

POLY PROBLEM

R E P O R T



CHANGE

Who finances the
circular economy?

wider sense

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THE CURRENCY OF THE FUTURE

Money is not merely a means of payment. It is also more than just an expression of wealth and power. Whenever we spend it, invest it, put it to work, and manage it, we are deciding – intentionally or not – on a piece of the future.

Flows of capital determine which business models get a chance and which end up as a PowerPoint presentation. They have a decisive influence on which innovations prevail in the market. They can protect what has always been there or drive forward what is disruptive. In short: money is an instrument for shaping things.

Social, ecological, and economic transformation is initially an abstract concept. It is money that makes change real. Committing to the circular economy politically and socially is easy as long as you leave out the question of what the transition from a linear to a circular economy costs. It is at the checkout that the moment of truth arrives.

That the circular economy also pays off on the balance sheet, and not only in the distant future, is now considered proven. No serious economist any longer doubts

that using resources for as long and as often as possible is not only an ecological necessity but also a question of economic survival.

Even so, investors, the financial sector, and capital market players still find it difficult to finance the circular transition. Why is that? And how can it be changed?

To understand this, you have to take a good look deep into the engine room. The good news: anyone who dares to take that look does not only come across a chicken-and-egg problem that is hard to solve, but also across courageous pioneers of change, creative solutions, and examples of success that can be spread and scaled.

Steering money in such a way that economic, social, and ecological returns are generated at the same time: it can be done. If courage defeats faint-heartedness.

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The future belongs to the circular economy – but the money does not

A NEW WAY OF DOING BUSINESS UNDER OLD RULES?

Every year, around 120 billion euros are invested in the circular economy in the European Union. That sounds like a lot, but it is not. Because in order to meet its own climate protection targets, the EU would need around 1,229 billion euros more by 2040 for the shift towards circular business models.¹ Why is that?

The prevailing economic model is based on a simple logic: extract raw material, manufacture product, throw it away. This logic has been generating profits for almost 200 years, but only because its follow-up costs do not appear on any balance sheet and are largely borne by society as a whole.

Global material consumption continues to grow unchecked and could rise by 60 percent by 2060 compared with 2020.² While global plastics production has also risen to almost 460 million tonnes in 2024, plastics production in Europe and Germany is slowly declining. In Europe, production fell to almost 55 million tonnes in 2024; more than 20 percent of this was accounted for by Germany. Of European production, nearly 80 percent came from fossil raw materials in 2024.³

Political economist and transformation researcher Maja Göpel sums up the fundamental problem in her book “Werte. Ein Kompass für die Zukunft” (Values. A compass for the future).⁴ The economic damage is enormous, too: according to research by the Dutch think tank Circle Economy, the annual loss of value caused by the linear economic system amounts to 25.4 trillion euros worldwide. That corresponds to around 31 percent of global gross domestic product (GDP), or to put it another way: for every three dollars of economic value

created, one dollar is lost again.⁵ For Germany, the costs of the resulting environmental and health damage are estimated at 13 to 19 percent of German GDP.⁶

The circular economy seeks to reverse this logic. Its core principle: materials and products should be kept in the economic cycle at the highest possible quality over the longest possible cycles, through repair, reuse, recycling, and redesign. In Germany alone, consistently expanding the circular economy could double gross value added in this sector to 125 billion euros by 2045. As a raw material importer, Germany would benefit twice over: a consistent circular economy reduces geopolitical dependencies and thus stabilizes value chains and international competitiveness.⁷

Why is the capital not flowing?

If all the economic data indicate that the circular economy is no longer merely an ecological necessity but also the more economically viable model – then why are far more substantial investments not flowing into the circular transition?

A report by the PREVENT Waste Alliance, a multi-stakeholder partnership initiated by the German Federal Ministry for Economic Cooperation and Devel-

1 European Investment Bank (2026), p. 8

2 UNEP (2024), p. xiv

3 Plastics Europe (2026), pp. 30.

4 Göpel (2025), p. 159

5 Circle Economy (2026), p. 6

6 Göpel (2025), pp. 166.

7 Boston Consulting Group on behalf of the Bundesverband der Deutschen Industrie (2026), pp. 2.

opment (BMZ), answers the question as follows: “Funders believe that regulations and market practices do not adequately capture and “price” the negative externalities of linear models. Despite this awareness, they still express reduced confidence in investing in circular economy models, often due to perceived uncertainties or challenges related to scaling and the current macroeconomic environment.”⁸ Put more plainly: in the current linear financing logic, investors frequently penalize whoever prices in what others externalize.

In addition, circular business models bring different value creation and profit logics with them. In product-use-as-a-service or sharing models, for example, value is not created through a one-off sale but through repeated cycles of use.⁹ Models of this kind depend on functioning take-back systems and secondary markets, for instance.¹⁰ Regulatory planning certainty is also lacking in most sectors. This in turn can extend the period until an investment pays off.¹¹ Conventional financing instruments are not designed for this reality.

This is reflected in investment decisions: between 2018 and 2023, a mere two percent of global commercial investment flowed into the circular economy. Capital investment from private-sector sources peaked in 2021, while public investment remains stable at a lower level.¹² According to an analysis of more than 1,200 financial institutions worldwide, only five percent of capital providers have the circular economy as an explicit investment focus.¹³

Who plays which role?

To understand why the financing gap is so persistent, it is worth looking at the groups of players that determine the pace of the transformation.

👤 THE START-UPS:

Pioneers without a safety net

Start-ups are the laboratories of sustainability and the circular economy. They develop new materials, take-back systems, platforms for reuse, repair infrastructure. Their problem is a financing environment that is structurally not geared to them.

This becomes apparent time and again in the critical phase between successful incubation and scaling up to industrial size. These young companies are too large for microloans and small grants, too small and supposedly too risky for institutional investors.¹⁴ The result of one survey is sobering: 60 percent of the circular economy start-ups surveyed had funding applications and enquiries rejected over the past two years.¹⁵ The reasons for rejection they cite most frequently are insufficient collateral, a lack of impact fit with the funder – and unclear business plans.¹⁶ The last of these may sound like a reproach directed at the founders. But it is also an indication of structural incompatibility: funders’ valuation logics are calibrated to linear business models, not to circular ones.

8 PREVENT Waste Alliance (2025), p. 25

9 Ellen MacArthur Foundation (2020), p. 35

10 Ellen MacArthur Foundation (2020), p. 35

11 PREVENT Waste Alliance (2024), p. 26

12 Circle Economy (2025), pp. 22.

13 PREVENT Waste Alliance (2025), p. 22

14 PREVENT Waste Alliance (2025), p. 21

15 PREVENT Waste Alliance (2025), p. 15

16 PREVENT Waste Alliance (2025), p. 16

🔗 THE ESTABLISHED COMPANIES:

The brake is built into the system

For established companies, the starting position is paradoxical: they have the resources, the infrastructure, and the market access to implement the circular economy on a large scale, but at the same time they have the strongest incentives not to do so.

Because circular business models change not only products but balance sheets as well. Anyone who switches over and leases products instead of selling them, or who opts for take-back and reprocessing, needs upfront investment before the new revenue logics take effect.¹⁷ That runs counter to a system that wants to measure profits every quarter. Yet the front-runners show that it pays off. French carmaker Renault offers reprocessed spare parts at 30 to 50 percent below the price of new ones.

🔗 THE FINANCIERS:

The potential is recognized, the structures are not adapted

At first, the figures sound encouraging: the number of private funds with a circular economy focus increased tenfold between 2016 and mid-2020.¹⁸ For a time, funds with a circular focus outperformed their competitors by an average of five percentage points.¹⁹

Nevertheless: an exclusive circular economy focus is rare in the venture capital world.²⁰ Venture capital is geared to rapid growth, scalable business models, and clearly defined exits. Many venture capital investors therefore prefer “asset-light models”, that is, business models requiring little investment in physical infrastructure, such as digital marketplaces or licence-based business models.²¹ Infrastructure, however, is indispensable for functioning circular systems: production plants, recycling plants, take-back systems, sorting infrastructure, and more.

In a study by the PREVENT Waste Alliance, one investor spells out what would be needed: “We have to start thinking about financing the system instead of financing individual players within the system.”²²

Banks, too, are structurally ill-prepared for circular business models, even though they are the most important source of funding for established companies. Only 13 percent of the private circular economy companies surveyed in the PREVENT report use bank loans as a source of financing, compared with 46 percent of small and medium-sized enterprises (SMEs) in Europe.²³

Individual pioneers, however, show what is possible when banks actively build up their own circular economy expertise. Through its “Circular Entrepreneurship Desk”, Rabobank has provided 270 million euros to circular companies. In 2023 alone, Intesa Sanpaolo made 11.7 billion euros available for circular projects – assessed according to its own circular economy methodology, developed together with the Ellen MacArthur Foundation.²⁴

🔗 POLITICS:

Without new rules of the game, little will move

Political rules can create the conditions under which capital flows or fails to flow. And they can make the hidden costs of linear models visible.

Three instruments are decisive. First, regulation as an investment signal: clear rules, such as the EU Packaging and Packaging Waste Regulation (PPWR), create the planning certainty that banks, investors,

and companies need in order to invest for the long term. Second, the pricing of externalities: as long as primary raw materials are cheaper than their ecological follow-up costs would suggest, the circular economy is competing against an artificially cheap-

17 Ellen MacArthur Foundation (2020), p. 35

18 Ellen MacArthur Foundation (2020), p. 32

19 Ellen MacArthur Foundation (2020), p. 15

20 PREVENT Waste Alliance (2025), pp. 22.

21 PREVENT Waste Alliance (2025), p. 25

22 PREVENT Waste Alliance (2025), p. 28

23 PREVENT Waste Alliance (2025), p. 12

24 PREVENT Waste Alliance (2025), p. 27

ened rival. Third, blended finance from public and private funds.²⁵

Transformation expert Maja Göpel appeals: “Let’s move away from the griping and the mutual mistrust between politics and business and get on with developing effective rules of the game.”²⁶ Investment flows when funders can trust that it will pay off. No market creates that trust on its own.

What this report examines

These four groups of players – start-ups, companies undergoing transformation, capital providers, and policymakers – are what this POLYPROBLEM report puts

under the microscope in the chapters that follow. We spoke with them about financing obstacles and financing successes – and about the conditions under which capital would flow in other directions.

