Autodesk
White Paper

A Corporate Finance Approach to Climate-stabilizing Targets ("C-FACT")

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This white paper outlines Autodesk's Corporate Finance Approach to Climate-stabilizing Targets ("C-FACT"), a business-friendly, science driven and transparent approach to corporate greenhouse gas target setting.

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1.Introduction and Rationale

1.1 A Global Gamble

A global average temperature increase of 2°C is now seen by most climate scientists as a tipping point beyond which there is a real risk of long-term irreversible climate change[1]. More immediately, the United Nations Develop Program (UNDP) considers 2°C the potential threshold at which large-scale human development would actually be reversed[2]. They argue that climate shocks such as droughts, floods, and storms, which will become more frequent and intense with climate change, are already among the most powerful drivers of poverty and inequality, and argue that the potential human costs of climate change have been understated.

To have a 50 percent chance of avoiding this tipping point, it is estimated that carbon dioxide concentrations in the atmosphere must be held at 450 parts per million (ppm) or less. To have a better chance at avoiding this tipping point, 350 ppm is a safer bet. According to the Potsdam Institute, if one counts all six major greenhouse gases (GHGs), rather than just carbon dioxide, we have actually already surpassed 400 ppm[3]. And another 10 years of business-as-usual would add another 50 ppm on top of that[4].

The task ahead involves an unprecedented reversal in the current emissions growth rates, combined with a reduction in absolute emissions to return to climate stabilizing concentrations of greenhouse gases. In other words, slowing the growth rate is not enough—we need a full-scale reversal of our current trajectory.

Acknowledging that emissions are closely correlated with economic growth[5], that industrialized countries represent the vast majority of emissions per capita and have had the luxury of emitting heavily ever since the Industrial Revolution, climate scientists and policy experts recommend that industrialized countries must take the lead in bending this upward emissions curve. Specifically, they recommend GHG reductions as follows:

85 percent absolute GHG reduction by industrialized countries by 2050
50 percent absolute GHG reduction by developing countries by 2050

[1] Intergovernmental Panel on Climate Change (2007), "Climate Change 2007: Synthesis Report: Fourth Assessment Report."
[2] UNDP (2008), "Human Development Report 2008."
[3] Potsdam Institute for Climate Impact Research (2009), "Synthesis Report from Climate Change: Global Risks, Challenges & Decisions."
[4] McKinsey & Co. (2009), "Pathways to a Low-Carbon Economy: Version 2 of the Global Greenhouse Gas Abatement Cost Curve."
[5] Notably, macroeconomic trends point to a decoupling between the classic duo of gross domestic product (GDP) and GHGs. Indeed, over the past 28 years, U.S. "CO2/$GDP" intensity has decreased by 2 percent compound annual growth rate (energy consumption grew by 38 percent, but its growth exploded by 75 percent). However, this is well below the Autodesk calculated 9.08 percent rate needed to achieve climate stabilization. Source: Union of Concerned Scientists and U.S. Energy Information Agency data as analyzed by Professor Robert Stavins, Harvard University, and summarized in *The Wall Street Journal* (2009), "Can Countries Cut Carbon Emissions Without Hurting Economic Growth?", Sept. 21.

1.2 The Wrong Ballpark

Historically, no policies related to climate change have even entered this ballpark. In fact, the Kyoto Protocol, assuming all commitments were fulfilled and it were extended to the year 2025, would represent less than one-thirtieth the reductions necessary to achieve the recommended levels[6].

Over the past year and a half, however, international policy dialogs have produced a drumbeat of calls for reductions of this magnitude.

January 23, 2008: The European Union committed to reducing its overall emissions to at least 20 percent below 1990 levels by 2020**,** and offered to scale up this reduction to as much as 30 percent if other industrialized countries made similar commitments.

June 26, 2009: The U.S. House of Representatives passed the first federal climate bill, which includes a package of provisions that in the aggregate amount to an 83 percent reduction below 2005 levels by 2050. In addition, the World Resources Institute's analysis of proposed climate legislation in both chambers and from both political parties points to a narrowing of the target range, suggesting greater consensus as to where the United States might aim.

