. Businesses with strong ESG performance experience:

- Higher profitability
- Ability to create a share price premium
- Access to a broader base of investors, providing capital on better terms
- Greater loyalty from B2B and B2C customers, partners, and employees
- Better reputation in the market, guaranteeing license to operate
- First mover advantages
- Ability to access new markets and revenue streams
- Increased protection from external shocks

By taking a holistic approach that looks beyond decarbonization to cover the entirety of ESG — including ethical business behavior, transparent sourcing across the supply chain, and enabling the circular economy — ESG leaders are more innovative than peers who focus solely on meeting the growing thicket of regulations.

THE PRESSING NEED TO OPERATIONALIZE ESG

Most organizations have committed publicly to long-term goals around sustainability. Delivering on these is more difficult than it seems, requiring transformational change in both culture and mindset as well as operating against a backdrop of market volatility, immature technology, and the difficulty in agreeing on short-term actions to meet long-term targets. Essentially, most companies have not yet operationalized ESG. ADL research shows that only half of surveyed companies have modified how they manage their organization, and just 8% have changed their business models.¹ The clock is ticking — companies need to embed ESG across business operations, moving beyond compliance. It must be an integral part of overall strategy with a shared understanding and common language across the organization.

¹ Milanese, Stefano, et al. “Overcoming the Challenges to Sustainability.” Arthur D. Little Report, July 2022.

Cultures and incentives must change and put ESG first, creating economically sustainable business models. Despite current uncertainty around the speed of change required, stakeholder pressure, and technology readiness, organizations must make the right decisions and invest now to safeguard their (and the world's) future.

BEST PRACTICE CONSULTANCY TO ACCELERATE ESG PROGRESS

ADL has been at the forefront of ESG consulting for many decades, helping clients and organizations understand and meet sustainability imperatives. This collection of articles provides a holistic view of ESG, illustrating the scale of the challenge — and exploring how and why organizations must act now to unlock opportunities across their wider ecosystems.

Moving from talk to action

We start by looking to understand where organizations currently find themselves. ADL recent research looks at organizational maturity when it comes to integrating sustainability into business models. Today's picture is of a business world in transition, struggling to “walk the talk” when it comes to sustainability. According to our research, while 80% had a sustainability strategy in place, just 29% felt it was understood across the organization. No wonder that 27% said their strategy had no impact on the company. Chapter 1 outlines these research findings, providing concrete examples of how to drive effective, fast change around ESG — and walking the talk on corporate sustainability. How are companies progressing in embedding sustainability into their strategy, governance, and organization?

Predicting the future with sustainability scenario planning

A major factor that holds back ESG decision-making is its sheer complexity and lack of clarity. It is difficult to understand or predict the pace of change, the adoption of regulations across the globe, or technology maturity — all against a backdrop of potentially long implementation timescales for new plants and processes.

Complexity must not be an excuse for inaction. It simply increases risks and means that competitive opportunities are overlooked. Many “no regret” decisions can and must be taken now, however the future evolves. Undertaking robust sustainability scenario planning exercises is key to understanding and predicting the future. Chapter 2 explains how organizations can use this technique to successfully model the possibilities and uncover and seize opportunities before competitors.

Financing the transition

It is estimated that it will require US \$12-\$20 trillion in investment to be net zero by 2050, 70% of which will come from the private sector. Despite short-term disruptions, such as the war in Ukraine, the long-term importance of sustainability investing to financial markets is still growing strongly.

Financing the transition to an ESG world requires transformation within the banking sector. It needs to step up and become the driver of green change, using its position to influence customers and ecosystems to achieve a sustainable future. Customers are increasingly looking for financial services companies to both improve their sustainability performance and offer the right products to help them transition.

Chapter 3 explains how financial services companies need to radically change themselves to seize the opportunity of financing ESG, including the key areas to focus on moving forward.

Take an ecosystem approach & look across the supply chain

Consumers and regulators increasingly hold companies to account for ESG performance across their entire supply chain. That means organizations need to clearly understand and manage risks such as:

- Scope 3 emissions
- Working practices of suppliers when it comes to pay, conditions, and child labor, particularly in sectors such as fashion
- Sourcing of materials, whether rare earth minerals used in batteries and consumer electronics or cotton within clothing

At the same time, the only way to solve ESG challenges is to take an ecosystem approach, based on adopting a more open, collaborative culture and mindset. Organizations need to partner across their supply chains to understand, monitor, and increase ESG progress, breaking down barriers and sharing data. But what are the boundaries of these new ecosystems? And who do you need to partner with? How do you position yourself to capture your fair share of the profit pool within the ecosystem? Chapter 4 outlines the risks and opportunities around managing sustainability in the supply chain.

The pressing need to build a circular economy

Globally, humanity uses around 1.8x the biological resources that Earth regenerates during the entire year.² We need to build circular economies to narrow and eradicate this gap through greater recycling (particularly of rare/difficult-to-source materials), reducing waste from end-of-life products, making fewer new products, and therefore lowering production emissions — all while meeting increasingly stringent regulatory requirements. The battery industry is a perfect example of where embracing the circular economy is vital. Production is growing rapidly due to the rise of electric vehicles and use of batteries for energy storage. Batteries have a finite life and are costly to produce, requiring many rare/expensive materials from across the globe. Dumping them increases pollution and poses major risks to public health. Regulations are consequently coming into force to mandate recycling, assigning clear responsibilities to producers and OEMs.

All this delivers opportunities across the ecosystem. Chapter 5 maps the emerging European circular economy for batteries and how players can become involved.

² "How Many Earths? How Many Countries?" Earth Overshoot Day, accessed May 2023.

The ESG lessons for vertical markets — Mobility & banking

We close our collection with two pieces that focus on specific vertical markets and how they can successfully seize the opportunities around ESG.

In the mobility sector, transport providers must meet three, sometimes conflicting, risks and become more:

- 1. Sustainable** — demonstrating a positive impact on society by widening access to transport as well as delivering on environmental requirements
- 2. Efficient** — maximizing usage of ageing, capital-intensive assets
- 3. Resilient** — when facing threats that range from extreme weather to supply chain collapses

Chapter 6 sets out a framework for managing these three risks in a holistic way to meet all goals.

Finally, in finance, for too long ESG has been seen as a compliance risk, rather than an opportunity. It is time for a shift in mindset to embrace the potential it brings. Chapter 7 therefore explains how greening finance and focusing on economic as well as ESG factors drives innovation and opens up significant revenues for banks.

Time is running out to take effective action around ESG. As this collection outlines, organizations across all sectors need to act now, innovate, and embrace the opportunities if they are to differentiate themselves in a fast-changing world.

WALKING THE TALK

ON CORPORATE SUSTAINABILITY

AUTHORS

Stefano Milanese, Stefano Decadri, Martijn Eikelenboom, Frederik van Oene

The COP26 summit saw progress in some areas and disappointment in others. The agreement seeks to keep the hope of maintaining temperature rise within 1.5C alive by inviting countries to submit new plans. However, it seems clear that reliance on national governments and supranational organizations alone will not be enough. Business has a crucial role to play, accounting for some two-thirds of global greenhouse gas emissions.¹ Most businesses in the developed economies have already taken at least some measures, however limited, to reduce carbon footprints in the last 20 to 30 years. Today the pace of action within businesses is rapidly accelerating — though some observers would criticize business for achieving too little, too late.

In the last edition of Prism (second semester 2021), we published an article on why corporate sustainability was now genuinely at the top of the business agenda, and how a partner ecosystem-based approach was key. (Refer to “Corporate Sustainability — Using Your Ecosystem to Sustain the Ecosystem,” Prism S2 2021.) Undoubtedly, we are seeing a new level of activity, driven by a combination of increased customer awareness and demand, developing government policies, rising emission costs, technological progress and plentiful green finance.²

¹ World Resources Institute, 2020, excluding agriculture, residential, waste.

² See also: “Actively Shaping the Future — The New Imperative for Financial Services” in this Report and “Growth in a Net Zero World” in Prism S1 2021.

Yet despite the new impetus, skepticism about the ability of business to deliver on its promises remains. For example, Al Gore wrote in his 2021 Sustainability Trends Report that there “remains a yawning gap between long-term climate goals and near-term action plans.” National consumer protection authorities (source: Bloomberg, GIM) estimate that 42 percent of environmental claims have been “exaggerated, false or deceptive,” and might even violate fair practice rules established by the European Union. Separately, data from Climate Action 100+ shows that about 53 percent of the 159 companies it tracks — which include the world’s largest emitters of greenhouse gases — don’t have appropriate short-term targets for Net Zero emissions.

NATIONAL CONSUMER PROTECTION AUTHORITIES (SOURCE: BLOOMBERG, GIM) ESTIMATE THAT 42 PERCENT OF ENVIRONMENTAL CLAIMS HAVE BEEN “EXAGGERATED, FALSE OR DECEPTIVE”

Is this criticism fair? Behind all the public messages, to what extent is business really “walking the talk” on sustainability? In this article we consider how companies are progressing in embedding sustainability into their strategy, governance and organization. Drawing on the results of a recent Arthur D. Little company survey on this topic, we look at some of the main challenges that companies are facing and how they can be best overcome.

HIGHLIGHTS AND LESSONS FROM THE SURVEY

In the third quarter of 2021, ADL conducted an anonymous questionnaire-based survey focusing on the degree of integration of sustainability into business models and organizations across more than 85 large and medium-sized companies. The coverage was pan-sector and pan-geography, although with a stronger focus on Europe-based organizations. Some 40 percent of companies come from the process industries (the chemicals, construction, industrial goods & services and oil & gas sectors).

1. COMPANY EMPLOYEES STILL DO NOT UNDERSTAND SUSTAINABILITY STRATEGIES WELL

By now there are few companies of any size that do not have any sustainability strategy at all. However, it’s one thing to have a strategy, and another to translate it into action. One of the most common challenges companies face is that sustainability strategies are not well understood by employees. For example, our survey indicated that less than one-third of companies had a sustainability strategy whose impact was clear to all employees (see Figure 1).

HOW MATURE IS YOUR COMPANY'S SUSTAINABILITY STRATEGY?



Figure 1. Maturity of sustainability strategy

The main reason for this lack of understanding is that companies struggle to create a common language on sustainability across the entire organization, in a way that conveys to employees across different functions and levels what it means for the business day to day.

This is also evident in the fairly limited extent to which sustainability strategy has affected the core business of the companies in our survey (see Figure 2).

HOW MUCH DOES THE SUSTAINABILITY STRATEGY AFFECT YOUR COMPANY?

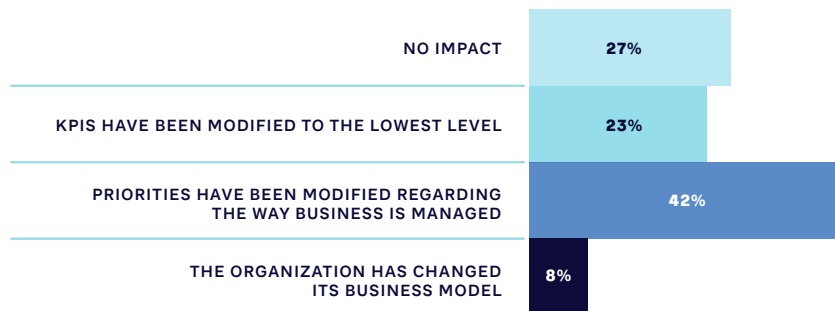


Figure 2. Impact of sustainability strategy

It can be seen that less than half (42 percent) of the companies have modified their ways of managing the business as a result of implementing a sustainability strategy, and only 8 percent have gone as far as actually changing their business model. Only one-quarter have modified their full range of key performance indicators (KPIs).

Lessons learned — Create a common language through adopting better tools to define sustainability performance

So, what approaches have companies taken to help create a common language that employees understand? Some sustainability leaders have tackled this problem by implementing approaches and tools to define and measure sustainability performance transparently at the product and portfolio level. For example, the chemicals and materials industry has created an accepted global industry standard for conducting portfolio sustainability assessments (PSAs), using a set

LESS THAN HALF (42 PERCENT) OF THE COMPANIES HAVE MODIFIED THEIR WAYS OF MANAGING THE BUSINESS AS A RESULT OF IMPLEMENTING A SUSTAINABILITY STRATEGY

of tools developed by the World Business Council for Sustainable Development, with assistance from ADL. This approach allows an objective assessment of the sustainability performance of a product in a specific application and/or region. This is invaluable for creating alignment on sustainability in

very practical terms, both internally across the staff and externally to other stakeholders. It also forms the basis for focused dialogues with suppliers and customers on how to collaborate better to jointly improve sustainability performance. In this way it highlights potential risks, but also substantially contributes to innovation.

Once the language is understood and shared, it becomes much easier to demonstrate how good sustainability management creates business value, for example, through improved customer satisfaction, reduction of product portfolio risk, boosting of activities with an excellent sustainability rating, better focus of R&D and CAPEX investments, and timely adaptation of supply chains.

2. SUSTAINABILITY COMMITMENTS ARE NOT GETTING THE SAME PRIORITY AS OTHER BUSINESS OBJECTIVES

One of the clearest indicators of the extent to which sustainability is embedded into the business is how it is reflected in senior management incentives and bonuses. Our survey showed that nearly two-thirds (65 percent) of companies did not link sustainability performance to senior management incentives. A very small minority (6 percent) reflected sustainability in terms of 15 percent or more of the managerial bonus (see Figure 3).

ARE SENIOR MANAGEMENT’S INCENTIVES LINKED TO SUSTAINABILITY PERFORMANCE?

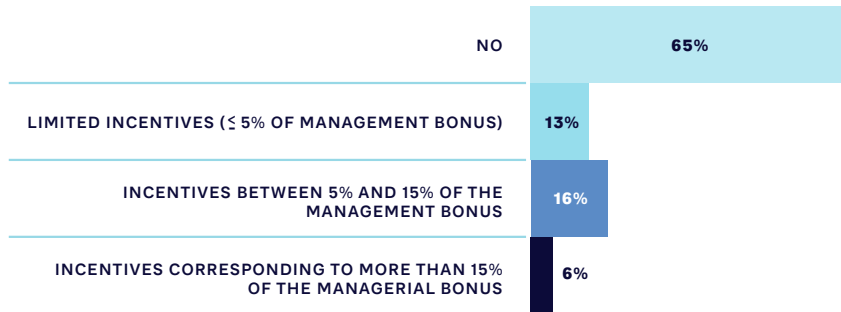


Figure 3. Linkage of sustainability to incentives

What’s more, many companies have a bonus system that involves some form of cascade from senior management down to employees. Influencing employees and changing culture, which is key for success, is not easy unless incentives are properly aligned across multiple levels in the hierarchy. Of course, not every company needs to have a significant part of executive bonuses linked to sustainability performance. Businesses are diverse, and some sectors have an innately bigger sustainability impact than others — for example, companies that offer services generally have a lower impact than those that make or process things.

The way in which sustainability performance is reported publicly is also an indicator of its perceived importance to the business (see Figure 4).

IS YOUR COMPANY’S SUSTAINABILITY REPORT SUBJECTED TO THE SAME RIGOR AS YOUR FINANCIAL REPORTS?

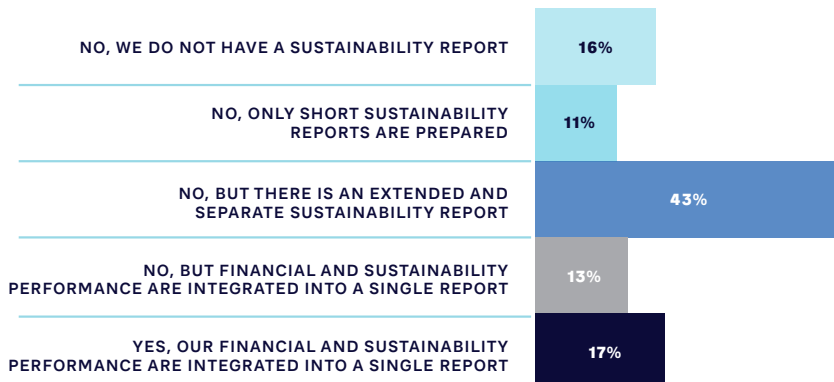


Figure 4. Sustainability reporting

Figure 4 shows that although 84 percent of companies have a sustainability report, only 17 percent use the same reporting rigor as they do for financial performance and integrate it into a single report. This reflects the current reality that financial reporting of sustainability impacts is still in the development phase. For example, few corporations have yet properly adopted financial models that incorporate new ways of accounting for externalities, such as social return on investment (SROI) and creating shared value (CSV) models. This is starting to change as shareholders and investors become more sophisticated in their consideration of environmental and social governance (ESG) issues, but there is still some way to go. A further challenge is that financial results are generally reported monthly, quarterly and annually, yet the benefits of good sustainability often manifest themselves over a much longer period.

