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Financing a European Circular Transition: From investment-readiness to investment alignment

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Executive summary

Executive summary

The EU is increasingly positioning the circular economy as an industrial strategy rather than solely an environmental agenda. Through the *Clean Industrial Deal* and the development of the *Circular Economy Act*, circularity is being linked to competitiveness, decarbonisation, resource security, stronger regional value chains and reduced dependence on volatile or geographically concentrated supplies of virgin materials. Delivering these objectives will require substantial investment in circular businesses, industrial transformation and shared infrastructure.

European initiatives already address important parts of this challenge. Project Development Assistance (PDA) programmes such as CircularInvest help businesses strengthen their business models and prepare for investment. Regulation, public procurement, product standards and demand creation can improve the conditions in which circular businesses operate, while public lending, guarantees and blended finance can support selected projects.

These measures remain necessary, but they fail to address the financing challenge in its entirety. A circular business may be investment-ready and operate within a more supportive policy environment while still struggling to obtain suitable finance. Many circular models are operationally complex, place-based or dependent on coordination across wider value chains. They may create significant strategic benefits and environmental value without offering the rapid growth and exit opportunities sought by venture capital investors. Banks, meanwhile, tend to favour established firms, familiar technologies, conventional collateral and predictable cash flows.

The result is not only an investment gap but an investment mismatch. Too little capital reaches transformative circular activities, while much larger volumes continue to support incumbent linear production and dependence on virgin materials. Current policy largely seeks to improve disclosure and adjust the risk–return profile of circular investments to attract private finance. These measures can highlight which businesses are making efforts towards improved circularity and provide incentives for private capital to invest in specific projects, but they do not actively direct investment to necessary initiatives, nor channel it away from extractive industry.

If circularity is strategically important to European resilience and competitiveness, financial policy must look beyond investment readiness and private capital mobilisation. It must also address how resource-related risks are assessed, where credit is directed, which activities continue to receive financial support, and when direct public investment or ownership is needed.

This brief proposes three complementary areas of action:

1. **Integrate resource dependency into bank risk assessment and supervision.** The EU should develop a common methodology to help banks and supervisors identify how reliance on critical materials, concentrated suppliers, virgin inputs

and exposed regions can affect financial risk. Resource-related risks should be incorporated into loan assessment, portfolio mapping, scenario analysis, and supervisory review, with Pillar 3 public disclosure introduced once methodologies have been tested and options to implement more directive action considered. This would improve financial resilience and allow circular strategies that reduce resource risks to be recognised more effectively

2. **Use credit guidance to align bank lending with European industrial and resource-security priorities.** Public authorities should use credit guidance to influence where bank lending flows, including the price, quantity, and conditions of credit. A democratically governed European framework should identify priority areas for expanded lending, support industrial transformation and restrict finance for activities that deepen incompatible forms of extraction and material dependence. The European Investment Bank, national promotional institutions and participating commercial banks could provide affordable, long-term loans for eligible investments, supported where appropriate by targeted central-bank refinancing. Strong additionality, pass-through and allocation conditions would be needed to ensure that public support changes lending outcomes rather than simply lowering banks' funding costs.
3. **Expand direct public investment and ownership where private finance is inadequate or inappropriate.** Public institutions should provide patient equity and quasi-equity to strategic circular businesses that do not fit conventional venture capital models, while retaining meaningful ownership and governance rights where appropriate. Public authorities should also take a more active role in planning and financing shared infrastructure required for circular value chains. Public, cooperative, private and blended models should be assessed according to their long-term public value rather than a default preference for private finance and de-risking.

Together, these recommendations shift the focus from mobilising more investment to aligning investment with European objectives. They do not replace private finance or the need for viable businesses and supportive economic policy. Instead, they seek to ensure that financial risk assessment, commercial lending and public investment are better aligned with the EU's stated objectives for circularity, industrial resilience and resource security.

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Part I

Introduction

The Clean Industrial Deal: The role of the circular economy in a resilient Europe

In recent years, the EU has increasingly repositioned the circular economy from an environmental imperative to a strategic pillar of industrial development and transformation in response to changing geopolitical dynamics and growing concerns around consistent access to critical raw materials. Under the Clean Industrial Deal, circularity is no longer framed primarily as a waste, recycling or environmental agenda, but as a driver of industrial competitiveness, decarbonisation, resource security and resilience. The European Commission explicitly links circularity to reducing the use of virgin critical raw materials, improving their recovery, and extending product lifetimes, while still emphasising reuse and recycling. The ambition is to make better use of the EU's limited resources and reduce overdependence on third-country suppliers and increasingly volatile global supply chains.

While still under development, the Circular Economy Act is the policy package through which these ambitions are to be addressed. It is expected to centre circularity as a core economic strategy for resource security, resilience, and industrialisation (re)development by creating a more effective Single Market for secondary raw materials, improving both the supply and demand for high-quality recycled materials, reducing dependence on imported raw materials, and strengthening domestic and regional value chains.

The development of the Act emphasises the EU's commitment to the circular economy and reflects the growing recognition that scaling circular business models will be central to achieving its industrial and resource security objectives.

Understanding the circular economy financing challenge as a two-sided problem

A core pillar of the EU's existing approach to the circular economy is the scaling of circular business models. Central to this effort is the provision of direct expert support to high-impact circular projects and businesses. CircularInvest, delivered through the Circular Cities and Regions Initiative (CCRI), sits within this practical implementation landscape by helping circular economy businesses become investment-ready through stronger business models, more effective impact communication, and preparation for due diligence and investor engagement.

CircularInvest, along with the many other Project Development Assistance (PDA) programmes, has been invaluable to the participating businesses. Many circular businesses need support to translate environmental and systems value into commercially credible propositions that banks, venture capital investors, public lenders and other financiers can appraise and invest. However, the experience of

these programmes also shows the limitations of viewing the circular economy financing challenge primarily as a pipeline problem.

PDA programmes are demonstrably effective in strengthening business cases, improving investor confidence, and deploying growth strategies that recognise the value-chain interdependencies often essential to circular business models. Yet a number of structural barriers continue to restrict funding opportunities, even for businesses that would, by most measures, be considered investment-ready. A circular business may have a commercially viable model, robust documentation and the ability to satisfy due diligence requirements, while still failing to attract investor interest or suitable financing terms.

The first policy brief produced through the CircularInvest programme outlined a range of policy measures to improve the economic conditions facing circular businesses, which often remain at a structural disadvantage to their linear counterparts. Virgin materials often remain cheaper than secondary alternatives, environmental externalities are insufficiently priced, and the infrastructure, standards and market demand needed to support circular models remain uneven. Developing a consistent pipeline of commercially viable businesses is therefore essential to expanding demand for circular economy finance, making PDA programmes highly valuable to the specific businesses they support. Widespread policy reforms that improve the price competitiveness of secondary and sustainable materials relative to virgin ones, on the other hand, would benefit the circular economy as a whole.

While PDA programmes strengthen the demand for circular economy investment, and economic policy improves the enabling environment for circular businesses, neither addresses the supply side of the financing challenge. Experience from the investor engagement phase of CircularInvest, as well as other PDA programmes, demonstrates that even businesses with a coherent financial plan, credible growth strategy, early proof of demand and sound documentation are fishing in a far smaller investor pool than their linear counterparts. In practice, they remain heavily dependent on a relatively small group of specialist and impact-focused investors, together with limited public funds.

The Venture Capital model has shortcomings in scaling impact

This reflects a wider characteristic of the European financial system, particularly the availability of venture capital (VC) and its suitability for business models with genuinely transformative social and environmental potential. VC plays an important role in financing and scaling innovation by providing high-risk, early-stage capital to businesses capable of rapid growth and generating substantial returns. Unsurprisingly, this has led VC to focus heavily on digital innovation, where the opportunity to generate substantial financial value is greatest. It is less well-suited to business models in which the societal or ecological value is as significant as, or more significant than, financial value. Research shows that clean- and green-tech firms already struggle to

raise venture capital in Europe, with evidence suggesting these barriers are even more acute for circular economy businesses.¹

For many circular businesses, innovation is operational rather than purely technological. They are often place-based, limiting their scalability, or depend on emergent infrastructure, regulation, public procurement support or value-chain coordination to succeed. Activities such as repair, reuse, refurbishment, remanufacturing, reverse logistics, circular construction, textile sorting and shared infrastructure can create significant system value and positive spillover effects within the value chain without offering the growth profile or exit potential typically sought by VC investors.

Banks do not adequately assess circular or linear risk

The challenges faced by circular businesses in raising equity are compounded by the makeup of Europe's financial system, which remains heavily bank-based. This makes banks essential to the financing of small- and medium-sized enterprises (SMEs) and, according to *Circularity Gap Report (CGR) Finance* data, they provide the largest share of circular economy investment across Europe.²

However, bank lending practices are not without their own shortcomings, especially in regard to funding transformative circular economy initiatives. Banks inherently favour track records, assets as collateral, predictable cash flows and familiar sector benchmarks. Linear firms are more likely to meet these criteria because their markets, assets and revenue models are well understood. Circular businesses, by contrast, may retain ownership of their products, preserve asset value through repair and refurbishment, or generate revenue through service contracts, all of which are not well captured by conventional measures of creditworthiness. As a result, circular economy businesses, especially those that extend the useful life of materials, are perceived as higher-risk borrowers and face greater difficulty accessing debt, even when they satisfy conventional measures of investment readiness.

