

# Sustainability Planning and Simulation

## **IBM Planning Analytics for sustainability**

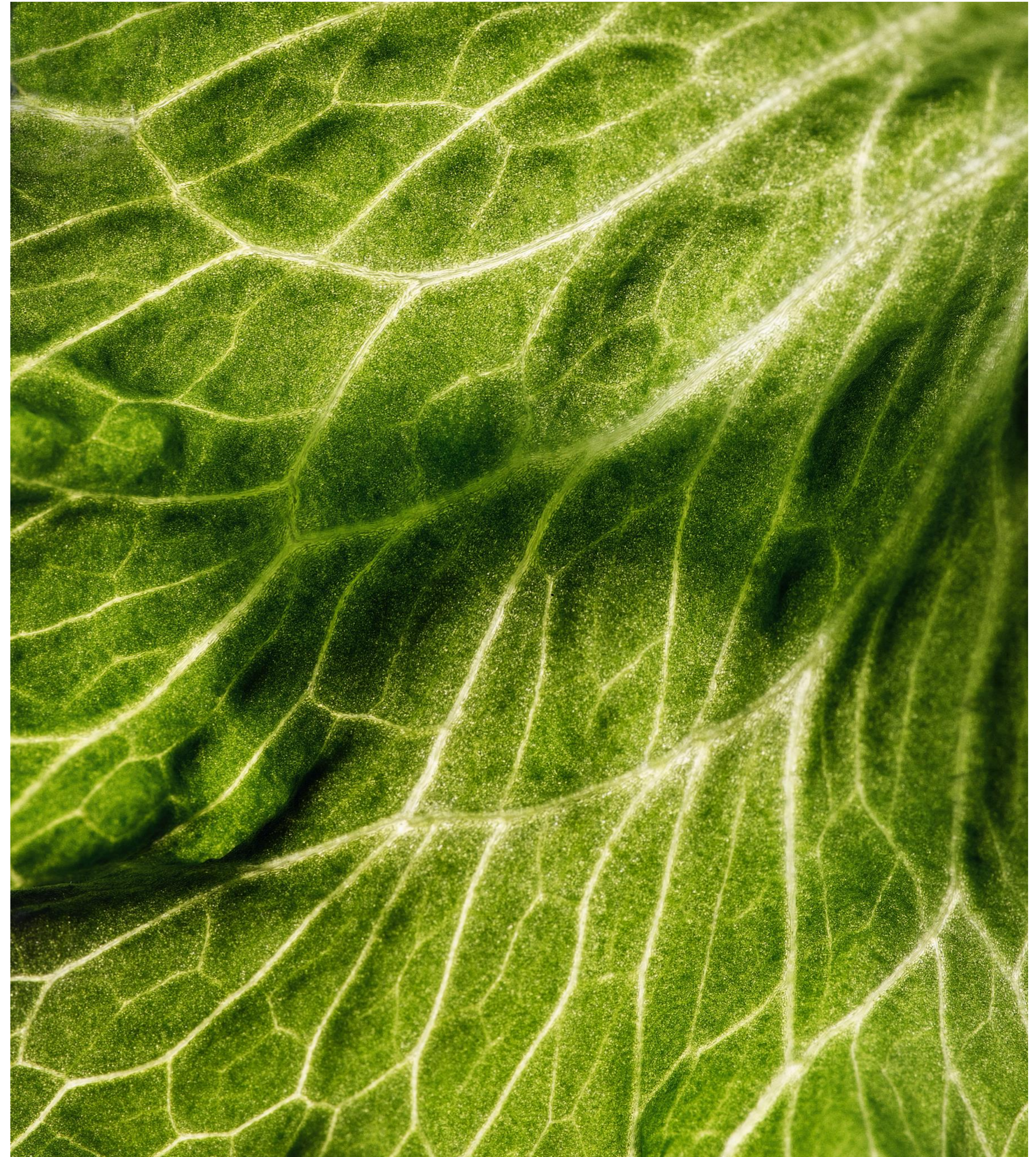
Overview and details for current accelerator-models

Steffen Wittenauer

Principal Solution Specialist - IBM Thought Leader  
[steffen.wittenauer@ch.ibm.com](mailto:steffen.wittenauer@ch.ibm.com)



Version: 19<sup>th</sup> Sept. 2023



# Turn sustainability ambition into action

## **Sustainability Strategy and Roadmap**

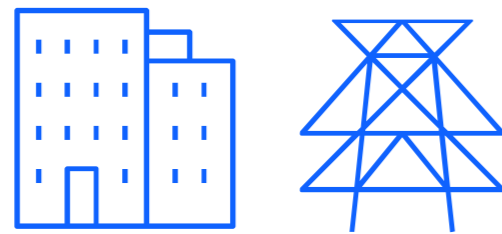
Co-creating a sustainability agenda and pathways towards delivering corporate social impact and business value

---

## **ESG Data, Reporting and Risk Management**

System of record for ESG data and insights to measure, report, operationalize and achieve your sustainability roadmap

---



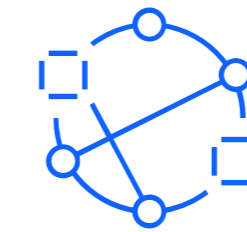
### **Intelligent assets, facilities and infrastructure**

Operational insights to drive clean energy transition, efficient waste management, and decarbonization



### **Responsible computing and green IT**

Optimize infrastructure and computing to enable more efficient IT and drive social impact



### **Sustainable supply chains and circularity**

Intelligent workflows for equitable, transparent, and carbon regenerative supply chains

# IBM Sustainability Portfolio: Technology & Consulting

## IBM Consulting and Ecosystem Partners

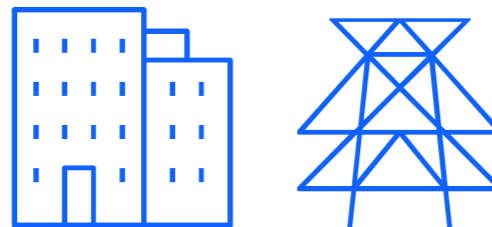
*Strategy, experience, technology, and managed services*

Sustainability Strategy and Roadmap

Garage for Sustainability (co-creation)  
Sustainability strategic advisory services

ESG Data, Reporting and Risk Management

Envizi ESG Suite  
Environmental Intelligence Suite  
Planning Analytics | OpenPages



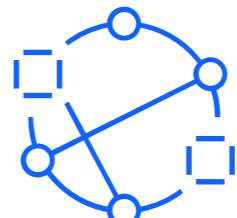
Intelligent assets, facilities and infrastructure

Maximo  
TRIRIGA



Responsible computing and green IT

Turbonomic  
z16 | LinuxONE | Power | Storage  
IBM Cloud



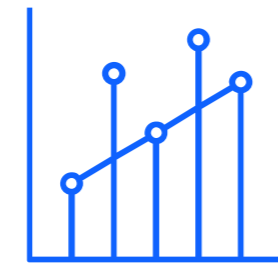
Sustainable supply chains and circularity

Supply Chain Intelligence Suite  
Sterling Order Management

*IBM Technology and Ecosystem Partners*

Accelerate from sustainability insights to sustainability action

Companies need to improve management of data across siloed sources and datasets

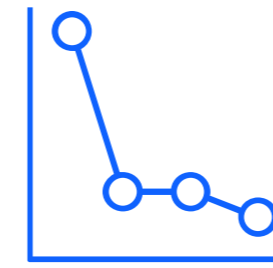


## Data challenges

Access, management and operationalization of sustainability data across siloed sources and evolving reporting datasets

Slow integration of sustainability planning, reporting and result analysis into financial and business planning

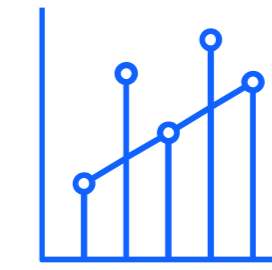
Lack of data quality and accuracy as basis



## Stakeholder challenges

Pressure to move from data management to actions with impact for different stakeholder

Diverse Stakeholder demands for transparency and accuracy from Leadership, regulators, investors, and customers

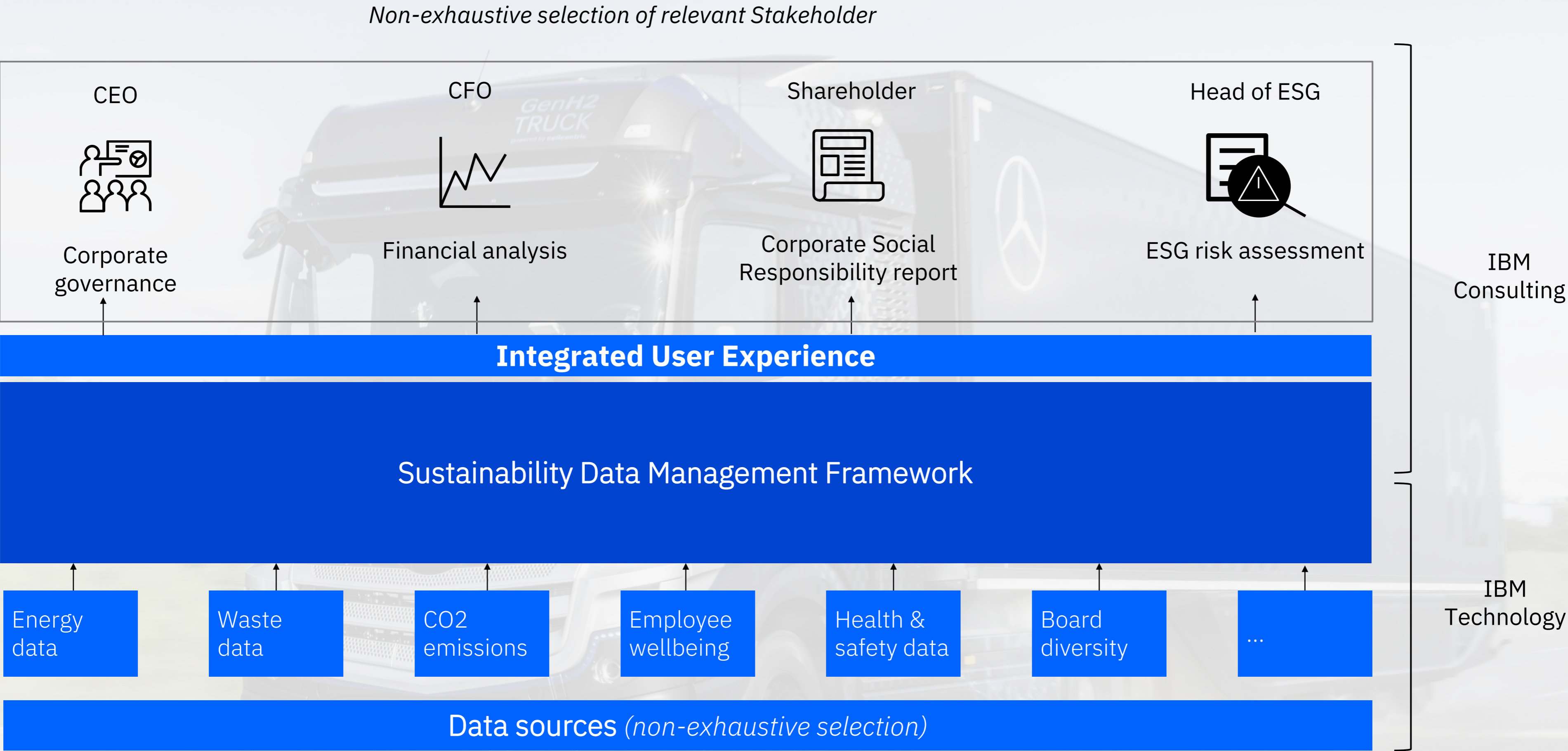


## Pressure to act

Lack of standardized industry reporting metrics

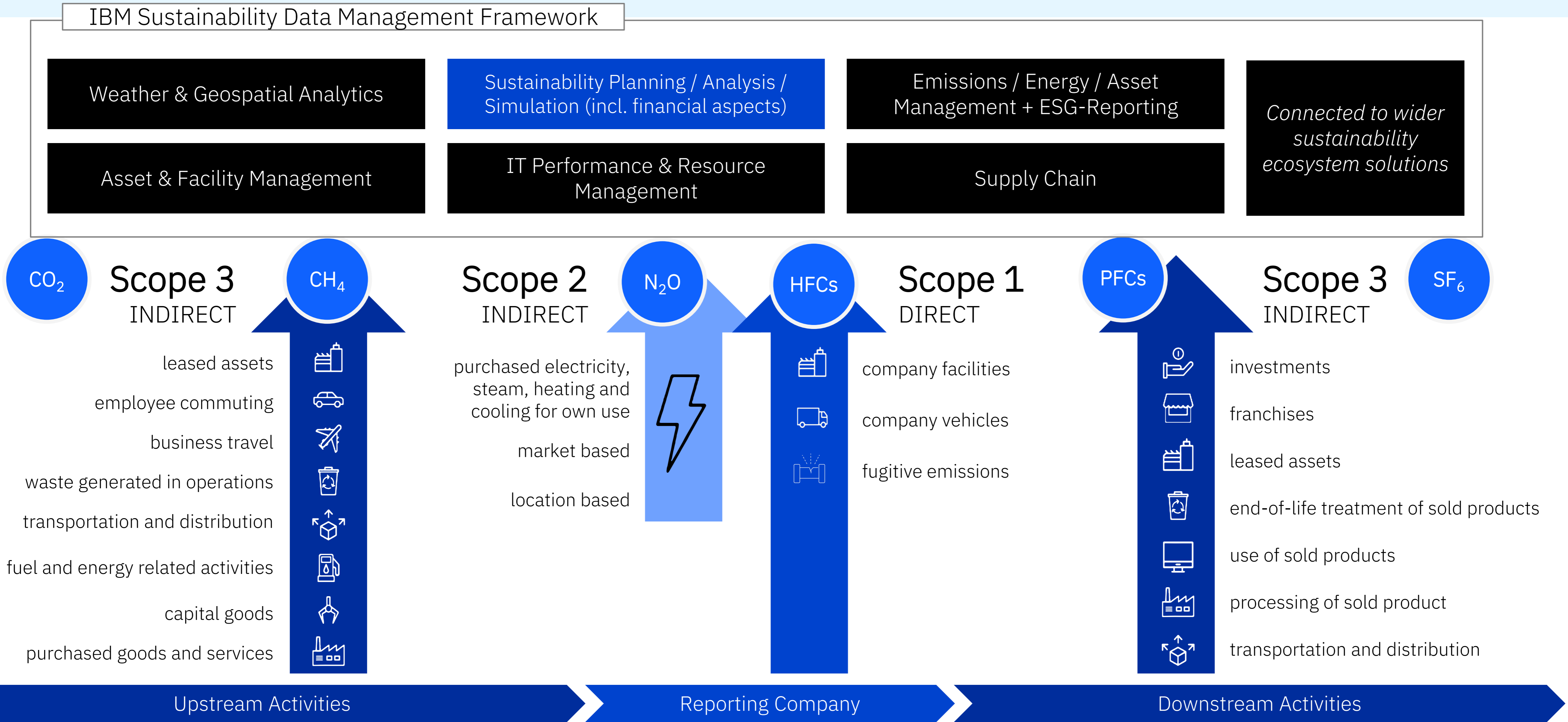
Accelerate from sustainability insights to sustainability action

# Integrate and streamline with IBMs sustainability solutions

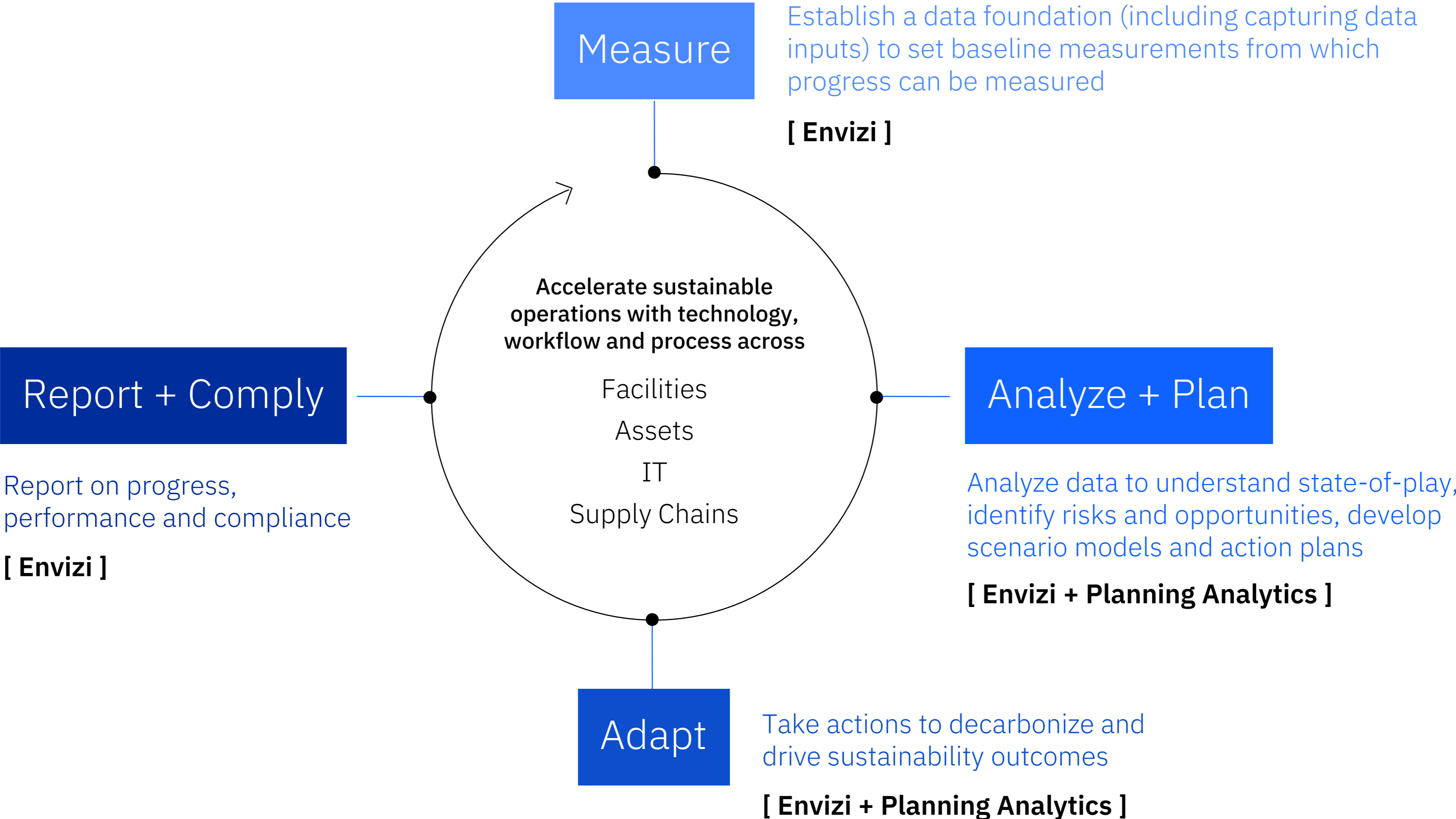


It's all about data

# IBM Technology – Sustainability Offerings – Data sources

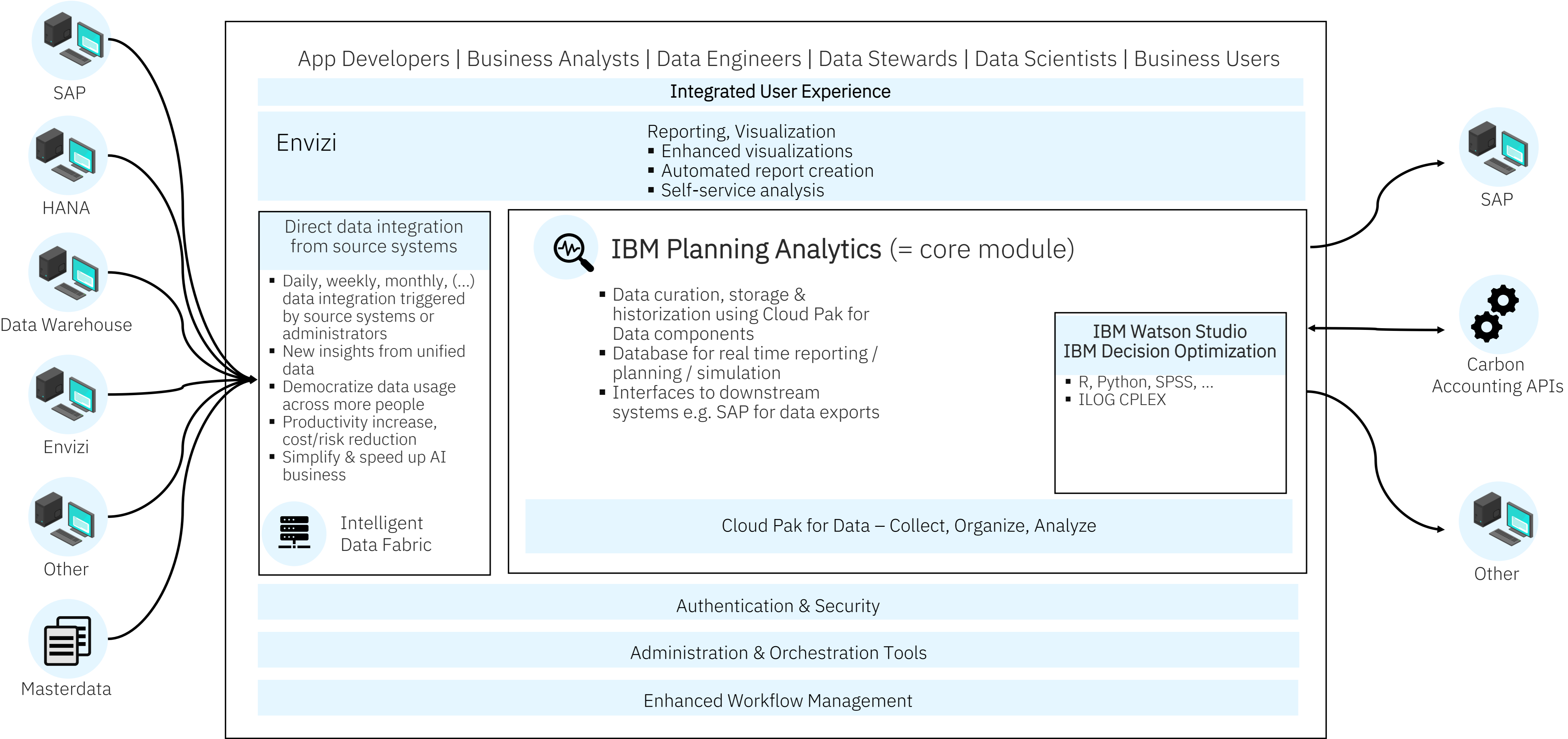


# One IBM Sustainability Technology



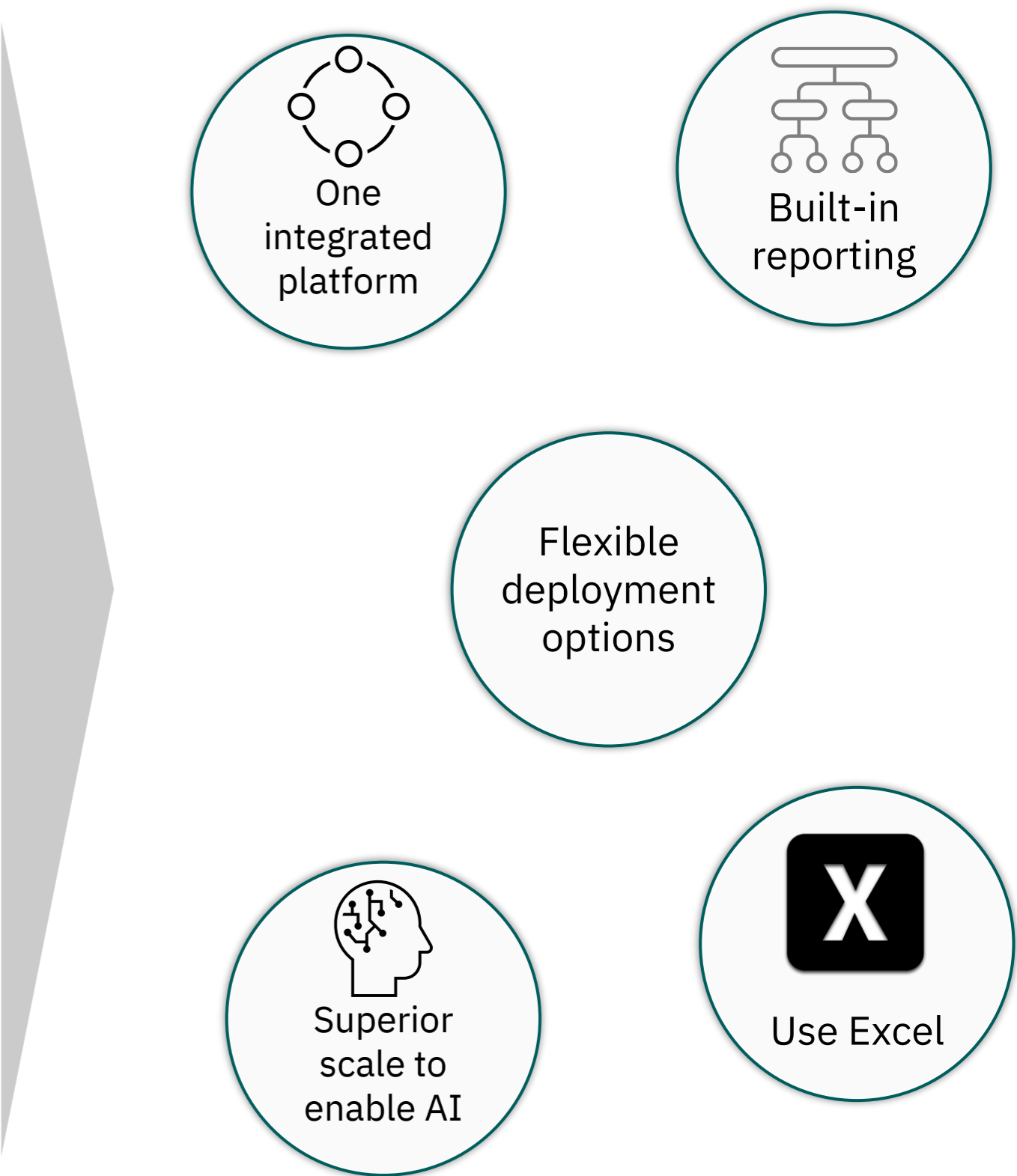
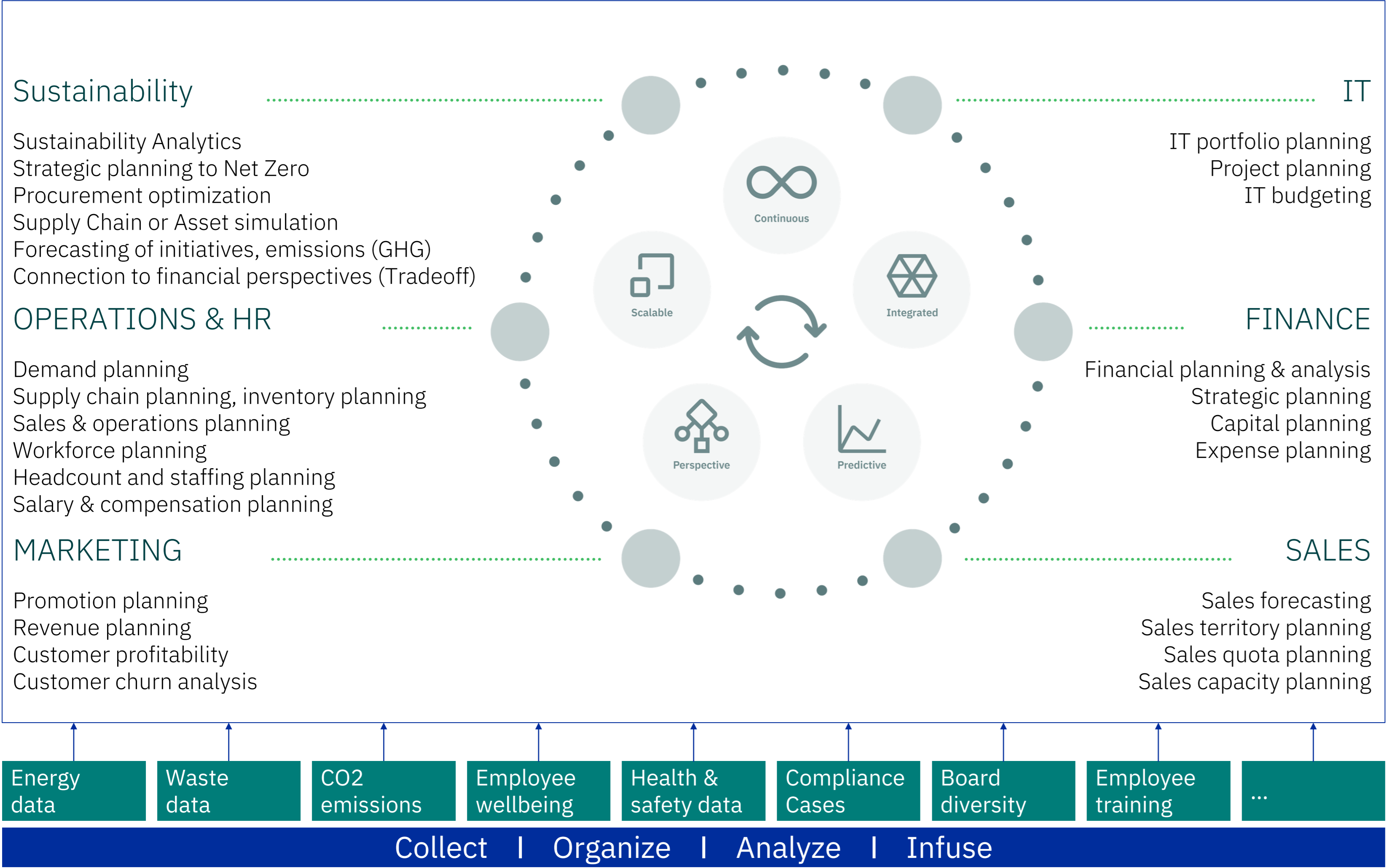
How is it delivered – a modular solution approach?

# A fully integrated Sustainability Solution architecture





# We support planning, reporting and analysis of sustainability data for corporate use cases



Available: on premise (local) or IBM SaaS (PA on Cloud or PAaaS)

# IBM Planning Analytics

## Sustainability planning, simulation and optimization



**Path to Net Zero ESG**  
Scope 3 in Procurement – optimizing procurement to reduce emissions



**Logistics**  
Simulate and compare sustainability measures for logistics assets



**Sustainability in the Supply Chain**  
Product footprint throughout supply chain



**Green Portfolio**  
Optimize asset-portfolio against sustainability KPIs



**Sustainability in the Chemical Sector**  
WBCSD PSA, Mass Balance

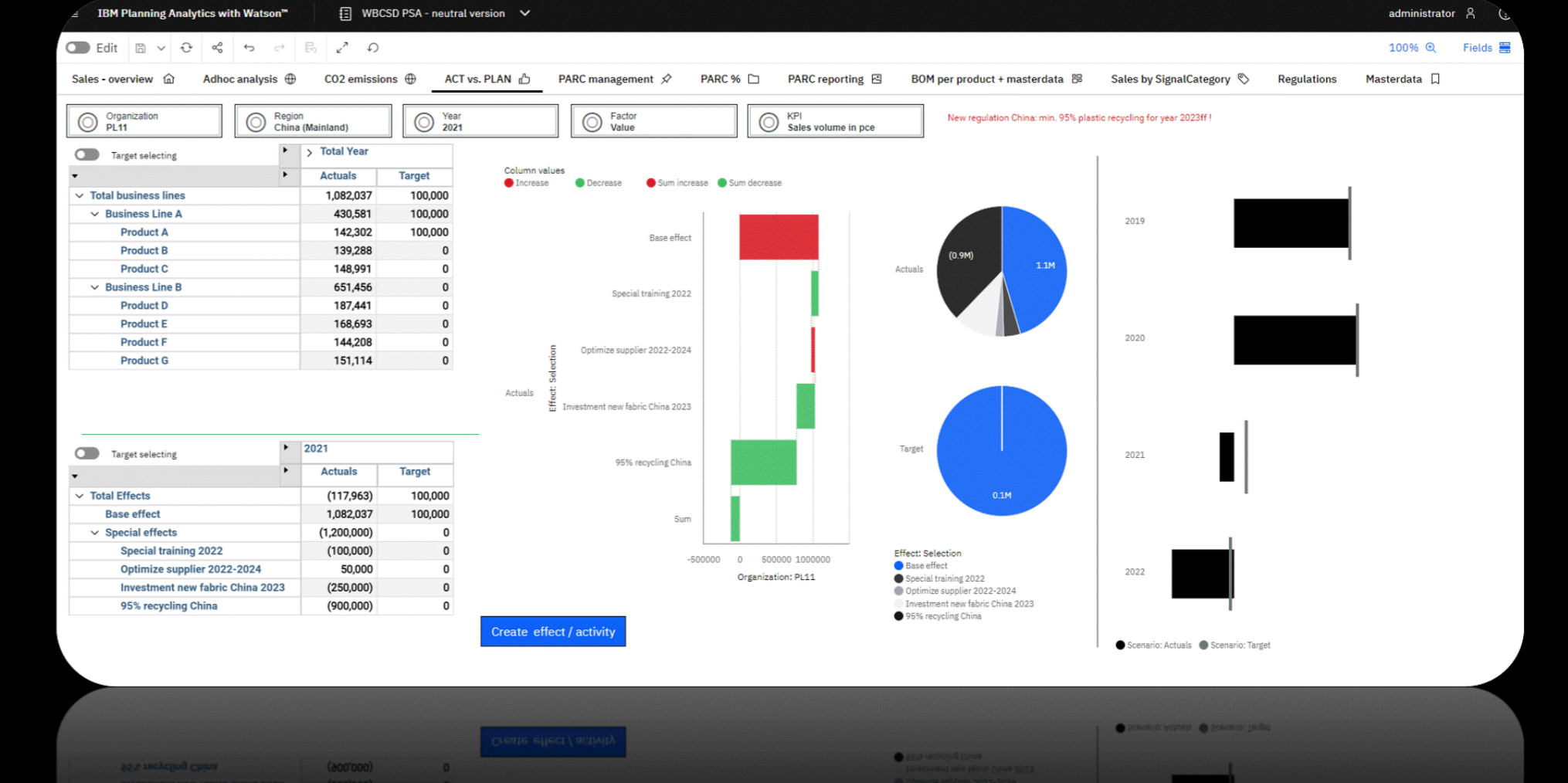


**SDG Analytics**  
17 United Nations Sustainable Development Goals (SDGs)

IBM Planning Analytics is an integrated solution with built in modeling and AI capability that supports planning, analysis, and optimization of sustainability data as part of an integrated planning process.

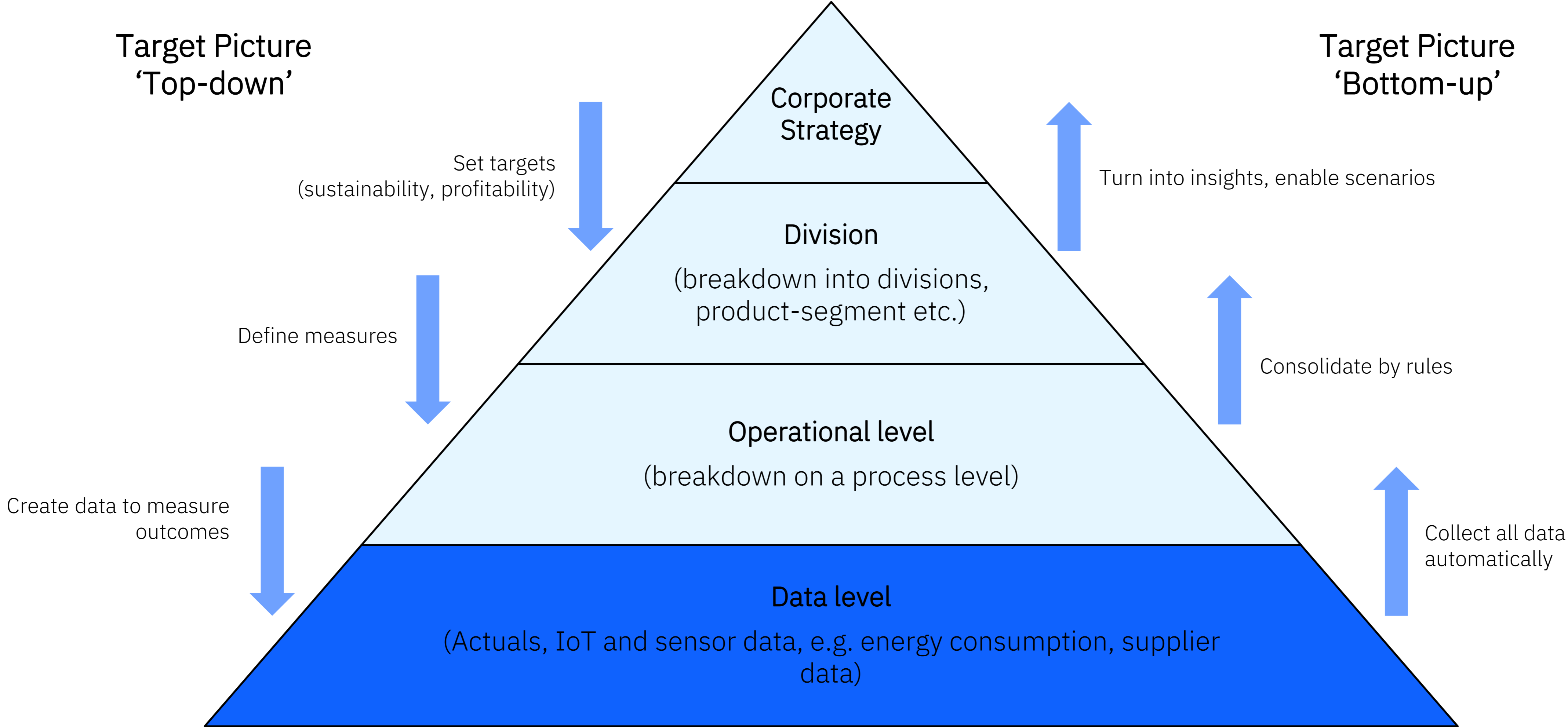
- Model your ESG targets & goals (top-down/bottom-up) and analyze deviations against your actual data
- Create & manage initiatives and corrective actions to meet set targets. Use AI to optimize automatically different concerning costs / sustainability / etc.
- Link sustainability results and ESG performance to financial indicators
- Incorporate ESG data into the supply chain planning process –optimizing procurement decisions for GHG and ESG objectives
- Analyze and visualize your goals and indicators in the context of the UN’s 17 Sustainable Development Goals (SDGs) through a modern and customizable workspace.

