Capturing GHG Emissions in Your Mill: By Leveraging Simple Online Tools

Sixteen Grains

Sixteen Grains

- 4th generation working in Canadian Agriculture.
- We've had the original homestead farm in Saskatchewan for 137 years.
- I combined my love of technology with Agriculture and built my Agricultural consulting company.
- Sixteen Grains Inc. a modern farm brand born to bring people closer together through fresh Canadian-farmed ingredients.
- Sixteen Grains was founded on the idea that fresh Canadian-farmed ingredients should be accessible to all.
- Launched in 2022, Sixteen Grains reimagines the Canadian farm experience to offer nutritious, delicious, and fun products that inspire kitchen memories.
- Located near Saskatoon, Saskatchewan Sixteen Grains is a proud food ingredient producer supplying specialty ingredients that are critical to the taste, nutritional value, and stability of everyday food.
- They only offer best-in-class ingredients and flavours, sourced directly from their farm.
- Growing up as farmers and living off the land for generations. Sixteen Grains is excited to share the joys and pleasures of farming with fellow Canadians through delicious mixes that anyone can enjoy!

ESG & GHG Capture, Compliance & Reporting

ESG has become a necessity.

Are you capturing the information that you need to report with ESG, or for GHG capture?

There are many tools available that can help.

What should your benchmarks be?

How do you get your data without it pulling away time and resources from your core business?

We will discuss simple tools that can be used to help you start on the journey of ESG and GHG compliance .

It is highly achievable for everyone.

GHG Emissions

- Land use – CO2, Methane, Nitrogen, hydro fluorocarbons. What we need to track
- Major sources of GHG emissions in flour mills, such as energy consumption, transportation, and waste management.
- Need to measure and track these emissions for effective reduction strategies.

Benefits of Online Tools

- Advantages of using online tools for capturing GHG emissions:
  - Easy data collection and management
  - Real-time tracking and monitoring
  - Simplified calculations and reporting
  - Enhanced accuracy and reliability

Available Online Tools

- List of simple online tools specifically designed for GHG emissions management in industrial settings, such as:
  - Carbon calculators
  - Emission tracking platforms
  - Sustainability management software
  - key features and functionalities of each tool.
- Solution: Power BI

Using Online Tools at Your Mill

- - Data collection: Inputting relevant information, such as energy usage, fuel consumption, and production volumes.
- - Emission calculations: Using built-in emission factors and formulas to calculate GHG emissions.
- - Reporting: Generating reports and visualizations for analysis and decision-making.

Case Study

AG TECH: 100+ TECHNOLOGY COMPANIES CHANGING THE FARM


Carbon Offsetting
wren
Patch
EcoCart
Watershed
Pachama
joro
.planetly
Greenly
Offsetra
ClimateSeed
REFORESTUM
cloverly
kora
CAPTURE
Jejak.in
Emitwise
SINAI
ATMO
inhabit.
TEM
Klimate.co
Climaider
minimum
planA
climeworks
PERSEFONI
CLEARTRACE
Economyz
YAYZY
Impact Investing Marketplaces
DATIA
ethic.
NORI
iCLIMA
cooler future
OpenInvest
tickr
inspire
Climate Data Services
CLARITY
Sustinteq
TRUVALUE LABS
SUSTAINALYTICS
right.
based on science
OWL analytics
LABEL
Who's Good
FAIRR
A COLLER INITIATIVE
cloud agronomics
GHGSat
net purpose.
eRevalue
zei
STRATYFY
VULTUS
TARENTUM
The Climate Service
GRC Software
ecolyze
Scope 5
Sylvera
DEMEX
PLANET
GreenStory
CLIMATE AI
ESG Reporting
Biome
Terra.do
THE SOCIAL VALUE PORTAL
ClimateView
Turnkey
Ulula
SteerImpact
libryo
Insurance
DESCARTES
kettle
allphins

Best Practices for Implementation

Provide recommendations and best practices for effectively utilizing online tools in your flour mill

