



Feeding AI Right: *XBRL vs. Unstructured Data*

Structured Data Powers
Reliable Intelligence

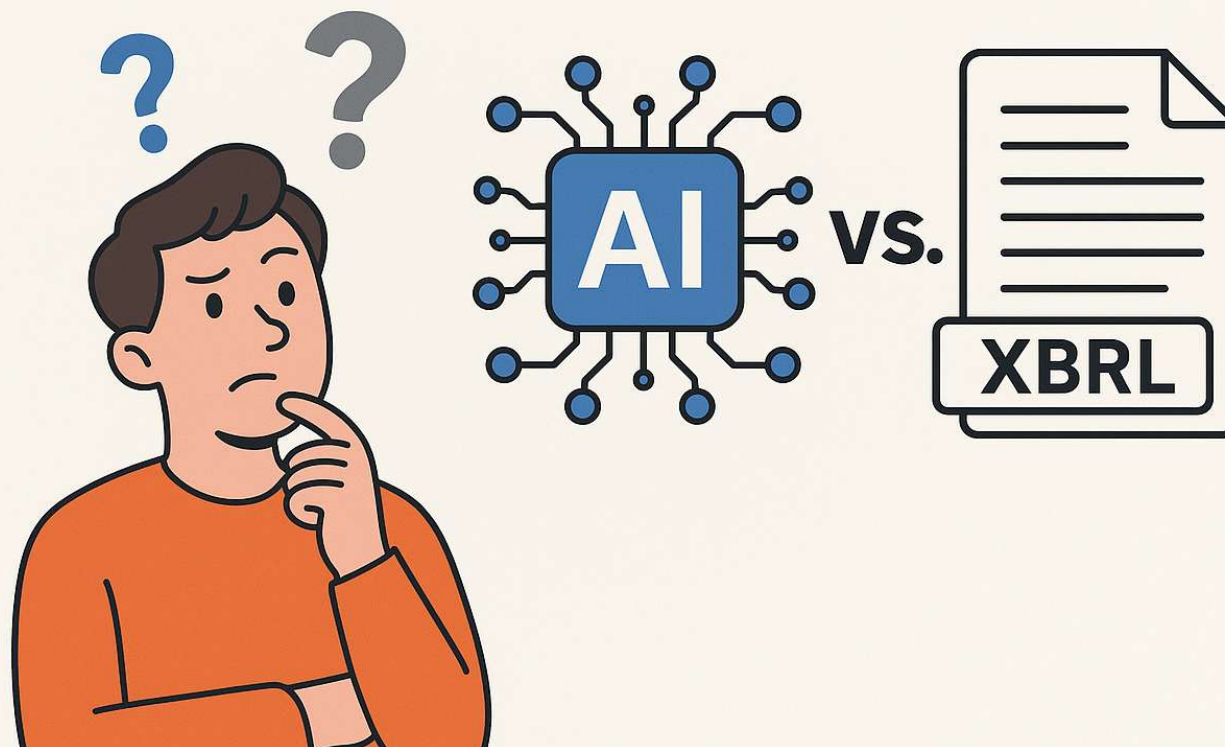
DIGITAL REPORTING IN EUROPE
3-5 JUNE 2025, FRANKFURT
Hosted by the European Central Bank

Revathy Ramanan , XBRL International

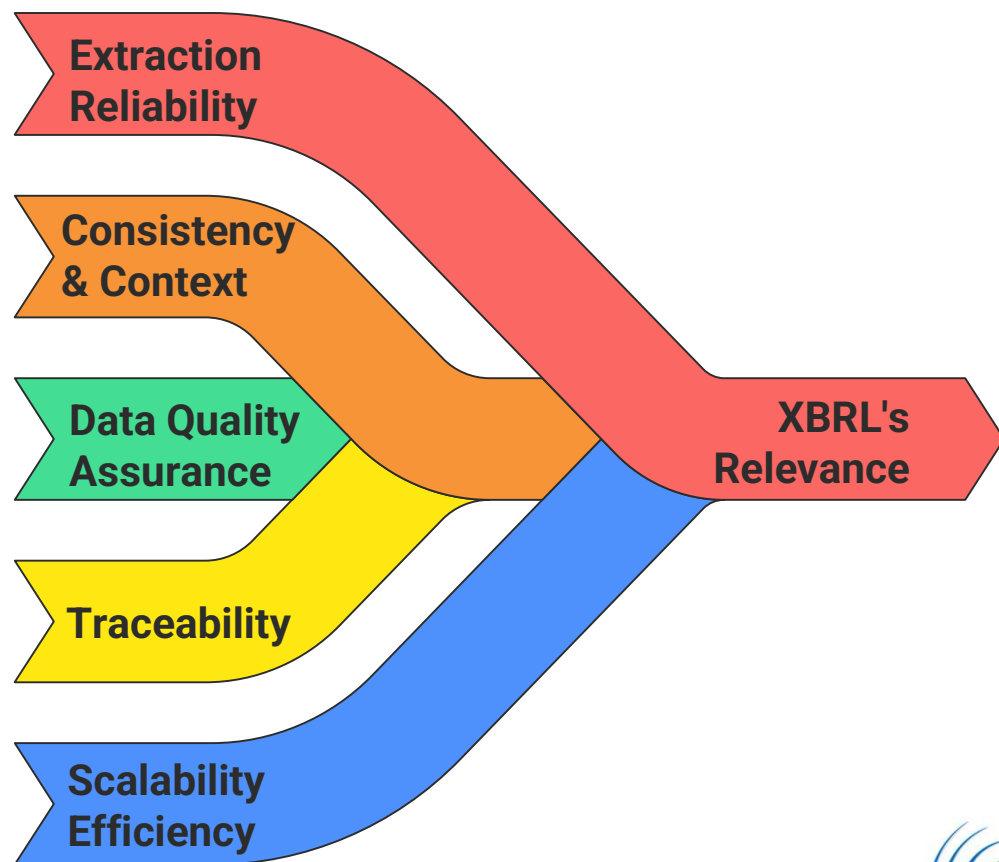


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If AI can extract data, why use XBRL?