Because the good news is: the capital is in fact there. What is missing are the right rules of the game, the right instruments, and a shared understanding of what we stand to lose if we do nothing.

25 Ellen MacArthur Foundation (2020), pp. 32.

26 Göpel (2025), p. 177



LINEAR BUSINESS IS A MAJOR RISK

For sustainable finance expert Silke Stremlau, circular business models have long been the more economically sensible answer to resource scarcity and geopolitical risks. In this interview she explains why the real risk today lies not in transformation but in clinging to the status quo.

Ms Stremlau, when will the circular economy become more attractive to financiers than linear business models?

It already is. Linear and therefore unsustainable business models have become a risk from a purely economic perspective as well – at least in the medium to long term. Who still wants to invest with conviction in the development of products that consume enormous resources irretrievably – and at a time when we can all painfully feel our dependence on the suppliers of those resources?

Is this insight already having an impact on the financial market? What changes have you noticed in recent years?

Unfortunately, not yet consistently enough. We are seeing wave-like movements. Time and again there have been phases in which I thought that now every player in the financial market had understood the issue of sustainability.

The period after the 2008 financial crisis was one such initial upswing. Then things went downhill again, and in 2015 there was another awakening with the VW diesel crisis and the Pope's encyclical "Laudato si". Then it went down again. In 2018 came the European Commission's Sustainable Finance Action Plan. With it came clear recognition that the financial market has leverage. It has to be used more forcefully to channel money into sustainable investments. That led to a considerable hype. Right now we are experiencing something of a setback again.

One reason: many people currently associate social and ecological standards above all with reporting obligations

and red tape. On top of that came Covid and the war in Ukraine. The EU Commission then said we are slimming down, and the first thing it took on was the supposed sustainability bureaucracy. I find that alarming, because companies are suffering under a whole range of regulations that could have been simplified first.

Have banks and institutional investors staged a complete rollback?

No. And that is the good part of the news. Banks and insurers have recognized that risks in the climate, environmental, and circular sphere also represent serious financial risks. Natural disasters destroy assets. Banks are building this into their risk management. That will not go away again. But measured against what would be possible and necessary in financing sustainable business models, we are today perhaps at level three or four out of ten.

Why do circular business models still find it hard to access capital, despite this growing insight?

There are various reasons for that. One major issue is venture capital, especially for scale-ups, that is, companies that want to grow after a successful start-up phase. There is a big gap here in Germany. Institutional investors such as insurance companies and pension funds are only allowed to invest in venture capital to a limited extent. They have to guarantee security for their investments and tend to invest conservatively. During the low-interest phase, more was tried out. Now there are good returns on government bonds again, and many are content with that. In the US, around six percent of venture capital comes from pension funds; in Germany it is a mere 0.2 percent. That is a massive difference.

The situation on the banking side is similar. Banks prefer to finance business models with stable flows of money and repayments (cash flows). With innovative, circular models there is a risk of defaults. If a large company converts its business model and can present that well, it gets capital. But wherever venture capital is needed, it is difficult.

[Is sustainable economic activity sufficiently incentivized by policy?](#)

No, and that is a key point. Companies moving into this field often face high initial investments. Shouldering these does not necessarily call for subsidies, but it does call for incentives. The investment regulation for pension funds, for example, has been amended so that more can be invested in infrastructure or venture capital. But implementation is stalling. Greater room for manoeuvre would have to be created without jeopardizing investors' security. At the same time, investments such as government bonds are given regulatory preference. There are levers for making transformation financing – and therefore investment in the circular economy – easier through regulation. But that is not yet happening to a sufficient degree.

[Which matters more for institutional investors and banks: regulation or risk-return thinking?](#)

Both. The relationship between risk and return has to be right. From investors' point of view, many sustainable business models do not yet meet this profile. That is why better framework conditions are needed. Concessions have to be created, especially in the early phases, so that things add up more quickly. One simple option, for example, would be a reduction in value added tax for circular products. Financing and improved market conditions have to go hand in hand.

With renewable energies we have seen how that works: at the beginning there was venture capital, then came political support in the form of the Renewable

Energy Sources Act (EEG) with fixed feed-in tariffs. And now it almost sustains itself. As soon as things add up, the capital comes.

And we must never forget: linear products and services only appear to be more economical than circular alternatives today because society bears the follow-up costs for them.

[Is transformation being thought through in a sufficiently holistic way?](#)

No, that is difficult. There are many players: ministries, supervisory authorities, the EU Commission. Each has its own logic. The supervisor says: our mandate is financial stability. It looks at risks, not at opportunities. Opportunities are somebody else's business, for instance the Ministry of Economic Affairs or the Chancellery. And the circular economy, in turn, sits with the Environment Ministry, and under the current government that does not get through to the Chancellery and the Ministry of Economic Affairs. These differing perspectives, and the silos between the ministries, are not brought together sufficiently. Integrated action is the great political challenge in the ecological and social transformation.

[What role does the state play in financing?](#)

The state should step in where there is not yet any positive cash flow. And it should withdraw where returns are possible. Guarantees and sureties would be important in order to mobilize private capital. That is precisely where blended finance – the joint financing from public and private sources – comes into play: the state steps in with guarantees, sureties, or first-loss tranches so that private capital is invested at all. Especially in the early phase of transformation, this can be an important lever. It makes sense to understand the 90-10 rule: 90 percent of transformation financing comes from private hands, that is, from companies or investors; only ten percent comes from the state. It is

often made to look as if the state has to finance everything, and that is not true.

What would that mean specifically for the circular economy?

The circular economy is no longer just the waste disposal and recycling industry. It contributes to our resilience, our robustness, and our competitiveness. That is why we have to have a genuine economic and security interest in it. And that is exactly what could be integrated more strongly into the Germany Fund – via the KfW development bank. At the moment the focus is very much on the heating transition and the climate. The circular economy would have to be factored in there far more strongly. That would be important, but so far, in my view, it has not really been considered. Planning certainty is decisive. Clear guidelines, a target picture for the next ten to 20 years. Then, as an entrepreneur, I can say: okay, now I will invest in the transformation.

Why has the EU taxonomy been little used so far?

The hope had been that the taxonomy criteria would make things easier, for example for investment in the circular economy. But the taxonomy is too complex. It describes the gold standard for sustainable economic activities, that is, a small part of the economy, but not the broad mass. As a result it has no real steering function. Banks collect the data but hardly use it actively. I would rather have defined what is not sustainable and given that greater regulatory weight. Banks would then have to hold far more equity against it if they still finance such things, because there is risk in them.

A second bottleneck is that most bankers have no idea about the circular economy. There is a lot of capacity building to be promoted within financial institutions, so that they understand: there is a business model here, this is a topic for the future, this is where we should be looking harder for corporate lending clients. There are banks that already have sustainability indicators in their management systems and are banking on growth through

green bonds and renewable energies, among other things. When targets of this kind go hand in hand with capacity building, credit growth follows immediately.

So what does the list of green loans do for the bank, apart from a gain in reputation?

Less risk, because companies operating in future-proof sectors and receiving a green loan will have better solvency in the future. They have a business model that is fit for the future. So-called green loans are about far more than reputation.

So the risk of sustainable investments is often misjudged?

Correct. The assumption still holds that green investments are riskier. Yet a great deal of data shows that they have no higher risk of default and often a better risk-return ratio – on the stock market as well. If you invested in sustainable equities over the past few years, there is a high probability that you suffered no disadvantage in returns and a small probability that you even outperformed. In the long term, circular business models are more stable, particularly with a view to geopolitical risks.

Why is this understanding gaining ground only slowly?

I have been wrestling with that question for 25 years. I have not yet given up hope. For all my impatience: there is progress in banks and companies, driven by regulation, but also grounded in the realization that we are inevitably heading into a warmer and riskier world. But many processes take time. What is often lacking is trust and openness, including about talking through conflicting objectives. Transformation is not a linear process.

And why are external costs not internalized more strongly?

That is highly irrational. You can see it in the example of the CO₂ price. First it is rated as an outstanding market instrument, and then, when it starts to hurt, those who

have so far done too little about their decarbonization begin to work against it. I believe that the fear of the consequences of a regulatory intervention – and with it the fear of the voter – is anticipated rather than actually substantiated. Ever since the major communication failure surrounding the so-called heating law, everyone acting politically is afraid of being punished for it. That is also why, sadly, politics does far too little about the things that only pay off in the medium or long term.

The world of finance and the world of sustainability seem to speak different languages. How do you personally deal with that tension?

I am a social scientist by training and my roots are more in the sustainability scene. I had to acquire the other language the hard way. It is very important to speak

very clearly in order to be understood in both worlds. That is precisely what we want to achieve at Finance for Transition: to be a bridge-builder between companies in the real economy that need capital for their transformation and investors. And to mediate actively between them.

And: I concentrate on what works. I believe that we humans have this unique gift. The world I imagine is a better and healthier one. A good life for all as the benchmark. But right now there are setbacks on this path worldwide, and we need time, patience, and new forms of cooperation until there is more collective strength for implementation again. Two steps forward, one step back – that is part of it.



Silke Stremlau has been committed for more than 30 years to a sustainable financial market and a socio-ecological transformation of the economy. She was chair of the German federal government's Sustainable Finance Advisory Council and is currently a member of the Sustainable Finance Practitioners' Advisory Board. Since 2026 she has been managing director of "Finance for Transition – F4T", a think-and-do tank for transformation financing that she founded. She also sits on the supervisory boards of NORD/LB and Umweltbank.

START-UPS

Good is not good enough



NEEDLES IN THE HAYSTACK

Anyone founding a start-up urgently needs money. Investing in a start-up as a capital provider, on the other hand, is risky and comes with no guarantee of success. This is classically where venture capitalists (VCs) step in. The idea for the overall portfolio: plenty of risk, but the chance of a high return that can be realized quickly.

That means the individual success case has to offset the losses from the unsuccessful start-ups and generate a correspondingly large profit. To do that, circular economy start-ups generally need more infrastructure and longer payback periods than other sectors.²⁷ From the capital providers' point of view, then: high risk combined with a slower and lower expected return.