Ensure data accuracy and completeness

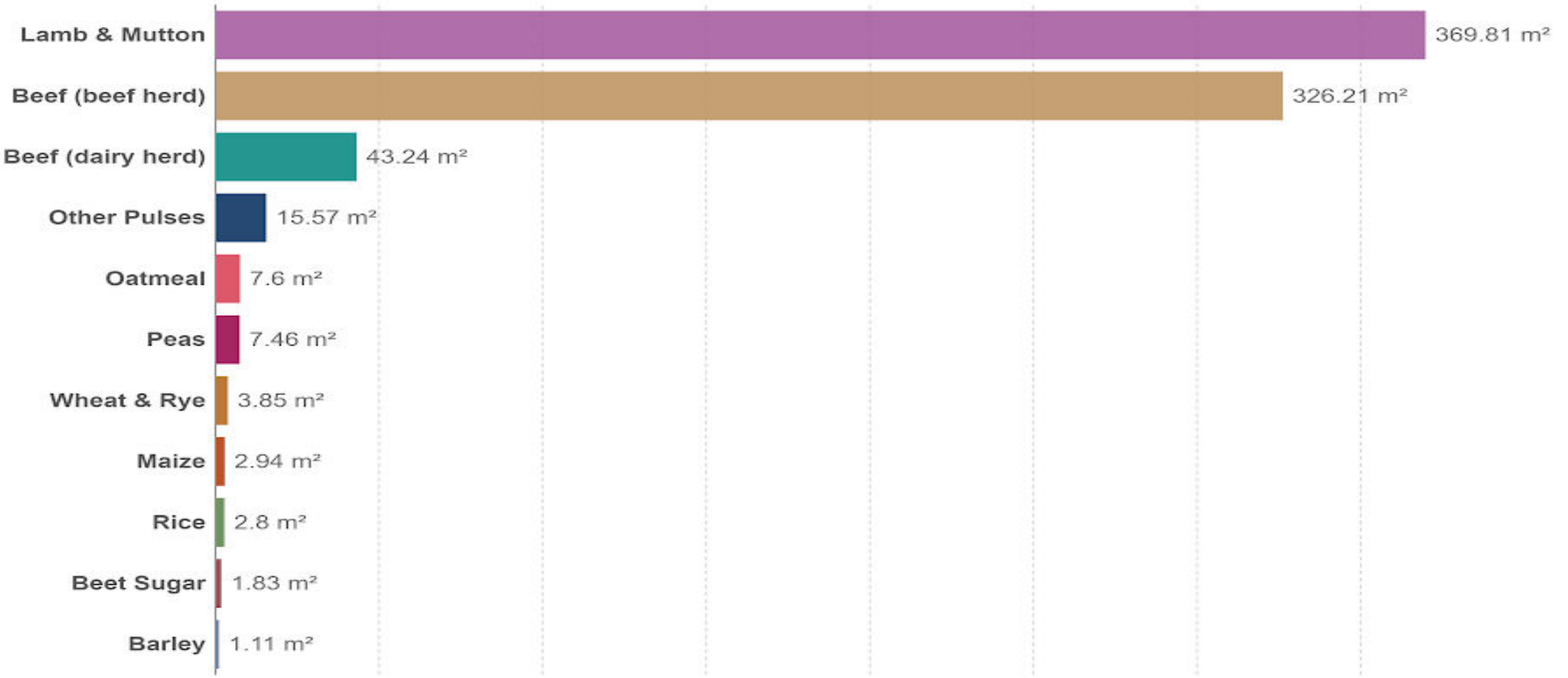
Regularly update and review emissions data

Engage employees and stakeholders in the process

Use the insights gained to drive continuous improvement

Land use per kilogram of food product

Land use is measured in meters squared (m²) per kilogram of a given food product.



Source: Joseph Poore and Thomas Nemecek (2018).

