

BEYOND

SMART CITIES



FUNDAMENTALS OF ORGANIZATIONAL GHG ACCOUNTING

FOR ENVIRONMENTAL AND GHG SPECIALISTS

KRISHNAJI PAWAR, LEED AP BD+C, GSAS CGP, ISO 14001:2015, GCP

ENVIRONMENTAL SPECIALIST CURRICULUM



BUSINESS APPLICATIONS OF CORPORATE GHG INVENTORIES

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LEARNING OBJECTIVES



The objective of this lesson is to understand the range of reasons why companies and other organizations invest in developing GHG inventories and what role the inventory can play in helping meet your organizational or corporate business goals.





BUSINESS BENEFITS OF GHG MANAGEMENT

Corporate and organization leaders consistently identify a range of benefits from developing a GHG emissions inventory, including:

- ✓Tracking, verifying, and achieving corporate social responsibility goals
- ✓Identifying opportunities to reduce waste and costs
- ✓Benchmarking performance and identifying opportunities to improve competitiveness
- ✓Participating in GHG emission markets
- ✓Providing information shareholders and other stakeholders
- ✓Participating in GHG reporting programs
- ✓Assessing liabilities and preparing for future GHG policies

In some cases, the inventory itself provides the benefits; in others, the inventory serves as the foundation for developing a broader GHG management strategy, which in turn delivers the benefits. Of course, not all benefits are equally relevant to every organization.

In this lesson, we will give you an overview of the benefits of tracking your GHG emissions and how inventories have been developed in real-world companies. In a later lesson, you will learn more about how a GHG inventory can serve as the basis for your GHG management strategy.

ACHIEVE CORPORATE RESPONSIBILITY GOALS

Many organizations establish goals or targets that have to do with GHG emissions. These targets might be framed explicitly as GHG reduction goals, or they might target a related indicator, such as energy consumption.

Targets can be framed either as absolute reductions (e.g., overall reduction in tons of emissions) or as intensity reductions (e.g., reduction in emissions per unit of good or service produced).

An example of an absolute target is that of DuPont, a major chemical company that has a target of reducing its GHG emissions by 65 percent from 1990 levels by 2020. To date, the company has achieved a 60 percent reduction due to implementing an end-of-pipe capture and destroy technique for N₂O, making process improvements to its HCFC-22 production technology, and a range of other solutions.

An example of a GHG intensity target is that of CEMEX. CEMEX is one of the three largest cement companies in the world, with operations in 30 countries and headquarters in Mexico. CEMEX established a corporate GHG reduction strategy in 1997, and has taken on a goal of reducing its emissions intensity (kg CO₂ per metric ton of cement produced) by 8.3% over the period from 1990 to 2002. Developing a GHG inventory has helped CEMEX identify opportunities to implement projects to help meet its target, including energy optimization, clinker substitution, and the use of alternative fuels.

IDENTIFY OPPORTUNITIES TO REDUCE COSTS

Higher GHG emissions are often associated with energy or operational inefficiencies. As such, GHG inventories can often help companies identify opportunities to increase energy or process efficiency, and to stabilize energy costs. Even in cases where an energy-tracking system already exists, implementing a GHG inventory can improve the system or make it more comprehensive, or help to identify inefficiencies that are not related to energy use.

Increasing energy efficiency: IBM has completed a GHG inventory each year since 1990. The inventories have helped the company reduce its CO₂ emissions by 65% from 1990 levels through energy improvements, which have saved IBM more than \$700 million. During 2002, another company – Baxter – reduced energy consumption per unit of production by 3 percent while increasing output by 7 percent and saving \$20 million. Finally, Intel's GHG inventory helped it identify opportunities to retrofit 5 boilers at a total cost of \$250,000, while achieving an an

IDENTIFY OPPORTUNITIES TO REDUCE COSTS

Increasing process efficiency : Through their inventory, ABB discovered a location where 10 suppliers were making independent deliveries in partially filled trucks. The company replaced the 10 trucks with 1 ABB truck that would be continually full because it picked up supplies and then returned packaging materials for re-use. This provided better service, less waste, fuel and cost savings. At IBM, one plant optimized its cycle time and reduced chemical use in 2 processes in semiconductor manufacturing, reducing GHG emissions by 5%, toxic chemicals by 14%, and manufacturing costs by \$600,000 per year.

Stabilizing energy costs : At its Austin, Texas operations, IBM purchases green power in order to protect itself from the price volatility associated with conventional energy purchases.



IMPROVE COMPETITIVE ADVANTAGE

A 2006 study by the Pew Center on Global Climate Change found that while many companies develop a GHG management system due to concerns about risk to their businesses, once they become more sophisticated on the issue, they begin to find opportunities to improve their competitive advantage through implementing a comprehensive climate change strategy. Through this process, they might seek to encourage innovation of new products and services, gain first-mover advantage by being the first to implement new technologies, or gain acceptance of their products in international markets.