At the same time, banks often underestimate the risks associated with linear business models. Resource-related risks arising from geopolitical instability, climate disruption, regulatory change and resource depletion are becoming increasingly material, yet few financial institutions have sufficiently developed methodologies to incorporate them into lending decisions. By failing to account fully for these risks, banks continue to fund businesses and industries that are vulnerable to major supply-side shocks while undervaluing the mitigating effects of circular business models.

The consequence is a structural bias in capital allocation. According to CGR Finance data, over 95% of all debt provisioned by European banks supports businesses that rely predominantly on virgin materials.³ Even within the circular economy, lending is concentrated in material recovery and recycling initiatives, where capital equipment

¹ (Jacques Delors Centre, 2024)

² (CGR Finance, 2025)

³ Findings from CGR Finance dataset

can be provided as collateral, business models can provide demonstrable track record over decades, and in many cases come with ample regulatory support. By contrast, businesses operating at the design and production stages of key value chains, where the greatest potential exists to mitigate virgin material extraction, associated pollution and waste generation, receive very little funding from banks.

Given the EU's newfound focus on stability and resilience, addressing this blind spot within the financial system will be paramount.

An investment mismatch rather than an investment gap

In response to this situation, European institutions rightly emphasise the scale of investment needed for the circular transition. The European Investment Bank and the European Commission estimate that achieving the objectives of the Circular Economy Action Plan will require an additional €1,229 trillion in investment between 2025 and 2040, equivalent to an annual investment gap of €82 billion, or a 68% increase in annual investment compared with current levels.⁴

The same assessment also recognises that circular projects face structural barriers, including competition from the linear economy, weak and fragmented demand for secondary materials and circular products, distorted price signals, uneven quality standards, split incentives, regulatory uncertainty and underdeveloped infrastructure. These findings reinforce the recommendations outlined in the first policy brief in this series, which argued that improving the broader economic conditions for circular businesses is essential to expanding investment opportunities.

This acknowledgement of an 'investment gap' has become a central feature of policy debates across sustainable development, with the dominant policy response focused on 'mobilising' private finance. This approach assumes that the most logical means to finance transitions is the substantial pools of capital deployed by asset managers, institutional investors and banks, and that it can be redirected where public finance is considered insufficient or better used elsewhere. While this framing highlights the scale of the financing challenge, it also risks reducing the problem to one of investment volume rather than one of capital allocation, direction, benefit, and system value. Critically, the funding gap narrative suggests that we need more overall finance, rather than suggesting that the vast amounts of existing capital should be reallocated.

This is somewhat at odds with the key finding of empirical evidence into circular economy capital flows. Circular activities account for only around 2% of tracked commercial investment, while the overwhelming majority of capital continues to fund linear, resource-intensive industries.⁵ This mirrors the anecdotal experience of investor engagement as part of CircularInvest. The challenge is not only that too little capital

⁴ (European Investment Bank, 2026)

⁵ (CGR Finance, 2025)

is flowing into circular activities, but that the majority of existing investment continues to support status quo linear activities over transformative ones.

Framing the current policy approach to financing the circular transition

The current European policy response to financing the circular transition is substantial. The Circular Economy Action Plan, Ecodesign for Sustainable Products Regulation, revised Waste Framework Directive, and Packaging and Packaging Waste Regulation all aim to improve the conditions for circular business models to develop. Meanwhile, the EU Taxonomy and Corporate Sustainability Reporting Directive help define, classify and disclose circular economy-related activities and risks. On the financing side, instruments such as InvestEU, Horizon Europe, the LIFE Programme, the Recovery and Resilience Facility, regional funds and European Investment Bank lending provide routes through which public finance can support circular economy objectives. Many of these instruments use risk-bearing finance, blended finance and advisory support to de-risk new circular economy projects, crowding in private capital and supporting market formation.

These measures are useful, especially those relating to economic policy. However, many finance-specific initiatives share a common limitation, in that they are primarily designed to improve the conditions under which private finance may choose to invest, rather than to shape how capital is allocated in line with the EU's resource security and resilience goals. Project development assistance improves the number of quality businesses seeking capital; disclosure and taxonomy tools improve the visibility and comparability of circular activities; and guarantees and blended finance reduce the risks for private investors in targeted activities. What these measures do not materially address, however, are the vast majority of capital flows supporting businesses reliant on increasingly scarce raw materials and volatile global supply chains.

The shortcomings of disclosure-based approaches are especially pronounced in the circular economy. Disclosure and classification tools can improve transparency, but rely on the assumption that better information will lead to 'better' allocations of capital. Given the breadth and system-dependent nature of circularity, this assumption is especially limited. The circular economy spans activities ranging from small operational improvements to large-scale infrastructure that creates value across entire systems. This breadth makes it much easier for weak claims to be presented as meaningful circular activity, especially when incremental improvements in recycling, packaging, waste diversion or operational efficiency are treated as equivalent to interventions that fundamentally reshape systems of production and consumption and reduce material use at scale. A disclosure-led approach may therefore improve the labelling of 'circular economy finance' without sufficiently addressing whether the underlying activity is genuinely transformative, but critically also what action the financial sector must take in relation to the determination.

The limitations of de-risking are different but equally important. Blended finance, guarantees and public-private partnerships can be useful where a circular project is close to commercial viability but faces specific barriers linked to scale, track record, technology or demand (un)certainty. However, many activities required to scale circular business models have public-good or system-enabling characteristics. They can generate value across sectors and value chains without necessarily generating sufficient project-level profit to attract private investors without substantial public support. In these cases, de-risking does not resolve the underlying business case problem. Instead, it can transfer risk from private to public balance sheets, as well as transfer value when guarantees, subsidies or concessional terms are required to produce returns above those available to investors in the market. Evidence from previous EU de-risking schemes also warrants caution. The European Court of Auditors found that nearly a third of surveyed European Fund for Strategic Investments projects would have proceeded without public support, raising questions about additionality, effectiveness and the optimal use of public funds.⁶

These approaches can play an important role in a comprehensive strategy to reorient capital flows, but they are unlikely to achieve this on their own. A stronger supply-side approach is needed to complement efforts to build the project pipeline and improve the information available to financial institutions. If circularity is now positioned as a core strategy for European resilience, financial policy must also address the incentives, risk models and regulatory expectations that dictate how banks and investors actually allocate capital.

This provides the basis for the recommendations positioned in Section two of this briefing. Scaling circular business models requires more than investment readiness and the voluntary mobilisation of private finance. It requires a policy approach that recognises the current direction of capital flows as part of the problem and uses public finance, financial sector regulation and market-shaping policy to align private finance with the EU's own objectives for resource security, resilience and industrial competitiveness.

⁶ (European Court of Auditors, 2019)

Part II

Reorienting capital
flows for a resilient
and competitive
Europe

Key recommendations

Insights from CircularInvest and other CCRI-PDA projects show that circular businesses, especially circular start-ups, face systemic, infrastructural, and social barriers rooted in economies designed for linear business models. These entrenched conditions prevent circular practices from going mainstream and have prompted repeated calls to 'level the playing field' by adjusting policies, incentives, and regulations so that circular businesses can compete more fairly with linear alternatives.

The previous policy brief in this series focused on the real-economy conditions required for circular businesses to scale, including supportive regulation, established demand for products and services, better infrastructure, and economic policies that improve their competitiveness relative to linear alternatives.⁷ These remain necessary conditions, and the recommendations that follow are intended to build on them rather than replace them. Together, the suite of policy options presented across the two briefs forms a more comprehensive approach to financing the circular transition: strengthening the pipeline of investment-ready circular opportunities on the demand side while addressing the supply side by establishing stricter institutional parameters for the financial sector and ensuring that the European economy is adequately protected from the growing volatility of global supply chains.

Some of the recommendations in this brief could be considered radical or unprecedented in the context of the last fifty years. During this period, market-based solutions have been the dominant mechanism for influencing financial markets, while disciplinary measures to determine commercial financing outcomes have become less common across most economies. Historically, however, such measures were considered to be a core principle of industrial policy, with states using them to develop strategic industries, public services and national infrastructure.⁸ As industrial policy returns to the centre of the EU's agenda, and the circular economy emerges as a key component of that strategy, there is an ample opportunity to reconsider such approaches.

The recommendations are united by a broader mission: to embed European competitiveness within, and resilience to, the changing economics of resource use. The aim is distinctly not to create a narrow niche for circular economy finance, but to align financial regulation, public finance and credit allocation with the EU's stated industrial priorities. If the *Clean Industrial Deal* and *Circular Economy Act* position circularity as a core route to competitiveness, reindustrialisation and reduced dependence on third-country suppliers, financial policy must be organised around the same objectives.