Full scope sustainability-example: set and breakdown targets (1)



Plan on all levels in all directions

# A fully implemented Sustainability Data Management solution will help to close the loop



## We support your fast start for sustainability planning

Enhance your ESG-solution.

Fast start.

No costs for the models.

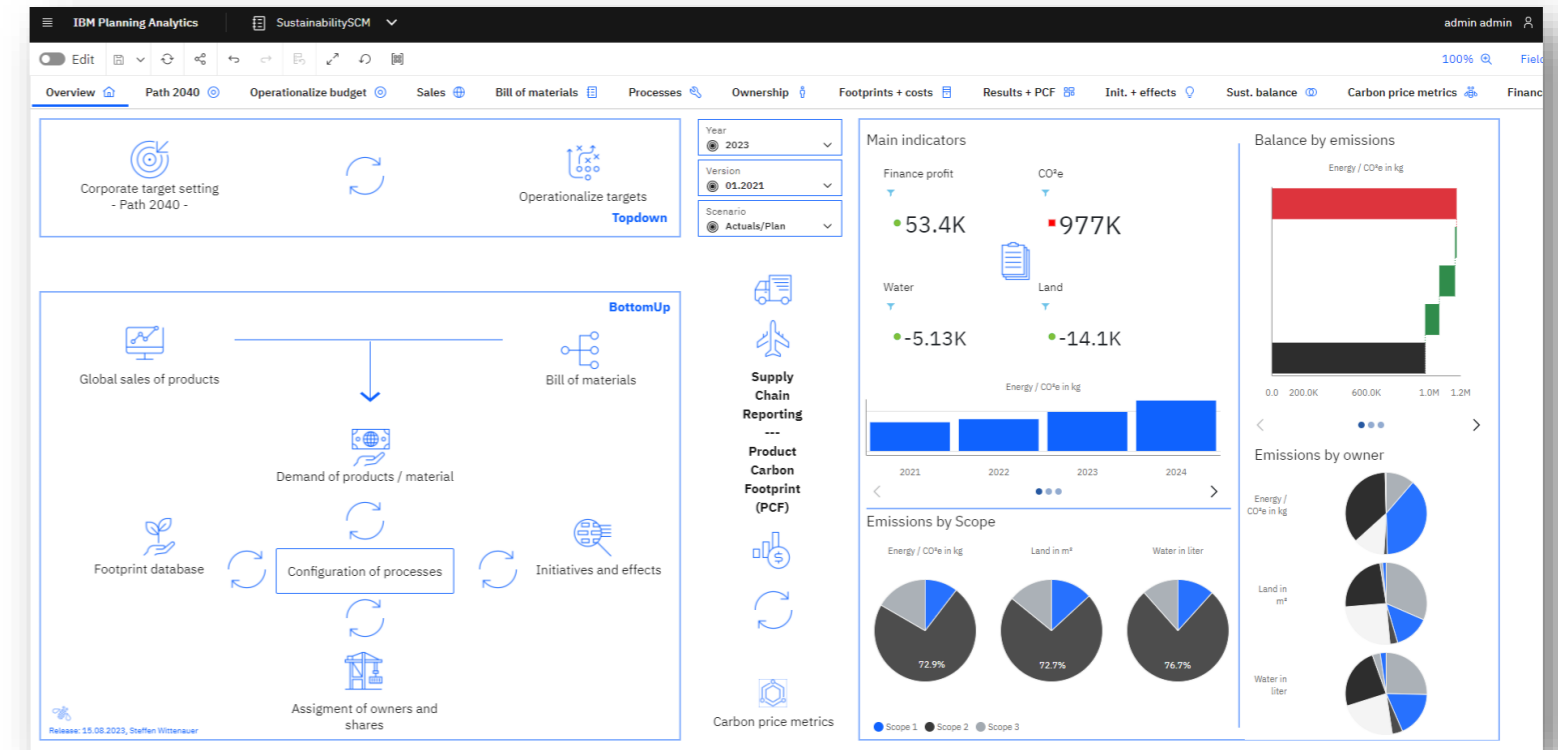
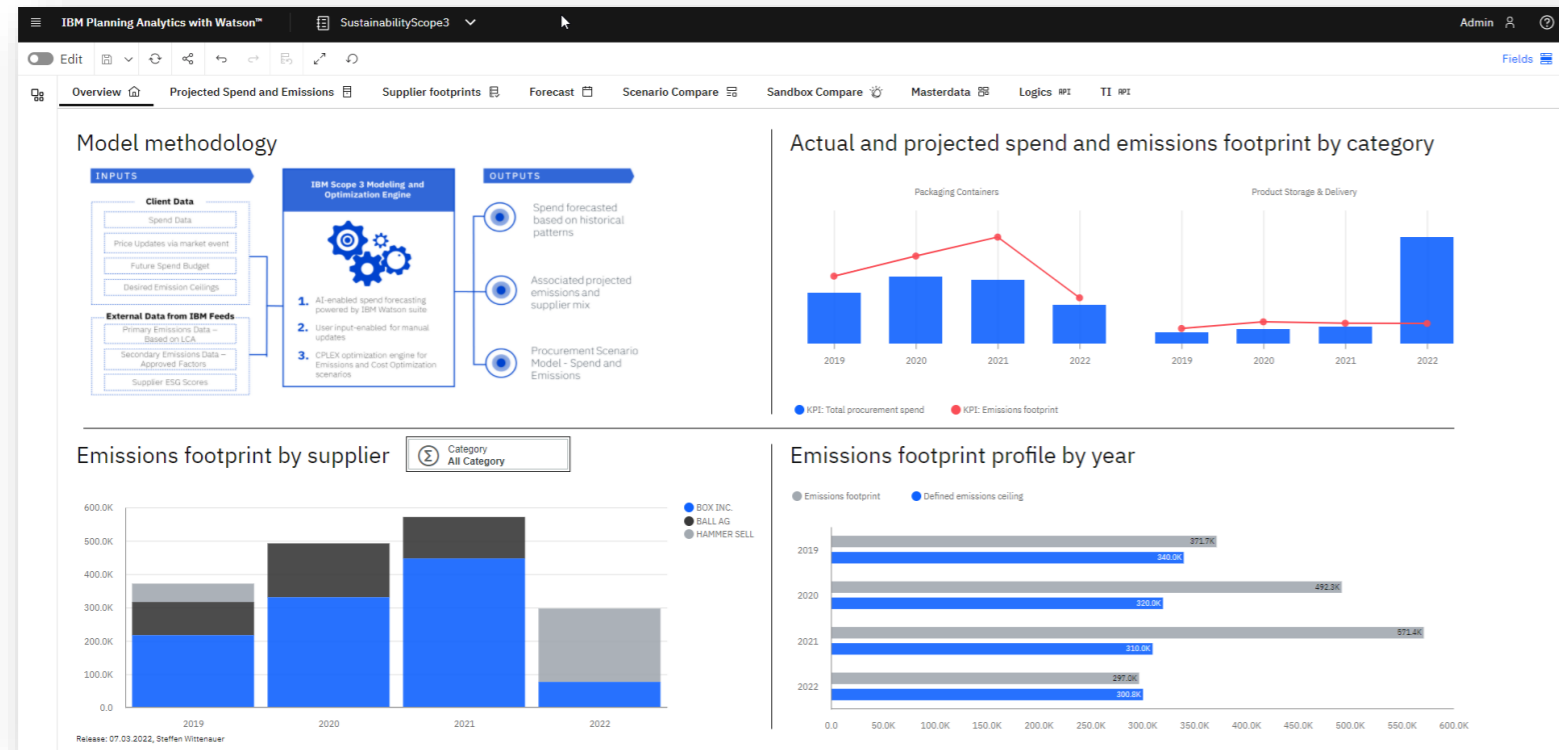
Unbeatable out of the box functions.

IBM is offering to clients and business partners an ongoing growing set of pre-build models for sustainability planning. Everything is based on IBM Planning Analytics.

These already mature models – we call them accelerators - can be used to accelerate your projects or being a perfect starting point for even bigger sustainability models. The models are free of costs. **All models were co-created with clients and have an existing use case in their background.**

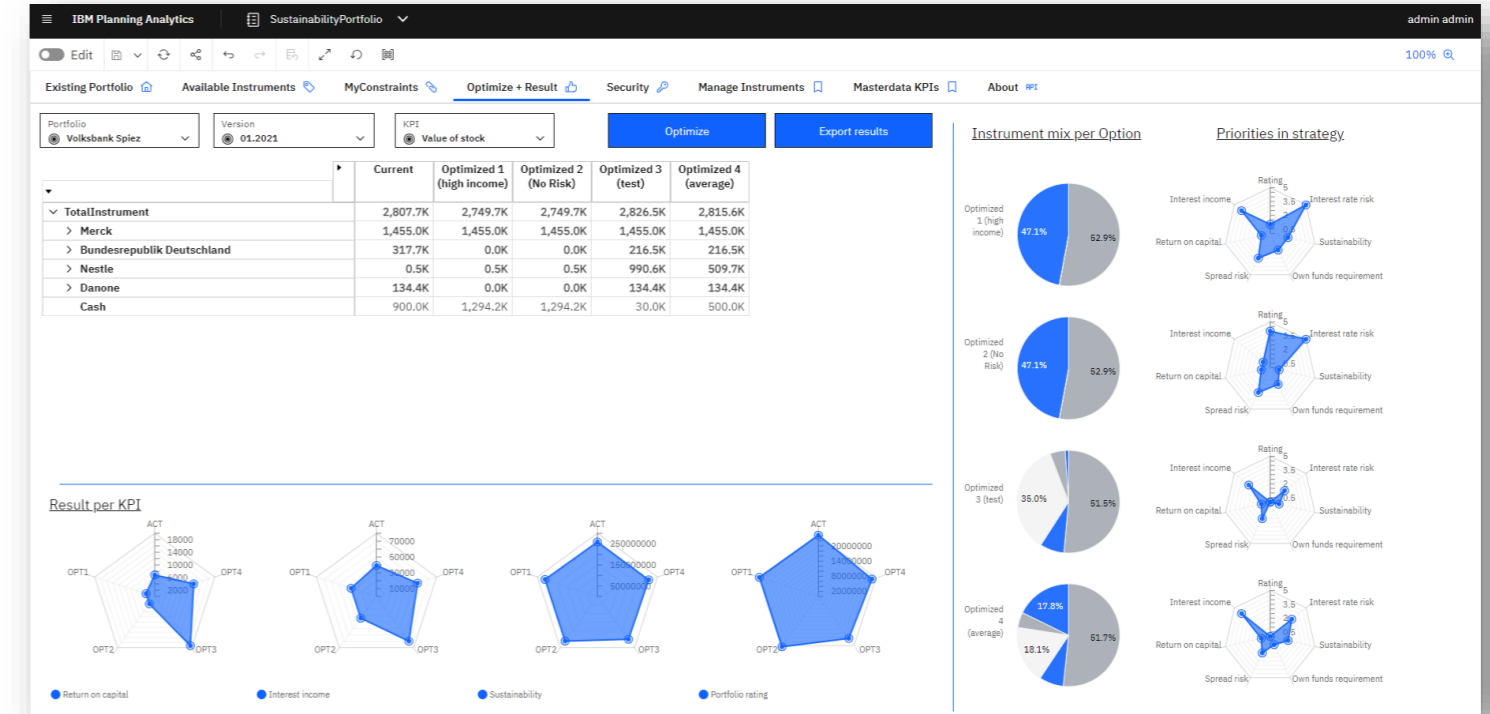
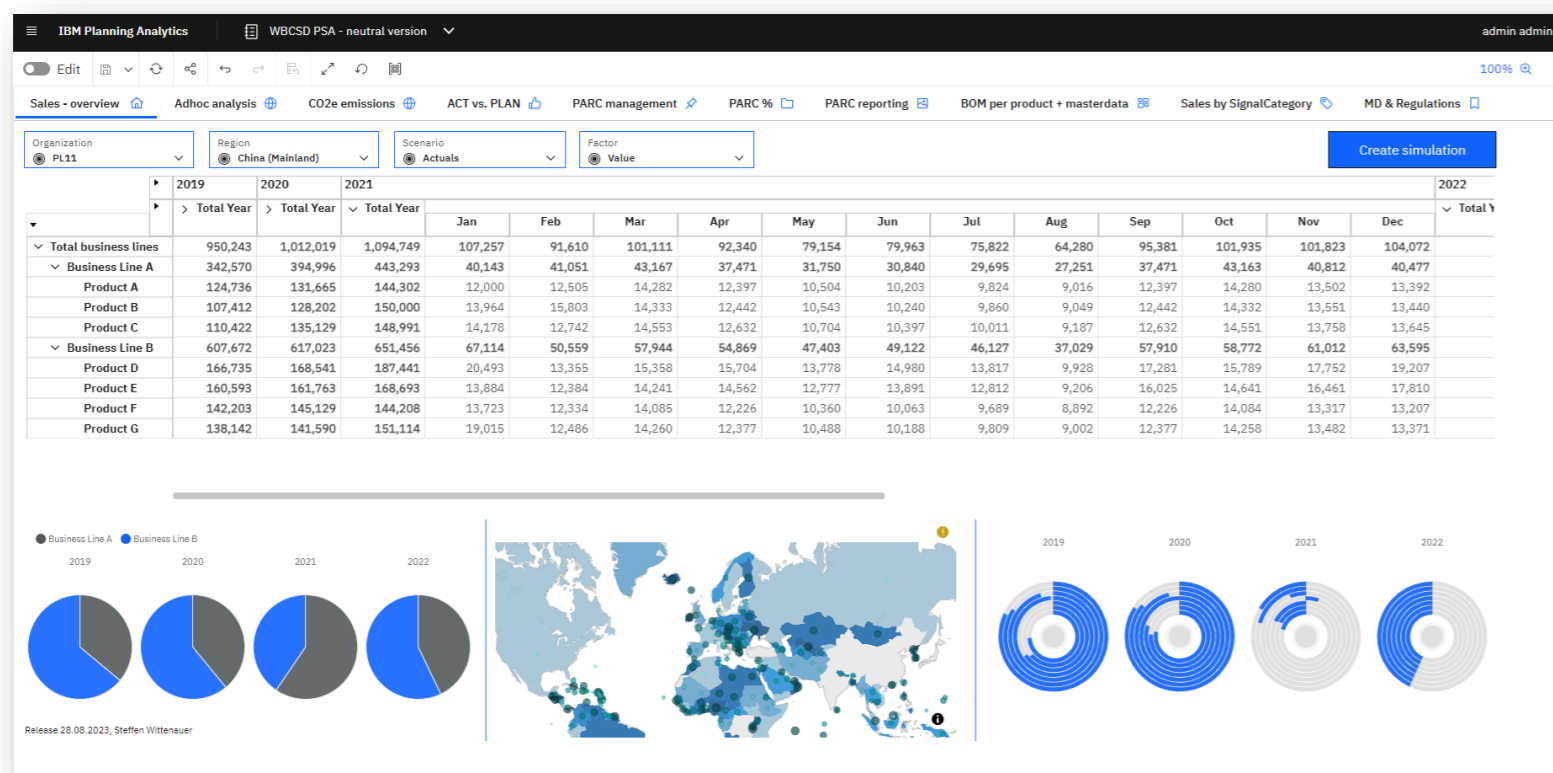
Fast start?

# Overview of current sustainability-accelerators for IBM Planning Analytics (1/3):



Accelerators: ‘Sustainability vs. Profitability – optimize it’  
(Scope 3 in procurement)

Accelerator: ‘Sustainability in the Supply Chain’  
(Operationalize targets to all processes incl. PCF)

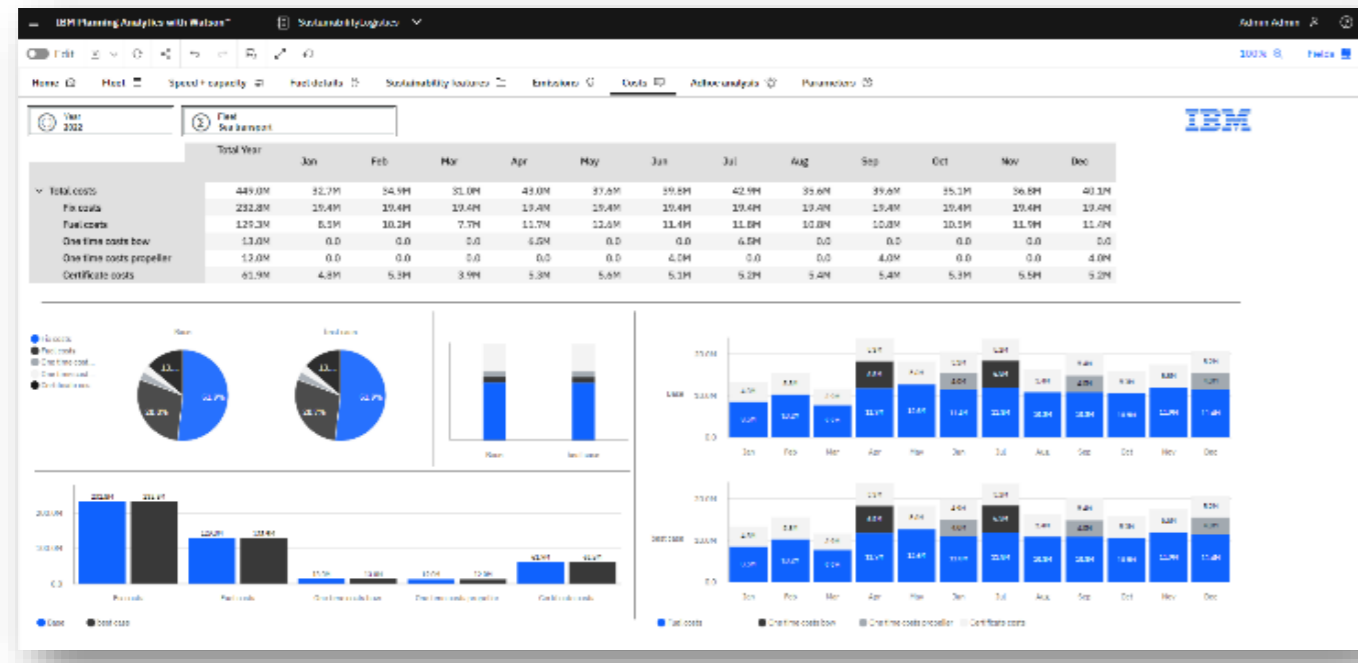


Accelerators: ‘Sustainability in the chemical sector’  
(WBCSD PSA\*, Mass Balancing)

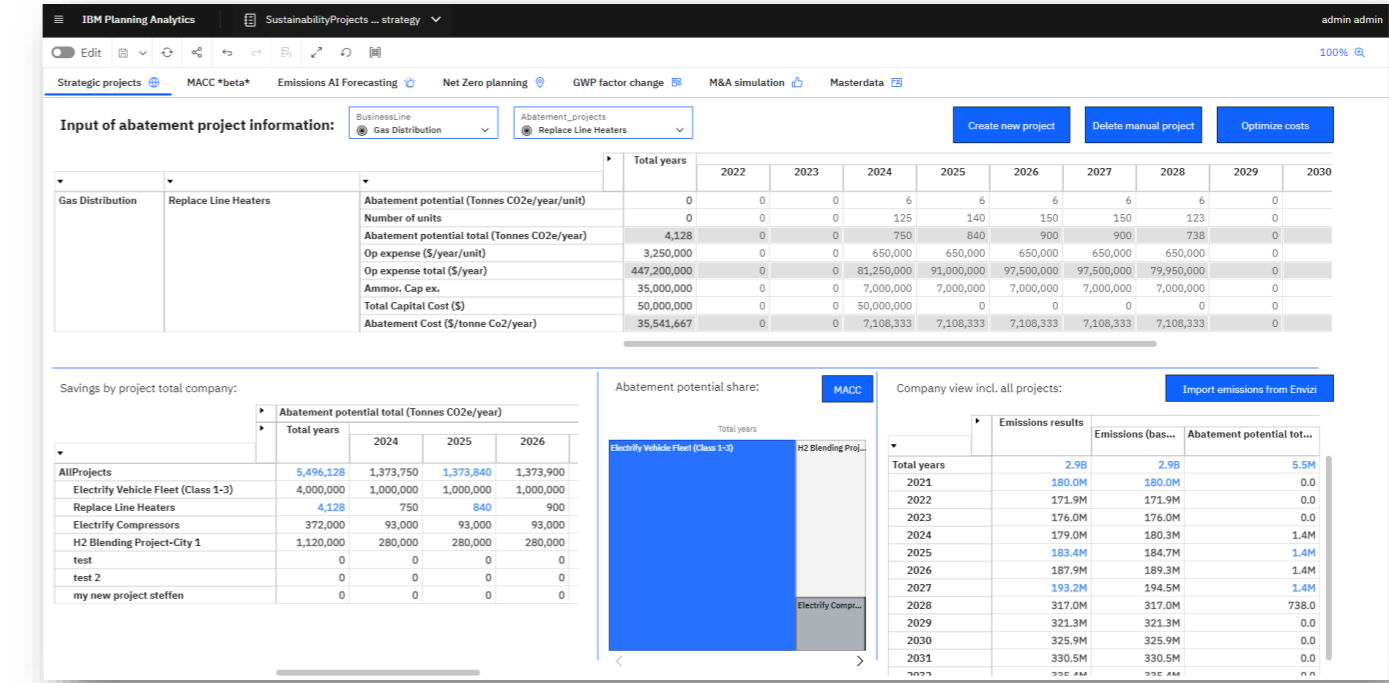
Accelerators: ‘Sustainability vs. Profitability – optimize it’  
(green portfolio or internal project-budget-prioritization)

Fast start?

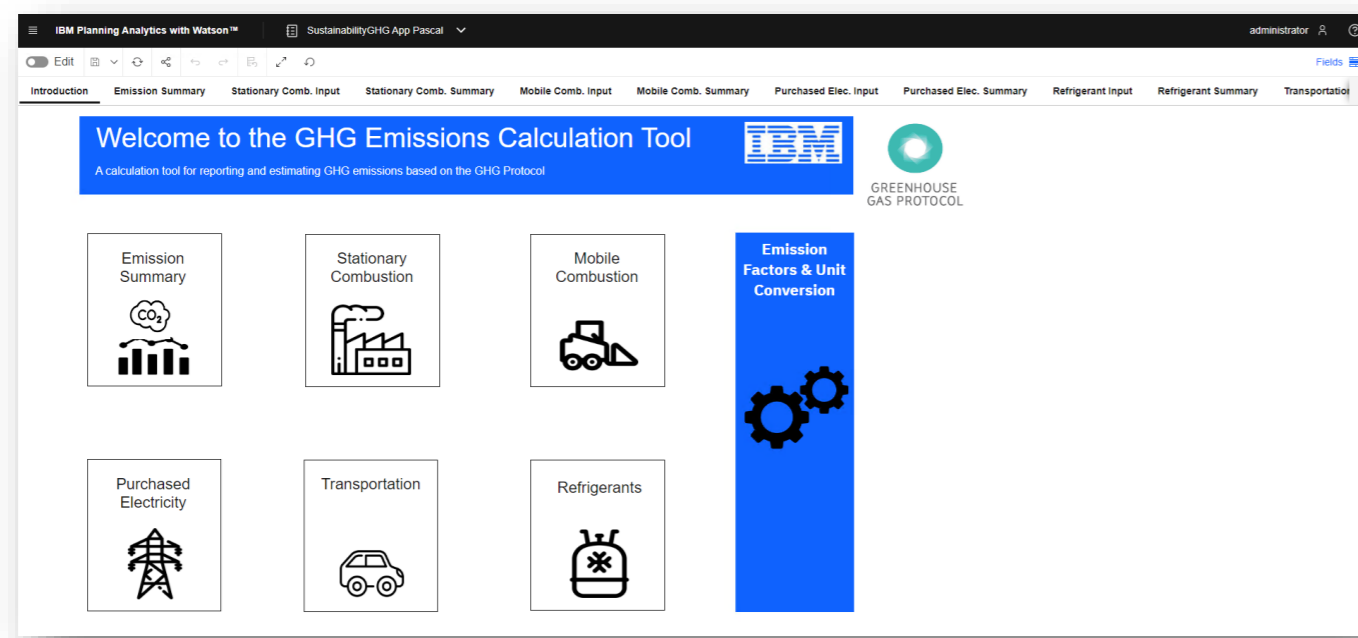
# Overview of current sustainability-accelerators for IBM Planning Analytics (2/3):



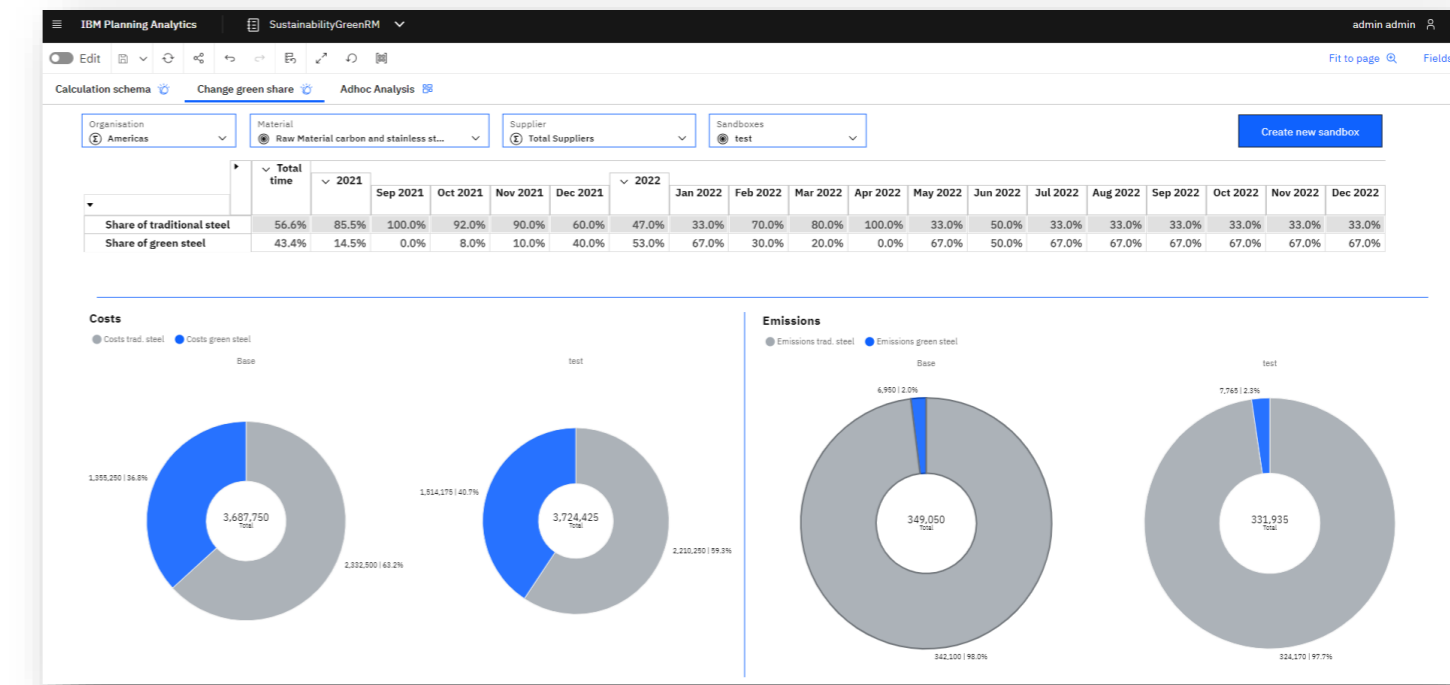
Accelerator: ‘Sustainability asset upgrades’  
(example logistics: simulate asset-upgrades on energy consumption, costs and emissions)



Accelerator: ‘Sustainability Decarbonization Strategy’  
(Strategic projects / MACC, merger & acquisition, global GWP-factors-change, AI forecasting)



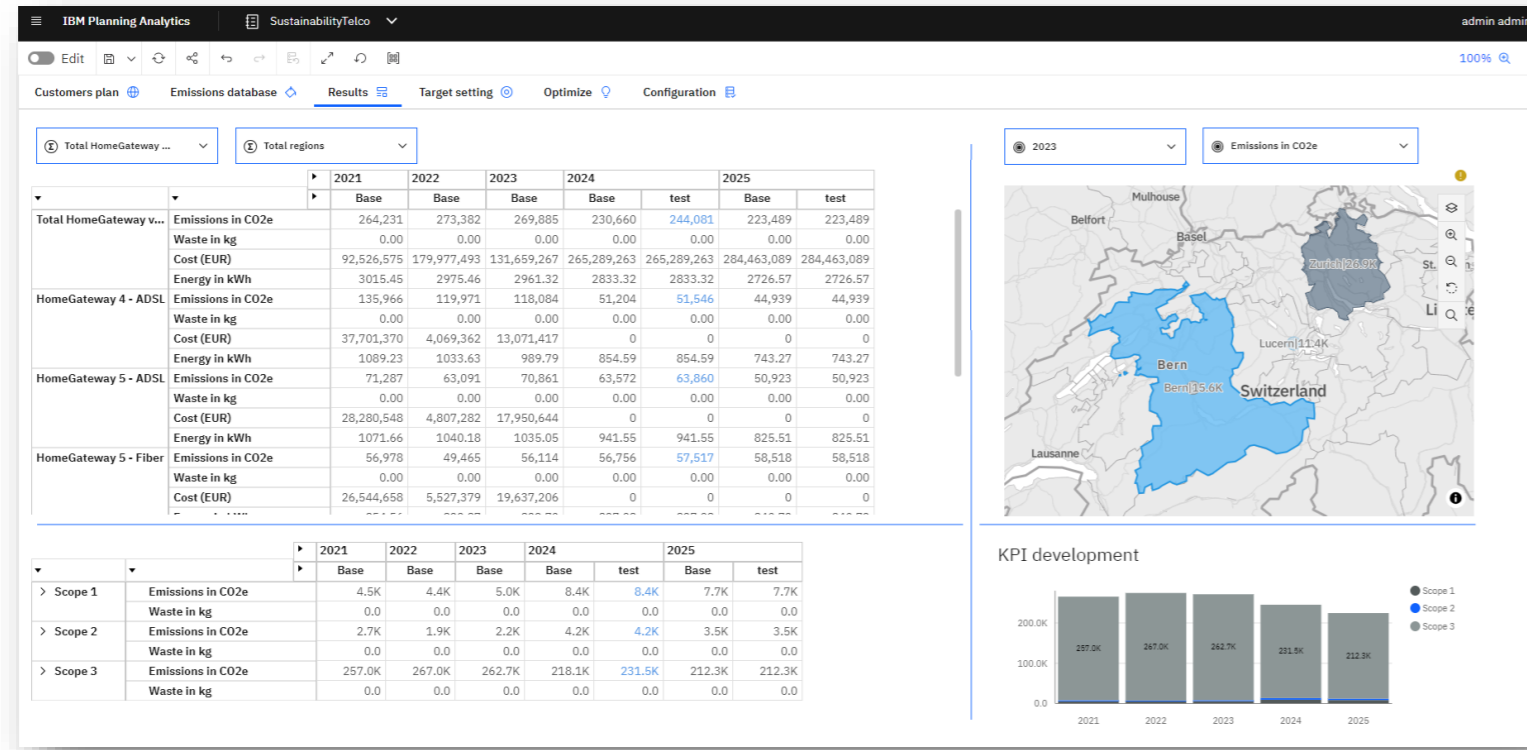
Accelerator: ‘Operational Emissions Management Tool: breakdown and operationalize CO2e budgets’



Accelerator: ‘Green raw material’  
(example steel procurement: simulate share of green steel)

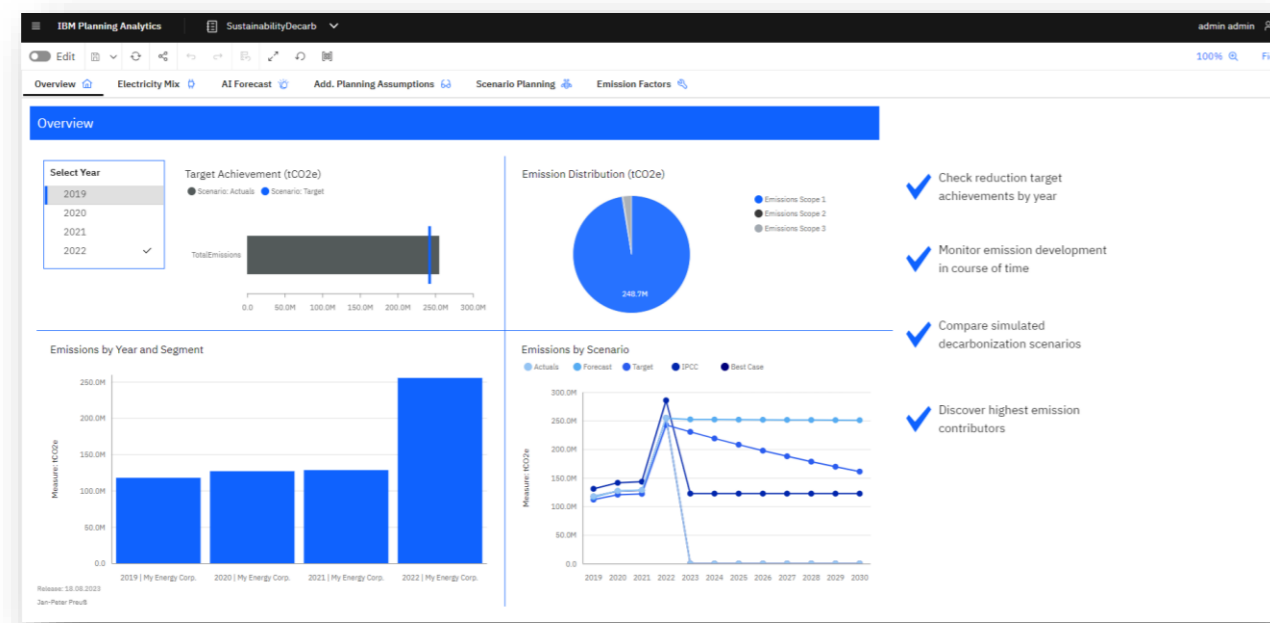
Fast start?

# Overview of current sustainability-accelerators for IBM Planning Analytics (3/3):



Accelerator: ‘Sustainable Telco’  
(simulate change of products/clients, processes, lifecycle etc.)

