



Corporate Greenhouse Gas Accounting and Management

Biogen Case Study: GHG Emission Tracking and Data Collection

Kathleen Woodward

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7000+
EMPLOYEES WORLDWIDE

48%
OF DIRECTOR-LEVEL
POSITIONS & ABOVE
HELD BY WOMEN

4
CONSECUTIVE YEARS
'BEST PLACE TO WORK'
for LGBT equality in the US

COMMITTED
to our employees,
diversity and inclusion,
and environmental
sustainability



**CARBON NEUTRAL
COMPANY SINCE 2014**

70%
REDUCTION IN
OPERATIONAL CARBON
INTENSITY SINCE 2006

100%
RENEWABLE POWER
COMMITMENT



UNITS		2016
ENVIRONMENTAL IMPACT		
Climate		
Scope 1 (fossil fuels and refrigerants)	Metric tons (MT) CO ₂ e	61,937
Scope 2 Location-based method (electricity and steam)	MTCO ₂ e	55,137
Scope 2 Market-based method (electricity and steam)	MTCO ₂ e	156
Scope 3 ²	MTCO ₂ e	259,805
Purchased goods and services (category 1) ³	MTCO ₂ e	197,830
Capital goods (category 2) ³	MTCO ₂ e	15,338
Upstream/downstream energy and water-related activities (category 3)	MTCO ₂ e	8,971
Waste generated in operations (category 5) ⁴	MTCO ₂ e	615
Business travel (category 6)	MTCO ₂ e	18,023
Employee commuting (category 7)	MTCO ₂ e	8,549
Upstream leased assets (category 8)	MTCO ₂ e	0
End of life treatment, sold products (category 12)	MTCO ₂ e	10,479
Total Value Chain (Scopes 1, 2 Market and 3)	MTCO ₂ e	321,898

Independent Assurance Statement to Biogen Inc.

ERM Certification and Verification Services, Inc. (ERM CVS) was engaged by Biogen Inc. (Biogen) to provide assurance in relation to selected 2016 data in Biogen's 2016 Global Impact Report: Science

Engagement Summary

Scope	Whether the 2016 data for the following indicators on pages 106 to 109 of the Report are fairly presented in accordance with the reporting criteria.
Reporting criteria used	Biogen's reporting criteria as described on page 106 of the 2016 Global Impact Report including the 2016 WBCSD/WRI GHG Protocol including the 2016 Sustainability Data Collection and Reporting
Assurance standards used	ISAE 3000 International Standard for Assurance engagements of limited assurance, and ISO 14064-3:2006: Specification with guidance for the verification of greenhouse gas assertions.
Assurance level	Limited assurance.
Respective responsibilities	Biogen is responsible for preparing the 2016 data for presentation of the information in the Report. ERM CVS's responsibility is to provide conclusions on the assurance activities performed and external

Our Conclusions

Based on our activities, nothing has come to our attention to indicate that the 2016 data for the selected indicators as identified in **bold** on pages 106 to 109 of the Report are not fairly presented, in all material respects, in accordance with the reporting criteria.

Our Assurance Activities

We planned and performed our work to obtain all the information and explanations that we believe were necessary to provide a basis for our assurance conclusions.

A team of sustainability, GHG and assurance specialists performed the following key activities:

- Interviews with relevant staff to understand Biogen's reporting criteria and internal reporting processes for the selected indicators, including the use of its GHG and Carbon Neutral methodologies and the various data management and reporting systems used for collecting, consolidating and reporting the data.
- A review of the calculations including conversion factors and emission factors used.
- Validating a risk-based selection of primary source data from corporate safety and employee databases as well as site level underlying data for the environmental indicators.
- A visit to the Biogen headquarters in Cambridge, Massachusetts to interview Biogen personnel and review program documentation.
- Cross checking that the purchased Carbon Offsets, Renewable Energy Certificates (REC), Guarantees of Origin, International-RECs and Green Power Certificates were retired/managed according to Biogen's Sustainability Data Collection and Reporting Procedure, which includes the Carbon Neutral Methodology.
- An analytical review of the consolidated year end data.

The Limitations of Our Engagement

The reliability of the assured data is subject to inherent uncertainties, given the available methods for determining, calculating or estimating the underlying information. We have not tested in detail the Trucost E10 model used to perform the calculations for Categories 1, 2 and 12. Category 7 is based on Biogen's primary data calculated by Trucost.