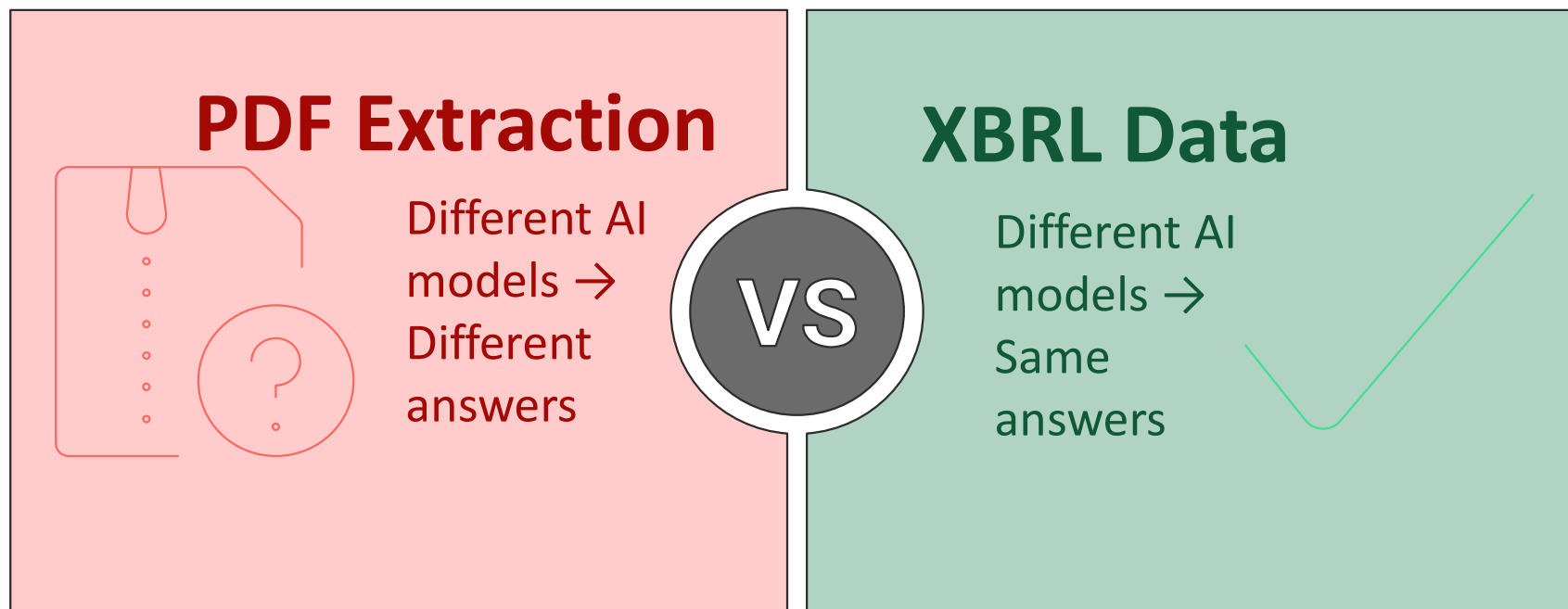


Why structured reporting still matters



No new arguments, but let's reassess considering AI advancements

Is AI data extraction reliable enough?



Focus on single CSRD metric

Sustainability statements - Environmental information - ESRS E1

E1-5 – Energy consumption and mix

Share of renewable
sources in total energy
consumption = 49%


		Unit	2024
1	Fuel consumption from coal and coal products	MWh	0
2	Fuel consumption from crude oil and petroleum products	MWh	0
3	Fuel consumption from natural gas	MWh	2,898
4	Fuel consumption from other fossil sources	MWh	10,279
5	Consumption of purchased or acquired electricity, heat, steam and cooling from fossil sources	MWh	1,682
6	Total fossil energy consumption (calculated as the sum of line 1 to 5)	MWh	14,859
	Share of fossil sources in total energy consumption	%	51
7	Consumption from nuclear sources	MWh	0
	Share of consumption from nuclear sources in total energy consumption	%	0
8	Fuel consumption for renewable sources, including biomass (also comprising industrial and municipal waste of biologic origin, biogas, renewable hydrogen, etc.)	MWh	0
9	Consumption of purchased or acquired electricity, heat, steam and cooling from renewable sources	MWh	12,858
10	The consumption of self-generated non-fuel renewable energy	MWh	1,533
11	Total renewable energy consumption (calculated as the sum of lines 8 to 10)	MWh	14,391
	Share of renewable sources in total energy consumption	%	49
	Total energy consumption (calculated as sum of line 6 and 11)	MWh	29,250

Solar A/S Annual Report 2024; Page 65



Extracting data from PDF

Chat-GPT

 **Solar Annual Report 2024.pdf**
PDF

What is the Percentage of renewable sources in total energy consumption

In the **Solar Annual Report 2024**, the **percentage of renewable sources in total energy consumption** is reported as **49%**.