July 9, 2009: Presidents of Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, Korea, Mexico, Russia, South Africa, U.K., and the United States issued a joint statement, confirming the need for an 80 percent reduction by 2050 target for industrialized countries to avoid a rise of 2°C or more.

September 16, 2009: Japan's new Prime Minister Hatoyama pledged to cut Japan's emissions by 25 percent by 2020 relative to 1990 levels.

2. Context of Corporate GHG Target-Setting Trends

2.1 The "Wild West" of Corporate Responses

With scientific and policy trends pointing to increasing and unprecedented levels of consensus on the scale of global emissions reductions, corporate leadership in defining a path forward remains varied, not comparable, and under-scrutinized.

Many major companies—and most industry sector leaders—have GHG targets of some kind. At the international level, 93 of the FTSE 350, 102 of the S&P 500, and 206 of the Global 500 have published targets. Of those companies reporting to the Carbon Disclosure Project (315 institutional investors with assets of $41 trillion), 74 percent have targets. In the United States the majority of the Fortune 100 and roughly half of the Fortune 500 have GHG targets.

[6] Cheyne Capital & Climate Wedge 2005 internal analysis.

However, even among the leaders charting the frontier, their targets:

- Are grounded in little more than ”guesstimates” of what looks good for marketing purposes or what seems reasonably easy to achieve in terms of sustainability investments. Few, with the exception of BT’s, are driven by the climate science.
- Are very short term in nature (2012 or before) despite the long-term nature of the climate challenge. Of the Global 100, 84 percent fall into this category. Only ENEL, France Telecom, Tesco, and Vodafone have targets to 2020[7].
- Are intensity targets normalized by:
    - Sales or revenue, which are not business-friendly normalization factors because they fail to account for the organic and nonorganic (through acquisitions and divestiture) changes in a business.
    - Nonpublic numbers such as production units or employee costs, which make it challenging for stakeholders (investor, analyst, or other) to track progress against the target or hold the company accountable for achieving it.
- Are at risk of ”green washing” accusations because they mask an actual increase in absolute emissions. This is true for companies with GHG targets normalized to growth but whose growth rate surpasses the percentage reduction to which they committed.
- Are opaque when it comes to the annual reduction targets derived from a multiyear commitment (only eight of the Global 100 have an annual target applied over a number of years[8]), making it hard for investors and other stakeholders to keep track of corporate progress toward the commitment.
- Differ in what triggers a redrawing of the carbon footprint baseline (for example, acquisition or divestiture of a threshold size, consolidation of facilities), making it impossible to compare performance even across those companies with similar targets.

2.2 The Shotgun Approach

Currently, in the absence of policy or standards, companies are experimenting with the relative trade-offs of different types of GHG targets (outlined in the following table).