Commentary

We have provided Biogen with a separate, confidential report detailing our findings and making recommendations regarding its overall reporting processes and systems for its sustainability reporting.

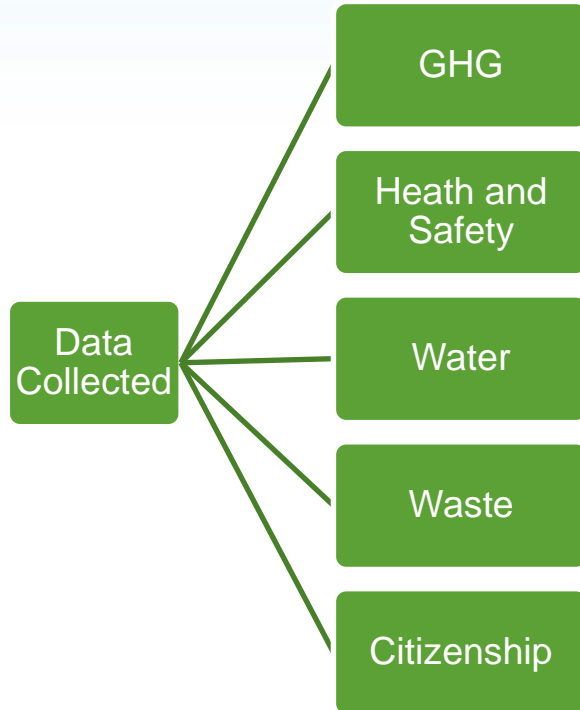


23 June 2017

Jennifer Larsen-Rogers,
Partner ERM Certification and Verification Services, Inc.
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ERM CVS is a member of the ERM Group. The work that ERM CVS conducts for clients is solely related to independent assurance activities and auditor training. Our processes are designed and implemented to ensure that the work we undertake with clients is free from bias and conflict of interest. ERM CVS and the staff that have undertaken work on this assurance exercise provide no consultancy related services to Biogen in any respect.

Metrics Module - Current State and Challenges



Unlocking Data Management

- Data transparency (granularity, frequency)
- Analytics
- Verification
- Dashboards
- Visibility
- Internal engagement

Energy Data - Electricity (Jan 2016)

Merged with main database on Monday, March 6, 2017

Matthew Yamatin (3/6/2017 1:18:02 AM)

Backup invoices can be found on the NUS database.

Show more messages (6)

Submit Delegate Export Import Back

Support Documents:
Data Entry Quickcard: [How to Enter Sustainability Data](#)
Sustainability Data Collection Procedure: [EHS-PRCD-460 \(2016 Draft 12-8\)](#)
Please attach backup documentation to the relevant indicator or 'Add Note or Upload Files' button at the bottom of this form.

	Electricity Cost
	US\$
Bldg. 5 - Electricity - Account 25924481002	4,386
Bldg. 5 - Electricity - Meter 28010660026	31,245
Bldg. 10 - Electricity - Meter 28538420036	14,173
Bldg. 10 - Electricity - Meter 28538430035	7,593
Bldg. 10 - Electricity - Meter 29219360012	1,952
Bldg. 10 - Electricity - Meter 29219370011	3,080
Bldg. 6 - Electricity - Account 40002260632	62,419
Weston - Electricity - Meter 28363600025	40,753



Thank you!

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Biogen, Inc.

Manager, EHS+S

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To Do List / Email Notifications

DATA ENTRY | **FRAMEWORKS** | **ADMIN**

[Home](#) | [Import data](#) | [Documents](#)

WELCOME TO YOUR HOME PAGE

My data

My forms

Data you are providing | Data you are approving

Search:

☒ Data you are entering (9) ☐ Data you have submitted (1)

Ute Marshall (9)

Energy Saving Projects - 2014 (Store 4454)	Due: 01/01/2015
Facilities Consumption - Q1 2015 (Store 6542)	Due: 01/04/2015
Facilities Consumption - Q2 2015 (Store 6542)	Due: 01/07/2015
Facilities Consumption - Q3 2015 (Store 6542)	Due: 01/10/2015
Facilities Consumption - Q4 2015 (Store 6542)	Due: 01/01/2016
Facilities Consumption - Q1 2015 (Store 4454)	Due: 01/04/2015

