1. How do software services provided by companies like Plan A and Planetly help businesses in tracking their carbon footprint? (3 marks)

Plan A and Planetly develops software which help companies monitor, report and reduce their emissions more efficiently compared to using Excel in the past by using descriptive analytics, predictive analytics and prescriptive analytics.

Data Entry Stage: Companies enter emissions data for a number of different categories. For planetly, these categories are building emissions, customer activities, employee activities and procurement.

Summary Stage: Companies can view a breakdown of their emissions and track them over time. Users can see how they compare to other companies in their industry and get a deep look into their scope three emissions.

Setting targets and deadlines: Plan A allows companies to set reduction targets and deadlines.

Moreover, Plan A has large teams of technical and scientific experts, who can help fill in the data gaps with well-informed estimates.

Answer:

Data Collection : Improves the ease of data collection by

Using templates/forms to enter data

Automate collection of data directly from data sources

Computing carbon emissions using industry standard or validated conversion factors

Data Visualization : used to present the data to

Show trends

Interactive dashboards allows users to do comparison/ benchmarking

Drill down analyses to focus on specific business processes or activities

1. One of the key concerns with carbon emission data is the data quality. Briefly describe what is the data quality concern. (3 marks)

In the US, corporate sustainability reporting remains largely voluntary. There are no audit requirements. And most company exclude indirect emissions, which often makes up the bulk of a company’s footprint.

Scope 3 emissions can be up to 70-90% of whole emissions. For example, nearly all of Apple’s emissions are scope 3, coming from the company’s largely China-based manufacturing centres and the use of their products, that is, charging an iPhone or browsing the internet.

Obtaining a complete and accurate PCF (Product Carbon Footprint) can be very challenging, due to the complexity of global supply chains and the lack of transparency in data.

This leads to uncomplete and unavailable data, especially for Scope 3 emissions when suppliers or investee does not report emissions data, leading to the original company being unable to accurately calculate their footprint.

Answer:

Accuracy/Reliability

* Inaccuracy of data input by business users( e.g. due to user recall bias, inaccuracy in estimations or inability to get data such as with scope 3 data which is external to the company)
* Conversion factors( or formulas) used to convert business activities to carbon emissions may not be accurate
* Lack of precision (e.g. due to contextual or locality differences and the data or the conversion factors may not be the same in different locations but aggregated data at the city or state or country is being used)

1. Describe in two or three sentences one way in which Plan A uses data analytics to address the data quality issue discussed in part (b). (1 mark)

Plan A has large teams of technical and scientific experts,. A quarter of Plan A’s team include data scientists, climate modelling lifecycle analysts, as well as sustainability experts, which gives them the ability to help fill in the data gaps with well-informed estimates using predictive analytics.

Answer:

* Plan A uses data analytics to address data quality issues with
  + Data cleansing
  + Model development
  + Better conversion factors/formulars or data-driven carbon benchmark
  + Validation of models/formulas

1. Briefly describe an example of how each of the 3 types of analytics (i.e. descriptive, predictive, prescriptive) can be applied to carbon emission data to help companies in taking effective climate action. (3 marks; 1 mark for each type of analytics)

Descriptive analytics: By using the collected data and getting a deep look into their scope 3 emissions which forms the bulk of companies whole emissions, companies are able to understand and make informed decisions on which specifics areas to tackle to reduce carbon emissions by finding out the biggest source of carbon emissions and periods where carbon emissions are at its peak.

Predictive analytics: Forecasting future emissions based on historical data. Companies are able to analyse if predictions and deadlines are feasible according to current reduction efforts or if they need to engage in more sustainable practices.

Prescriptive analytics: Determine optimal ways and best practices in which an organization can improve efficiency to decrease or minimize its carbon footprint. Companies can use a combination of carbon offsets and determining which processes to cut down or improve upon to minimize their carbon emissions.

Answer:

Descriptive analytics:

* Summarise and highlight patterns or trends of carbon footprint across business processes and localities (hot spot analysis or spatial statistics)
* Use of data visualization tools e.g. dashboards to compare with industry competitors’ carbon emissions or across benchmarking standards.

Predictive analytics:

* Predict carbon footprint emissions using predictive models(regression techniques) in areas such as customers/employees activities, business processes, or even buildings’ emissions.

Prescriptive analytics:

* Determine the optimal parameters for processes so companies can reduce their carbon footprint to meet industry benchmarks (use optimization techniques)

References:  
  
Why Tracking Carbon Emissions Is Suddenly A Billion Dollar Opportunity. www.youtube.com, https://www.youtube.com/watch?v=X11xoGeX0s8

Why Carbon Tracking and Reporting Is Necessary to Hold Corporations Accountable | Greenbiz. https://www.greenbiz.com/article/why-carbon-tracking-and-reporting-necessary-hold-corporations-accountable