Such mission-oriented policy does not assume that the state should intervene only to correct market failures after they occur. Rather, it recognises that public institutions can and should shape the direction of markets where long-term public goals require

⁷ (CircularInvest, 2026a)

⁸ (Hodgman, 1973; Kedward, Gabor and Ryan-Collins, 2022)

coordination across sectors, systems, technologies, and policy priorities. The relevant question is therefore not whether the EU should 'pick winners' at the level of individual firms but whether it can intelligently and intentionally set strategic directions, build institutional capacity, and mobilise public and private actors around missions that markets have proven unable to deliver.

Policy recommendations for financing a European circular transition

The policy recommendations are grouped under three complementary strategic themes. Together, they respond to distinct but interconnected limitations in the current approach to financing the circular transition. Improving the investment readiness of individual businesses and projects remains important, but it does not address the wider financial structures that continue to favour established linear activities or determine which forms of production receive capital.

The first theme addresses the incomplete recognition of resource dependency and supply-side vulnerability within bank risk assessment and supervision. Better information, scenario analysis and disclosure can make these risks more visible and improve how banks distinguish between resource-vulnerable and resource-efficient activities. However, risk-based approaches remain limited as a standalone strategy. They assume that, once risks are measured and reflected more accurately in prices, private financial institutions will reallocate capital in line with public objectives. This cannot ensure that strategically important investments receive finance where commercial returns remain uncertain, nor can it prevent profitable extractive and resource-intensive activities from continuing to attract capital. These suggestions therefore build from setting the foundations for more adequate risk assessment, to considering measures of more directive action based on the determined exposure to such risks.

The second theme moves from risk assessment to the more explicitly allocative question of where credit should flow. It considers how public authorities could guide the price, quantity and conditions of bank lending in line with democratically determined industrial and resource-security priorities, while also restricting finance for activities that deepen incompatible forms of extraction and material dependency.

The third theme addresses investments for which repayable credit is insufficient or inappropriate. It proposes a stronger role for direct public equity, long-term public ownership, and public or cooperative infrastructure provision where the wider social, environmental and strategic value of an investment cannot be adequately captured through private financial returns.

The three themes should be understood as mutually reinforcing rather than strictly sequential:

1. **Improve the recognition and management of resource-related financial risks.**

2. **Guide bank credit towards publicly determined priorities and away from incompatible activities.**
3. **Use direct public investment and ownership to develop strategic firms, capabilities and shared infrastructure.**

Taken together, these recommendations shift the focus from simply mobilising more private finance towards actively aligning financial risk assessment, credit allocation and public investment with the EU's circular economy and industrial objectives. The following sections examine the individual policy recommendations within each theme in greater detail, outlining the financing challenge each addresses and the role each measure plays within the wider framework.

Recommendation			Challenge addressed
1. More effectively integrate resource dependency into bank risk assessment and supervision	1.1	Develop an EU resource-risk module within the existing prudential framework	Addresses the absence of a common method for translating high-risk material dependency, supply concentration and resource-related disruption into established financial risk categories.
	1.2	Integrate resource dependency into loan origination and monitoring	Ensures that banks consider resource vulnerabilities and credible circular risk mitigants when assessing borrowers, rather than relying primarily on conventional sectoral and collateral-based indicators.
	1.3	Introduce supervisory exposure mapping and pilot resource-risk scenarios	Gives banks and supervisors greater visibility over concentrated portfolio exposures and tests how supply interruptions, price shocks and regulatory changes could affect borrowers and financial stability.
	1.4	Integrate material resource risks into supervisory review and remediation	Ensures that exposure mapping and scenario analysis lead to changes in bank risk management, supervisory remediation and, where justified, additional prudential protection.
	1.5	Extend Pillar 3 disclosure to material resource-related financial risks	Improves the comparability and public visibility of banks' resource-related exposures, data gaps and risk-management responses, strengthening market and supervisory discipline.

2. Better align bank lending with determined public objectives	2.1	Establish a democratically governed EU framework for credit allocation	Converts EU industrial, circularity and resource-security priorities into clear guidance on the activities for which credit should be expanded, redirected or restricted.
	2.2	Direct affordable, long-term credit towards key aspects of industrial transformation	Addresses the shortage of suitably priced and structured debt for circular investments, particularly for small and medium-sized enterprises and projects requiring longer maturities or transition-related working capital.
	2.3	Introduce a restrictive arm for finance that expands incompatible and extractive capacity	Prevents additional circular lending from being undermined by continued financing for activities that deepen extraction, virgin-material use and strategic dependency.
	2.4	Consider collateral eligibility, bond-purchase conditions and capital requirements as allocative tools	Examines how monetary and prudential frameworks could reinforce credit guidance and reduce the favourable treatment currently extended to incumbent and incompatible forms of finance.
3. Use direct public investment and ownership to scale strategic circular innovation and infrastructure	3.1	Establish a direct public equity and patient-capital window for strategic circular businesses	Addresses the mismatch between conventional venture capital and circular businesses that are asset-heavy, operationally complex, slower to scale or dependent on wider value chain transformation.
	3.2	Retain public stakes, governance rights and a share of the value created	Prevents public capital from functioning only as temporary risk absorption before ownership, control and financial upside are transferred to private investors.
	3.3	Develop coordinated circular infrastructure programmes in priority value chains	Addresses gaps in shared facilities, logistics, data, skills and other enabling systems that individual circular businesses cannot efficiently finance or coordinate alone.
	3.4	Select financing, ownership and delivery models according to public value	Challenges the default preference for private finance and de-risking by requiring public, cooperative, private and blended models to be assessed on comparable

			financial, social, environmental and strategic terms.
	3.5	Protect open access and fund enabling functions that cannot support commercial returns	Prevents publicly supported infrastructure from becoming a private bottleneck and ensures that essential coordination, standards, data and technical-support functions receive appropriate non-commercial funding.

Table one. Overview of main policy recommendations

1. Recommendations to more effectively integrate resource dependency into bank risk assessment and supervision

Europe's dependence on imported virgin materials, geographically concentrated supply chains and volatile commodity markets creates material risks for both financial institutions and the businesses within their investment portfolios. Disruptions to the supply of critical inputs can increase production costs, interrupt operations, raise working-capital requirements, reduce asset values and weaken borrowers' capacity to service debt. Regulatory changes concerning product durability, repairability, recycled content, waste and extended producer responsibility can create additional transition costs for firms that remain dependent on linear production models.

These should be understood as **resource-related financial risks**. Their underlying drivers may be environmental, geopolitical, technological, commercial or regulatory, but they ultimately affect banks through established risk categories such as credit, concentration, market, operational and business-model risk.

The EU's prudential framework already provides a basis for addressing many of these risks. The revised *Capital Requirements Directive* requires banks to identify, measure, manage and monitor environmental, social and governance risks over short-, medium- and long-term horizons. It also requires resilience testing under baseline and adverse scenarios, beginning with climate-related factors and progressively extending to wider environmental and social changes. The European Banking Authority's guidelines on environmental, social and governance risk management have applied since January 2026, while its more detailed guidelines on environmental scenario analysis will apply from January 2027.⁹

The issue, therefore, is not the complete absence of a regulatory mandate, but the lack of sufficiently consistent indicators, scenarios and credit-assessment methods for resource dependency. While climate-related financial risks are increasingly supported by common definitions, exposure metrics and supervisory exercises, comparable

⁹ (European Banking Authority, 2025)

approaches remain underdeveloped for critical-material dependency, supplier concentration, resource-price volatility, substitutability, waste-related costs and circular strategies that reduce these exposures.

This matters not only for the financial resilience of the European economy, but also for the allocation of finance and the orientation of capital flows. Where resource dependencies are not adequately recognised, banks may understate the vulnerability of established firms whose business models depend on cheap virgin materials and fragile supply chains. At the same time, they may fail to recognise the risk-mitigation benefits of investments in material efficiency, substitution, repair, reuse, remanufacturing and secondary-material supply. Better risk assessment would not, on its own, redirect finance towards the circular economy. Many strategically important circular investments will remain commercially uncertain even where their contribution to resilience is significant. However, alongside a suite of economic and regulatory measures, improved risk assessment can help to remove an important bias in existing financial decision-making. Banks would be better able to distinguish between firms that are exposed to resource shocks and otherwise comparable firms that have credibly reduced those vulnerabilities.

The European Commission and banking authorities should therefore use the implementation of the *Capital Requirements Regulation* and *Capital Requirements Directive* to establish a common approach to resource-related financial risk. This should proceed through the following largely sequential measures.

1.1. Develop an EU resource-risk module within the existing prudential framework

◆ **Mandate the European Banking Authority to develop a common methodology for identifying and assessing financial risks arising from resource dependency.**

The European Banking Authority, working with the European Central Bank, European Systemic Risk Board, Joint Research Centre and national competent authorities, should develop a resource-risk module within the existing framework for environmental, social and governance risk management. This should not establish 'resource risk' as a wholly separate prudential risk category, instead, it should provide a common method for identifying resource-related risk drivers and tracing their transmission into established financial risks.