Case Studies

- CRedit360 McDonalds Case Study.pdf** (document ref 77479, version 1)
- CRedit360 Westpac Case Study.pdf** (document ref 77480, version 1)
- CRedit360 Linde Group Case Study.pdf** (document ref 77481, version 1)

Issue List

No actions found

Data Entry

[DATA ENTRY](#) | [FRAMEWORKS](#) | [ADMIN](#)

FACILITIES CONSUMPTION (Q1 2015)

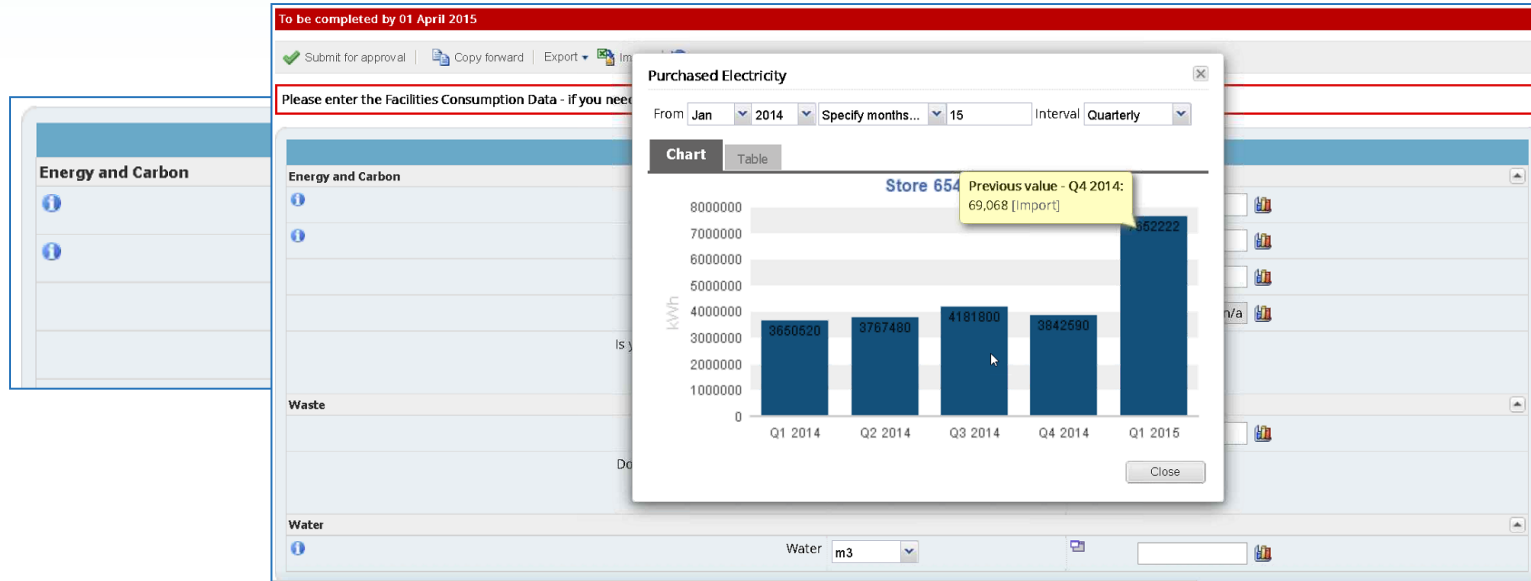
To be completed by 01 April 2015

[Submit for approval](#) | [Copy forward](#) | [Export](#) | [Import](#) | [Back](#)

Please enter the Facilities Consumption Data - if you need help, contact Christine at Christine@123.com.

	Unit	Store 6542
Energy and Carbon		
Purchased Electricity *	kWh	<input type="text"/>
Natural Gas *	Therms	<input type="text"/>
Fuel Oil *	Litres	<input type="text"/>
Total Carbon Footprint	Tonnes	n/a
Is your site ISO 14001 compliant? *	Yes/No	<input type="radio"/> Yes <input type="radio"/> No
Waste		
Waste to Landfill	Tonnes	<input type="text"/>
Do you recycle waste for your site?	Yes/No	<input type="radio"/> Yes

Data Entry Help



Data Entry Validation

To be completed by 01 April 2015

Submit for approval | Copy forward | Export | Import | Back

Please enter the Facilities Consumption Data - if you need help, contact Christine at Christine@123.com.