Lessons learned — Develop a carefully balanced set of sustainability indicators to be reflected in senior management incentives and external reports

The relatively limited adoption of linkages between sustainability performance and incentives shown in the survey is, to some degree, a reflection of the difficulty of selecting meaningful and appropriate indicators. For example, some ESG criteria, such as stakeholder impact or employee engagement, are difficult to measure in practice. Others, such as progress towards Net Zero impact, are not only hard to measure, but may also be too long term to be meaningful for an annual remuneration package. A recent study from the Executive Remuneration Center of the Vlerick Business School concluded that ESG criteria in board incentive structures were often poorly defined, with the result that targeted progress in sustainability performance was not achieved. Companies should therefore work towards developing and reporting on a balanced set of indicators suitable for their business, taking into account some important principles, for example:

- Reflect short-term ESG goals in incentives, not just over-arching long-term goals. (See also section 3 below.)
- Ensure that any ESG goals set for remuneration purposes are properly reflected in the corporate strategy, not just add-ons.
- Consider realistic sustainability impacts along the entire supply chain, not just within the company boundaries, taking a broad stakeholder view. (See also section 4 below.)
- Consider more than just one dimension of ESG impact, for example, not just climate change, but also waste, energy, diversity and inclusion, etc.
- Balance lagging impact measures (such as emissions) with leading proactive measures (such as controls implemented).

Corporate governance has an important role to play in this respect — the board is often in a better position to take a longer perspective in the broader interests of shareholders than the executive.

3. THERE IS OFTEN A LACK OF PRACTICAL PLANNING AROUND HOW TO ACHIEVE PUBLICLY DECLARED SUSTAINABILITY GOALS

While ambitious long-term targets and goals are often publicly declared, there is frequently a lack of practical planning around what these goals mean in the short and medium term (see Figure 5).

HAS YOUR COMPANY QUANTIFIED SUSTAINABILITY GOALS FOR THE FUTURE?

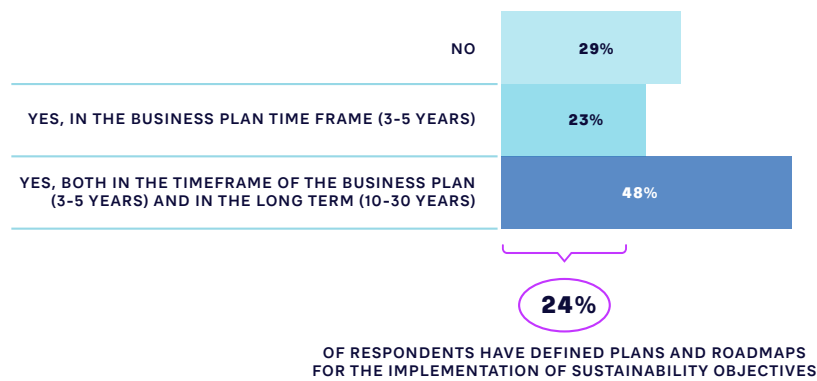


Figure 5. Sustainability goals and planning

Less than half (48 percent) of the companies in the survey have set sustainability goals that include both the normal three-to-five-year planning horizon and the longer-term goal of 10–30 years. Only 24 percent have structured plans, roadmaps and milestones to achieve the goals. Nearly one-third have set no goals at all.

Setting ambitious sustainability goals and communicating these to stakeholders can be risky if not backed up by a robust strategy and implementation roadmap. There are many examples of companies having to rapidly implement painful internal processes — including divestments — to reassure stakeholders when previously declared targets are not met. At the other end of the scale, some companies adopt a policy of simply reflecting legal obligations, for example, “Net Zero by 2050” for Europe-based companies, which may not be enough to drive the necessary changes.

Lessons learned — Ensure that long-term goals are supported by meaningful roadmaps

To avoid these problems, companies need to ensure that five-year-plus goals are supported by meaningful roadmaps with intermediate short-term goals and actions. Just as importantly, there needs to be a defined and agreed process for monitoring progress versus these goals. This can be more complex than some companies expect.

Danone is a good example of a company that has a well-structured set of sustainability goals. Danone is committed to a sustainable shared value creation model: “One Planet. One Health.” Its set of nine long-term goals aligns with both this internal model and the United Nations 2030 Sustainable Development Goals. There is integration also with Danone’s broader business, brand and trust models. The

goals are monitored yearly by a company dashboard, with results also communicated externally.

A SURVEY CONFIRMED THAT VIRTUALLY ALL COMPANIES (APPROXIMATELY 80 PERCENT) BELIEVE THAT SUSTAINABILITY IS, AS WELL AS BEING CRITICAL FOR OUR SURVIVAL, GOOD BUSINESS

Another example is IKEA, whose sustainability ambitions for 2030 are to become circular and climate positive, regenerate resources while growing the IKEA business, and create positive social impact for everyone across the company’s

value chain. These ambitions are supported by the IKEA People & Planet Positive strategy, which has a long-term roadmap for positive change entailing investments in new technologies, innovative materials, and ways of generating clean energy, as well as in social development.

4. NEARLY ALL COMPANIES BELIEVE GOOD SUSTAINABILITY IS BENEFICIAL TO THE BUSINESS, BUT MANY STILL STRUGGLE TO DRIVE CHANGE

Despite the patchy progress in dealing with the challenges of sustainability after many years, even decades, it would be wrong to conclude that business simply lacks true commitment. For the most part, company leaders are smart individuals who are strongly motivated to “do the right thing” for their stakeholders. For example, the survey confirmed that virtually all companies (approximately 80 percent) believe that sustainability is, as well as being critical for our survival, good business, providing competitive advantage and improving attractiveness to both employees and investors (see Figure 6).

HOW MUCH DO YOU AGREE WITH THE FOLLOWING STATEMENTS



Figure 6. Benefits of sustainability

However, the survey also showed that only 45 percent believe good sustainability improves financial results. This is very much connected with the difficulty of reporting the financial impact of sustainability in a meaningful way, as already discussed in point 2 above.

Lessons learned — Focus on people and take a broad stakeholder ecosystem view

There is no simple solution to the problem of translating motivation into change. It requires attention across all the aspects mentioned above, including strategy, governance, planning, organization, monitoring and reporting. However, one underlying priority that helps ensure success is to focus on people, not just inside the company, but across the whole stakeholder ecosystem.

As with any major change, it is ultimately the behaviors of people that will determine what actually happens. This requires not only implementing new systems and processes, but also providing the right training and coaching in what sustainability means for business managers and winning “hearts and minds” through inspiring initiatives, clear communication and leadership by example. As we have said, one of the keys to inspiring employees is to deal with sustainability in an open way as an integral part of the success of the business, rather than as an obligatory set of attitudes or form of corporate political correctness. As with all forms of change, approaches that “pull” people to behave differently, for example, through shared beliefs and values and aligned incentives, are much more effective than those that seek only to “push” them through imposing new rules and restrictions.

In working on changing people, it is critically important to take a broad “partner ecosystem” perspective. This was covered in depth in our previous Prism article, “Corporate Sustainability — Using Your Ecosystem to Sustain the Ecosystem” The ecosystem approach means engaging not just with employees and shareholders, but also with suppliers, customers, competitors, government, regulators,

THE ECOSYSTEM APPROACH MEANS ENGAGING NOT JUST WITH EMPLOYEES AND SHAREHOLDERS, BUT ALSO WITH SUPPLIERS, CUSTOMERS, COMPETITORS, GOVERNMENT, REGULATORS, COMMUNITIES AND START-UPS, AMONG OTHERS

communities and start-ups, among others.

Sustainability is only meaningful when considered in terms of overall impact, which is also key for effective external sustainability measuring and reporting. Companies need to do more than simply adopt one of the many publicly

available reporting protocols. Instead, they need to understand better how their impacts take place within the ecosystem, learn from their partners, and design a monitoring and reporting system that is feasible and realistic. Employees who understand the position of their company in the ecosystem, and who are surrounded by like-minded individuals both inside and outside the company, are more likely to buy into sustainability goals and contribute positively.

The ecosystem approach also helps to leverage innovation in sustainability. One typical example among many is the Italian start-up ACBC (standing for “Anything Can Be Changed”), which collaborates with global brands such as Emporio Armani, Save the Duck, Philippe Model and Missoni to produce sneakers designed for the lowest-possible carbon footprint using bio-based or 100 percent recycled materials.

Small companies, especially, often struggle on their own to make the necessary investment of time and money to embed sustainability, yet collectively their impact is significant. Being part of a partner ecosystem, either through direct links to larger corporates or through industry or professional associations, can make a big difference.

INSIGHTS FOR THE EXECUTIVE

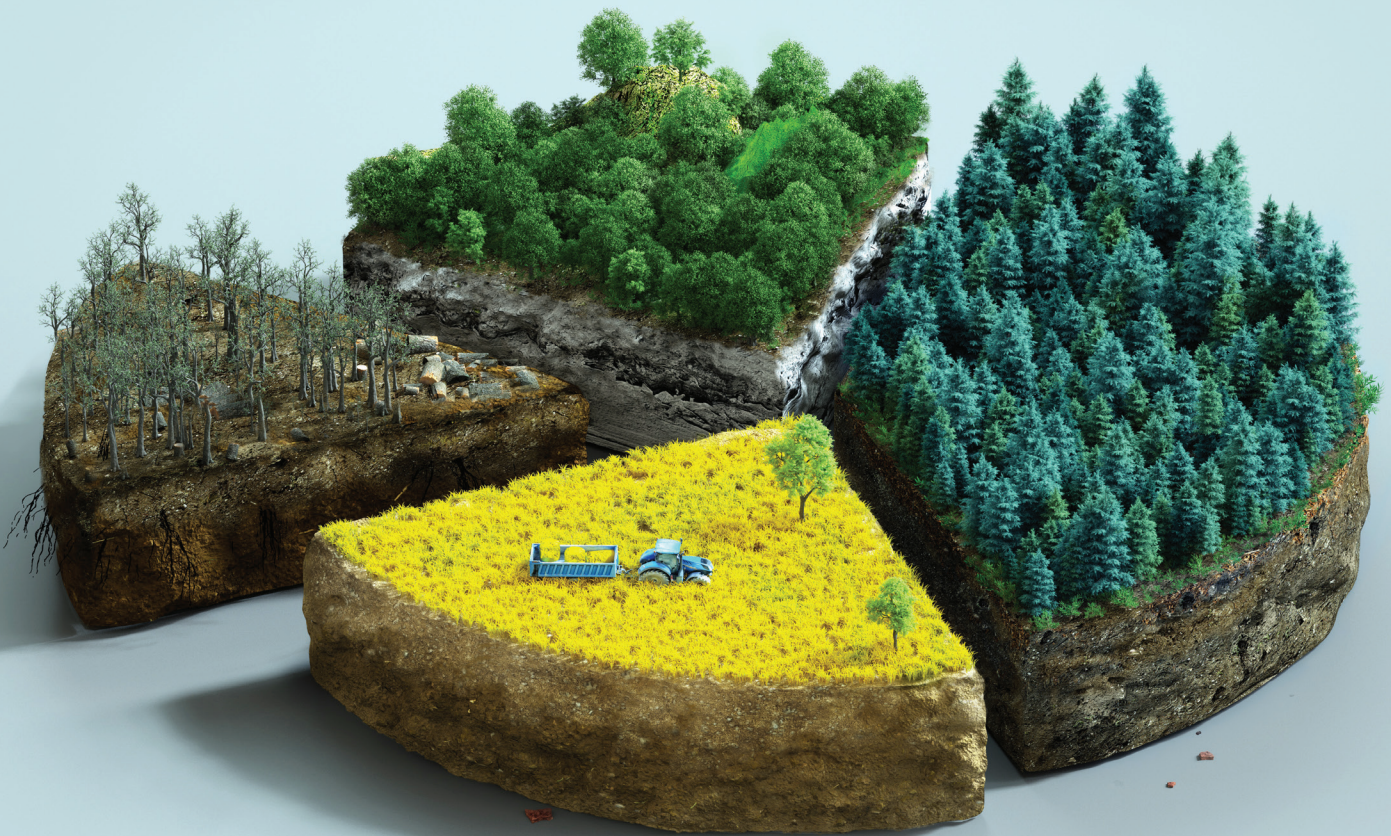
Despite the progress that has been made in many parts of the business world, the evidence from the survey confirms that many companies still have some way to go before they can properly “walk the talk” on sustainability.

Yet, in most cases, this is not simply due to a lack of motivation or sincerity on the part of company leadership teams. Rather, it is due to the inherent challenges of truly embedding sustainability into core business. These are, for the most part, practical challenges, such as how to measure and account for sustainability impacts and benefits (i.e., externalities) on equal terms with financial impacts and benefits, how to properly assess overall impacts both downstream and upstream, how to connect long-term goals with short-term targets, and how to engage properly with people both internally and across a wide stakeholder ecosystem.

However, in all these areas there is recent progress. Increasingly, the legal framework is providing the necessary underpinning for companies to make the sometimes-drastic transformations that are required. The financial sector is already being transformed in terms of growing insistence on responsible investment, and green funding is available at levels never seen before. Advances in green technology continue apace, and there is finally evidence of a genuine shift in consumer demand for sustainable products and services.

The need for embedding sustainability is therefore increasingly urgent. Companies should take heed of the key lessons learned from the leaders, including finding a common and transparent language, adopting the right indicators and making them really count, adopting realistic goals and effective ways to measure progress against them, and above all, focusing on people and adopting a stakeholder ecosystem perspective.

NAVIGATING THE SUSTAINABILITY JOURNEY



— A NEW SCENARIO-BASED
APPROACH TO
DECISION-MAKING

AUTHORS

Dr. Michael Kolk, Martijn Eikelenboom, Lina Lukoseviciute,
Johan Treutiger

Sustainability is one of the few topics that is high on the agenda across all companies, sectors, and countries. Eighty percent of companies in a recent global ADL study¹ had a sustainability strategy in place, and a further 12 percent were developing one.

Ninety-nine percent of CEOs surveyed by the United Nations said it was important for their business. However, recent economic developments, the COVID-19 pandemic, supply chain disruptions, and the energy crisis have all made it difficult for companies and consumers to prioritize sustainability. In addition, recognizing something as very important does not automatically drive urgent action. In a complex world with multiple players, understanding what to do NOW is not straightforward, particularly as regulations, technology, standards and expectations are still developing or uncertain. For example, just 18 percent of CEOs in the United Nations' study² felt that governments and policymakers had given them the clarity needed to meet their sustainability goals.

All of this means that companies, especially those operating globally, struggle to reach consensus among key stakeholders on what is important and what requires urgent investment to ensure business continuity and capture strategic opportunities. How can CEOs understand what are the most important and urgent actions and "no regret" decisions to take now, irrespective of what will change in the future?

As this article explains and illustrates, one answer is to adopt updated, more data-driven, scenario-based planning methodologies, focusing on complex local and international sustainability factors and their interdependencies (such as technology developments, local and international legislation, or NGO pressure). These give the clarity and confidence business leaders need to take the right short-term decisions, without jeopardizing their mid- to long-term sustainability journey.

1 Milanese, Stefano, et al. "Overcoming the Challenges to Sustainability" Arthur D. Little Report, July 2022.

2 United Nations Global Compact.

THE DIFFICULTY OF MAKING SUSTAINABILITY-BASED STRATEGIC CHOICES

While the vast majority of larger companies state that they have a sustainability strategy, far fewer position it as part of the core of their strategy that guides actual investment decisions. Often, change only happens when market and regulatory pressure delivers a “burning platform” moment, such as in the automotive sector, which faces bans on the sale of new internal combustion engine (ICE) vehicles in many countries, beginning in Norway in 2025.

This opens incumbents to the risk of challenges from new, sustainability-first competitors, or even of being driven out of business altogether. For example, Volvo Cars’ former CEO, Håkan Samuelsson, stated in October 2014 that fully electric cars were “not something we believe in.” Less than seven years later, in March 2021, Samuelsson announced that Volvo Cars would only sell electric cars by 2030, significantly behind first mover Tesla.

Aside from current economic and geopolitical turmoil, a range of factors act as obstacles to progress on sustainability (see Figure 1). These include:

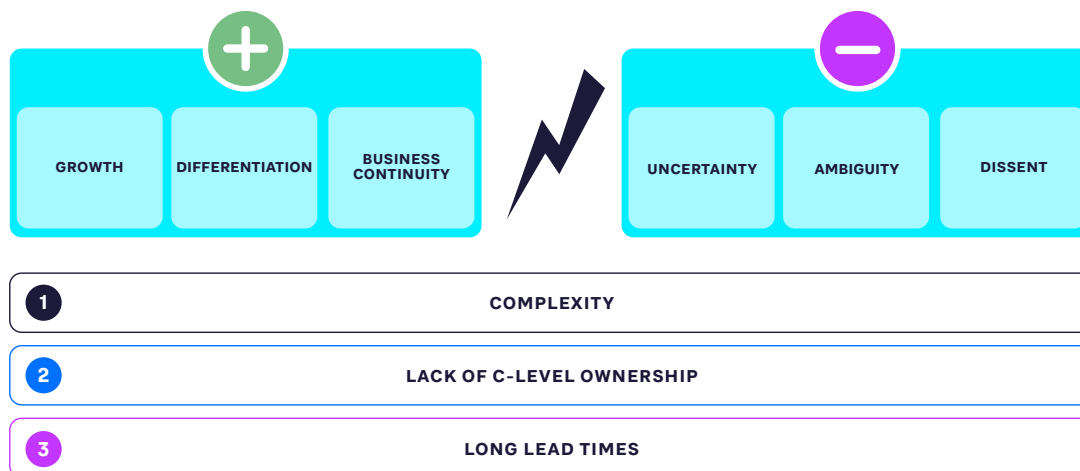


Figure 1. What makes decision-making in sustainability-driven transformation difficult?