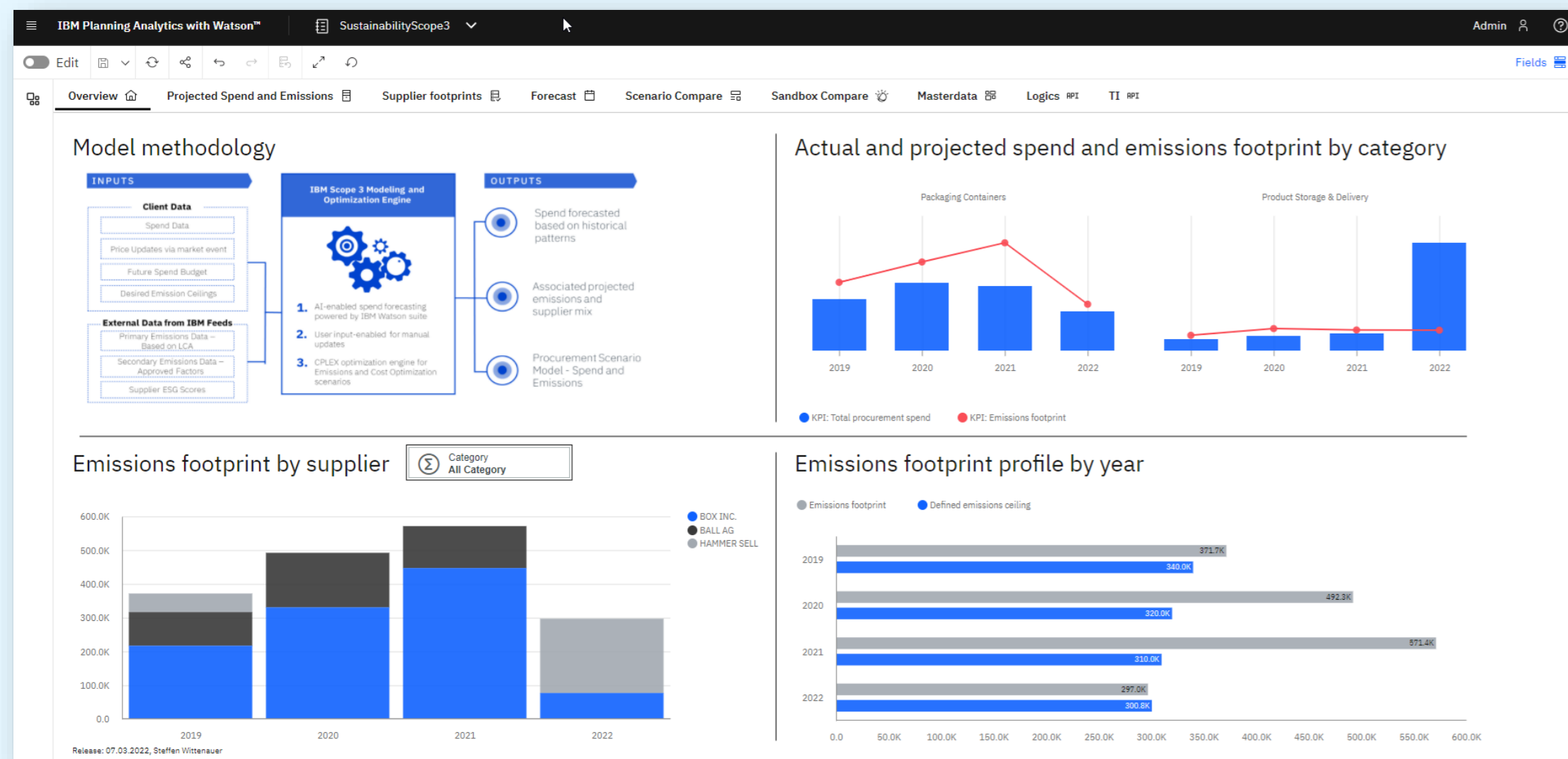
Accelerator: ‘Sustainability analytics entry point’  
(17 United Nations goals / SDGs)



Accelerator: ‘Sustainable Energy Decarbonization’  
(simulate energy mix of energy production or grid losses)

# Accelerator: Sustainability vs. Profitability – optimize it

## Scope 3 in procurement

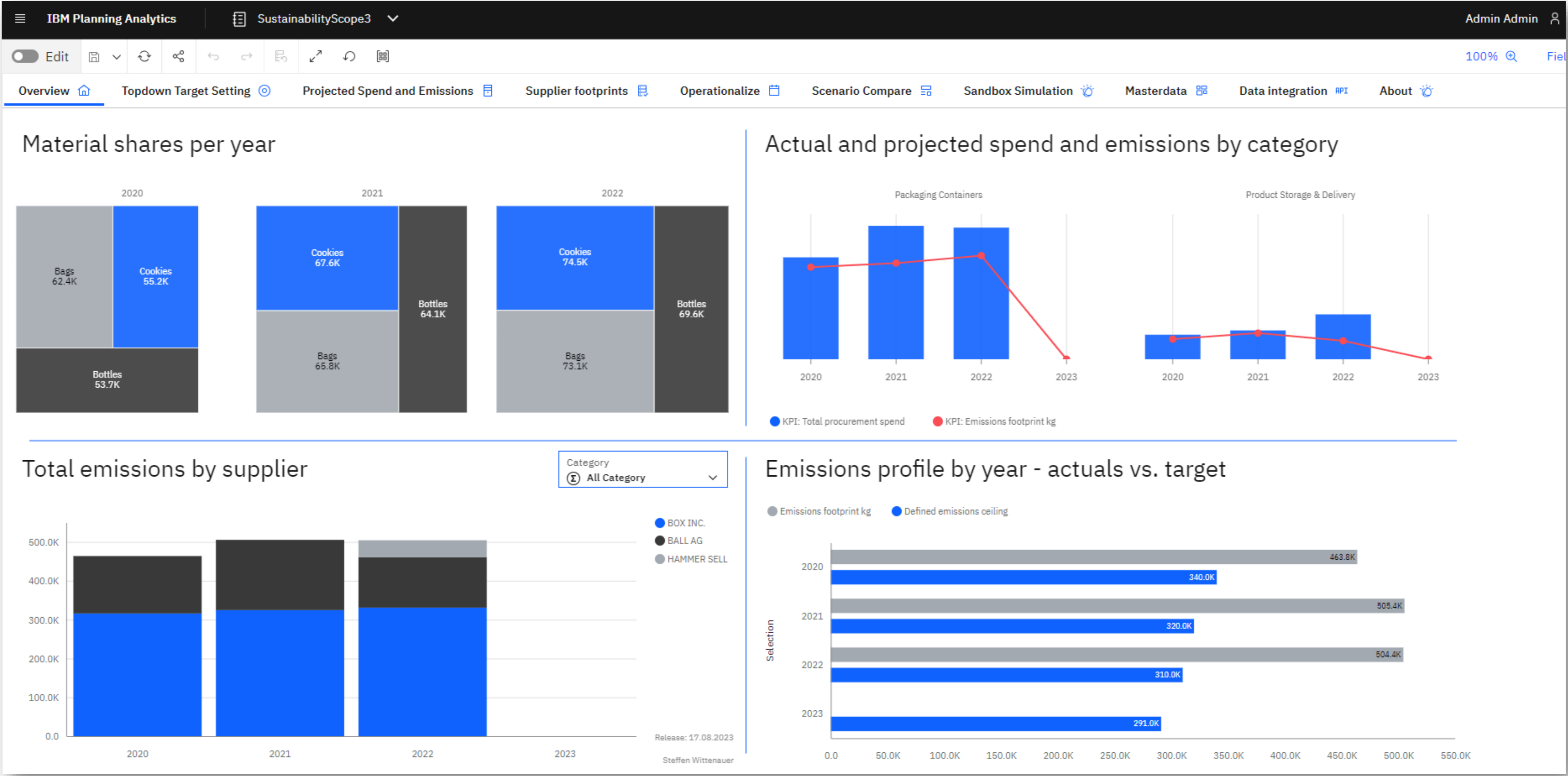


- Purpose: possible starting point for each client having not yet any reporting or target-setting for sustainability scope 3 – especially in the procurement-department
- Content: based on footprints (CO2e, costs etc.) and material-demand & spend, a client can simulate the scope 3-effect vs. occurring costs
- The model can be extended with other business-constraints like minimum order quantity, general supplier-ESG-ratings or stock-parameters
- Data sources: master data can be manually adapted – actuals can be loaded (files, data warehouse etc.) or manually inputted
- Technology: IBM Planning Analytics, ILOG CPLEX (as addit. optimization-component for sustainability vs. costs)



Sustainability vs. Profitability – optimize it

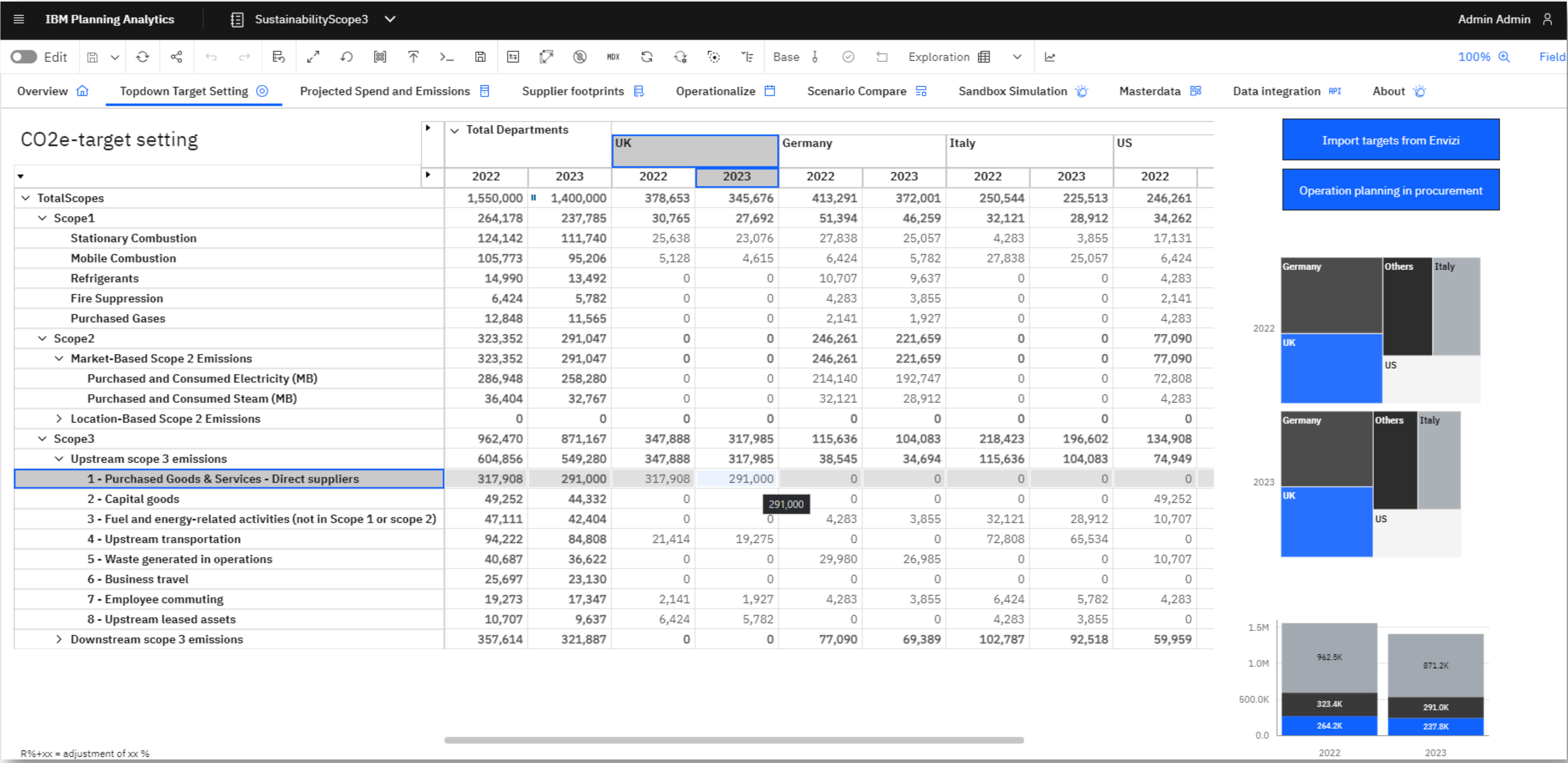
# Landing page with KPI-overview - example in procurement



The defined main-KPIs and display of the process

Sustainability vs. Profitability – optimize it

# Start breaking down sustainability targets to departments and accounts (top down)



Use last years actuals or any other mechanisms to set targets for the future and break them top down to individual levels down, e.g. for procurement

Sustainability vs. Profitability – optimize it

# Plan your future (unit-demand, spend-budget, CO2e-budget)

The screenshot displays the IBM Planning Analytics interface for SustainabilityScope3. The main view is 'Projected Spend and Emissions' for the UK department. It shows a table of projected data for 2020-2023, broken down by product category (All products, Bags, Bottles, Cookies) and month. Below the table are three trend charts for Demand in units, Total procurement budget, and Defined emissions ceiling for Bottles in 2023. A 'Forecast preview' window is open, showing a line chart of historical and forecasted data with a 95% confidence interval.

	2020	2021	2022	2023	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
All products	171,285	197,498	217,248	0	0	0	0	0	0	0	0	0	0	0	0	0
Bags	62,368	65,833	73,108	0	0	0	0	0	0	0	0	0	0	0	0	0
Bottles	53,706	64,101	69,644	0	0	0	0	0	0	0	0	0	0	0	0	0
Cookies	55,211	67,565	74,495	0	0	0	0	0	0	0	0	0	0	0	0	0

Plan everything initially bottom-up incl. targets - if data is not available in source-systems like ERP etc. , units and budgets can be inputted or forecasted

Sustainability vs. Profitability – optimize it

# Load/input ESG-footprints incl. costs and ESG-ratings for possible suppliers

The screenshot displays the IBM Planning Analytics SustainabilityScope3 interface. The main table shows footprint data for three suppliers (BOX INC., BALL AG, HAMMER SELL) from 2020 to 2023, broken down by month. Below the table are three charts: 'Supplier costs and emissions trends' (donut charts for Energy/CO2e and Units costs), 'Supplier compare' (scatter plot of Units costs), and 'General supplier ratings' (table of ESG ratings).

ProductScope3		Footprint per 1 unit												
Bags		Total Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BOX INC.	2020	1.017	1.250	1.250	1.250	1.250	0.850	0.850	0.850	0.850	0.850	0.850	1.050	1.050
	2021	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100
	2022	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	2023	0.567	0.600	0.600	0.600	0.600	0.600	0.600	0.500	0.500	0.500	0.500	0.600	0.600
BALL AG	2020	1.530	1.530	1.530	1.530	1.530	1.530	1.530	1.530	1.530	1.530	1.530	1.530	1.530
	2021	1.550	1.550	1.550	1.550	1.550	1.550	1.550	1.550	1.550	1.550	1.550	1.550	1.550
	2022	1.680	1.680	1.680	1.680	1.680	1.680	1.680	1.680	1.680	1.680	1.680	1.680	1.680
	2023	1.615	1.690	1.690	1.690	1.590	1.590	1.590	1.590	1.590	1.590	1.590	1.590	1.590
HAMMER SELL	2020		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2021		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2022		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2023		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

	2020	2021	2022	2023
BOX INC.	100%	100%	100%	100%
BALL AG	95%	95%	95%	90%
HAMMER SELL	80%	90%	90%	70%

Load or input the different footprints like CO2 or costs on a yearly or monthly basis per product, supplier etc.

Sustainability vs. Profitability – optimize it

# Plan, simulate or optimize corporate plan with units, suppliers, scope 3-footprint, costs etc.

The screenshot displays the IBM Planning Analytics SustainabilityScope3 interface. The main view is a data table titled 'Order in units' showing monthly and total year data for suppliers: BOX INC., BALL AG, and HAMMER SELL. A second table below shows 'Remaining demand in units' and 'Remaining procurement budget' with monthly and total year data. To the right, there are filter controls for Year (2023), ProductScope3 (Bags), and Scenario (Actuals/Projected). A blue button labeled 'Optimize plan (CPLEX-mechanism)' is visible. An optimization dialog box is open in the foreground, titled 'Review Parameters for OptimizationStart', with fields for scenario description, source, fill, CO2 priority-weighting (60%), budget overruns (1), and optimizing year (2022). Below the tables are two charts: 'KPI compare per supplier' (Energy / CO<sub>2</sub>e in kg and Units costs) and 'General supplier mix of total company' (pie charts for 2020-2023).

Find a decision to find the perfect product-supplier-mix concerning your targets incl. optimization in real-time to find your strategy

Sustainability vs. Profitability – optimize it

# Compare the automated calculated scenarios

The screenshot displays the IBM Planning Analytics interface for 'SustainabilityScope3'. The main view is 'Scenario Compare', showing four optimized scenarios: Optimized 1 (Cost opt.), Optimized 2 (Sust. opt.), Optimized 3 (Production opt.), and Optimized 4 (Risk opt.).

**Supplier Performance Data:**

Supplier	Metric	Optimized 1 (Cost opt.)	Optimized 2 (Sust. opt.)	Optimized 3 (Production opt.)	Optimized 4 (Risk opt.)
Total supplier	Total procurement spend	\$837,081	\$957,207	\$990,839	\$919,872
	Emissions footprint kg	574,461	275,616	212,317	286,722
BOX INC.	Total procurement spend	\$345,244	\$283,330	\$309,222	\$353,859
	Emissions footprint kg	393,744	20,541	22,419	126,882
BALL AG	Total procurement spend	\$133,301	\$404,481	\$295,241	\$183,552
	Emissions footprint kg	68,386	202,007	109,576	69,617
HAMMER SELL	Total procurement spend	\$358,536	\$269,396	\$386,376	\$382,461
	Emissions footprint kg	112,331	53,068	80,322	90,224

**Scenario Parameters:**

Parameter	Optimized 1 (Cost opt.)	Optimized 2 (Sust. opt.)	Optimized 3 (Production opt.)	Optimized 4 (Risk opt.)
ExecutedByUser	CAMID("CognosEx:u:ui...)	CAMID("CognosEx:u:ui...)	Mike	Steffen
ExecutedTime	2023-08-23 - 12:01:23	2023-08-23 - 12:02:35	2023-01-10 - 06:02:27	2023-01-10 - 06:01:14
CO2Priority	10%	90%	75%	30%
CostPriority	90%	10%	25%	70%
OverrunCO2Allowed	Yes	Yes	Yes	Yes
OverrunCostsAllowed	Yes	Yes	Yes	Yes

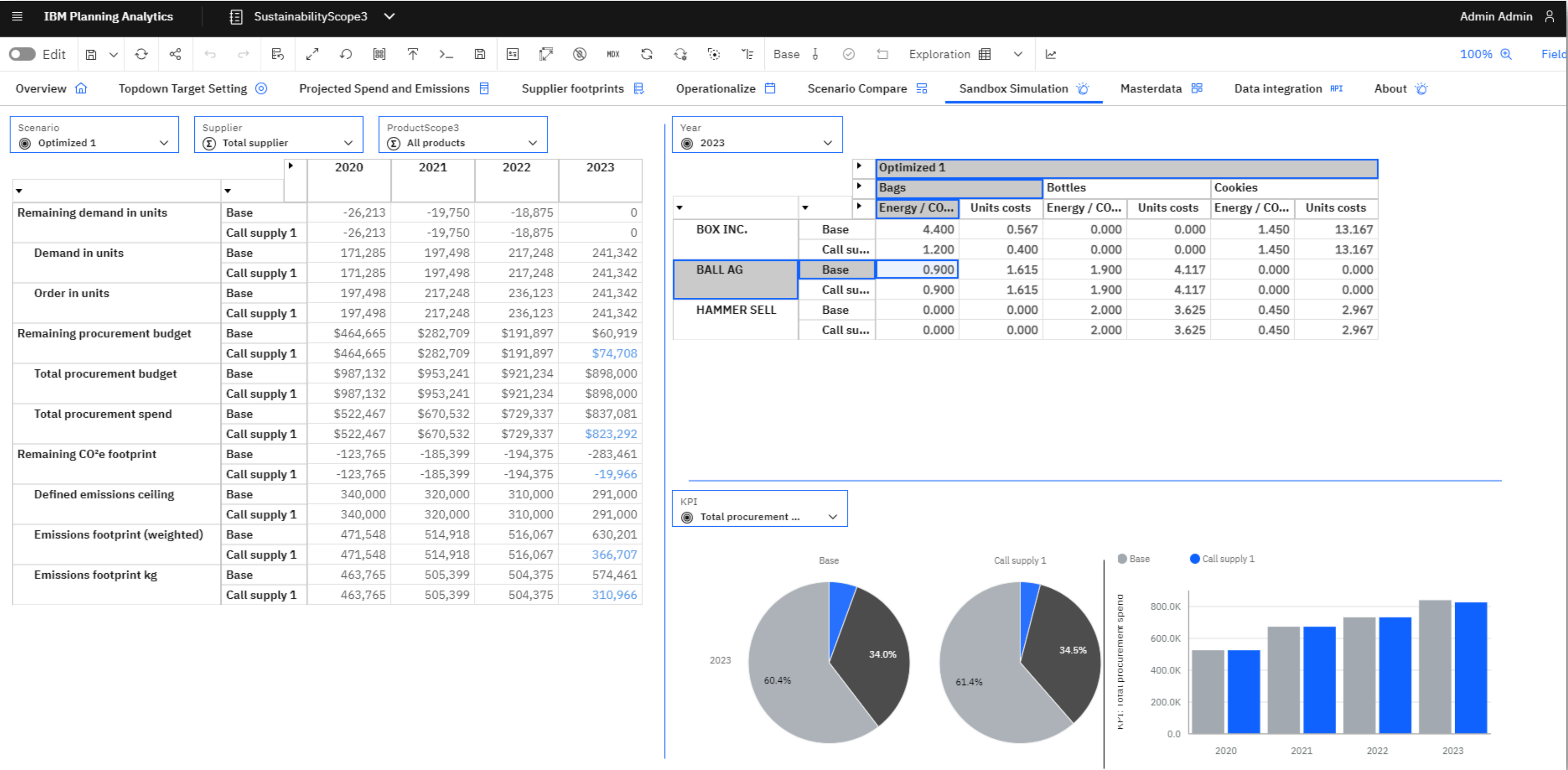
**Supplier-share per scenario per KPI:** A stacked bar chart showing the distribution of procurement spend and emissions footprint across suppliers (BOX INC., BALL AG, HAMMER SELL) for each scenario.

**Scenario compare: costs vs. sustainability:** A scatter plot showing the trade-off between Total procurement spend (X-axis) and Emissions footprint kg (Y-axis) for the four optimized scenarios.

Compare the calculated options incl. the parameters and analyze all forecasted details on all levels of the model in real-time-speed for an optimized decision

Sustainability vs. Profitability – optimize it

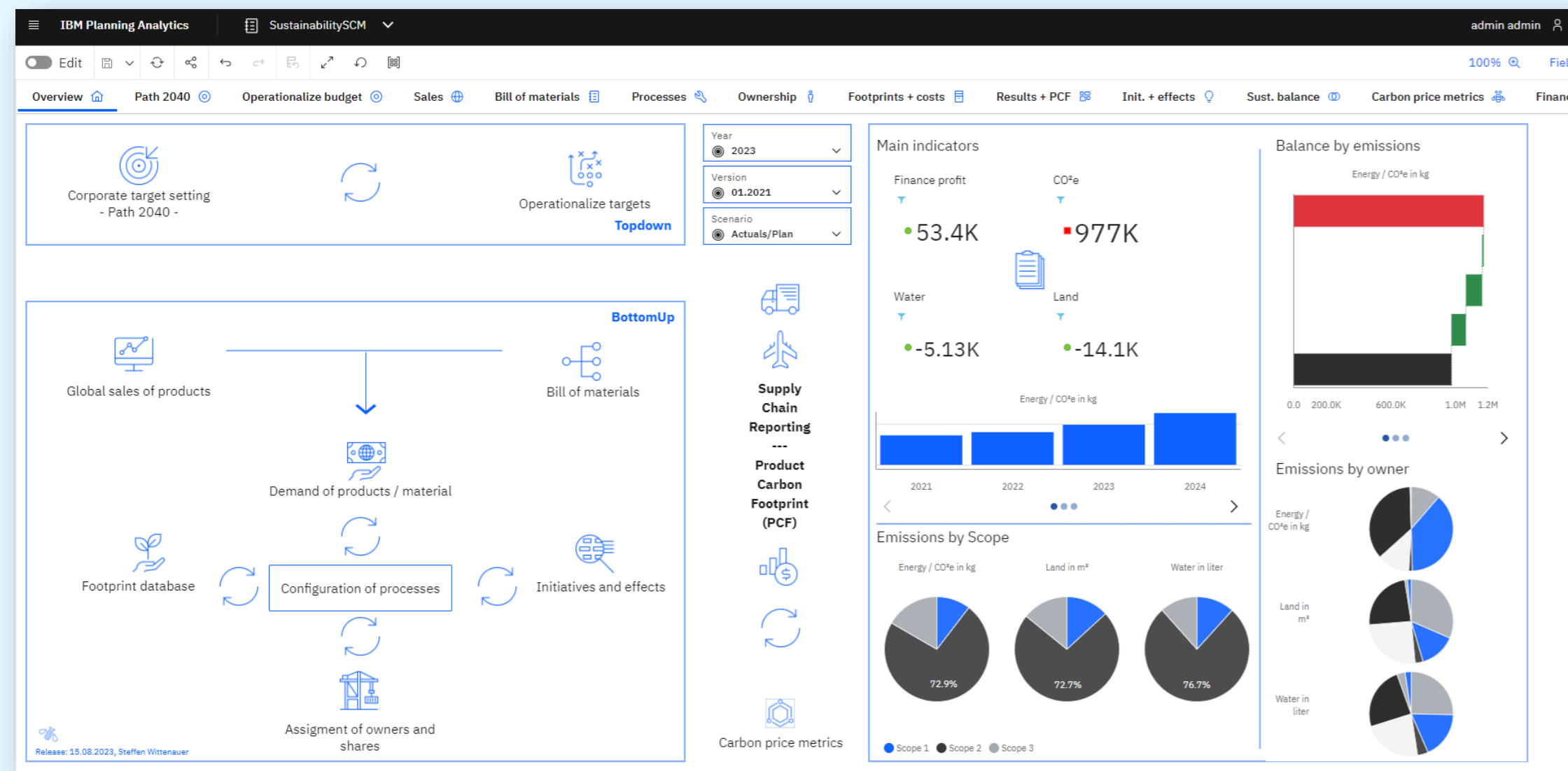
# Compare your real-time simulation/sandboxes and decide for your future



Compare your real-time simulation/sandboxes and decide for your future

# Accelerator: Sustainability in the Supply Chain

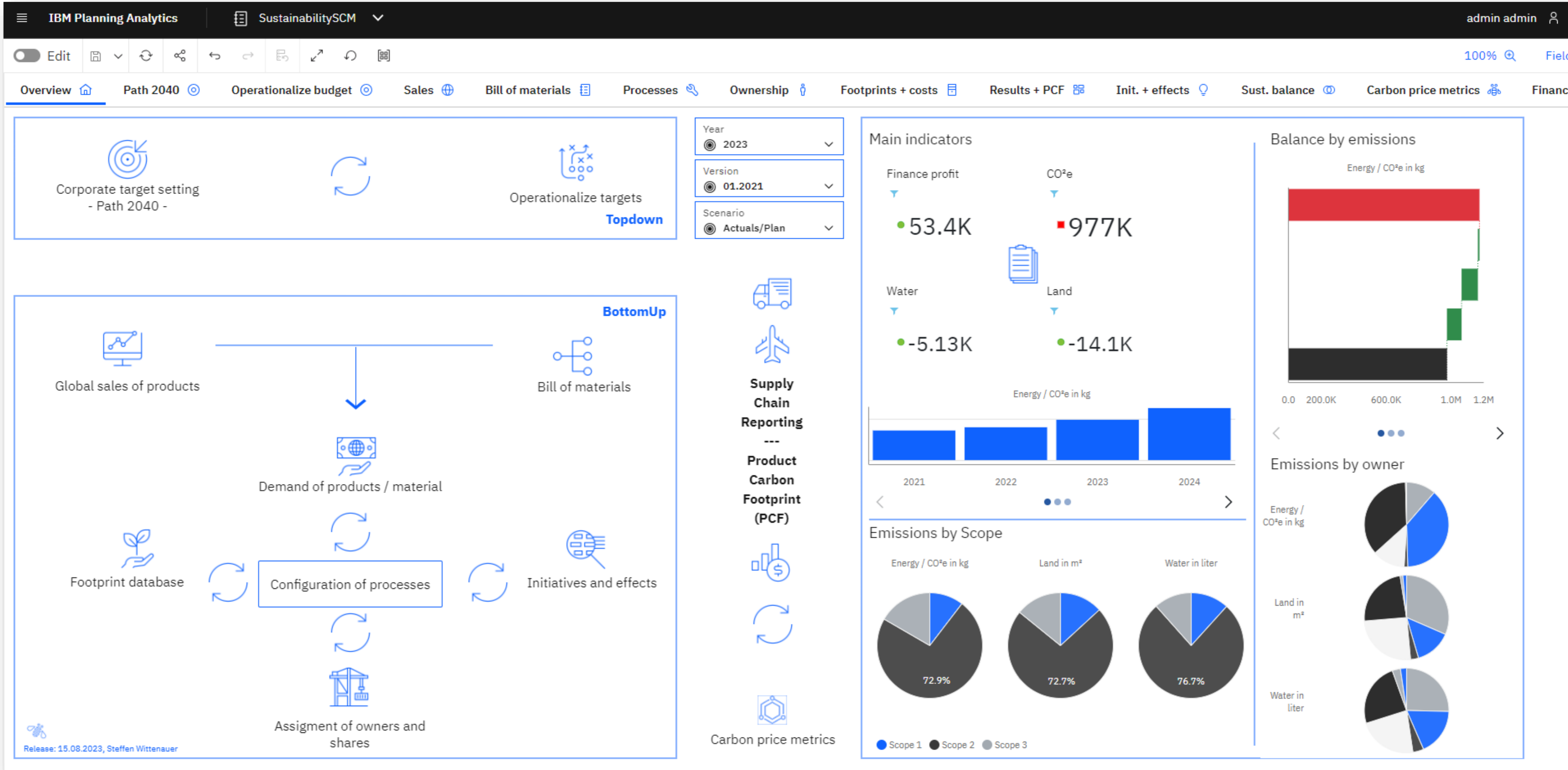
Plan & simulate almost unlimited  
parameters & impacts



- Purpose: following the companies supply chain-processes for reporting-, planning- or simulation-purposes
- Content: focusing on sales-/production-units with conversion into sustainability-footprints for products or materials incl. ‚bill of materials‘; assignment of internal and external ownerships and unlimited steps in the processes; reporting / planning / simulation in real-time possible
- Overview of the model: set targets, plan sales/production – calculate needed resources by BOM / processes / assignments / footprints – analyze results in different scenarios incl. PCF and CO2e-compensation
- Technology: IBM Planning Analytics (core module), IBM Cloud Pak for data optional (Data Fabric / IBM Cognos Analytics / Watson Studio)



# Manage all kind of KPIs or processes and simulate all kind of changes



Entry screen managing all scenarios, KPIs and analytics results.

# Set strategic targets and break them down for operational units in all granularity

The screenshot displays the IBM Planning Analytics SustainabilitySCM interface. It is divided into several key sections:

- Target-Planning of 2025+:** A table showing energy footprint targets from 2021 to 2040. The 2030 target is highlighted at 924,967 kg CO<sub>2</sub>e, with a 10.0% reduction goal from the 2029 baseline.
- Operationalize:** A tree view showing the breakdown of the 2030 target into various emission categories like Stationary Combustion, Mobile Combustion, and Upstream scope 3 emissions.
- Budget vs. Target:** A bar chart comparing budgeted values against actuals for different scopes and regions.
- Long term target:** A line chart showing the overall energy footprint trend from 2021 to 2040, illustrating the downward trajectory towards the 2030 target.

At the bottom of the interface, there are two blue buttons: "Copy targets down for operationalization" and "Delete operationalized target".

Plan absolute and/or in % the yearly overall reduction per emission-type. Then breakdown these targets to any kind of data granularity like organizations, products, supply chain owners (internal + external/suppliers)

# Plan or adjust sales-data like amount of units and price if needed

The screenshot displays the IBM Planning Analytics with Watson interface. A 'Forecast preview' window is open, showing a line chart for 'Sales / Germany' with a 95% confidence interval. The chart includes historical data, outliers, and a forecast. A 'Load sales-data (ERP)' button is visible. Below the chart, a table shows sales data for various months. The interface also includes a 'Regulations' section with a warning about Switzerland-act 123 and a 'Revenue' section with a pie chart showing the distribution of sales by product type (TP milk, Yogurt nature, Baby milk) for the years 2021-2024. A map of Europe is also shown, highlighting sales in units for different regions.

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
261	249	268	226	198	183	174	152	240	2
69	80	76	60	47	44	39	34	59	
89	78	88	77	69	64	62	54	84	
104	91	104	90	81	75	73	64	98	1

	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
18.02	18.02	18.02	18.86	18.86	18.86	18.86	18.86	18.86	18.86
20.12	20.12	20.12	20.12	20.12	20.12	20.12	20.12	20.12	20.12
18.86	18.86	18.86	18.86	18.86	18.86	18.86	18.86	18.86	18.86

Year	TP milk 3,5%	Yogurt nature 250g 1,5%	Baby milk
2021	37.4%	32.2%	30.4%
2022			
2023			
2024			

End-user friendly: the included out-of-the-box AI forecast running different models in the background

# Include changes in the ,Bill of materials' to see possible impacts in next supply chain steps

The screenshot displays the IBM Planning Analytics SustainabilitySCM interface. The top navigation bar includes 'Overview', 'Path 2040', 'Operationalize budget', 'Sales', 'Bill of materials' (active), 'Processes', 'Ownership', 'Footprints + costs', 'Results + PCF', 'Init. + effects', 'Sust. balance', 'Carbon price metrics', and 'Finance'. The main configuration area shows 'Product' set to 'TP milk 3,5%', 'Scenario' to 'Actuals/Plan', 'Version' to '01.2021', and 'Sandboxes' to 'Base'. Below this, a table shows the Bill of Materials for 'TP milk 3,5%' from 2021 to 2024. A second table shows 'Total Year' values for various materials across all products. On the right, a chart titled 'Amount of materials per year:' shows stacked bars for each year (2021-2024) with categories like 'Milk raw 1l', 'Euro-palette', 'Packaging Tetrapack 1l (CHN)', 'Plastic for palette', and 'Water 1l'. At the bottom, there are buttons for 'Create new material', 'Delete leaf-material', 'Manage masterdata / deactivate yearly-logic', 'Create new product', 'Delete leaf-product', and 'Load bill of materials (ERP)'.