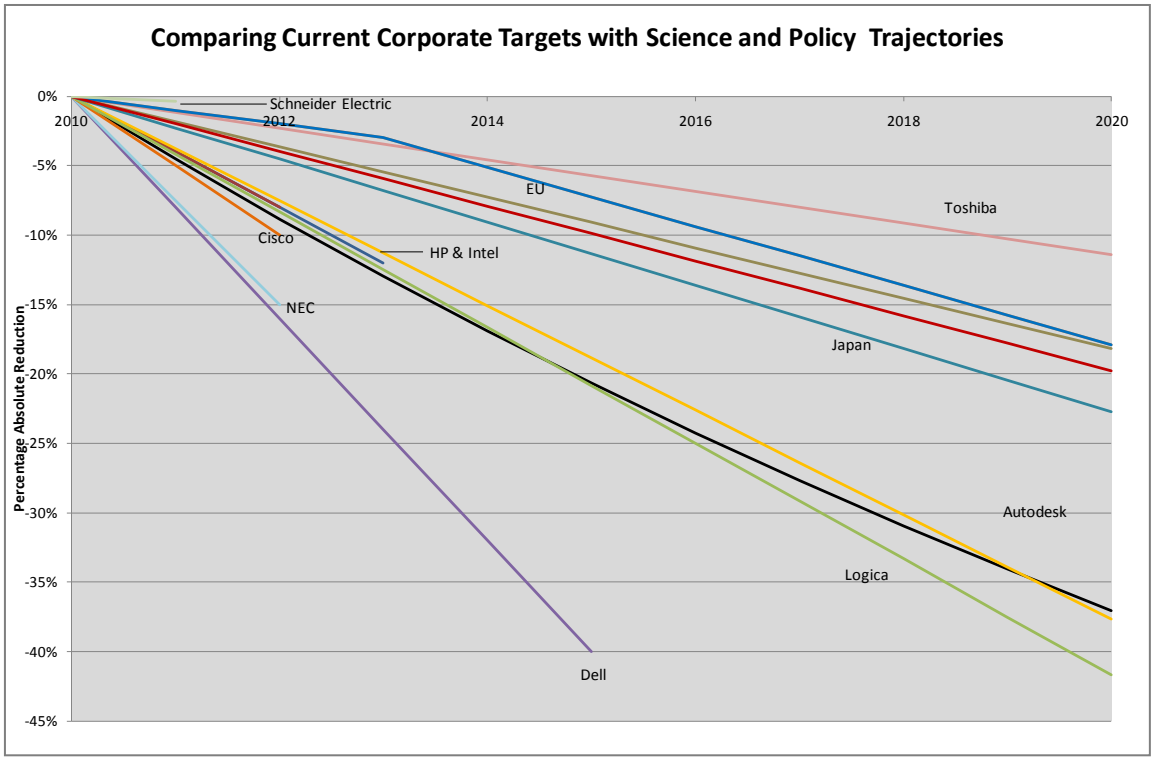
[7] Carbon Disclosure Project (2009), “The Carbon Chasm.”
[8] *Supra*.

Type of Target	Typical Values	Advantages	Disadvantages
Absolute	Energy use (kWh) or GHGs	Most meaningful for climatic system Potential requirement for regulatory compliance Easily communicated and understood	Difficult to achieve in a high-growth economy due to correlation between growth and emissions Difficult to scale for emissions outside of direct control Percentage figure tends to be small and hence less brand enhancing
Intensity (or "Normalized")	Numerator: Energy use (kWh) or GHGs Denominator(s): $ revenue or sales # employees # units of production	May account for growth Percentage figure tends to appear ambitious and hence brand enhancing	Can be misleading in case of rapid growth and/or downsizing Do not consider contribution to GDP Future climate standards may not support it

A recent analysis of the GHG targets of the Global 100 found that, even when including companies currently lacking targets, at the current rate, the reductions necessary to stabilize the climate will be achieved 39 years too late[9].

The following graph compares the current GHG reduction trajectories of a sample of IT leaders with the scientific recommendations ("IPCC Science"), EU commitments ("European Union"), Japanese commitments ("Japan"), and the two most prominent U.S. proposals ("Boxer-Kerry" and "Waxman-Markey"). It is evident that while some corporate targets are less aggressive, others are impressively ambitious in the early years (for example, Dell). But because of the short-term nature of the commitments and lack of a clear long term goal, it will be challenging for these companies to keep up this pace. We instead recommend a steady and purposeful approach that is grounded in data, follows Science and is enduring.

[9] *Supra.*



Sample tech companies were selected from the [Carbon Disclosure Project's S&P Climate Leadership Index 2009] based on (a) top ranking within the subsector or (b) largest footprint within the subsector.

3.Introducing C-FACT

We advocate that companies adopt a GHG target setting approach that recognizes companies are GHG emitters but also simultaneously create economic value.

In other words, companies should aim to:

Reduce their GHGs in line with scientific and policy climate stabilization targets (85 percent reduction by 2050 from current levels) but do so proportional to their relative contribution to global GDP—not more, not less.

In 2008, BT announced a Climate Stabilization Intensity model, which introduced the idea that corporate carbon emissions should be set relative to economic value-added. We have developed a way to operationalize this using universally accepted accounting techniques.

Uniquely, C-FACT also adheres to the following three *principles* :

Fairness: Acknowledges that corporate commitments should be proportional to their contribution to GDP and not to the corporations' existing size and footprint. It is nondiscriminatory to companies of varying sizes, GHG footprints, and growth prospects.