OurWorldInData.org/environmental-impacts-of-food • CC BY

Grains Greenhouse Tool

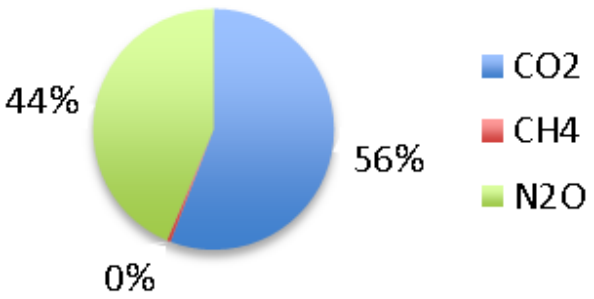
Crop	Wheat	Oilseeds	Other legume	Other Cereals	Barley	
Outputs	**t CO_2e/farm**	**t CO_2e/farm**	**t CO_2e/farm**	**t CO_2e/farm**	**t CO_2e/farm**	**total t CO2e/farm**
Scope 1 Emissions (on-farm)						
CO_2 - Fuel	1.7	1.9	2.5	0.6	0.7	7.5
CO_2 - Lime	198.0	39.6	99.0	158.4	99.0	594.0
CO_2 - Urea	36.7	5.9	7.3	17.6	18.3	85.8
CH_4 - Field burning	0.0	0.0	0.0	0.0	0.0	0.0
CH_4 - Fuel	0.007	0.005	0.007	0.002	0.003	0.024
N_2O - Fertiliser	150.8	21.6	31.9	94.7	71.3	370.3
N_2O - Atmospheric Deposition	16.6	2.4	3.5	10.4	7.8	40.7
N_2O - Field Burning	0.0	0.0	0.0	0.0	0.0	0.0
N_2O - Crop Residues	127.1	33.7	5.0	129.2	65.8	360.9
N_2O - Leaching and Runoff	44.0	10.4	9.9	40.7	22.3	127.3
N_2O - Fuel	0.0	0.0	0.0	0.0	0.0	0.1
Scope 1 Total	**575**	**116**	**159**	**452**	**285**	**1,587**
Scope 2 Emissions (off-farm)						
Electricity	0.5	1.0	0.5	0.3	0.3	2.5
Scope 2 Total	**0.5**	**1.0**	**0.5**	**0.3**	**0.3**	**2.5**
Scope 3 Emissions (pre-farm)						
Fertiliser	175.7	25.9	36.2	115.5	84.2	437.4
Herbicides/pesticides	0.3	0.4	0.2	0.7	0.3	1.9
Electricity	0.1	0.1	0.1	0.0	0.0	0.3
Fuel	0.1	0.1	0.1	0.0	0.0	0.4
Lime	12.5	2.5	6.3	10.0	6.3	37.5
Scope 3 Total	**189**	**29**	**43**	**126**	**91**	**478**
Carbon Sequestration						
Carbon sequestration in trees	-182.7	-60.9	-8.9	-15.2	-30.5	-298.2
Net Farm Emissions	**581**	**85**	**194**	**563**	**346**	**1,768**
Emissions intensity	**0.19**	**0.21**	**0.30**	**0.19**	**0.20**	**t CO2-e/t crop**