	2021	2022	2023	2024
Milk raw 1l	1.0000	1.0000	1.0000	1.0000
Euro-palette	0.0010	0.0010	0.0010	0.0010
Packaging Tetrapack 1l (GER)				
Packaging Tetrapack 1l (CHN)	1.0000	1.0000	1.0000	1.0000
Plastic for palette	0.0200	0.0200	0.1000	0.0200
Water 1l	0.0100	0.0100	0.0100	0.0100
Semi-/finished product	1.0000	1.0000	1.0000	1.0000

	2021	2022	2023	2024	
> Total Year	> Total Year	> Total Year	> Total Year	> Total Year	
All products	Plastic for palette	3384.65	3856.68	3141.99	2913.93
	Water 1l	717.74	806.90	583.88	629.32
	Semi-/finished product	8541.41	8963.07	7003.41	7453.90
TP milk 3,5%	Milk raw 1l	3139.41	2826.90	2563.98	2729.05
	Euro-palette	3.14	2.83	2.56	2.73
	Packaging Tetrapack 1l (CHN)	3139.41	2826.90	2563.98	2729.05
	Plastic for palette	62.79	56.54	256.40	54.58
	Water 1l	31.39	28.27	25.64	27.29
	Semi-/finished product	3139.41	2826.90	2563.98	2729.05
Yogurt nature 250g 1,5%	Milk raw 1l	2479.00	2835.93	2153.43	2133.84
	Euro-palette	4.96	5.67	4.31	4.27
	Packaging Tetrapack 1l (GER)	2479.00	2835.93	2153.43	2133.84

Configure / load / simulate the ,Bill of materials' and see in real-time the results of needed materials

# Configure or load or assign supply chain processes and owners

**Which material is needed in which process:** Product: TP milk 3,5%, Year: 2024, Scenario: Actuals/Plan, Version: 01.2021, Sandboxes: Base

**Most used processes:** Dairy - fridge, Alp - milking machine, Dairy to retail < 50km (truck), Dairy - production workforce, Aux. material bought - opt. transport footprint

Material in process	Milk raw 1l	Euro-palette	Packaging Tetrapack 1l (GER)	Packaging Tetrapack 1l (CHN)	Plastic for palette	Water 1l
<b>Total Supply Chain processes</b>						
<b>Production</b>						
<b>Alp</b>						
Alp - cows 100% gras / 0% concentrate feed						
Alp - cows 70% gras / 30% concentrate feed	X					
Alp - milking machine						
Alp - milk cooler	X					
Alp - building	X					
<b>Dairy</b>						
Dairy - filling line	X					
Dairy - fridge	X					
Dairy - building in general	X					
Dairy - production workforce	X					
Aux. material bought - prod. footprint		X				
Aux. material bought - opt. transport footprint		X				
<b>Transport (cluster)</b>						
<b>Transport - alp to dairy</b>						
Alp to dairy < 20km (truck)	X					
Alp to dairy < 50km (truck)						
Alp to dairy < 100km (truck)						
Alp to dairy > 100km (truck)						
<b>Transport - dairy to retail</b>						
<b>Dairy to retail - truck</b>						
Dairy to retail < 50km (truck)						
Dairy to retail > 100km (truck)						

**Who will manage the process:** Product: TP milk 3,5%, Year: 2024, Scenario: Actuals/Plan, Version: 01.2021, Sandboxes: Base

Owner assignment in %	Owner N/A	Plant China	Plant Germany	Miller Im-/Export China	BuyEverything GmbH	Farming Huber	Green Plastic Germany	Maxer Transport AG
Alp - cows 70% gras / 30% concentrate feed	Milk raw 1l	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
Alp - milk cooler	Milk raw 1l	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Alp - building	Milk raw 1l	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Dairy - filling line	Milk raw 1l	0.0%	20.0%	80.0%	0.0%	0.0%	0.0%	0.0%
Dairy - fridge	Milk raw 1l	0.0%	20.0%	80.0%	0.0%	0.0%	0.0%	0.0%
Dairy - building in general	Packaging Tetrapack 1l (CHN)	0.0%	20.0%	80.0%	0.0%	0.0%	0.0%	0.0%
Dairy - production workforce	Milk raw 1l	0.0%	20.0%	80.0%	0.0%	0.0%	0.0%	0.0%
Aux. material bought - prod. footprint	Euro-palette	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%	0.0%
Aux. material bought - opt. transport footprint	Packaging Tetrapack 1l (CHN)	0.0%	20.0%	80.0%	0.0%	0.0%	0.0%	0.0%
	Plastic for palette	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Alp to dairy < 20km (truck)	Milk raw 1l	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
Dairy to retail < 50km (truck)	Semi-/finished product	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%
Dairy to retail < 100km (train)	Semi-/finished product	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%
Supermarket in general	Semi-/finished product	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%

Assignments of internal or external ownerships per process and different assignments of internal / external ownership for processes

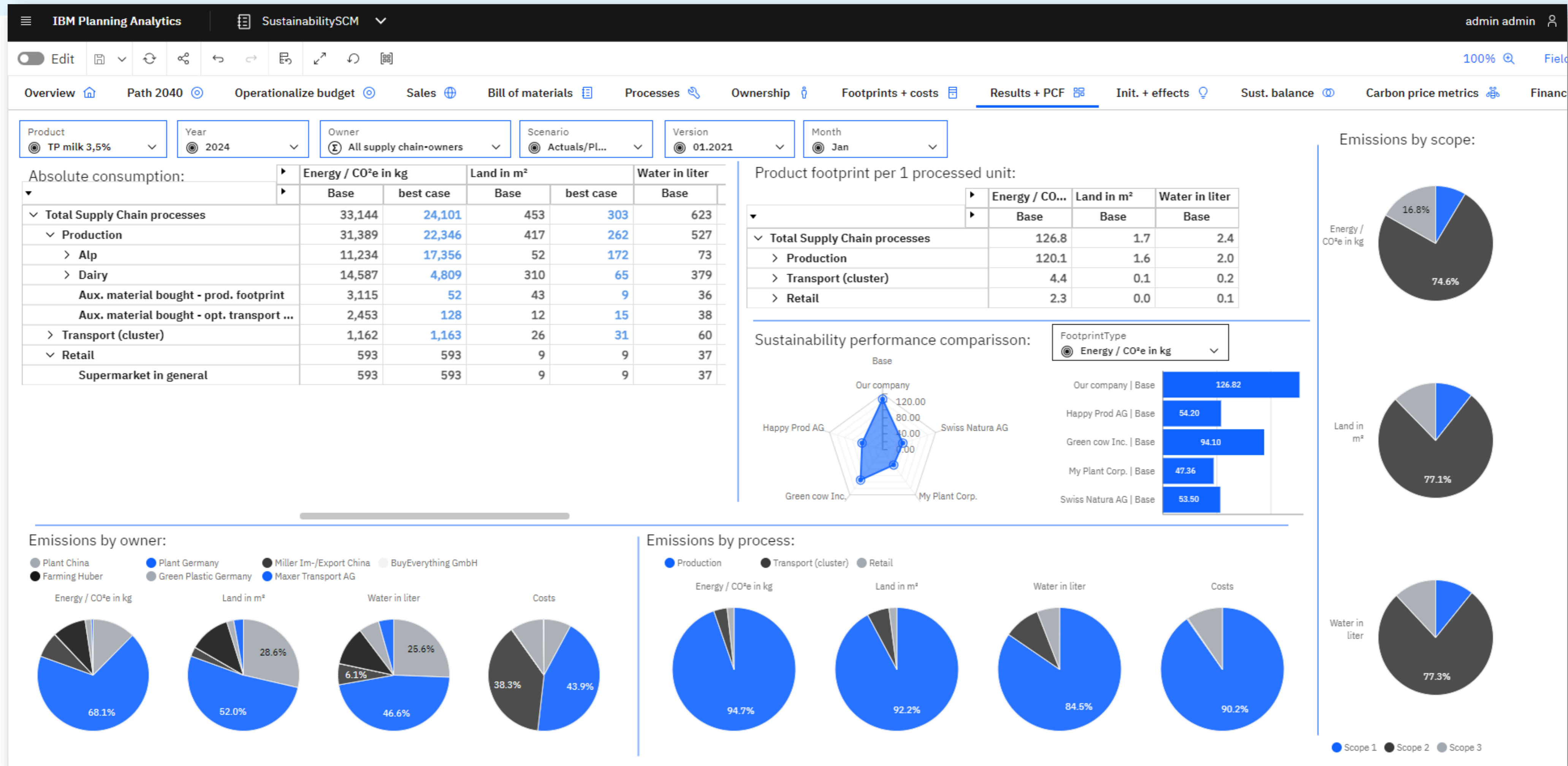
# Connect / load automatically or change manually different footprints and costs

The screenshot displays the 'Footprints + costs' view in IBM Planning Analytics. It features a navigation bar with various modules and a main data table. The table is filtered for 'Footprint per 1 unit: (product-neutral)' and shows data for 'Plant China' and 'Plant Germany'. The table columns include 'Energy / CO...', 'Land in m²', 'Water in liter', 'Costs', and 'Input needed'. A sidebar on the right contains action buttons: 'Import footprints of IBM Envizi', 'Load costs/footprints', 'Run IBM Accounting API', and 'Check outliers'. A blue bar at the bottom indicates 'Optimize scope 3 - procurement'.

Footprint per 1 pce			Energy / CO...	Land in m²	Water in liter	Costs	Input needed
Plant China	Alp - cows 70% gras / 30% concentrate feed	Milk raw 1l	26.0	0.2	0.3	0.1	1.0
	Alp - milking machine	Milk raw 1l	9.2	0.5	0.4	0.1	1.0
	Alp - milk cooler	Milk raw 1l	3.4	0.2	0.2	0.2	1.0
	Alp - building	Milk raw 1l	18.6	0.6	0.5	0.1	1.0
	Dairy - filling line	Milk raw 1l	9.4	0.1	1.0	0.0	1.0
		Packaging Tetrapack 1l (CHN)	3.4	0.2	0.2	0.2	1.0
	Dairy - fridge	Milk raw 1l	4.1	0.2	0.1	0.0	1.0
		Packaging Tetrapack 1l (CHN)	18.6	0.6	0.5	0.1	1.0
	Dairy - building in general	Milk raw 1l	2.7	0.1	0.2	1.8	1.0
		Packaging Tetrapack 1l (CHN)	3.4	0.1	0.1	0.0	1.0
Dairy - production workforce	Milk raw 1l	9.2	0.0	0.2	0.9	1.0	
Aux. material bought - prod. footprint	Packaging Tetrapack 1l (CHN)	9.2	0.5	0.4	0.1	1.0	
Plant Germany	Alp - cows 70% gras / 30% concentrate feed	Packaging Tetrapack 1l (CHN)	18.6	0.6	0.5	0.2	1.0
		Milk raw 1l	34.5	0.0	0.1	1.5	1.0
	Alp - milking machine	Milk raw 1l	26.2	0.0	0.0	0.0	1.0
	Alp - milk cooler	Milk raw 1l	26.3	0.0	0.0	0.0	1.0
	Alp - building	Milk raw 1l	9.5	0.0	0.0	0.0	1.0
	Dairy - filling line	Milk raw 1l	4.7	0.0	0.0	0.0	1.0
		Packaging Tetrapack 1l (CHN)	18.6	0.6	0.5	0.1	1.0
Dairy - fridge	Milk raw 1l	3.4	0.1	0.1	0.0	1.0	

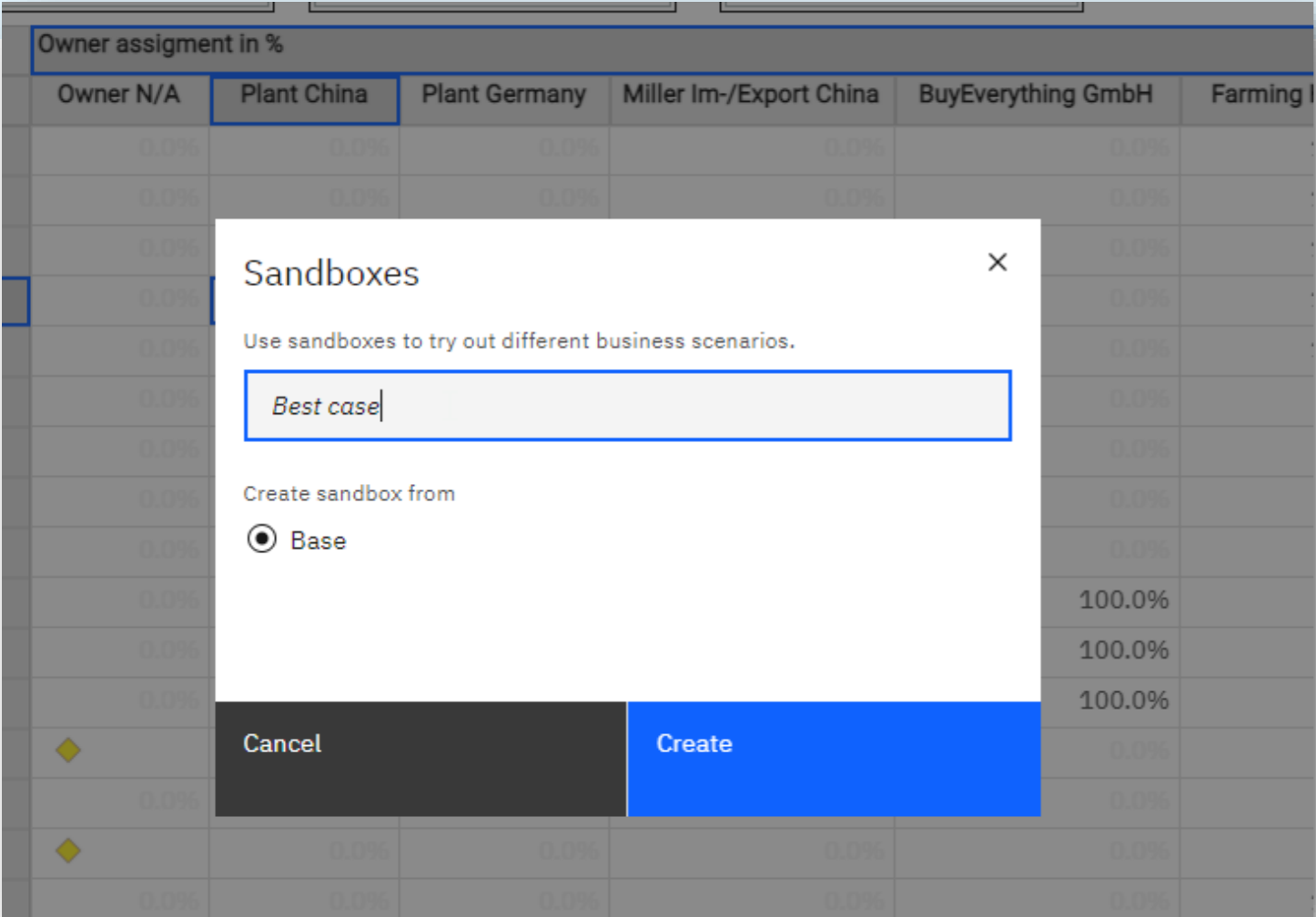
View into the footprint-database which can have a mix of loaded of manual inputted parameters

# Results on all granularity through the whole supply chain incl. product carbon footprint



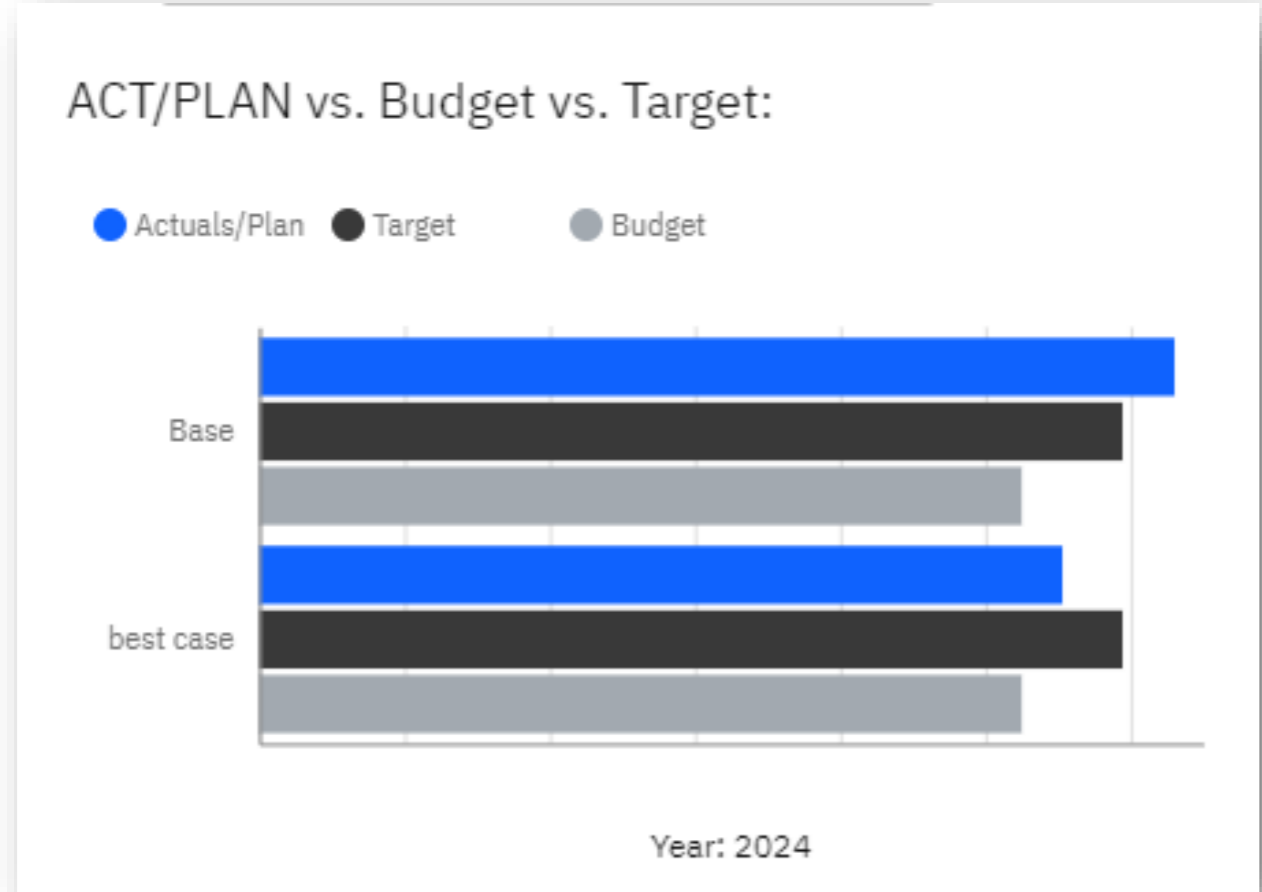
No limitation for reporting and analysis-purposes – power users can create their own views on all data-levels with nearly unlimited types of visualizations: PCF / absolute emissions / performance comparison

# Create real-time-scenarios to simulate and compare special effects and assumptions



Balance: Year  Version  FootprintType

		Actuals/Plan		Target	
		Base	best case	Base	best case
▼ Total emissions balance	> Total Effects	1,260,553	1,106,122	1,188,947	1,188,947
▼ Emission	> Total Effects	1,295,553	1,201,122	1,188,947	1,188,947
	BaseEmission	1,295,553	1,201,122	1,188,947	1,188,947
▼ Reductions	> Total Effects	-35,000	-95,000	0	0
	Special projects				
	▼ Total Effects	-35,000	-95,000	0	0
	▼ Special effects	-35,000	-95,000	0	0
	Special training 2023ff	-5,000	-5,000	0	0
	Optimize supplier 2025x	-20,000	-80,000	0	0
	Investment new fabric Chi...	-10,000	-10,000	0	0



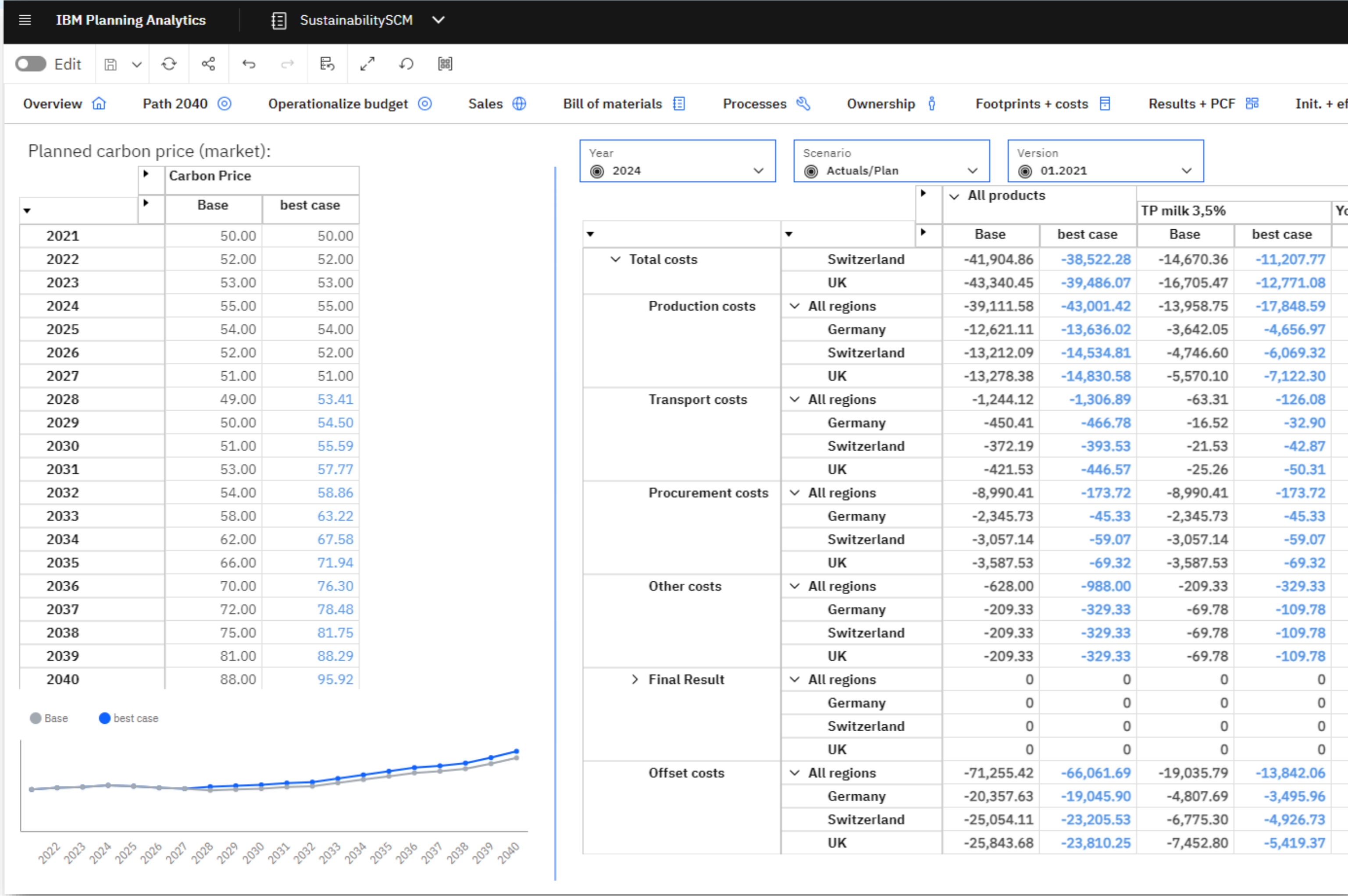
Year  Scenario  Version  Owner  Process

				Total Year							
				Value	Comment	Jan	Feb	Mar	Apr	May	Jun
Base	Special training 2023ff	Emission	Energy / CO²e in kg	50,000	Start in GER	50,000	0	0	0	0	0
			Land in m²	30,000		30,000	0	0	0	0	
			Water in liter	9,000		9,000	0	0	0	0	
	Other costs	Costs	Energy / CO²e in kg	4,800.00		3,900.00	0.00	900.00	0.00	0.00	
			Land in m²	200,000		200,000	0	0	0	0	
			Water in liter	27,000		27,000	0	0	0	0	
	Investment new fabric China 2028	Emission	Energy / CO²e in kg	21,000		21,000	0	0	0	0	
			Land in m²	1,200.00		1,200.00	0.00	0.00	0.00	0.00	
			Water in liter	100,000		100,000	0	0	0	0	
	Other costs	Costs	Energy / CO²e in kg	100		100	0	0	0	0	
			Land in m²	0		0	0	0	0	0	
			Water in liter	280.00	opening in 2026	280.00	0.00	0.00	0.00	0.00	

Create your own scenarios (sandboxes), special effects / initiatives, assumptions and compare their outcomes



# Include a carbon pricing for remaining emissions to see impact on profit & loss



Simulate the price curve and see impact down to a product level for offset costs and changing margins

# Link sustainability-results or changes to the financial perspective (P&L)

The screenshot displays the IBM Planning Analytics SustainabilitySCM interface. At the top, it shows the application name and user 'admin admin'. Below the navigation bar, there are filters for 'Year' (2024), 'Version' (01.2021), and 'FootprintType' (Energy / CO<sub>2</sub>e in kg). The main content is divided into three sections: 'Balance', 'Financial result', and 'Deactivating effects - unsuccessful rate'.

**Balance Table:**

		Actuals/Plan		Target	
		Base	best case	Base	best case
▼ Total emissions balance	> Total Effects	1,260,553	1,106,122	1,188,947	1,188,947
▼ Emission	> Total Effects	1,295,553	1,201,122	1,188,947	1,188,947
	BaseEmission	1,295,553	1,201,122	1,188,947	1,188,947
▼ Reductions	> Total Effects	-35,000	-95,000	0	0
	▼ Special projects				
	> Total Effects	-35,000	-95,000	0	0
	> Special effects	-35,000	-95,000	0	0
	Special training 2023ff	-5,000	-5,000	0	0
	Optimize supplier 2025x	-20,000	-80,000	0	0
	Investment new fabric Chi...	-10,000	-10,000	0	0

**Financial result Table:**

	Actuals/Plan	
	Base	best case
▼ Profit	35,359.72	45,057.53
Revenue	156,589.24	156,589.24
▼ Total costs	-121,229.52	-111,531.71
Production costs	-39,111.58	-43,001.42
Transport costs	-1,244.12	-1,306.89
Procurement costs	-8,990.41	-173.72
Other costs	-628.00	-988.00
Offset costs	-71,255.42	-66,061.69

**Deactivating effects - unsuccessful rate Table:**

	Deactivate effect by %	
	Base	best case
▼ Special training 2023ff	90.0%	90.0%
Optimize supplier 2025x	90.0%	60.0%
Investment new fabric China 2028	90.0%	90.0%

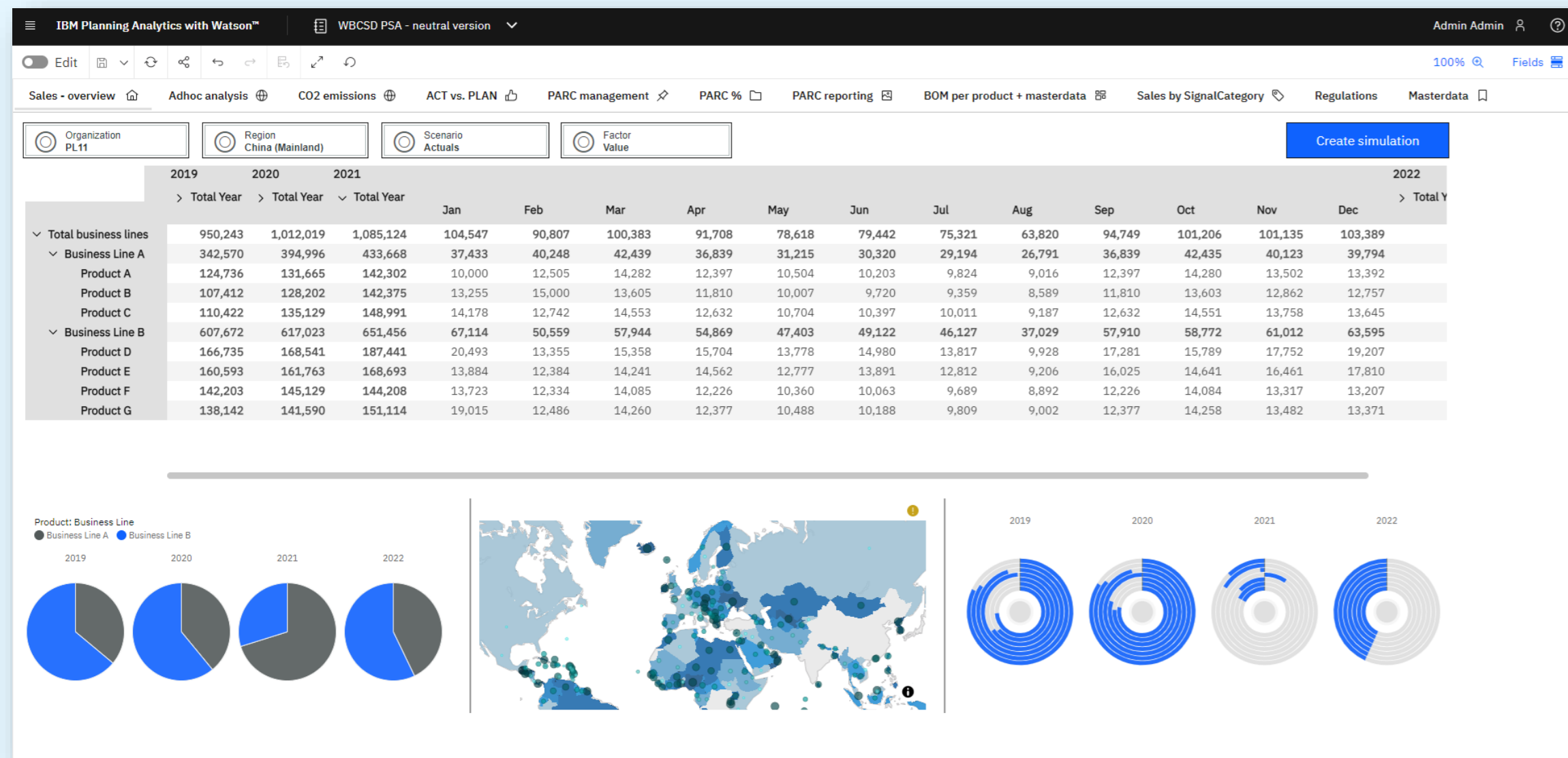
**Visualizations:**

- Breakdown by effects (ACT/PLAN):** A horizontal bar chart comparing 'Base' and 'best case' scenarios. Red bars represent emissions, and black bars represent reductions.
- ACT/PLAN vs. Budget vs. Target:** A horizontal bar chart for 'Year: 2024' comparing 'Actuals/Plan' (blue), 'Target' (black), and 'Budget' (grey) for 'Base' and 'best case' scenarios.
- Energy / CO<sub>2</sub>e in kg:** Two pie charts comparing 'Base' and 'best case' scenarios. The 'Base' scenario shows 48.2% TP milk 3,5% and 26.7% Yogurt nature 250g 1,5%. The 'best case' scenario shows 52.0% TP milk 3,5% and 27.1% Yogurt nature 250g 1,5%.
- Land in m<sup>2</sup>:** Two pie charts comparing 'Base' and 'best case' scenarios. The 'Base' scenario shows 17.0% TP milk 3,5% and 35.5% Yogurt nature 250g 1,5%. The 'best case' scenario shows 20.2% TP milk 3,5% and 42.2% Yogurt nature 250g 1,5%.
- Water in liter:** Two pie charts comparing 'Base' and 'best case' scenarios. The 'Base' scenario shows 20.0% TP milk 3,5% and 29.6% Yogurt nature 250g 1,5%. The 'best case' scenario shows 24.1% TP milk 3,5% and 35.7% Yogurt nature 250g 1,5%.

Analyze all sustainability KPIs or –scenarios and check how the financial results change if one parameter is changed

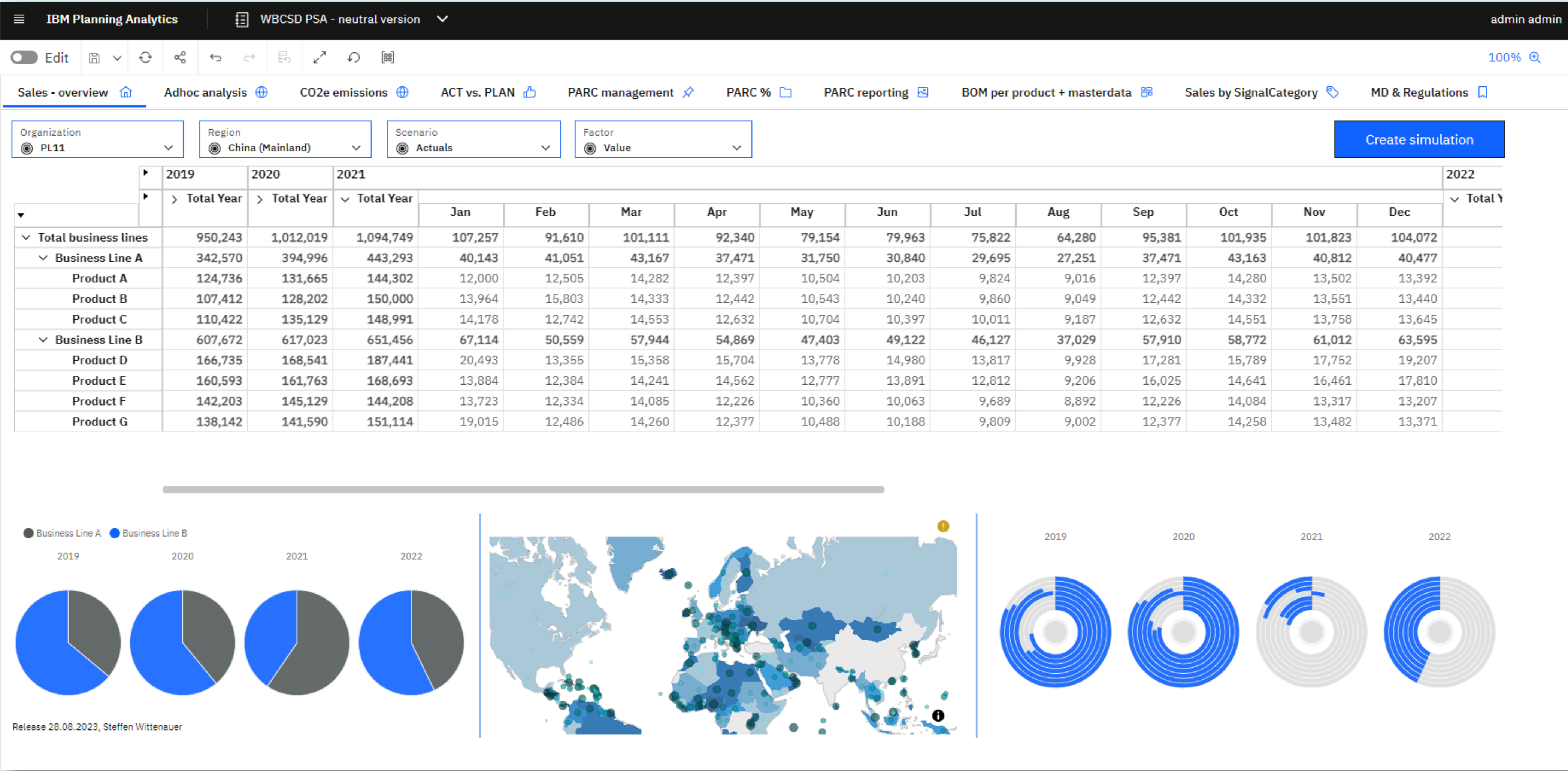
# Accelerator: Sustainability in the chemical sector (PSA)

## Portfolio Sustainability Assessments (PSA)



- Purpose: following WBCSD-standard for Portfolio Sustainability Assessments (PSA)
- Content: focusing on sales-/production-units with conversion into sustainability-footprints for products or materials incl. ‚bill of materials‘ (PARC- and signal-category-logic); reporting / planning / simulation in real-time possible
- Data sources: master data can be manually adapted – actuals can be loaded (files, data warehouse etc.) or entered manually, footprints can be imported by other source-systems or using ‚Carbon Performance Engine carbon accounting APIs‘
- Technology: IBM Planning Analytics (core module), IBM Cloud Pak for data optional (Data Fabric / IBM Cognos Analytics / Watson Studio)

# Actuals analysis for KPIs, e.g. sales or emissions



Possible landing-page for a high level-overview of KPIs

# Planning / simulation incl. AI-forecast and emissions on products, sites etc.

The screenshot displays the IBM Planning Analytics interface for WBCSD PSA - neutral version. The main view shows a table of CO2e emissions for various business lines and products across months from Jan to Jul. A 'Forecast preview' window is open for Product A, showing a line chart with historical data and a forecast with a 96% confidence interval. Below the main table, there are charts for Business Line A and B, a 'Carbon per pce' table, and a section for 'IBM Carbon Accounting APIs' with four circular progress indicators.

	Total Year		Jan		Feb		Mar		Apr		May		Jun		Jul	
	Total carbo...	Sales volu...	Total carbo...	Sales volu...	Total carbo...	Sales volu...	Total carbo...	Sales volu...	Total carbo...	Sales volu...	Total carbo...	Sales volu...	Total carbo...	Sales volu...	Total carbo...	Sales volu...
▼ Total business lines	351,048	1,094,749	35,513	107,257	29,423	91,610	33,082	101,111								
▼ Business Line A	131,816	443,293	12,151	40,143	11,753	41,051	12,865	43,161								
Product A	28,860	144,302	2,400	12,000	2,501	12,505	2,856	14,281								
Product B	22,500	150,000	2,095	13,964	2,371	15,803	2,150	14,331								
Product C	80,455	148,991	7,656	14,178	6,881	12,742	7,858	14,551								
▼ Business Line B	219,232	651,456	23,362	67,114	17,671	50,559	20,218	57,941								
Product D	35,614	187,441	3,894	20,493	2,537	13,355	2,918	15,351								
Product E	28,678	168,693	2,360	13,884	2,105	12,384	2,421	14,241								
Product F	77,872	144,208	7,410	13,723	6,660	12,334	7,606	14,081								
Product G	77,068	151,114	9,698	19,015	6,368	12,486	7,272	14,261								

	Carbon per pce			
	2019	2020	2021	
Product A	0.11	0.09	0.20	0.15
Product B	0.14	0.11	0.15	0.15
Product C	0.45	0.49	0.54	0.54
Product D	0.23	0.21	0.19	0.19
Product E	0.23	0.19	0.17	0.17
Product F	0.56	0.61	0.54	0.54
Product G	0.67	0.54	0.51	0.51

End-user friendly: the included out-of-the-box AI Forecast running different models in the background

# Creation of simulation-sandboxes and driver-based results in real-time

The screenshot displays the IBM Planning Analytics interface for WBCSD PSA - neutral version. The main view shows a table of CO2e emissions for various business lines and products from January to July 2021. The table is filtered by Organization (PL11), Region (China (Mainland)), Year (2021), Scenario (Actuals), and Factor (Value). A red notification states: "New regulation China: min. 95% plastic recycling for year 2023ff!".