1. **Complexity.** There are generally very good reasons to “go green”: it can serve as a new growth engine, help differentiate your products, and even be critical for the longer-term survival of the company. However, individual business cases for green initiatives, such as to start a large R&D program, acquire a greener technology, or build a new plant, can be fraught with uncertainty. (For example, will new technology around carbon capture really take off, and can we access enough green raw material at the right price?) Ambiguity can further confuse the case for change: will customers really be paying a green premium, and are we even clear on what we regard as

“sustainable”? To make matters worse, there is often a great deal of dissent between internal stakeholders. Some may question the projected pace of change in consumer preferences, or of political willingness to move ahead as economic concerns grow. Others may see proposed green investments as a threat to their own business.

2. Lack of C-level ownership. As any CEO can attest, it is not easy to drive change that truly “moves the needle” in large companies. Innovative products can be launched, and new technologies and ways of working implemented, but without executive decision-making and follow-up, a company will remain largely the same tomorrow as it was yesterday. This is why company-critical issues are generally owned by C-suite executives: CEO, CFO, COO, and so on. It is therefore surprising that few companies have a chief

THERE ARE GENERALLY VERY GOOD REASONS TO “GO GREEN”: IT CAN SERVE AS A NEW GROWTH ENGINE, HELP DIFFERENTIATE YOUR PRODUCTS, AND EVEN BE CRITICAL FOR THE LONGER-TERM SURVIVAL OF THE COMPANY

sustainability officer or comparable role represented in the boardroom, someone who brings understanding across functional domains and the authority to act across organizational departments. We believe this is a real problem for many companies. It is made clear from the authoritative reports on sustainability

(such as those from the International Energy Agency [IEA] and the Intergovernmental Panel on Climate Change [IPCC]) that the world and the business environment will be turned upside down for most industry sectors, and company transformation will need to accelerate significantly. Making the right far-reaching decisions in a highly complicated and dynamic environment is often fiendishly difficult, but in most companies, the accountability for informed decision-making around sustainability is scattered at best.

3. Long lead times. While most business leaders today would agree that sustainability trends are accelerating, they could still take a long time to become truly inescapable. Decarbonizing and circularizing entire supply chains, particularly in globalized industries, is an extremely complex process that will take many years, if not decades. Developing new technologies to the required robustness and economic viability is similarly time consuming, as development of fuel cells, for instance, clearly shows. All this in itself would not be such a problem if not for the fact that most companies are only good at making decisions whose “time to business impact” runs in years, not a decade or more. It takes a high degree of conviction and stakeholder alignment to make far-reaching decisions that will solve issues that have yet to fully materialize and will take many years before fully paying off. As a result, such decisions are all too often postponed or watered down. They are strategically important, but not seen as urgent.

Clearly, companies need to find new ways to address and overcome these challenges if they are to both hit medium- to long-term sustainability targets and ensure competitiveness as they move forward.

A NEW APPROACH TO SCENARIO-BASED PLANNING FOR SUSTAINABILITY

Scenario-based thinking and planning have been proven approaches for many decades to manage uncertainties and understand trade-offs. Through detailed research, they aim to provide a range of realistic, coherent possible future scenarios based on available information, and then use this to drive more informed decision-making. They enable organizations to monitor, plan and shape their potential futures, providing actionable insights and timelines for the speed and depth of change.

However, traditional scenario planning has its limitations. Often, it remains solely a research exercise that is not then turned into action. If it is used, general business planning typically picks the mid-case for decision-making and budgeting and ignores the other findings.

Working with clients, ADL has successfully trialed a new approach that builds on conventional scenario development approaches, but is tailored to the specific requirements around sustainability decision-making.

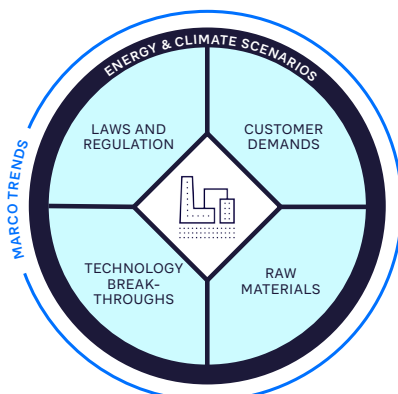
As shown in Figure 2, the sustainability scenario approach differs from others primarily in its focus on **understanding the implications of sustainability drivers for management decision-making at a much more granular business portfolio/regional level, including the question of timing and urgency.**

SCENARIO TIME HORIZONS	GREATER DETAIL DEVELOPED FOR SCENARIOS AT RELEVANT TIME HORIZONS FOR STRATEGIC PLANNING , E.G., 5-10 YEARS RATHER THAN 10-20 YEARS
IMPACTS	ASSESSED AT A MORE GRANULAR BUSINESS PORTFOLIO/ PRODUCT SEGMENT/REGIONAL LEVEL , RATHER THAN ONLY AT AN OVERALL STRATEGIC LEVEL
URGENCY	SPECIFICALLY ADDRESSED FOR EACH STRATEGIC RESPONSE BY CONSIDERING RELATIVELY PREDICTABLE FACTORS (SUCH AS NEW LEGISLATION), AS WELL AS THE CONSEQUENCES OF "DO NOTHING"
DECISION-MAKING	DISCRETE DECISIONS RECOMMENDED, INCLUDING SCENARIO-INDEPENDENT "NO-REGRET" ACTIONS, AS WELL AS EVENT-DEPENDENT DECISIONS TO BE MADE IN THE FUTURE

Figure 2. How the sustainability scenario approach differs from conventional scenario planning

The approach involves four main stages, as shown in Figure 3.

1. SUSTAINABILITY SCENARIOS

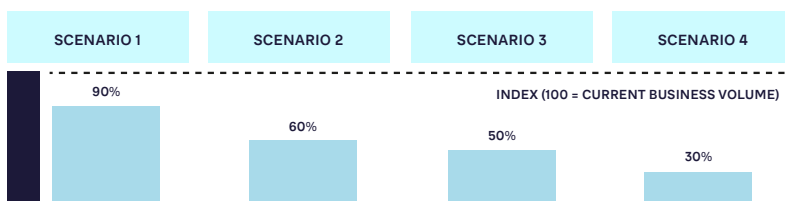


2. COMPETITIVE POSITION

INDUSTRY X	COMPETITIVE POSITION			
BUSINESS SEGMENT	TECHNICAL PERFORMANCE	COST	CARBON FOOTPRINT	CIRCULARITY
1. <i>Building</i>	ON PAR	COST	COST	COST
2. <i>Residential</i>	ON PAR	COST	COST	COST
3. <i>Industrial</i>	ON PAR	COST	COST	COST
4. <i>Commercial</i>	ON PAR	COST	COST	COST

COST
ON PAR
SIGNIFICANTLY HIGHER

3. SCENARIO IMPACT (2035)



4. NO-REGRET DECISIONS

PURCHASING/SOURCING	BUY	MAKE	PARTNER	
ASSETS/OPERATIONS	EXPAND	CLOSE	REFURBISH	
PORTFOLIO	DIFFERENTIATE	FIX	EXIT	EXPLOIT
R&D	ACQUIRE	PARTNER	DEVELOP	
ORGANIZATION	GOVERNANCE	IT	LEGAL	

Figure 3. The approach, from scenarios to business impact to decision-making (illustrative examples)

1. SUSTAINABILITY SCENARIOS

The most important requirement in scenario development is for scenarios to be individually meaningful and plausible, as well as collectively exhaustive. Meaningfulness and plausibility can be achieved by starting from wider macro trends (such as global demographics) using reputable sources such as the World Bank and the United Nations. Within those “macro-constraints,” we can then position the wider energy and climate scenarios (such as around the use of renewables and stated government goals) as produced by the IEA and IPCC.

We then consider all sustainability factors and trends that impact specific industry scenarios across different end markets and regions, such as regulation, customer demand, technology breakthroughs, and the availability of required sustainable materials, which is

THE MOST IMPORTANT REQUIREMENT IN SCENARIO DEVELOPMENT IS FOR SCENARIOS TO BE INDIVIDUALLY MEANINGFUL AND PLAUSIBLE, AS WELL AS COLLECTIVELY EXHAUSTIVE

increasingly becoming critical. These factors need to be characterized by defining what might be their credible extreme projections within a relevant, realistic timeframe, such as from today to 2035. For example, costs of CO₂ emissions could rise well above today’s levels,

but the EIA regards it as unlikely that they will structurally exceed USD 160–170/t by 2035. Similarly, we might expect economically viable breakthrough technologies to emerge, but wide application may still be constrained by economic limitations.

One always-present scenario that deserves specific attention represents continuation of today’s situation (called “Scenario 1” in Figure 3). The point here is that even if sustainability trends stall over the coming years, the world will experience continued and worsening reminders of the importance of fighting climate change. In our view, this means whatever urgency is allocated to sustainability by governments and the market today, the world of tomorrow (for example, by 2035) is bound to be meaningfully different from today from a sustainability perspective, regardless of the scenarios that may unfold. This is an important realization because it underlines that “doing nothing” is also a decision that may have significant consequences.

2. COMPETITIVE POSITION

Once sustainability scenarios have been created, they need to be applied across the company and its portfolio of products/markets. A baseline competitiveness assessment evaluates how products and other offerings currently compare to those of competitors in a company’s key business segments. These are evaluated along three axes: cost, technical performance, and sustainability performance, which, in the client example in Figure 3, is broken down into carbon

footprint and circularity performance. This ensures that fact-based and commonly agreed competitive product advantages are considered throughout the analysis and the economic consequences of sustainability actions are transparently considered.

3. SCENARIO IMPACT

Once the sustainability scenarios are defined and described in detail and the company's current competitive position is known, the impact of each scenario on the relevant product and market segments can be assessed, and even quantitatively estimated. Depending also on the region where a certain product category is sold, the "greenness" of a scenario will change the buying criteria in a market and, hence, determine whether it will win or lose against competing products and potential alternative solutions. For example, a technically superior but fossil-based light-weighting solution in the automotive market may benefit from accelerated penetration of electric vehicles (where weight contribution is especially important), but only in regions where its relatively high carbon footprint is not excessively penalized by either regulators or consumers. Where this is the case, that same product may lose against alternatives made from biomass. Taking the analysis to this level of granularity is key to gauge the real impact of tightening sustainability concerns on margins and market shares.

4. NO-REGRET DECISIONS

Based on this detailed assessment of potential impacts, we can identify decisions that would have positive outcomes regardless of how future events unfolded. Every product group and segment may require highly specific actions, but a handful of decision types

BASED ON THIS DETAILED ASSESSMENT OF POTENTIAL IMPACTS, WE CAN IDENTIFY DECISIONS THAT WOULD HAVE POSITIVE OUTCOMES REGARDLESS OF HOW FUTURE EVENTS UNFOLDED

generally emerge if we roll up the scenario impacts across the entire business: such as acquiring more sustainable raw materials and components, making changes to the company's physical (production) assets, modifying its business portfolio (such as by exiting certain segments), starting new R&D programs, and improving supporting

competencies and ways of working in the organization. This allows companies to focus on the few "must-win battles" that apply in each scenario, and be clear on which of those require urgent and specific action (how much and what sustainable materials to source by when, for example, or the specific economic context for a new recycling technology to be developed). This clarity is needed to remove the complexity obstacles mentioned above.

Of course, more action is needed besides identifying urgent actions to take today. C-level ownership should be taken, not just for implementation of immediate actions, but certainly also for follow-up over longer periods of time. The higher degree of scenario definition and more precise understanding of which components will be most

important to the company's success help to define these longer-term actions. They make it possible to track just a handful of measurable and meaningful signpost indicators whose values can be used as early warning signals that something is about to happen, requiring urgent specific further action around which executives are already aligned today. Examples could be important regulatory changes on how the EU will deal with recycling and CO2 emissions, or changes in the market prices of green alternatives.

SUSTAINABILITY SCENARIO DEVELOPMENT AT A GLOBAL MANUFACTURING COMPANY

Manufacturing industries are under increasing regulatory and customer pressure to transition from fossil-based manufacturing to safe and low carbon products that are fully circular. However, in complex, interrelated markets characterized by long-term, large-scale investment decisions, planning this transition is difficult. Working closely with a EUR5bn global manufacturing company, ADL used the sustainability scenario approach outlined in this article to identify, assess and optimize strategic choices around future sustainability-related investments and initiatives.

Together with a large, global, cross-functional team, ADL defined four sustainability scenarios whose characteristics and (future) business implications are now well understood by all stakeholders. Furthermore, around 20 "no regret" decisions were defined and budgeted for, which will deliver competitive advantage under any future scenario, covering "external" (such as sourcing and procurement and partnering). Additional "internal" initiatives were proposed, such as launching new R&D programs on recyclability, enhancing the company's digital infrastructure, and introducing new management KPIs and incentives. By using the approach, the company was able to develop a coherent, practical and evidence-based set of strategic decisions to help realize their sustainability transition goals.

INSIGHTS FOR THE EXECUTIVE — PUTTING SCENARIOS AT THE HEART OF SUSTAINABILITY PLANNING

For executives to have the confidence needed to take the right decisions today that will not jeopardize the longer-term sustainability journey — and gain the consensus of key stakeholders — companies need to adopt a robust, scenario-based approach as outlined in this article. Postponing tough decisions, no matter how important for the company's future, can seem all too attractive in the face of acute economic challenges, especially given the byzantine workings around sustainability trends, opportunities and threats.

The only smart way for companies to move ahead is to boil all this down to urgent and no-regret actions to take at any given moment, starting from today:

- **Start off by defining commonly accepted principles and wisdom**, such as the scenarios developed by the IPCC. Agree on more qualitative assumptions based on experience and common sense.
- **Produce custom scenarios for your business**, using digital tools to analyze dependencies between factors or probabilities and analyzing impacts at the business portfolio and regional levels.
- **Involve all relevant business functions** (commercial, operations, R&D, finance, etc.) to achieve alignment.
- **Make all conclusions actionable**. Monitor, deep dive, and initiate with “if-not-now-then-when” timelines. Define practical signposts linked to key actions.
- **Automate signpost monitoring** wherever and to whatever degree possible, and report through customized management dashboards available by business function.
- **Create ownership at the right level**. Perhaps most importantly, ensure that findings, actions and future follow-up are all “owned” at the right organizational level. Especially in energy- and materials-intensive industry sectors, such ownership should include a (potentially dedicated) C-level executive.

**ACTIVELY
SHAPING
THE FUTURE**

**— THE NEW
IMPERATIVE
FOR FINANCIAL
SERVICES**

AUTHORS

Andreas Buelow, Florian Forst, Raffaella Ritter, Georg von Pförtl

Each and every industry must become greener and more sustainable. However, as a key pillar of the global economy and wider society, the financial services sector is in a unique position. It not only must change how it operates to build sustainable business models, but it also has a crucial role to play in funding and de-risking the transition towards climate neutrality. The financial services sector can become the driver of green change.

Seizing the initiative around sustainability and demonstrating true leadership can transform how the sector is viewed — by consumers, regulators, and existing and potential employees. It provides the opportunity to fundamentally reposition financial services away from being seen as part of the problem, to leading the solution.

The stakes are high. Yet despite the enormous interest in environmental, social and governance (ESG) issues, the majority of financial services organizations are still in a passive, reactive mode. Many see growing green regulatory requirements as a cost to be met, not an opportunity to be grasped. While they trumpet their green credentials, often they achieve this through offsetting existing activities — planting trees, buying CO2 certificates and paying fines, rather than changing their business models.

To remain relevant and achieve competitive advantage, banks, insurers and asset managers need to move from a passive position to become active shapers of the green, sustainable future. Otherwise, traditional players risk being outflanked by new ESG-focused entrants, which is exactly what happened with fintech start-ups during digitization. Time is running out for financial services companies to make this fundamental shift.

How can players make this change and shape a sustainable future for themselves and the planet? In this article we look at how they can rebalance their capabilities, mobilize stakeholders, and move ESG from talk and commitments to concrete, positive action.

THE CURRENT LANDSCAPE

While sustainability is not a new topic, it has gained significant traction in financial services over the last few years, which has moved it center stage, driven by a range of stakeholders including governments and regulators, investors, and clients themselves. At the COP26 conference, a range of initiatives and plans were announced. Over 90 percent of global emissions are now covered by Net Zero commitments. However, this needs to be backed by concrete short- and mid-term action to ensure long-term commitments are met.

This has led to a range of plans, agreements, and frameworks, including:

- **The UN Principles for Responsible Banking (PRB)**. This was created in 2019, and 275 signatories now represent over 45 percent of the global banking system by assets, mobilizing \$2.3 trillion of sustainable finance. Similar sets of principles cover insurance and investment.
- **The Glasgow Financial Alliance for Net Zero (GFANZ)**, which covers more than 400 financial institutions and includes the Net-Zero Banking Alliance (103 banks representing over 44 percent of global banking assets), the Net-Zero Asset Owner Alliance (70 institutional investors with \$10.4 trillion of assets under management) and the Net-Zero Insurance Alliance (over 20 insurers representing more than 11% of world premium volume globally).
- **The Global Alliance for Banking on Values (GABV)**, a network of independent banks using finance to deliver sustainable economic, social and environmental development. It comprises 67 financial institutions operating in 40 countries across the world. Collectively, they serve more than 60 million customers and hold over USD 200 billion in combined assets under management.
- **The UN Environmental Program Finance Initiative (UNEPFI)**, in which 4,000 businesses have committed to aligning their business model to Net Zero by 2050 and the lower 1.5 degree target for global warming.

