

How much does the corporate climate transition cost?

Quantifying the investment of high-impact climate transition initiatives



Audrey Grove



Kat Hunt



Shetal Lettvin



Alec Lucas



Earth Finance

Two Union Square, 601 Union Street,
Suite 3525, Seattle, WA, 98101

 [linkedin.com/company/earthfinance](https://www.linkedin.com/company/earthfinance)
 [earthfinance.com](https://www.earthfinance.com)

Climate and sustainability professionals are operating in a unique moment in history. A confluence of shifting political, economic, social, technological, and environmental forces is putting the field under an undeniable stress test, and all during a time when the urgency for climate action has never been higher.

Yet in an era of increased political volatility and uncertainty, C-suite executives are staying the course. [In a recent survey](#), 90% of sustainability executives said the political landscape has not changed their approach. If anything, these shifting market, regulatory, and political forces have reinvigorated the need for sustainability to be grounded in business value and core business strategy.

Quantifying the [business value of sustainability initiatives](#), and by extension tackling the structural challenges of how to pay for them, is one of the largest hurdles organizations face on their climate and nature transition. For most companies, the natural starting point is determining how much those initiatives will cost in the first place.

The costing challenge

Mapping out the cost of sustainability initiatives is foundational to sound, business-aligned transition finance strategy. With a clear understanding of investment, expressed in dollars per metric ton of CO₂e abated (\$/MT), companies can identify innovative partnerships and financing strategies to alleviate risks, reach near-term sustainability and financial goals, and realize greater return on investment (ROI).

Unfortunately, modeling the cost of climate transition initiatives is easier said than done. Even among leading companies, costing exercises and investments have typically been limited to high-feasibility, operational initiatives such as retrofits, certifications, and clean energy procurement. That's because more transformative value chain initiatives often require fundamental changes to operating models and deep, interdepartmental collaboration pathways.

Developing this kind of collaboration pathway means overcoming language barriers and differing definitions of value between departments and gathering data from numerous siloed business units (assuming the data exist in the first place). It comes as no surprise, then, that many organizations have struggled to carry out this critical first step to financing their climate and nature commitments.



This resource is designed to give corporations a starting point on their costing and transition finance journey, using anonymized corporate data and market insights to shed light on the magnitude of cost of various climate initiatives. The climate transition strategies listed are not comprehensive – rather, this piece aims to highlight strategies striking the right balance of greenhouse gas (GHG) reduction potential, abatement cost, and feasibility for the modeled companies.

The transition finance strategies available to corporations, from tax credit transferability and blended finance to self-sustaining funds, will be a topic of exploration in the coming months.

Key & assumptions

GHG reduction potential
1: lowest GHG reduction potential 5: highest GHG reduction potential
Investment magnitude
\$: least expensive \$\$\$\$\$: most expensive
Company characteristics
Investment magnitude and GHG reduction potential were modeled using data from companies under the following parameters: - Size: Fortune 500 - Industry: Retail

Note: The figures listed for investment magnitude and reduction potential are relative estimations meant to showcase where emissions reduction strategies rank in comparison to each other. Abatement figures in the case study are meant to demonstrate the variance in abatement potential and cost using real data from 2 representative corporations under the assumptions listed above.

Actual figures will vary based on your industry, company size, business priorities, and climate and energy goals.

Climate transition strategies

	Strategy	Explanation & considerations	GHG reduction potential	Investment magnitude	Local , state, or federal incentives & rebates	Co-benefits
SCOPE 1	Refrigeration retrofits and upgrades	Use less ozone-damaging refrigerants and/or install a CO2 refrigeration system with leak detection technology.	1/2	\$\$	✓	 Hazardous waste reduction
	Fleet electrification	Consider alternative fuel sources for fleets and other operating equipment, including electricity and renewable fuels. GHG reduction potential will depend on your fleet size, industry, and business goals.	1	\$\$\$	✓	 Water  Nature  Social impact
	Electrify commercial building equipment	Electrify or transition to renewable fuel sources for equipment used to produce goods and process materials (industrial ovens, assembly line machinery, etc.).	1	\$	✓	—
	Install building management systems (BMS)	BMS's reduce emissions leakage by controlling and automating lighting, HVAC, and refrigeration systems in operational facilities.	1	\$	✓	—

All strategies assume that a company is connected to a centralized, traditional power grid as opposed to a localized, self-contained energy system like a microgrid.