SIXTEEN GRAINS - Second Quarter GHG emissions report

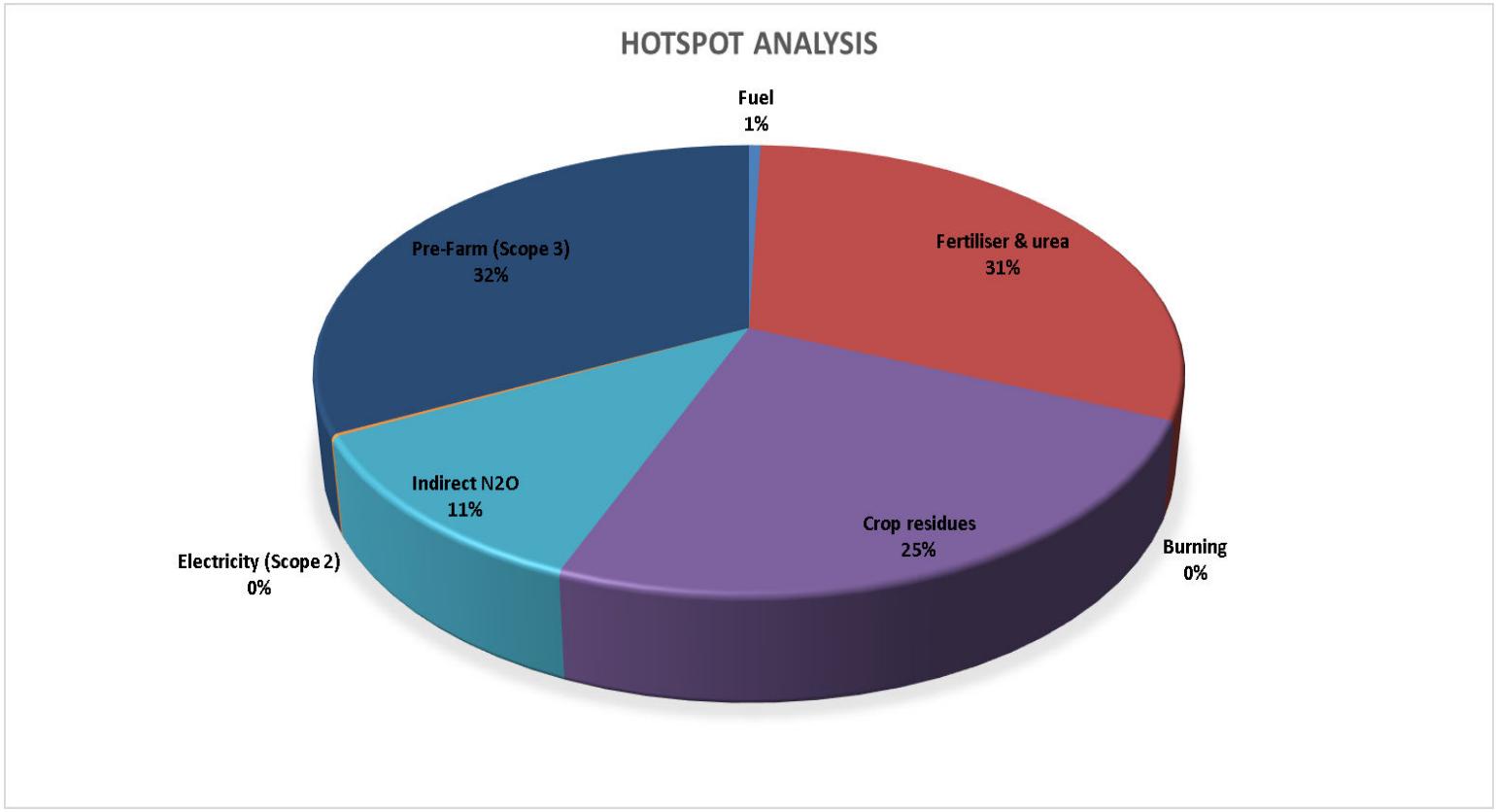
Category		Emission source category		t CO2e
Scope 1 and 2, Value Chain - Scope 3	Scope 1	Direct emissions arising from owned or controlled stationary sources that use fossil fuels and/or emit fugitive emissions	Fuels	43.77
			Refrigerants	-
		Direct emissions from owned or controlled mobile sources	Passenger vehicles	-
			Delivery vehicles	17.35
	Scope 2	Location-based emissions from the generation of purchased electricity, heat, steam or cooling	Electricity	6.94
			Heat and steam	-
			Electricity for Evs	-
			District cooling	-
		Fuel- and energy-related activities	All other fuel- and energy related activities	-
			Transmission and distribution losses	0.51