These bodies all aim to accelerate change through a systemic, comprehensive, science-based, time-bound, measurable, transparent, and immediate approach.

Regulators and supervisory authorities are also increasingly active. For example, the Bank of England has become the first central bank to add green criteria to its corporate bond-buying program,

OVER 90 PERCENT OF GLOBAL EMISSIONS ARE NOW COVERED BY NET ZERO COMMITMENTS. HOWEVER, THIS NEEDS TO BE BACKED BY CONCRETE SHORT- AND MID-TERM ACTION TO ENSURE LONG-TERM COMMITMENTS ARE MET

while the ECB has committed to including ESG considerations in its monetary policy, as well as making ESG a supervisory priority. This increases pressure on financial institutions.

Some progress has been made on both the debt and

equity sides. For example, EUR 358 billion of green bonds were issued between January and September 2021. There are now approximately 4,000 green bonds outstanding, with volume of EUR 1,084 billion — this is 0.9 percent of all outstanding bonds. On the private equity side, firms are increasingly incorporating ESG considerations into their investments, with many ranking it as a top factor in value creation.

However, overall ESG activities have not met targets:

- While 93 percent of PRB members are analyzing the impact of their activities, just 30 percent are setting targets to reduce the effects. Twelve percent have created processes to regularly consult stakeholders.
- Figures from Bloomberg show that in the first nine months of 2021, banks organized USD 459 billion of bonds and loans for the oil, gas and coal sectors, alongside USD 463 billion worth of green bonds and loans.
- While the availability of green finance has expanded, the sums required are immense. The UNEPFI estimates that an additional USD 60 trillion is needed to transition to low carbon, climate-resilient economies by 2050.

Communications and commitments are ahead of activities on the ground. This risks the credibility of financial institutions with stakeholders, and leaves them open to accusations of “greenwashing” and insufficient ESG focus. Additionally, there is a need to take immediate action if commitments are to be delivered — many changes required by 2030/2050 cannot be reached unless work begins now.

There are certainly key challenges that must be overcome:

- Uncertainty over the definition of key terms, leading to guesswork when setting and evaluating strategy.
- The unavailability of quality ESG data across the supply chain to underpin decision-making. For example, while the EBRD is exploring the digitization of green finance, a lack of comprehensive, reliable end-to-end ESG data may hold back progress.
- The absence of market standards when it comes to ESG ratings. For example, comparing the evaluations of different ESG rating providers across major banks shows wide variability between these different providers.
- Missing incentives for financial institutions to focus on ESG while delivering expected shareholder returns.
- A lack of knowledge and skills within banks, exacerbated by the need for a cultural shift to put ESG center stage.

Many of these challenges have been previously faced by other sectors on their ESG journey. However, unlike manufacturers or consumer goods companies, financial services companies don't provide physical products. While they can – and must – achieve Net Zero in terms of their operational footprint, true sustainability requires ensuring that clients and customers are also Net Zero. That means leveraging customer relationships and driving ESG impact by changing their behavior and becoming an internal sparring partner to drive transformation, rather than simply excluding certain industries or clients.

HARNESSING THE OPPORTUNITIES

Shaping the future requires financial services companies to take an ecosystem approach that brings together public, private and third-sector partners. In such a complex environment, everyone needs to

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play a complementary role; however, as in an orchestral performance, it needs to be conducted well for the duration of the concert, with all players displaying commitment and ongoing dedication.

Figure 1 highlights the complexity and diversity of the ecosystems that financial institutions need to play in. These broadly fit into four stakeholder groups, as classified by the UNEPFI:

- The financial institutions themselves, including employees and partners, as well as the wider financial sector
- The real economy, such as customers that access and benefit from financial institutions
- Policymakers and regulators, at both a national and supranational level
- Science and technology providers delivering solutions for sustainability

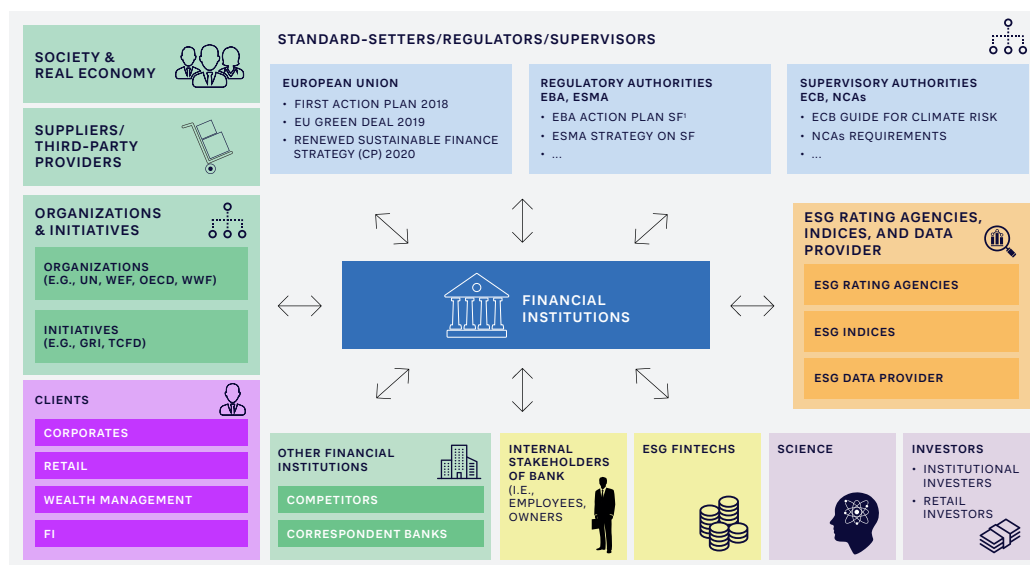


Figure 1. The ecosystem of financial institutions

Achieving success is a long-term process. After the sprint of initial discussions and signing up to commitments, ESG transformation is a marathon.

Senior management in financial institutions therefore needs to focus on transformational change in key areas:

1. Make ESG the board's top priority

ESG is not just an add-on, but also must be an integral part of the business model. It cannot be siloed or delegated to risk or marketing teams. Financial institutions need to build a clear, credible, and holistic sustainable finance strategy. Mind-sets, culture and conduct must change. Led from the top, this strategy needs to establish the business case and define how the organization will position itself from an ESG perspective. This should also set out risk options, as well as show how technology can be used to mitigate these risks.

All of this should be captured in long- and short-term roadmaps for transitioning to a desired ESG state.

2. Prioritize long-term value creation

Ensure that ESG and sustainable finance-oriented strategies and business models prioritize long-term value creation for shareholders and stakeholders, rather than focusing simply on short-term returns for the bank itself. Strategy must be based not on today’s worldview, but on one that will apply in five to 10 years.

It is vital to redefine what success means — moving from measures such as return on equity to look at the bigger picture. Institutions need to adopt a “shared value”-oriented philosophy that takes into account different stakeholders and their needs, as well as incorporating the wider economy and society, remodeling incentives. ESG strategies unlock value drivers that impact the top and bottom line, as Figure 2 demonstrates.

ESG & SUSTAINABLE VALUE DRIVERS (UNIVERSAL BANK)



Figure 2. ESG and sustainable value drivers

3. Take real action now across your ecosystem

“Wait and see” is no longer a viable option, especially if you want to gain any kind of first-mover advantage. Differentiate by making real commitments that go beyond regulatory bare minimums, build well-resourced ESG capabilities, and put in place the frontline processes to ensure you take action to deliver on them. For example, leading banks are remodeling their relationship management programs to better serve client needs through ESG early-warning and opportunity detection systems that increase transparency over their portfolios.

The sheer volume of risk-tolerant, flexible capital required to drive change goes far beyond the capabilities of a single institution or government. New partnerships — in the public, private and philanthropic sectors — will be required, and all sides will need to work together to define sector-specific pathways to Net Zero. For example, HSBC has launched a Climate Solutions Partnership with the World Resources Institute and World Wildlife Fund to finance companies and projects tackling climate change, backed by USD 100 million of philanthropic funding over five years.

4. Actively drive change in corporate and consumer customers

Financial institutions have the opportunity to build a sustainable, diverse future by becoming a transformation partner of the businesses that they invest in and work with. Effective transformation requires close engagement with clients, to the extent of working alongside or inside companies to ensure they become greener and more sustainable. This approach works better than simply dropping certain types of customers because of their historic record on sustainability.

On the consumer side, banks need to educate customers, building their ESG financial literacy so they are actively seeking out and demanding sustainable financial products, and therefore driving change. Institutional investors are already setting strict targets for ESG compliance — banks need to ensure consumers are applying the same pressure if they are to be seen as relevant and on the side of sustainability. This is particularly important given current excess liquidity levels, high inflation and low interest rates, which are destroying monetary value in real terms. Educating consumers to reallocate their savings to ESG products unlocks major new funding opportunities.

5. Engage with regulators and policymakers early

The financial crisis and other misconduct led to not only greater regulation, but also an adversarial relationship between banks and regulators. Rather than fighting, financial institutions should demonstrate why they deserve to be involved in setting – and leading – new ways of driving sustainability forward. This requires openness and a change of mind-set. Taking an active role in shaping sustainability policies will allow banks and regulators to jointly define the future rules of the regulatory game, and help move the needle at a systemic level.

Process and pioneers

As discussed in this article, the vast majority of large financial services companies have made long-term commitments to increasing sustainability. Many have also launched specific initiatives:

- Citi's USD 200 million Impact Fund invests in companies addressing today's biggest societal challenges.
- JPMorgan Chase has set up a Green Economy team to provide dedicated banking services and expertise to companies that produce environmentally friendly goods and services.
- BNP Paribas has created a 250-person Low Carbon Transition Group to support corporate clients and investors in decarbonizing their exposures.
- Deutsche Bank has brought forward its target date for deploying EUR 200 billion in sustainable finance by two years to 2023.

However, as with digital disruption, ESG is providing opportunities for fintech start-ups to focus on specific areas and opportunities. Analyst company Medici lists over 150 ESG fintechs in its latest study, covering areas such as ESG-oriented products and services, impact investing, tech/ratings platforms, and inclusion initiatives such as mobile money.

Examples include:

- **Aspiration** — a US neobank that does not invest customer money into fossil fuel projects. It currently has over 1.5 million customers for its banking service.
- **MioTech** — an AI platform that empowers sustainable finance with ESG data and technology. Investors include Moody's and Horizon Ventures.

While currently there are no ESG gamechangers that have broken through, this state of affairs is unlikely to last. Traditional players that potentially underestimated the likes of trading and banking fintech Revolut (worth more than Deutsche Bank, Japan Post Bank or UniCredit based on its last fundraising), broker app Trade Republic (valued at over USD5 billion) and payment processing provider Stripe (the most valuable venture-backed private company in the US) should not make the same mistake again.

INSIGHTS FOR THE EXECUTIVE

- **Make ESG real. Move from talk to action.** Only then will financial services organizations be able to lead the transformational change that is required to deliver a Net Zero, decarbonized economy and benefit from the opportunities it brings. Failure will open the door to being overtaken by the growing number of ESG start-ups and fintechs, just as slowness to embrace digitization spawned new, disruptive competitors.
- **Make ESG bonuses relevant.** Get buy-in from your people by ensuring that compensation and incentives from the board down have a substantial ESG component in order to support culture and behavior change. KPIs have to be clear, concrete and measurable — and focus on what individuals can actually influence through their daily actions. As well as changing incentives, clearly communicate what you expect of your people when it comes to ESG. Model the right behaviors yourself and roll out a code of conduct that makes a sustainable focus the norm.
- **Create an ESG unit with authority, reporting directly to the CEO.** Set up a dedicated, well-resourced ESG group, located in the CEO's office. It should be given sufficient power, cross-business scope and staffing to make a difference. Task this team with neutrally reviewing all ESG exposures with both existing clients and any new products that are launched or customers that are won. Go beyond external requirements with more detailed internal reporting to give multiple ESG lines of defense and position ESG as a differentiator with external stakeholders.
- **Create a clear plan to stop financing non-ESG-compliant business.** Turn strategy into practice by reviewing the tools, actions, communications and KPIs of all client-facing business units and ensure they reflect your green objectives. Adjust your investment vehicles to make them ESG led in order to gain early-mover advantage. Bring ESG criteria into know-your-customer requirements to minimize any exposure to uncompliant businesses.
- **Make ESG products part of every customer's portfolio.** Educate consumers and businesses that they need to make ESG products central to their financial strategies. Start young — offer products that let children and their parents invest to build and benefit from a greener world. Don't just rely on traditional bankers to create new ESG products and services. Bring in outsiders to work alongside them and drive innovative new products and services that will differentiate you going forward.

- **Stop hiding — be transparent.** There has been a lot of talk about ESG and a backlash against greenwashers (those that are not as green, but try to ride the bandwagon), transition-washers (less advanced in ESG than they communicate) and competency-washers (less expertise than they claim). Commit to full transparency beyond what is required by regulations and take the lead, backed by the right skills, processes and actions.
- **Become a transformation partner.** Ultimately, the only real ESG lever for financial services is to influence clients and their behavior. Move from being on the outside to become an effective internal transformation partner with clients. Only by effectively engaging will customers transform and real ESG impact be delivered.

SUSTAINABILITY IN THE SUPPLY CHAIN: THE RISKS AND THE REWARDS

Supply chain sustainability risk management

Supply chain risk management is a key challenge for many companies and can be plagued by inadequate transparency, difficulty of control, and, in many cases, a lack of trust. As companies are urged to develop and publish sustainability policies, managing the risk of noncompliance against these policies to avoid reputational damage and associated financial losses is receiving senior management attention. Over the past decade, there have been numerous high-profile cases of poor sustainability in supply chain risk management.

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But the upside is the potential for true value creation in an increasingly sustainability-aware business environment. Indeed, companies are asking some fundamental questions today about why they exist (other than simply for creating wealth for investors) and are looking at sustainability across the entire supply chain. In a global landscape where sustainability is considered by some as an essential part of business but to others as just a second thought, how can a company manage the risks and upsides associated with sustainability across their supply chain?

SUPPLY CHAIN COMPLEXITY

Supply chains can be extremely complex. They are often multitiered, sometimes spanning multiple geographies and often requiring highly specialized raw materials and subcomponents that in turn rely on other parties for parts or services. As the complexity of a supply chain increases, so does the potential for a lack of transparency and a weakened level of control and influence. Across the supply chain, organizations struggle to foresee and control risks, such as varying regulatory environments, political landscapes, national cultures and patterns of behavior, and societal expectations.

THE CONFUSION SURROUNDING SUSTAINABILITY RISK

A recurring theme surrounding sustainability risk is the idea that companies should focus solely on environmental risk. Supply chain sustainability risk is broad, however, and encompasses a range of different aspects and sources, including:

- **Health and safety** — preserving health and well-being to employees, contractors, and those exposed to supply chain operations.
- **Environmental** — minimizing damage to the environment through pollution/resource reduction, waste management, sustainable sourcing, and biodiversity conservation.
- **People** — working alongside suppliers to enhance local communities in the form of

safe work, fair wages and hours, education, infrastructure improvements, and protection from child labor/modern slavery and discrimination (see sidebar “Case study: Child labor class action lawsuit”).

- **Ethics** — effectively governing over poor business conduct that could take the form of bribery, fraud/embezzlement, or misconduct.
- **Regulatory** — ensuring compliance with laws and legislation to protect the organization from loss of critical operations/business licenses and legal proceedings.
- **Reputation and finance** — providing the organization with a positive brand image and reputation – attracting customers, investors, and employees and enhancing competitiveness; ultimately protecting a company from a damaged reputation and financial loss.

Case study: Child labor class action lawsuit

Tech giants Apple, Google, Microsoft, Dell, and Tesla are all being sued by a human rights group — International Rights Advocates — for alleged poor oversight of their Cobalt supply chains, which enabled the use of child labor in mining operations in Democratic Republic of Congo (DRC).

The class action lawsuit claims that, although each company has specific policies prohibiting the use of child labor in its supply chains, they all have failed to effectively implement such practices.

The DRC produces around 60% of the world’s cobalt and, with a history of poor working conditions and labor practices, tech groups and car makers face a growing dilemma around how to effectively manage this emerging risk in their supply chain.

The tech groups are currently investigating the claims but are at risk of significant reputational and financial damage. With impending new laws (see “A business case for sustainability”), the potential for damage from such activity increases.

COMBATting SUPPLY CHAIN SUSTAINABILITY RISK

Implementing a supply chain sustainability risk management framework (including a defined risk appetite) and supplier engagement strategy require collaboration and communication between numerous functions and stakeholders across the supply chain. A risk appetite and supplier engagement strategy will determine an organization's capability and capacity to engage with suppliers in terms of:

- **Number of suppliers to engage with** — includes direct suppliers as well as Tier 2 and beyond.
- **Contract management** — depth of contractual agreements with suppliers e.g., dedicated contracts for certain types of supplier or individual suppliers, mandatory requirements, termination agreements).
- **Supplier relationship management** — dedication to work alongside suppliers to improve sustainability performance (e.g., incentives, joint activities, joint KPIs).
- **Performance management** — monitoring supplier performance against contractual commitments (e.g., corrective action plans, mandatory training).
- **Internal practices** — establishing internal practices to support sustainability culture across own organization (e.g., setting and adhering to internal targets and KPIs, internal codes of conduct).

SUPPLIER QUALIFICATION & PERFORMANCE MANAGEMENT

Organizations must perform pre-assessment and due diligence before considering a supplier.

