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ESG Analysis

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Corporate Climate Competitiveness:
Growing Your Business, Optimizing Investments, and Managing Costs

EXECUTIVE SUMMARY

- There is a transition underway to a greener, low-carbon economy. Businesses that successfully decarbonize their operations in line with global energy transition commitments may be more likely to protect their license to grow and avoid increased costs from carbon pricing.
- Current standard practice is to measure the financial return of project investments. Best practice during this transition, however, could be to prioritize investments that meet science-based targets (SBTs) and decarbonize operations.
- Companies could evaluate investments for financial and environmental performance to achieve carbon targets and mitigate risks associated with hidden future carbon prices.
- Reporting that is aligned with the recommendations of the Task Force on Climate-related Disclosures (TCFD) increases transparency with internal and external stakeholders for financially material climate-related risks and opportunities.
- Trucost's analysis of four publicly disclosed investments intended to deliver environmental and financial returns reveals that three of them could fail to meet either or both performance targets. For example, investment in coal storage, meant to improve the condition of the coal and reduce the amount purchased and combusted, was found to have significant hidden carbon emissions. The Green Transition Tool demonstrates that this supposedly green investment turns out to be brown.
- Trucost's Green Transition Tool scenarios enable businesses to prioritize investments, consider environmental and financial performance, and report in line with TCFD recommendations.

INTRODUCTION

Businesses that successfully adapt will reduce their exposure to regulatory and carbon pricing risks, while improving energy and resource efficiency. Companies that delay action could be left behind, as competitors act to align business strategies with the transition.

There is a transition underway to a greener, low-carbon economy. As companies navigate the complexities of this shift, many could grapple with complex investment decisions—What to invest in? Where? How much to invest? Some may want to incorporate low-carbon technology in their operations or substitute greener materials in their products. Others may want to improve process and product designs, enhance management practices, or adopt different business models. Businesses that successfully adapt will reduce their exposure to regulatory and carbon pricing risks, while improving energy and resource efficiency. Companies that delay action could be left behind, as competitors act to align business strategies with the transition.

Conventional business practice considers the financial returns of capital investments, but does not typically factor in hidden financial and environmental benefits, such as reduced carbon taxes, penalties, and emissions. Better-informed investment decisions consider environmental and financial returns side by side.

Companies have many possible pathways to reduce energy consumption and transition to low-carbon business. Businesses must determine the optimal pathway that minimizes environmental impacts, while delivering acceptable financial returns. For most companies, this can be challenging because it requires robust environmental data at a local level.

Companies are under increased pressure to address climate-related issues. For example, customers want to understand how companies' business practices are aligned with their climate goals. Investors want to understand how companies are managing material climate risks, and if they will be realized as financial costs. The TCFD recommends disclosing clear, comparable, and consistent information using scenario analysis as a tool for assessing those transition and physical risks and opportunities.[1]

As customers, investors, and policymakers impose new expectations about climate-related activities, it is vital for businesses to consider the climate-related implications of their investments if they want to maintain carbon competitiveness.

[1] Task Force on Climate-Related Financial Disclosure, "Recommendations of the Task Force on Climate-Related Financial Disclosures: Final Report," June 2017, pp. 12-13. Downloaded May 9, 2018.

INSIGHTS FROM THE GREEN TRANSITION TOOL

Because transitioning to a low-carbon economy presents companies with complex choices, Trucost developed the Green Transition Tool to simplify decision-making. The tool quantifies different ways to decrease fossil use, reduce exposure to carbon-related costs, and communicate alignment with TCFD recommendations.

Currently, companies may evaluate investment scenarios that encompass different combinations of investments in low-carbon projects. For example, an investment scenario could include a mix of renewable energy plants, new energy-efficient production technologies, a greener fleet, and greener buildings. The selection of projects is often constrained by available capital expenditure (capex) funds or by funds raised by issuing debt, such as green bonds. The best-performing investment scenario would optimize environmental and financial returns.

Using the Green Transition Tool, Trucost analyzed three investment scenarios, consolidating publicly disclosed data and compared the financial and environmental investment returns of each scenario.

Trucost analyzed three investment scenarios using the Green Transition Tool, consolidating publicly disclosed data—from a solar project deployed by a Canadian utility, an anaerobic digestion (AD) plant and coal storage projects built by European food companies, and light-emitting diode (LED) light fixtures installed in the U.S. by an office-based company—and compared the financial and environmental investment returns of each scenario. The Green Transition Tool demonstrates how to evaluate and select the best investment scenarios in line with a 2 degree Celsius scenario—an assessment that could help forward-looking corporate treasurers, sustainability professionals, or investors to align business strategies with the low-carbon transition.