What about cost savings and ROI?

Many of the initiatives listed above offer tangible cost savings, risk mitigation, and ROI benefits that are not factored into the investment magnitude estimations. For instance, in addition to yielding higher long-term profitability and ROI, adopting [regenerative practices in the value chain](#) creates cost savings by shielding businesses from disrupted supply during a drought, recall risks, and livestock disease.

Climate transition strategies, continued

	Strategy	Explanation & considerations	GHG reduction potential	Investment magnitude	Local, state, or federal incentives & rebates	Co-benefits
SCOPE 2	Purchase renewable energy	Purchase energy through Renewable Energy Certificates (RECs), Emission-Free Energy Certificates (EFECs), or Power Purchase Agreements (PPAs).	3	\$\$	✓	 Social impact
	Install onsite renewable energy generation and/or microgrid systems	In addition to creating clean energy in house, onsite generation systems can amplify the abatement potential of other strategies, such as fleet and building equipment electrification.	3	\$\$\$	✓	 Water  Nature  Social impact
	Retrofit commercial HVAC systems	Modify existing HVAC systems to improve energy efficiency, performance, or capacity by sealing leaks, installing smart controls, upgrading furnaces and chillers, and more.	1	\$\$	✓	 Hazardous waste reduction
	Retrofit LED lighting	Replace fluorescent and incandescent lighting with LEDs.	1	\$	✓	—
	Upgrade building insulation	Lower energy consumption and tighten building envelope by improving insulation materials, reducing air infiltration, and upgrading windows.	1	\$	✓	—
	Install a geothermal heat pump	Although more expensive than traditional air-source systems, geothermal heat pumps offset additional costs as energy savings in 5-10 years.	2	\$\$	✓	—

Climate transition strategies, continued

	Strategy	Explanation & considerations	GHG reduction potential	Investment magnitude	Local , state, or federal incentives & rebates	Co-benefits
SCOPE 3	Financially support supplier energy transition	Help suppliers shift to clean energy by offering financial incentives, sustainability-linked loans, preferential terms, and more.	4/5	\$\$\$	✓	 Water  Nature  Social impact
	Embrace regenerative agriculture at the farm level	Work with farmers on pilots to rebuild soil health, improve water retention, and increase biodiversity.	5	\$\$\$\$\$	X	 Water  Nature  Social impact
	Use less GHG-intensive materials in products	Work with suppliers to integrate more sustainable materials into product design, such as shifting to deforestation-free inputs, and/or increase energy efficiency of goods and services.	4	\$\$\$\$	X	 Water  Nature  Social impact
	Redesign GHG-intensive packaging	Redesign packaging to reduce single-use plastics and other fossil fuel-reliant materials, such as by lightweighting, sourcing recycled or bio-based content, and designing out small-format packaging.	2	\$\$\$	X	 Water  Nature  Social impact
	Reduce facility-level embodied carbon	Use less GHG-intensive building and construction materials in new and existing facilities, such as green cement and reclaimed lumber.	2/3	\$\$\$\$	X	 Water  Nature
	Contract with low-emission 3rd party logistics provider	Lower transportation and distribution emissions by coordinating with a 3PL offering lower-emissions trucking, maritime, and aviation.	2/3	\$\$\$	X	 Water  Nature  Social impact

Investment magnitude for Scope 3 emissions strategies tends to be larger than Scope 1-2 strategies because supply chain emissions often [account for a large majority of corporate GHG footprints, especially for consumer-facing companies.](#)

Carrots vs sticks EPR Laws:

While incentives (carrots) for sustainable packaging are limited, regulatory mandates (sticks) are expanding in the form of Extender Producer Responsibility (EPR) laws. EPR packaging laws holding producers accountable for the lifecycle of their packaging are already active in [7 US states](#) and all EU member states.