Pre-assessment usually involves an initial materiality assessment to establish an understanding of any potential sustainability supply chain risks. The pre-assessment includes data gathered from annual reports, websites, news reports, remote interviews, small questionnaires, and so on. It is not focused on sustainability supply chain risk alone but on a supplier's overall ability to be a reliable supplier.

Due diligence consists of gathering detailed information, usually through a detailed questionnaire, and includes specific company data and records. Questionnaire responses and transparency of data depend on:

- Procurer/supplier engagement strategy.
- Supplier capability, which depends on product category, company size, location, language, etc.
- Supplier willingness, which depends on volume, existing relationship, dependency, supplier market dominance, etc.
- Availability of alternative suppliers.

Similar to pre-assessments, due diligence is not entirely focused on sustainability supply chain risk but is related to a supplier's overall ability to be a reliable supplier that fits it with a company's strategic priorities. Questionnaires are commonly used in procurement processes but often omit sustainability aspects, which risks ignoring deal-breaking questions that could identify key sustainability risk.

These initial assessments of potential suppliers can encompass the whole supply chain without requiring much time or effort from an organization and means suppliers who are deemed too high-risk can be ruled out early, although a large pool of potential suppliers may remain.

PRIORITIZING SUPPLIERS BASED ON RISK

The size of a supply chain varies by organization, based on the type of industry and number of tiers within the supply chain. It is not uncommon for the supply chain to be vast, and in such cases, it is not feasible to risk assess each supplier. This creates a dilemma around which suppliers to prioritize for an “intensive care” approach and what type of prioritization would be most effective in capturing the suppliers exposed to the highest level of sustainability risk.

Organizations should consider the following dimensions when prioritizing suppliers within a supply chain:

- **Category typology** — selecting suppliers based on strategy such as volume/expenditure, sustainability risks, criticality to operations, policy changes, future operations, etc.
- **Supplier typology** — selecting suppliers based on perceived sustainability risks related to their geo-location, sources of raw materials and labor, historical performance, etc.
- **Sustainability issue typology** — selecting suppliers within specific “high-risk” categories against key sustainability risks (e.g., emissions, child labor, poor cybersecurity) based on key stakeholder consultation.

Organizations can combine multiple dimensions into their prioritization framework to make it robust and tailored to their business environment. This is a better than the “finger in the air” approach that some companies rely on, which heavily depends on the opinion of internal “experts” to prioritize an entire supply chain. These methods can lack any credible scoring criteria that is backed by data or tool-based assistance and may lead to a lack in clarity on those suppliers that potentially carry the most sustainability risk.

The prioritization process can be optimized using:

- **Data references** — external stakeholder review, expert consultation, peer/competitor opinion, law and regulation review, media coverage analysis, etc.
- **Data backed tools** — detailed sustainability risk questionnaires for suppliers, geo-location assessments based on sustainability indices, etc.
- **Technology** — performance dashboards (including artificial intelligence/machine learning platforms), heat mapping to enable effective decision making, etc.

RISK ASSESSMENT OF PRIORITIZED SUPPLIERS

Once an organization has determined a pool of prioritized suppliers, it can identify, assess, evaluate, control, and monitor sustainability supply chain risks:

- **Identification.** Potential sustainability supply chain risks can be identified based on various sources, including data references and data-backed tools like those used in the prioritization phase, highlighting potential areas of noncompliance, current and emerging industry risk, and historical loss data. Techniques such as cause-and-effect analysis and carefully constructed workshops can be used to identify relevant sustainability supply chain risks.
- **Risk assessment and evaluation.** This stage requires the formulation of likelihood and consequence criteria. Consequence criteria should be formulated by combining the knowledge of internal and industry experts. These criteria can be adjusted by region and business unit to align with local business conditions and regulatory environments. Likelihood criteria should be based on a combination of historical data and relevant industry expertise. Sustainability supply chain risks can then be mapped against these criteria for each prioritized supplier.

- Mitigation and control.** The next step is to identify potential mitigation measures. Control and mitigation strategies come in the form of contract management, supplier relationship management, performance management, and internal practice.
- Monitoring.** An effective escalation and aggregation process ensures that supply chain sustainability risks are escalated appropriately to provide transparency of risk and enable corrective actions to be taken by the appropriate level of management. Organizations can optimize monitoring by developing effective threshold limits and identifying and monitoring key risk indicators (KRIs) (see [“Transforming business resilience”](#)).

A BUSINESS CASE FOR SUSTAINABILITY

The global sustainability landscape is constantly evolving, with (some) governments and multinational companies leading the way to generate real business advantage. On the other hand, there is evidence that poor sustainability performance is becoming very costly, and proposed regulations will potentially make it more so (see sidebar “Being proactive over reactive” on next page).

New laws: European Commissioner for Justice Didier Reynders recently announced that legislation will be introduced on **mandatory sustainability due diligence** for companies as part of the Commission’s 2021 work plan and the European Green Deal.

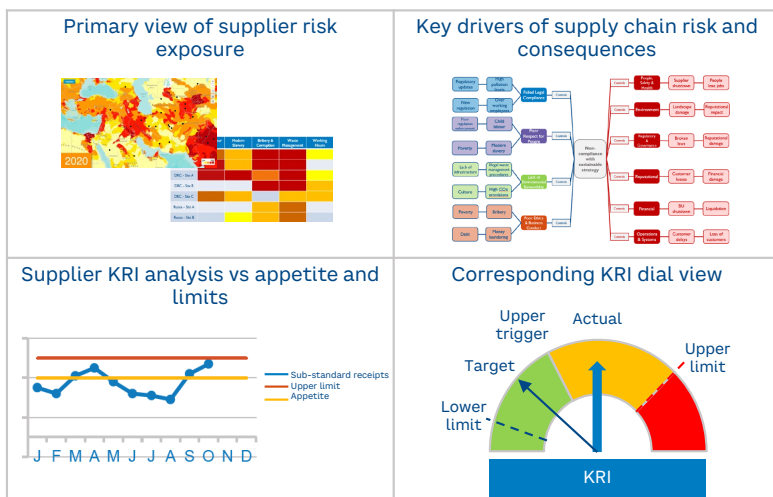
A draft report by the European Parliament Committee on Legal Affairs released in September 2020 states unequivocally that *“minimum requirements for undertakings to identify, prevent, cease, mitigate, monitor, disclose, account, address and remediate the human rights, environmental and governance risks posed by their own operations and also their value chain, including business relationships.”*

The report goes on to say state: *“Member States should designate national authorities to share best practices as well as to supervise and impose sanctions, including criminal sanctions in severe cases.”*

This is a significant step in the enforcement of environmental, social, and governance (ESG) requirements as well as punishment for those who do not comply. This will have an impact on companies and suppliers across the world. As suggested in the draft legislation, companies should promptly act to eradicate sustainability risk from their supply chains.

Sustainable investing is becoming a prominent feature across various investment banks and investment management firms. John McKinley, director of BlackRock Sustainable Investing Team, states, “We observe an increasing positive correlation between effective management of ESG-indicators and the longer-term value creation by a company.” This is corroborated by global investment research firm MSCI, which has identified that ESG leaders return significantly greater gross returns than average ESG performers.

Figure 1. Sustainability KRI dashboard



Source: Arthur D. Little

Financial institutions such as Standard Chartered are also providing a greater emphasis on sustainability risk by setting specific lending requirements for certain industries. One such case is shipbreaking (ship disposal and recycling), where lending is agreed only if shipyards follow internationally recognized environmental, health, and safe working practices. These practices include providing safety training programs, protective clothing, fair working hours, and regular health checks.

Being proactive over reactive

Those skirting the moral lines on sustainability performance are starting to feel the effects of updated regulation and corporate/public perception.

Various existing and emerging markets have been exposed — from fast fashion with its issues with waste management, resource usage, and material toxicity to electric vehicles and its issues with modern slavery and child labor used in the mining of essential elements.

With further crackdowns imminent, organizations must be proactive in their response to sustainability risk issues in their supply chain before they become too exposed.

CONCLUSION

EXPLOITING THE POSITIVE ASPECTS OF SUSTAINABILITY IN THE SUPPLY CHAIN

WITHOUT CAREFUL MANAGEMENT AND CONTROL, ORGANIZATIONS MAY BE EXPOSED TO SIGNIFICANT FINANCIAL AND REPUTATIONAL RISK THAT COULD CAUSE VERY SERIOUS DAMAGE

The global sustainability landscape is ever more complex, and sustainability is becoming increasingly important due to an ever-changing regulatory environment, higher societal and shareholder expectations, greater scrutiny, and competitors that gain advantages by exploiting the positive aspects of sustainability in the supply chain.

This complexity can lead to a lack of transparency in sustainability risks across the supply chain, putting organizations in danger of unwitting exposure to risks.

Without careful management and control, organizations may be exposed to significant financial and reputational risk that could cause very serious damage. At the same time, organizations that do have an effective sustainability strategy that covers both internal and external supply chains, combined with effective and proactive risk management systems, will become more competitive and attractive as business partners in the future.

EUROPEAN BATTERY RECYCLING: AN EMERGING CROSS-INDUSTRY CONVERGENCE

The need for partnering in a heterogeneous value chain

The rise of electric vehicles (EVs) and associated battery gigafactories is pushing forward the creation of a European closed-loop battery recycling value chain. Increased recycling demand, intensified EU regulations, and a strong desire to localize supply chains and safeguard critical raw materials is driving multiple opportunities. In this context, as we explore in this Viewpoint, new ecosystems are emerging, and players interested in scaling need to act quickly to take advantage of the current environment.

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DRIVING MARKET OPPORTUNITY

While the race to create more and more EV lithium-ion (Li-ion) battery factories in Europe is accelerating, with investments regularly making the headlines, the recycling of EV batteries has yet to generate similar volumes of coverage. This is changing rapidly as three interconnected factors create a need for EV Li-ion battery recycling across Europe.

1. Growing demand created by switch to EVs

According to Arthur D. Little (ADL) analysis, 70% of newly registered passenger vehicles are expected to be battery-powered by 2030, accelerated by the combination of government legislation and increasing consumer demand for greener transport. By that date, there will be an estimated 61 million passenger EVs on Europe's roads, making up 30% of the total vehicles in use.

This unprecedented growth is driving the enormous expansion of Li-ion battery manufacturing within the EU, as described in a previous Viewpoint, "[Building the Battery Ecosystem of Tomorrow](#)." In addition to powering vehicles, batteries will also be central to the growth of energy storage systems (ESS) used for grid storage of power generated by renewables for future use.

The increased battery stock for recycling will come from two sources:

- **End-of-life.** The average life of an EV battery is between eight and 15 years. With a rapidly growing EV fleet, an increasing number of batteries will need to be returned, and possibly recycled, moving forward. ADL estimates less than 4 GWh will be returned annually in Europe by 2025, with a dramatic rise to more than 200 GWh by 2040.

- **Manufacturing scrap.** The complexity of battery production results in very high scrap rates (about 10%-30%), especially during production ramp-up in newly established gigafactories. As soon as production scales, a significant amount of scrap will need to be recycled on an ongoing basis. We believe this will be the strongest driver of recycling demand during the coming decade, before the large-scale return of end-of-life batteries increases. Annually, around 70 GWh of European scrap is expected to require recycling by 2025.

Taken together, ADL estimates that by 2030 the total annual European Li-ion battery recycling market will reach about 130 GWh, which represents more than 700 kilo tons (ktons) of recycling capacity need. It will then increase three-fold by 2040 as more EV batteries reach the end of their usable lives.

REGULATIONS ARE CURRENTLY UNDERGOING SIGNIFICANT REVISIONS

2. New regulations set targets & mandate recycling

The EU has existing, but outdated, legislation in place that sets efficiency targets for recycling specific battery types and minimum rates for battery collection. These recycling regulations do not adequately cover the growth in Li-ion vehicle batteries. Consequently, the regulations are currently undergoing significant revisions, which encompass the following key points:

- These regulations will be EU-wide, entering into force immediately in all countries.

- For the first time, specific targets will be attached to lithium-based batteries and will include recovery rates of specific materials, including cobalt, nickel, and lithium.
- The framework will reinforce extended producer responsibilities for original equipment manufacturers (OEMs), such as automotive or grid storage manufacturers, while increasing tracking, diligence, and visibility across the supply chain and via coordination mechanisms.
- Targets are expected to increase and tighten in the coming decade.

The European Parliament recently voted on current amendments to these targets, which are expected to begin implementation by 2023. These amendments highlight a trend toward more ambitious recycling requirements and will increase the scope and need for battery recycling.

3. Desire for circular & independent EU battery industry

The growing strategic and environmental importance of EVs to the wider EU economy — along with the supply chain disruptions caused by the COVID-19 pandemic, the war in Ukraine, and sanctions on Russia — have further increased the need to create a circular and ideally more resilient and independent EU battery industry.

Generous subsidies and incentives have led to a wave of announcements of new battery manufacturing facilities, from both new entrants and existing international players. National governments, as well as the EU, are investing heavily to attract these plants, with capacity expected to reach more than 1,100 GWh by 2030 if all plans are fully realized.

Access to materials is increasingly vital for all these plants to succeed in a market currently suffering from significant material pricing volatility (especially metals). This is leading to a reversal of the trend of annual declines in cell

prices. Graphite, lithium, and cobalt are already on the European Commission's list of critical raw materials (flagged as of potential high importance and with supply risks). Nickel was already being monitored for inclusion even before current Russia-related risks.

As global battery production increases, combined demand is expected to continue growing, with supply increasingly perceived to be a risk to the growth of an independent EU battery industry. A strong recycling ecosystem is therefore seen as a way to mitigate risk, as well as an avenue to lower the environmental impact of mining new minerals in the EU.

FOR SOME PLAYERS DEMONSTRATING A RECYCLING APPROACH IS A CENTRAL PART OF THEIR STRATEGIC PLANNING

DYNAMIC, EMERGING ECOSYSTEM

Diverse range of sectors

The emerging recycling opportunity is attracting a wide range of players with diverse backgrounds and industrial capabilities. Potential entrants range from metals processing and chemicals companies to automotive and waste management businesses. Some are positioning themselves via subsidiaries or joint ventures, while others are focusing on specialist battery recycling. Some have a rich industrial heritage, and others are European small and medium-sized enterprises finding themselves at the heart of this new ecosystem.

For some players, such as those in the battery and automotive sectors, demonstrating a recycling approach is a central part of their strategic planning. Others are more opportunistic, looking to leverage their specific capabilities in this new, potentially attractive market.

Need for partnerships that combine capabilities

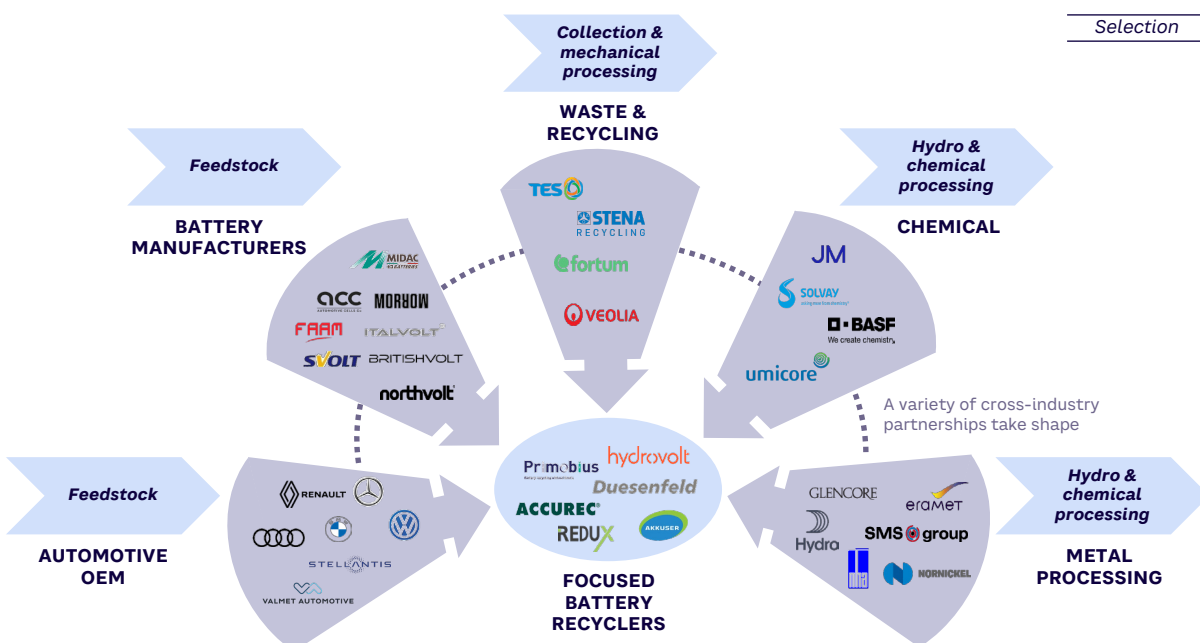
As Figure 1 demonstrates, players aim to use their individual capabilities to contribute to specific steps of the supply chain, although they recognize that cross-industry partnering with complementary businesses is required to cover the entire value chain. Alliances created by multiple players, such as the Renault-Veolia-Solvay cooperation (feedstock supply, mechanical processing, and hydrometallurgy [hydro] and chemical processing), seem to be forming. Valmet-Fortum-Nornickel-BASF and Volkswagen-Northvolt-Hydro are other notable examples. Many industrial players can also benefit from the accumulated expertise of focused battery recycling players, some of which have been involved in recycling non Li-ion batteries for many years.