	Total Year		Jan		Feb		Mar		Apr		May		Jun		Jul	
	Total carbo...	Sales volu...	Total carbo...	Sales volu...	Total carbo...	Sales volu...	Total carbo...	Sales volu...	Total carbo...	Sales volu...	Total carbo...	Sales volu...	Total carbo...	Sales volu...	Total carbo...	Sales volu...
▼ Total business lines	373,482	1,094,749	37,474	107,257	31,179	91,610	35,095	101,111	31,464	92,340	26,860	79,154	26,764	79,963	25,513	79,154
▼ Business Line A	140,755	443,293	13,002	40,143	12,517	41,051	13,738	43,167	11,925	37,471	10,104	31,750	9,800	30,000	28,000	27,000
Product A	28,860	144,302	2,400	12,000	2,501	12,505	2,856	14,282	2,479	12,397	2,101	10,504	2,000	10,000	9,500	9,000
Product B	22,500	150,000	2,095	13,964	2,371	15,803	2,150	14,333	1,866	12,442	1,581	10,543	1,500	10,000	9,500	9,000
Product C	89,395	148,991	8,507	14,178	7,645	12,742	8,732	14,553	7,579	12,632	6,422	10,704	6,200	10,000	9,500	9,000
▼ Business Line B	232,728	651,456	24,473	67,114	18,662	50,559	21,357	57,944	19,539	54,869	16,755	47,403	16,964	50,000	47,000	44,000
Product D	35,614	187,441	3,894	20,493	2,537	13,355	2,918	15,358	2,984	15,704	2,618	13,778	2,800	13,000	12,500	12,000
Product E	42,173	168,693	3,471	13,884	3,096	12,384	3,560	14,241	3,640	14,562	3,194	12,777	3,400	13,000	12,500	12,000
Product F	77,872	144,208	7,410	13,723	6,660	12,334	7,606	14,085	6,602	12,226	5,594	10,360	5,400	10,000	9,500	9,000
Product G	77,068	151,114	9,698	19,015	6,368	12,486	7,272	14,260	6,312	12,377	5,349	10,488	5,200	10,000	9,500	9,000

A "Sandboxes" dialog box is open, allowing the user to create a simulation scenario. The dialog includes a text input field with "Best case", a "Create sandbox from" section with a radio button selected for "Base", and "Cancel" and "Create" buttons.

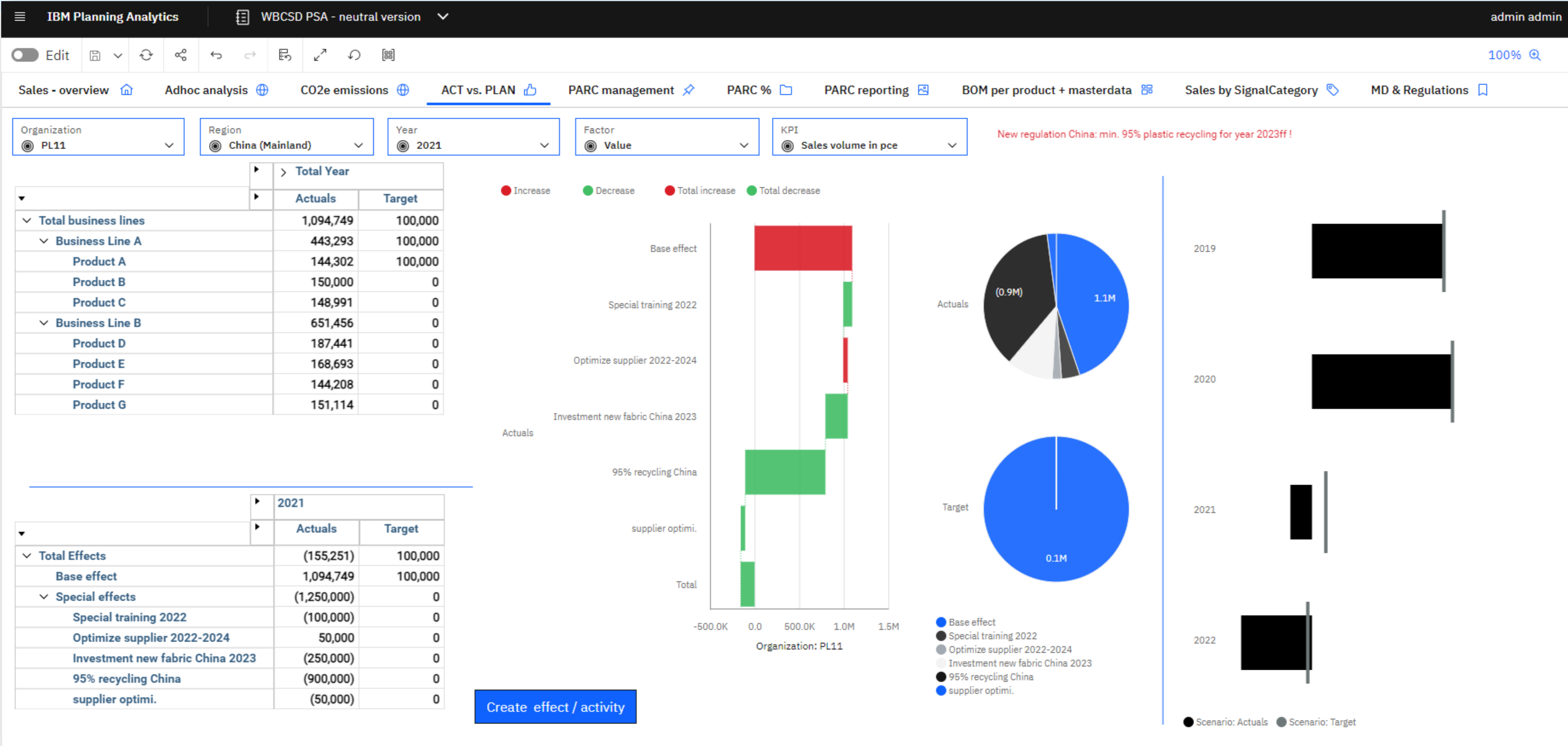
	Carbon per pce				Comment
	2019	2020	2021	2022	
Product A	0.11	0.09	0.20	0.30	
Product B	0.14	0.11	0.15	0.15	
Product C	0.45	0.49	0.60	0.54	
Product D	0.23	0.21	0.19	0.19	
Product E	0.23	0.19	0.25	0.17	
Product F	0.56	0.61	0.54	0.54	
Product G	0.67	0.54	0.51	0.51	

Below the table, there is a bar chart showing the percentage distribution of Business Line A (dark blue) and Business Line B (light blue) for the years 2019, 2020, and 2021. The percentages for Business Line A are 24.1% (2019), 28.5% (2020), and 37.7% (2021). The percentages for Business Line B are 75.9% (2019), 71.5% (2020), and 62.3% (2021).

At the bottom of the interface, there is a blue button labeled "IBM Carbon Accounting APIs".

Initial real-time result of a simulation of CO2-emission (scenario-change is blue coloured)

# Actuals vs. targets and regulatory information



Planning of targets and special effects / initiatives. Display of regulatory information possible

# Different options to manage the PARC-aggregation-categories

The screenshot displays the IBM Planning Analytics interface for WBCSD PSA - neutral version. It features a navigation bar with various analysis options and a main workspace divided into several sections:

- Shares in a product:** A table showing the percentage of shares for different categories.
 

Category	Percentage
Chemicals strong hazard	100.00%
H314 in general	45.00%
Parc_0002_Product G	45.00%
411 general	100.00%
Parc_0029_Product E	27.27%
Parc_0029_Product C	72.73%
- PARC management:** A table listing products with their application types and hazard classes, alongside a 'Marker' column.
 

Product	ProductApplicationType	ProductHazardClass	Marker
Product A	Pharma	None	
Product B	Chemicals	H220	
Product C	Household	H411	
Product D	Chemicals	H220	
Product E	Pharma	H411	
Product F	Chemicals	None	
Product G	Pharma	H314	
- PARC %:** A table showing the aggregation of PARCs into categories.
 

Parc	Caption	ParcAutomatic	Last change date	Last change user	AmountProducts	ProductHazardClass	ProductApplicationType	AmountPARCs
Parc_0001	Chemicals strong hazard	x	2021 NOV 18 - 13:41:54	Holger	4			
Parc_0002	H314 in general	x	2021 NOV 21 - 12:39:04	Phil	1			
Parc_0029	411 general		2021 DEC 21 - 07:21:06	Admin	2			
Product C	Product C					H411	Household	1
Product E	Product E					H411	Pharma	1
- PARC reporting:** A table showing rules for PARCs and their attributes.
 

Parc	Rule	ProductAttribute	Parc Attribute Value
Parc_0001	Rule01	ProductApplicationType	Chemicals
	Rule02	ProductHazardClass	H314
	Rule03		
Parc_0002	Rule01	ProductHazardClass	H314
	Rule02		
	Rule03		

Management actions include: 'Create new PARC manually via marker', 'Change PARC\*\*', 'Delete PARC', 'Create new empty automatic PARC', and 'Restate all automatic PARC\*'. A note at the bottom states '\* current logic: or-union'.

Automated management of sustainable categories and splitting units between different categories



# Analysis, reporting and simulation of material-categories and PARCs

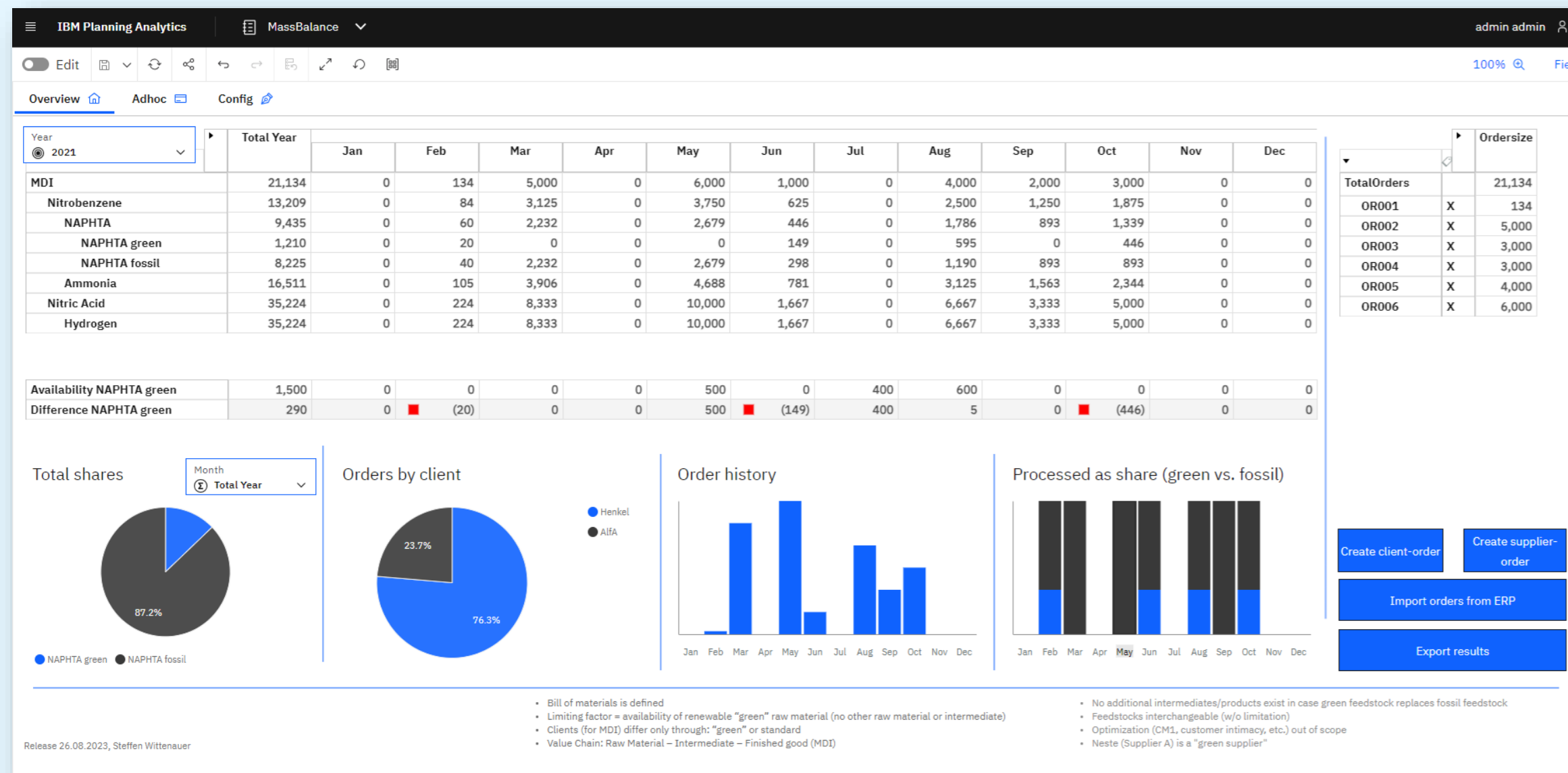
The image displays several overlapping screenshots from the IBM Planning Analytics interface, illustrating various sustainability reports and simulation capabilities.

- Top Left:** A 'BOM' (Bill of Materials) table showing materials 4, 7, and 8 with their respective counts (5, 2, and 1).
- Top Middle:** A 'Sales - overview' dashboard for 'WBCSD PSA - neutral version' showing navigation options like 'Adhoc analysis', 'CO2e emissions', and 'PARC management'. It includes filters for Year (2021), KPI (Total carbon in kg), Organization (PL11), and Region (China).
- Top Right:** A 'Sales by SignalCategory' dashboard featuring eight donut charts for Material 1 through Material 8, color-coded by priority (SC1 Prio1, SC1 Prio2, SC2 Prio1, SC2 Prio2).
- Middle Left:** A table showing 'Total Year' data for 'Chemicals strong hazard', 'H314 in general', and '411 general' across months Jan to Apr.
- Middle Right:** A table showing 'Total Year' data for 'Total materials' through 'Material 8' across months Jan to May.
- Bottom Left:** A line graph comparing 'Base' (blue) and 'Best case' (black) scenarios from 2019 to 2022, showing a significant drop in values starting in 2022.
- Bottom Middle:** A 'Configure categories' table mapping products (A-G) to material categories (SC1 Prio1, SC1 Prio2, SC2 Prio1, SC2 Prio2).
- Bottom Right:** A table showing 'Sales volume in pce' and 'SC total' for 'Total materials' through 'Material 8', with columns for SC1, SC2, and SC n/a.

Possible reports showing all KPIs in PARC-categories – having in parallel still the option to simulate parameters, bill of materials and rules for material-impacts

# Accelerator: Sustainability in the chemical sector

## Mass Balancing



- Purpose: report, forecast or simulate a chemical production process
- Content: it is about mixing fossil and recycled or renewable materials in existing systems and processes while keeping track of their quantities and allocating them to specific products, orders or time-frames.
- Data sources: master data can be manually adapted – actuals can be loaded (files, data warehouse etc.) or entered manually, footprints can be imported by other source-systems
- Technology: IBM Planning Analytics

# Manage your green-products-share based on client-orders

The screenshot displays the IBM Planning Analytics MassBalance interface. At the top, it shows the application name and user 'admin admin'. Below the navigation bar, there are tabs for 'Overview', 'Adhoc', and 'Config'. The main content area is divided into several sections:

- Data Table:** A table showing production data for various products (MDI, Nitrobenzene, NAPHTA, etc.) across months from Jan to Dec. It includes a 'Total Year' column and a 'Year' dropdown set to 2021.
- Summary Table:** A table with two rows: 'Availability NAPHTA green' and 'Difference NAPHTA green', showing values and status indicators (red squares) for each month.
- Charts:**
  - Total shares:** A pie chart showing 87.2% for NAPHTA green and 12.8% for NAPHTA fossil.
  - Orders by client:** A pie chart showing 76.3% for Henkel and 23.7% for Alfa.
  - Order history:** A bar chart showing order volumes for each month from Jan to Dec.
  - Processed as share (green vs. fossil):** A stacked bar chart showing the monthly breakdown of green and fossil feedstocks.
- Right Panel:** A table titled 'Ordersize' listing order IDs (OR001-OR006) and their corresponding quantities.
- Control Panel:** A set of buttons including 'Create client-order', 'Create supplier-order', 'Import orders from ERP', and 'Export results'.

At the bottom, there are several bullet points providing context and assumptions for the data:

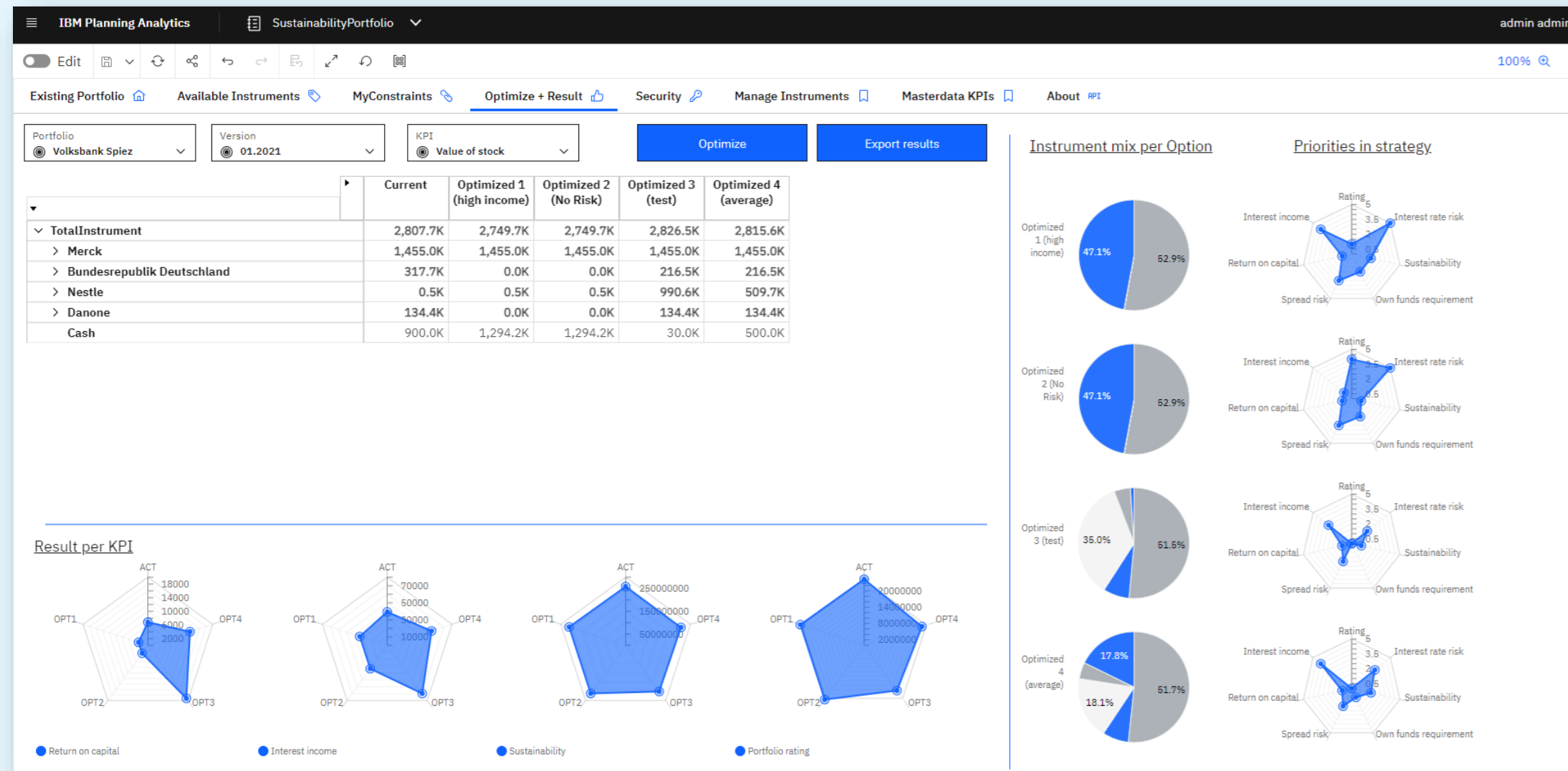
- Bill of materials is defined
- Limiting factor = availability of renewable "green" raw material (no other raw material or intermediate)
- Clients (for MDI) differ only through: "green" or standard
- Value Chain: Raw Material – Intermediate – Finished good (MDI)
- No additional intermediates/products exist in case green feedstock replaces fossil feedstock
- Feedstocks interchangeable (w/o limitation)
- Optimization (CM1, customer intimacy, etc.) out of scope
- Neste (Supplier A) is a "green supplier"

Release 26.08.2023, Steffen Wittener

Report, track or simulate on a granular or aggregated view your production incl. BOM, orders (client / suppliers) and raw-material-stock

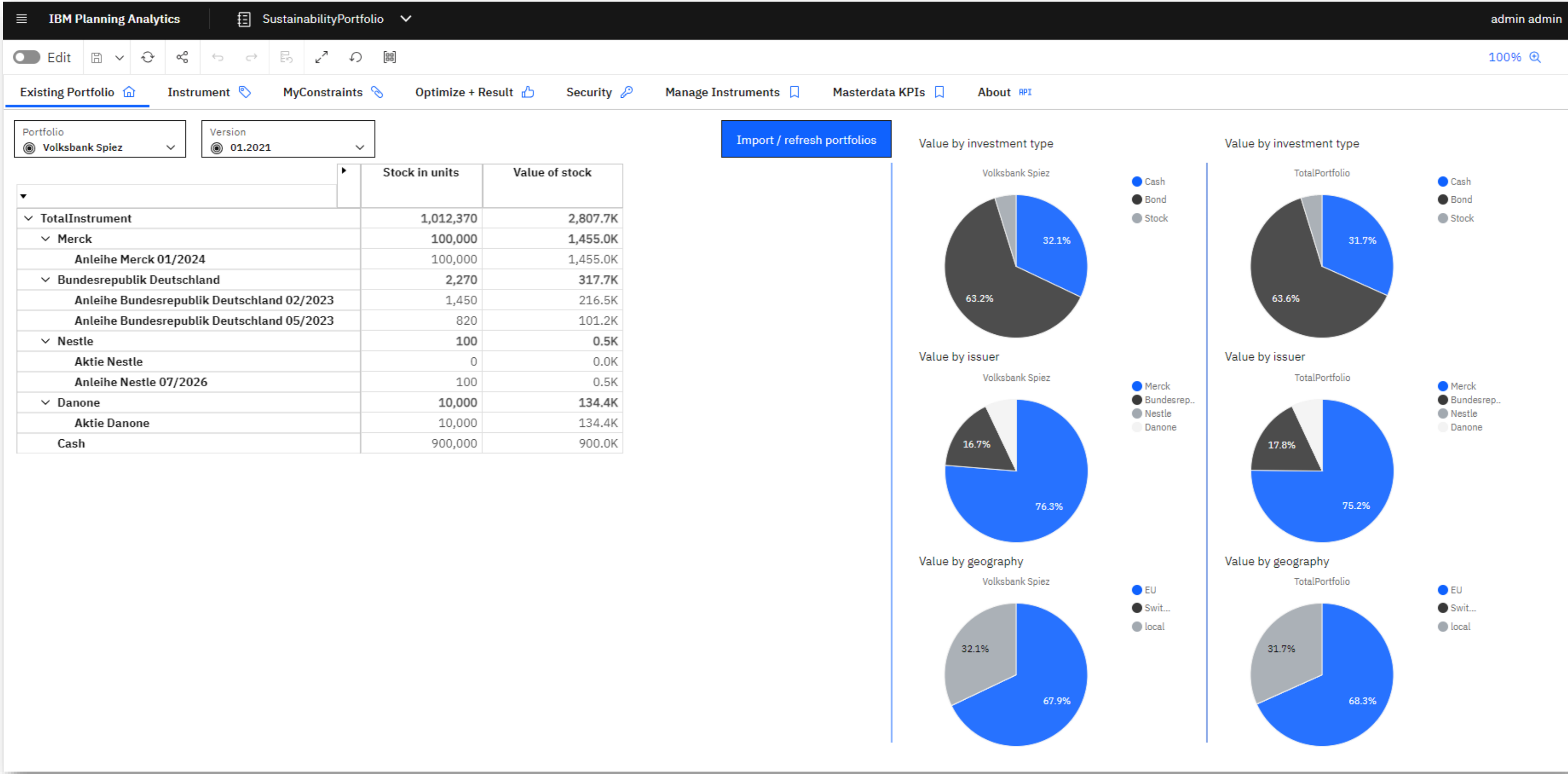
# Accelerator: Sustainability vs. Profitability – optimize it

## Green portfolio



- Purpose: optimize an existing asset-portfolio for a mix of different strategies. Model can also be used for budgeting investments for internal projects etc.
- Content: based on classical KPIs like risk, profit or duration, an existing portfolio can be enriched with sustainability KPIs like an ESG-asset-scoring to automatically calculate different comparable investment-strategies incl. sustainability
- The model can be extended with other business-constraints like minimum/maximum investment per asset or issuer or other investment-related asset-parameters
- Technology: IBM Planning Analytics, ILOG CPLEX (as addit. optimization-component for sustainability vs. profitability)

# Overview of the current portfolio



Analysis per different KPIs or attributes of the current portfolio

# Overview of possible instruments and their KPIs

The screenshot shows the 'SustainabilityPortfolio' interface in IBM Planning Analytics. The main table lists various instruments with their respective KPIs. Below the table, there are three summary sections: 'TOP 5 instruments:', 'Sustainability rating in %', and 'Return on capital'.

Instrument	Instru...	Geography	Value										Comment	
			Market value	Bid	Ask	Sustainability rating	Return on c...	Interest inc...	Remaini...	central ban...	Interest rat...	Spread risk		Own funds r...
Anleihe Merck 01/2024	Bond	EU	14.55	11.34	15.43	91.00	0.20%	1.00%	13.00	0	0.50%	1.40%	5.60%	A
Anleihe Bundesrepublik Deutschland 02/2023	Bond	EU	149.32	132.34	155.34	85.00	0.30%	2.00%	23.00	1	0.80%	1.50%	1.30%	AA
Anleihe Bundesrepublik Deutschland 05/2023	Bond	EU	123.45	119.23	135.32	77.00	0.40%	2.00%	34.00	1	0.30%	0.80%	2.40%	AAA
Aktie Nestle	Stock	Switzerland	14.67	11.12	14.34	88.00	1.40%	5.00%	999.00	1	1.50%	2.30%	4.20%	BBB
Anleihe Nestle 07/2026	Bond	Switzerland	5.11	0.56	5.12	92.00	0.90%	3.00%	999.00	0	2.30%	3.50%	1.40%	B
Aktie Danone	Stock	EU	13.44	10.45	13.45	77.00	2.30%	4.00%	999.00	0	3.50%	2.30%	2.30%	BB
Cash	Cash	local	1.00	1.00	1.00	100.00	0.00%	1.50%	999.00	1	0.00%	0.00%	0.00%	AAA

**TOP 5 instruments:**

Instrument	Interest income
Aktie Nestle	5.00%
Aktie Danone	4.00%
Anleihe Nestle 07/2026	3.00%
Anleihe Bundesrepublik Deutschland 02/2023	2.00%
Anleihe Bundesrepublik Deutschland 05/2023	2.00%

**Sustainability rating in %**

Instrument	Sustainability rating in %
Cash	100.00
Anleihe Nestle 07/2026	92.00
Anleihe Merck 01/2024	91.00
Aktie Nestle	88.00
Anleihe Bundesrepublik Deutschland 02/2023	85.00

**Return on capital**

Instrument	Return on capital
Aktie Danone	2.30%
Aktie Nestle	1.40%
Anleihe Nestle 07/2026	0.90%
Anleihe Bundesrepublik Deutschland 05/2023	0.40%
Anleihe Bundesrepublik Deutschland 02/2023	0.30%

List-overview with all other possible instruments and their KPIs

Sustainability vs. Profitability – optimize it (Green portfolio)

# Define constraints of possible scenarios

The screenshot displays the IBM Planning Analytics SustainabilityPortfolio interface. At the top, the user is logged in as 'admin admin'. The main navigation bar includes 'Existing Portfolio', 'Available Instruments', 'MyConstraints', 'Optimize + Result', 'Security', 'Manage Instruments', 'Masterdata KPIs', and 'About'. Below this, there are dropdown menus for 'Portfolio' (Volksbank Spiez), 'Scenario' (Optimized 3 (test)), and 'Version' (01.2021). Two buttons, 'Copy constraints' and 'Optimize', are visible.

Two tables are shown:

**Per issuer:**

	Min. investment is...	Max. investment iss...	Activate constraint (issu...
Merck	0.0K	999,000.0K	0
Bundesrepublik Deutschland	0.0K	999,000.0K	0
Nestle	1.0K	999,000.0K	1
Danone	0.0K	999,000.0K	0

**Per instrument:**

	Min. investm...
Anleihe Merck 01/2024	0.0K
Anleihe Bundesrepublik Deutschland 02/20...	0.0K
Anleihe Bundesrepublik Deutschland 05/20...	0.0K
Aktie Nestle	0.0K
Anleihe Nestle 07/2026	0.0K
Aktie Danone	0.0K
Cash	10.0K

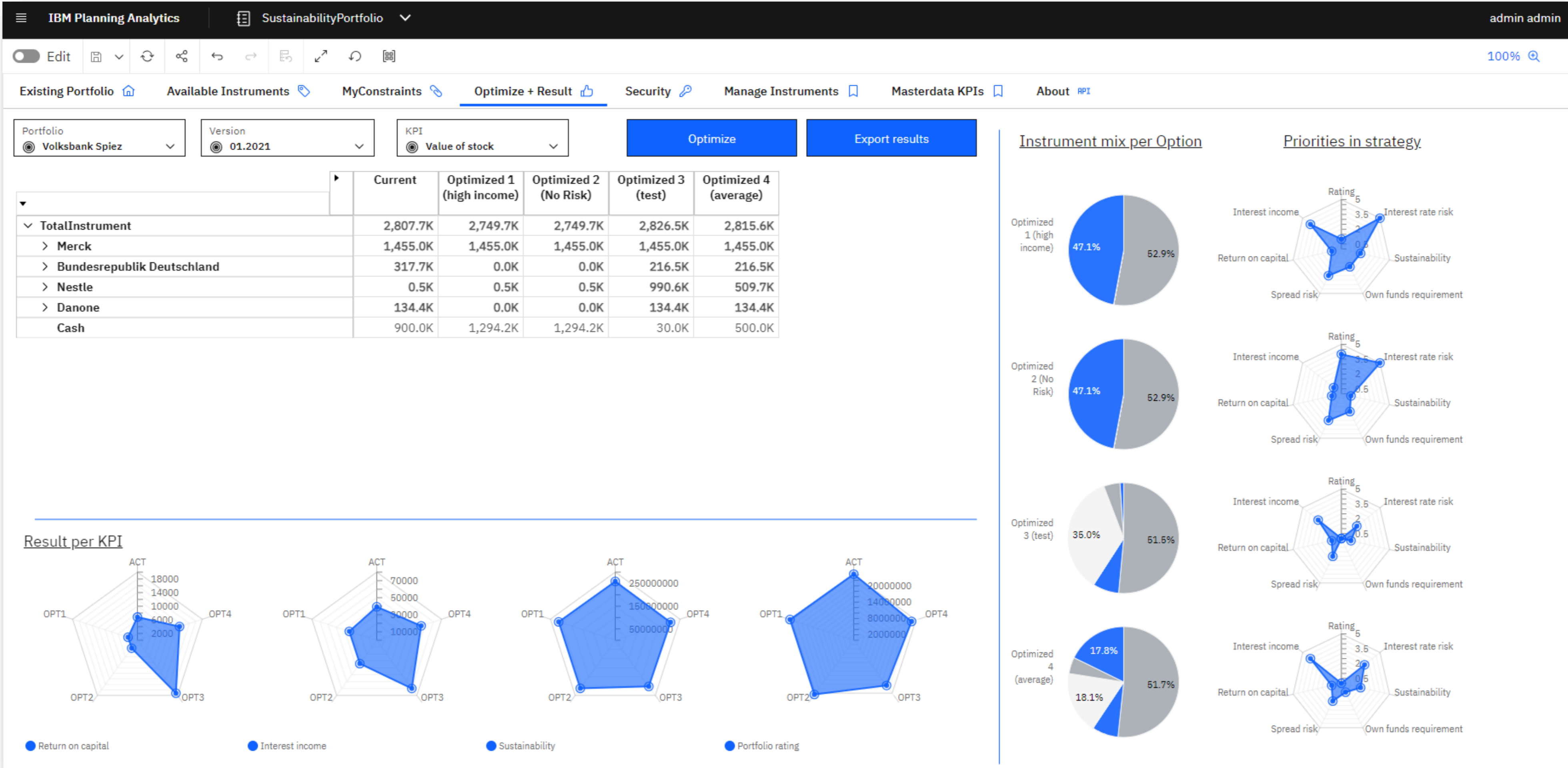
An 'Optimize' dialog box is open, titled 'Review Parameters for OptimizationStart'. It contains the following parameters:

Prompt	Value
Please describe scenario	Sustainability-optimized
What is the optimizing portfolio?	Volksbank Spiez
What is the optimizing scenario?	Optimized 3 (test 123)
What is the optimizing version?	01.2021
Whats your priority for "Rendite?"	3
Whats your priority for "Zinsertragg?"	4
Whats your priority for "Zinsänderungsrisiko?"	2
Whats your priority for "Spreadrisiko?"	4
Whats your priority for "Eigenmittelanforderung?"	2
Whats your priority for "Sustainability?"	1

The dialog box has 'Cancel' and 'OK' buttons at the bottom.

Input constraints like minimum or maximum values for issuers, geography or instrument-types and start prioritized optimization

# Compare scenarios in their results of profitability and sustainability

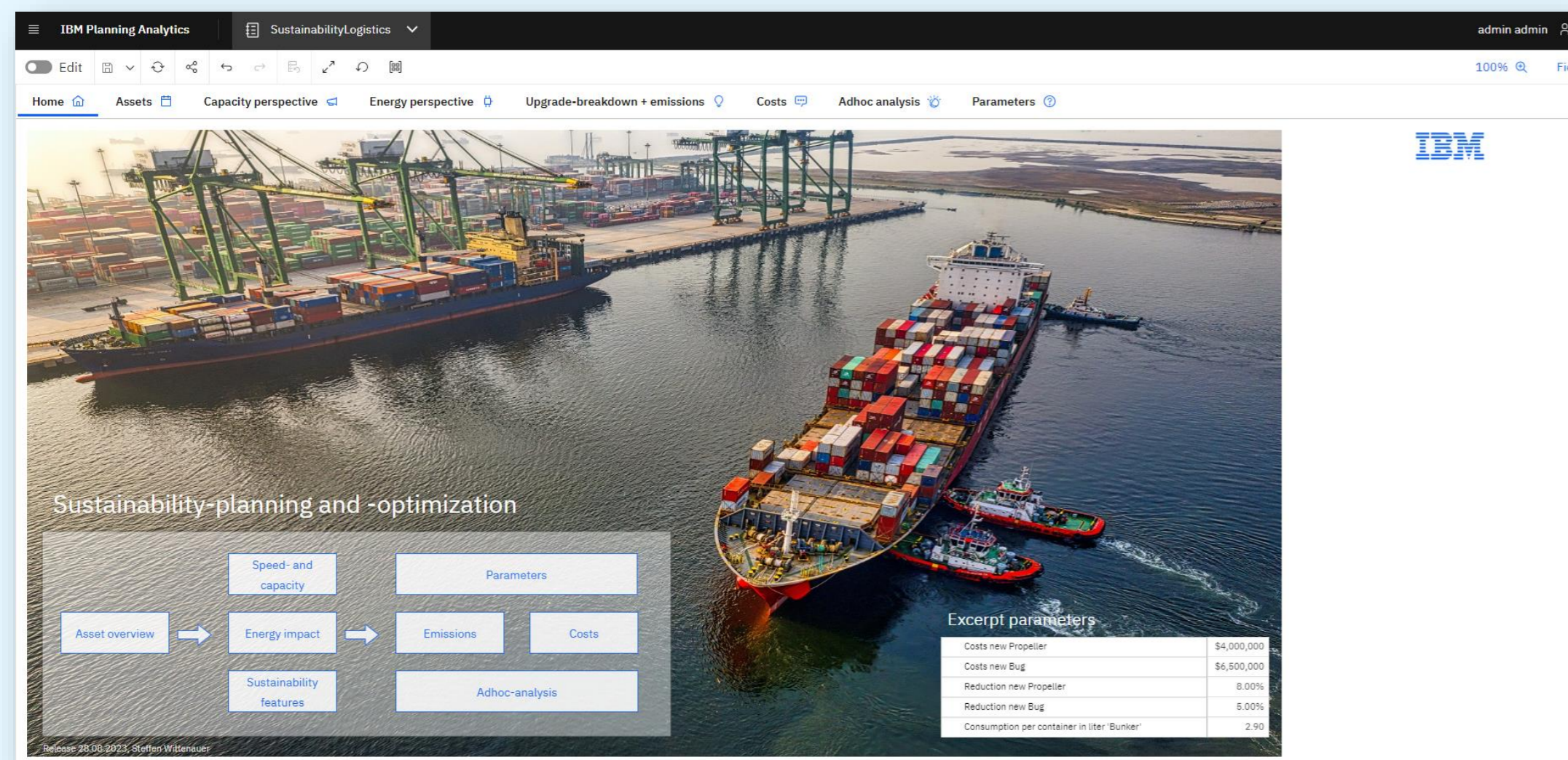


Overview and analysis of the scenarios to decide for the future strategy



# Accelerator: Sustainability asset upgrades

Strategic investments in your assets



- Purpose: simulate and compare from a strategic perspective different sustainability options for your assets. Example logistics: like biofuel, speed-reduction or vehicle-upgrades/addons. Can in general be used for all assets like logistics (ships, planes, fleet), production (production lines) or buildings.
- Content: based on inputs per asset or asset-class, the model calculates you in different scenarios the emissions- and cost-outcome based on different assumptions incl. compensation-costs CO2e.
- Data sources: all data can be manually adapted or automatically loaded. Adjusted data and other data sources are auditable.
- Technology: IBM Planning Analytics

# Landing page logistics model

**Sustainability-planning and -optimization**

```

    graph LR
      AO[Asset overview] --> EC[Speed- and capacity]
      AO --> EI[Energy impact]
      AO --> SF[Sustainability features]
      EC --> P[Parameters]
      EI --> E[Emissions]
      EI --> C[Costs]
      SF --> AA[Adhoc-analysis]
  
```

**Excerpt parameters**

Costs new Propeller	\$4,000,000
Costs new Bug	\$6,500,000
Reduction new Propeller	8.00%
Reduction new Bug	5.00%
Consumption per container in liter 'Bunker'	2.90

Release 28.08.2023, Steffen Wittnauer

Entry-page with navigation and some high-level-parameters like onetime-cost for upgrades and effects

# Speed-reduction simulation incl. capacity

The screenshot displays the IBM Planning Analytics SustainabilityLogistics interface. The top navigation bar includes 'Home', 'Assets', 'Capacity perspective', 'Energy perspective', 'Upgrade-breakdown + emissions', 'Costs', 'Adhoc analysis', and 'Parameters'. The main content area is divided into two panels.