Investment Scenario 1: How Can a Company Avoid Making an Investment With a Superior Financial Return but an Inadequate Environmental Return for the Green Transition?

Superior environmental performance does not always equate to superlative financial impact, and vice versa. These hidden risks become apparent with Trucost's side-by-side analysis of environmental and financial returns. Trucost's Green Transition Tool uncovers the optimal combination of investments and determines which scenarios achieve 2-degree-Celsius-aligned financial and environmental performance.

Four investments that were representative of a range of possible green projects were evaluated:

- USD 48 million in 114,000 m^2 of solar photovoltaic panels (PV) in Japan;
- USD 20 million in an ADplant in the UK;
- USD 30,000 in 2,000 LED lighting fixtures in the U.S.; and
- USD 400,000 in an improved coal storage unit in the UK.

On the surface, these green investments appear to reduce reliance on fossil-fuel-powered energy from the grid by using renewable solar energy; by generating energy from waste with the AD plant; by lowering energy consumption with efficient LED lights; and by improving the condition of the coal, a fossil fuel with high carbon emissions.

The Green Transition Tool delivers data on the financial performance of the investments. Metrics include conventional measures such as return on investment (ROI), net present value (NPV), and internal rate of return (IRR). The LED light and coal storage investments offered triple-digit financial ROIs, positive NPVs and IRRs, and break-even dates of a year or two (see Exhibit 1).

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Exhibit 1: Project Finance Overview (Lifetime Impacts)

PROJECT TYPE	COUNTRY	ROI (%)	NPV (USD)	BREAK-EVEN DATE	IRR (%)
Solar PV	Japan	-90	-41,000,000	N/A	-8.5
AD Plant	UK	-61	-12,000,000	N/A	-4.3
LED Lights	U.S.	159	44,000	2019	66
Coal Storage	UK	464	1,600,000	2018	110
Total			**-51,000,000**		

Source: Trucost. Data derived from Green Transition analysis as of July 3, 2018. Totals may reflect rounding errors. Table is provided for illustrative purposes.

Closer examination reveals that the returns on the solar PV installation and AD plant were feeble, delivering negative returns and no break-even date.

The Green Transition Tool enhances the financial investment case with insight on the environmental performance of the investments. In particular, it examines future carbon pricing risk, which is Trucost's unique metric that estimates the avoided cost of carbon in the regions where the assets are, deployed to 2030. Using the Green Transition analysis, the company would have found that, though at first glance the investment in coal storage looks promising, its carbon pricing risk of USD 2.2 million substantially outweighs those of the solar PV, AD plant, and LED lights combined (see Exhibit 2). The overall emissions would also increase because more coal would be combusted to create additional electricity—and additional carbon taxes.

Exhibit 2: Project Avoided Costs

PROJECT TYPE	AVOIDED CARBON PRICING RISK (USD)	AVOIDED ENERGY COST (USD)
Solar PV	3,600,000	4,820,000
AD Plant	-1,800,000	7,850,000
LED Lights	19,000	77,800
Coal Storage	-2,200,000	2,260,000
Total	**-381,000**	**15,007,800**

Source: Trucost. Data derived from Green Transition analysis as of July 3, 2018. Totals may reflect rounding errors. Table is provided for illustrative purposes.

Additional Trucost environmental metrics include avoided emissions and avoided fossil fuel and electricity use.

Additional Trucost environmental metrics include avoided emissions and avoided fossil fuel and electricity use. Trucost also analyzes the environmental performance of investments. Exhibit 3 summarizes the findings. Solar PV and LED lights avoided fossil fuel use and emissions. LED lights offered the additional benefit of 4.2 million kWh of avoided electricity use. The AD plant results were more mixed, but they also bringavoided fossil fuel use. The coal storage asset had largely negative environmental performance, as it brought a hefty increase in carbon emissions of 434,000 metric tons. These negative metrics for coal storage overshadowed the 140,000 kWh of avoided electricity it could deliver and wiped out all of the carbon savings generated by the other three projects. The coal investment lowers the environmental and financial performance of the entire portfolio.

Exhibit 3: Environmental Overview (Lifetime Impacts)

PROJECT TYPE	COUNTRY	AVOIDED EMISSIONS (tCO_2e)	AVOIDED FOSSIL FUEL USE (t oil eq)	AVOIDED ELECTRICITY USE (kWh)
Solar PV	Japan	207,000	64,400	-
AD Plant	UK	-83,000	15,400	-
LED Lights	U.S.	2,300	670	4,200,000
Coal Storage	UK	-434,000	-	140,000
Total		**-307,700**	**80,470**	**4,340,000**

Source: Trucost. Data derived from Green Transition analysis as of July 3, 2018. Totals may reflect rounding errors. Table is provided for illustrative purposes.