Accountability: Uses available financial and carbon disclosure information, enabling 100 percent verifiability of methodology and progress.

Flexibility: Adapts to inaccurate financial forecasts, economic uncertainty, organic and inorganic changes in business, and inevitable deviations of real performance versus intended target.

Importantly, C-FACT is compatible with existing techniques for financial and environmental measurement systems. It is aggressive only to the degree needed to attain climate stabilization, but is data driven and grounded in science.

Although deriving such a corporate greenhouse gas target that is both business and environmentally friendly can be an arduous task, we have simplified the process into four stages: (1) Calculate, (2) Commit, (3) Annualize and (4) Adjust.

Step 1: Calculate the Numbers

Commit to setting your company on track for climate stabilization relative to your company's contribution to global GDP, by employing following steps:

A: Calculate Your Company's Base-Year Carbon Footprint
If you have completed a carbon footprint for more than one year, select the earliest year for which you feel confident about the data and for which you feel the boundaries will remain relevant in the future.

Autodesk's base-year is 2009 and its base-year carbon footprint is 83,073 metric tons

B: Calculate Your Company's Contribution to GDP
Contribution to GDP is the best universally available measure of the value-added by a company to the economy[10]. The economic literature tells us that a good proxy for a company's contribution to GDP is Gross Profit (commonly defined as revenues minus costs of goods sold)[11]. Similar to GDP at the economy level, Gross Profit at the company level, measures total sales less the value of intermediate outputs.

Autodesk's contribution to GDP (as measured by its Gross Profit) in Fiscal Year 2009 was US$2.1 billion

C: Calculate Your Company's Carbon Intensity Ratio (A ÷ B)
Divide your Carbon Emissions in the Base Year by your Contribution to GDP

Autodesk's carbon intensity ratio for fiscal year 2009 was 0.04 kg CO2/$ GDP contribution

D: Forecast Your Company's Contribution to GDP
Use recognized financial analysts' research to forecast Gross Profit for the short term. Use a steady-state growth rate and target Gross Margins to estimate Gross Profit for the long term. Cite your specific sources in communications related to the target.

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[10] See Value-Added approach of calculating GDP in "Measuring the Economy: A Primer on GDP and the National Income and Product Accounts," Bureau of Economic Analysis, U.S. Department of Commerce, 2007

[11] For non-revenue making 'startups' and non-profit organizations, an alternate proxy for contribution to GDP may be needed. An example could be "EBITDA + Operating Expenses (that include Marketing, Sales, Research & Development and General & Administration)"

Autodesk used Bloomberg's three-year forecast and a steady state annual growth rate of 5.75 percent[12] beyond that

E: Use 2050 Climate Stabilization Target to Derive Carbon Intensity Reduction Rate
Use Intergovernmental Panel on Climate Change recommended reduction target for climate stabilization for 2050 (that is, 85 percent absolute reduction from current levels for industrialized countries and 50 percent for developing countries). Calculate the annual Carbon Intensity Reduction Rate at which your Carbon Intensity Ratio must decrease to achieve that 2050 end state[13]. This only needs to be done once. The derived carbon intensity ratio would then remain unchanged for the commitment time frame (as explained in Step 2 below).

Autodesk's carbon intensity reduction rate is 9.08 percent year-over-year, based on its financial projections and starting point of Fiscal Year 2010

Step 2: Commit Publicly Through A Chosen Commitment Time Frame

Select a Commitment Time Frame
Consider the following factors:

- Climate change is inherently a long-term challenge, so 1–5 year commitments look short-sighted to regulatory bodies, customers, and competitors.
- Opportunity to leave a legacy during a typical senior management tenure for your sector.
- Periodicity of your company's strategic plans (for example, every three years).
- Alignment with climate policy at regional, national, and international levels.

Autodesk committed to this approach through the year 2020, at which point we will validate its success and continue on the path to 2050.

Step 3: Annualize the Reduction Trajectory to Calculate Annual Targets

Annualize the Reductions over Time Through 2050
In the interest of transparency and accountability, commit to publishing the annual target derived from this methodology as well as your performance against that target at the close of each fiscal year.