Oliver Kuschel, managing director and co-founder of the non-profit start-up consultancy Anthropia in Duisburg, knows this financing challenge from numerous advisory processes. Financing, he says, is one of the most central issues at various stages in the life of these young companies. The obstacles are structural: impact start-ups operate in markets that often only come into being through legal requirements and that remain volatile for as long as sustainability has no consistent legal framework. Conventional venture capital logics are a

poor fit: true to the asset-light model, they are looking for platform businesses with high growth rates, for the famous "unicorns" among start-ups. In the start-up universe, these are the young companies that quickly reach a high market value, frequently in the online or tech sector.²⁸

In the field of the circular economy, however, that is like looking for a "needle in a haystack", as Kuschel puts it: "For impact start-ups, the valley of death is deeper and wider." That simply means that there is a longer gap between the start-up commencing operations and its first revenues.²⁹ What is needed, therefore, is patient capital. "These are people who say that interest matters less to me than the impact that is achieved," Kuschel reports.³⁰ Yet this is precisely the capital that is as hard for impact start-ups to find as "unicorns" are for VCs in the German start-up market.

27 Ellen MacArthur Foundation, How not to fail: Avoiding 10 common pitfalls when scaling circular business models, 2025, p. 23

28 Cf. Gabler Wirtschaftslexikon; Einhorn • Definition | Gabler Wirtschaftslexikon

29 Cf. Startup Valley of Death: Sieben einfache Schritte zum Startup-Erfolg | G-P

30 In addition: PREVENT Waste Alliance, Financing Circularity Part 1: Bridging the Gap between Finance Demand and Supply, 2025, p. 4

How the material pioneers at Traceless raised the money for their first factory

“IF WE DON’T DO IT NOW, NOBODY WILL”

Traceless is regarded as a flagship for innovation in the plastics industry: a plant-based plastic substitute, winner of the German Founders’ Award and nominated for the German Future Prize in 2025, with production in Hamburg that has just opened. If any company ought to have easy access to capital, it is this one. And yet Isabel Thoma, Head of Impact Communications, describes how the financing turned into a Herculean task.

Traceless pursues the goal of replacing petroleum-based plastic on a large scale and building a climate-neutral materials industry. The product is a natural polymer made from plant residues that can be processed like plastic and is compostable at the end of its life. Founded in 2020, the Hamburg-based company closed a 36 million euro financing round in 2023 and used it to build its first industrial-scale plant, which started up in spring 2026.

Anyone who now believes that a highly innovative product in a regulation-driven market attracts capital all by itself is mistaken. Everyone calls for innovation, but when it is at the door, even willing funders run into their limits.

For the sore point, the same term keeps coming up: “first of a kind”. Traceless is the first company to build

an industrial plant for materials of this type. Nobody can guarantee in advance that the technology will work reliably on a large scale. “That is this notorious valley of death,” says Thoma, meaning the gap between technology successfully tested in the laboratory and the financing of scale-up.

Obtaining venture capital on this scale is “very hard”, and that is not least due to the so-called causality dilemma: as a pioneer, Traceless has to help create the entire market for its own product. Demand often only arises through regulatory pressure, for instance when unsustainable materials are banned or made subject to conditions.

When the business requires a lot of “hardware”, it becomes harder still: pilot plant, demonstration plant, later the industrial plant, each of them an enormous investment. This is where conventional venture capital providers withdraw. They often lack the technical knowledge for industrial innovation, and they follow market trends in which conventional industry rarely features. “There is a market failure in the VC market,” Thoma concludes. With other financiers, she says, systemic hurdles are added: a bank, for example, cannot tick the box for approval because it does not fit its risk management. And so, of all things, the first industrial leap often cannot be financed.

How can that be? Thoma’s answer is the lack of a level playing field – unequal rules of the game that mean not all competitors have the same opportunities. Market



prices are still geared to a linear economy. “We see huge indirect subsidies for business models based on fossil raw materials,” she says, and hardly any incentives for circular raw materials. As long as the linear competitor remains artificially cheap, investors will back the wrong model.

Thoma rejects the accusation that impact and returns cannot be reconciled. For Traceless the two are not a contradiction but mutually dependent.

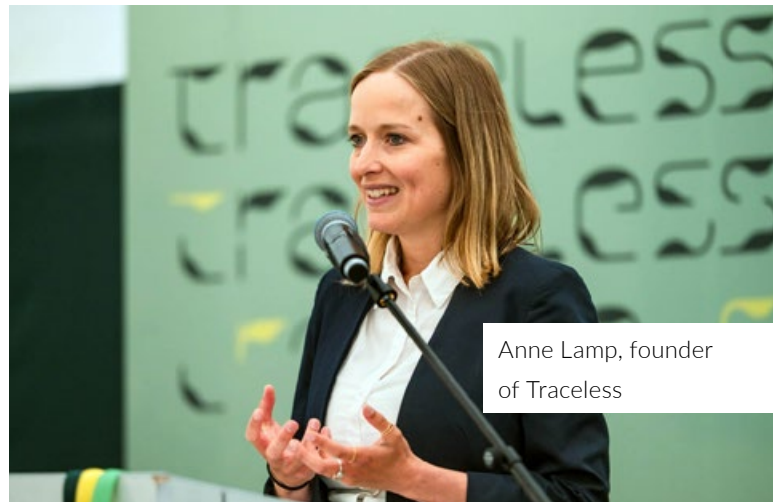
“We always think of it the other way round: the impact goals come first, and in order to achieve them you have to be economically viable,” says founder Anne Lamp.

How does a company cover such high financing needs under these conditions? The answer: not through one funder, but through many. At the beginning there were small but decisive grants. The Hamburg programme “Calls for Transfer” provided “a few tens of thousands of euros”. Then came the seed round with the first VCs, funding from the European Innovation Council and, for the demonstration plant, five million euros from the Environmental Innovation Programme of the German Federal Ministry for the Environment. The Series A – the first institutional financing round after the early founding and seed phase – finally combined equity investors, public funding once again, and a bank loan that was only possible because the state of Hamburg provided a guarantee.

The mix of different funders, each with different requirements, is demanding but also has advantages, Thoma says. Each funder looks at the same project from its own logic and brings different knowledge to the table. Scrutiny by a public programme also has an external effect: whoever passes it is more credible in the eyes of the other players. Beyond capital, strategic partners count too: companies such as Mondi or Otto



Isabel Thoma,
Head of Impact
Communications
at Traceless



Anne Lamp, founder
of Traceless

do not buy in through shares but, through development partnerships, supply the proof of market that in turn matters in other funders' analyses.

In the end it was not the market that made the bank loan possible, but politics. Without the state guarantee there would have been no loan. Thoma calls that an exception: being able to mobilize that much political support is not the norm. It helped that the project has high social relevance and fits the economic agenda of the Hanseatic city. From this follows her central demand. If the financing problem with “first-of-a-kind” projects is systemic, then its solution must not depend on individual political cases: “If it is a systemic gap, then perhaps it also needs a systemic solution.” Guarantees such as the one provided should therefore be institutionalized.

Despite the success, founder Anne Lamp does not lapse into euphoria. “It really was a Herculean effort,” she concedes. What remains is a mixture of willingness to take risks and conviction: “If we don't do it now, then nobody else will.”

FINANCING WITHOUT CONVENTIONAL FINANCIERS

Outside the door it is quiet. One of them tugs at his collar, the other checks for the third time whether the USB stick with the presentation really is in his trouser pocket. The bell has been rung. Now all they can do is wait. Behind this door sits the first investor willing to meet them at all – after months full of conversations, emails sent without reply, and one polite no after another. The light on the intercom turns green. The buzzer sounds. The door opens.

Many founders in Germany stand in front of doors like these, and especially those whose business models are aimed at sustainability, the circular economy, or social innovation. That a workable idea will find money for its implementation, even when it benefits the planet or people, is by no means a given.

Most of these stories end in a rejection. But some lead elsewhere, because necessity is the mother of invention: those who do not fit the conventional grid sometimes reinvent their own financing. The founders of Plastic Fischer and Denttabs tell two such stories.



Plastic Fischer: Impact as a Service

The founders of Plastic Fischer did not ring at all that many doors in the first place. Researching their network already showed them that most would stay shut. The founders want to stop plastic waste from reaching the sea. They intercept it at river mouths using simple technology and local workers. When they started in 2019 they were convinced that a large share would be recyclable and that the proceeds would finance material costs and salaries. They put in their own money.

The practical test in Indonesia disproves the original hypothesis: it is not that simple, the technology does not work as intended, and the waste is of such poor quality that it cannot be recycled.

During the enforced Covid break they redevelop the business model. If recycling brings in no income, then the impact itself has to become the product: companies buy precisely measured quantities of waste that Plastic Fischer removes from the environment on their behalf. They call the model “impact as a service”.

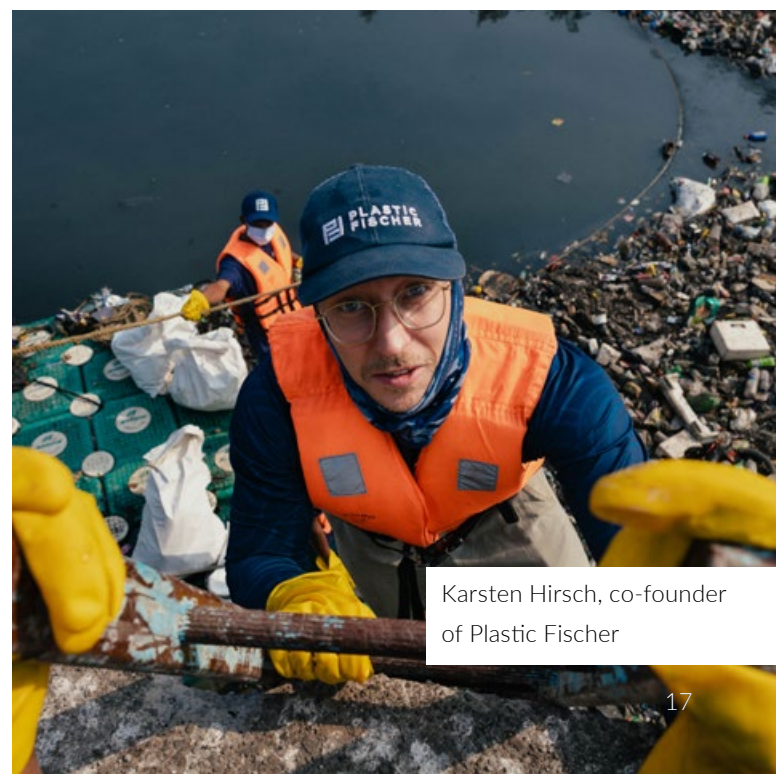
Between 2021 and 2023 that carries them well. The climate is in the headlines, large German companies and private individuals buy impact, and sponsorship is added. Meanwhile the wind has grown harsher: customers and staff at many companies are less interested in green stories, and competitors are pushing into the market with cheaper – but differently audited – offerings.