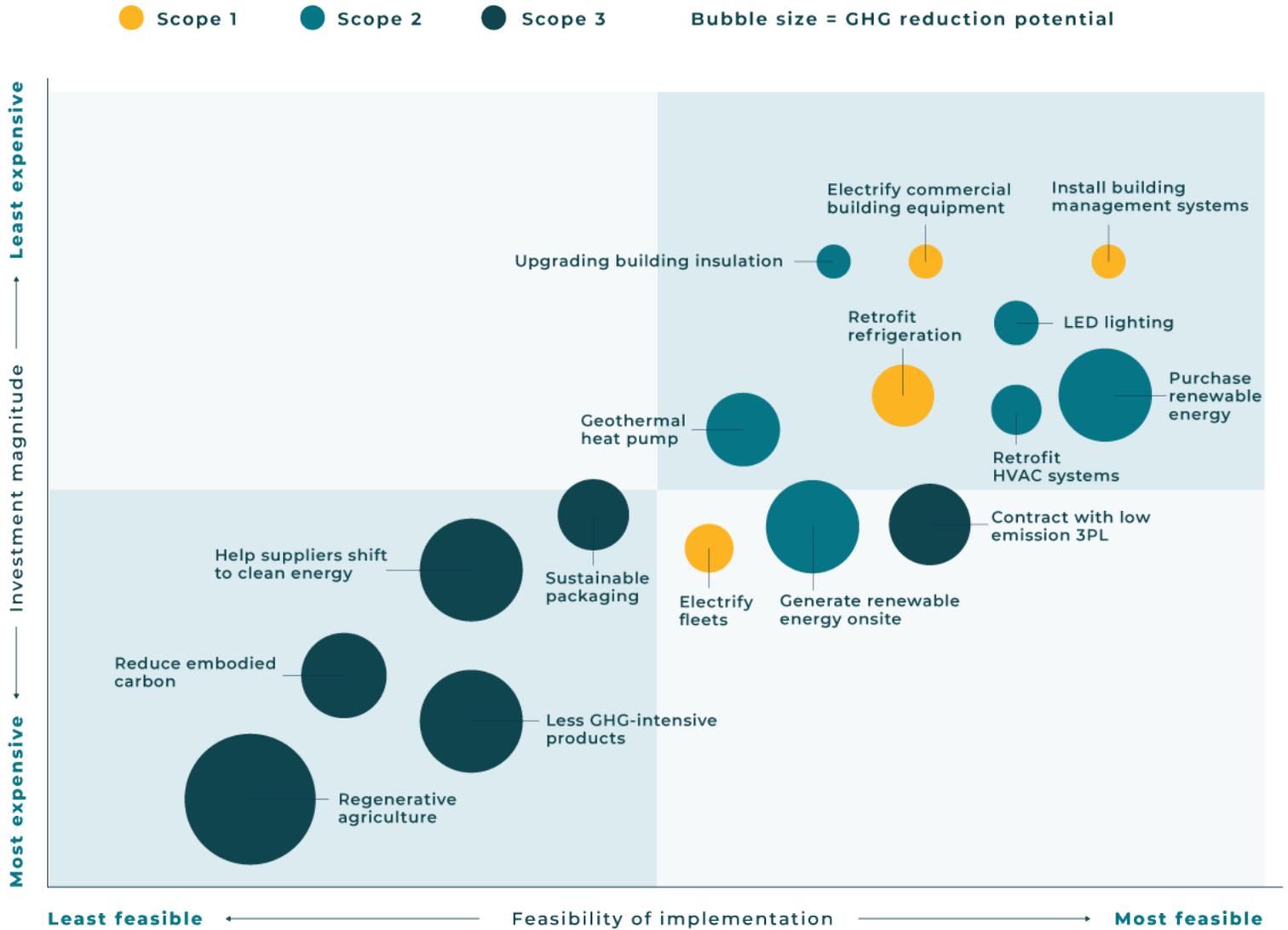
Strategies in action

Learn how one Fortune 500 retailer is financially supporting the supplier energy transition through creative use of tax credit transferability.