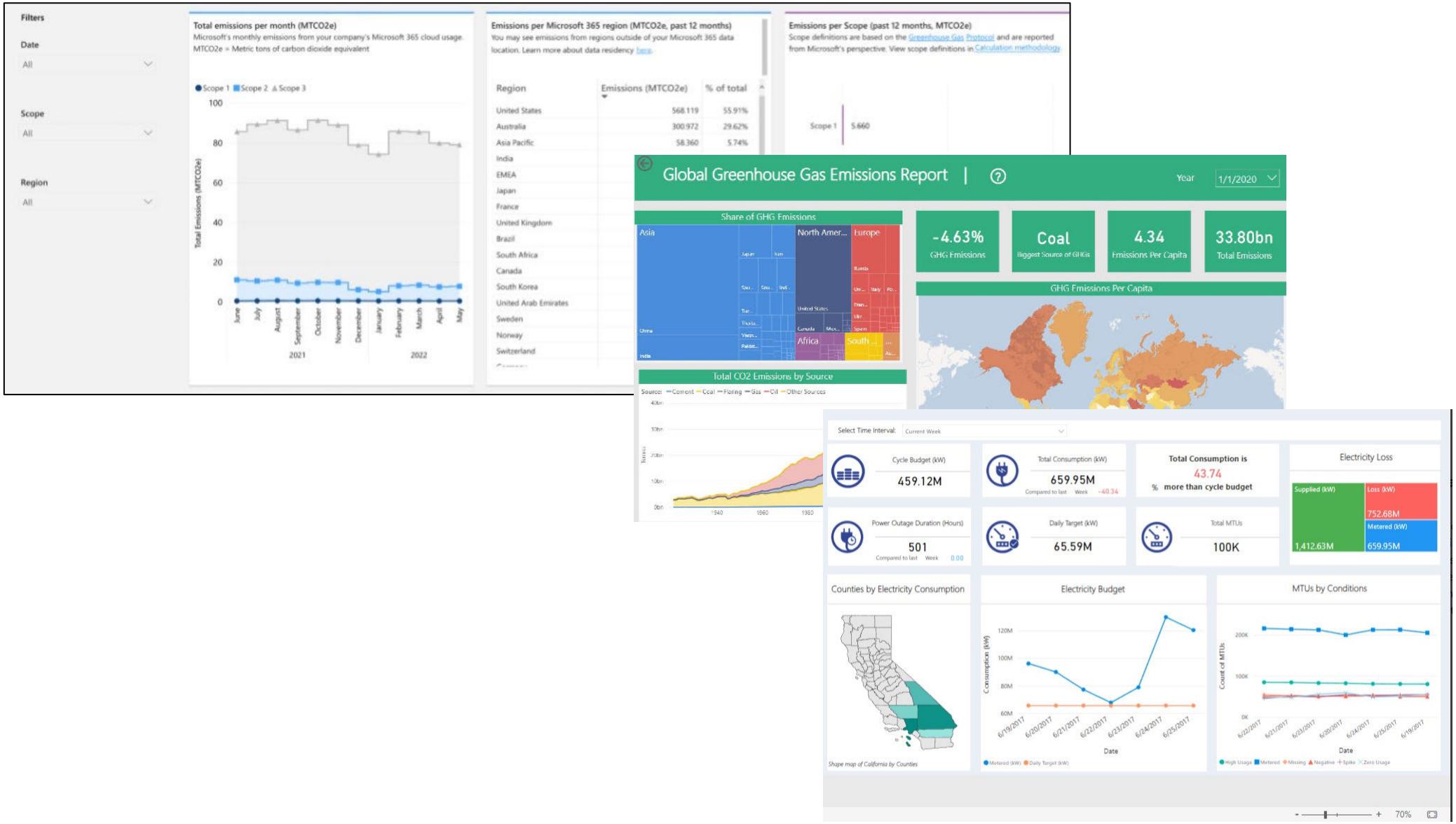
GHG Protocol Standards: Corporate Scope - 1	Scope 3	Waste generated in operations	Waste water	-
			Waste	6,776.17
		Purchased goods	Water supplied	1.79
			Material use	318,141.41
		Business travel	All transportation by air	0.13
			Emissions arising from hotel accommodation associated with business travel	-
			All transportation by sea	-
			All transportation by land, public transport, rented/leased vehicle and taxi	-
		Upstream transportation and distribution	Freighting goods	14.17
		Employees commuting		6.21
		Food		-
		Home office		3.65

Breakdown of GHGs



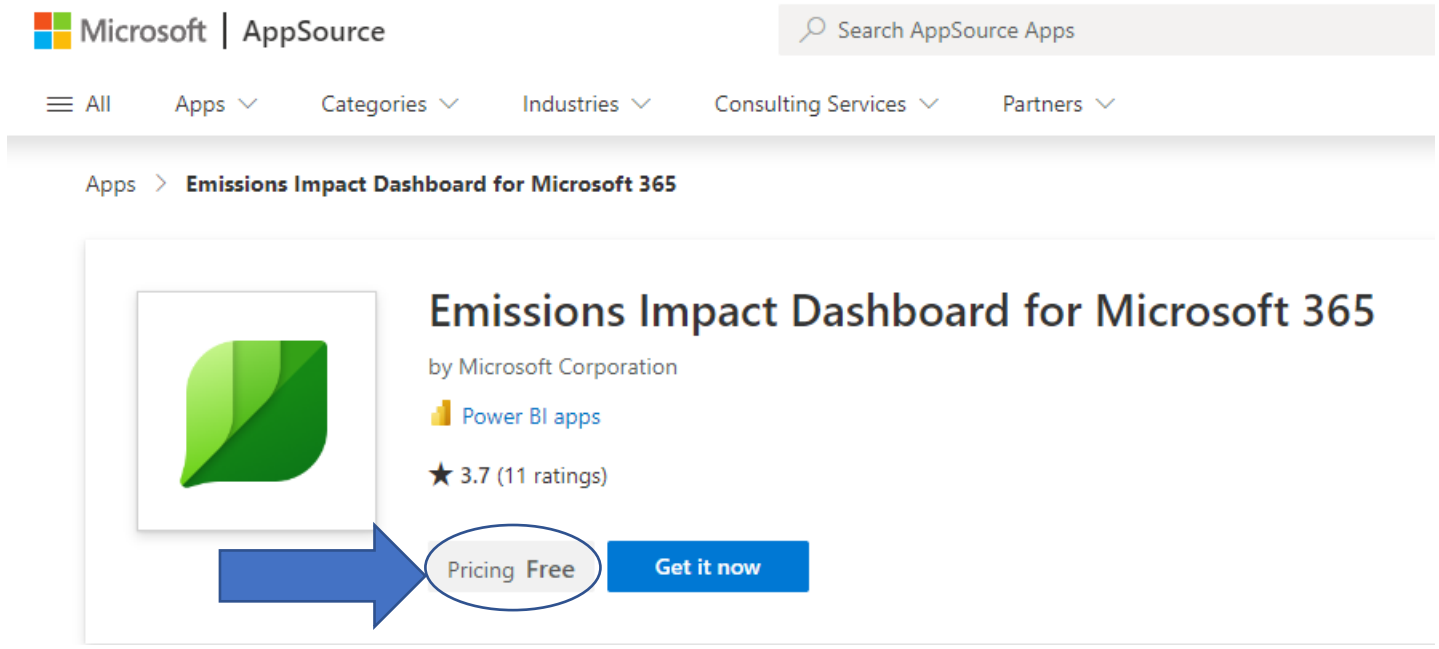
Summary	t CO2e/farm
CO_2	1,152
CH_4	10
N_2O	901