Even so, Plastic Fischer is still not looking for a venture capitalist today – nor for an impact fund, although the capital would be useful. “We could readily take on 500,000 to one million euros. But we would only enter into a partnership for financing if it was a very precise fit,” says co-founder Karsten Hirsch. It is not about a fundamental rejection of money or profit, he says, but

about the conditions: their own management, their own pace. The current model allows slow, stable growth; and that is exactly what Plastic Fischer is aiming for. Rapid growth, which impact funds ultimately expect as well, would come at the expense of the staff – above all in India and Indonesia – who pull the waste out of the rivers.

What Hirsch would like instead is “philanthropic investment” – voluntary capital that puts impact above returns and rewards slow growth. This gap cannot be closed by their own efforts alone:

“We will always depend on external funds in order to do our work,” he says. The risk involved is low, he argues, because “we have a clear impact case and little risk of going bust”. Money of that kind would make it possible to build stable structures. His appeal goes beyond his own sector to policymakers and society: social tasks, he says, should be solved collectively.



Karsten Hirsch, co-founder of Plastic Fischer

Denttabs: Making an impact on the brink

Axel Kaiser is used to enquiries to funders not ending well. His company Denttabs has been on the market for decades, sustained by its own funds and a few small loans, hardly at all by outside capital. The product: toothpaste tablets, healthier for users, with less chemistry ending up in the environment and no plastic tube – demonstrably effective and available online and in drugstores. The only problem is that demand has not grown for years: the change in behaviour of giving up the tube is not catching on at scale.

In his search for investors, Kaiser talks to established companies, banks, funds, conventional as well as impact investors, and finds hardly any difference in how he is treated. His model fits no grid: too little revenue, too little impact. He wants to hand over the company anyway; he lacks the management expertise, as he says himself. He is the visionary, implementation belongs in other hands. In 2025 the search for a buyer fails once again. He then files for insolvency, half out of financial need, half out of frustration at years of searching.

What follows is a wave of sympathy: on the social network LinkedIn, reports from users about the product's effect pile up and sales rise. The attention leads to a cooperation with Viversus gAG, which sells non-profit shares in order to finance projects transparently and in a socially responsible way.

For Denttabs, 10,000 shares at 50 euros each are to be issued, giving Viversus 50 percent of the shares and allowing anyone to become a co-owner.

That did not, however, save Denttabs from insolvency. Insolvency was only averted by converting production and by one person leaving. Today Denttabs manufactures, among other things, the own brand of a large drugstore chain, and Kaiser is negotiating with further interested parties about shares.

So what does Axel Kaiser take away from this phase? His objection is fundamental: that money itself becomes an asset, that you first have to calculate returns for investors in order to win them over at all. For him it is about the cause, not about multiplying money: "We simply have to learn to think about the economy differently," he says.



Axel Kaiser,
founder of Denttabs

Even if the doors to financing remain closed: not every start-up that fails to find conventional financing goes under. Those who do not fit into the linear economy and its grid sometimes reinvent their financing as well as their actual idea. Plastic Fischer and Denttabs do so in opposite ways: one keeps control in order to grow slowly, the other wants to hand it over so that the business really grows. What both have in common is that it is not the return that sets the rules, but the cause.

Can venture capital and sustainable growth still go together?

WHEN TWELVE PERCENT IS NOT ENOUGH

As a “House of Impact”, the non-profit organization Anthropia in Duisburg, initiated by several foundations, accompanies socially effective start-ups from the first idea to the growth phase – with know-how, a network, and the conviction that entrepreneurial action and social progress are not a contradiction. They also wanted to supply “patient capital”, but the financial world refused to play along.

Anthropia recognized the structural financing gap faced by impact start-ups and saw an opportunity in it. The thesis: close support in the incubator provides an information advantage that lowers the risk of default – even with a moderate return. “We can provide money that a normal investor would not provide for reasons of risk assessment, because they are not as close to it as we are,” says managing director Oliver Kuschel. Anthropia Ventures was therefore founded in 2024: a fund intended to invest specifically in impact start-ups.

Anthropia looked for investors, but the market’s response was sobering. The targeted fund volume of ten million euros did not materialize. The feedback from potential investors was consistent: the expected return of around twelve percent – solid, comparatively reliable, but without the growth fantasy of a tech “unicorn” – was not enough. Kuschel reports: “Many investors said that a twelve percent return a year is too little. At some point we said: fine, then we will leave it for now in this market environment.”

Despite the reduced risk, the market lacked confidence in a model beyond conventional VC paths – among conventional investors as well as among impact capital providers. The credo, he says, is still: as much return as possible. And impact start-ups can generally only deliver that at the expense of their impact.

Kuschel therefore argues for alternative capital providers. Foundations, for example, could take on this task by investing as part of their asset management instead of “only” providing grants. Above all, though, what is needed is a legal framework that makes patient investment fundamentally more attractive, for instance through blended finance models in which public and private money interlock. The advantage: public investment reduces the risk of a market, so that private capital is leveraged rather than crowded out.

Because Anthropia has learned one thing over several years of supporting start-ups: “If impact start-ups solve social problems, then society has to help finance that too.”



Oliver Kuschel,
managing director
of Anthropia



ESTABLISHED COMPANIES

The old is meant to finance the new.
Can that work?

Business as usual could turn out to be the most expensive option

THE LONG ROAD TO NEW VALUE

For established companies, the greatest challenge on the road to a circular future does not lie in developing a new business model. The transition to it is harder. Because that means financing two worlds at once over a period of years: the existing linear business has to keep running and generating profits, while take-back systems, repair services, rental models, or new services have to be built up in parallel.

The new business ties up capital, staff, and management capacity – long before it makes a comparable contribution to the company's success. The old, linear business model finances its circular successor. In economically good years that can work. But what if business is already mediocre?

It is precisely at this point that it is decided whether transformation succeeds. Because circular business models change more than products or production processes. They change the economic logic of a company. Revenues no longer arise exclusively from selling a product, but increasingly from taking it back, reusing it, reprocessing it, or marketing it again. Investment comes earlier, economic returns later. Companies therefore need capital that accepts longer payback periods and supports the transition.

Rebuilding not just products, but the company

At Austrian plastics and foam processor Greiner, the circular economy is no longer understood as an individual product innovation; the company has set itself ambitious targets for combining recyclable design, reusable solutions, partnerships, and the build-up of its own recycling expertise.

A linear company optimizes throughput: materials are purchased, processed, and sold as products. A circular company has to know what happens to those products

after use. It needs information about material composition, collection, and sorting. It has to decide whether a product can be reused, mechanically recycled, or recovered in some other way. And it has to reach agreements with customers and waste management companies that were previously not part of the business.

Greiner is responding to this with several strategies at once. "Design for recycling" is intended to ensure that packaging can actually be sorted and recycled after use. In-house recycling activities are meant to secure access to secondary raw materials and knowledge about processing them. Reusable solutions and new business models are meant to reduce dependence on the one-off sale.³¹ The transformation is therefore taking place on two levels – and according to Greiner CEO Saori Dubourg, the pressure to change is considerable.³² The company is changing its products – and at the same time building up capabilities that were hardly needed in the linear model.

Yet even a company with billions in revenue cannot close the loop on its own. Even a technically well-designed piece of packaging remains linear if it is not collected separately, if sorting plants do not recognize it, or if there is no market for the recovered material. Investment in a company's own product therefore only pays off if other companies and the public infrastructure invest at the same time.

31 Greiner AG (2024)

32 Greiner AG (2024b)

It is exactly here that the financing question reveals itself as a systemic problem: every player bears the costs of its own conversion, but economic and ecological success depends on decisions taken elsewhere in the value chain.

The loop itself becomes the product

At bicycle tyre manufacturer Schwalbe, this shift in perspective is particularly vivid. The company continues to produce and sell tyres. At the same time it was the first bicycle tyre manufacturer in the world to set up take-back systems for used bicycle inner tubes and tyres. “We treat recycling like a product, and it has the same priority as any technical innovation,” is how Holger Jahn, board member for development and technology, sums it up.³³

The strategic change begins with an extended responsibility. In the linear model, the relationship with the tyre ends with the sale. In the circular model, a new process begins at the end of its life: the tyre has to find its way back to the manufacturer or a partner, be transported, reprocessed, and made usable as material once more. Despite these challenges, the system introduced in 2022 quickly shows results: by July 2024, one million tyres had already been collected, recycled, and returned to the loop. By now the figure is almost 2.5 million.³⁴ The loop itself becomes the entrepreneurial achievement.

To do this, Schwalbe had to build a network reaching far beyond its own factory: specialist retailers accept used tyres, logistics partners bundle and transport them, a technology company extracts reusable components from them, and the development department has to ensure that the recycled material can be used in tyres again.³⁵

Value is thus not created within a single company. It is created in the connection between different players. Each of them needs an economic motivation to take part on a lasting basis.

The example also makes visible why loops frequently cannot be financed from the value of the recovered material alone. Collection, transport, and reprocessing cost money before the raw material can be used again. If primary material is cheap at the same time, the market value of the recyclate may not be enough to pay for all these services.

When retail becomes a raw materials manager

In many cases, new business models do not replace the classic business but complement it. A prominent example of this is the Schwarz Group. With its Lidl and Kaufland chains it is one of the most successful retail companies, and in 2018 it placed a complete waste management and recycling division, PreZero, alongside them.³⁶ The capital-strong group did not let this division grow slowly but created a giant from a standing start. Schwarz cannot therefore serve as an example of the problems involved in financing the circular transition. Hardly anyone has these options.

And founding groupings of this kind does not in itself create a circular transformation. It does, however, reveal a particular strategy: the Schwarz Group describes its combination of production, retail, recycling, and digitalization as an ecosystem in its own right. With its company-wide circular economy strategy “REset Resources” it aims to connect the individual parts more closely with one another.

