Systemic Value Assessment

Quantifying environmental and social impact for strategic decision-making

We've built economic systems with extraordinary capacity to measure what gets bought and sold, and almost no capacity to measure what sustains human welfare. A ton of avoided CO_2 emissions, a preserved cubic meter of groundwater, a new economic activity in a deindustrialized region. These are real, material contributions to collective flourishing, but they exist in measurement universes that can't speak to each other. So when capital gets allocated, when technologies get chosen, when industrial strategies get set, the decision framework is systematically blind to most of what matters. At Blunomy, we've developed a methodology that makes these values quantifiable in a common unit so they can finally inform the decisions that shape our industrial future.

1) Why Externalities Stay Invisible

The challenge with impact measurement exists at three distinct levels.

First: all environmental and social impacts aren't priced by markets. Climate damage from GHG emissions, ecosystem degradation, health costs from air pollution, industrial value creation: these impacts are real and material, but they don't appear in financial statements. A recycled plastics facility avoids emissions and reduces fossil resource consumption, but quantifying these effects rigorously requires measurement infrastructure that doesn't exist in standard business analytics. The difficulty compounds because we need precision across multiple dimensions simultaneously (climate, water, health, resources) and we need that quantification to be science-based, derived from peer-reviewed research rather than approximate estimates.

Second: there's no common unit for comparison. Even when individual impacts are quantified, they exist in separate measurement universes. Tonnes of CO_2 avoided, cubic meters of water saved, jobs created—these sit in different columns with no mechanism to assess their relative importance. Without a common denominator, aggregation across impact categories is impossible.

Third: impacts don't inform decisions. An organization might calculate its carbon footprint and water usage, but if those figures can't integrate into capital allocation frameworks or strategic planning, they remain supplementary information. Which initiative creates more total value per euro invested? This question stays unanswerable. Sustainability analysis gets completed and sometimes then forgotten, while core strategic decisions continue to be made primarily on financial criteria because those are the only metrics that provide a basis for comparison.

2) From Impact to Systemic Value

Systemic Value Assessment (SVA) applies the same analytical rigor to impact quantification that financial modelling applies to return projections. It is based on principles of materiality assessment, impact measurement, social return on investment, and life-cycle analysis. The output is the Systemic Value Estimate, measured in euros per year, representing the monetized value of externalities an activity will create relative to a defined baseline. Compared to other frameworks that seek to reconcile financial and extra-financial, SVA is decision-oriented, as many impacts are locked in from the decision moment.

Consider a new European chemical recycling facility processing 70,000 tonnes of PET annually.

We begin by establishing the counterfactual scenario: “what would happen without the investment?”. Without this asset, the current status is virgin PET production from fossil feedstocks, with end-of-life plastic waste going to incineration (52% in Europe) or landfill (25%). The rigor of this baseline is essential because all subsequent calculations measure the difference between what actually happens and what would have occurred anyway.

Next, we quantify impacts across the full value chain using Life Cycle Assessment and other science-based methods. For the reference case: fossil extraction, refining, petrochemical processing, and waste treatment. For the solution case: waste collection and chemical recycling. We calculate impact across material categories (climate effects, resource depletion, water impacts, land use, air pollution, human health), with data coming from established sources, or detailed company-specific data. We also assess the impact of reindustrialisation through GDP contribution, and are actively working to cover other social impacts (human rights, working conditions, …).

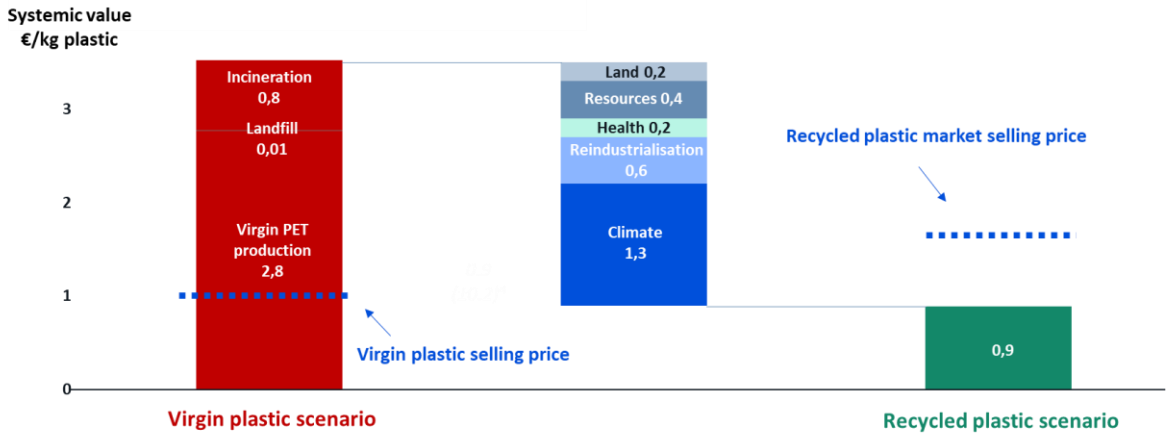
The critical transformation is translation in monetary units. We apply valuation factors derived from peer-reviewed research that convert physical impacts into social costs in euros. Over the past three years, tremendous efforts have been done by the scientific community to understand, standardise, localise when relevant, and evaluate the social costs of climate impacts and other externalities. We select, among these sources, those that are the most covering, robust, conservative and we yearly review and update the impact-to-euros factors we use.