Encourage innovation of new products and services

Alcoa has developed a new variety of commercial truck wheels that weigh less than conventional wheels, yielding a reduction in GHG emissions from use of one of its products.



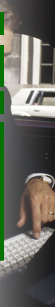
IMPROVE COMPETITIVE ADVANTAGE +

First-mover advantage

Lafarge is looking to gain first-mover advantage for sourcing alternative cementitious materials

Acceptance of products in international markets

Tata Steel has made managing GHG emissions a key element of one of its primary business goals: to get its products accepted in international markets. Applying the GHG Protocol has helped them develop key sustainability metrics (such as energy/ton steel and CO₂/ton steel) to ensure market acceptability and competitiveness.



PARTICIPATE IN GHG MARKETS

Many companies are looking to participate in GHG markets such as the following:

- ✓The Kyoto Protocol's Clean Development Mechanism (CDM)
- ✓European Union's Emissions Trading Scheme (EU-ETS)
- ✓Chicago Climate Exchange (CCX)
- ✓Voluntary retail emission offset markets

Conducting a GHG inventory can be a first step towards identifying opportunities to implement GHG reduction projects, which in certain cases can be the first step to yielding tradable credits through mechanisms in the markets above.



PROVIDE STAKEHOLDER INFORMATION

Investors are becoming more and more interested in the climate change issue. They understand that climate change and policies related to it have implications for the companies in which they invest, and they are requesting more information from those companies in order to understand the relevant financial risks and opportunities.

The Carbon Disclosure Project (CDP) represents more than 100 institutional investors representing over \$20 trillion in assets. Each year, CDP asks the Global 500, and other major businesses in new developing countries each year, to report information on their GHG emissions and related risks to their businesses. They recommend the use of the GHG Protocol Corporate Standard for emissions accounting & reporting.



PROVIDE STAKEHOLDER INFORMATION +

In addition, many companies find it necessary to provide information on GHG performance to other stakeholders – such as consumers or environmental groups – as well.

While stakeholders are interested in a range of GHG-related information, including financial risk and performance benchmarks, most companies see a GHG inventory as a necessary first step for proactive stakeholder engagement on the issue of climate change.



PARTICIPATE IN GHG REPORTING PROGRAMS



More and more countries, states, provinces, regions and NGOs are establishing public GHG accounting and reporting programs, which require preparing a GHG inventory according to internationally accepted standards and protocols.

Examples include:

- ✓California Climate Action Registry (CCAR)
- ✓Mexico GHG Program

California Climate Action Registry was established by California statute as a non-profit voluntary registry for greenhouse gas (GHG) emissions. The purpose of the Registry is to help companies and organizations with operations in the state to establish GHG emissions baselines against which any future GHG emission reduction requirements may be applied.

PARTICIPATE IN GHG REPORTING PROGRAMS +



The Mexico GHG Program is a voluntary GHG accounting and reporting program created in partnership with the Mexican environment agency (SEMARNAT) and WBCSD (in conjunction with its local counterpart CESPEDS). The approximately 30 participating companies include Mexico's entire cement, petroleum, and beer brewing sectors, as well as a significant portion of its steel sector. Participants make a voluntary commitment to conduct and publicly report a corporate GHG inventory, and the program is now expanding to include the accounting for GHG reduction projects.

PREPARE FOR GHG POLICIES



✓Corporate leaders are beginning to see GHG policy measures as an inevitable development in more and more of the countries where they operate

✓In this context, GHG inventories can help managers:

✓Establish their emissions baseline, and record voluntary measures taken to address GHG emissions with an eye towards receiving credit for them under a future policy regime; and

Make more informed contributions to the policy discussion. In the words of David Hone, Group Climate Advisor at Shell, "To validly have a seat at the (policy) table, you have to bring experience. You cannot just take a seat because you are interested." Developing a GHG inventory is the first and most fundamental step toward gaining the necessary experience and information to productively and legitimately influence policy.

SUMMARY

In summary, companies and other organizations gain a wide range of benefits from developing GHG inventories and, eventually, implementing GHG management strategies. The examples covered in this session only begin to touch on the ways that GHG data can be interpreted and applied to stimulate innovation, cost savings, and market opportunities through:

- ✓ Tracking, verifying, and achieving corporate social responsibility goals
- ✓ Identifying opportunities to reduce waste and costs
- ✓ Benchmarking performance and identifying opportunities to improve competitiveness
- ✓ Participating in GHG emission markets
- ✓ Providing information shareholders and other stakeholders
- ✓ Participating in GHG reporting programs

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