33 Schwalbe (2024)

34 Schwalbe (2024)

35 Schwalbe (2024)

36 Schwarz Gruppe (2026), page 7

With revenue of 3.9 billion euros in the 2023/24 financial year, PreZero has already made it into the top ten of the world's largest waste management companies.³⁷ And yet: according to the industry publication EUWID, the Schwarz Group's division remains a loss-making business. Being able to afford that over the long term is another matter.³⁸

How stubborn this deficit is can be seen in the group's figures: in 2024, PreZero's result did improve from around minus 511 million euros to minus 386 million euros, but it remained deep in the red.

Standing still is an investment decision too

The debate about the circular economy frequently focuses on the costs of change. Less attention is paid to the other side of the calculation: sticking with the linear model involves economic risks as well.

It leaves companies dependent on primary raw materials whose prices and availability can be subject to geopolitical crises, trade conflicts, or supply bottlenecks. At the same time, regulatory requirements are increasing. With new rules on recycling rates, the use of recyclates, and stronger producer responsibility, the European Union is raising the pressure to build material loops early. Those who only react once these requirements become binding often have to invest under greater time and cost pressure.³⁹

The more that functioning material loops become established, the sooner they develop into a competitive advantage. From this perspective, the circular economy is not a sustainability project. It becomes an investment in long-term competitiveness.

Not every company can buy its own loop

Large companies and corporate groups have the means to build new structures themselves. But the circular economy cannot depend on every company owning its own collection and take-back systems. The decisive question is therefore how a shared infrastructure is financed and how the value it generates is distributed.

Who bears the costs of take-back logistics? Who benefits from packaging that is easier to sort? Who finances recycling capacity when demand for recyclate fluctuates? And how are companies rewarded that invest today even though the benefit only unfolds in a functioning value chain of tomorrow?

Alongside uniform market rules and economic incentives, the Ellen MacArthur Foundation names cooperation along the supply chain and suitable financing solutions as prerequisites for scaling circular business models. These include instruments that reduce risks and make investment in shared infrastructure possible.⁴⁰

The opening thesis therefore needs an addition: the greatest challenge is not only to finance the transition period from the linear present to the circular future. It is no less a matter of doing so in a synchronized way – across companies and along the value chain. That does not make the task any easier.

37 EUWID (2026)

38 EUWID (2025)

39 Ellen MacArthur Foundation (2026)

40 Ellen MacArthur Foundation (2026)

“COMPANIES FIGHTING FOR CAPACITY UTILIZATION INVEST MORE CAUTIOUSLY IN NEW STRUCTURES”

Much is said about financing the circular economy. But what does the reality inside companies look like? Frank Stammer, Head Regulatory, Standardisation and Circular Economy at the German association for technical plastics products (TecPart), observes the transformation right across the plastics industry and explains why medium-sized companies, corporate groups, and financiers face very different tasks.

Mr Stammer, many people talk about the circular economy. What is actually happening inside companies?

Most of them are not building a completely new business on a greenfield site. They are expanding their existing business step by step. Circularity often emerges first in individual projects: more use of recycles, new product designs, or take-back concepts. The change is evolution rather than revolution.

Why do many companies currently find this change so difficult?

Because they have to manage two time horizons at once. In the long term, many companies know that the circular economy is necessary. In the short term, though, the focus is on order books, costs, and competitiveness. Companies fighting for capacity utilization invest more cautiously in new structures.

Are there differences between medium-sized businesses and large corporations?

Yes, considerable ones. Medium-sized companies mostly finance new circular projects out of ongoing operations. Large companies can take a more strategic approach, raise capital in a targeted way, and build entire recycling or take-back systems. They simply have more room for long-term investment.

Does the circular economy also change cooperation between companies?

Absolutely. In the past it was often enough to buy material and sell products. Today, processors, customers, recyclers, and raw material suppliers have to work together much more closely. The circular economy does not come about within one company but along the entire value chain.

What do companies want most in order to make faster progress?

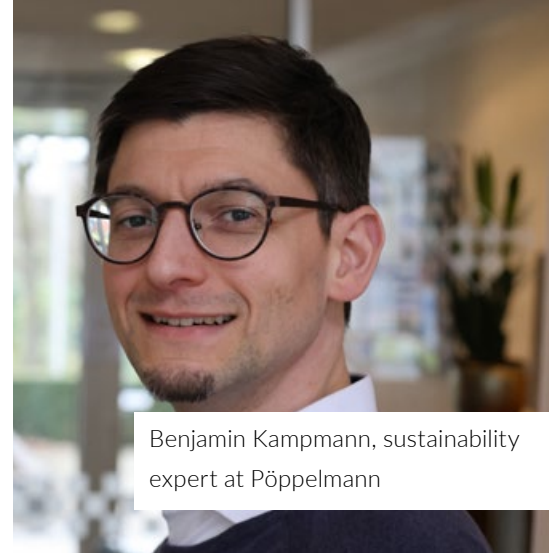
Clarity. Companies can adjust to new requirements if the direction is reliable. Anyone who knows which rules and quotas will apply in five or ten years can invest. Uncertainty is often a bigger obstacle than the transformation itself.



Frank Stammer, Head Regulatory, Standardisation and Circular Economy at TecPart

**Plastics processor Pöppelmann recognizes
the value of PCR and recyclates early on**

RECYCLED CONTENT AS A TOP MANAGEMENT PRIORITY



Benjamin Kampmann, sustainability
expert at Pöppelmann

At plastics processor Pöppelmann in Lohne, the use of recyclates is not a cost item at the margins of the business but a matter for top management. The current strategy began in 2018, when the shareholders of the family business – founded in 1949 and employing around 2,500 people worldwide – responded to the images of plastic waste in the sea and to Asian import restrictions on plastic waste by asking what the future of plastic as a material should look like at Pöppelmann. And this in a company that had already been processing recyclates since the 1980s.

“Our answer to that was our Pöppelmann blue initiative – with a steering committee made up of shareholders, the advisory board, and the management, which has been reviewing progress every quarter ever since,” reports sustainability expert Benjamin Kampmann. The aim, he says, was to establish lighthouse projects in all four business divisions and thus “to move from discussing whether to discussing how”. By the end of 2020, corresponding series products were on the market in every division.

The challenges differ from sector to sector, he says. In horticulture, Pöppelmann says its TEKU plant pots have helped shape the market. In the automotive sector the company positions itself as a development partner and already uses recyclates from packaging waste and end-of-life vehicle recycling. With food packaging, by contrast, regulation places narrow limits on the use of recyclates.

Pöppelmann does not need external funders in order to make greater use of recyclates. “All of this is self-financed,” Kampmann emphasizes. There is, however, no fixed budget for special projects. Rather, the availability of qualified staff is the decisive bottleneck. Because the issue is carried right up to shareholder level, priority and pressure to deliver arise at the same time.

What has been decisive, he says, is understanding the

use of recyclates as a business model and not as an obligation. Today the company’s recyclate share stands at around 50 percent, of which 40 percentage points are PCR and ten percentage points PIR. The target originally formulated for 2025 – 60 percent recyclate with 50 percent PCR – was missed. Even so, the volume of PCR used has quadrupled since the initiative began. “We failed successfully,” says Kampmann.

Development is furthest advanced in horticulture. Across the entire TEKU portfolio, the PCR share there is more than 70 percent, and individual series certified with the Blue Angel ecolabel require at least 80 percent PCR. Several billion such plant pots have already been produced.

Kampmann now sees the greatest challenge less in the technology than in the supply of raw material. The EU quotas applying from 2030 could push demand for recyclates up faster than supply. From the company’s point of view, this threatens a paradox: of all companies, those that opted early for the use of recyclates could in future no longer receive enough recycled material.

“If in doubt, from 2030 we will go back to making plant pots from virgin material because we can no longer get recyclate for them. But that would make no sense ecologically or economically,” says Kampmann.



FINANCIERS

A new game under old rules

TRAPPED IN THE VALLEY OF DEATH

The circular economy is often portrayed as a financing challenge. But the real challenge is that circular business models do not fit today's financial system.

For Marvin Nusseck, Lead of the Finance Programme at Circle Economy, it is obvious: there is no shortage of capital, but of direction. Research by Circle Economy shows that investment continues to flow above all into established sectors and proven business models, not into those with the greatest potential for circular impact. The Amsterdam-based think tank is behind the Circularity Gap Report that measures global circularity and its recent addition, the Circularity Gap Report Finance, assessing capital flows towards circular business models.

Contrary to what is often claimed, the challenge lies less in the supply of capital than in the incentive structures that continue to steer investment into linear business models. "The underlying problem is always the pricing of resources," says Nusseck, likewise pointing to the externalized costs of the linear economy, which make things harder for circular business models in the market.

Who finances what?

Part of the challenge is that different investors operate under very different mandates. Multilateral development banks (MDBs) and public development banks are prepared to finance transformation and infrastructure projects over longer time frames as well. "They are able to have patient capital, capital that can wait longer for a return," Nusseck explains. At the same time, these institutions set particularly high requirements for proof of impact and sustainability. "The public banks and the MDBs are the most thorough and at the same time the most advanced in this respect," he says.

Impact investors, he says, tend to act more flexibly. They are more willing to support emerging circular business models because they are convinced that ecological and social added value will translate into financial success in the long run. Their investment decisions are frequently guided by alignment with their mission.

Commercial banks and institutional investors, by contrast, generally demand proven cash flows, standardized key figures, and established risk profiles.

"For most of the bankers who actually do the financing, circular economy just feels like a distraction," says Nusseck. Their job is ultimately to finance projects that generate reliable returns with limited risk.

Each of these actors play an important function, he says, which is why their respective financing logics need to be better understood and taken into account. The challenge is that many circular businesses fall between these categories. They are often too risky for conventional lenders, too capital-intensive for venture capital, and not yet mature enough for large-scale institutional financing – the notorious valley of death.

The circular economy's valley of death

Nusseck explains that circular start-ups in early development phases often access grants, incubators, and public support. Mature businesses with stable revenues can usually obtain debt finance. The biggest funding gap emerges in between, during commercial development and growth.

Many circular business models require substantial upfront investment (capex) long before returns materialize. “The return on investment needs to happen within five years and not 15 years,” Nusseck explains. “That’s the problem: circular companies have viable business models, but they cannot demonstrate them quickly enough.” They therefore fail to meet many investors’ expectations of rapid growth. “It is not the hockey-stick growth that venture capitalists want to see.” The result is what is commonly known as “valley of death”, a phase in which technologies have proven their viability but still struggle to attract sufficient growth capital to scale up.