This is calculated from:

- Purchased or acquired electricity, heat, steam, and cooling from renewable sources: **12,858 MWh**
- Self-generated non-fuel renewable energy: **1,533 MWh**
- Total renewable energy consumption: **14,391 MWh**
- Total energy consumption: **29,250 MWh**

So, the share of renewables = $\frac{14,391}{29,250} \times 100 = 49\%$.

Sources

Gets it right!
Though the value is derived



Extracting data from PDF

Google Gemini

What is the Percentage of renewable sources in total energy consumption

Solar Annual Report 2024 PDF

Solar Annual Report 2024.pdf

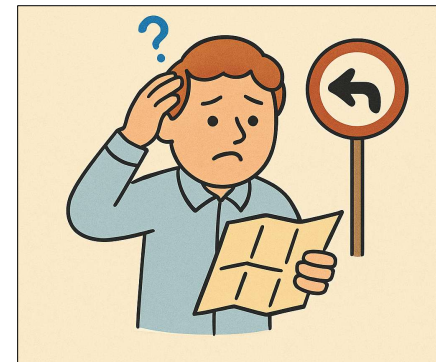
Analysis

Based on the 2024 annual report, Solar A/S's revenue from Climate & Energy products exceeds DKK 1 billion.

The report also states:

- In 2024, 9% of Solar's revenue came from Climate & Energy products.
- Solar has revised its 2026 ambition for the share of revenue from Climate & Energy to >10%, down from >15%.

Talks about targets and not the actual metric



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Extracting data from PDF

Mistral

PDF

Solar Annual Report 2024.pdf

What is the
Percentage of renewable sources in total energy consumption

M

The document states that Solar aims to use 100% renewable energy (electricity) by 2026. For 2024, the share of renewable energy (electricity) reached 88%. For sites owned by Solar, the share was 100%. However, since most of their sites are leased, achieving 100% renewable energy across all sites is challenging, but they are committed to making ongoing efforts to increase this share.

The document does not specify the percentage of renewable sources in total energy consumption for 2024, but it does mention that approximately 30% of their total electricity consumption comes from self-generated energy.

15:12

Says the document does not specify the metric



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Same metric but different report

Energy intensity and mix

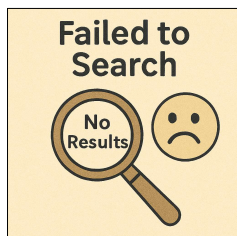
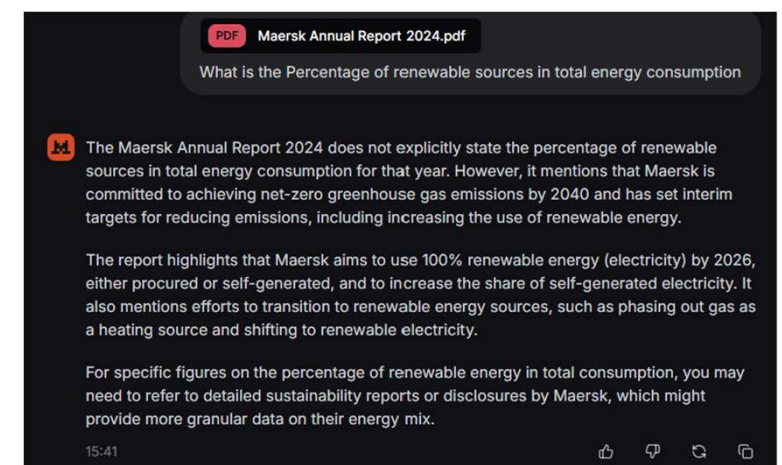
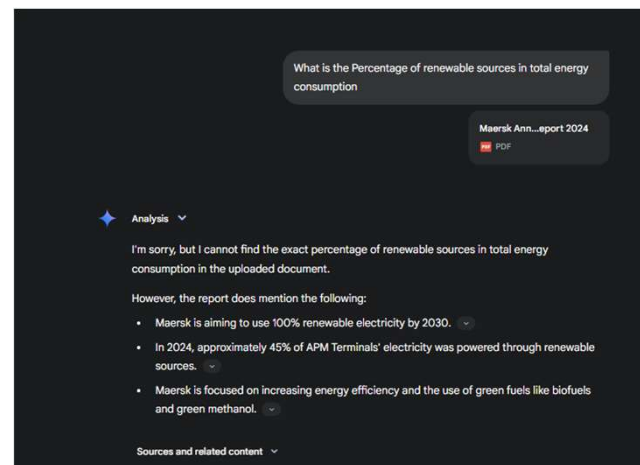
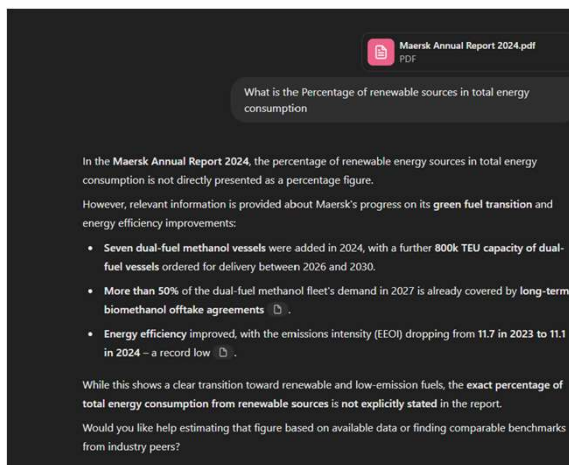
EFRAG ID	Indicator	Unit	2024	2023 ¹	2022 ¹
E1-5_18	Energy intensity	GWh/USDm	2.18	2.28	1.52
E1-5_09	Share of renewable energy consumption	%	3	2	2
E1-5_15	Share of fossil fuel sources in energy consumption	%	97	98	98