For Autodesk, the 9.08 percent year-over-year Carbon Intensity Reduction Rate translates to a 4.52 percent (or 3,756 metric tons) reduction in absolute emissions in Fiscal Year 2010 compared to our Fiscal Year 2009 baseline emissions.

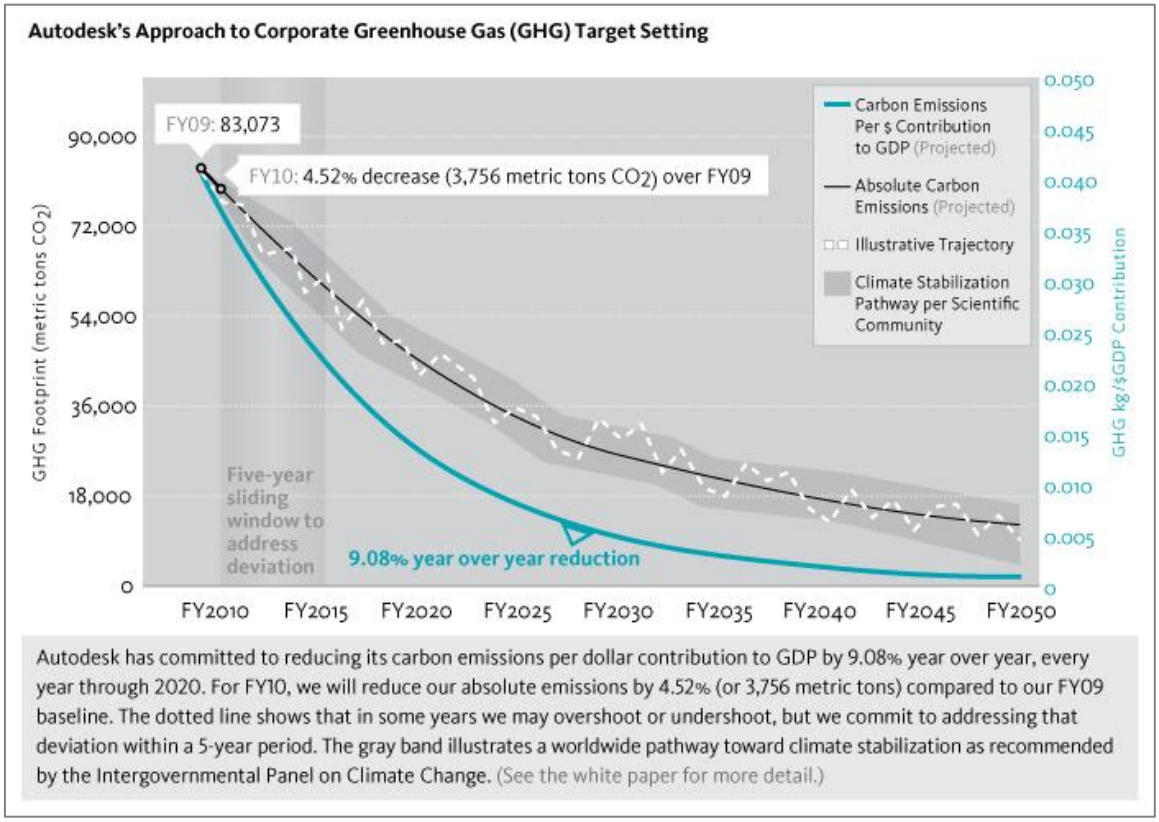
[12] The long term steady state growth rate (5.75 percent) assumed for Autodesk is the average growth in World GDP (current prices) from 1981 to 2009, per IMF World Economic Outlook Database October 2009
[13] For example, you could use "Goal Seek" in Microsoft Excel 2007 to calculate the reduction rate.