A definition problem

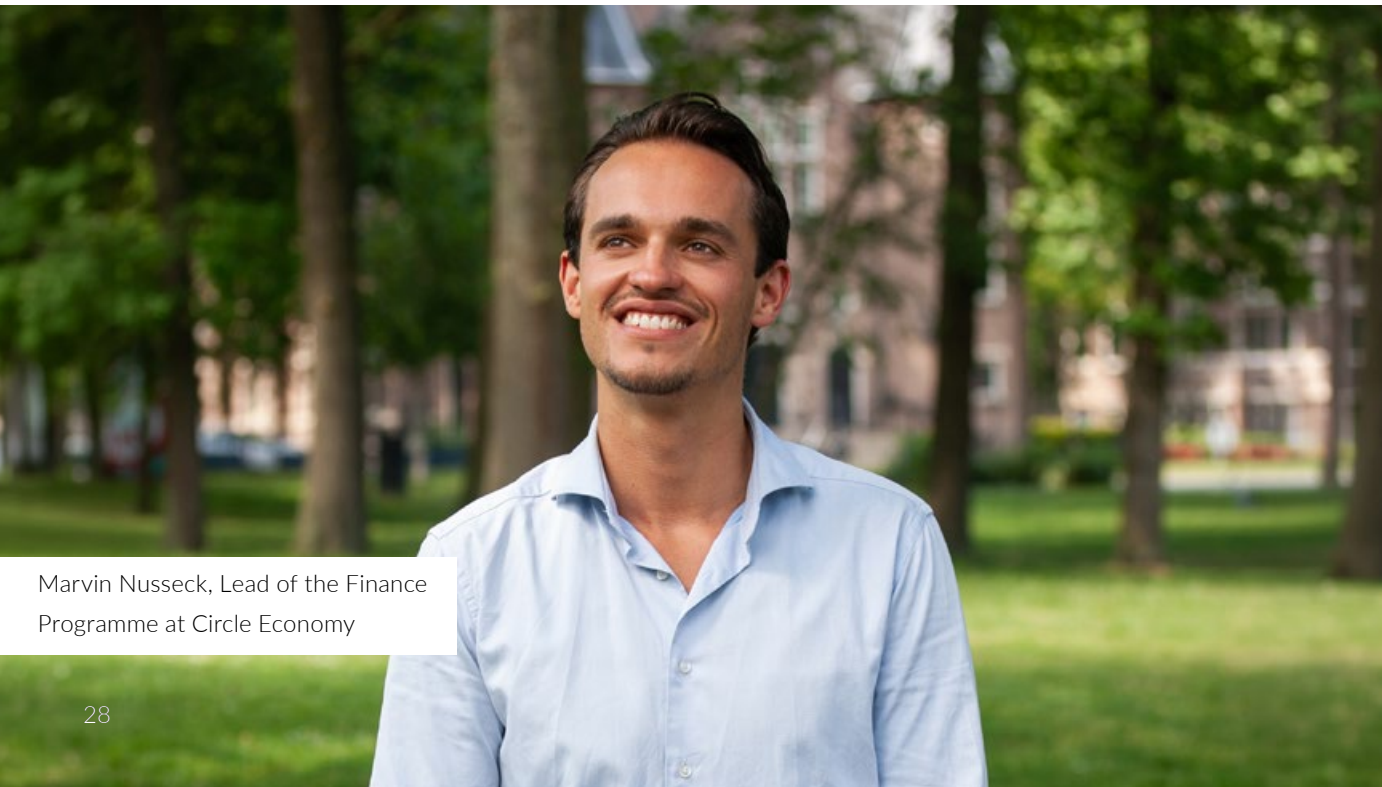
The financing challenge is compounded by another issue: nobody fully agrees on what counts as a circular investment. Is the circular economy about recycling, about resource efficiency, about product-as-a-service, about circular design, or about secondary raw materials? “There will never be a waterproof definition on what’s circular and what’s not,” Nusseck argues. Without a

shared definition it becomes difficult to record investment flows, compare investment opportunities, develop benchmarks, or launch specific financial products.

Why risk models fail

The most fundamental barrier, however, lies in the way financial institutions assess risk. “Financiers’ risk models do not really cater for circular business models,” Nusseck argues. Most financial models were developed on the basis of established ownership structures, predictable supply chains, and historical performance data. Circular businesses often generate value differently: through resource efficiency, material recovery, resilience, and reduced exposure to volatile commodity markets. Yet these benefits rarely appear in conventional valuation frameworks.

Ultimately, the circular economy suffers from a financial system that was designed for a linear economy. The real challenge is to develop definitions, valuation methods, and risk models that allow finance to recognize what circularity is actually worth.

A portrait of Marvin Nusseck, a man with short dark hair and a light beard, smiling. He is wearing a light blue button-down shirt. The background is a blurred outdoor setting with green trees and a building in the distance.

Marvin Nusseck, Lead of the Finance Programme at Circle Economy



“BELIEF IN THE GREEN BONUS IS NAIVE”

The stories about the plight of sustainability pioneers often sound similar: too little capital, too little willingness to take risks on the part of financiers and investors, too little political support for green technologies. Investor Wolfgang Hafenmayer considers this one-sided attribution to be wrong.

“There is enough money,” says Wolfgang Hafenmayer. A remarkable statement from an investor who, with his companies Sagana and Circulate Capital, invests hundreds of millions of dollars worldwide in recycling infrastructure, climate tech, and circular business models.

The German investor, who operates out of Switzerland, sees the problem elsewhere: many founders, he says, cannot adequately explain how their technology is supposed to turn into an economically viable company.

“Of more than 3,000 innovation entrepreneurs, perhaps one percent can explain how they intend to become competitive in five years. Most of them are pure technology freaks or eco-dreamers.” With this, Hafenmayer touches a sore point: too much focus on innovation and impact, too little on scaling and profitability.

Impact alone is not enough

The idea behind impact investing is frequently misunderstood, he says. For Hafenmayer it does not mean forgoing returns. “An investor wants to share in the earnings of successful companies.” Circulate Capital, too, does not invest philanthropically but with clear expectations of returns. The fund structure follows classic venture and growth models, only with an additional impact component. The thesis behind it: the major ecological problems of the coming decades are generating enormous new markets. Whoever develops solutions that work can create highly profitable companies. But it is precisely here that many fail.

Deep-tech start-ups in particular frequently underestimate the economic reality of industrial markets. Good technologies alone are not enough. What is decisive is whether production costs fall, supply chains function, and customers are willing to pay.

That becomes particularly difficult in circular business models, because according to Hafenmayer these are often infrastructure-heavy and therefore capital-intensive. Unlike classic software start-ups, recycling plants, new materials, or biological and chemical innovations require high upfront investment and long development cycles. “Many investors quite simply do not have the stamina to hold out that long.”

The circular economy is not a software model

This is precisely where a structural problem lies: many investors are shaped by the scaling logics of digital platforms – yet recycling infrastructure cannot be copied with minimal capital outlay. “A recycling line costs five to ten million dollars.” That also explains why many circular start-ups fail despite a great deal of attention: the problem is not the idea, but the step up to industrial scale.

For Hafenmayer, the circular economy is in many areas a question of infrastructure. Successful models arise where material flows can be organized efficiently and used commercially. That also explains why large corporations such as PepsiCo, Coca-Cola, or Unilever were among the first supporters of Circulate Capital. “For them it was essential for survival from a business point

of view.” Recyclates are becoming increasingly relevant strategically – not for moral reasons, but because regulation, resource scarcity, and geopolitical risks are forcing companies into it.

The illusion of the green premium

Many circular start-ups build a “green bonus” into their calculations: customers or companies, they assume, will pay more because the product is more sustainable. Hafenmayer considers that naive: “Without regulation you have no chance.” As long as fossil raw materials remain cheaper than recyclates, the circular economy comes under cost pressure – particularly in the plastics sector. As a lever against this he sees mandatory recycling rates, recycled content requirements, and stricter material standards.

Why he invests all the same

For all his criticism, Hafenmayer continues to invest in the circular economy and climate tech. Considerably more selectively, though, than many classic sustainability funds. What matters is not the sustainability narrative but the industrial logic. Models become attractive when ecological transformation and economic necessity coincide, for instance with rare earths, battery recycling, or new material technologies. Sagana invested, among others, in Cyclic Materials, a Canadian company that recycles magnets from electric vehicles. “That is extremely relevant geopolitically and ecologically, and it promises significant financial success,” he says in explaining his involvement.

At the same time, Hafenmayer believes that many of today’s recycling models could disappear again in the long term. “At the end of the day we will have technologies that make recycling redundant,” he says, looking

ahead to new materials and processes that could make products biodegradable or fully regenerative. It is precisely there that he sees enormous investment opportunities – but only for teams that can combine technological innovation with economic scalability. Because in the end one simple rule holds for him: it is not sustainability that makes a company investable, but a business model that works.



Wolfgang Hafenmayer,
investor

CIRCULARITY DOES NOT FIT INTO THE SPREADSHEET

The circular economy reduces economic risks. It lessens dependence on raw material imports and makes supply chains more robust. When it comes to granting loans to finance circular business models, however, that hardly plays any role in risk assessment. Why is that?

Andreas Gruber, Chief Sustainability Officer of Deutsche Kreditbank (DKB), sees no lack of willingness to invest in his industry. “We see enormous potential. Circularity solves several problems at once.” The real problem, he says, is a different one: financing the circular economy currently founders on the valuation and risk logics according to which capital is allocated.

The circular economy’s chicken-and-egg problem

Banks do not assess risks on gut instinct but on the basis of decades of empirical values, standardized valuation procedures, and clearly traceable cash flows – and this is exactly where the circular economy reaches its limits. “There is too little clarity about the flows of money and about the values behind them. And so in many cases there is too little clarity about the risks and the expected revenues of circular business models,” is how Gruber describes the situation.

Many circular business models only generate their greatest economic benefit over long periods. Reusable materials, buildings that can be dismantled, or leasing models for products create value that often only unfolds fully after decades. The problem: banks usually look at financing over considerably shorter time horizons. “A circular business model often bears the most fruit only after ten years, while the bank carries the risks at the beginning,” says Gruber.

This creates a classic chicken-and-egg problem: without financing, new business models cannot grow. With-

out successful examples, in turn, the empirical values that banks need for their risk assessment are missing.