A.P. Moller - Maersk Annual Report 2024; Page 95



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Extracting data from PDF



None of the LLMs (Large Language Models) extracted the value, despite it being present in the PDF



Switching to XBRL

- iXBRL report of A.P. Moller - Maersk Annual Report

- Voluntary tagged by IRIS Carbon

<https://eu.iriscarbon.com/Home/IxbrlViewer/67b2ffb1e538d40b54f125c3>

Inline XBRL Viewer [User Guide](#)

Energy intensity and mix

EFRAF ID	Indicator	Unit	2024	2023 ¹	2022 ¹
E1-S-18	Energy intensity	GWh/USDm	2.18	2.28	3.52
E1-S-09	Share of renewable energy consumption	%	5	2	2
E1-S-15	Share of fossil fuel sources in energy consumption	%	97	98	98

¹ Not covered by the Independent Auditor's limited assurance report.

For 2024, the energy intensity was 218 GWh/USDm, a decrease from 2.28 compared to 2023. This was driven by a relatively higher increase in revenue compared to energy consumption for the year. We recorded a minor increase in the share of renewable energy consumption from 2023 to 2024, however 97% of Maersk's total energy consumption was derived from fossil fuel sources in 2024.

ACCOUNTING POLICIES

Energy intensity (Based on revenue)
Energy intensity is the total energy consumption in high climate impacts sectors per unit of revenue (USDm), as stated in the income statement of the consolidated financial statements. All of Maersk's energy consumption is considered as related to high climate impact sectors.

Share of renewable energy consumption
The share of renewable energy is the percentage of total energy consumption that is derived from renewable energy sources.

Share of fossil fuel sources in energy consumption
The share of fossil fuel sources in energy consumption is the percentage of total energy consumption that is derived from fossil-based energy sources.

Renewable energy production

EFRAF ID	Indicator	Unit	2024
E1-S-17	Renewable energy production	GWh	9

Maersk's renewable energy production is related to on-site solar installations that produce electricity and/or heating, which is used on-site. Electrification of assets and investments in on-site renewable energy installations are part of Maersk's transitions.

ACCOUNTING POLICIES

Renewable energy production
Renewable energy production is the total amount of renewable energy produced in Maersk's operations during the reporting year. The total reported production comprises of the consumption, storage and sale of renewable electricity to the grid.

Legend: Positive Number, Negative Number, Text Data, Paragraph, Boolean And Fixed

Selected Elements: Hidden Elements: Meta Information:

Tagged Values

	Label	XBRL Tag	Value	Unit	Scale	Start Date	End Date
1	Percentage of renewable sources i...	esrs:PercentageOfRenewableSour...	3	Pure	Percent	2024-01-01	2024-12-31



Querying XBRL report

what is reported value for
"PercentageOfRenewableSourcesInTotalEnergyConsumption"

Thought for a couple of seconds >

The reported value for "PercentageOfRenewableSourcesInTotalEnergyConsumption" for the 2024 reporting period (from 2024-01-01 to 2025-01-01) is 0.03, which indicates that 3% of the total energy consumption is derived from renewable sources .

what is reported value for "PercentageOfRenewableSourcesInTotalEnergyConsumption"



Worked for 1s

The reported value for "PercentageOfRenewableSourcesInTotalEnergyConsumption" is 0.03 (or 3%).

10:57



what is reported value for "PercentageOfRenewableSourcesInTotalEnergyConsumption"

Okay, I'll extract the reported values for "PercentageOfRenewableSourcesInTotalEnergyConsumption" from the JSON data you provided.

Based on the provided JSON:

- **Tag510:** "esrs:PercentageOfRenewableSourcesInTotalEnergyConsumption" with period "2024-01-01T00:00:00/2025-01-01T00:00:00" and ReportingScopeAxis "esrs:PreviouslyStatedMember" has a value of "0.03" (or 3%)
- **Tag512:** "esrs:PercentageOfRenewableSourcesInTotalEnergyConsumption" with period "2023-01-01T00:00:00/2024-01-01T00:00:00" and ReportingScopeAxis "esrs:PreviouslyStatedMember" has a value of "0.02" (or 2%)
- **Tag514:** "esrs:PercentageOfRenewableSourcesInTotalEnergyConsumption" with period "2022-01-01T00:00:00/2023-01-01T00:00:00" and ReportingScopeAxis "esrs:PreviouslyStatedMember" has a value of "0.02" (or 2%)

Therefore:

- **For the reporting period 2024-01-01 to 2025-01-01, the reported value for "PercentageOfRenewableSourcesInTotalEnergyConsumption" is 0.03 (or 3%).**
- For the reporting period 2023-01-01 to 2024-01-01, the reported value for "PercentageOfRenewableSourcesInTotalEnergyConsumption" is 0.02 (or 2%).
- For the reporting period 2022-01-01 to 2023-01-01, the reported value for "PercentageOfRenewableSourcesInTotalEnergyConsumption" is 0.02 (or 2%).