**Left Panel: Asset Master Data**

Asset ID	Caption	FleetType
FL000	Total fleet	Top
FL100	Sea transport	Fleetclass
FL001	A 18 class	Class
FL002	El Capitan	Ship
FL003	King Wilhelm	Ship
FL004	Japan Ninja	Ship
wdwfe	MS Steffen	Ship
FL005	Express class	Class
FL006	Berne Express	Ship
FL007	Thun Express	Ship
FL008	T-Klasse	Class
FL009	Zuerich	Ship
FL010	Lugano	Ship
FL011	Winterthur	Ship
FL900	Charter	Ship
FL200	Barge transport	Fleetclass
FL300	Train	Fleetclass
FL400	Truck	Fleetclass
FL999	Fleet N/A	N/A

**Right Panel: Capacity Perspective Simulation (Year 2022)**

	Total Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sea transport	78%	75%	85%	76%	84%	81%	75%	78%	78%	79%	75%	72%	80%
A 18 class	80%	75%	80%	82%	85%	79%	75%	81%	79%	79%	82%	82%	79%
El Capitan	83%	90%	86%	86%	97%	76%	70%	83%	77%	77%	86%	86%	77%
King Wilhelm	95%	92%	85%	94%	99%	97%	88%	97%	97%	97%	97%	97%	97%
Japan Ninja	92%	70%	100%	97%	95%	93%	93%	93%	93%	93%	93%	93%	93%
MS Steffen	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Express class	94%	80%	90%	68%	100%	100%	100%	100%	100%	100%	100%	100%	95%
Berne Express	95%	80%	90%	79%	100%	100%	100%	100%	100%	100%	100%	100%	90%
Thun Express	94%	80%	90%	56%	100%	100%	100%	100%	100%	100%	100%	100%	100%
T-Klasse	89%	95%	101%	98%	98%	98%	82%	85%	86%	91%	74%	65%	98%
Zuerich	95%	85%	95%	107%	95%	95%	95%	95%	95%	95%	95%	95%	95%
Lugano	72%	100%	95%	96%	100%	100%	50%	60%	65%	78%	26%	0%	100%
Winterthur	100%	100%	112%	90%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Charter	4%	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

**Capacity Summary Table:**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
TEUR capacity available	1.4M	111.1K	128.8K	113.5K	124.9K	120.1K	113.1K	118.3K	117.5K	118.5K	116.1K	114.0K	119.0K
TEUR capacity market demand	1.3M	89.5K	105.0K	97.0K	115.0K	115.0K	110.0K	100.0K	105.0K	109.5K	105.0K	102.0K	105.0K

**TEUR available - split -**

**Legend:**

- A 18 class (Blue)
- Express class (Black)
- T-Klasse (Grey)

**Chart Data (TEUR values):**

Month	A 18 class	Express class	T-Klasse
Jan	67.2K	21.1K	22.8K
Feb	70.9K	23.7K	24.2K
Mar	72.2K	17.8K	23.4K
Apr	75.0K	26.4K	23.6K
May	70.2K	26.4K	23.6K
Jun	67.1K	26.4K	19.6K
Jul	71.5K	26.4K	20.4K
Aug	70.4K	26.4K	20.8K
Sep	70.4K	26.4K	21.8K
Oct	72.1K	26.4K	17.7K
Nov	72.1K	26.4K	15.6K
Dec	70.4K	25.0K	23.6K

**Notes:**

- capacity is measured in TEUR
- If a fleet-asset is created manually for simulation purposes, it receives the flag 'cr'

Overview/management of asset-master data (fleet, sites etc.) and simulation of speed-impact on energy-savings and capacity-change

# Check direct energy-savings

IBM Planning Analytics
SustainabilityLogistics
admin admin

Edit 100%

Home Assets Capacity perspective Energy perspective Upgrade-breakdown + emissions Costs Adhoc analysis Parameters

Year: 2022

Fleet: A 18 class

Operations speed in %:

	Total Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
▼ A 18 class	80%	75%	80%	82%	85%	79%	75%	81%	79%	79%	82%	82%	79%
El Capitan	83%	90%	86%	86%	97%	76%	70%	83%	77%	77%	86%	86%	77%
King Wilhelm	95%	92%	85%	94%	99%	97%	88%	97%	97%	97%	97%	97%	97%
Japan Ninja	92%	70%	100%	97%	95%	93%	93%	93%	93%	93%	93%	93%	93%
MS Steffen	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%

Energy savings in %:

	Total Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
▼ A 18 class	41%	51%	41%	37%	28%	42%	51%	39%	42%	42%	38%	38%	42%
El Capitan	43%	27%	37%	37%	9%	56%	65%	43%	54%	54%	37%	37%	54%
King Wilhelm	14%	22%	39%	16%	3%	8%	33%	8%	8%	8%	8%	8%	8%
Japan Ninja	20%	66%	-1%	9%	14%	18%	18%	18%	18%	18%	18%	18%	18%
MS Steffen	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%	88%

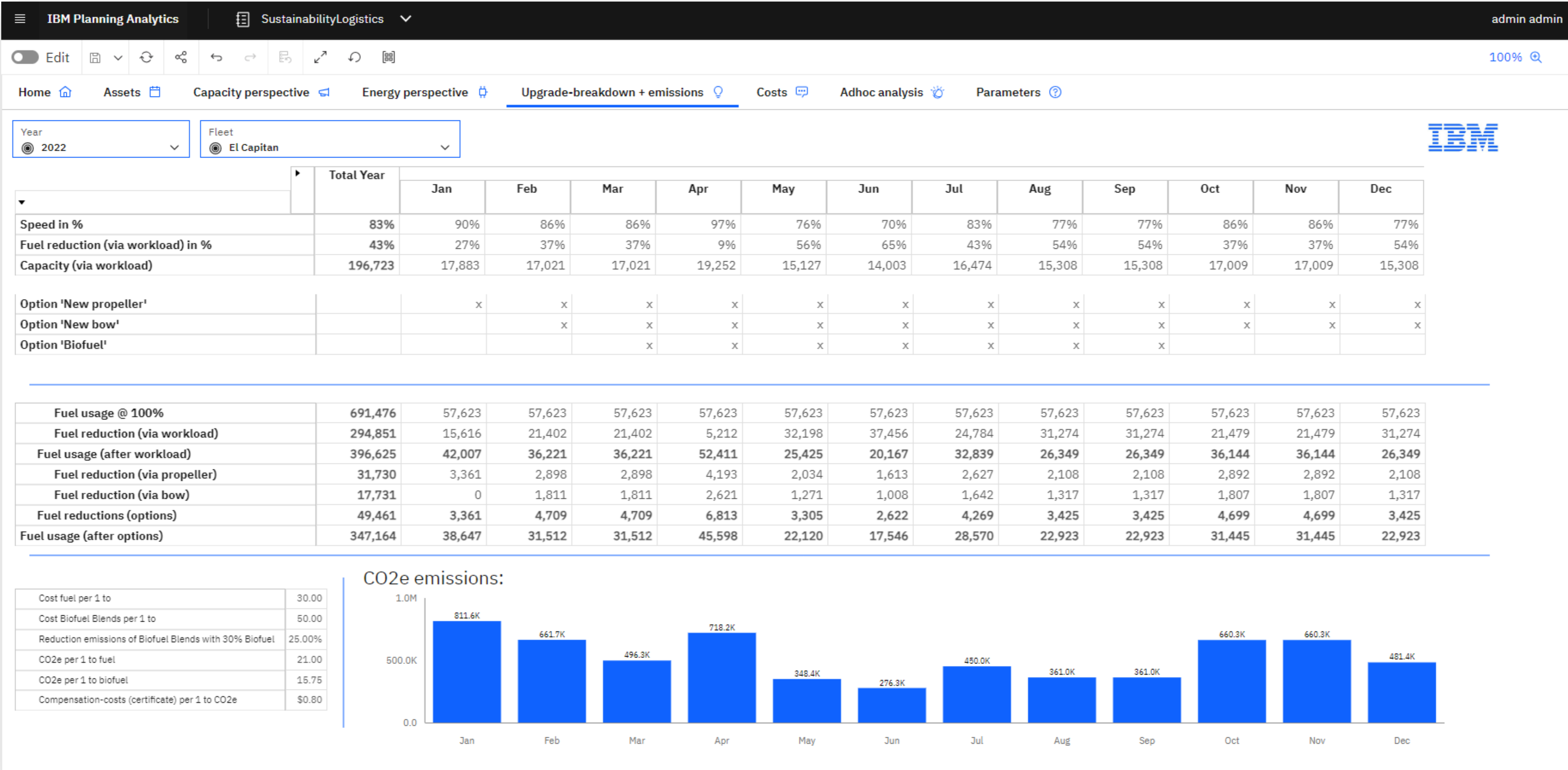
Energy saving-balance:

Energy saving-comparisson (before / after):

Reduction by asset:

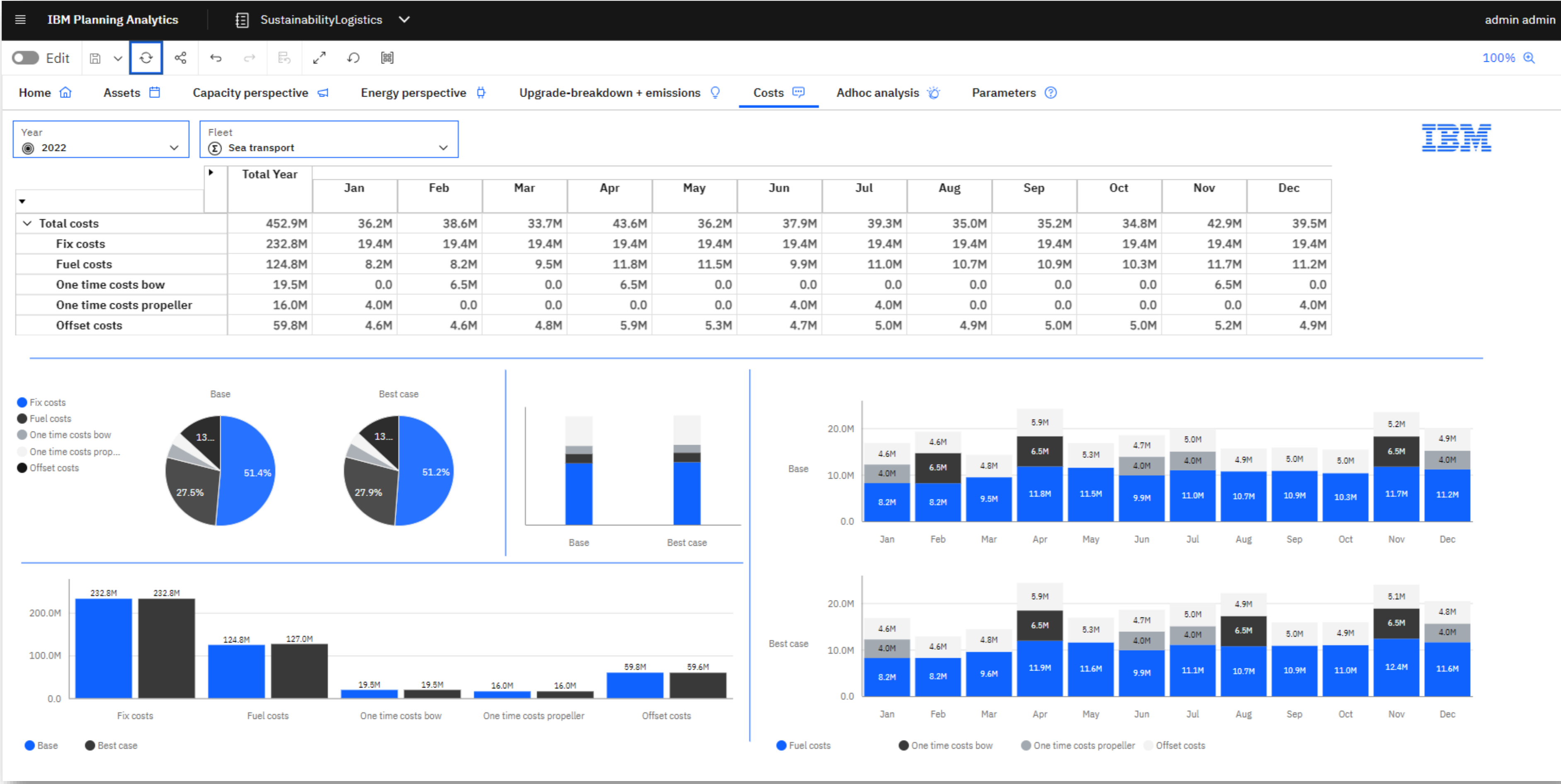
Simulate by activation of ,asset-upgrades' the energy-savings

# Upgrade-simulation and impact on energy-reduction and CO2e



Simulate by activation of 'asset-upgrades' the energy-savings and remaining CO2e

# Results by emissions and costs



Final comparable results of CO2e-emissions incl. compensation- and costs-perspectives (one-time and flexible/fix costs) in different scenarios

# Accelerator: Operational Emissions Management Tool (GHG)

Breakdown and operationalize CO2e budgets

**Welcome to the Operational Emissions Management Tool**  
An analytical solution for planning emissions based on the GHG Protocol - TopDown and BottomUp

**Emission Summary**

- Scope 1 Emissions Input
- Scope 2 Emissions Input
- Scope 3 Emissions Input

**Emission Factors & Unit Conversion**

- ✓ Gather operational activities in different scopes
- ✓ Monitor and analyze the resulting carbon footprints, overall and in-depth in every account
- ✓ Specify Topdown CO2e budgets for your company and spread them to operational accounts in proportions of past emissions
- ✓ Convert CO2e budgets to operational units, e.g. miles or kWh
- ✓ Plan bottom-up in LOB's metrics and match resulting carbon footprints with topdown budgets

Source: WRI/WBCSD Corporate Value Chain (Scope 3) Accounting and Reporting Standard (PDF), page 5.

- Purpose: report, plan or breakdown targets in all directions or granularity of your company
- Monitor and analyze carbon footprints, overall and in-depth in every scope account
- Specify top down CO2e budgets for your company and spread them to operational accounts in proportions of past emissions
- Convert CO2e budgets to operational units, e.g. miles or kWh
- Plan bottom-up in LOB's metrics and match resulting carbon footprints with top down budgets
- Technology: IBM Planning Analytics

# Central management of sustainability-KPIs

**Welcome to the Operational Emissions Management Tool**  
An analytical solution for planning emissions based on the GHG Protocol - TopDown and BottomUp

**Greenhouse Gas Protocol**

**Emission Summary**

- Scope 1 Emissions Input
- Scope 2 Emissions Input
- Scope 3 Emissions Input

**Emission Factors & Unit Conversion**

- ✓ Gather operational activities in different scopes
- ✓ Monitor and analyze the resulting carbon footprints, overall and in-depth in every account
- ✓ Specify Topdown CO2e budgets for your company and spread them to operational accounts in proportions of past emissions
- ✓ Convert CO2e budgets to operational units, e.g. miles or kWh
- ✓ Plan bottom-up in LOB's metrics and match resulting carbon footprints with topdown budgets

Source: WRI/WBCSD Corporate Value Chain (Scope 3) Accounting and Reporting Standard (PDF), page 5.

Jan-Peter Preuß, Release 01.09.2023

Landing page for all scopes: see which accounts are covered



# Analyze emissions, locations etc. in all needed granularity

The dashboard displays the following components:

- Emission Summary:** A table showing CO2e (tonnes) and Biofuel CO2 (tonnes) for various scopes and categories. The total CO2e is 5,584 tonnes.
- Emission Analysis:** A section with several charts and filters:
  - Emissions by Year and Scenario:** A bar chart showing emissions from 2020 to 2024 for TopDown, BottomUp, and Actuals scenarios.
  - Emissions by Scope:** A pie chart showing the distribution of emissions across Scope 1 (28.8%), Scope 2 (34.1%), and Scope 3 (37.1%).
  - Emissions by Scope and Entity:** A heatmap showing emissions across different entities (Hamburg, Berlin, Frankfurt, Leipzig, Brussels, Copenhagen, Helsinki, Athens, Vienna, Madrid, Istanbul, Paris, Rome, London, Beijing, Shanghai, Sydney, New York, San Francisco, Montreal) for Scope 1, 2, and 3.
- Filters:** Select Year (All Years, 2020, 2021, 2022), Select Scenario (TopDown, BottomUp, Actuals), Select Entity (TotalEntity, TotalGermany, Hamburg, Berlin), and Select KPI (Total CO2e, CO2e (tonnes), Biofuel CO2 (tonnes)).

Free configurable dashboards for all KPIs

# Define emission targets based on past or future scenarios

The screenshot displays the 'SustainabilityGHG Summary' interface in IBM Planning Analytics. The main view is 'TopDown Emission Input'. It features two primary tables and a configuration dialog.

**Emission Summary per year**

	2020		2021		2022	
	CO2e (tonnes)	Biofuel CO2 (tonnes)	CO2e (tonnes)	Biofuel CO2 (tonnes)	CO2e (tonnes)	Biofuel CO2 (tonnes)
<b>TotalScopes</b>	4,988	1,286	5,386	1,369	5,582	1,428
> Scope1	1,260	369	1,552	442	1,669	482
> Scope2	2,201	0	2,292	0	2,337	0
> Scope3	1,526	917	1,542	927		

**Define Emission Budgets (selected year / total year) / TopDown**

	> Total Year		
	CO2e (tonnes)	Biofuel CO2 (tonnes)	
<b>TotalScopes</b>	6,000	5,592	408
> Scope1	1,748	1,515	233
Stationary Combustion	1,748	1,515	233
> Scope2	2,447	2,447	0
Market-based Purchased Electricity	728	728	0
Location-based Purchased Electricity	320	320	0
Heat/Steam Emissions	1,398	1,398	0
> Scope3	1,806	1,631	175
Upstream scope 3 emissions	1,806	1,631	175
4 - Upstream transportation	709	669	40
6 - Business travel	648	581	67
7 - Employee commuting	448	381	67

**Review Parameters for Spread\_Topdown\_Emissions\_All**

Prompt	Value
Which scenario should be referenced?	Actuals
Which year should be referenced?	2022
Spread topdown emissions for which year?	2023
Spread topdown emissions for all accounts? (0=no)	Yes
Spread topdown emissions for stationary combustion? (optional; 0=no)	Yes
Spread topdown emissions for Purchased Electricity? (optional; 0=no)	Yes
Spread topdown emissions for Transportation? (optional; 0=no)	Yes

Buttons: Cancel, OK, Spread TopDown Emissions

Distribute top down targets to single accounts with proportional spreads with respect to a reference scenario for the future

# See what emission targets mean in operational metrics, like transport units

The screenshot displays the 'Transportation Topdown Planning' interface in IBM Planning Analytics. It includes a navigation bar with 'Transportation Summary', 'Transportation TopDown', 'Transportation BottomUp', 'Transportation Actuals Input', and 'Transportation Factors'. The main content area features several data visualization components:

**Filters:** Year (2023), Month (Total Year), Version (01.2021), Effect (TotalEffects), and Transport Type (AllTypes).

**CO2e Budgets by Transport Type (TopDown):** A pie chart showing the distribution of CO2e budgets across different transport modes: Car, Air, Bus, Rail, and Ferry.

**CO2e Budgets by Entity (TopDown):** A horizontal bar chart showing CO2e budgets for various entities, including Hamburg, Berlin, Frankfurt, Leipzig, Europe, and Global.

**Distance TopDown-Budgets per Transport Type:** A table showing operational metrics for different transport types.

	Mile	Ton Mile	Ton Kilometer	Passenger Mile	Passenger Kilometer
AllTypes	1,585,817	23,463	37,760	13,634,384	1,949,814
Car	1,585,817	0	0	0	178,340
Vans - Average (up to 3.5 tonnes) ...	Mile	202,210	0	0	0
Vans - Average (up to 3.5 tonnes) ...	Mile	343,334	0	0	0
Average Car - Diesel	Mile	112,144	0	0	0
Average Car - Petrol	Mile	104,127	0	0	0
Average Car - Plug-in Hybrid Elec...	Mile	412,001	0	0	0
Average Car - Battery Electric Ve...	Mile	412,001	0	0	0
Taxi - regular	Passenger Kilo...	0	0	0	178,340
Air	0	23,463	37,760	51,841	223,644
Bus	0	0	0	961,777	1,547,830
Rail	0	0	0	3,762,068	0
Ferry	0	0	0	8,858,698	0

Emission targets are converted into LOB's units and distributed among all dimensions as observed in reference scenario

# Plan bottom-up to match defined targets

The screenshot displays the 'Transportation BottomUp Planning' interface. It includes filters for Transport Type (AllTypes), Version (01.2021), Entity (TotalEntity), and AssetID (AllAssets). The main table shows historical data for 2020-2023 and planned data for 2024 across months Jan-Jun. A second table shows CO2e and Biofuel CO2 planned vs budget for 2024 by category (BottomUp, TopDown). Summary boxes show Total CO2e planned (70.66 t) and Total biofuel CO2 planned (1.19 t), both significantly exceeding their respective budgets of 0.00 t. Two line charts at the bottom show monthly trends for CO2e and Biofuel CO2.

	2020	2021	2022	2023	2024	Jan	Feb	Mar	Apr	May	Jun
<b>Total Year</b>	<b>Total Year</b>	<b>Total Year</b>	<b>Total Year</b>	<b>Total Year</b>	<b>Total Year</b>						
Kilometer	2,933,289	2,959,178	2,929,879	2,754,086	100,000	100,000	0	0	0	0	0
Mile	6,638,077	6,696,664	6,630,361	6,100,000	200,000	0	200,000	0	0	0	0
Ton Mile	34,255	34,558	34,215	32,162	0	0	0	0	0	0	0
Ton Kilometer	15,495	15,632	15,477	14,548	0	0	0	0	0	0	0
Passenger Mile	10,555,588	10,648,750	10,543,317	9,910,718	0	0	0	0	0	0	0

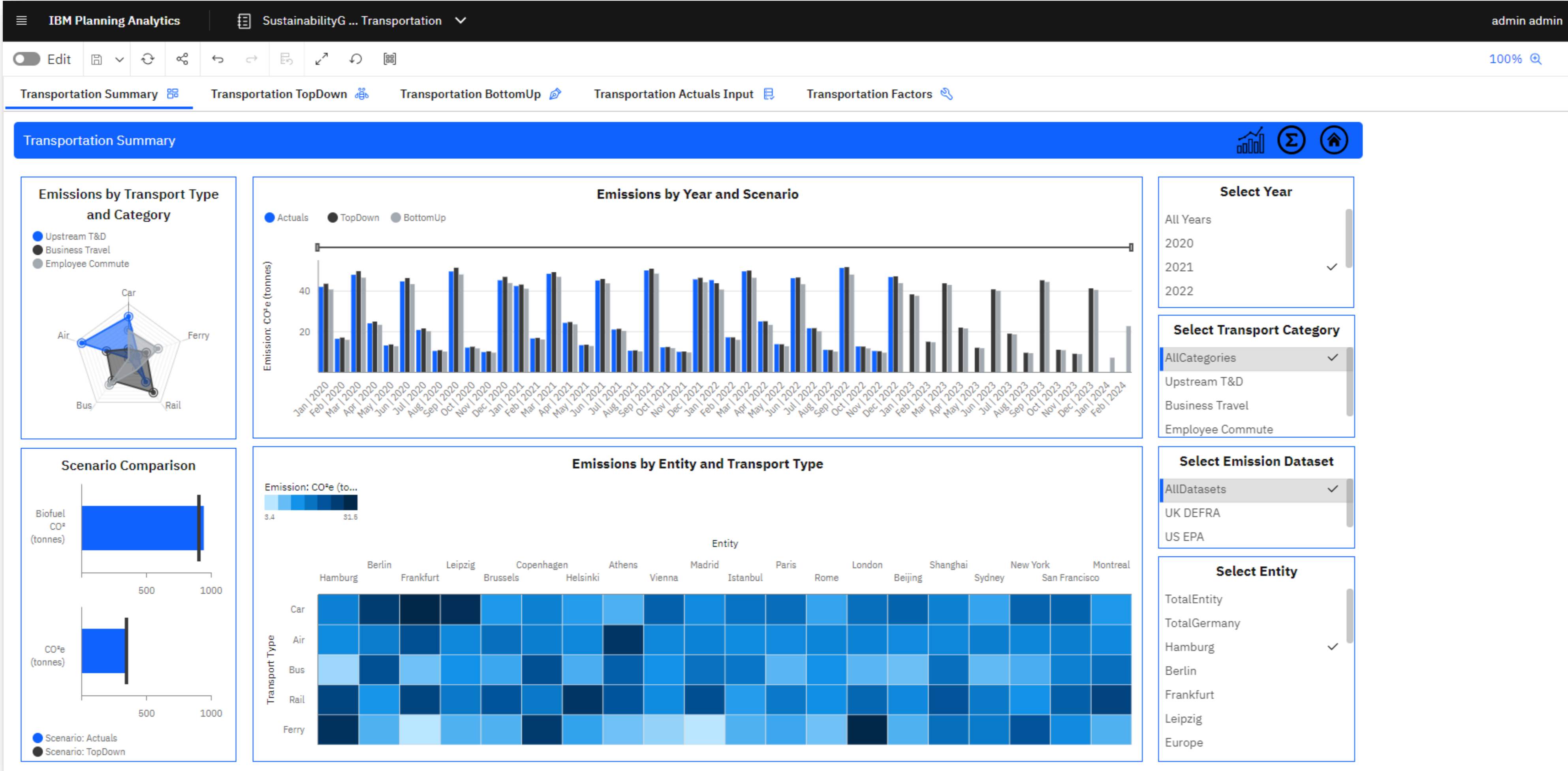
	Total Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>BottomUp</b>	<b>CO<sup>2</sup>e (tonnes)</b>	71	17	54	0	0	0	0	0	0	0	0	0
	<b>Biofuel CO<sup>2</sup> (tonnes)</b>	1	0	1	0	0	0	0	0	0	0	0	0
<b>TopDown</b>	<b>CO<sup>2</sup>e (tonnes)</b>	0	0	0	0	0	0	0	0	0	0	0	0
	<b>Biofuel CO<sup>2</sup> (tonnes)</b>	0	0	0	0	0	0	0	0	0	0	0	0

Total CO2e planned (t):	<b>70.66</b>	Total CO2e budget (t):	0.00
Total biofuel CO2 planned (t):	<b>1.19</b>	Total biofuel CO2 budget (t):	0.00

Operational activities are planned in respective units, effects in carbon footprints are directly calculated and compared to targets

# In-depth emission analysis for every account



Unlimited possibilities to visualize emissions in every account for detailed analysis

# Handle your GHG- or emissions-factors centrally

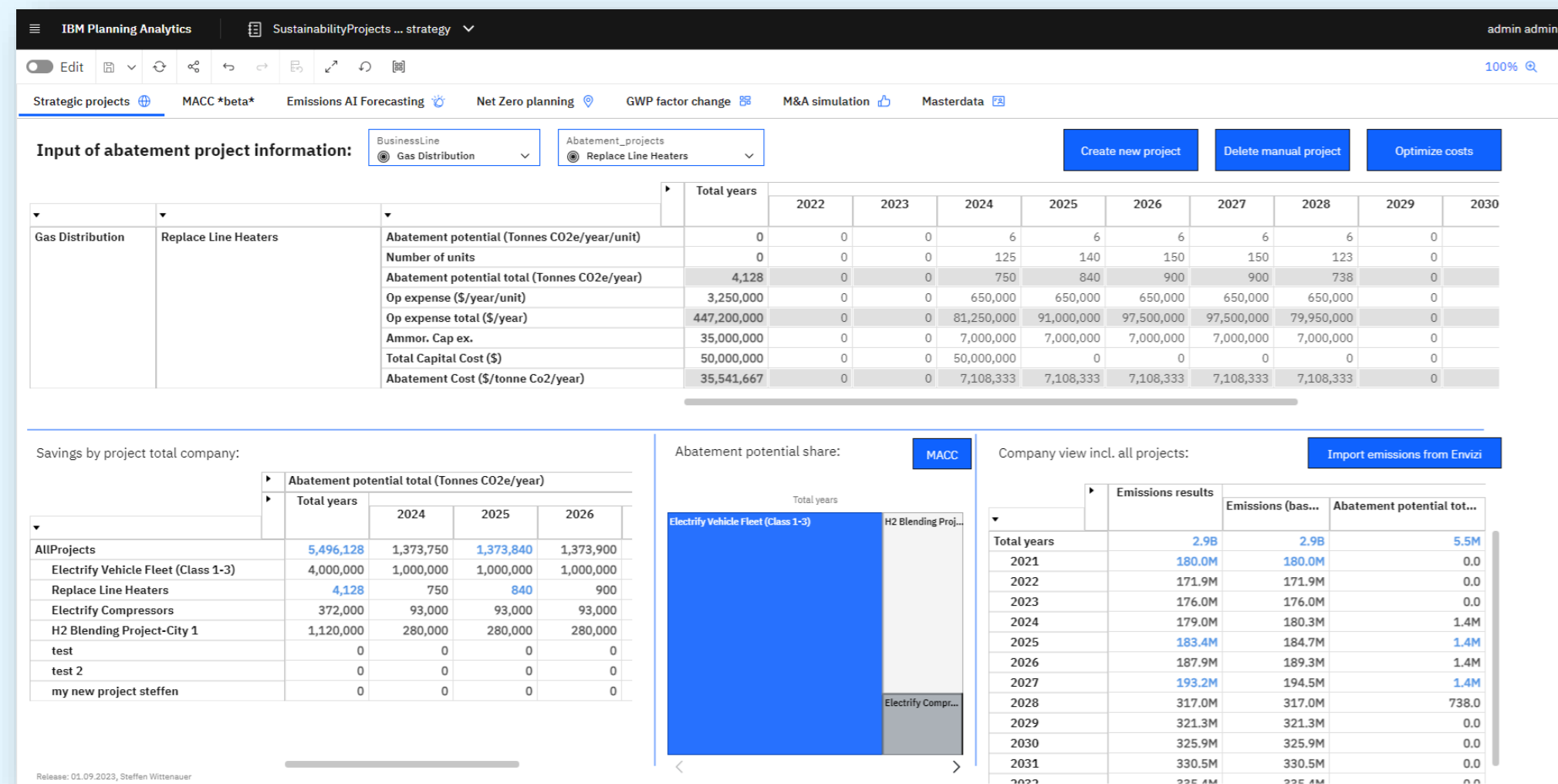
The screenshot shows the 'Stationary Combustion Emission Factors' configuration page in IBM Planning Analytics. The interface includes a top navigation bar with 'IBM Planning Analytics' and 'SustainabilityG ... Administration'. Below the navigation bar is a toolbar with icons for Edit, Save, Refresh, and other actions. The main content area features a blue header with the title 'Stationary Combustion Emission Factors' and a version dropdown menu set to '01.2021'. The central part of the page is a table with columns for various emission factors and a source reference.