[Read all about it.](#)

STRATEGY MATRIX

Investment magnitude versus feasibility of implementation

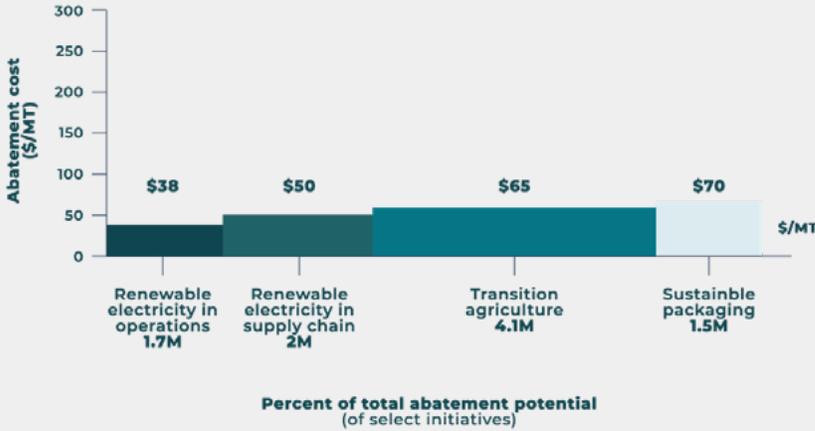


CASE STUDY

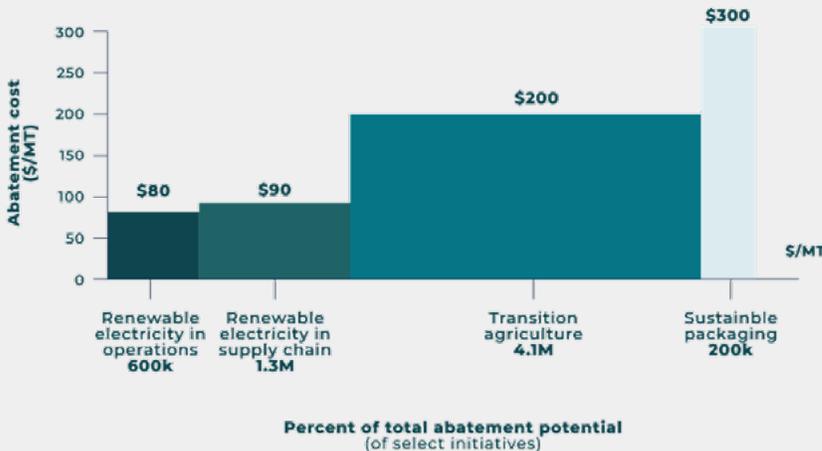
Abatement potential versus abatement cost

MACC curve comparison of 2 consumer-facing companies

Company 1



Company 2



Abatement cost methodology:

A closer look

To calculate the initiative-level abatement costs listed to the left, existing client data were collated from various departments, combined with market insights, and used as inputs for a bespoke stochastic model. Stochastic modeling, or uncertainty modeling, is a simulation-based methodology used to analyze and forecast potential outcomes under different conditions. These models are particularly valuable for climate transition planning because they integrate a variety of inputs, from internal data to geopolitical and macroeconomic trends. As a result, the likelihood of accuracy is much higher than single point estimations, and stakeholders can clearly visualize the influence of different factors on the corresponding abatement cost range.

Our model merged political, regulatory, and technological factors with client data and market research to quantify abatement cost ranges for each sustainability initiative.