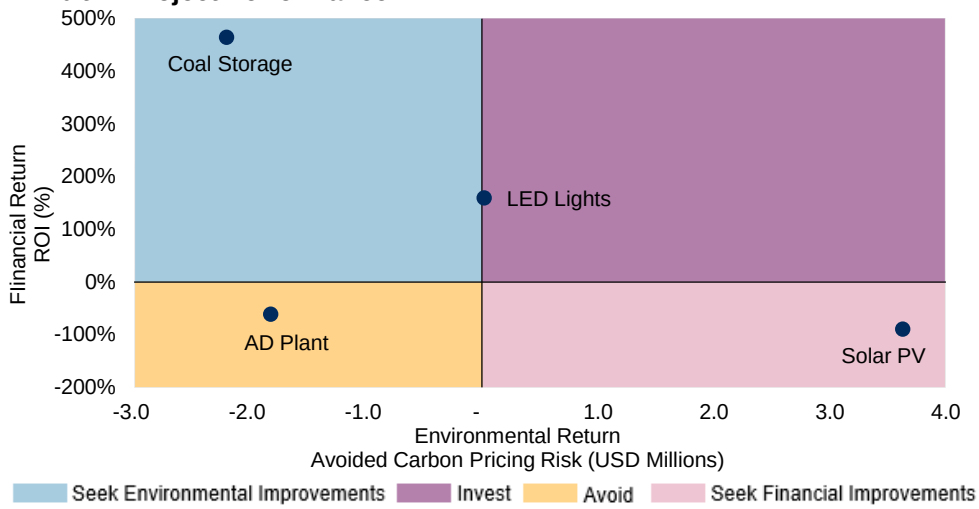
Investment Scenario 2: How Can the Corporate Finance Team Maintain Margins by Prioritizing Capital Investments With Lower Carbon Pricing?

Investment scenario 1 delivered clear recommendations about LED lights and coal storage, but a cloudier outlook on the remaining assets. The mixed financial and environmental results made it difficult to decide whether to invest in the AD plant and solar PV. What if there was a way to provide more forward-looking, insightful data and analytics to the treasurer about what assets to invest in and where?

The Green Transition Tool's performance matrix displays which investments to pursue, which to avoid, and which require improvements. Top performers with high environmental and high financial returns appear in the top right-hand quadrant of Exhibit 4.

In Exhibit 4, we can see that LED lights had positive ROI and avoided carbon pricing risk.

Exhibit 4: Project Performance



Source: Trucost. Data derived from Green Transition analysis as of July 3, 2018. Chart is provided for illustrative purposes.

In Exhibit 4, we can see that LED lights had positive ROI and avoided carbon pricing risk. Though delivering an ROI of nearly 500%, coal storage, in the top left quadrant, also brought an unsatisfactory USD 2.2 million carbon risk, a clear risk of margin erosion. Conversely, the solar PV investment in the bottom right demonstrated healthy avoided carbon pricing risk of nearly USD 3.6 million, but needed to improve a weak financial ROI. Investment in the AD plant, in the lower left quadrant, should be avoided altogether because its financial and environmental performance were poor.

Investment Scenario 3: How Can the Corporate Sustainability Director Communicate Benefits of the Company's Climate-Related Actions?

In this scenario, Trucost analyzes how closely the Green Transition Tool results align with the recommendations of the TCFD compared with disclosures made by the companies about their investments. The companies disclosed the location, size, value, and types of investment they made. They did not demonstrate that both climate-related opportunities and risks were considered. Nor did they provide examples of the risks and opportunities and how they impacted performance of the investments.

To align with TCFD recommendations, the companies need to deliver evidence that the investment assessments take into account transition risks including policy and legal issues, technological and market-related risks, and opportunities, such as those related to resource efficiency, energy source, and resilience. Reporting on climate risks in financial terms provides a way for the sustainability team to work with peers in treasury, finance, and risk.

The Green Transition checklist in Exhibit 5 demonstrates that the company was closely hewing to the recommendations of the TCFD by measuring

multiple risks and opportunities in the model. For example, for policy and legal risks, the Green Transition Tool reported increased pricing of greenhouse gas (GHG) emissions as avoided carbon pricing risk. The use of more efficient transport modes and buildings, a resource efficiency opportunity, was factored into the analysis.