Step 4: Adjust by Updating Data Annually

Update the Model Annually with the Latest Available Information

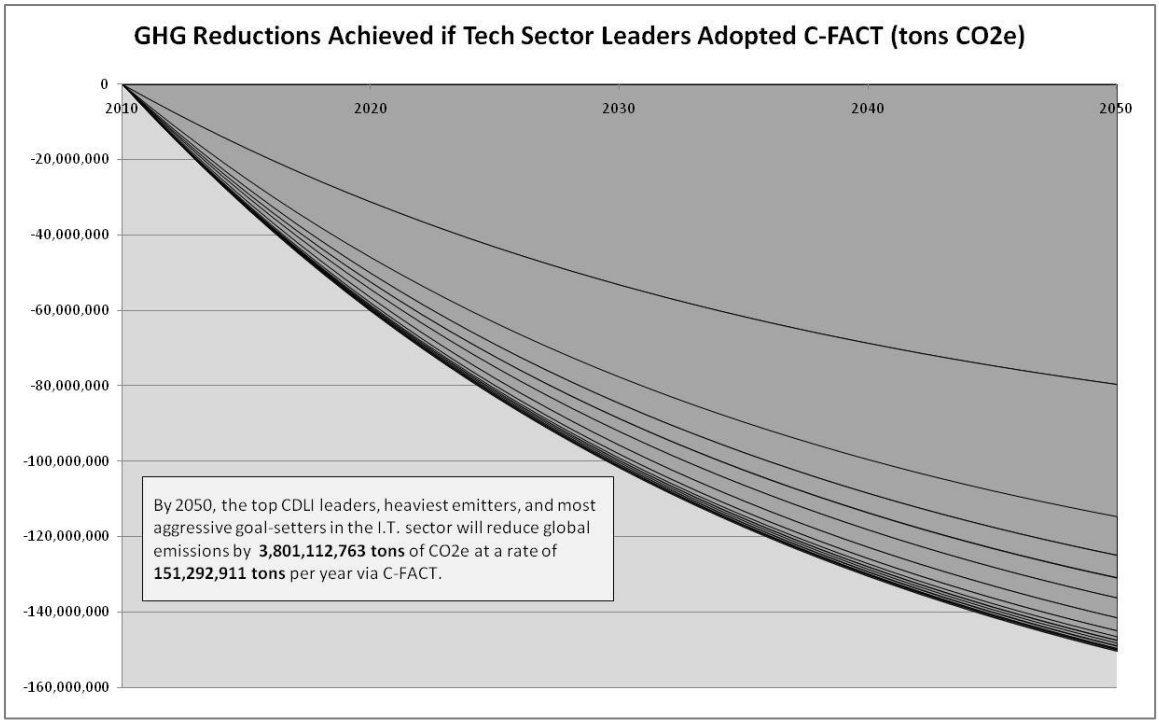
a. Calculate new carbon footprint and the deviation from the intended target (that is, did you underestimate or overshoot the annual target).
b. Diffuse positive and negative deviations over a five-year sliding window. This technique (a) grants flexibility in meeting short-term targets, (b) prevents procrastination beyond five years and (c) aligns with common budgeting practices in corporate finance and government spending.
c. Update your growth rate projections for Gross Profit to get the annual absolute target for next year.

The following figure summarizes the methodology in graphical form. The methodology is also explained in a video at www.autodesk.com/green):



4. An Open Source Model and a Call to Action

If all companies were to adopt C-FACT, private sector emissions would be on track to help stabilize the climate by 2050. We applied this approach to a basket of high-technology companies profiled below, and found that if they were to adopt this approach, global GHGs could be reduced by a whopping 3,801,112,763 metric tons by 2050, equivalent to roughly 9 percent of the global target laid out by the Intergovernmental Panel on Climate Change.



Technology companies for this analysis were selected from the Carbon Disclosure Project's S&P Climate Leadership Index 2009 based on (a) top ranking within the subsector or (b) largest footprint within the subsector and include Samsung, Intel, Toshiba, Hewlett-Packard, Hitachi, NEC, Microsoft, Ericsson, Advanced Micro Devices, Cisco, Dell, SAP, Accenture, Logica, Schneider Electric, Canon and Autodesk

As companies do so, we will all benefit from:

- Increased trust and collaboration from policy makers and nongovernmental organizations (NGOs)
- Reduced prices for carbon-efficient products and projects due to greater volume demand
- Greater credibility in selling low-carbon products to customers

We hope that other companies will, in the spirit of open source tools, consider this C-FACT model, analyze its strengths and weaknesses, adopt it and further improve upon it.

About Autodesk

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