The framework should distinguish four dimensions:

1. **Dependency:** The extent to which a borrower or value chain relies on particular materials, suppliers, processing stages or geographic regions.
2. **Vulnerability:** The financial consequences of disruption, including effects on production, revenue, costs, working capital and asset values.
3. **Adaptive capacity:** The borrower's ability to respond through substitution, inventories, supplier diversification, product redesign or cost pass-through.

4. **Risk mitigation:** The extent to which resource efficiency, repair, reuse, remanufacturing, secondary-material sourcing and related circular strategies materially reduce exposure.

Common indicators could include:

- dependence on designated critical or strategically important materials;
- the share of key inputs sourced from highly concentrated countries or suppliers;
- single-supplier and single-region exposure;
- availability and cost of substitute inputs;
- inventory coverage and replenishment times;
- material costs as a share of total production costs;
- dependence on virgin relative to secondary materials;
- exposure to waste, disposal and extended producer responsibility costs; or
- contractual access to recovered materials.

The same material dependency may have very different financial implications depending on contracts, inventories, market position, substitution options and public policy. It would therefore be unhelpful to convert these indicators into a single resource-risk score. An optimal methodology should instead illustrate how particular dependencies affect cash flows, debt servicing capacity and asset values under defined conditions.

The framework should also distinguish environmental risks from wider industrial supply risks. Resource depletion, pollution and ecosystem degradation, for example, may fall within the emerging environmental risk framework, but export restrictions, geopolitical concentration and commodity-market disruption may need to be captured through credit, country, market and concentration risk analysis. Forcing all resource-security concerns into the environmental, social and governance category would leave important transmission channels poorly specified.

To support operationalisation, initial implementation should focus on a limited number of strategically important and materially exposed value chains, such as batteries, electronics, vehicles, chemicals, textiles and construction. The methodology could then be refined and extended as supervisory capacity develops.

1.2. Integrate resource dependency into loan origination and monitoring

◆ **Amend European Banking Authority guidance so that banks assess material resource dependencies when originating and monitoring loans in exposed sectors.**

The European Banking Authority should incorporate the resource-risk module into its *Guidelines on Loan Origination and Monitoring* and, where necessary, issue

supplementary guidance under its existing environmental, social and governance risk-management framework.

The objective should be to ensure that material resource dependencies are considered within ordinary credit assessment rather than remaining within a separate sustainability function. Where relevant to the borrower, banks should assess how supply interruptions, price volatility and regulatory change could affect:

- revenue and production volumes;
- operating margins;
- working-capital needs;
- capital expenditure;
- liquidity;
- collateral values;
- probability of default; and
- recovery values in the event of default.

Banks should also assess whether claimed circular strategies constitute credible financial risk mitigants. Relevant evidence would need to be defined, but could include:

- long-term contracts for secondary-material supply;
- diversified or regionalised sourcing;
- verified reductions in material use per unit of output;
- take-back and recovery systems;
- contracts that include repair or maintenance;
- secondary-material offtake agreements;
- established markets for recovered products, components or materials.

Circularity should not, however, be treated as an automatic indicator of lower credit risk. Retained ownership and product-as-a-service models may involve longer repayment periods, residual-value exposure, utilisation risk and higher upfront capital requirements. Repair, refurbishment and remanufacturing models may depend on uncertain return volumes and secondary-market demand. In theory, these models may reduce the overall associated business risk, but they can also introduce complexities related to cash flow timing, logistics, and regulatory reliance. Banks should therefore assess these risks alongside the resilience benefits.

The regulatory objective should be better differentiation, not preferential treatment based on labels. A firm should receive recognition only where it can demonstrate that a particular strategy reduces a financially relevant vulnerability or strengthens repayment capacity.

A more nuanced assessment framework could also address banks' reliance on crude sectoral and business model proxies and improve funding outcomes for small and medium-sized enterprises. Smaller firms developing circular solutions may lack conventional collateral or long operating histories while being less exposed to virgin-

material volatility or future product regulation. A more appropriate assessment framework would allow these characteristics to inform the credit decision.

Finally, to avoid shifting disproportionate reporting costs onto small borrowers, the European Banking Authority can acknowledge, as it has with environmental, social and governance, that data will remain incomplete and that a fully standardised methodology is not yet feasible across all portfolios. Banks should instead use a tiered approach: initial sectoral screening based on public and supervisory datasets; standardised estimates where firm-level information is unavailable; a short core data request for borrowers in materially exposed sectors; and more detailed assessment only for large, concentrated or high-risk exposures.

The European Commission could support this through an open European resource-risk data platform combining information on material use, import concentration, production locations, environmental pressures, waste flows and trade dependencies. Providing this information as shared public infrastructure would be more efficient than requiring each bank and SME to purchase or reproduce similar datasets separately.

1.3. Introduce supervisory exposure mapping and pilot resource-risk scenarios

◆ **Require banks to map material resource exposures and include selected resource shocks in supervisory scenario analysis.**

The European Banking Authority's 2026 consultation proposed a supervisory template for risk exposures to environmental risks beyond climate.¹⁰ This provides a clear avenue for incorporating selected resource-dependency considerations into proportionate supervisory reporting without establishing an entirely separate reporting system. Such an approach is important for understanding, assessing and pricing the risks arising from future ecological and geopolitical incidents unlike those we have seen in the past. It would represent a critical shift in financial risk assessment—from an approach centred on historical trends to one that is forward-looking and cognisant that future shocks may be both materially significant and unprecedented.

Initial reporting should focus on the information supervisors need to identify concentrations and data gaps. These might include core aspects such as sectoral and geographical exposure to certain materials or countries, the estimated reliance on and sensitivity to certain material inputs, as well as evidence of circular economy mitigants such as material substitution, diversification, and product take-back systems.

Reporting should initially remain confidential, giving supervisors the opportunity to compare methodologies, assess data quality and identify misleading indicators before introducing broader public disclosure. The European Central Bank and national competent authorities could then pilot resource-risk scenarios in selected industrial value chains. These exercises would build on the European Banking

¹⁰ (European Banking Authority, 2026a)

Authority's environmental scenario analysis framework, which distinguishes short-term stress testing from longer-term analysis of business-model resilience.

Scenarios should examine potential changes in the access, supply and price of certain materials, including temporary supply interruptions and disruption in certain regions. Prospective or hypothetical policy changes could also be considered. Each scenario should define the severity and duration of the shock, the availability of substitutes, inventory coverage, the capacity to pass costs to customers and any assumed public policy response. Banks could then translate these assumptions into financial effects on borrowers and portfolios.

1.4 Integrate material resource risks into supervisory review and remediation

◆ **Develop a common European Banking Authority methodology for incorporating material resource-related financial risks into the Supervisory Review and Evaluation Process, including proportionate remediation and additional capital requirements where warranted.**

Improved reporting and scenario analysis will strengthen financial resilience only if their findings influence banks' risk management and supervisory responses. Competent authorities should therefore incorporate material resource-related risks into the Supervisory Review and Evaluation Process (SREP), through which they assess a bank's business model, governance, risks to capital and liquidity, and the adequacy of its internal controls. The revised European Banking Authority framework already provides for environmental, social and governance risks to be integrated across supervisory assessment rather than treated as a separate sustainability exercise.

Where exposure mapping identifies material vulnerabilities, banks should be expected to incorporate them into their risk appetite, sectoral and geographic concentration limits, loan monitoring practices and strategic planning. Relevant risks should also enter the Internal Capital Adequacy Assessment Process (ICAAP), through which each bank assesses whether it holds sufficient capital against the risks arising from its business model and portfolio.

Supervisory responses should be proportionate to the severity of the exposure and the quality of its management. Where weaknesses arise primarily from poor data, governance or controls, competent authorities could require improvements to risk management systems, underwriting policies, contingency planning or portfolio limits. The revised Capital Requirements Directive already requires supervisors to assess institutions' environmental, social and governance exposures, plans and risk management arrangements, providing an existing legal basis for incorporating material resource-related factors.

Where the Supervisory Review and Evaluation Process identifies material resource-related risks to capital that remain inadequately mitigated and are not sufficiently covered by Pillar 1 requirements, competent authorities could impose appropriate

institution specific Pillar 2 requirements or other quantitative supervisory measures. If similar dependencies create correlated risks across several institutions, relevant macroprudential authorities could also assess whether the vulnerability can be addressed through an existing sectoral systemic-risk buffer or another macroprudential instrument, and whether changes to the applicable exposure categories are required.

Such measures should not follow automatically from exposure to a resource-intensive sector. They would require evidence that the vulnerability is financially material, could contribute to system-wide disruption, is insufficiently mitigated and is not already captured elsewhere in the prudential framework. Where supervisory evidence indicates that similar resource-related risks are systematically undercaptured across institutions, the European Banking Authority should assess whether targeted adjustments to Pillar 1 credit-risk parameters or other prudential requirements are warranted.