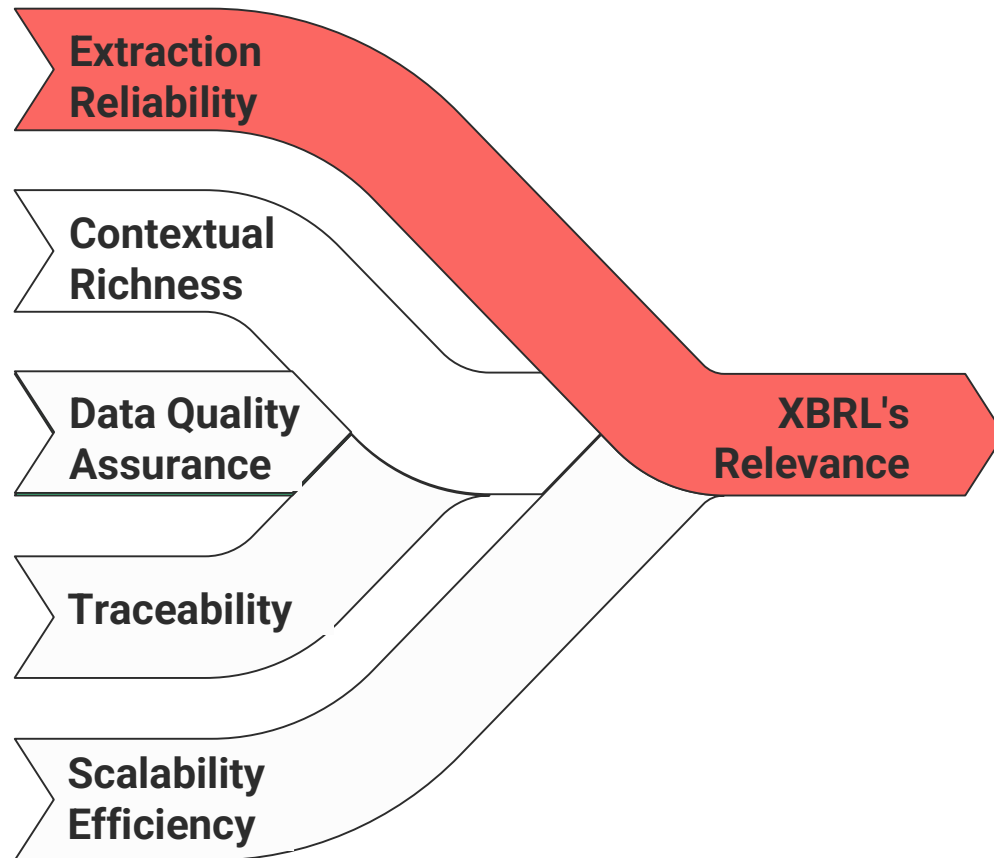
It's important to note that the numbers are expressed as decimals in the JSON, so 0.03 represents 3%.

**Correct
answer in
all three
LLMs**



The iXBRL report was converted to xBRL-JSON to query in LLMs
<https://www.xbrl.org/a-getting-started-guide-experimenting-with-llms-for-xbrl-analysis/>





Extraction of
data
consistent and
reliable with
XBRL



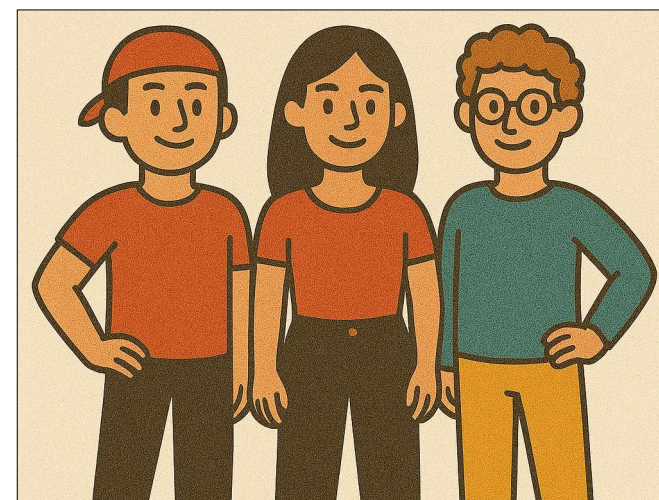
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Gender diversity across leadership roles

Extract of CSRD Requirement

Disclosure Requirement GOV-1 – The role of the administrative, management and supervisory bodies

21. The undertaking shall disclose the following information about the composition and diversity of the members of the undertaking's administrative, management and supervisory bodies:
- (d) percentage by gender and other aspects of diversity that the undertaking considers. The board's gender diversity (¹³) shall be calculated as an average ratio of female to male board members; and



Same disclosure – different representation

ESRS2 GOV-1 Composition and diversity metrics

	Unit	2024
Executive members	Headcount	2
Non-executive members	Headcount	9
Female members of administrative, management and supervisory bodies	%	27.3
Board's gender diversity ratio	Times	0.38
Independent board members	%	44.4

Solar A/S Annual Report 2024; Page 33

Own workforce targets and performance Gender diversity	Unit	Target year	Target value	2024 value
Women external hire - white collar	%	2024	33%	30%
Women external hire - blue collar	%	2024	12%	12%
Women in Executive management positions	%	2025	25%	22%