Energy and Carbon	Unit
Purchased Electricity *	kWh
Natural Gas *	Therms
Total	

To be completed by 01 April 2015

Submit for approval | Copy forward | Export | Import | Back

Please enter the Facilities Consumption Data - if you need help, contact Christine at Christine@123.com.

Store 6542

Purchased Electricity * kWh

4,444,444

n/a

Yes

No

Yes

No

Variance | Notes | Files | Queries | Changes

Variance: +15.7% compared with 3,842,590 kWh in Q4 2014

Enter reason for change:

Click to enter a more detailed explanation

☐ Apply this to other values

Save Close

Previous value - Q4 2014:
3,842,590 [Import]
Increase:
15.66%

Import from Excel



To be completed by 01 April 2015

Submit for approval | Copy forward | Export | Import | Back

Please enter the Facilities Consumption Data - If you need help, contact

Energy and Carbon

Purchased

Variance Notes 0

Variance: +15.7% compared with 3,84

Enter reason for change:

Click to enter a more detailed explanation

☐ Apply this to other values

Waste

Water

Excel Interface:

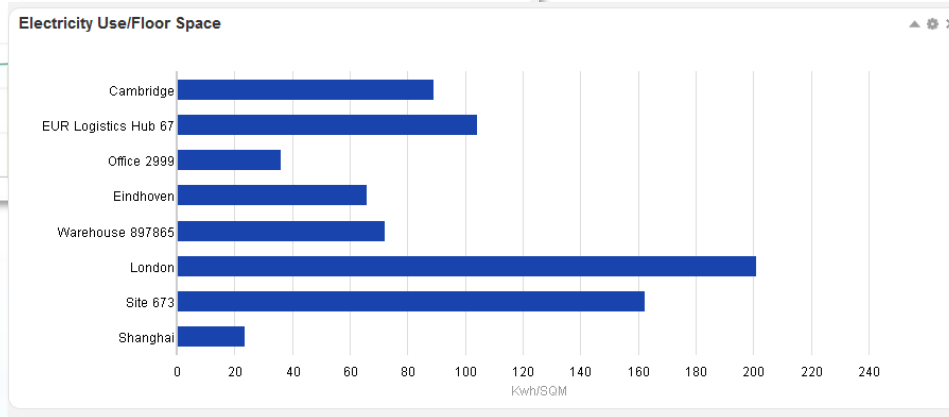
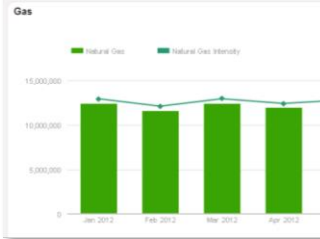
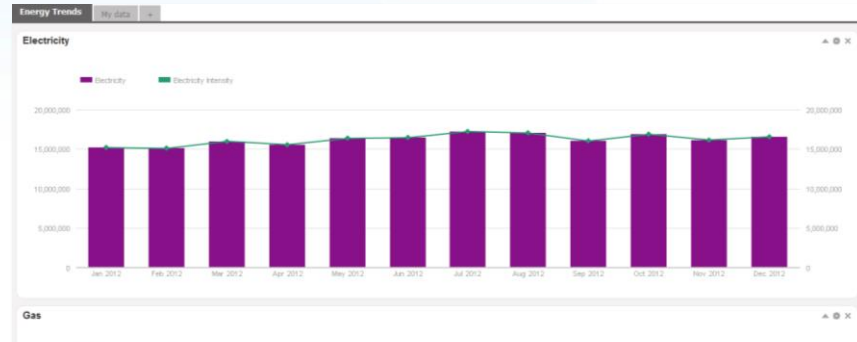
File Home Insert Page Layout Formulas Data Review

PROTECTED VIEW Be careful—files from the Internet can contain viruses

B2 1/1/2012

	A	B	C	D
1	Gas Consumption			
2	Site	Jan-12	Feb-12	Mar-12
3	Dist Centre 7872	4,876	4,298	5,440
4	Dist Hub 567	23,452	25,464	26,424
5	Dist Hub 321	283,878	262,842	181,090
6	Logistics Hub 67	17,654	19,789	20,643
7	Office 2999	78,741	79,852	80,753
8	Office 3456	33,852	34,987	35,164
9	Office 7699	151,543	161,680	181,541
10	Site 112	154,987	153,654	154,354
11	Site 1900	83,654	85,860	165,572
12	Site 1303	28,178	56,940	73,889

Example Dashboards



Example Dashboards