This would complete the supervisory chain by ensuring that resource-risk assessment leads to remediation where necessary, rather than ending with information collection.

1.5 Extend Pillar 3 disclosure to material resource-related financial risks

◆ **Amend the EU's Pillar 3 implementing standards to require proportionate public disclosure of banks' material resource dependencies, portfolio vulnerabilities and risk-management responses.**

Pillar 3, the public-disclosure component of the EU's prudential banking framework under the Capital Requirements Regulation, requires banks to publish standardised quantitative templates and qualitative information on their capital, exposures and management of material risks. Its purpose is to support market discipline by allowing investors, creditors, counterparties and public authorities to compare banks' risk profiles and assess whether those risks are being managed adequately. It is therefore distinct from corporate sustainability reporting: its primary concern is the financial risk to the institution, rather than the full environmental and social impact of its financing.

Environmental, social and governance risks are already included within Pillar 3 under Article 449a of the Capital Requirements Regulation.¹¹ The Capital Requirements Regulation III extends these requirements across the banking sector on a proportionate basis, and the European Banking Authority published final draft implementing technical standards on 22 June 2026.¹² However, the standardised quantitative templates remain predominantly focused on climate-related transition and physical risks, energy performance, emissions and taxonomy alignment. They do not provide sufficiently standardised information on non-climate resource risks,

¹¹ (European Parliament and Council, 2024)

¹² (European Banking Authority, 2026b)

including critical-material dependency, concentrated supply chains, virgin-material price volatility and resource-related regulatory change.

Following the supervisory pilots proposed in Section 1.3, the European Commission should request the European Banking Authority to incorporate a proportionate resource-risk component into the Pillar 3 implementing technical standards, aligned with environmental, social and governance supervisory reporting under Article 430(1)(h) of the Capital Requirements Regulation. Banks should be required to disclose:

- aggregate exposure to sectors and counterparties materially dependent on selected critical or highly concentrated resources;
- significant concentrations in particular materials, supplier regions or processing stages;
- the estimated effect of common resource-price and supply-disruption scenarios on exposed portfolios;
- the extent to which borrowers have credible measures in place to diversify, substitute, reduce or circularise their material inputs; and
- material data gaps and the use of sectoral estimates or proxies.

The disclosure should distinguish clearly between gross dependency, financial vulnerability and risk mitigation. Exposure to a material-intensive sector is not, by itself, an adequate measure of risk. Financial vulnerability depends on factors such as input substitutability, supplier concentration, inventory coverage, contractual arrangements, cost pass-through and the borrower's capacity to adapt. Banks should therefore report both the scale of an exposure and its estimated sensitivity to defined shocks.

Banks should also disclose the proportion of materially exposed lending for which credible borrower-level mitigation measures have been identified, including lending whose purpose is to reduce the relevant dependency through redesign, material substitution, resource efficiency, remanufacturing or secondary-material infrastructure. This would prevent all lending to exposed sectors from being treated as equivalent. Credit for such activities may increase a bank's short-term exposure to a resource-intensive sector while reducing the underlying vulnerability of the borrower and value chain. Such financing should be reported as risk mitigation only where the bank can demonstrate a plausible connection between the financed intervention and a reduction in the borrower's sensitivity to the identified resource shock. The disclosure framework should make that distinction visible rather than encouraging banks simply to withdraw from strategically important European industries.

Implementation should follow the proportionality principles already embedded in Pillar 3. Large and systemically important institutions should initially provide the full quantitative templates and scenario-based information. Smaller and non-complex institutions should be subject to simplified aggregate requirements, particularly where exposures are limited or firm-level data are unavailable. The European Banking Authority should provide standard sectoral assumptions, material-level risk indicators

and public reference data so that implementation does not depend on individual banks transferring extensive and inconsistent reporting demands to small and medium-sized enterprise borrowers.

The resulting information would allow supervisors and market participants to identify banks with concentrated resource exposures, weak data or inadequate mitigation strategies. It would also provide a more credible basis for assessing whether institutions are genuinely reducing portfolio vulnerability, rather than reporting relatively small volumes of circular finance alongside much larger and unmanaged exposures to linear resource dependency.

In summary

Together, these measures would make resource-related financial risks more visible, comparable and actionable across the European banking system. A common methodology, supervisory reporting and scenario analysis would help banks identify where material dependency, supply concentration and regulatory change could affect borrowers' cash flows and repayment capacity. Supervisory review would require banks to address unmanaged exposures and could lead to additional capital requirements where material risks remain inadequately mitigated or covered. Pillar 3 disclosure would further strengthen accountability and comparability, while recognising credible measures that reduce underlying resource vulnerabilities. Where similar risks appear to be systematically undercaptured across institutions, the resulting evidence could also support targeted changes to the wider prudential framework.

This would improve risk differentiation, but it would not, on its own, guarantee that finance flows at the scale required towards circular businesses or strategically important investments. Prudential regulation remains primarily concerned with risks to banks and financial stability. It cannot capture the full industrial, environmental or social value of an activity, and accurate risk assessment may still show that innovative circular projects are commercially risky.

The following recommendations therefore build on, rather than follow mechanically from, this risk framework. Credit guidance would use public authority to influence the direction and conditions of lending in line with European industrial priorities. Public investment and ownership would finance the firms, capabilities and shared infrastructure whose wider system value cannot be adequately supported through commercial credit or private investment alone.

2. Recommendations to better align bank lending with public objectives

As discussed in the previous section, improving the assessment of resource-related financial risks would correct important blind spots in bank lending, strengthen

prudential oversight of exposure to supply-side shocks, and incentivise financial sector actors to orient portfolios to more localised and resource-efficient activities. It cannot, however, ensure that credit is redirected away from extractive activities and towards the investments Europe needs to meet its industrial ambitions. Banks make lending decisions primarily according to expected private returns, repayment risk and collateral. Strategically important investments may therefore remain underfunded even where their wider system value is clear, particularly when they involve unfamiliar technologies, uncertain markets, long repayment periods or coordination across multiple firms.

This limitation is especially important for the circular economy. Investments in repair, remanufacturing, material substitution, secondary-material processing and new service models can reduce European dependence on imported resources, but may not offer the short payback periods or conventional collateral preferred by commercial lenders. SMEs, which are central to developing and implementing many of these approaches, are particularly dependent on bank finance because they generally have less access to bond and equity markets.

Banks do not allocate finance across the economy neutrally. Their lending decisions are shaped by existing client relationships, established technologies, conventional collateral, historical financial data and expectations formed within the current economic system. These practices tend to favour large incumbent firms and familiar business models, even where those firms remain dependent on virgin-material extraction, geographically concentrated supply chains, high material throughput and short product lifetimes. Established extractive and linear activities can continue to attract substantial finance because they have proven revenue streams, valuable assets and long relationships with financial institutions. In many cases, they also benefit from economic policy that reinforces these advantages. Their profile makes them easily bankable, despite exposing Europe to resource shocks and their potential conflict with longer-term environmental and industrial objectives.

This creates an allocative problem that cannot be reduced to inaccurate risk pricing. Some resource-intensive activities may remain profitable and creditworthy despite imposing significant ecological costs or increasing strategic dependency. Conversely, investments in repair, reuse, remanufacturing, material substitution and secondary material systems may generate substantial public and industrial value without providing the risk-adjusted returns or collateral profiles preferred by commercial banks.

The first policy brief in this series addresses the wider economic conditions needed to make circular production more viable, including regulation, demand creation, market coordination and infrastructure. These measures are essential: financial policy cannot compensate for the absence of markets, stable demand or supportive industrial policy. But even where these conditions improve, the allocation of credit remains a political and institutional question. Banks may continue to finance the expansion of incumbent activities while underproviding the long-term credit required for structural transformation.

Credit guidance is a policy tool that addresses this problem directly. It refers to the use of public policy to influence which activities receive credit, in what quantities and on what terms. Historically, European governments and central banks used targeted

refinancing, public lending institutions, differentiated interest rates, sectoral lending targets and quantitative restrictions as core instruments of industrial policy. Contrary to dominant narratives, the retreat from these tools did not depoliticise finance, it transferred greater control over the direction of investment to commercial financial institutions.

A renewed credit-guidance framework should therefore have two complementary functions. Its positive arm should improve the cost, maturity and availability of finance for investments that reduce material dependency and build circular industrial capacity. Its restrictive arm should limit public support for, and where necessary constrain, new lending that expands extractive or resource-intensive capacity incompatible with agreed European objectives.

Such an approach would not require public authorities to approve individual loans or assume that every circular business is commercially viable. Instead, democratically accountable institutions would define strategic priorities, exclusions and programme conditions, while financial institutions would continue to assess individual borrowers and operate under new, more restrictive conditions. The objective is to place commercial lending within a collectively determined industrial strategy, rather than allowing existing banking practices to reproduce the status quo by default.

The distinction from the first recommendation is therefore fundamental. Resource-risk regulation asks whether banks adequately recognise and manage their exposures. Credit guidance asks where credit should flow and uses public authority to influence the financing available to different activities. Risk assessment can inform these decisions, but it cannot substitute for them.