	Heat Content (HHV)	CO2 Factor (kg / mmBtu)	CH4 Factor (kg / mmBtu)	N2O Factor (kg / mmBtu)	Biogenic CO2 Factor (kg/ mmBtu)	kgCO2e	Receive Topdown Emissions?	Source
▼ Total Stationary Combustion Fuel	0.00	0.00	0.00	0.00	0.00	0.00		
> Coal and Coke	0.00	0.00	0.00	0.00	0.00	0.00		
▼ Other Fuels - Solid	0.00	0.00	0.00	0.00	0.00	0.00		
Municipal Solid Waste	9.95	90.70	32.00	4.20	0.00	92.71	Yes	EPA, "Emission Factors for Greenhouse Gas Inventories," Table 1 St...
Petroleum Coke (Solid)	30.00	102.41	32.00	4.20	0.00	104.42	Yes	EPA, "Emission Factors for Greenhouse Gas Inventories," Table 1 St...
Plastics	38.00	75.00	32.00	4.20	0.00	77.01	Yes	EPA, "Emission Factors for Greenhouse Gas Inventories," Table 1 St...
Tires	28.00	85.97	32.00	4.20	0.00	87.98	Yes	EPA, "Emission Factors for Greenhouse Gas Inventories," Table 1 St...
> Biomass Fuels - Solid	0.00	0.00	0.00	0.00	0.00	0.00		
> Natural Gas -	0.00	0.00	0.00	0.00	0.00	0.00		
> Other Fuels - Gaseous	0.00	0.00	0.00	0.00	0.00	0.00		
> Biomass Fuels - Gaseous	0.00	0.00	0.00	0.00	0.00	0.00		
> Petroleum Products	0.00	0.00	0.00	0.00	0.00	0.00		
> Biomass Fuels - Liquid	0.00	0.00	0.00	0.00	0.00	0.00		
> Biomass Fuels - Kraft Pulping Liquor, by Wood F...	0.00	0.00	0.00	0.00	0.00	0.00		

Auditable emissions-information

# Accelerator: Sustainability Decarbonization Strategy

Simulate small parameters with huge impact



- Purpose: report, plan or simulate in different small use cases how your company can change different parameters to achieve long term sustainability targets
- Manage strategic projects with sustainability- and cost-perspective (MACC)
- Simulate or AI forecast your emissions, set up your base year and plan your reduction or even simulate if a GWP-factor would change
- Simulate in a pragmatic way how merger & acquisition or any company structure change would impact your target
- Technology: IBM Planning Analytics

# Create, manage or simulate investments on strategic projects

IBM Planning Analytics | SustainabilityProjects ... strategy | admin admin

Strategic projects | MACC \*beta\* | Emissions AI Forecasting | Net Zero planning | GWP factor change | M&A simulation | Masterdata

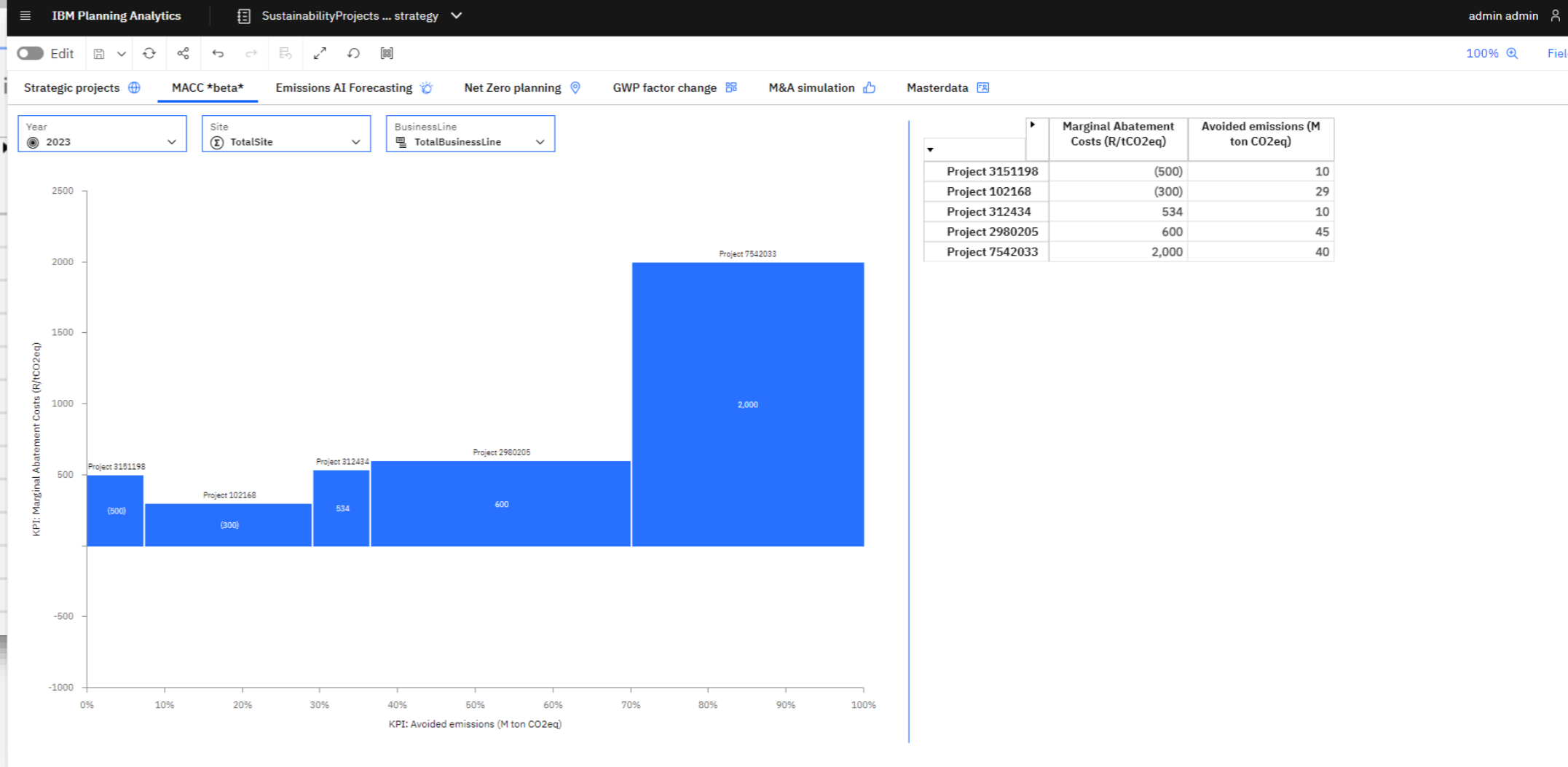
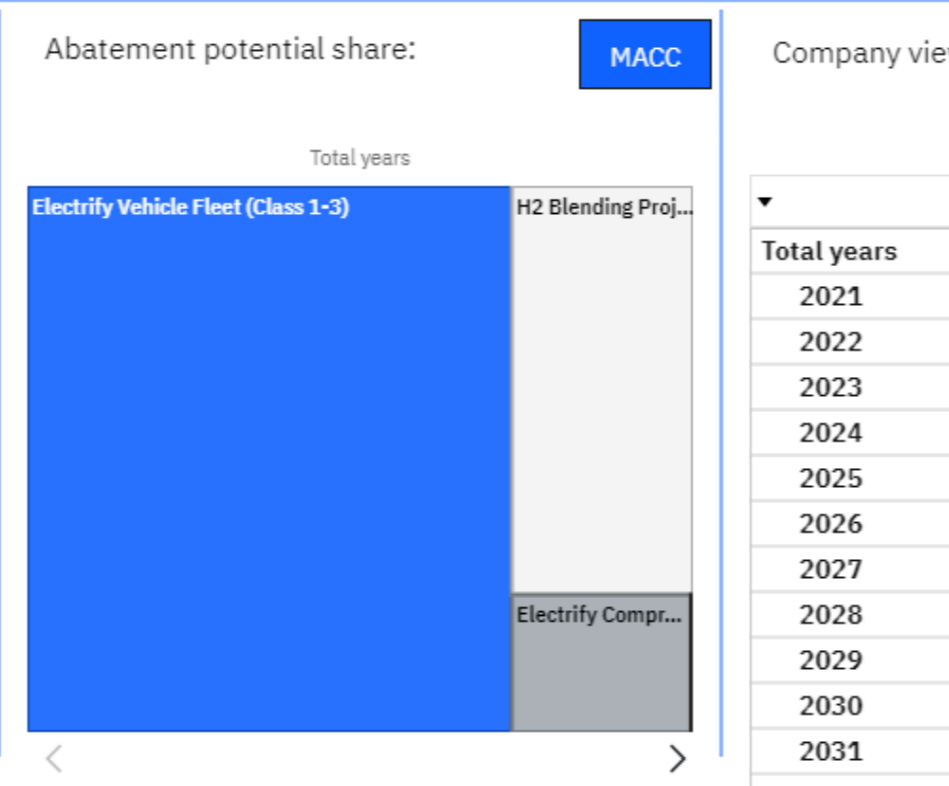
Input of abatement project information: BusinessLine: Gas Distribution | Abatement\_projects: Replace Line Heaters

Buttons: Create new project | Delete manual project | Optimize costs

		Total years	2022	2023	2024	2025	2026	2027	2028	2029	2030
Gas Distribution	Replace Line Heaters	Abatement potential (Tonnes CO2e/year/unit)	0	0	6	6	6	6	6	0	
		Number of units	0	0	125	140	150	150	123	0	
		Abatement potential total (Tonnes CO2e/year)	4,128	0	750	840	900	900	738	0	
		Op expense (\$/year/unit)	3,250,000	0	650,000	650,000	650,000	650,000	650,000	0	
		Op expense total (\$/year)	447,200,000	0	81,250,000	91,000,000	97,500,000	97,500,000	79,950,000	0	
		Ammor. Cap ex.	35,000,000	0	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	0	
		Total Capital Cost (\$)	50,000,000	0	50,000,000	0	0	0	0	0	
		Abatement Cost (\$/tonne Co2/year)	35,541,667	0	7,108,333	7,108,333	7,108,333	7,108,333	7,108,333	0	

Savings by project total company:

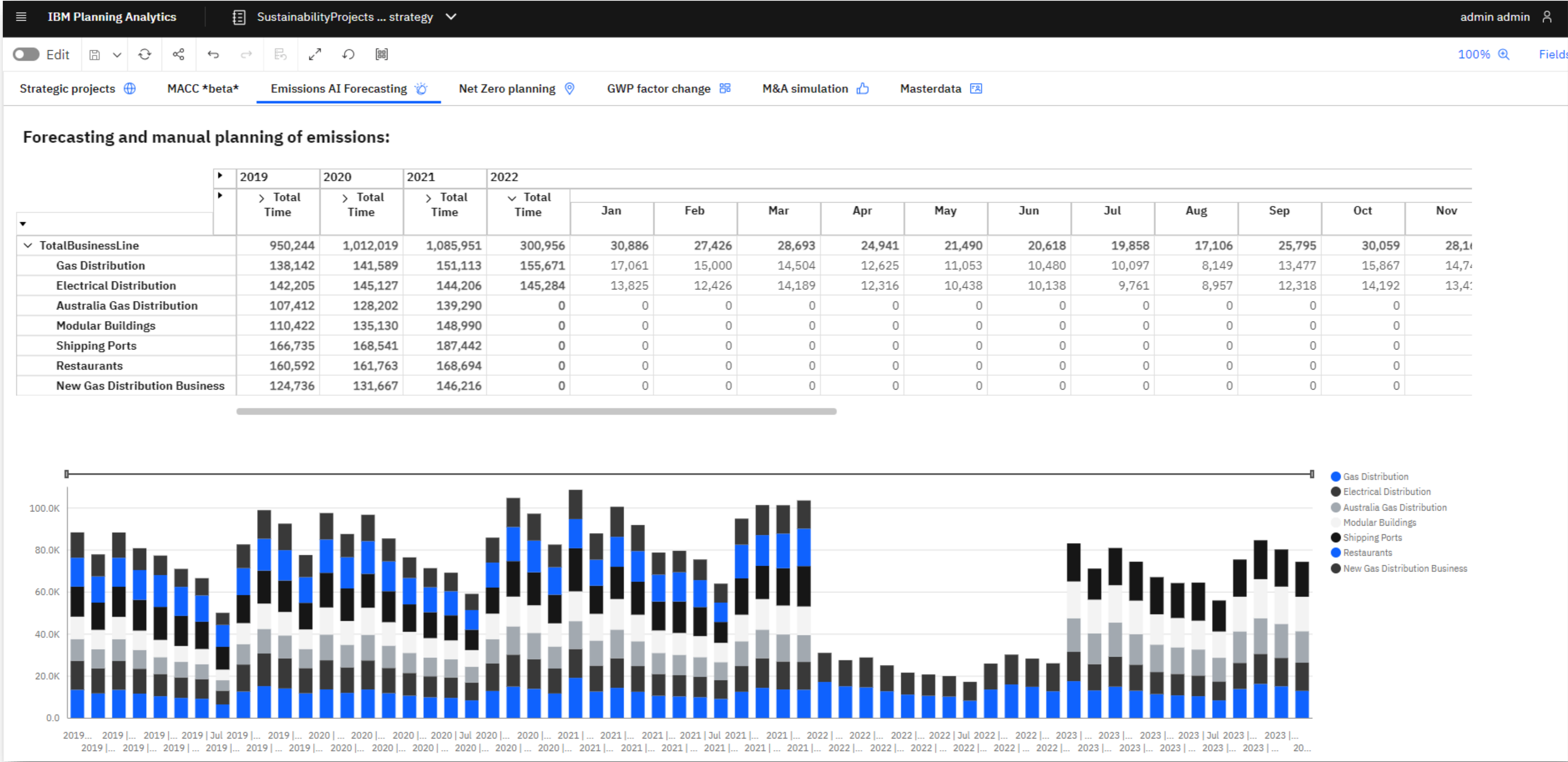
	Abatement potential total (Tonnes CO2e/year)			
	Total years	2024	2025	2026
AllProjects	5,496,128	1,373,750	1,373,840	1,373,900
Electrify Vehicle Fleet (Class 1-3)	4,000,000	1,000,000	1,000,000	1,000,000
Replace Line Heaters	4,128	750	840	900
Electrify Compressors	372,000	93,000	93,000	93,000
H2 Blending Project-City 1	1,120,000	280,000	280,000	280,000
test	0	0	0	0
test 2	0	0	0	0
my new project steffen	0	0	0	0



Change and plan parameters like costs, number of units, abatement potential, CAPEX etc. and see how the impact of these projects would be added on the long term sustainability baseline



# AI-forecast emissions or other KPIs per organization unit



Simply mark a unit and use integrated enduser-friendly AI forecast for any kind of KPI or emission

# Plan or simulate change GWP-factors or reduction-targets

The screenshot displays the IBM Planning Analytics interface for sustainability projects. It features two main panels: 'Changing baseline assumptions' and 'Underlying GWP factors'.

**Changing baseline assumptions:** This panel shows a table of emissions (tonne CO2e) for years 2018-2032, categorized by Scope 1, 2, and 3. It compares 'Base' and 'test' scenarios. A 'test' scenario for 2021 shows a significant reduction in Scope 1 emissions to 180,000,000 tonne CO2e.

Year	Total scopes - Emission (tonne CO2e)		Scope 1 Emission (tonne CO2e)		Scope 2 Emission (tonne CO2e)		Scope 3 Emission (tonne CO2e)
	Base	test	Base	test	Base	test	Base
2018	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0
2021	177,629,454	180,000,000	152,489,454	152,489,770	140,000	153,199	25,000,000
2022	171,865,145	171,865,145	147,027,145	147,027,145	138,000	138,000	24,700,000
2023	176,036,548	176,036,548	149,967,688	149,967,688	133,860	133,860	25,935,000
2024	180,328,545	180,328,545	152,966,951	152,966,951	129,844	129,844	27,231,750
2025	184,745,586	184,745,586	156,026,299	156,026,299	125,949	125,949	28,593,338
2026	189,292,044	189,292,044	159,146,870	159,146,870	122,170	122,170	30,023,004
2027	194,529,643	194,529,643	162,886,983	162,886,983	118,505	118,505	31,524,155
2028	316,997,011	316,997,011	283,781,699	283,781,699	114,950	114,950	33,100,362
2029	321,345,175	321,345,175	289,457,325	289,457,325	111,502	111,502	31,776,348
2030	325,859,914	325,859,914	295,246,463	295,246,463	108,157	108,157	30,505,294
2031	330,541,449	330,541,449	301,151,455	301,151,455	104,912	104,912	29,285,082
2032	335,389,694	335,389,694	307,174,250	307,174,250	101,765	101,765	28,113,679

**Underlying GWP factors:** This panel shows GWP factors for CO2, CH4, and N2O. A 'test' scenario for 2021 shows a 6.0% reduction in CO2 GWP factor.

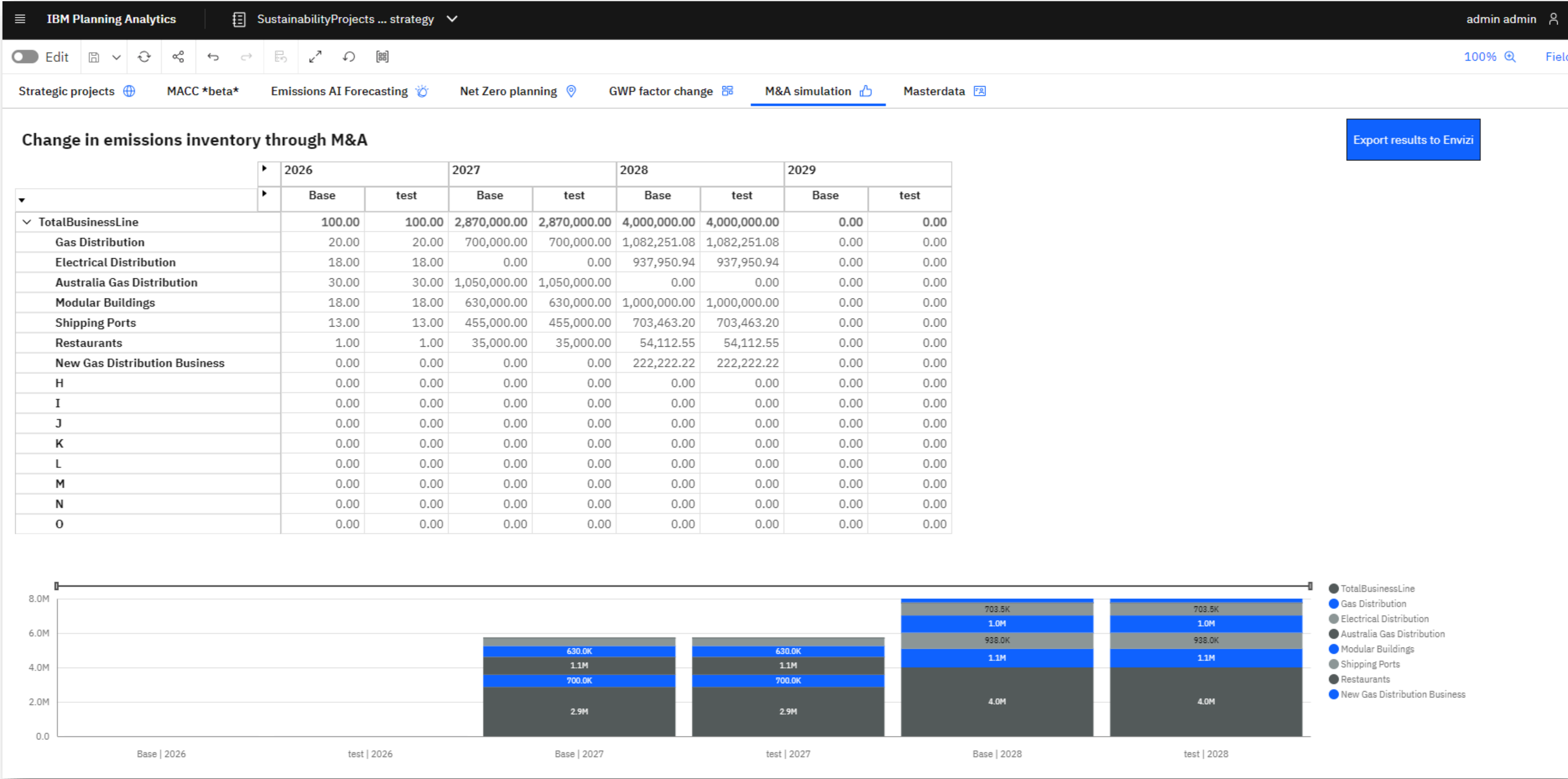
Year	Planned yearly reduction	
	Base	test
2018	0.0%	0.0%
2019	0.0%	0.0%
2020	0.0%	0.0%
2021	0.0%	0.0%
2022	(3.0%)	(3.0%)
2023	(4.0%)	(4.0%)
2024	(2.0%)	(2.0%)
2025	(2.5%)	(2.5%)
2026	(3.0%)	(3.0%)
2027	(4.0%)	(6.0%)
2028	(5.0%)	(5.0%)
2029	(10.0%)	(10.0%)
2030	0.0%	0.0%
2031	0.0%	0.0%
2032	0.0%	0.0%

**Additional Data:** The interface also displays 'Result planned emissions' and 'Achievement in %' tables, and a 'Define base year' dropdown set to 2021.

**Charts:** Two charts are shown: 'Total scopes - Emission' (bar chart comparing Base and test scenarios from 2021 to 2026) and 'KPI: Total scopes - Emission' (line chart showing planned reduction targets from 2021 to 2032).

Check your different emissions beside CO2 like CH4 or N20, simulate less consumption and check what would happen if in long term such factors would change

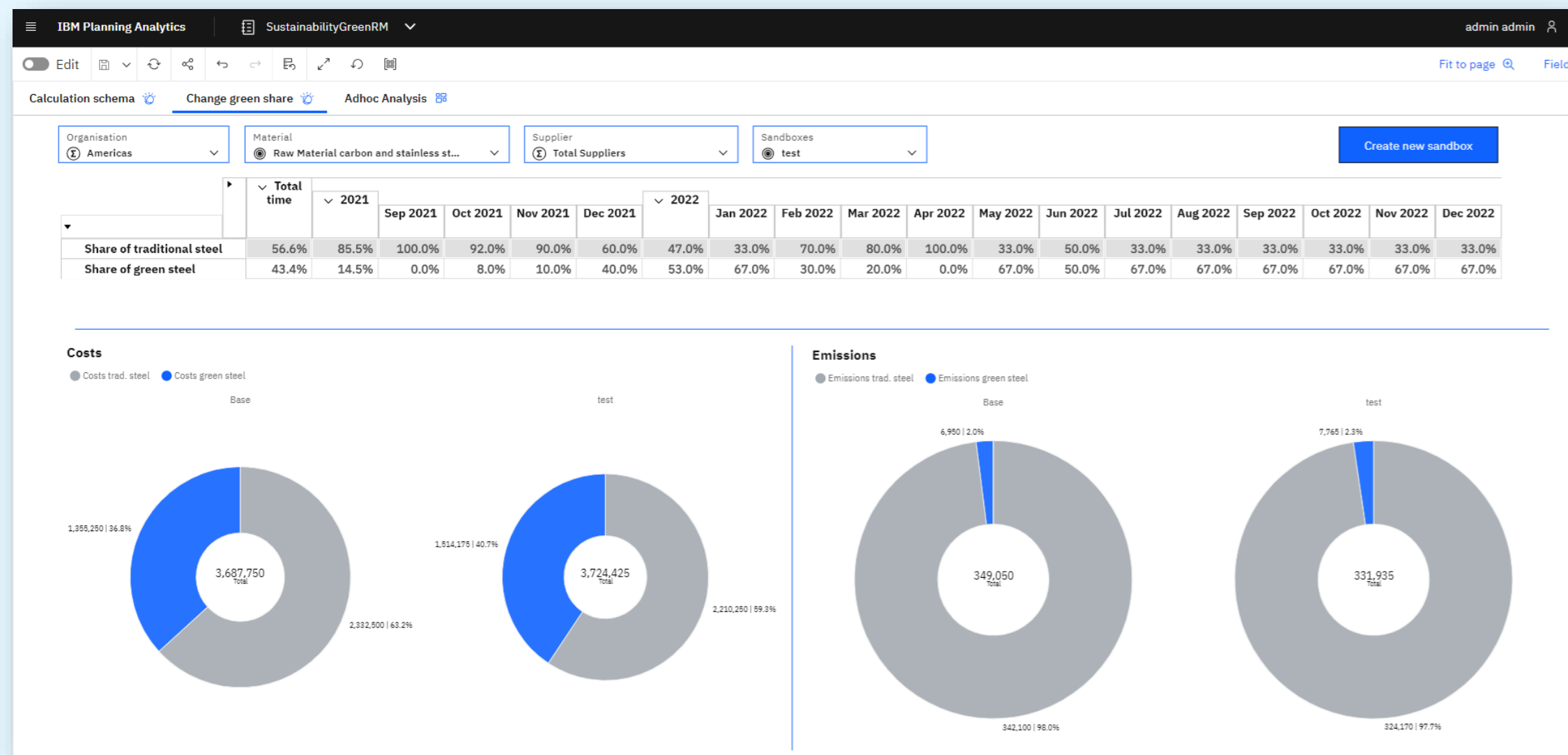
# Check or compare different scenarios based on merger & acquisition



Simulate in different scenarios how merger & acquisition could impact the sustainability targets

# Accelerator: Green raw material

Example steel procurement: simulate share of green steel



- Purpose: simulate the impact of buying a higher share of sustainable produced raw materials in the procurement process
- Simulate different parameters like sales amount, share of green raw material, steel price and green-uplift or carbon price
- Compare different scenarios and compare them
- Visualize results in dashboards or in an ad hoc analyses
- Technology: IBM Planning Analytics + ILOG CPLEX (optional)

# Simulate and visualize various parameters in procurement with cost-impact

The screenshot displays the IBM Planning Analytics SustainabilityGreenRM interface. It features a navigation bar with 'IBM Planning Analytics' and 'SustainabilityGreenRM' tabs, and a user profile 'admin admin'. Below the navigation bar, there are filters for 'Organisation' (Americas), 'Material' (Raw Material carbon and stainless st...), 'Supplier' (Total Suppliers), and 'Sandboxes' (test). A 'Create new sandbox' button is also present.

The main content area is divided into several sections:

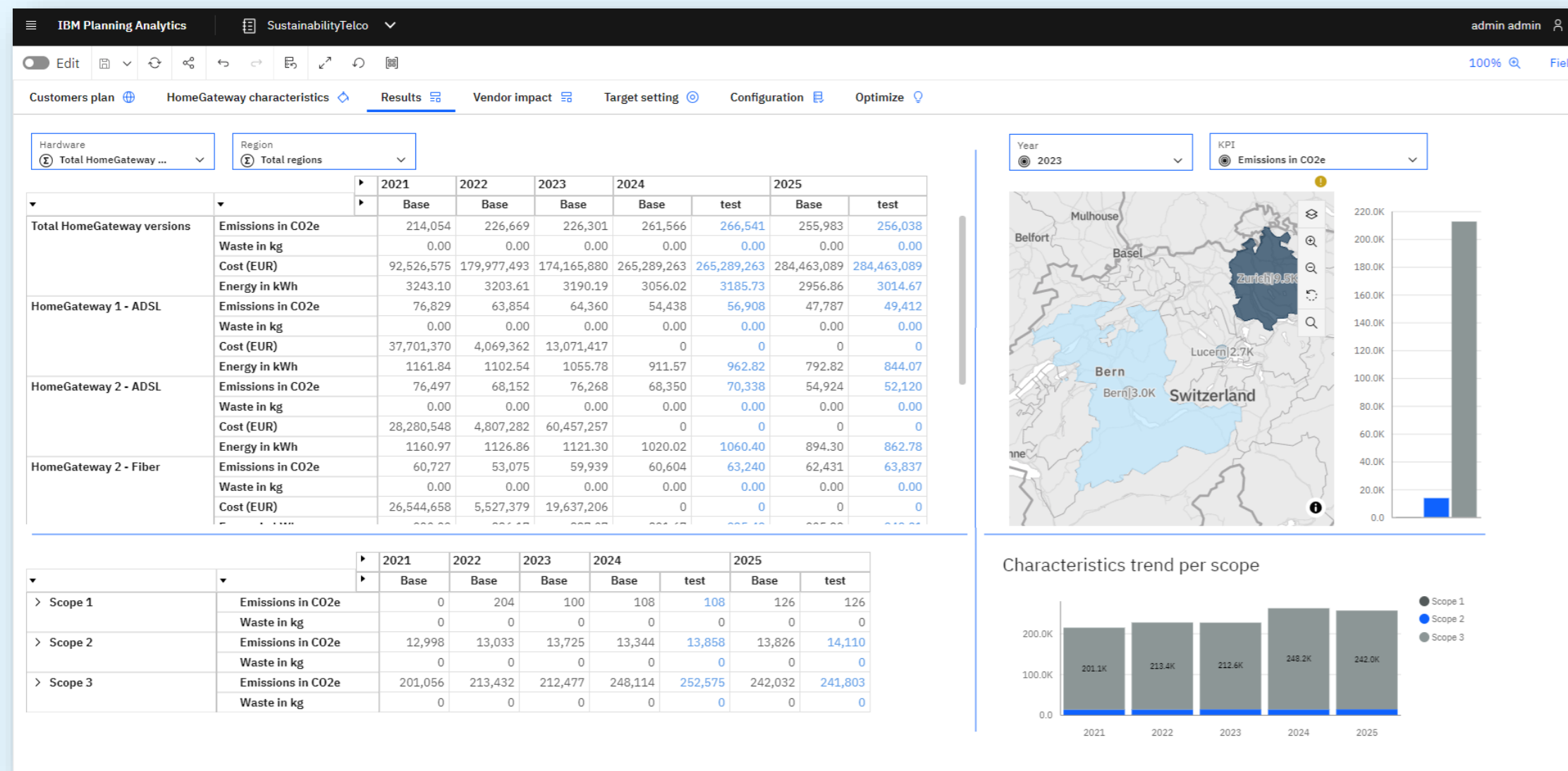
- Share of traditional steel and Share of green steel:** A table showing percentages for 2021 and 2022 across months from Sep to Dec.
- Costs:** A donut chart comparing 'Costs trad. steel' (grey) and 'Costs green steel' (blue). The total cost is 3,687,750. The chart shows 1,355,250 (36.8%) for traditional steel and 2,332,500 (63.2%) for green steel.
- Table:** A detailed data table with columns for 'Total time', '2021' (Sep-Dec), and '2022' (Jan-Apr). Rows include:
  - Quantity in t (purchase): 225,000 (2021), 105,000 (2022)
  - Order in k EUR (base): 13,310 (2021), 7,186 (2022)
  - Traditional steel - current cost [t / €]: 15,000
  - Green steel - cost increase: [% / t]: 30.0%
  - Green steel - costs [t / €]: 19,500
  - Share of green steel: 47.4% (2021), 61.7% (2022)
  - Share of traditional steel: 52.6% (2021), 38.3% (2022)
  - Total financial cost: 3,687,750 (2021), 1,856,700 (2022)
  - Total emissions: 349,050 (2021), 99,540 (2022)
  - Financial Impact: 312,750 (2021), 281,700 (2022)
  - CO2 Impact: -145,950 (2021), -131,460 (2022)
  - Total emissions: 349,050 (2021), 99,540 (2022)
- Parameters:** A table defining key metrics:
  - EF - 1t of steel [tCO2e]: 2.20
  - EF - 1t of green steel [tCO2e]: 0.10
  - Carbon price EUR / t: 45.00
- Bar Chart:** A bar chart showing emissions for 2021 and 2022. The 2021 bar is significantly higher than the 2022 bar, indicating a reduction in emissions.

Change quantity, order values and a lot of other values to compare impacts for different scenarios

# Accelerator: Sustainable Telco

Simulate change of products/clients, processes, lifecycle etc.

- Purpose: simulate different parameters for your products addressing different consumer groups in your product-/client-lifecycle
- Create and simulate different steps in product-/client-lifecycle
- Plan or AI-forecast different parameters like amount of subscribers/leavers
- Check your targets against projected actuals
- Technology: IBM Planning Analytics + ILOG CPLEX (optional)



# Analyze / plan / forecast your products from a client-perspective

The screenshot displays the IBM Planning Analytics interface for 'SustainabilityTelco'. The main view is titled 'Input: HomeGateway planning / forecast' and shows a data table for the years 2023 and 2024. The table is organized by region (Total regions, Bern, Zurich, Lucern) and customer status (Existing Customers, New subscribers, Leavers). A line chart below the table tracks various HomeGateway versions over time. To the right, a 'Result: number of HomeGateways' table shows data from 2021 to 2024 for different gateway types. Below that, an 'Input: % of recycled' table shows the percentage of recycled materials for each gateway type from 2021 to 2025.

		2023		2024					
		Nov	Dec	Year	Jan	Feb	Mar	Apr	Ma
Total regions	Existing Customers	6,647,339	6,622,983	5,772,411	6,598,628	6,523,517	6,448,406	6,373,296	6,29
	New subscribers	22,006	22,006	0	0	0	0	0	0
	Leavers	46,361	46,361	901,328	75,111	75,111	75,111	75,111	7
Bern	Customers	529,875	527,692	227,692	502,692	477,692	452,692	427,692	40
	Existing Customers	532,057	529,875	252,692	527,692	502,692	477,692	452,692	42
	New subscribers	2,606	2,606	0	0	0	0	0	0
Zurich	Customers	35,800	34,967	12,634	33,106	31,245	29,383	27,522	2
	Existing Customers	36,633	35,800	14,495	34,967	33,106	31,245	29,383	2
	New subscribers	0	0	0	0	0	0	0	0
Lucern	Customers	293,098	291,558	252,563	288,308	285,059	281,809	278,559	27
	Existing Customers	294,638	293,098	255,812	291,558	288,308	285,059	281,809	27

	2021	2022	2023	2024
Total HomeGateway versions	22.7M	22.8M	22.9M	22.9M
HomeGateway 1 - ADSL	7.3M	6.9M	6.6M	5.8M
HomeGateway 2 - ADSL	8.9M	8.7M	8.6M	7.9M
HomeGateway 2 - Fiber	6.6M	6.4M	6.3M	6.4M
HomeGateway 3 - Fiber	0.0M	0.4M	0.6M	0.9M
HomeGateway 3 - Fiber - ...	0.0M	0.4M	0.6M	0.9M
HomeGateway 4 - Fiber L...	0.0M	0.0M	0.0M	1.1M

	2021	2022	2023	2024	2025
Total HomeGateway versions	67.00%	44.20%	44.20%	73.20%	62.17%
HomeGateway 1 - ADSL	67.00%	67.00%	67.00%	90.00%	90.00%
HomeGateway 2 - ADSL	67.00%	67.00%	67.00%	75.00%	80.00%
HomeGateway 2 - Fiber	67.00%	67.00%	67.00%	67.00%	67.00%
HomeGateway 3 - Fiber	.00%	10.00%	10.00%	67.00%	67.00%
HomeGateway 3 - Fiber - (optimiz...	.00%	10.00%	10.00%	67.00%	67.00%
HomeGateway 4 - Fiber latest	.00%	.00%	.00%	.00%	2.00%

Use included AI forecast or take existing further planning functions to plan product or client-KPIs

# Plan KPIs like emissions, waste, costs or any other indicator per process

The screenshot displays the IBM Planning Analytics SustainabilityTelco interface. The main view is titled 'HomeGateway characteristics' and shows a table of inputs per hardware for the years 2021 to 2025. The table is categorized into Manufacturing, Distribution, Installation, and End of Life. Below the table, there are sections for 'Energy usage in kWh per one HomeGateway per year' and 'CO2e emissions in tons for usage across all regions and all clients'.

	2021	2022	2023	2024	2025
<b>Manufacturing</b>	37,000	37,000	37,000	37,000	37,000
Manufacturing core	37,000	37,000	37,000	37,000	37,000
<b>Distribution</b>	1,500	1,500	1,500	1,500	1,500
Cardboard for shipping	1,500	1,500	1,500	1,500	1,500
Instruction sheet					
Padding foam/paper					
Waste disposal by customer					
<b>Installation</b>	900	900	900	900	900
Install box at home	500	500	500	500	500
Install fiber to home					
Car fleet usage / owned	400	400	400	400	400
Car fleet usage / leased					
Electricity consumption at network per year					
<b>End of Life</b>	3,000	3,000	3,000	3,000	3,000
Receive box to warehouse					
Shipping from client to warehouse					
Return from client					
Dispose return packaging					
Reconditioning					
Disposal HomeGateway	3,000	3,000	3,000	3,000	3,000

Energy usage in kWh per one HomeGateway per year:

Electricity consumption at home per year		70.00	70.00	70.00	70.00
Electricity consumption at network per year		10.00	10.00	10.00	10.00

CO2e emissions in tons for usage across all regions and all clients:

Emissions in CO2e	0.0	2.1K	3.2K	4.3K	5.6K
-------------------	-----	------	------	------	------

The interface also features two bar charts. The first chart, 'Characteristics comparison by HomeGateways per one unit:', is a stacked bar chart showing CO2e emissions for four configurations: HomeGateway 1 - ADSL, HomeGateway 2 - ADSL, HomeGateway 3 - Fiber (optimized use), and HomeGateway 4 - Fi... The second chart, 'CO2e emissions in tons for usage across all regions and all clients:', is a bar chart showing the total CO2e emissions for the same four configurations.

Cluster all processes in any granularity and fill the KPIs automatically or per manual input



# Check the results per region, product etc. for any KPI incl. scope 1-3 and supplier impact

The screenshot displays the IBM Planning Analytics SustainabilityTelco interface. The top navigation bar includes 'IBM Planning Analytics', 'SustainabilityTelco', and user information 'admin admin'. Below the navigation bar, there are tabs for 'Customers plan', 'HomeGateway characteristics', 'Results', 'Vendor impact', 'Target setting', 'Configuration', and 'Optimize'. The 'Results' tab is active, showing a data table for 'Emissions in CO2e' across various HomeGateway versions and regions. The table includes columns for years 2021-2025 and scenarios 'Base' and 'test'. A map of Switzerland is visible in the background, with a bar chart showing emissions in CO2e for different regions. The 'Vendor impact' tab is also shown, displaying a table for 'Emissions in CO2e' by vendor and year, along with a stacked bar chart and pie charts showing the percentage contribution of each vendor to the total emissions.

		2021	2022	2023	2024	2025		
		Base	Base	Base	Base	test	Base	test
Total HomeGateway versions	Emissions in CO2e	214,054	226,669	226,301	261,566	266,541	255,983	256,038
	Waste in kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cost (EUR)	92,526,575	179,977,493	174,165,880	265,289,263	265,289,263	284,463,089	284,463,089
	Energy in kWh	3243.10	3203.61	3190.19	3056.02	3185.73	2956.86	3014.67
HomeGateway 1 - ADSL	Emissions in CO2e	76,829	63,854	64,360	54,438	56,908	47,787	49,412
	Waste in kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cost (EUR)	37,701,370	4,069,362	13,071,417	0	0	0	0
HomeGateway 2 - ADSL	Emissions in CO2e	76,497	68,152	76,268	68,350	70,338	54,924	52,120
	Waste in kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cost (EUR)	28,280,548	4,807,282	60,457,257	0	0	0	0
HomeGateway 2 - Fiber	Emissions in CO2e	60,727	53,075	59,939	60,604	63,240	62,431	63,837
	Waste in kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cost (EUR)	26,544,658	5,527,379	19,637,206	0	0	0	0

		2021	2022	2023	2024	2025		
		Base	Base	Base	Base	test	Base	test
> Scope 1	Emissions in CO2e	0	204	100	108	108	126	126
	Waste in kg	0	0	0	0	0	0	0
> Scope 2	Emissions in CO2e	12,998	13,033	13,725	13,344	13,858	13,826	14,110
	Waste in kg	0	0	0	0	0	0	0
> Scope 3	Emissions in CO2e	201,056	213,432	212,477	248,114	252,575	242,032	241,803
	Waste in kg	0	0	0	0	0	0	0

Drill down to any granularity and see in the blue colored KPIs any parameter change to compare different scenarios

# Set your targets in the tool and check if your actuals or plan fit to it

The screenshot displays the IBM Planning Analytics SustainabilityTelco interface. The top navigation bar includes 'IBM Planning Analytics', 'SustainabilityTelco', and user information 'admin admin'. The main menu contains 'Customers plan', 'HomeGateway characteristics', 'Results', 'Vendor impact', 'Target setting', 'Configuration', and 'Optimize'. The 'Target setting' tab is active, showing a table for setting targets per KPI. Below this is a bar chart for 'Emissions (CO2e in Tonnes)' comparing 'Base' and 'test' scenarios from 2021 to 2025. The 'Configuration' tab is also shown, featuring a table for 'CO2e per 1 kWh per region' and a 'Vendor per HomeGateway' table. A 'HomeGateway characteristics' table lists various processes like 'Installation', 'Usage of product', and 'End of Life' with their respective valid-for periods and scopes. Action buttons for 'Update vendor hierarchy', 'Create new process', and 'Update process hierarchy' are visible.