MOST RECYCLING FACILITIES IN EUROPE ARE PRESENTLY OPERATING AT A PILOT OR TEST SCALE

Though the battery production industry currently has enormous momentum, most recycling facilities in Europe are presently operating at a pilot or test scale. They are in the process of scaling up and transitioning toward 20+ kton plants as market demand increases.

As Figure 2 indicates, most recyclers are planning operations close to the core central European automotive industry, which is unsurprisingly where key battery gigafactories are also emerging, as they provide easy, short-distance access to production scrap materials. The Nordic countries are another focus; they possess the ability to leverage cheap renewable energy and hold a potentially significant position in metals processing, linked to their relatively large mineral resources.

Figure 1. Convergence of industries in the EU Li-ion battery recycling ecosystem



Source: Arthur D. Little

Figure 2. Recycling players prepare for European battery gigafactories



Source: Arthur D. Little

In addition to homegrown players, a growing number of companies from outside Europe have also spotted the opportunity and are starting to compete in the EU. Some bring connections in the battery value chain (e.g., Redwood has links to Tesla), others expect to leverage global capabilities (e.g., SungEel has hydro processing

plants in Korea), while some are recently well-funded with global ambitions or intellectual property (e.g., Li-Cycle). Europe has become the latest and hottest arena for the global Li-ion recycling industry.

The battery recycling process

Li-ion battery recycling follows a four-stage process:

1. **Collection/sorting.** Spent batteries are collected/transported to operating hubs, where they are sorted.
2. **Pretreatment.** Batteries can be mechanically processed for discharging and disassembling. Alternatively, some processes perform thermal pretreatment.
3. **First-material extraction.** Batteries are first processed to extract a mix of valuable materials through either a mechanical or pyrometallurgical route. This results in either black mass (mechanical) or alloy/slag (pyrometallurgical) as primary intermediary products.
4. **Second-material extraction.** Primary intermediary products are processed via hydro by using chemical solvents and reagents to produce individualized metal streams. Additional refining steps are potentially necessary for higher-grade results.

CHALLENGES IN BATTERY RECYCLING ECOSYSTEM

Players need to quickly decide with whom to partner, what types of strategic partnerships to form, and where in the ecosystem to operate. This is due to the speed at which the opportunities are developing, the time frames required to develop capabilities and build large-scale plants, and the need to secure material flows along the supply chain. However, some key considerations must still be factored into decision making, as we discuss below.

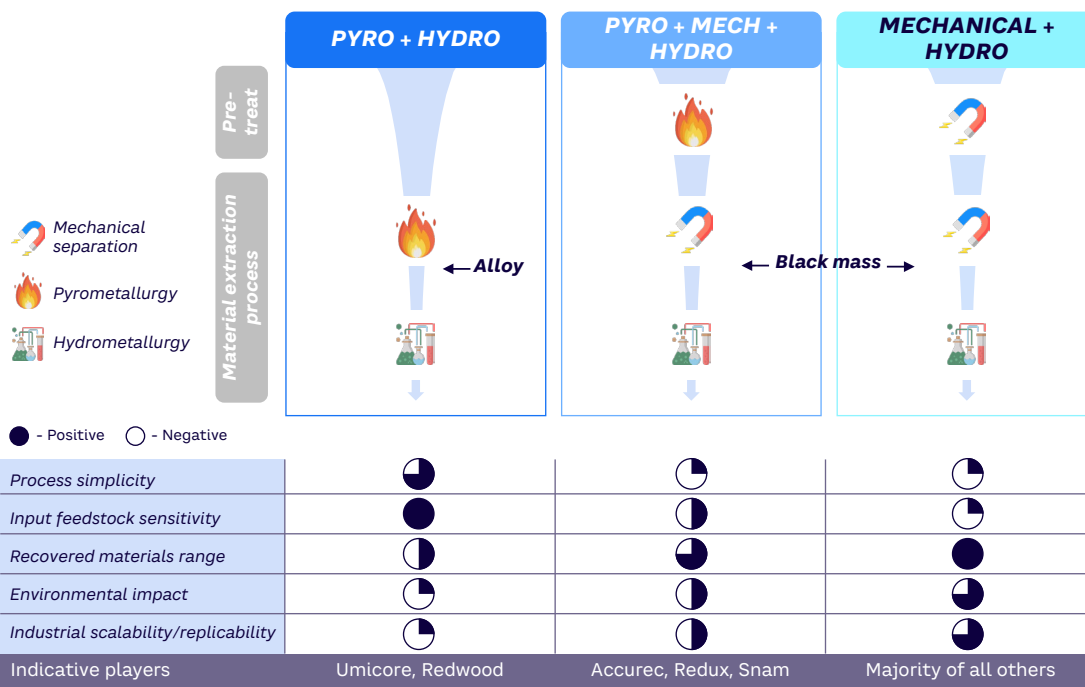
1. Choosing the right recycling technology process

A variety of process pathways are currently being explored in the market. These primarily involve combinations of mechanical separation, pyrometallurgical, and hydro methods (see Figure 3).

Most players are adopting a combined mechanical and hydro route, based on expectations that this route maximizes recovered material efficiencies (e.g., avoids burning potentially recoverable organic material), while reducing the associated environmental burden (e.g., through lower energy use). The type of mechanical separation facilities needed are also potentially easier to replicate and could favor a more decentralized initial processing step. However, this route is also more sensitive to feedstock chemistry and potentially brings greater complexity in terms of the range of process variations available. For example, some mechanical steps allow for energy recovery from discharged batteries, followed by shredding under inert atmosphere conditions, while others opt for submerged shredding.

The optimal process choice will vary depending on the capabilities, ambitions, and position of the player in the value chain. This is especially true of new entrants that are likely to consider the mechanical step the most straightforward to replicate and scale, while others may stop at this stage and simply trade the resulting black mass.

Figure 3. Simplified comparison of recycling technology process routes



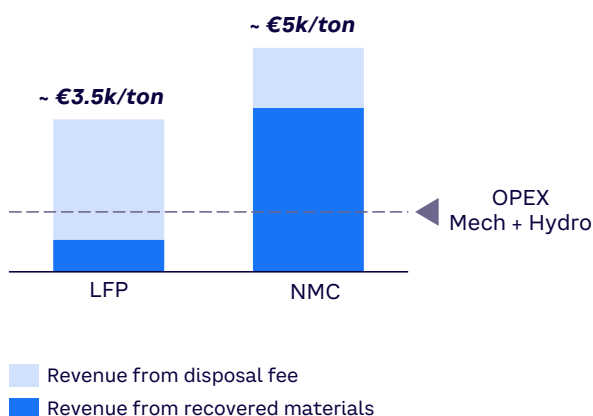
Source: Arthur D. Little

2. Preparing for the economics of changing battery chemistry

The chemistries used in battery cells are becoming increasingly diverse, with a widening variety of cathode material usage. This is driven by the constant need for battery makers to optimize performance specs, while balancing costs and expected material availability. There has been a noticeable reduction in cobalt-rich chemistries, with trends toward nickel-rich, manganese-rich, or nickel/cobalt-free cells. All of these potential feedstock combinations must be processed efficiently by recyclers the same way and will inherently provide different associated revenue streams.

Figure 4 provides indications of expected revenue streams (per ton of recycled batteries) for a typical recycling plant. It shows that processing high-value chemistries, using nickel manganese cobalt [NMC] as a benchmark, already provides a profitable business case. In Europe, OEMs are also reportedly paying a “disposal fee” to recyclers. Along with extended producer responsibility legislation, this serves as an additional revenue stream and incentive to the recycling ecosystem. The disposal fee for processing low-value chemistries (e.g., lithium iron phosphate [LFP]) is higher than fees paid for NMC, balancing the overall recycling business case.

Figure 4. Battery recycler EU revenue streams by feedstock chemistry (modeled result)



Source: Arthur D. Little

We believe the existence and stability of disposal fees will be critical for recyclers’ financial returns, as the recycling ecosystem will need to effectively process a variety of chemistries.

3. Picking a logistics model that scales effectively

Strategically planning recycling operations means not just choosing between extraction technologies; organizing logistics and sites is necessary. Essentially the choice spans two models:

— Centralized model:

- End-of-life batteries are transported to a central location, where they are processed and refined.
- This method leads to greater transport and storage costs, primarily because of tight regulations around transporting hazardous lithium batteries.
- However, this model delivers greater operational efficiency as recyclers can process and refine on a larger scale.

— Decentralized model:

- End-of-life batteries are processed locally, creating the intermediary product, black mass.
- Black mass is less hazardous and both easier and cheaper to transport for final refining.
- While this model results in lower transport costs, it reduces economies of scale as recyclers are unable to process centrally.

The industry seems to be leaning toward a decentralized model for initial processing and a more centralized model for hydro and final refining steps. Collection and mechanical separation hubs close to production sites will favor recyclers with strong partnerships with battery makers and OEMs, while securing a stable feedstock supply of materials. Hydro and refining will likely center around traditional industrial chemical and metal processing sites.

CONCLUSION

CREATING STRATEGIC FOUNDATIONS FOR RECYCLING SUCCESS

COMPETITION WILL BE INTENSE, WITH PARTNERSHIPS, AMBITION, AND FUNDING ALL REQUIRED FOR SUCCESS

The European battery recycling ecosystem is developing quickly — driven by the need to recycle battery scrap and supported by a strong regulatory framework. Competition will be intense, with partnerships, ambition, and funding all required for success. Thus, players need to take the following actions:

- 1 Form the right partnerships across the ecosystem, which are ready to scale up.** Find the most attractive complementary technology and business partners with aligned ambitions and interests.
- 2 Build knowledge and physical capabilities.** Creating new facilities and skills requires an investment of money and time. Most players are still early in their journey.
- 3 Position flexibly.** This ecosystem is in the process of being formed, with multiple moving parts in terms of technologies, business, and financial models.

TOWARD SUSTAINABLE, EFFICIENT & RESILIENT MOBILITY SYSTEMS

**An integrated approach to manage
opposition and reinforcement across
objectives at the system and enterprise
level**

Most transportation systems and companies have defined elements of their sustainability strategy and launched initiatives related to improving efficiency and strengthening resilience. However, we believe these concepts — sustainability, efficiency, and resilience (SER) — should be considered not in isolation but with a holistic and integrated view.

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Transport and mobility companies must acknowledge that SER goals are not always compatible and can hamper strategic business objectives, leading to misalignment across stakeholders and organizational inertia. Instead, the aim should be to use a systematic approach to strike a balance among these three often competing areas, identifying areas of mutual benefit to maximize the positive impact to the business.

DEFINING PRIORITIES FOR THE COMPANY OF THE FUTURE

We live in a world where change is increasingly fast-paced, constant, and unpredictable, driven by a wide range of interrelated trends. Examples are not hard to find: the COVID-19 pandemic has caused huge disruption in the transport sector, geopolitical challenges are ever more present and unpredictable, and the ongoing energy crisis is stressing global economies and supply chains. Transport and mobility systems are under increasing pressure to deliver in this context. To survive and grow, transport systems and companies must become more:

- **Sustainable** — being inclusive and socially geared in meeting the access and development needs of society while minimizing impact on both human and environmental health. Many transport systems and companies are working to reduce their carbon footprint and create more long-term value as passengers, regulators, and governments demand more sustainable mobility. The ongoing energy crisis has brought this into even sharper focus.
- **Efficient** — delivering the output required with reduced or minimal expenditure, resource consumption, and use of human capital. Efficiency goals are further complicated by transportation systems typically being asset- and energy-intensive, and many companies have an aging asset base with significant capital budgets required to maintain or replace them.

- **Resilient** — operating in the face of multiple threats and disruptions, such as extreme weather, collapse of key supply chains and energy supplies, loss of service, or incidents. The companies that comprise a resilient transport system must be able to anticipate opportunities and threats to ensure they can survive rapid changes in demand and use patterns. The COVID-19 pandemic and ongoing recovery have highlighted the importance of resilience.

TRANSPORT AND MOBILITY SYSTEMS ARE UNDER INCREASING PRESSURE

Many companies we have spoken to are struggling to tackle the interrelated challenges between these high-level SER goals. Nearly all companies have specific plans and objectives relating to these individual goals, but they are too often considered in isolation, with different senior managers accountable for them and a lack of holistic governance and communication. For example, transport companies have carbon-zero strategies to varying levels of maturity, typically led by a sustainability director, that place significant demands on all aspects of the business going forward, including operations, engineering, asset management, and supply chain — from providing low-carbon energy to power vehicles to ensuring communities get fair and equal access to transport services.

Transport companies are not new to risk management, and some are embracing the broader topic of resilience, including operational resilience (the transport system has a high level of redundancy and can continue to operate effectively with multiple disruptions, such as alternative routes and power supplies) and financial/business resilience (the system and constituent companies can continue to function with rapid changes to demand and revenue, such as by having multiple diverse sources of revenue). However, resilience is growing in relevance and necessity. For example, in October 2022, the EU Commission instructed member states to carry out stress testing on transport infrastructure after the sabotage of the Nord Stream gas pipelines as part of an effort to increase the resilience of critical infrastructure.

Efficiency gains will often take the form of initiatives to reduce head count, extend asset life, and so on, rather than necessarily being under the governance of a single part of the organization.

Activities under these different goals are rarely integrated but can often undermine each other, so companies and systems are often left with dilemmas and tradeoffs (see sidebar, “Dilemmas & tradeoffs — Examples”).

The solutions to these conflicts are often multifaceted and nontrivial. How can a balance be achieved, and the overall position improved, while keeping the internal and external stakeholders happy? How can SER objectives be analyzed to identify tensions (reinforcement/opposition) and maximize benefits in terms of overall impact as well as time to impact? Arthur D. Little (ADL) has developed an SER framework and approach that can help a company to identify the issues and opportunities that either block or accelerate an organization’s ability to achieve its strategic objectives and deliver on its commitments, as well as take action to ensure long-term success.

Dilemmas & tradeoffs — Examples

- **Sustainability and efficiency blocking resilience.** A pared-down supply chain with a high dependence on a small number of sustainable suppliers may help deliver efficiency and sustainability but exposes the company to single points of supply chain failure.
- **Sustainability and resilience blocking efficiency.** Utilizing multiple renewable energy sources increases diversity and reduces dependence on the unstable oil market but is expensive to operate and maintain.
- **Efficiency and resilience blocking sustainability.** Ground-level construction (instead of tunneling) is cheaper and increases resilience by expanding operations to new profitable areas but causes significant environmental damage and disrupts communities.
- **Sustainability blocking resilience.** Increasing public transport ridership has obvious environmental benefits, but if operating costs are not covered by passengers’ fares and require public subsidies, costs for public authorities are significantly increased, damaging system resilience.
- **Sustainability blocking efficiency and resilience.** Pursuing social inclusion objectives (in terms of network coverage and fares) is often not financially viable, particularly for isolated and remote communities.
- **Sustainability reinforcing resilience.** Optimizing the wider economic benefits of public transport can increase revenue for public authorities, which can be used to further fund public transport, diversifying revenue sources and increasing contributions from indirect beneficiaries.

FROM ESG TO SER

All companies are familiar with the strategic importance of managing environmental, social, and governance (ESG), prompting them to define ESG strategic objectives and corporate commitments to varying degrees of maturity and sophistication and in line with internal capabilities and priorities. Some have created detailed plans and are committed to action, while others have outlined future aspirations that are not yet concrete. However, strategic objectives for ESG often compete with efficiency and resilience goals (see Figure 1).

ADL's SER framework builds on ESG (effectively ESG++) by taking existing plans, frameworks, and strategies and reconciling them to remove conflicts so that companies can meet strategic objectives and commitments without compromising overall efficiency and resilience aims. It is likely that it will be necessary to revise

or adjust specific delivery objectives to achieve this goal. Failure to meet public commitments to sustainability, imposed efficiency measures, or to be sufficiently resilient to survive the next "COVID event," however, are significant reputational and, in some cases, existential risks all transport systems and companies face. The key question is, can a transport system or company survive, and thrive, if any of the S, E, and R dimensions are not delivered upon?

STRATEGIC OBJECTIVES FOR ESG OFTEN COMPETE WITH EFFICIENCY AND RESILIENCE GOALS

THE SER FRAMEWORK

As the three high-level pillars of SER are not new in isolation, plans, frameworks, and strategies exist to address specific elements under each of the pillars, some of which have been subject to cost/benefit analysis. It is neither feasible nor desirable simply to replace these plans, so conflicts must be carefully managed to ensure they can support the achievements of strategic objectives and stakeholder expectations. The SER framework allows transport companies and authorities to consider the three pillars holistically and in an integrated fashion, aiming to increase the chance of system and company success across the three areas through a more integrated approach and improving the opportunities for identifying and acting on appropriate synergies.