Airbus Annual Report 2024; Page 217

The table below presents gender demographic metrics among the company's employees for 2024 and 2023:

Gender Demographic Metrics ³⁴	2024	2023
Number (headcount) of women in senior leadership	35	35
Percent of women in senior leadership	15%	14%
Number (headcount) of women in senior management	727	722
Percent of women in senior management	29%	29%

AB INBEV - ANNUAL REPORT 2024; Page 162

Diversity, Gender with the lowest representation / female				
Board of Directors	%	14	0	14%p
Leadership Team	%	0	0	0%p
Extended Leadership Team	%	12	8	4%p
All employees	%	35	36	-1%p

European Energy Annual Report 2024; Page 12



Significant variation

Leadership roles

BOD
Group Executive Team
Senior Directors
Leadership Team
Senior Management
Extended Leadership Team
Executive Management
Administrative, management and supervisory bodies (CSRD term)

Gender description

Gender with lowest minority representation (female)
Female
Women

Normalisation needed!

Judgement
unavoidable

Who will do that work?

Data user /AI?



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XBRL Taxonomy

- Every one uses the same tag
- No judgements required
- Foundation for scalable analysis

[-] [200610] ESRS2.GOV-1 Role of administrative, management and supervisory bodies - general
[-] Role of administrative, management and supervisory bodies - general [abstract]
[+] Role of administrative, management and supervisory bodies [abstract]
[-] Percentage of members of administrative, management and supervisory bodies by gender [abstract]
[-] Percentage of members of administrative, management and supervisory bodies by gender [table]
[-] Reporting scope [axis]
[-] Gender [axis]
[-] Total / all genders / NA [member]
Female [member]
Male [member]
Gender other than female and male [member]
Gender not reported [member]
[-] Percentage of members of administrative, management and supervisory bodies by gender [line items]
Percentage of members of administrative, management and supervisory bodies

[Extract from ESRS Set 1 XBRL Taxonomy](#)



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Taxonomy unlocks meaning

Need to understand the term to use it appropriately in models

“Finance lease liability”

- This term generally means the value on the balance sheets towards finance lease payables



Example report

This term, under the cash flow from financing section, reflects a different context

CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from the issuance of common stock	1,804,166	2,046,702
Proceeds from the issuance of convertible notes payable	150,000	120,000
Proceeds from the issuance of notes payable	500,000	500,000
Proceeds from the issuance of notes payable, related party	15,000	105,000
Finance lease liability	(24,411)	(20,756)
Payments on notes payable, in default	(100,000)	-
Payments on notes payable	-	(6,000)
Payments to shareholders	-	(2,400)
Net cash provided by financing activities	2,344,755	2,742,546

SEAFARER EXPLORATION CORP. 10 K Report

<https://www.sec.gov/ix?doc=/Archives/edgar/data/1106213/000119983525000129/sfrx-10k.htm#fact-identifier-656>

Let's see how LLMs can understand this



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Finding context of the reported value

Explain report item "Finance lease liability" \$24,411 in the report

✦ Based on the provided context, the finance lease liability of \$24,411 refers to the Company's obligation under a lease agreement where the Company essentially finances the purchase of an asset rather than renting it.

Here's a breakdown of what that generally means and how it applies to the information given:

- **Finance Lease vs. Operating Lease:** There are two main types of leases:
 - **Finance Lease:** This is like a loan where the lessee (the Company) takes on most of the risks and rewards of ownership. At the end of the lease term, the asset's ownership is typically transferred to the lessee.
 - **Operating Lease:** This is more like a traditional rental agreement.
- **Finance Lease Liability:** This represents the Company's debt obligation to make lease payments under the finance lease agreement. The \$24,411 figure is the present value of those future lease payments. In other words, it's how much the Company owes today for the right to use the leased asset.
- **Why is it a Liability?** Because the Company has a legal obligation to pay this amount over the lease term.

In the context of the provided report excerpt, the key takeaway is that Seafarer Exploration Corp. has entered into a lease agreement that is classified as a finance lease, and this liability represents the financial obligation arising from that lease.

LLM ignored the actual placement of the item in the PDF report



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Relationship of the concept in XBRL taxonomy

Explain the relationship for "FinanceLeasePrincipalPayments" - use also the meta-model data

Here's a detailed explanation of the XBRL relationship defined for **us-gaap:FinanceLeasePrincipalPayments**, using both your taxonomy JSON and the FASB meta-model:

What it Represents:

- **Concept:** `us-gaap:FinanceLeasePrincipalPayments`
- **Label:** "Finance Lease, Principal Payments"
- **Type:** `xbrli:monetaryItemType`
- **Balance Type:** Credit (cash outflow)
- This concept represents cash payments made to reduce the principal balance of a finance lease liability.