The value nobody puts on the balance sheet

This dilemma becomes particularly clear in the building sector. Circular buildings contain materials that do not end up as waste after decades but can be used again. In purely economic terms, these materials therefore have a future residual value. In the current financial system, however, it plays hardly any role. “In a circular building, components have a long-term value that we as a bank would have to account for differently, but cannot yet,” Gruber explains. It is precisely here that the mismatch between circular and financial logic becomes apparent. While the circular economy is geared to preserving value over the long term, conventional financing is frequently based on collateral that can be demonstrated in the short term and on known market values. The consequence: many of the advantages of circular models appear on no balance sheet, and therefore in no lending decision either.

Banks want to invest – but they lack the tools

The financial sector is by no means negative about the subject. The DKB already finances large parts of the energy transition and invests in social infrastructure, municipal enterprises, and sustainable real estate projects. In the field of the circular economy, too, initial financing arrangements and pilot projects are emerging. At the same time, the bank still describes itself as a



learner. “We have no circularity strategy and no genuine circularity product. We are still in the phase of getting up to speed and of conceptually grasping what we actually understand circularity to mean,” says Gruber.

That is not due to a lack of interest, he says, but to a lack of instruments. Often it is not even visible where circularity is already taking place. The bank is therefore calling for better data foundations and standards. Instruments such as digital building resource passports could make visible which materials are built into buildings and what long-term value they hold. Only then could these values also be taken into account in financing decisions.

The lesson from renewable energies

A look at the success story of renewable energies shows how markets of this kind can come into being. Today, wind and solar farms are considered largely bankable. That was not always the case. The turning point came with the political framework. “With the feed-in tariff, the legislator took the risk out of the cash flow, and that made the whole thing easy for the banks to handle,” Gruber recalls.

For the circular economy, too, he sees the state in a central role. That does not necessarily mean new subsidies, but standards, data infrastructures, funding pro-

grammes, and regulatory incentives. “The state has an incredible number of instruments at its disposal.”

The real transformation

For Gruber it is clear: what the circular economy needs first and foremost is not more money in the system. It needs a changed valuation system with criteria that make its value creation recognizable. As long as banks cannot integrate long-term material values, reduced raw material dependencies, or future reuse potential into their models, many circular business models will appear riskier than they actually are.

The challenge therefore lies less with individual companies than in the structures of the financial system itself – or, as the DKB’s head of sustainability puts it: “We are all in the starting blocks. But we are still finding it a bit hard to get running.”

The future of the circular economy is therefore decided not only in factories, recycling plants, or construction projects, but also in the risk models, accounting rules, and valuation systems of the financial world.

CIRCULAR FINANCE NEEDS ECOSYSTEMS

The circular economy is often presented as the “less risky” future of business: fewer raw materials, less waste, more resilience. But from the perspective of multilateral development banks, the reality is more complicated. “It is not that the risk disappears. It’s just a different kind of risk,” says Marcela Betancourt Munoz from the Climate and Environment Team at IDB Invest, the private sector arm of the Inter-American Development Bank Group (IDB).

That insight challenges one of the dominant narratives surrounding circular finance. According to Betancourt, the biggest obstacle does not necessarily lie in a lack of capital or investor interest. The real problem is that markets, regulations, and financial systems still do not know how to properly assess circular business models.

At IDB Invest this question has become increasingly important. The multilateral development bank has been working to understand how circular economy can be bankable, while financing projects across Latin America in sectors such as waste management, water treatment, and transport infrastructure. Unlike specialized impact investors or circular economy venture funds, IDB Invest rarely finances projects simply because they are labelled circular.

This reflects a broader reality of circular finance: many circular solutions are embedded inside conventional industries rather than existing as standalone business categories. Electric buses, for example, only become circular once questions around battery reuse, waste streams, or second-life applications enter the conversation: “What they do with the batteries is a new conversation and a new business model,” Betancourt says.

The same applies to agriculture and industrial production. IDB Invest increasingly looks at how to create industrial symbiosis. They ask how waste streams from

one sector can become inputs for another, for example using agricultural residues and converting them into biogas. “One of the things that is missing is how to connect the different ecosystems,” Betancourt explains. “We have to move from circular business to a real circular economy. Yet many of these projects still operate as isolated loops rather than part of a fully connected circular ecosystem.”

For banks, this creates uncertainty. Secondary material markets are often underdeveloped, certification systems incomplete, and long-term demand difficult to predict. Many companies can produce circular output, but they still struggle to find buyers, industrial partners, or market structures capable of absorbing them at scale. “You can find projects that close the loop internally. But then they don’t have any clients for their product,” Betancourt says.

This lack of ecosystem maturity is one of the reasons why circular finance still represents only a small percentage of global investment flows. According to Betancourt, scaling circular economy will require much more than financing individual projects. It will require coordinated ecosystems, shared standards, and stronger policy frameworks. “Taxonomy is one of the most important things,” she says. “That would help everyone to start talking in the same language.”

For multilateral development banks, this systems perspective is central. Unlike commercial banks, institutions such as IDB Invest are mandated to prioritize development impact alongside financial returns. “Our primary focus is impact and development in the region,” Betancourt explains. The bank is not just interested in closing a profitable transaction. That mandate allows multilateral development banks to combine loans with technical assistance, blended finance, sustainability-linked instruments, and policy support. In practice, this means helping companies redesign processes, defining circularity KPIs, or reducing risks for additional investors entering the market: “If we are part of a transaction, it is often perceived as more secure and we can therefore bring different investors on board.”

At the same time, IDB Invest is working with governments, financial institutions, and private-sector actors to strengthen policy frameworks and sustainability taxonomies across the region. Without these overarching structures, circularity will remain fragmented into isolated pilot projects. “Circularity is very difficult if you don’t have someone creating the big umbrella,” Betancourt says.

The future of circular finance, then, may depend less on finding more capital and more on building the ecosystems that allow circular business models to work at scale.



Marcela Betancourt Munoz,
climate and environment team,
IDB Invest

POLITICS

Environmental policy is a thing of the past



“WE MUST NOT KEEP CHANGING DIRECTION”

Frans Timmermans, for many years vice-president of the EU Commission, argues that Europe should take a pioneering role in sustainability.

Good environmental policy today is security policy, economic policy, and future policy all at once – and in many cases it fails above all because of political short-termism. For Frans Timmermans, who as long-serving vice-president of the European Commission was one of the most tenacious architects of the European Green Deal, this is the main reason why the switch from a linear to a circular economy is not getting the tailwind from politics that it needs. A conversation about responsibility, courage, and the question of why sustainability is nothing less than a promise of security – for a world that is currently learning how expensive this can become.

Mr Timmermans, what does good environmental policy have to achieve at a time of overlapping crises?

Politics should concentrate on what matters for our children and grandchildren and not only look at the next few years. We talk far too little about what environmental policy means for our security. If we link our future to our security, then we have a completely different debate about environmental policy.

Is there even such a thing as environmental policy any more, or are environmental, economic, and security policy, realistically speaking, one and the same?

Eighty percent of biodiversity losses are caused by the way we do business linearly, because we do not have a circular economy. The European Commission had that investigated. And conversely, the loss of natural

resources leads to massive problems for the economy. The interaction is obvious.

Are economic and ecological interests not currently being played off against each other?

German Chancellor Friedrich Merz (CDU) keeps setting economy and ecology against each other, as if sustainability were causing us economic difficulties. The opposite is true. I do not understand why that is not better understood. The only explanation I can find is that people want to score points in the very short term.

As vice-president of the EU Commission you were responsible for sustainability and initiated a whole series of directives and regulations to promote the circular economy. What was the common thread running through all of it?

You have to look at the issue holistically and not only in its individual parts. If you want to convince a majority in the European Parliament and in the member states, you have to show that it is not only about the circular economy but also, for instance, about the energy transition. We were only able to do all of that because there was something important in it for everyone. That also made people more willing to give something in another area that in turn mattered to others. For those in business who think long term, it was important to know what was necessary. They must not be left feeling punished by short-term politics and then no longer want to take part.

Despite your efforts, market conditions for circular products are still difficult. Single-use plastic, for example, is cheaper than adequate reusable systems. How can it become more attractive for investors to invest in circular business models?

The member states of the European Union should take a close look at the situation in the Strait of Hormuz and ask what that means for our provision in many areas. Virgin plastic is made from oil, and oil is becoming ever more expensive. At the same time, though, recycling businesses are currently going bankrupt. Those two things do not fit together.

We have to make sure that we can produce more independently. We will only manage that if we become circular and use everything we produce here all over again. The price difference between virgin material and recycles has to become smaller. That is what I meant at the beginning: sustainability serves our security.

With electric cars we are currently in the process of handing our lead to China – just as we already did with photovoltaics. If we now give up on plastics and recycling as well, it will be far more expensive later on to rebuild them or to buy them from China at great cost. That would be a tragedy.

Is it realistic that governments and the European Union can adopt further regulation on a larger scale in this respect?

Why was it possible during Covid to intervene so deeply in people's lives? The large majority of the European population understood it, because people were dying. The dangers to life and limb from the climate, from nature conservation, from our security, and from the circular economy are just as great. It is simply that politicians do not make that case.

I find it irresponsible that politics thinks only of the next election and is not prepared to say that we also have to think of our children and grandchildren. When did we lose this sense of responsibility? Why did our

grandparents and parents have this responsibility in mind and we no longer do? When the great catastrophes arrive, it will be too late to convert our economy. The global South, countries such as Vietnam or Indonesia, are doing more about it than we are in Europe. Why can we not be a role model for this world? America has lost that role-model function for many people. For Europe that is a golden opportunity that we must not miss.

What specifically has to happen now in order to break out of this spiral of short-termism?