Note: As mentioned above, stochastic models typically demonstrate a range of outputs under various conditions, in this case the range of abatement cost by initiative. These ranges were illustrated as a point estimate in the visuals to the left for the sake of simplicity and ease of comparability.

⚡ ABATEMENT COST VARIANCE: Renewable electricity in operations

Local renewable energy markets have a sizable impact on abatement costs. For example, Company 2 operates in more nascent clean electricity markets than Company 1, yielding a higher abatement cost.

📦 ABATEMENT COST VARIANCE: Sustainable packaging design

In this example, Company 1 is targeting a specific subset of already-recyclable resins in its sustainable packaging strategy. Company 2, on the other hand, needs to develop recycling infrastructure models in addition to redesigning its packaging, thus creating a higher abatement cost.

Why the variance in abatement potential?

As demonstrated above, abatement potential for similar strategies can vary greatly by company. What's logistically feasible for one company versus another is heavily dependent on industry, size, internal strategy, team expertise, and more. For example, one of the companies in the figure above is more reliant on agricultural supply chains, making their proportional land use emissions (and corresponding abatement potential) larger than the other.



The climate transition costing journey: **Tips for success**

As mentioned above, costing and ultimately financing high-impact climate transition initiatives often requires a fundamental shift in how teams operate and work together.

Here are some tips for success:

- ✓ **Identify relevant data holders.** Cross-departmental collaboration is essential to creating accurate costing models. Data owners often include leaders from sustainability, energy, purchasing, treasury, accounting, financial planning, supply chain, real estate, risk management, and more.
- ✓ **Consolidate and standardize data.** Many organizations have more data than they realize – it just might be owned by different business units. Reach out to all relevant departments to see who has what information and create a centralized database communicating inputs in the same format. This step is critical to building the foundation for stochastic modeling, which is the recommended methodology for quantifying the cost of climate transition initiatives under uncertain conditions (changing macroeconomic trends, political dynamics, etc.).
- ✓ **Gain early buy-in from finance partners.** With direct involvement in budgeting and strategic planning, finance teams are a particularly important stakeholder to engage. Working side-by-side with these partners will ensure you're presenting and communicating information in alignment with how they make decisions (such as creating business case templates or analyzing ROI tradeoffs for initiatives).
- ✓ **Create a C-suite narrative.** Develop a narrative to educate C-suite executives on the business case for specific climate initiatives, why they cost what they do, and what strategies you might utilize to pay for them.



Pro tip: The financing mechanism used often informs the cost of a specific initiative. Thoughtfully research which financing mechanisms could allow you to pay for an initiative in a smarter way (for instance, [partnering with](#) a climate technology startup on a creative cost-sharing or offtake strategy as opposed to a direct balance sheet investment).

- ✓ **Convene a climate transition finance task force.** Consider creating a task force to support sustainability investment decisions and oversee goals and progress. Your task force could, for example, assign financial partners to particular investment areas, analyze investment strategy and tradeoffs, and identify opportunities for increased abatement potential or ROI.

Thinking forward

Identifying the right strategies to finance your climate initiatives is crucial to bridging the commitment-action gap and attaining your business and sustainability goals. That starts with having a clear understanding of the abatement cost and potential of each initiative based on the unique geographical, technological, and market forces influencing your company.

How you pay for an initiative influences the investment magnitude nearly as much as the cost of the initiative itself.

If your models produce figures that seem excessively high, remember there are numerous levers you can pull, from sub-national policy incentives to creative, cross-sector partnership structures, to make the initiatives financially and operationally feasible. In the coming months, our team will release an in-depth resource exploring these internal and external mechanisms, including an analysis of which strategies are best suited to specific sustainability initiatives.

Earth Finance helps organizations tackle the structural challenges of how to pay for climate and nature commitments.

The transition to a sustainable future is the greatest economic opportunity of our time. Our team can help you quantify investment costs and develop corresponding transition finance strategies for high-impact sustainability initiatives specific to your organization.

[Get in touch](#)