Relationships (from taxonomy):

1. Calculation Relationship

- It is a child in the calculation relationship for:
 - `us-gaap:NetCashProvidedByUsedInFinancingActivities`

json Copy Edit

```
"us-gaap:NetCashProvidedByUsedInFinancingActivities": [
  { "t": "us-gaap:FinanceLeasePrincipalPayments", "w": -1.0 }
]
```

This implies:

csharp Copy Edit

```
Net Cash from Financing =
+ Proceeds from Issuance of Stock or Debt
- Repayments of Debt (including Finance Lease Principal Payments)
```

2. Presentation Relationship

- It is grouped under the Financing Activities section in the cash flow statement:

python-repl Copy Edit

```
Net Cash Provided By (Used In) Financing Activities
├ Finance Lease, Principal Payments
├ Payments for Repurchase of Equity
├ Proceeds from Notes Payable
...
```

- Reliably understand
- meaning
 - properties
 - presentation hierarchy
 - how it contributes to subtotals

The taxonomy model in JSON format extracted from iXBRL viewer was loaded to query in LLM



Accounting relationships

Explain the relationship defined for "Finance Lease, Principal Payments"

"Finance Lease, Principal Payments" has two relationships defined in the meta model:

1. Trait-Based Relationship

- **Parent:** Financing Activity
- **Type of Relationship:** Classification trait
- **Explanation:** This links the concept to the broader category of **Financing Activities** — it's used to characterize the nature of the transaction rather than implying numeric aggregation.

2. Cash Flow Structure Relationship

- **Parent:** Cash
- **Type of Relationship:** Instant outflow
- **Explanation:** This defines it as a **cash outflow**—it contributes to a reduction in the **Cash** line item. This makes it part of the cash flow statement's actual movement of funds.

Accounting relationships in the US-GAAP meta-model taxonomy aid concept further understanding and interpretation of concept

Meta Model Relationships Taxonomy

<https://www.fasb.org/page/detail?pagelId=/projects/FASB-Taxonomies/gaap-meta-model-relationships-taxonomy.html>



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Understanding extension concepts is crucial

What It Represents

This tag captures the amount of convertible notes payable that:

- Are owed to related parties
- Are classified as current liabilities
- Are reported on the balance sheet
- Represent obligations likely due within the next 12 months

So in essence:

It shows how much the company owes in the short term to insiders (like executives, directors, or shareholders) via convertible notes.

Liabilities and Stockholders' Deficit

Current liabilities

Accounts payable and accrued expenses

Deferred revenue

Convertible notes payable, net of discount of \$10,525 and \$0, respectively

Convertible notes payable, related parties

Convertible notes payable, in default

Convertible notes payable, in default - related parties

Notes payable, net of discount of \$67,708 and \$0, respectively

Notes payable, in default

Notes payable, in default - related parties

Shareholder loan

Operating lease liability, current

Finance lease liability, current

Total current liabilities

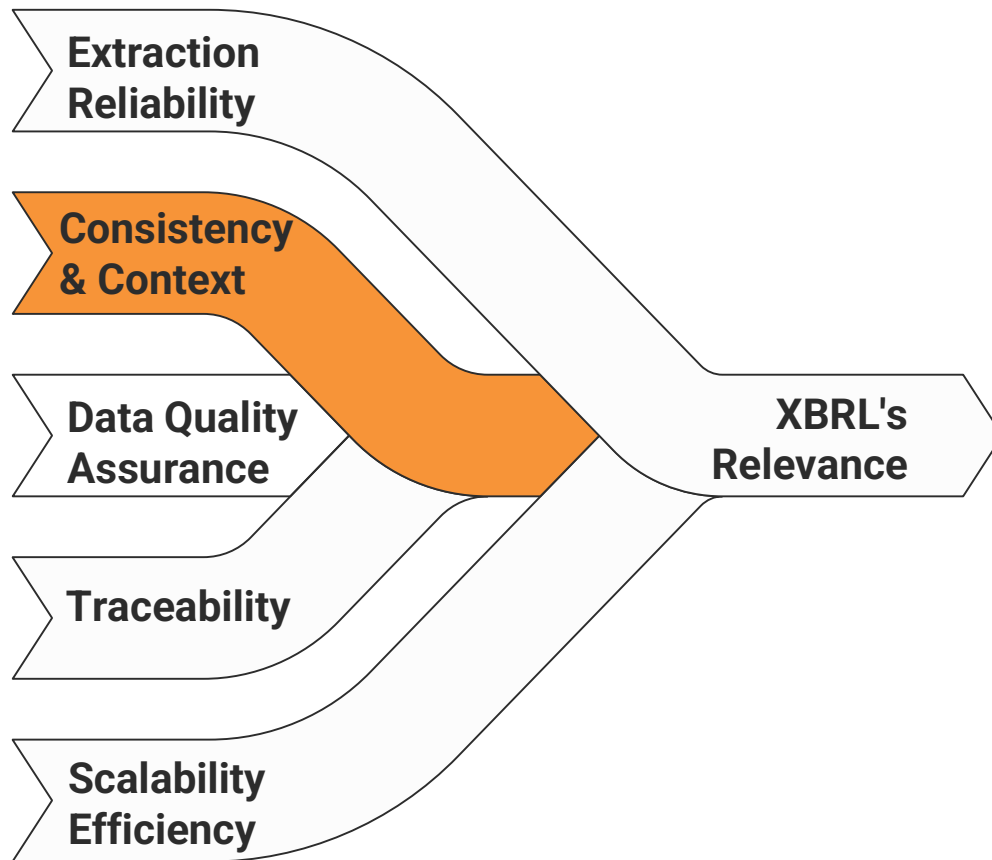
SEAFARER EXPLORATION CORP. 10 K Report

<https://www.sec.gov/ix?doc=/Archives/edgar/data/1106213/000119983525000129/sfrx-10k.htm#fact-identifier-11>