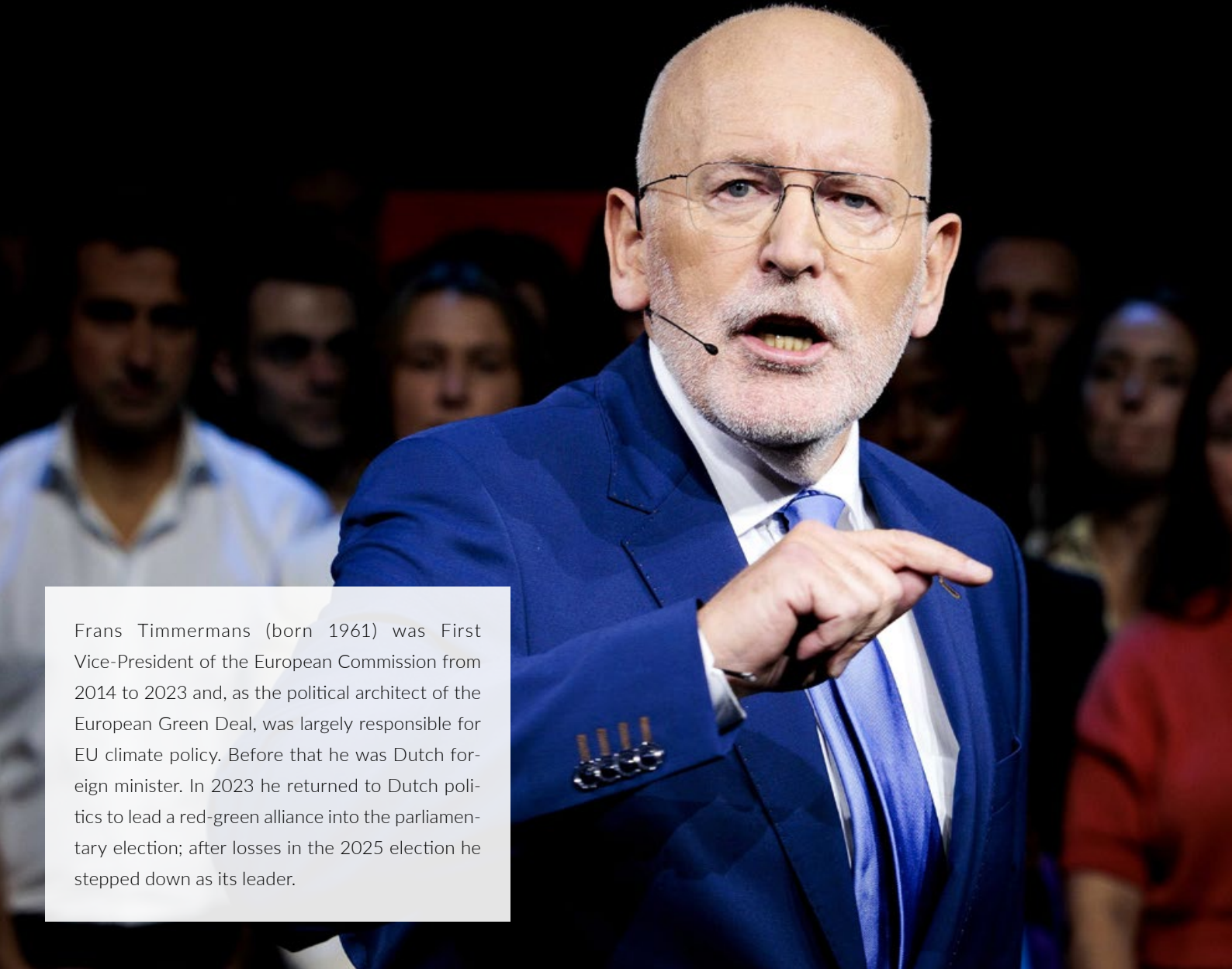
In principle we should carry on with what the European Commission has proposed and what the European Council and the European Parliament have adopted. But we have to be honest and say so. We have a unique opportunity to show that Europe has a far better model than America or China.

We must not communicate this only through the growth rate; we also have to connect it with our values. Why is there so much political apathy? People have the feeling that they no longer have any influence over their future. But we could show that we as Europeans are able to shape the future. I experienced that at the world climate conferences: when Europe takes the lead, the Chinese and the Americans follow.

We now have to hold out and must not keep changing direction. That is what causes businesses difficulties. They do not know whether they can count on us enforcing our legislation consistently. But consistency is what the EU has to offer, now that we have chosen a direction with the Green Deal.

What role do subsidies, regulation, and market mechanisms play?

Until now, subsidies have often been designed to benefit people who do not actually need them. We saw that with solar subsidies, and also with the subsidies for electric cars. Most of the people who benefited from them could have afforded both anyway. So far we have



Frans Timmermans (born 1961) was First Vice-President of the European Commission from 2014 to 2023 and, as the political architect of the European Green Deal, was largely responsible for EU climate policy. Before that he was Dutch foreign minister. In 2023 he returned to Dutch politics to lead a red-green alliance into the parliamentary election; after losses in the 2025 election he stepped down as its leader.

paid far too little attention to sustainability from the point of view of redistribution.

The most important thing we can do for financing the circular economy, though, is to create a European capital markets union. There are many billions of euros looking for good investment opportunities. But if you invest in Europe, you are still dependent on completely different national rules. That makes investors cautious. If we want to bring investment in sustainability from America to Europe, then we urgently need the capital markets union, and it is a disgrace that the member states have not yet taken this step. Under German and French leadership it should be pushed through quickly.

At Shell and BP I saw their former CEOs thinking out loud about how their business model would work in 50 years' time and wanting to invest massively in renewa-

ble energies and the circular economy. Both lost their jobs, because these companies are dominated by shareholders who think about short-term profit. Pension funds, by contrast, are willing to think long term.

[But even European capital market rules cannot guarantee that additional investment will not flow only into the old economy, but into circular and sustainable business models ...](#)

Norway can be a model here, where a sovereign wealth fund is used to make sure that private investment is protected. That makes the risks smaller. With this fiscal policy the state has the opportunity to mobilize private capital.

We were far too weak in that we did not prescribe precisely what member states have to do with the money

from emissions trading (ETS). Germany receives many billions from the ETS, but it is not used specifically for sustainability. If we put part of the ETS money into a fund and let it grow, as Norway does with its oil money, then we could also support investors and bridge more difficult times.

[Do you have the feeling that this rethinking you are calling for is taking place?](#)

Sadly not. We are seeing an example of that in the energy crisis following the war with Iran. Germany, the Netherlands, and Belgium are dealing with it in completely different ways. Germany is giving subsidies to the fossil fuel industry, and in the Netherlands that then creates tensions among citizens as to why the

same is not being done there. We need a European solution for this, and in doing so we would have to accelerate the transition to sustainable energy. That is the only constructive and sustainable thing we can do.

I also believe that a policy of this kind, if we push it through at European level, will be supported by citizens as well; 73 percent of them say Europe has to do more. I have not seen approval that high in the past 15 years. They can tell that the threat is coming from Russia, but also that we can no longer rely on the Americans. It would certainly go down well with people if we told them: look, there are a few very difficult years ahead, and we will have to ask more of those who can afford it. If we do that, we will come out of it better.



GLOSSARY

Accelerator programme

A time-limited support programme that helps start-ups grow rapidly through mentoring, networks, and resources.

Asset-light model

A business model in which a company owns as few assets of its own as possible (e.g. real estate or production facilities) and instead relies on partnerships, outsourcing, or platform structures in order to operate flexibly and with little capital.

Blended finance model

A financing approach in which public and private funds are combined to enable investment in development or sustainability projects, by reducing risks for private investors and creating incentives.

Cash flow

The net inflow of liquid funds, showing how much money a company actually has at its disposal.

Development bank

A state or international financial institution that supports projects for economic and social development, particularly in emerging and developing countries, often through low-interest loans or grants.

Due diligence

Careful examination and analysis of a company or project ahead of an investment, in order to assess opportunities, risks, and actual value.

First loss

The first loss position in a financing arrangement, which absorbs defaults first and thereby protects other investors.

Green bonds

Bonds whose issue proceeds are used exclusively for sustainable environmental and climate protection projects.

Impact investing

An investment strategy in which investments are deliberately designed to achieve a measurable positive social or ecological impact alongside a financial return.

Level playing field

A situation in which all market participants operate under comparable conditions, so that no company has systematic advantages or disadvantages in competition.

Patient capital

Long-term capital that investors provide without expecting short-term returns, in order to enable sustainable growth and the development of a company over an extended period.

Return on investment (ROI)

A metric for assessing the profitability of an investment; it relates the profit achieved to the capital employed and thus shows the return on a measure.

Scale-up

A company that has successfully left the start-up phase behind and is scaling its business model rapidly and sustainably, that is, strongly expanding revenue, customer base, or headcount.

Seed

The earliest phase of company financing, in which capital is provided to develop a business idea, create initial prototypes, and validate the business model.

Series A

A start-up's first larger financing round after the founding phase, in which external investors provide capital to develop the business model further and scale growth.

Venture capital

Investment capital that may, with a certain probability, also be lost, because the business model does not work out as planned after all.

Venture capitalist

An investor who finances young, high-growth companies with equity and receives shares in the company in return, usually at an early stage of development and with elevated risk.

LINKS TO THE ORGANIZATIONS AND INDIVIDUALS MENTIONED

Organization	Abbr	Link
Anthropia		https://anthropia.de
Circle Economy		https://www.circle-economy.com
Circulate Capital		https://www.circulatecapital.com
Denttabs		https://denttabs.de
Deutsche Kreditbank	DKB	https://www.dkb.de
Finance For Transition		https://www.finance4transition.de
Inter-American Development Bank Invest	IDB Invest	https://idbinvest.org
Plastic Fischer		https://plasticfischer.com
Pöppelmann		https://poeppeppelmann.com
Sagana		https://sagana.com
Silke Stremlau		https://www.silke-stremlau.de
TecPart		https://tecpart.de
Traceless		https://www.traceless.eu/

Interviews were conducted with the following people:

Anthropia, Oliver Kuschel, Managing Director & Co-Founder

Circle Economy, Marvin Nusseck, Lead of the Finance Programme

Denttabs, Axel Kaiser, Founder & CEO

Deutsche Kreditbank (DKB), Andreas Gruber, Chief Sustainability Officer

Finance for Transition, Silke Stremlau, Managing Director

Frans Timmermans, former Vice-President of the European Commission and former parliamentary group leader of GroenLinks-PvdA

IDB Invest, Marcela Betancourt Munoz, Advisory Officer for Climate Change

Plastic Fischer, Karsten Hirsch, Co-Founder & CEO

Pöppelmann, Benjamin Kampmann, Sustainability Expert

Sagana & Circulate Capital, Wolfgang Hafenmayer, Founding Partner

TecPart, Frank Stammer, Head Regulatory, Standardisation and Circular Economy

Traceless, Isabel Thoma, Head of Impact Communications

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