2.1. Establish a democratically governed EU framework for credit allocation

◆ **Translate EU industrial, resource-security and circular economy objectives into a periodically reviewed framework identifying the activities for which credit should be expanded, redirected or restricted.**

An EU credit guidance framework, developed as part of the wider industrial-policy agenda, would provide the strategic basis for targeted lending programmes, public-bank mandates, refinancing operations, guarantees, collateral policy and restrictions on lending that is incompatible with Europe's long-term objectives.

The priorities should be grounded in objectives already established through EU legislation and industrial planning, rather than determined independently by the European Central Bank, banking supervisors or private financial institutions. The *Critical Raw Materials Act*, for example, already sets objectives for European processing, recycling and supply diversification. Credit policy should help translate these objectives into investment.

In developing the framework, policymakers should distinguish between different functions of credit, including:

- investment that expands certain strategic capacities;

- finance that supports the transition of existing industrial processes;
- lending that maintains essential activity during transition;
- marginal efficiency improvements with limited structural effect; and
- new capacity that deepens avoidable extraction, virgin material use or import dependency.

Assessment should take place primarily at the level of the financed activity. Large incumbents may require support to convert existing production, while a firm described as 'circular' may seek finance for an activity with little transformative value. Project-level criteria would therefore allow the framework to support industrial transformation without granting preferential treatment to all expenditure by a qualifying company.

The European Commission should develop the criteria in cooperation with the European Investment Bank, European Investment Fund, Joint Research Centre, national promotional institutions, regional authorities, trade unions, SMEs and civil-society organisations. Expected contributions should be expressed through measurable outcomes in areas of strategic importance, such as increased component recovery, greater supply diversification or reduced dependence on certain concentrated imports.

Such a framework should be reviewed regularly so that public support reflects changing industrial needs. Activities that become commercially established should gradually leave preferential programmes, while emerging bottlenecks should be incorporated. The resource-risk analysis developed under Recommendation one should inform these decisions but should not determine them mechanically. Strategically important investments may warrant support precisely because they remain financially risky.

2.2. Direct affordable, long-term credit towards industrial transformation

◆ **Establish coordinated European and national lending programmes offering preferential finance for investments identified through an EU credit-guidance framework.**

The major financing arms of the European public sector, including the European Investment Bank and national promotional banks, should extend or develop dedicated lending programmes for industrial transformation in line with circular economy objectives. Public institutions could provide loans directly to major projects capable of servicing debt, while also offering long-term credit lines to commercial, cooperative and regional banks that can reach a wider range of SMEs and mid-sized firms.

The European Investment Bank already uses intermediated lending to support smaller companies through partner banks. A dedicated programme could build on this model while attaching clearer requirements concerning the destination of credit, additional lending and the terms received by final borrowers. Such financing would

better reflect the actual needs of industrial transformation, especially in the circular economy, rather than relying on standard shorter-term loan products. Depending on the investment, programmes could provide:

- longer maturities and repayment grace periods;
- fixed or capped interest rates;
- finance for both capital expenditure and transition-related working capital; and
- repayment structures suitable for retained-ownership and service-based models.

Eligible expenditure could include product redesign, remanufacturing and refurbishment equipment, material substitution, secondary-material processing, take-back systems, and investments that reduce dependence on concentrated inputs or suppliers. Preferential finance should focus resolutely on real-economy initiatives and exclude shareholder distributions, speculative asset purchases, unrelated acquisitions and the refinancing of existing debt where no additional investment is made.

Within the euro area, the European Central Bank could assess the feasibility of a targeted longer-term refinancing operation linked to the priorities established through the EU framework. Previous operations supplied banks with long-term central bank funding on terms linked to their lending performance. A new facility could similarly link a bank's borrowing allowance and interest rate to the net additional credit it provides for eligible investments.

To ensure such an operation produces additional and better-targeted lending, preferential funding should be conditional on a demonstrable change in the destination and terms of bank credit. Participating banks should be assessed against targets for net additional eligible credit, accounting for repayments, loan sales and securitisations so that existing portfolios cannot simply be relabelled. They should also demonstrate that lower public funding costs have been passed through to final borrowers through reduced interest rates, longer maturities, grace periods or lower collateral requirements.

A proportion of each programme should be reserved for SMEs, smaller mid-sized firms and underserved regions, with limits on the amount that can be allocated to a single company or corporate group. Participating banks should retain a meaningful share of the credit risk and commit some of their own resources, preserving incentives for appropriate due diligence. Where lending or pass-through conditions are not met, access to preferential refinancing should be reduced or withdrawn and financial benefits recovered where appropriate.

The industrial priorities would need to be established politically. The European Central Bank would remain responsible for determining whether and how such an operation could support the general economic policies of the EU without prejudicing price stability. Its scale should also be coordinated with fiscal policy, procurement, skills

investment and the productive capacity of the sectors concerned, so that additional credit expands supply rather than simply increasing prices. Comparable programmes should be available outside the euro area through national promotional banks and, where compatible with their mandates, national central banks. Common European funding would help prevent access to transition finance from depending too heavily on national fiscal capacity.

Such programmes should focus on investments with a credible capacity to service debt once appropriate maturities, pricing and wider policy support are in place. Where revenues are too uncertain or insufficient to support borrowing, or where the wider public value of an investment cannot be captured through the borrower's cash flows, equity, grants or direct public provision would be more appropriate, as set out under Recommendation three.

2.3 Introduce a restrictive arm for finance that expands incompatible and extractive capacity

◆ **Exclude incompatible activities from publicly supported finance and introduce targeted limits on net new bank lending where continued expansion would undermine determined objectives**

Sustainable investment will have limited structural impact if banks continue to provide much larger volumes of finance to extractive, polluting, carbon- and resource-intensive activities. Credit guidance should therefore address not only what the financial system is expected to support, but also which activities should no longer receive unrestricted access to finance.

The first step should be to align all public financial instruments with the aforementioned credit guidance framework. Activities identified as incompatible with agreed development pathways should, as a first step, be excluded from European Investment Bank and national promotional-bank programmes, InvestEU guarantees, preferential central-bank refinancing and favourable collateral treatment. Public finance should not simultaneously support circular transformation and subsidise investments that deepen the same dependencies.

Where commercial lending continues to finance material expansion of incompatible capacity, EU legislation should allow targeted quantitative restrictions on net new credit. These could take the form of declining lending ceilings for narrowly defined activities or forms of capacity expansion. Restrictions should focus on the use of finance rather than apply indiscriminately to entire sectors. Credit for the conversion of an industrial facility, material substitution, remediation, decommissioning or just-transition initiatives should be treated differently from finance that expands incompatible production. Working-capital lending required to maintain essential output during a managed transition may also need separate treatment. The initial scope should be narrow, applying where incompatibility with an agreed pathway is clear, continued credit expansion is material to the problem, and viable alternatives or conversion pathways exist. Restrictions should be accompanied by finance for

industrial conversion, worker protection and regional development. They should not become a means of imposing unmanaged decline on communities that remain dependent on the affected industries. Larger firms may also be able to replace bank loans with retained earnings, bonds or private credit. Restrictions on bank lending should therefore, where necessary, be supplemented by equivalent exclusions across publicly supported bond purchases, securitisations, guarantees and investment funds.

2.4 Use collateral eligibility, bond purchase conditions, and capital requirements as means to reorient capital allocations in Europe

◆ **Explore how central-bank collateral rules, future asset-purchase programmes and selected prudential measures could reinforce the direction established through EU credit guidance.**

The frameworks governing central-bank liquidity and bank balance sheets influence which assets financial institutions have an incentive to originate and hold. Assets accepted as collateral by the Eurosystem, particularly where subject to relatively low haircuts, become more useful to banks and may benefit from improved financing conditions. Collateral policy therefore serves both a risk-management and a wider market-signalling function.

The European Central Bank could assess how these frameworks might better reflect resource dependency, environmental pressure and the contribution of financed activities to European industrial resilience. This would not require the collateral framework to become the primary instrument of industrial policy. Rather, it would help ensure that central-bank operations do not undermine the priorities established through targeted lending and credit guidance.

Collateral eligibility, haircuts and concentration limits

The European Central Bank could assess whether assets associated with highly extractive, environmentally harmful or resource-dependent activities should face more restrictive treatment where they also lack a credible transition pathway. Possible measures include higher haircuts, concentration limits within collateral pools and, for narrowly defined incompatible activities, exclusion from eligibility.

At the same time, identifiable portfolios of loans financing circular capacity or industrial conversion could be considered for broader eligibility or more favourable treatment. This could be particularly relevant to SMEs, which depend mainly on bank loans rather than corporate bond markets. Any preference should be linked to the targeted refinancing, lending targets and additionality requirements proposed above, ensuring that it supports new lending rather than simply increasing the liquidity value of existing assets.

The assessment would need to consider both the issuer and the purpose of the financing. A blanket exclusion of exposed sectors could restrict the credit required for material substitution, remediation or industrial conversion. Conversely, preferential treatment for a single labelled project should not automatically extend to all financing raised by an otherwise resource-intensive company.