Filters
Date
All
Scope
All
Region
All
Total emissions per month (MTCO2e)
Microsoft's monthly emissions from your company's Microsoft 365 cloud usage.
MTCO2e = Metric tons of carbon dioxide equivalent
Scope 1 Scope 2 Scope 3
Total Emissions (MTCO2e)
100
80
60
40
20
0
June July August September October November December January February March April May
2021
2022
Emissions per Microsoft 365 region (MTCO2e, past 12 months)
You may see emissions from regions outside of your Microsoft 365 data location. Learn more about data residency here.
Region
Emissions (MTCO2e)
% of total
United States 568.119 55.91%
Australia 300.972 29.62%
Asia Pacific 58.360 5.74%
India
EMEA
Japan
France
United Kingdom
Brazil
South Africa
Canada
South Korea
United Arab Emirates
Sweden
Norway
Switzerland
Emissions per Scope (past 12 months, MTCO2e)
Scope definitions are based on the Greenhouse Gas Protocol and are reported from Microsoft's perspective. View scope definitions in Calculation methodology
Scope 1 5.660
Global Greenhouse Gas Emissions Report
Year 1/1/2020
Share of GHG Emissions
Asia
North Amer...
Europe
United States
Africa
South ...
-4.63%
GHG Emissions
Coal
Biggest Source of GHGs
4.34
Emissions Per Capita
33.80bn
Total Emissions
GHG Emissions Per Capita
Total CO2 Emissions by Source
Source Cement Coal Flaring Gas Oil Other Sources
Tonnes
1940
1960
1980
Select Time Interval: Current Week
Cycle Budget (kW)
459.12M
Total Consumption (kW)
659.95M
Compared to last Week -40.34
Total Consumption is
43.74
% more than cycle budget
Electricity Loss
Supplied (kW)
1,412.63M
Loss (kW)
752.68M
Metered (kW)
659.95M
Power Outage Duration (Hours)
501
Compared to last Week 0.00
Daily Target (kW)
65.59M
Total MTUs
100K
Counties by Electricity Consumption
Shape map of California by Counties
Electricity Budget
Consumption (kW)
120M
100M
80M
60M
6/19/2017
6/20/2017
6/21/2017
6/22/2017
6/23/2017
6/24/2017
6/25/2017
Date
Metered (kW) Daily Target (kW)
MTUs by Conditions
Count of MTUs
200K
100K
0K
6/22/2017
6/21/2017
6/23/2017
6/20/2017
6/24/2017
6/25/2017
6/19/2017
Date
High Usage Metered Missing Negative Spike Zero Usage
70%

Try for Yourself Emissions impact in the Cloud

Link:
https://appsource.microsoft.com/en-us/product/power-bi/coi-sustainability.emissions_impact_dashboard_microsoft_365?exp=kyyw



Conclusion

- What we learnt.
- Encourage to explore and implement online tools to capture GHG emissions

Questions?
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Thank You!

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