The Green Transition checklist in Exhibit 5 demonstrates that the company was closely hewing to the recommendations of the TCFD by measuring multiple risks and opportunities in the model.

Exhibit 5: Task Force on Climate-Related Financial Disclosure Checklist

	CLIMATE-RELATED RISKS	NO. METRICS	GREEN TRANSITION EXAMPLES
TRANSITION RISKS	**POLICY AND LEGAL**		
	Increased pricing of GHG emissions	**1**	Avoided carbon price risk
	Enhanced emissions reporting obligations	**12**	Avoided lifetime carbon emissions
	TECHNOLOGY		
	Unsuccessful investment in new technologies	**6**	ROI; NPV; IRR; MIRR
	Costs of transition to lower emissions technologies	**11**	Present value of investment
	MARKETS		
	Increased costs of raw materials	**8**	Avoided electricity cost

CLIMATE-RELATED OPPORTUNITIES	NO. METRICS	GREEN TRANSITION EXAMPLES
RESOURCE EFFICIENCY		
Use of more efficient transport modes and buildings	✓	Factored into analysis
Move to more efficient buildings	✓	Factored into analysis
ENERGY SOURCE		
Use of lower-emission sources of energy	✓	Factored into analysis
Use of new technologies	✓	Factored into analysis
Shift towards decentralized energy generation	✓	Factored into analysis
RESILIENCE		
Participation in renewable energy programs and adoption of energy-efficient measures	✓	Factored into analysis

Source: Trucost. Data derived from Green Transition analysis as of July 3, 2018. Table is provided for illustrative purposes.

CONCLUSION

In order to maintain a license to grow, optimize investments, and avoid increased costs from carbon pricing, companies need to set ambitious science-based GHG emission reduction targets and identify the smartest way to achieve them. Measuring environmental returns alongside financial returns of capital investments in all geographies where they operate will help avoid capex investments that do little to achieve climate goals. Scenarios help identify, evaluate, and optimize capital spending options. Carbon pricing risk is a unique metric that reveals hidden environmental costs. Clear prioritization of investments makes decision-making simple and repeatable. Finally, demonstrated alignment with TCFD recommendations can ease communication with stakeholders. Together, these analyses could orient businesses toward a carbon-competitive future.

APPENDIX: GREEN TRANSITION TOOL – METHOD, SCOPE, AND DATA

The Green Transition Tool is Trucost's proprietary model that compares the environmental and financial returns of different investment scenarios in low-carbon projects. The Green Transition score measures how well each investment reduces carbon emissions, compared with what is required for a 2-degree-Celsius climate scenario. Companies can use the analytics to inform how they allocate capital and communicate the positive impacts and avoided carbon emissions from their investments. The Green Transition Tool is especially useful for quantifying the benefits of bonds.

Trucost evaluates several combinations of project investments, called investment scenarios, to identify an optimal mix of projects that maximize financial and environmental return. The Green Transition Tool includes over 350 technologies, covering green energy, green transportation, green buildings, and energy efficiency, and can also accept data on a company's proprietary technologies.

For each project, Trucost quantifies the net benefit—either positive or negative—of the project compared to business as usual (BAU). The net benefit is the difference between the carbon emissions from the investment and the avoided BAU emissions. For instance, for an investment in onshore wind power in the U.S., the BAU scenario was purchasing electricity from the grid. The BAU scenario included carbon emissions from operations and the investment scenario included the lifetime emissions across the project's entire life cycle, from its construction or manufacture, operation, and disposal.

Trucost has assembled data from extensive internal and external sources to calculate the net benefit of individual investments and investment scenarios. Company-provided data includes project type, asset life, investment amount, quantity of assets, size, year of investment, and country of deployment. In order to calculate the financial performance, Trucost uses industry average data on electricity and fuel costs, which can be overridden by company specific data, if available.

Trucost has created analytics to account for carbon pricing risk by location and business activity, as well as changes in national infrastructure up to 2050. This includes the change in the mix of energy sources to generate energy for the national grid, for example, from increased use of renewable energy generation.

Where appropriate, the Green Transition Tool estimates environmental performance based on the project's location. However, in some instances a site-specific approach is not required, such as calculating the environmental performance of a particular type of car, such as diesel, which is independent of the geography in which it operates.

Carbon emissions associated with the construction and disposal of an investment are based on a number of life-cycle inventory (LCI) datasets. Carbon emissions from operations of the investment and the BAU scenario are based on LCI datasets, as well as product- and asset-specific data, such as specific emissions factors for certain technologies.

ACKNOWLEDGMENTS

Thanks to the Trucost team for their assistance in prioritizing, optimizing, and maximizing the value of this paper.

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