Research by Positive Money Europe and the WWF provides a useful precedent.¹³ It argues that eligibility rules, haircuts and concentration limits can address environmental risks while withdrawing favourable market signals from harmful activities. Although focused on climate and nature, this logic could be extended to resource dependency and circular industrial transformation.

Future corporate bond purchases

Should the European Central Bank resume net corporate bond purchases, it could consider extending its experience with climate-related bond tilting to resource and circular economy objectives. Purchases could give greater weight to bonds financing eligible industrial conversion or circular capacity, while reducing exposure to issuers expanding clearly incompatible forms of extraction or material-intensive production.

Such an approach should combine issuer-level assessment with use-of-proceeds information. This would reduce the risk that a labelled bond receives favourable treatment while the issuer continues to direct most of its investment towards activities that deepen resource dependency. Bond tilting would primarily affect larger companies with access to capital markets and would therefore complement, rather than replace, the bank-credit instruments aimed at smaller firms.

Capital requirements

Risk-based capital measures should be applied through the supervisory and prudential framework set out under Recommendation one. Where resource dependency creates identifiable financial or systemic risks, this could include institution-specific Pillar 2 requirements, macroprudential measures and, where risks are systematically undercaptured, targeted changes to Pillar 1 requirements.

A more explicitly allocative option would be to consider additional capital requirements for new lending that finances narrowly defined incompatible expansion, even where the full resulting environmental or strategic costs are not captured by conventional measures of financial risk. This would go beyond the risk-based approach under Recommendation 1. It would require a clear legislative basis and should be presented transparently as an industrial policy choice rather than as a purely technical reflection of historical default risk.

By contrast, a general reduction in capital requirements for circular lending appears less suitable. It would not ensure additional lending or improved terms for borrowers and could conflate strategic value with low financial risk. Targeted refinancing, lending conditions and collateral treatment provide more direct and controllable ways to support priority credit without weakening prudential safeguards.

Taken together, these options could help align the wider monetary and prudential architecture with Europe's resource-security and circular economy objectives. Their role would be supportive: reinforcing the direction established through credit

¹³ (Positive Money Europe, 2024)

guidance and reducing the extent to which central-bank and regulatory frameworks continue to favour the existing allocation of finance.

In summary

Taken together, these recommendations treat the direction of bank lending as a legitimate concern of European industrial policy rather than as a neutral market outcome. A democratically governed credit-guidance framework would identify the activities for which finance should expand, support industrial conversion, and restrict new lending that deepens avoidable extraction, virgin material dependence or other forms of incompatible capacity. Targeted lending programmes and refinancing operations could then improve the availability, cost and maturity of credit for investments that contribute to circularity, resource security and industrial resilience.

The approach combines a positive and a restrictive arm. Preferential credit would support investments such as repair, remanufacturing, material substitution and secondary material processing, particularly for SMEs that depend heavily on bank lending. At the same time, exclusions from public financial support and carefully targeted lending limits would help prevent these gains from being outweighed by continued expansion of finance to extractive and resource-intensive activities. Collateral rules, future corporate bond purchases and selected capital measures could reinforce this direction without becoming substitutes for politically determined priorities or direct lending requirements.

Credit guidance would not remove the need for banks to assess the commercial viability of individual borrowers, nor could it govern all investment undertaken through bonds, private credit or retained corporate earnings. Its purpose is to place commercial credit within a wider public strategy and correct the structural tendency of the financial system to reproduce incumbent patterns of production. The following recommendation addresses the remaining cases in which strategically important circular firms, shared capabilities and infrastructure cannot be supported adequately through repayable credit and therefore require direct public investment, patient equity or public ownership.

3. Recommendations to use direct public investment and ownership to scale strategic circular innovation and infrastructure

The previous recommendations in this briefing seek to improve the assessment of resource-related risks and influence the allocation of repayable bank credit. These measures address important barriers, but they cannot provide every form of capital required for circular industrial transformation. Some businesses need equity because their revenues remain uncertain or will develop over a longer period, while some shared infrastructure and enabling functions cannot generate sufficient standalone income to repay debt on commercial terms.

VC plays an important role in financing high-risk innovation, but its model is not suited to every form of economic transformation. VC funds generally seek a small number of investments capable of generating very large returns within a defined investment period, typically through the eventual sale or public listing of the company. This favours businesses that can scale quickly and achieve rapid increases in valuation.

Many circular businesses do not follow this pattern. Their innovation may lie in changing the organisation of production, ownership, maintenance and material recovery rather than in developing a single scalable technology. Repair, refurbishment, remanufacturing, reverse logistics, circular construction and secondary-material processing can be operationally complex, capital-intensive and dependent on local infrastructure or coordination across a value chain. As described in Section one, these activities may create substantial industrial, ecological and regional value without producing the growth trajectory or exit opportunity expected by a conventional VC fund.

The issue, therefore, is not simply that Europe has an insufficiently large VC market. Public funding channelled through private VC funds also remains subject to their investment horizons, return expectations and selection criteria. The public sector supplies capital and bears part of the uncertainty, but generally delegates decisions about which firms receive investment and relinquishes much of the ownership, control and financial value created when they succeed. Direct public equity provides a different option. Public institutions can invest over longer periods, recognise strategic returns that may not be fully reflected in company valuations and retain a stake in the productive capabilities created. Private investment can remain part of this approach, but attracting private co-investment should not be the principal test of whether a public investment is worthwhile.

A related challenge concerns the infrastructure on which many circular businesses depend. Collection, sorting, storage, testing, certification, repair, recovery and reverse-logistics systems often create benefits across multiple firms and municipalities. Although some can charge users, their wider value may not be captured through the revenues of the individual asset. They may also have network, bottleneck or natural-monopoly characteristics that make their ownership and access arrangements important to the functioning of the wider system.

The dominant response is often to use guarantees, subsidies or public-private partnerships to make such infrastructure attractive to private investors. De-risking can be useful where it resolves a defined and temporary barrier to an otherwise viable investment. It is less convincing where substantial public support is required on an ongoing basis to secure private returns, while ownership and future revenues remain private. In such cases, direct public or cooperative investment may be more cost-effective, accountable and capable of protecting access over the long term.

This recommendation therefore covers two connected roles. The first is to invest directly in strategic circular firms and retain a meaningful share of the value created. The second is to plan, finance and, where appropriate, own the shared infrastructure and enabling capabilities required for circular value chains to develop. Overall, it focuses on cases where repayable credit or commercial equity are insufficient or inappropriate.

3.1 Establish a direct public equity and patient-capital window for strategic circular businesses

◊ **Expand the capacity of European and national public financial institutions to make direct, long-term investments in circular businesses that are poorly matched to the expectations of commercial equity investors**

The European Investment Bank, European Innovation Council and national promotional institutions should establish or expand dedicated investment windows for strategic circular businesses. This should complement, rather than replace, existing investments through private funds. The windows should focus on firms whose activities contribute to priority industrial and resource objectives but whose growth profiles, capital needs or time horizons make them difficult to finance through conventional venture capital

Public institutions should be able to use a range of instruments, including equity, convertible finance, quasi-equity and revenue-participation agreements. The financial instrument should reflect the underlying business model rather than requiring all firms to follow the standard VC path towards a rapid exit. Investment horizons should also reflect the time needed to develop physical capacity, supply relationships, markets and regulatory support. Public investors should be able to provide follow-on capital and remain invested where companies continue to create strategic value, rather than pushing for a premature sale because a fund has reached the end of its investment period.

Investments should be managed as diversified portfolios linked to clearly defined industrial priorities. Public institutions cannot know in advance which technologies and firms will succeed, but they can invest across a range of possible solutions and assess whether the portfolio as a whole develops useful capabilities, knowledge and productive capacity. Professional investment teams should combine financial expertise with technical and value-chain knowledge. Private co-investment may be valuable, but should not be required where the absence of private investors reflects the same short-term expectations that the public instrument is intended to overcome.

3.2 Retain public stakes, governance rights and a share of the value created

◊ **Ensure that direct public investment creates lasting public ownership and influence rather than functioning mainly as temporary risk capital for future private investors.**

Where public capital supports a business through the uncertain stages of development and scale-up, public institutions should retain an appropriate share of the financial and strategic value created. An early private exit should not be treated as the default measure of success. Depending on the significance of the firm and investment, public holdings could provide:

- representation on the company board;
- rights over major asset sales, relocation or changes in corporate purpose;

- protections for strategically important intellectual property and production capacity;
- conditions relating to employment, skills and regional development;
- restrictions on excessive dividends, share buybacks and financial engineering;
- rights to participate in subsequent investment rounds; and
- a continuing share of dividends and future capital gains.

Rather than primarily intermediating investment through existing commercial VC funds, including those with sustainability mandates, strengthening public institutions as substantial equity holders could provide benefits beyond just providing more suitable capital to high-impact firms.