	Base					test				
	2021	2022	2023	2024	2025	2021	2022	2023	2024	2025
Emissions in CO2e	300.0K	285.0K	270.0K	257.0K	244.0K	300.0K	285.0K	270.0K	600.0	244.0K
Waste in kg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cost (EUR)	200.0M	200.0M	200.0M	250.0M	250.0M	200.0M	200.0M	200.0M	250.0M	250.0M
Energy in kWh	1.7B	1.7B	1.7B	1.7B	1.7B	1.7B	1.7B	1.7B	1.7B	1.7B

	2021	2022	2023	2024	2025
Total regions	55.00	55.00	65.00	65.00	65.00
Bern	30.00	30.00	30.00	30.00	30.00
Zurich	80.00	80.00	120.00	120.00	120.00
Lucern	52.00	52.00	52.00	52.00	52.00
Rest of Switzerland	58.00	58.00	58.00	58.00	58.00

	2021	2022	2023	2024	2025
HomeGateway 1 - ADSL	Vendor 1	Vendor 1	Vendor 1	Vendor 1	Vendor 1
HomeGateway 2 - ADSL	Vendor 2	Vendor 2	Vendor 2	Vendor 2	Vendor 2
HomeGateway 2 - Fiber	Vendor 2	Vendor 2	Vendor 2	Vendor 2	Vendor 2
HomeGateway 3 - Fiber	Vendor 3	Vendor 3	Vendor 3	Vendor 3	Vendor 3
HomeGateway 3 - Fiber - (optimized use)	Vendor 3	Vendor 3	Vendor 3	Vendor 3	Vendor 3

	2021	2022	2023	2024	2025
Installation					
Install box at home					
Install fiber to home					
Car fleet usage / owned					
Car fleet usage / leased					
Usage of product					
Electricity consumption at home per year					
Electricity consumption at network per year					
End of Life					
Receive box to warehouse					
Shipping from client to warehouse					
Return from client					
Dispose return packaging					
Reconditioning					
Disposal HomeGateway					
Process N/A					

Set the targets for any KPIs. Customize on top the processes, create or change new one.

# Optimize sustainability versus financial KPIs automatically

The screenshot shows the IBM Planning Analytics interface for 'SustainabilityTelco'. The 'Optimize' tab is active, displaying a table of targets and optimization parameters. A dialog box titled 'Review Parameters for Optimize' is open, showing prompts for region, product, and year selection.

**Targets**

	2021	2022	2023	2024	2025
Emissions in CO2e	300.0K	285.0K	270.0K	257.0K	244.0K
Cost (EUR)	200,000.0K	200,000.0K	200,000.0K	250,000.0K	250,000.0K

**Optimization parameters**

**General**  
Regions : 4 Values  
CO2e / region

**Product Related - HomeGateway**  
HomeGateway characteristics : 7 Values  
CO2e : 6 values, kWh consumption : 1 value, Cost : 1 value

**Additional HomeGateway data**

		2021	2022	2023	2024	2025
Growth for New Subscribers	Min					
	Max					
Growth for Leavers	Min					
	Max					
Production of new liveboxes	Min	0	0	0	0	0
	Max	0	0	0	0	0

**Client related / per region / any HomeGateway**

		2021	2022	2023	2024	2025
Client per region (Subscribers)	Min	20.00%	20.00%	20.00%	20.00%	20.00%
	Max	24.00%	24.00%	24.00%	24.00%	24.00%
Client per region (Leavers)	Min	4.00%	4.00%	4.00%	4.00%	4.00%
	Max	20.00%	20.00%	20.00%	20.00%	20.00%

**Review Parameters for Optimize**

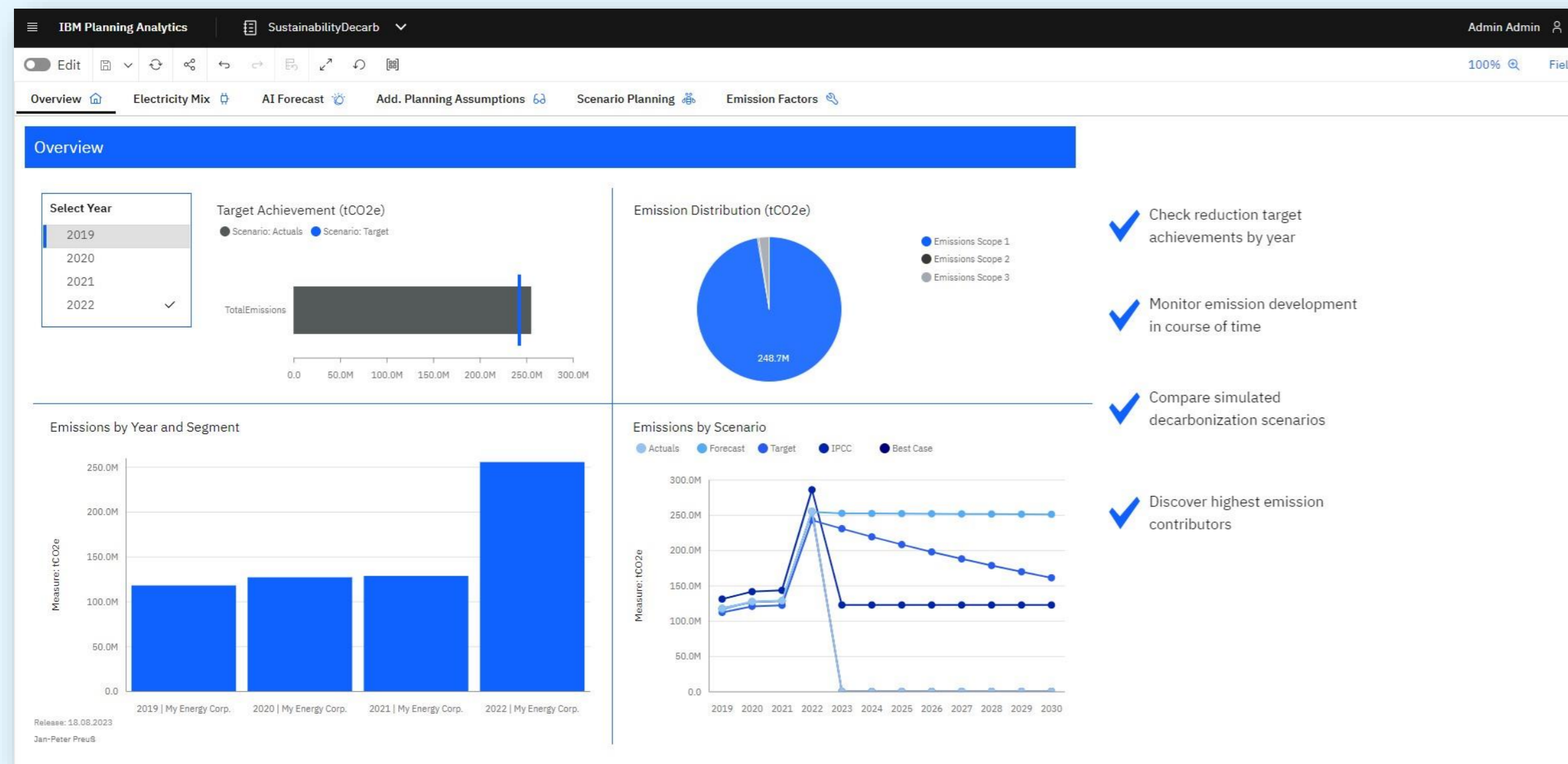
Prompt	Value
Which region should be optimized?	Pick an element
Which product?	Pick an element
Which Year? (Blank = All)	Pick an element

Buttons: Cancel, OK

Use optionally optimizing components to find automatically the best plan for all your targets

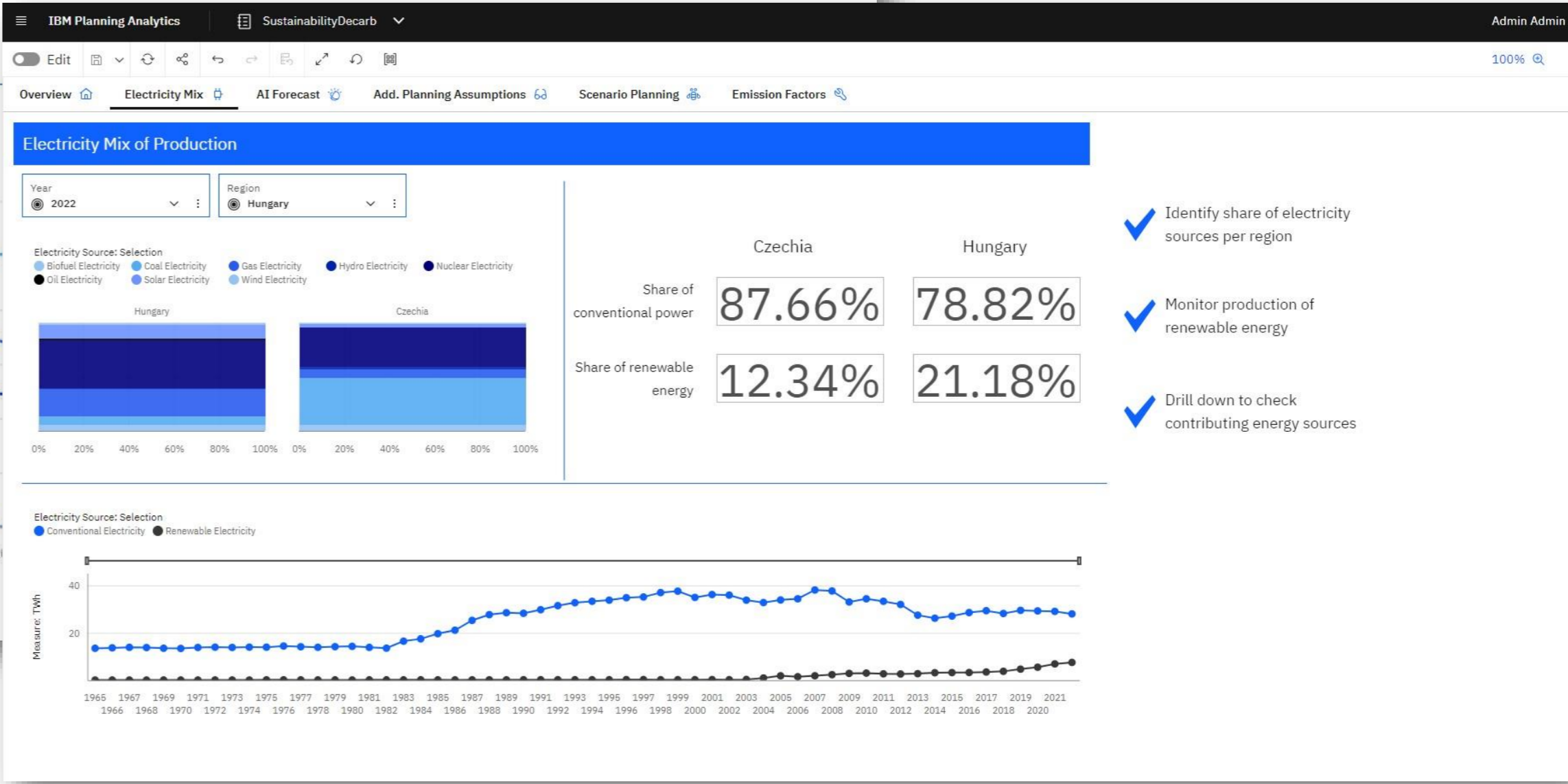
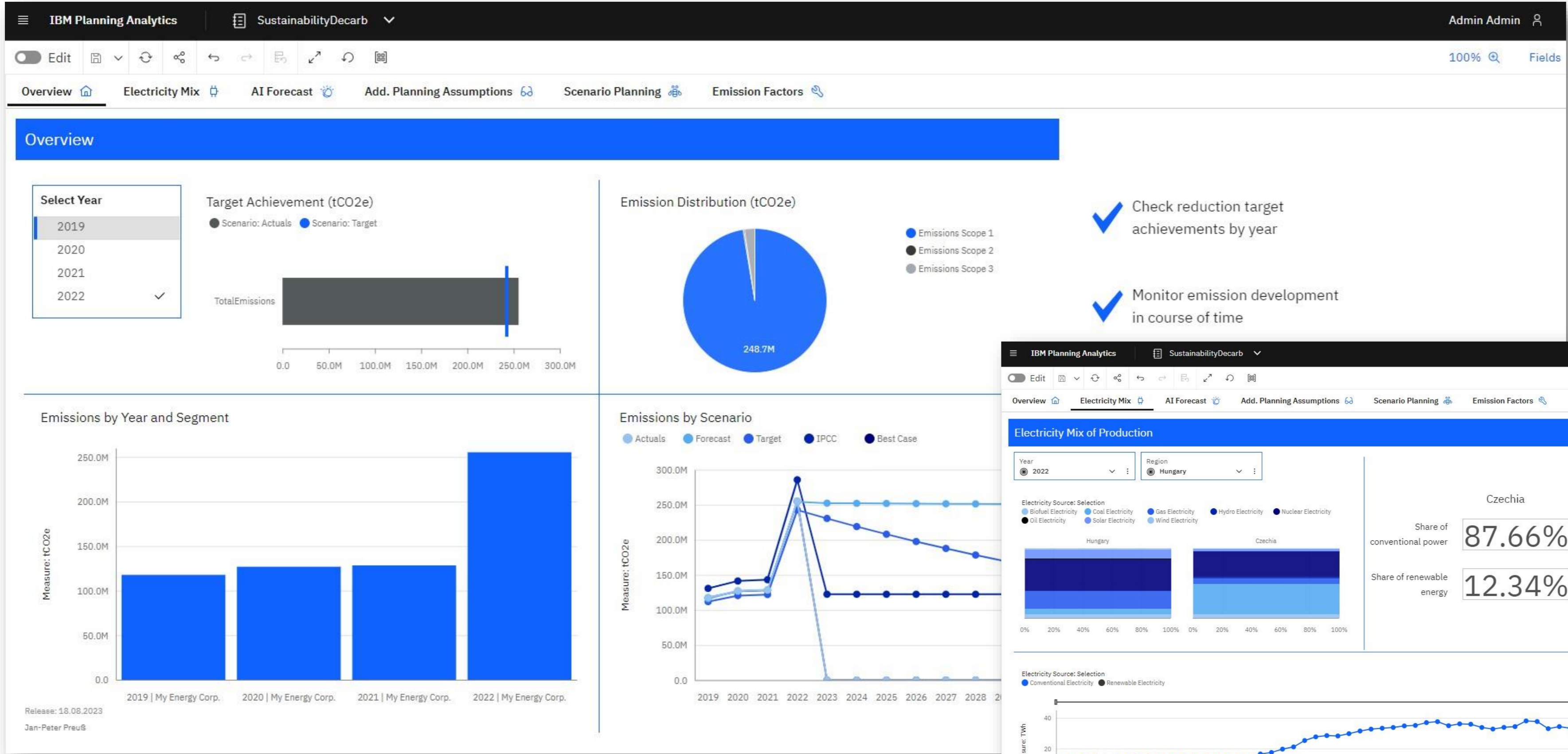
# Accelerator: Sustainable Energy Decarbonization

Simulate energy mix of energy  
production or grid losses



- Purpose: plan and simulate for different production-locations the energy-mix producing electricity
- Content: based on historic data and some other manual inputted parameters, the model calculates based on GWP-factors emission-scenarios
- Data sources: master data can be manually adapted – actuals can be loaded (files, data warehouse etc.) or manually inputted in an auditable way and automatically aggregated
- Technology: IBM Planning Analytics

# Analyze your emissions and long term history of energy mix in production



Compare locations, actuals vs. targets or any kind of data granularity

# Plan / forecast the energy mix in production

The screenshot displays the IBM Planning Analytics interface for 'SustainabilityDecarb'. It features a navigation bar with 'Overview', 'Electricity Mix', 'AI Forecast', 'Add. Planning Assumptions', 'Scenario Planning', and 'Emission Factors'. The main content is divided into three sections:

- Electricity Mix AI Forecast:** A table showing 'Forecast External Data (Electricity Mix)' from 2021 to 2030. A checkmark icon and the text 'Forecast development of energy mix' are present.
- Plan Emission Factors:** A line chart showing 'tCO2e' from 2019 to 2027 for three indicators: Scope 3 - Purchased power sold t..., Scope 3 - Sales Power B2B (mark...), and Scope 3 - Sales Power B2C (mark...).
- Additional planning assumptions:** A section for 'Gas grid losses' with a table showing percentage changes from 2020 to 2029 for 'Energy Czechia', 'Grids Gas Czechia', 'Energy Hungary', and 'Grids Gas Hungary'. Below this is a 'Waterfall' chart showing 'Measure: tCO2e' from 2020 to 2030, with column values for 'Increase' and 'Decrease'.

Three checkmarks on the right side of the interface indicate key capabilities: 'Model the impact of special effects on reduction path', 'Create transparency on emission development by effects', and 'Include advanced dependencies as well as ad-hoc emission effects'.

Manually plan or use included AI forecast to simulate the mix. In a second step plan addit. effect like reduced grid losses or other effects

# Compare the results and open new scenarios

The screenshot displays the IBM Planning Analytics Scenario Planning interface. At the top, there's a navigation bar with 'Overview', 'Electricity Mix', 'AI Forecast', 'Add. Planning Assumptions', 'Scenario Planning', and 'Emission Factors'. The main content area is titled 'Scenario Planning' and contains a table with columns for 'Total years' (2019-2023) and rows for 'Actuals', 'Forecast', and 'Target', each broken down into 'TotalEmissions' and three 'Emissions Scope' categories. To the right of the table are four blue buttons: 'Create Scenario', 'Delete Scenario', 'Mass Import Actuals', and 'DL Actuals (demo)'. Below the table are two charts: a line chart on the left showing 'Measure: tCO2e' from 2019 to 2030 for 'Actuals', 'Forecast', 'Target', 'IPCC', and 'Best Case' scenarios; and a bar chart on the right titled 'Scenario Comparison' comparing 'Scenario: Actuals' and 'Scenario: Target' for the years 2019-2022. On the far right, four blue checkmarks are accompanied by the following text: 'Compare different decarbonization scenarios', 'Check actual achievement of your scenarios', 'Create new scenarios and implement assumptions easily', and 'Use sandboxes for ad-hoc analysis'.

	Total years	2019	2020	2021	2022	2023	2024
Actuals	TotalEmissions	117,750,673.59	126,856,780.59	128,377,812.34	255,344,341.38	0.00	
	Emissions Scope 1	100,390,183.05	114,562,260.33	119,075,763.22	248,662,714.61	0.00	
	Emissions Scope 2	765,649.40	705,343.87	856,739.60	739,643.72	0.00	
	Emissions Scope 3	16,594,841.14	11,589,176.39	8,445,309.52	5,941,983.05	0.00	
Forecast	TotalEmissions	116,078,756.75	127,254,840.19	128,719,695.00	254,196,586.47	252,252,60...	252,0...
	Emissions Scope 1	100,122,125.98	114,820,119.39	119,336,588.83	246,729,065.94	246,582,59...	246,5...
	Emissions Scope 2	586,743.67	533,348.70	649,957.07	568,486.49	568,486.49	568,...
	Emissions Scope 3	15,369,887.10	11,901,372.10	8,733,149.10	6,899,034.03	5,101,515.82	4,877,...
Target	TotalEmissions	111,863,139.91	120,513,941.56	121,958,921.72	242,577,124.33	230,448,26...	218,9...
	Emissions Scope 1	95,370,673.90	108,834,147.32	113,121,975.06	236,229,578.89	224,418,09...	213,1...
	Emissions Scope 2	727,366.93	670,076.67	813,902.62	702,661.54	667,528.46	634,...
	Emissions Scope 3	15,765,099.09	11,009,717.57	8,023,044.05	5,644,883.90	5,362,639.71	5,094,...

Open new scenarios and take existing scenarios as initial baseline for all new parameter changes

# Accelerator: Sustainability analytics entry point

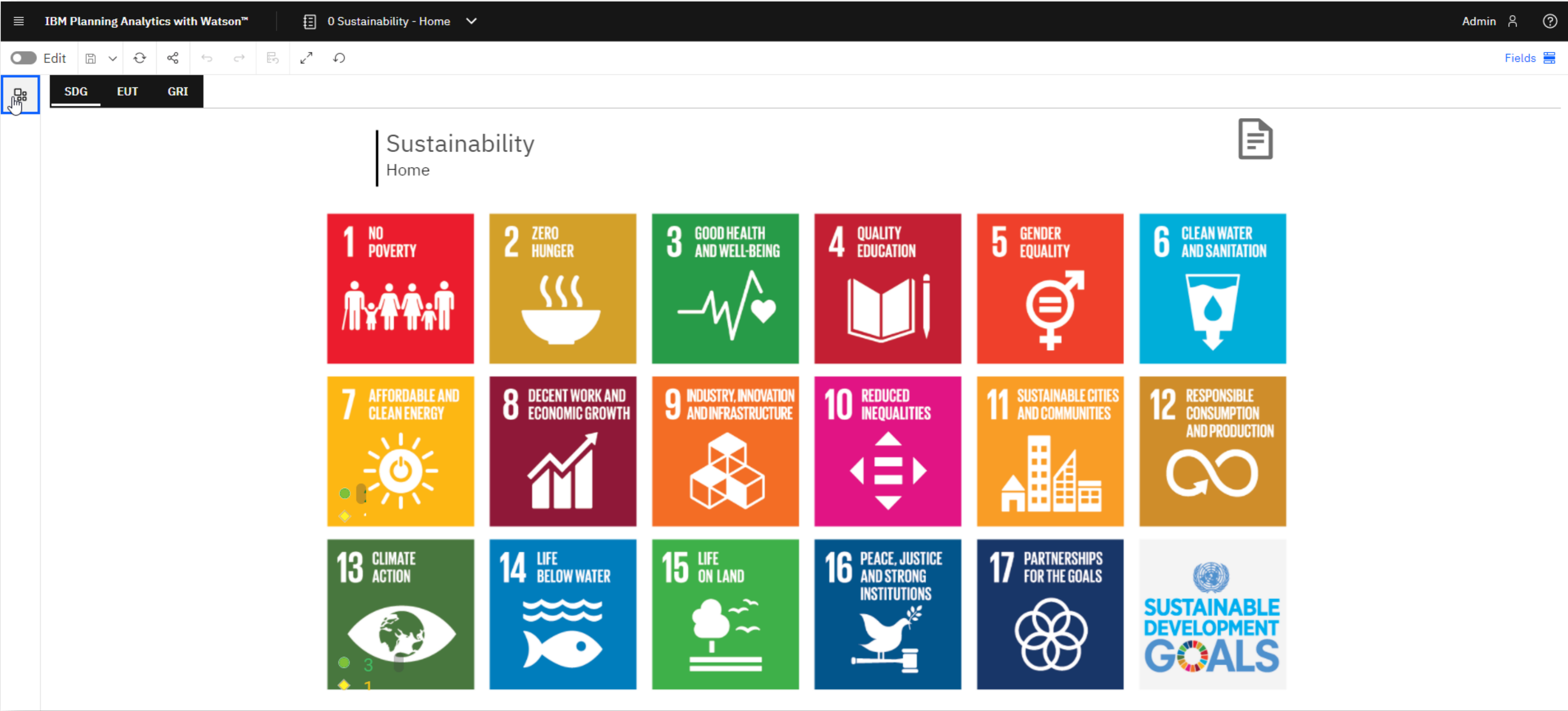
Start your data collection



- Purpose: possible starting point for each company having not yet any analytics or target-setting for sustainability. Can be used for an easy data-collection and visualization.
- Content: modular approach having the 17 UN-goals in focus
- Data sources: master data can be manually adapted – actuals can be loaded (files, data warehouse etc.) or manually inputted in an auditable way and automatically aggregated
- Technology: IBM Planning Analytics



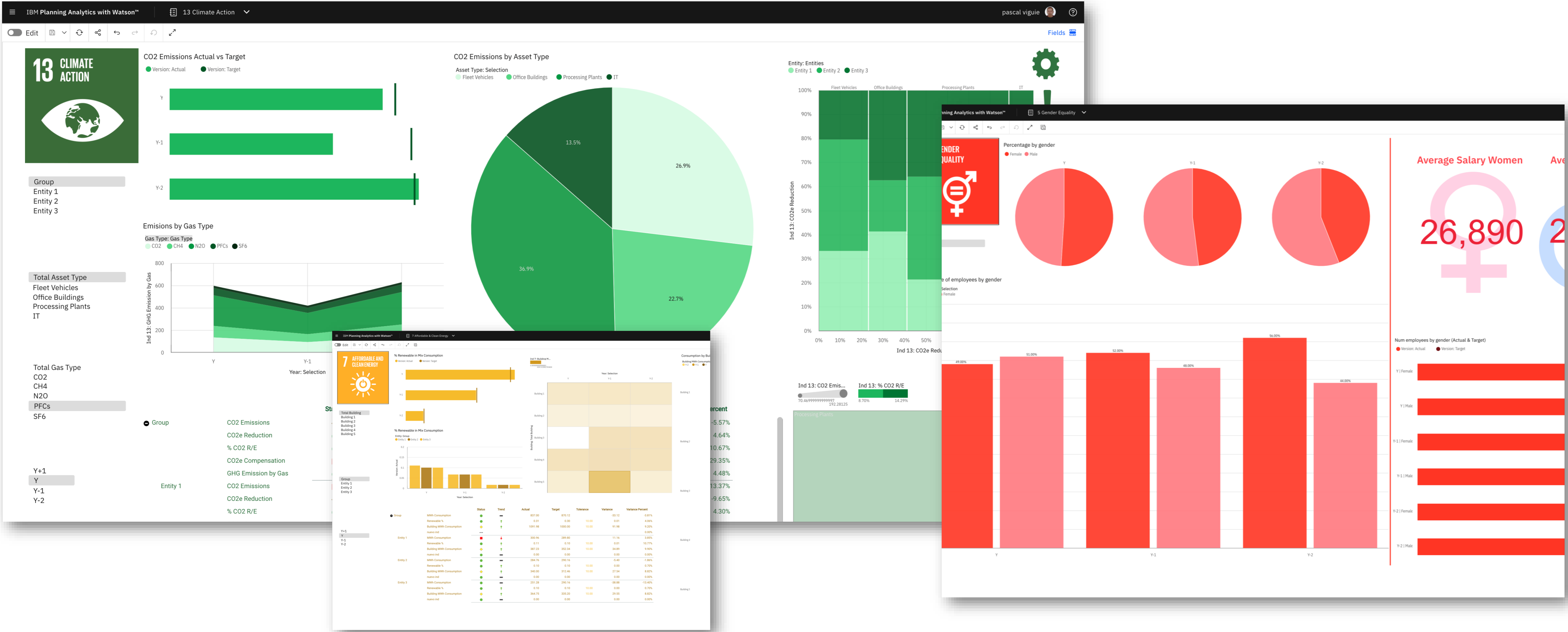
# Use Planning Analytics as initial data collection



Collection based on the 17 goals (SDGs) of the United Nations

Sustainability analytics entry point

# Visualize goals and indicators through modern and customizable dashboards in a few clicks



Management-ready: create within few clicks dashboards on your collected data

Sustainability analytics entry point

# Manage the information for each indicator at the level you need

The image displays three overlapping screenshots of the IBM Planning Analytics with Watson interface, illustrating the flexibility in managing sustainability indicators.

- Top Left Screenshot (Manage Indicator):** Shows the 'Manage Indicator' tab. The indicator 'Ind 7' is selected under 'R6Sustainability'. The table below lists members: 'es (Alias)', 'Tot Ind 7', 'MWh Consumption' (Consumo MVh), 'Renewable %' (% renovable del consumo), and 'Building MWh Consumption' (Consumo MVh Edificios).
- Top Right Screenshot (Manage Entity):** Shows the 'Manage Entity' tab. The entity 'Entity' is selected under 'R6Sustainability'. The table lists members: 'Entity Total', 'Entity NA', 'Group', 'Entity 1', 'Entity 2', and 'Entity 3'.
- Bottom Left Screenshot (Manage Custom 1):** Shows the 'Manage Custom 1' tab. The custom dimension 'Building' is selected under 'R6Sustainability'. The table lists members: 'en (Alias)', 'es (Alias)', 'Custom 1 Total' (Total Building.), 'Custom 1 NA', 'Total Building', 'Building 1', 'Building 2', 'Building 3', 'Building 4', and 'Building 5'.
- Bottom Right Screenshot (Rename Custom Dimensions):** Shows the 'Rename Custom Dimensions' tab with the instruction: 'Assign a business name to your used Custom Dimensions'. A table below shows the mapping of custom dimensions to business names:

Custom Dimension	Business Name
Custom7 1	Building
Custom7 2	Custom7 2
Custom7 3	Custom7 3

. All data granularity or master data is changeable : you can always decide to add or remove details to your indicators

Sustainability analytics entry point

# Define targets for each of the sustainability indicators and analyze deviations against data

The screenshot displays the IBM Planning Analytics with Watson interface for sustainability analytics. The main dashboard shows a bar chart for '% Renewable in Mix Consumption' comparing actual and target values for years Y, Y-1, and Y-2. Below this is a table with columns for Status, Trend, Actual, Target, and Tolerance, detailing MWh Consumption and Renewable % for various entities (Group, Entity 1, Entity 2, Entity 3) across years Y+1, Y, Y-1, and Y-2.

Group	Metric	Status	Trend	Actual	Target	Tolerance
Group	MWh Consumption	●	▬	837.00	870.12	
Group	Renewable %	●	↑	0.31	0.30	10.00
Group	Building MWh Consumption	◆	↑	1091.98	1000.00	10.00
Group	nuevo ind	...				
Entity 1	MWh Consumption	■	↓	300.96	289.80	
Entity 1	Renewable %	●	↑	0.11	0.10	10.00
Entity 1	Building MWh Consumption	◆	↑	387.23	352.34	10.00
Entity 1	nuevo ind	●	▬	0.00	0.00	
Entity 2	MWh Consumption	●	▬	284.76	290.16	
Entity 2	Renewable %	●	↑	0.10	0.10	10.00
Entity 2	Building MWh Consumption	◆	↑	340.00	312.46	10.00
Entity 2	nuevo ind	●	▬	0.00	0.00	
Entity 3	MWh Consumption	●	▬	251.28	290.16	-38.88
Entity 3	Renewable %	●	↑	0.10	0.10	0.70%
Entity 3	Building MWh Consumption	◆	↑	364.75	335.20	29.55
Entity 3	nuevo ind	●	▬	0.00	0.00	8.82%

The secondary window, 'Admin Meta Data', shows a list of indicators for 'Ind 7' with their corresponding values and aliases:

Indicator	Value
Tot Ind 7	es (Alias)
MWh Consumption	Consumo MVh
Renewable %	% renovable del consumo
Building MWh Consumption	Consumo MVh Edificios

Customize all KPIs, versions etc. depending on your needs without programming

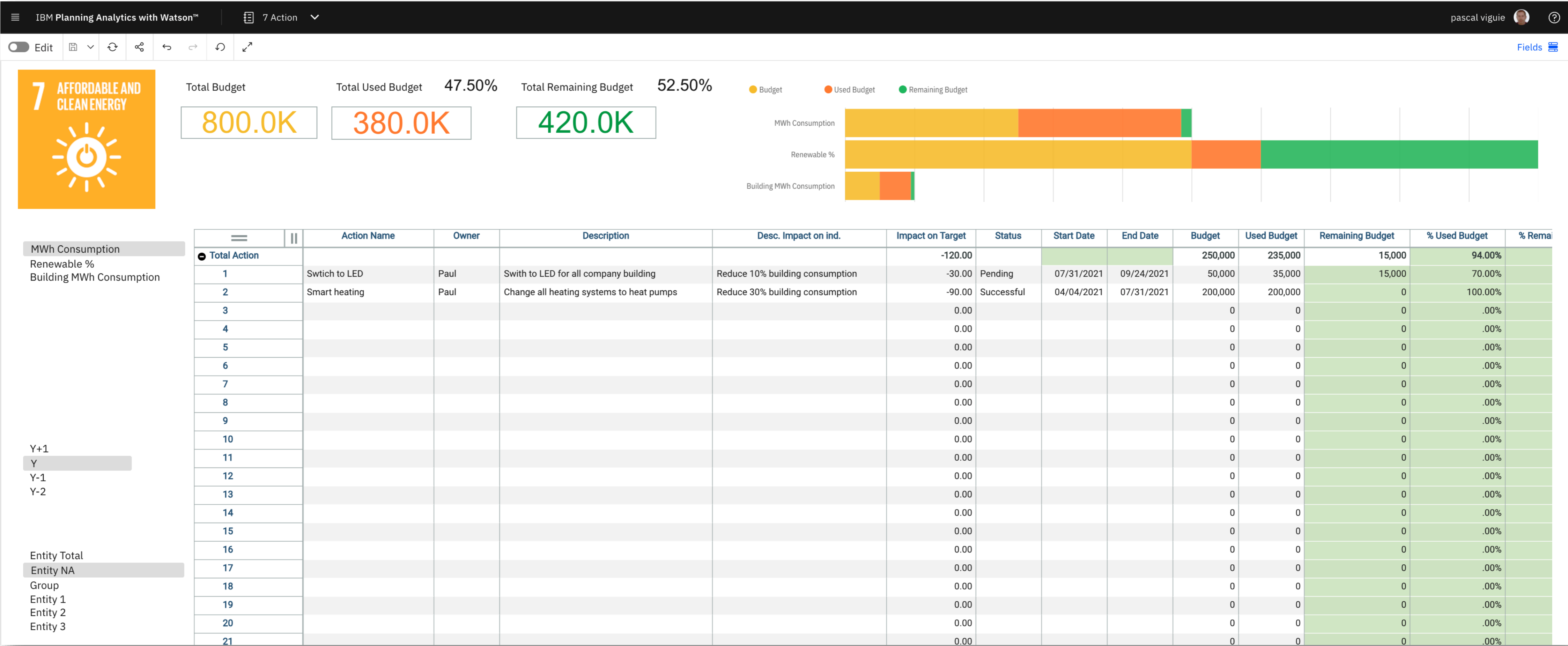
# Recompile + centralize all sustainability information according to its format and availability

The screenshot displays the IBM Planning Analytics with Watson interface. The main window shows a data table with columns for 'Y+1', 'Y', 'Y-1', and 'Y-2', each with 'Actual' and 'Target' sub-columns. The table is organized by 'Entity' (Entity 1, Entity 2, Entity 3) and 'Building' (Total Building, Building 1-5). A sidebar on the left contains navigation options like 'Administration', 'MWh Consumption', and 'Data Load'. A 'DATA MANAGEMENT' overlay is positioned in the foreground, featuring a large yellow document icon and two options: 'Load from Data Base' (with a database cylinder icon) and 'Load from File' (with a document icon). Below these options is a dashed box containing an upload icon and the text 'Drag and drop files here or click to browse'.

		Y+1		Y		Y-1		Y-2	
		Actual	Target	Actual	Target	Actual	Target	Actual	Target
Entity 1	Total Building	0.00	300.96	300.96	289.80	278.88	280.20	231.00	269.88
	Building 1	0.00	45.00	45.00	43.32	87.00	87.36	2.04	2.28
	Building 2	0.00	42.00	42.00	40.44	141.96	142.56	21.96	25.68
	Building 3	0.00	45.96	45.96	44.28	12.96	13.08	66.96	78.36
	Building 4	0.00	83.04	83.04	79.92	15.96	16.08	68.04	79.44
	Building 5	0.00	84.96	84.96	81.84	21.00	21.12	72.00	84.12
Entity 2	Total Building	0.00	300.96	284.76	290.16	221.76	279.96	219.36	269.88
	Building 1	0.00	45.00	88.80					
	Building 2	0.00	42.00	144.84					
	Building 3	0.00	45.96	13.32					
	Building 4	0.00	83.04	16.32					
	Building 5	0.00	84.96	21.48					
Entity 3	Total Building	0.00	300.96	251.28	2				
	Building 1	0.00	45.00	78.36					
	Building 2	0.00	42.00	127.80	1				
	Building 3	0.00	45.96	11.76					
	Building 4	0.00	83.04	14.40					
	Building 5	0.00	84.96	18.96					

Five possible ways for data collection: Manual input / upload of data files / connection to data bases for manual or scheduled data load / structured and unstructured Excel data upload / integration via APIs

# Create and manage initiatives and corrective actions for your indicators



Set target, track ownerships or manage budgets

# Why using IBM Planning Analytics for sustainability-topics?

- The technology is offering one platform for planning/simulation, analysis and optimization. It is addressing the sustainability-use cases for [all stakeholders](#) in the company.
- Link [sustainability-results directly to existing other plans](#) like finance, cost-planning or P&L.
- The solution is able to [simulate in real-time scenarios-changes](#) of all factors, drivers, initiatives or parameters – the end-users can directly check sandboxing-results in the balance or other result-outcomes.
- The solution can handle [all types of master data or granularity](#) like products, materials, regions, supply chain-processes etc. and applications be flexible [adjusted by the business department](#).
- No limitation for emission factors - ability to [create flexible new emission factors](#). No limitation of user interface languages.
- IBM Planning Analytics is a [mature native analytics-application](#) which can handle billions of data records in [scalable real-time-speed](#). Furthermore, the seamless analysis on all levels or aggregations through the whole data is possible.
- IBM Planning Analytics is [part of the integrated IBM Analytics portfolio](#) - other components like IBM Cognos Analytics, Watson Studio or ILOG CPLEX can enrich the solution (CP4D, Data Fabric etc.).

IBM