In the end, the solution generates €2.69 of social value per kilogram of recycled PET. This breaks down into climate benefits (€1.25/kg, 46% of total), European reindustrialization (€0.58/kg), preserved fossil resources (€0.51/kg), and land, health, water impacts. We quantify uncertainty systematically (±€0.45 for the solution €2.69 figure) and conduct sensitivity analyses on key parameters. The complete calculation chain is documented for external audit.

At 70,000 tonnes annual production of recycled PET in Europe, that's €188 million of systemic value created per year.

It's critical to understand what this represents. This €188 million is not revenue, profit, or cash flow. These are monetized externalities the market doesn't price: avoided climate damage, preserved resources, health benefits, industrial value added. What this methodology does is make these invisible costs and benefits visible, quantifiable, and comparable to financial metrics.

At Blunomy, we take every opportunity to apply the Systemic Value Assessment to increase the type and number of externalities we are able to cover – building on an environmental foundation to expand in the social realm.



3) Applications Across Decision Contexts

Investment managers can compare systemic value creation across different technologies and geographies for portfolio construction.

Investment managers currently screen deals based on financial projections and qualitative impact narratives that can't be compared across sectors. SVA enables quantified portfolio construction: a chemical recycling facility versus a solar deployment versus wastewater epidemiology can be ranked on total value creation per euro deployed. At origination, SVA estimates identify high-impact opportunities. During transaction, practical assessments help determine key impact parameters and impact action plan, and how to tie it to the overall business plan. During holding period, SVA monitoring reveals operational levers – knowing that a facility's social value comes from air pollution for example indicates where process improvements have disproportionate impact.

Corporate strategy teams face business cases that rely on "intangible benefits" or distant regulatory compliance arguments. SVA transforms this: a manufacturing firm evaluating process electrification can present it as generating €X million in quantified social value with Y-year financial payback, making the strategic case alongside the financial case. SVA informs decision-making for sustainable projects, new products, technological choices, or even beyond, strategic shifts.

Public sector entities evaluate programs using fiscal cost-benefit analysis that sometimes overlooks many environmental and social impacts. SVA changes the calculation: a subsidy program for industrial decarbonization that costs €50 million can be assessed against €120 million in avoided climate damage and €30 million in health costs from reduced air pollution, demonstrating welfare-positive outcomes before accounting for innovation spillovers or industrial competitiveness effects. Investment priorities (which transportation corridor to upgrade, which energy system to support…) can incorporate quantified societal returns alongside economic development metrics, making trade-offs explicit rather than implicit.

4) Building Measurement for What Matters

Modern market economies optimize precisely for what flows through price mechanisms while being nearly blind to everything else. GDP measures output but not welfare or natural capital depletion. Corporate accounts recognize assets but not the commons operations depend upon.

Systemic Value Assessment is an attempt to build measurement for domains that have resisted measurement. It's not *perfect*: the Social Value Assessment involves model-dependent projections, baseline scenarios involve disputable counterfactuals. But when the methodology is transparent (every data source documented, every assumption explicit, every calculation auditable), rigorous disagreement becomes possible. And when rigorous disagreement becomes possible, the topic moves from the margins to the centre of strategic decisions.

The purpose is to make financial and social value creation legible to each other. To establish decision-making where both dimensions can be evaluated with comparable rigor. This is foundational infrastructure for an economy that treats financial performance and societal impact as two quantifiable dimensions of the same decision.

The best part - This recycled PET example will actually go live, as Reed AM has selected BASF's Industriepark Lausitz in Schwarzheide, Germany, as the site of Infinite Loop Europe's first PET and polyester fiber recycling facility in Europe. This state-of the art plant will use Loop Industries' depolymerization technology to turn currently non or low value PET waste into virgin quality material, at scale. By 2030, the facility is expected to produce 70,000 tons of recycled material per year, create around 150 direct skilled jobs and avoid up to 5 tons of CO_2 emissions for every ton of recycled PET, directly supporting Europe's transition towards a more circular and less carbon-intensive chemical industry.

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