Public institutions could retain flexibility over the duration of their holdings. A sale may be appropriate once a business is mature and its wider objectives can be secured through regulation. In other cases, long-term ownership may generate recurring public revenue, preserve strategic influence and support coordination with other industrial investments.

Returns from successful investments should be reinvested through the public portfolio. This would allow the state to build its own financial capacity and expertise over time, rather than repeatedly providing early-stage support while transferring the resulting value to private owners.

Stronger ownership powers would be accompanied by clear accountability. Public investment institutions should report on the financial, industrial and environmental performance of their portfolios and remain subject to independent audit and democratic scrutiny, while routine investment decisions should be protected from short-term political interference.

3.3 Develop coordinated circular infrastructure programmes in priority value chains

◊ **Identify and invest in the shared infrastructure and enabling capabilities required for circular businesses to operate and scale.**

A critical facet of Europe's transition to a more circular economy will be coordinated investment in the infrastructure required to support circular value chains. The European Commission, Member States and regional authorities should therefore develop circular infrastructure programmes for priority value chains. These should begin with the productive outcomes Europe is seeking and identify the connected assets and capabilities needed to achieve them.

Depending on the value chain, investment needs could include:

- collection, sorting, grading and pre-processing facilities;
- shared storage, material banks and exchange systems;
- testing, certification and quality-assurance facilities;
- repair, refurbishment, remanufacturing and disassembly centres; and
- reverse-logistics and shared transport systems;

Planning at the value-chain level is important because these investments are frequently interdependent. A recycling facility may require a reliable sorting and feedstock system, while the reuse of construction materials may depend on storage, testing, digital inventories and procurement demand. Funding isolated projects without these complementary conditions can leave infrastructure underused and force individual businesses to bear costs that should be shared across the system.

The programmes should identify where infrastructure will serve multiple firms or municipalities, where control over an asset could create a bottleneck, and where revenues are unlikely to reflect the full public value generated. Regional employment, existing industrial capabilities and the needs of workers and communities affected by the contraction of linear production should also inform the sequencing of investment. A limited number of coordinated programmes could initially focus on areas such as construction materials, electronics, textiles, reusable packaging and industrial symbiosis. These should combine infrastructure investment with regulation, procurement, skills development and support for the businesses expected to use the facilities.

Such an approach would address a critical gap in private finance: the capacity for strategic, long-term planning across multiple actors where benefits accrue across entire systems. Given the interdependencies of circular value chains, the limitations of de-risking and the need for cross-sectoral coordination, it is highly unlikely that required infrastructure could be implemented at the required scale and affordability if its development were left primarily to private-sector incentives.

3.4 Select financing, ownership and delivery models according to public value

◊ **Require an evidence-based assessment of whether public, cooperative, private or blended models best serve the long-term public interest for each major circular infrastructure category.**

Public authorities should assess financing and ownership models at the beginning of infrastructure planning rather than assuming that private investment should be mobilised wherever possible. Public, cooperative, private and blended models should be compared on equivalent terms, taking into account the full costs and benefits associated with each.

This would prevent immediate public expenditure from being treated as a cost while the longer-term costs of private returns, guarantees and user charges are overlooked. Public ownership may require more direct expenditure at the outset but could provide lower financing costs, continuing revenues and greater control over access and future investment.

Private or blended delivery may still be appropriate where it offers a demonstrable operational advantage, and risks can be allocated effectively. De-risking should, however, respond to a specific and proportionate barrier rather than serve as the default model. Where an infrastructure asset requires long-term public revenue support to meet private return expectations, direct public investment should be assessed as a genuine alternative.

This does not create a presumption that all circular infrastructure should be publicly owned. It removes the opposite presumption: that private ownership is inherently more efficient and that public finance should principally be used to make private investment profitable.

3.5 Protect open access and fund enabling functions that cannot support commercial returns

◊ **Attach public-interest conditions to publicly supported infrastructure and provide direct funding for necessary functions that cannot be converted sensibly into investable assets.**

Shared infrastructure will only support a wider circular economy if firms can access it on fair and affordable terms. Publicly financed assets should not become private bottlenecks that extract excessive rents from the businesses and communities they were intended to serve.

Conditions attached to public support could include:

- transparent and non-discriminatory access;
- affordable and independently reviewable pricing;
- dedicated access arrangements for SMEs and social enterprises;
- interoperability with common European technical and data standards; and
- reporting on utilisation and material outcomes.

Where monopoly or bottleneck characteristics are strong, public, municipal or cooperative ownership may provide the clearest way to protect long-term access. Other facilities could be operated privately under time-limited concessions, while the public sector retains ownership and the ability to replace the operator.

Not every system-enabling function will generate a meaningful revenue stream. Standards development, open data, value-chain coordination, workforce training, technical assistance and local repair networks may require grants or continuing public operating support. Attempting to make every function investable can create unnecessary user charges, proprietary information systems and fragmented forms of private control.

Ownership and governance arrangements should also allow municipalities, workers, cooperatives and community organisations to participate where infrastructure is locally significant. This would help retain the economic and financial benefits of investment within the regions and value chains that generate them.

In summary

Together, these measures would expand the public role beyond correcting market failures and mobilising private investment. Direct public equity would provide strategic circular businesses with capital that is not constrained by conventional VC horizons,

while retained ownership and governance rights would allow the public sector to influence their development and share in the value created.

For circular infrastructure, the approach would replace the default question of how to attract private investors with a prior assessment of what needs to be built, who should control it and which delivery model best serves the public interest. Private finance would retain a role where it provides genuine additional value, but public and cooperative provision would be treated as normal options rather than measures of last resort.

This completes the wider financial-policy framework. Risk regulation makes resource vulnerabilities visible; credit guidance influences the direction of repayable lending; and direct public investment provides the equity, coordination and shared capacity that commercial finance cannot reliably supply on appropriate terms.

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Conclusion:

The way forward

The way forward

From investment-readiness to investment alignment

With circularity increasingly positioned through the *Clean Industrial Deal* and the forthcoming *Circular Economy Act* as a route to competitiveness, resource security and industrial resilience, the financing challenge can no longer be understood only as a shortage of investment-ready projects. Project development assistance, improved regulation, demand creation and stronger markets for secondary materials remain necessary, but credible circular businesses may still struggle to access suitable capital while established linear activities continue to receive finance on comparatively favourable terms.

This brief has therefore focused on the supply side of the financing challenge and on the institutions that shape how capital is assessed, allocated and owned. The recommendations are intended to work together. More consistent assessment of resource dependency would improve banks' understanding of vulnerabilities associated with concentrated supply chains and reliance on virgin materials. Credit guidance would move beyond risk recognition by influencing the activities for which lending should expand, support industrial conversion or be restricted. Direct public investment and ownership would address the remaining cases in which strategically important businesses and shared infrastructure cannot be supported adequately through repayable credit or conventional private equity.

These measures would complement, rather than replace, the recommendations made in the first brief in this series. Financial policy cannot compensate for weak demand, inconsistent regulation, fragmented markets or missing infrastructure. At the same time, improvements to these economic conditions will not necessarily change the direction of finance if banks and investors continue to favour incumbent firms, familiar technologies and conventional forms of collateral. A credible circular industrial strategy therefore requires coordinated action on both sides: creating viable markets for circular production while ensuring that financial institutions and public investment programmes are aligned with the same objectives.

The central message of this brief is therefore a shift from investment-readiness to investment alignment. It is not enough to improve the ability of individual circular businesses to attract finance. The financial system itself must become better aligned with Europe's objectives for resource security and industrial transformation.

The role of the Circular Cities and Regions Initiative (CCRI)

The CCRI is not itself responsible for implementing prudential regulation, credit guidance or European public-investment mandates. Its experience can nevertheless provide an important connection between these higher-level reforms and the practical financing conditions faced by businesses, cities and regions.

PDA should continue to improve business models, financial plans and investor readiness. However, recurring financing barriers across otherwise credible projects should also be treated as evidence about the structure of the financial system and the wider conditions in which circular initiatives operate.

The CCRI could strengthen this contribution by:

- aggregating evidence on recurring barriers relating to collateral, repayment periods, investor expectations and infrastructure;
- identifying regional and value-chain gaps that cannot be resolved through support to individual businesses;
- informing the design and review of eligibility criteria for targeted public lending and equity instruments; and
- connecting regional project pipelines with European and national public financial institutions.

This would allow lessons from project support to feed more directly into policy design. Where several businesses depend on the same sorting, testing, storage or reverse-logistics facilities, for example, the appropriate response may be coordinated infrastructure investment rather than further attempts to improve each project's individual bankability. Similarly, where circular firms repeatedly struggle to secure equity because their value is operational, place-based or slow to materialise, the experience of the CCRI can help demonstrate the need for more patient forms of public investment.

The transition from investment-readiness to investment alignment does not diminish the importance of viable businesses or private finance. It recognises that Europe's stated circular economy objectives will not be achieved by adapting projects indefinitely to the existing preferences of financial markets. Financial assessment, credit allocation and public investment must also adapt to the forms of value, risk and coordination involved in circular industrial transformation.

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