Figure 1. Sustainability, efficiency, and resilience tradeoffs



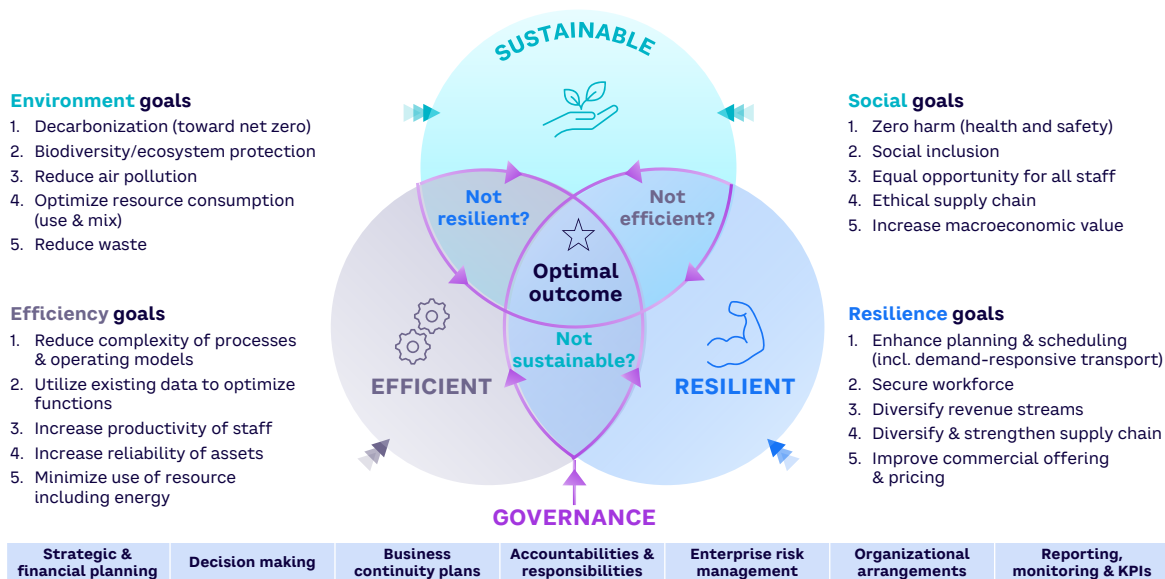
Source: Arthur D. Little

The framework takes an organization’s specific goals across the three pillars of SER and includes 20 generic goals in the areas of environment, social, efficiency, and resilience that we expect will align with most transport companies’ existing plans, frameworks, and strategies (see Figure 2). These goals are then operationalized through effective governance arrangements, when tensions, blockers, and enablers can be uncovered. Helpfully, the approach can identify key enablers as well as blockers. Multiple enablers are important, as any plans or objectives that can positively contribute to all three high-level SER pillars are likely to be an obvious choice. For example, transport systems that embrace mobility as a service (MaaS) may find ways to combine benefits across all three pillars: improved **sustainability** through social inclusion (through easing access to and understanding of multiple mobility actions) and reduced environmental footprint (through fostering a shift to more environmentally friendly transport modes); increased **efficiency** (by optimizing mobility flows at system level, including ensuring a better utilization of assets); and increased system **resilience** (through improving choice

and ease of use of multiple mobility options by providing real-time multimodal information considering user preferences and prevailing circumstances).

It is not the aim of the SER framework to comprehensively cover all the objectives of a transport system or company. Many transport companies will have strategic objectives relating to other key areas such as growth, quality, and customer experience. However, these objectives are often closely linked or highly synergistic with SER objectives, and successfully reconciling tensions within SER will improve the likelihood of meeting other critical business objectives (e.g., improving system resilience often leads to more reliable service, which improves customer experience, leading to higher satisfaction and loyalty, and ultimately leading to increased revenue streams, and so on). Successfully managing competing objectives in a dynamic environment will require the development of strong, holistic, and cross-functional governance arrangements to drive and oversee progress. Therefore, the fourth element of the framework is **governance**, which underpins the three SER pillars.

Figure 2. ADL SER framework — 20 goals



Source: Arthur D. Little

PUTTING THE FRAMEWORK TO WORK

Applying the SER framework involves deploying a four-stage process (see Figure 3). The framework can be applied as a one-off diagnostic to act as a trigger for business planning decisions, or it can be integrated into the wider business planning cycle and used routinely (including continuous monitoring and reporting).

Understand

The first step is to understand the current position and what is already planned. This means mapping all external/internal drivers and collecting and collating individual SER visions, goals, and plans. At a high level of abstraction, these goals are likely to be similar for all transport organizations, such as achieving net-zero carbon by 2050. Where they will differ is in the delivery plans used to achieve them. Some companies will have specific plans, such as a switch to 100% renewable power or retiring old rolling stock. Some companies may not yet have tangible or realistic plans, and the way they plan to achieve their high-level goals remains to be determined.

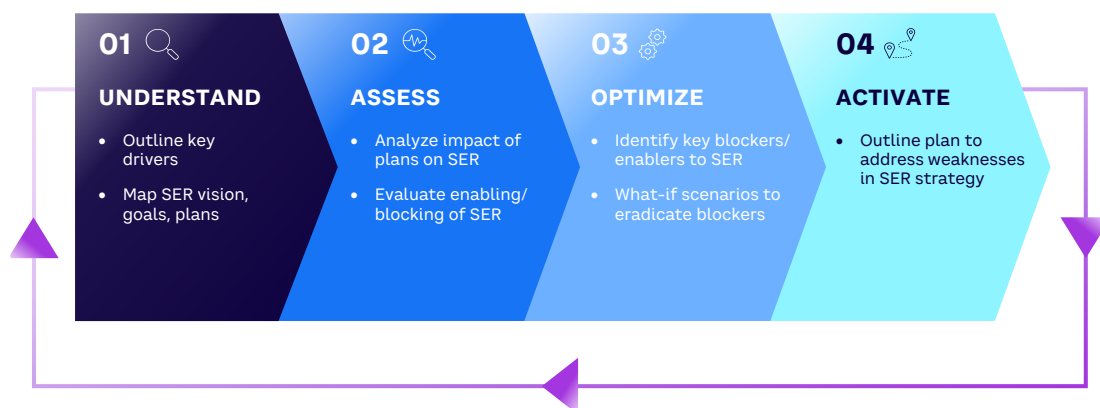
Assess

Once the delivery plans have been collated, they need to be assessed under their respective SER pillar. Companies can rate each specific delivery objective in terms of its:

- **Scale of delivery and application.** How ambitious is the plan? For the part of the system in which it is being implemented, what percent of revenue, emissions, resource consumption, workforce, people, and service are affected? How much of the transport system is the plan targeting? This could range from a pilot program to a full global rollout.
- **SER interaction.** How does each delivery objective interact with the high-level sustainability (environment, social), efficiency, and resilience goals? Do they block or enable SER?

Once each specific delivery objective under the high-level SER goals has been rated, companies can use the SER heatmap to identify where tensions and blockers exist (see Figure 4).

Figure 3. Four-step SER process



Source: Arthur D. Little

Figure 4. The SER heatmap — Net-zero carbon example

			SER IMPACT				
			Sustainability		Efficiency	Resilience	
GOALS & DELIVERY PLAN	Goals	Delivery plan	Environment	Social			
	High-level objectives determined in Step 1	Specific activities to achieve high-level goals	Impact	Minimize emissions, waste & resource use	Increase social & economic value	Make best possible use of resource	Respond & adapt to threats & opportunities
	Net-zero carbon by 2050	100% of transport energy from renewables	3	(1)		(4)	(2)
All suppliers must have a net-zero strategy		2				(3)	
Phase out old rolling stock and replace		3			(5)	(6)	
Reduce use of concrete in capital projects by 30%		5	(1)			(7)	
Electrification of busiest routes		4					
Stop unnecessary business travel		1	(1)				
Utilize demand-responsive transport		5	(1)		(8)		

(1) The specific elements of the net-zero carbon delivery plan have obvious strong sustainability benefits.
 (2) Reducing diversity in the organization's energy mix will leave the organization exposed to supply issues.
 (3) Highly prescriptive procurement requirements significantly reduce supplier diversity.
 (4) Incremental benefit from reducing the organization's overall energy demand.
 (5) Significant investment of resource and capital to upgrade fleet.
 (6) A more modern energy-efficient fleet will reduce overall operational risk.
 (7) Reliance on alternate construction methods requiring specialized resource and expertise exposes the organization to single points of failure.
 (8) Significantly improves operational efficiency by removing underutilized services.

Source: Arthur D. Little

Optimize

By analyzing the results of the assessment, companies can identify where current plans may block the achievement both of specific SER pillars and individual goals. An SER dashboard can be used to highlight and understand areas of concern. The company can then use scenario modeling to target the removal of key blockers. Optimization decisions must factor in any current progress/investment in specific plans and the impact of external drivers (e.g., legislation) on the flexibility of plans.

Activate




Understanding what needs to be changed to remove blockers can look simple in theory, but when put into practice, complications and conflicts will inevitably arise. Solutions to the problems caused by tensions between sustainability, efficiency, and resilience are often multifaceted and span large elements of the organization.

The SER framework is likely to uncover a wide range of blockers across all high-level goals. Therefore, companies should start by creating a roadmap that addresses all blockers and their relative impact. The removal of high-impact blockers should be prioritized, although the complex nature of transport operations and the maturity of existing corporate strategies and commitments mean it is unlikely to be possible to remove all blockers from all high-level goals. Organizations must also create new strategies to mitigate/minimize other significant blockers that cannot be removed. (For examples, see the sidebar, "Management of opposition & reinforcement — Three examples").

Management of opposition & reinforcement — Three examples

1. A **public transport operator** decided to update to compressed natural gas (CNG)-based buses and streamlined its supplier base, only using suppliers that were implementing a net-zero strategy. This left it highly dependent on a small number of suppliers for critical components. It was essential to balance these goals against the resilience goal of diversifying and strengthening its supply chain. After considering opposition with its resilience goals, the company developed a probation period strategy with suspensive conditions for suppliers to increase the number of potential suppliers for critical components without impacting environment and efficiency goals and developed a long-term partnership with a local resource company to place extra CNG stations.
2. A **major railway** undertaking significantly increased its health and safety requirements during maintenance as part of delivering its zero-harm strategy. It needed to balance its zero-harm objectives against an efficiency goal of minimizing resources and optimizing asset utilization. The enhanced safety arrangements had a drastic impact on capacity, with a high risk of creating bottlenecks on specific routes with mixed traffic. Considering this, it carried out a detailed review of the specific work plans to optimize asset utilization while respecting the zero-harm strategy goals.
3. Several **organizing authorities and public transport operators** were each aiming to implement their own MaaS strategy to improve the attractiveness of their offering and to build in greater resilience. The different parties realized that developing MaaS ecosystems in isolation would not allow them to efficiently utilize data or optimize mobility flows in the system’s interest. After considering those goals, they developed a joint plan across all authorities and operators to facilitate a coordinated approach. This improved both efficiency (by optimizing data and minimizing use of resource) and resilience (by improving the commercial offering and enhancing multimodal scheduling).

Figure A. Managing opposition & reinforcement — Three examples

COMPANY GOALS	INITIAL STRATEGY	REVISED STRATEGY
<ul style="list-style-type: none"> Decarbonization (environment) Cost of resources (efficiency) Operating model (efficiency) vs. <ul style="list-style-type: none"> Diversify & strengthen supply chain (resilience) 	<p>Management of opposition</p>  <ul style="list-style-type: none"> A PTO decided to upgrade to CNG-based buses & request suppliers' commitment to net-zero strategies Refueling capacity identified as a bottleneck, putting service levels to PT users at risk 	<ul style="list-style-type: none"> Adaptation of requirements (probation period) to extend supplier base Partnership with a local resource company to place extra CNG stations
<ul style="list-style-type: none"> Zero-harm health & safety (social) vs. <ul style="list-style-type: none"> Minimal use of resources/ optimal use of assets (efficiency) 	<p>Management of opposition</p>  <ul style="list-style-type: none"> Railway undertaking increased occupational safety requirements as part of zero-harm strategy Impact on capacity, with a high risk on creating bottlenecks on specific routes with mixed traffic 	<ul style="list-style-type: none"> Review of works planning allowed to mitigate risks of capacity bottlenecks while respecting zero-harm strategy goals
<ul style="list-style-type: none"> Improve commercial offering (resilience) vs. <ul style="list-style-type: none"> Optimizing data for efficiency Minimal use of resources (efficiency) Enhanced multimodal scheduling (resilience) 	<p>Securing reinforcement</p>  <ul style="list-style-type: none"> Separate initiatives from OA and PTOs to develop MaaS to enhance attractiveness & resilience of offerings Isolated implementation would not allow proper data sharing & system-level mobility flows optimization 	<ul style="list-style-type: none"> A joint plan is being developed across authorities & operators toward a more coordinated approach for MaaS regulations and deployment

Source: Arthur D. Little

MOVING TO THE END STATE: GETTING IT RIGHT

The need for robust governance

Because transport companies and systems are functioning in a fast-changing world, SER calibration must be an ongoing activity. It therefore requires the development of strong, holistic, and cross-functional governance arrangements to drive and oversee progress. Companies that implement the SER framework are likely to have to change their organizational structure and decision-making processes to ensure competing S, E, and R objectives are robustly and consistently balanced. Individuals or committees with holistic oversight over the three different SER strategies can avoid the siloed decision making many companies have today, where the impact of SER initiatives on other strategic objectives is not visible to or considered by key stakeholders.

When creating new governance arrangements, it is important to design efficient and effective committee structures to avoid duplication and inertia, while maintaining agility within the organization to deliver its strategic goals. Individuals and committees need a degree of authority to act and require the setting of clear terms of reference, roles, and responsibilities, with predefined escalation rules to ensure there is accountability and visibility over the SER framework and that adjustments can be made in a timely manner. Therefore, a comprehensive approach to SER involves embedding the framework in the organization, conducting the exercise multiple times as part of the annual planning process, and making sure accountable individuals have the visibility and authority to influence strategy to remove tensions and blockers and promote reinforcement across the three pillars.

The right level

In practice, material changes to organizational governance are nontrivial, expensive, and time consuming. However, the SER framework can still be used to add value without full deployment and significant changes to governance. A one-off exercise, focused on a specific company (or even division or business unit) or subset of objectives, can identify opposition and reinforcement relatively easily and be used to identify both short- and long-term actions to better the company's overall position (and will not require going through the four-step process). Another approach is to use the SER framework as a tool to enhance and reinforce the robustness of the ESG strategy, ensuring the company meets its ESG commitments while positively impacting efficiency and resilience. This approach will inform the ESG strategy without requiring significant changes to organizational governance.

**MATERIAL CHANGES
TO ORGANIZATIONAL
GOVERNANCE ARE
NONTRIVIAL, EXPENSIVE,
AND TIME CONSUMING**

Figure 5. How SER can add value to your organization

	SER for strategic tradeoffs & reinforcement	Reinforcing ESG strategy through SER ("ESG++")	SER-based strategic decision making (ERM++)
Why?	Your company often finds itself considering objectives that are in opposition and is struggling to set the right priorities	Your company aims to develop an ESG strategy in a more comprehensive and virtuous way , also considering efficiency and resilience components	Your company wants to ensure decision making and strategy are systematically based on proper understanding of tradeoffs and synergies
What?	Use the SER framework as a concept to help identify reinforcement and opposition across critical company objectives and define shaping and mitigation actions to enhance synergies and reduce opposition	Use the SER framework as a tool to enhance and reinforce the robustness of the ESG strategy , ensuring the company meets its ESG commitments while positively impacting efficiency and resilience	Use the SER framework as an embedded process to improve strategic planning and decision making through better understanding of required tradeoffs and removal of organizational silos
How?	<ul style="list-style-type: none"> • Apply the SER framework during a strategic exercise/retreat • Use SER as part of a business plan review exercise (company or BU/function level) 	<ul style="list-style-type: none"> • Apply four steps of SER approach (understand, assess, optimize, activate) to develop the ESG++ strategy • Ensure proper monitoring and reporting 	Integrate and embed the SER framework into: <ul style="list-style-type: none"> • Strategic planning cycle • Decision-making processes (e.g., ERM) • Governance arrangements

Source: Arthur D. Little

The right timing

Recent years have seen significant changes in the relative importance of sustainability, efficiency, and resilience to key stakeholders in transportation systems. For example, the opening of the European national rail market in 2016 led to many companies focusing on increasing customer satisfaction and reducing costs to fight growing competition from long-distance operators. However, over the course of a few years, with escalating pressure from environmental groups (e.g., Fridays for Future) and new European legislation, environmental sustainability moved up the list of priorities until it was seen as the key issue by many companies in Europe. The COVID-19 pandemic meant that most European rail and infrastructure providers had to refocus on efficiency, as demand declined significantly. Today, in post-COVID Europe, the combination of increased demand (exacerbated by government environmental schemes in response to the ongoing energy crisis, such as Germany's 9-Euro ticket pass), supply chain interruptions, and high inflation has brought the need for resilience into sharp focus and put significant pressure on efficiency, be it energy sources, other parts of the supply chain, or cybersecurity.

With the benefit of hindsight after a significant change in external context, it is easy to say the right timing for the SER exercise would have been before the events unfolded. Clearly, there are significant benefits in integrating the SER framework into the annual planning cycle, but fortunately, there are other ways to benefit from the SER framework as well. As recent experience in the European rail and mobility markets shows, if companies or systems have not yet fully assessed the scale and impact of their plans on the SER pillars, the best time to start is always now, even if budgets and planning are close to being finalized. The relative priorities of SER constantly change, and significant changes in external context are never far away. There is always a benefit from considering different scenarios, trigger points, and contingency plans.

CONCLUSION

NAVIGATING THE PATH AHEAD

TRANSPORT ECOSYSTEMS MUST MANAGE A GROWING NUMBER OF STRATEGIC PRIORITIES

At the individual organization level (i.e., transport operator or infrastructure manager) as well as at the system level (transport authority or city), transport ecosystems must manage a growing number of priorities, requiring a holistic and integrated approach. In short:

- 1** The SER framework can enhance an organization's ability to achieve strategic objectives and deliver on its commitments by maximizing reinforcement and handling opposition across critical company objectives, allowing for acceleration of alignment for optimal outcome and long-term success.
- 2** The SER framework can be used comprehensively as an embedded process to improve strategic planning and decision making through better understanding of required tradeoffs and removal of organizational silos, requiring changes to governance arrangements.
- 3** The SER concept also works as a tool to enhance and reinforce the robustness of the ESG strategy (i.e., ensuring the company meets its ESG commitments while positively impacting efficiency and resilience) or as a one-off exercise to identify opposition and reinforcement among critical objectives and pinpoint concrete improvement actions to refine the overall position.



FROM GREEN FINANCE TO GREENING FINANCE

**ESG innovations can accelerate
green change and increase revenues**

Environmental, social, and governance (ESG) provides financial services businesses with a framework for funding and de-risking the shift to a greener world. It offers banks an enormous revenue opportunity by introducing green products and services to new and existing customers. However, greening finance requires changes in culture and mindset and expanding ESG considerations to include an economic perspective, thus creating ESGE (environmental, social, governance, and economic). This Viewpoint explains how banks can innovate and unlock ESG's revenue potential.

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FROM BUZZWORD TO BALANCE SHEET

In recent years, banks have aspired to become more sustainable by investing heavily in resources for greening their own operations and meeting regulatory targets, as detailed in the Arthur D. Little (ADL) *Prism* article, "[Actively shaping the future — The new imperative for financial services.](#)"

MAKING THE SHIFT TO OFFERING ESG PRODUCTS AND SERVICES ENTAILS A MULTISTAGE PROCESS

Banks now need to move their attention beyond compliance and take concrete steps to reap the economic benefits of innovating and launching new ESG products and services. Like a game of football, they must think both offensively and defensively. This approach addresses two client-related challenges:

1. **Defensive — Keep existing clients.**

Corporate and retail clients are increasingly asking for green and sustainable products and services, on both the investment and lending sides. Corporates are also looking to work with like-minded partners, such as banks, as they accelerate and fund their own sustainability and green transition journeys. In research carried out by ADL and leading Austrian financial services provider Erste Group, 80% of Austrian corporates said that sustainability was of very high or high importance. However, 76% were unaware if their bank offered ESG products and services despite half the respondents (46%) citing sustainability as very important to their relationship with their bank. Half the companies that were aware of their bank's ESG products were using them. Studies in other countries and our client work indicate similar results. Can you afford to lose nearly half your corporate clients through inaction?

2. Offensive — Grow client base. Over 60% of clients in the ADL/Erste Group study wanted their bank to do more on ESG by becoming greener as well as offering additional green products and services. Using ESG innovation to launch new products and widen portfolios gives banks the chance to reposition themselves in the market and win new business. Expanding ESG capabilities extends their reach and increases revenue potential.

Making the shift to offering ESG products and services entails a multistage process, which begins with focusing on clients and their specific needs, as outlined below.

1. **Identify your starting point**

Every bank's ESG situation will differ, shaping the strategy and structure they need to adopt. How a bank embraces ESG and derives value will depend on multiple factors, including:

- The bank's business model.
- The ESG goals (i.e., does the bank want to be a leader, follower, or merely defend its existing customer base?).
- The distribution of client segments, such as retail and corporate, which includes micro-enterprises, small and medium-sized enterprises (SMEs), large organizations, and private banking (including affluent clients).
- Client demographics, their access to capital, and how they impact awareness of and interest in ESG.
- Business lines (e.g., lending, investments, services) identified as the most important for top-line growth, and how ESG can be factored in.
- Operational geography and ESG awareness in countries and/or regions where the bank operates.

Alongside these factors, a whole ecosystem of new green technology players is emerging. These businesses feature a broad range of services from providing ESG data to supplying consumer products like solar panels. Banks can partner with these companies — both to meet their own ESG transition and reporting requirements and to equip their customers with solutions for better sustainability and to support them with green transition finance. Partnerships help increase engagement with customers and cement the bank's position as a trusted provider of ESG products and services. Extending client relationships and opening new revenue streams are two additional advantages of partnerships.

2. Make the customer the heart of your ESG strategy

A growing global interest in ESG among retail and corporate customers provides banks with a clear opportunity to grow their offerings. However, every bank's customer base varies in ESG awareness and large variances exist within demographics, countries, and sectors.

BANKS MUST FOCUS ON THEIR OWN CUSTOMERS AND WHAT THEY EXPECT

So start by talking to customers and listening to their needs; this will inform value creation by developing and delivering the right products and services. Rather than relying on generic surveys of the wider market, banks must focus on their own customers and what they expect. Gathering this information requires in-depth research and listening exercises to gain a clear understanding of opportunities based on what customers require. Upon accomplishing this task, banks should then repeat the exercise across the wider market to learn what potential customers expect and are looking for in ESG products.

3. Cultivate new ESG capabilities

After identifying opportunities and seeing how they link to overall strategy, banks need to focus on which initiatives and tools will help generate ESG success. Launching green versions of existing products through existing channels is not sufficient. Instead, banks must analyze the factors that lead to ESG lending leadership with target customers. These might include a stronger focus on user experience; integration to new ecosystems or partnerships; or promoting specific, need-based solutions.

Planning successful products involves identifying multiple factors, such as key performance indicators (KPIs), governance, processes, and data. Growth cannot happen without understanding the necessary actions and investments. After defining KPIs, the next step is deciding which initiatives and products to prioritize, taking the following factors into consideration:

- ESG impact.
- Economic impact.
- Implementation time and effort.
- Availability of required resources and expertise.

4. Build an ESG-first culture

ESG has evolved within financial services. It began as a niche area, before becoming a compliance responsibility, linked to a bank's license to operate. Next, it evolved again as an essential piece of reputation management and corporate social responsibility (CSR). Now, further transformation will be brought on by embracing ESG's business relevance and economic impact — and treating these capabilities as levers for value creation.

Banks should therefore use their understanding of client expectations and ESG value drivers to create and define concrete use cases in specific areas, such as SME lending. However, it is one thing to understand client needs, and another to effectively position and sell new ESG products.

Often, the issue is cultural, with bank staff, particularly relationship managers, remaining focused on previous product lines that they know, understand, and feel confident about.

TRANSFORMATION CAN ONLY COME OUT OF A BEHAVIORAL SHIFT

Transformation therefore relies on a cultural change that can only come out of a behavioral shift. The following factors are key when involving and engaging relationship managers with ESG:

- Training and education.** Invest in training and certification for relationship managers by accessing the growing number of courses and exams administered by organizations such as the United Nations Environment Programme Finance Initiative (UNEPFI), banking associations, universities, and other financial trade bodies. For example, Deutsche Bank has committed to training its product experts to standards certified by the Chartered Financial Analyst (CFA) Institute or the European Federation of Financial Analysts Societies (EFFAS). In addition, J.P. Morgan runs an ESG Masterclass Series and Goldman Sachs provides ESG training globally to relevant employees.

- Incentives and bonuses.** Explore new forms of compensation that encourage relationship managers to engage with and responsibly sell ESG products. Be transparent and publish clear remuneration policies for all staff that involve ESG and CSR objectives as part of overall governance. For example, BNP Paribas has outlined on its website the rules it follows when calculating the annual variable remuneration of executive corporate officers, including factors such as the bank’s ranking for extra-financial performance in independent league tables.
- Senior-level visibility.** Demonstrate that ESG, and more importantly ESG products, form the core of the bank’s future. Lead programs from the top and heavily involve senior management and the board. Bring in a chief sustainability officer and other employees with the right skills at the senior level, backed by ESG product managers.

5. Tailor metrics to your program

There are manifold KPIs for measuring ESG progress, success, and its impact on the business. These ESG KPIs can be split into four main groups, as illustrated in Table 1:

1. Regulatory KPIs:

- Contribute products to regulatory metrics, such as the EU’s Green Asset Ratio (GAR). This indicator defines the proportion of green financed economic activities and investments as a share of total assets.

Table 1. Examples of ESG KPIs

CATEGORY		SELECTED KPIs
Regulatory		Green Asset Ratio (GAR), Banking Book Taxonomy Alignment Ratio (BTAR), etc.
ESG	E	GHG emissions, energy efficiency, use of renewable energy, etc.
	S	Employee satisfaction, number of solidarity hours, training hours, etc.
	G	Woman as board members, litigation risks, corruption cases, etc.
Financial/economic	Top-line	Operating income from ESG products/services, revenue increase from ESG products/services, client number with ESG products/services, etc.
	Profitability	Share of profit coming from ESG products/services, return on assets from ESG products/services, return on equity from ESG products/services, etc.
	Risk	Risk exposure from ESG products, expected loss from ESG products, risk parameters of ESG products, etc.
	Capital markets	Share price, investor outreach, volume of ESG bonds issued, etc.
Non-financial		Employee satisfaction, retention, branding, reputation, etc.

Source: Arthur D. Little

2. Non-regulatory ESG KPIs:

- May vary based on sector but could include:
 - Environmental KPIs (e.g., CO2 footprint, use of renewable energy, and energy efficiency).
 - Social KPIs (e.g., diversity, equity, and inclusion; training and education; and qualifications earned).
 - Governance KPIs (e.g., actions taken against corruption and litigation risks).
- External ESG ratings, although there are wide differences among these standards.

3. Financial/economic KPIs:

- Top-line indicators (e.g., revenue increase, new customers).
- Profitability (e.g., return on assets, return on equity).
- Meeting risk KPIs (e.g., expected loss from ESG products).
- Capital market metrics (e.g., share price).

4. Non-financial KPIs:

- Employee satisfaction with company progress on sustainability.
- Retention.
- Branding and reputation.

PUTTING ESG INTO PRACTICE WITH SME LENDING

Banks should acknowledge increased interest from SMEs in ESG products — and take action to meet their needs. After all, doing nothing leads to top-line reduction, while doing something provides a good chance of increasing revenues.

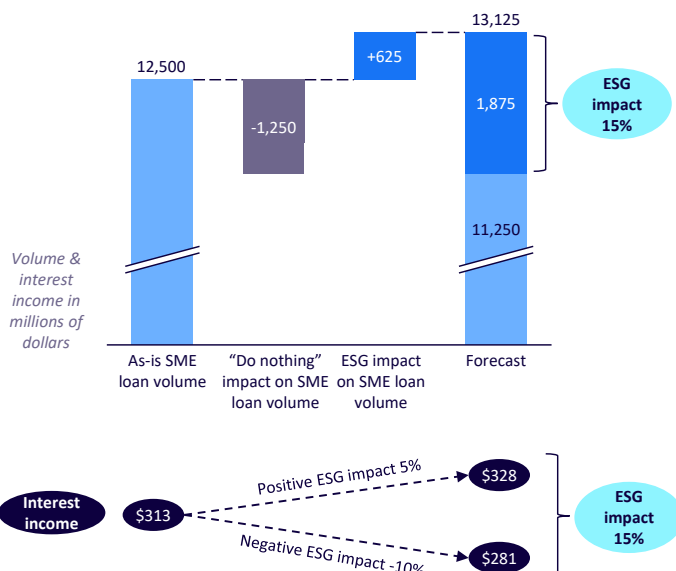
We have derived a business case for ESG within SME lending from our past project experience and discussions with clients that have expanded our knowledge. This business case example, outlined in Figure 1, shows the potential financial opportunity within a country with an annual volume of SME loans valued at US \$250 billion.

A bank with a 5% market share (equivalent to \$12,500 million) and a 2.5% interest rate will earn \$313 million in interest income. This market share can be increased to \$13,125 million without changing pricing through a combination of:

- **Attracting new clients from rivals.** Offering ESG investments increases loan volume by a conservative 5% (+ \$625 million).
- **Preventing churn of existing clients.** Removing the risk of income loss of 10% in the medium-to-long term decreases (-\$1,250 million).

This equals a 15% ESG impact on SME loan volume and a rise in interest income to \$328 million. Further revenues can be gained through cross-selling opportunities, which could include offering CO2 certificates and ESG advisory services.

Figure 1. ESG’s impact on SME loan revenues



Source: Arthur D. Little

The benefits of an ESG portal

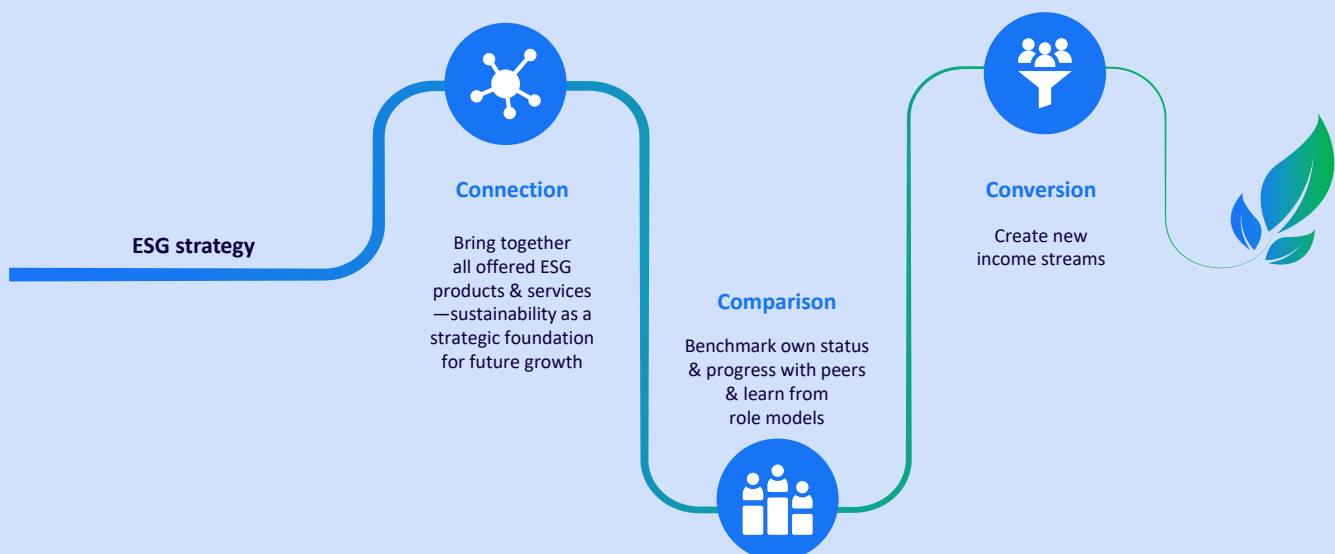
ADL worked with a financial services group that offers a diverse range of products to help shape its company-wide ESG strategy and to set up an internal ESG portal. Figure A shows the three focus areas:

- 1. Connection** — bringing together all available ESG products and services across the group into a single portal, establishing sustainability as a strategic foundation for future growth.
- 2. Comparison** — showing the group how other divisions were performing, enabling them to benchmark their own progress and learn from each other through healthy internal competition.
- 3. Conversion** — using the portal to highlight and offer new green products and services for new and existing customers, potentially generating new income sources through commissions or increased sales.

By creating a central portal for ESG products, the group made it simpler for all parts of the organization to understand and sell a higher volume of more sustainable services. Greater transparency encouraged all divisions to embrace new opportunities and clearly see the financial benefits.

As a further step, financial institutions can go beyond an internal portal to providing a platform that is open to clients and through which non-banking ESG products and services, provided by different providers, are offered. Expanding the portal to a wider ecosystem (e.g., including providers of renewable technology) increases commission opportunities and creates openings to offer tailored loans to aid purchases. This allows banks to be the primary ESG destination for clients, helping them take a leading role in the green transition.

Figure A. Shaping the ESG strategy of a financial group



Source: Arthur D. Little

CONCLUSION

SEIZING THE ESG REVENUE OPPORTUNITY

ESG IS A LONG-TERM TREND THAT WILL ONLY ACCELERATE

Despite current economic and geopolitical headwinds, ESG is a long-term trend that will only accelerate — and banks need to be ready. ESG provides an enormous revenue opportunity for them to deliver new, tailored products to keep their existing customers and win new business. Therefore, banks need to move from greening the organization to underpinning greater sustainability across customers through new products that can drive future growth. Achieving this requires a focus on seven best practices:

- 1 Move from ESG to ESGE**, fully integrating ESG into your economically sustainable business model.
- 2 Encourage cultural change by promoting awareness of ESG, particularly with customer relationship managers.**
- 3 Understand customer expectations** and the products and services they need and want.
- 4 Create specialized ESG products** tailored to different business lines.
- 5 Build a wider ecosystem by building new partnerships beyond financial services.**
- 6 Engage all stakeholders** in an ongoing dialogue as ESG evolves.
- 7 Invest in the right people and competencies** by looking beyond traditional banking skill sets.



Arthur D. Little has been at the forefront of innovation since 1886. We are an acknowledged thought leader in linking strategy, innovation and transformation in technology-intensive and converging industries. We navigate our clients through changing business ecosystems to uncover new growth opportunities. We enable our clients to build innovation capabilities and transform their organizations.

Our consultants have strong practical industry experience combined with excellent knowledge of key trends and dynamics. ADL is present in the most important business centers around the world. We are proud to serve most of the Fortune 1000 companies, in addition to other leading firms and public sector organizations.

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