Nature of the concept explained
- supports use in analytical models



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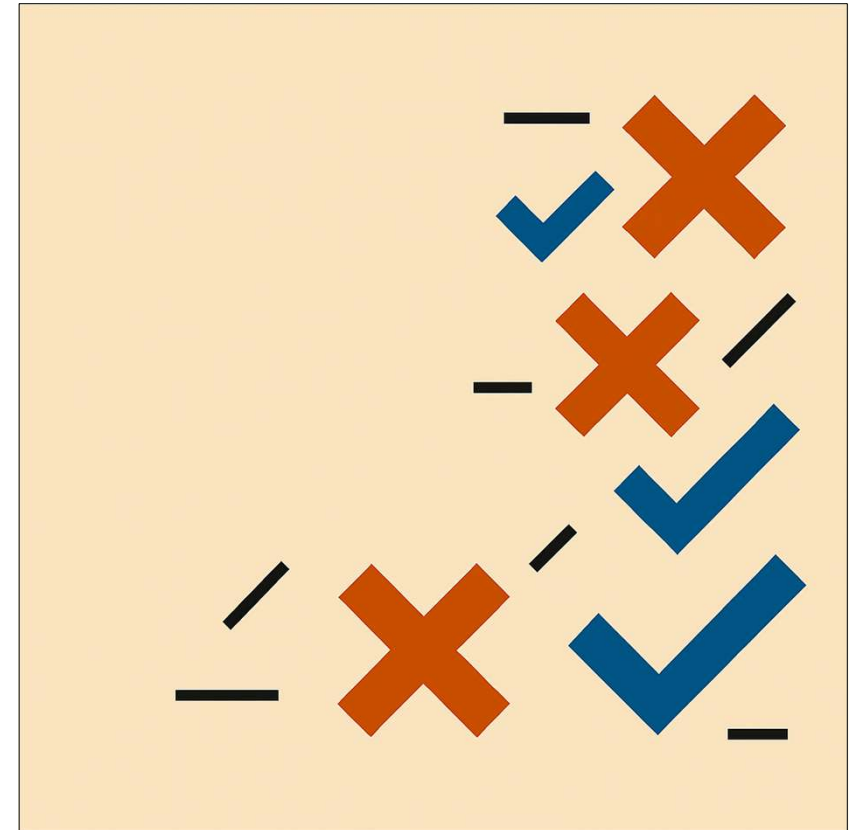


Taxonomy
provides
standardization
and contextual
richness – absent
in PDFs



Built-in validation: A key strength of XBRL

- Ability to define rules
- Validation rules enforcement
- Questionable with PDF alone



Example validation rules

DQC_0084

Ensures consistency in durational facts by verifying that sub-period values add up to the aggregate period

$$Q1 + Q2 = H1$$

Example of failed rule

Sum of the cumulative periods of -64,901,316 for us-gaap:NetIncomeLoss does not match the reported total of -64,891,096, a difference of 10,220.

Period values are:

2024-01-01 to 2024-03-31 -26,618,215 Decimals: 0

2024-04-01 to 2024-06-30 -3,479,291 Decimals: 0

2024-07-01 to 2024-09-30 -34,803,810 Decimals: 0

Camber Energy, Inc. - <https://www.sec.gov/Archives/edgar/data/1309082/000147793225003162/0001477932-25-003162-index.htm>



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Rule evaluation on PDF report

Rule understanding

Analysis ▾

I can definitely help you analyze the provided 10-Q report using the Durational Aggregation rule (DQC_0084). However, to execute the rule effectively, I'll need to perform some calculations and extractions of values from the financial statements.

Let's break down how we can approach this and what specific data we need:

1. Understanding the Rule

The rule checks if the values of a durational element (like revenue, expenses, etc.) for sub-periods add up to the value of the aggregated period. It also considers a tolerance for rounding differences.

2. Data Extraction

From the 10-Q report, we need to extract relevant financial data that can be aggregated across different time periods. Specifically, we'll look for:

- **Income Statement Data:** We need line items like "Revenue", "Cost of goods sold", "Operating expenses", etc., for the "Three months ended September 30, 2024", "Three months ended September 30, 2023", "Nine months ended September 30, 2024", and "Nine months ended September 30, 2023" periods.
- **Time Periods:** We need to clearly define the sub-periods and the aggregated periods. In this case, it looks like we can consider the three-month periods as sub-periods and the nine-month periods as the aggregated period.
- **Decimal Precision:** We need to note the decimal precision (if specified) for each of the values we extract, as the rule uses this to calculate the tolerance.

Rule evaluation

Okay, let's apply the Durational Aggregation rule (DQC_0084) specifically to the "Net loss" line item from the income statement in the 10-Q report.

1. Data Extraction

Here's the data we extract for "Net loss" from the "CAMBER ENERGY, INC. Condensed Consolidated Statements of Operations (Unaudited) (Restated)": ▾

Period	Net loss	Decimal Precision
Three months ended Sep 30, 2024	(34,793,590)	0
Three months ended Sep 30, 2023	(7,877,344)	0
Nine months ended Sep 30, 2024	(64,891,096)	0
Nine months ended Sep 30, 2023	(10,785,683)	0

📄 Export to Sheets

2. Calculation and Verification

- **Sum of three-month periods:**
 - 2024: (34,793,590)
 - 2023: (7,877,344)
- **Comparison to nine-month periods:**
 - Difference (2024): $|(34,793,590) - (64,891,096)| = 30,097,506$
 - Difference (2023): $|(7,877,344) - (10,785,683)| = 2,908,339$

Did not
identify all
occurrences
of the facts



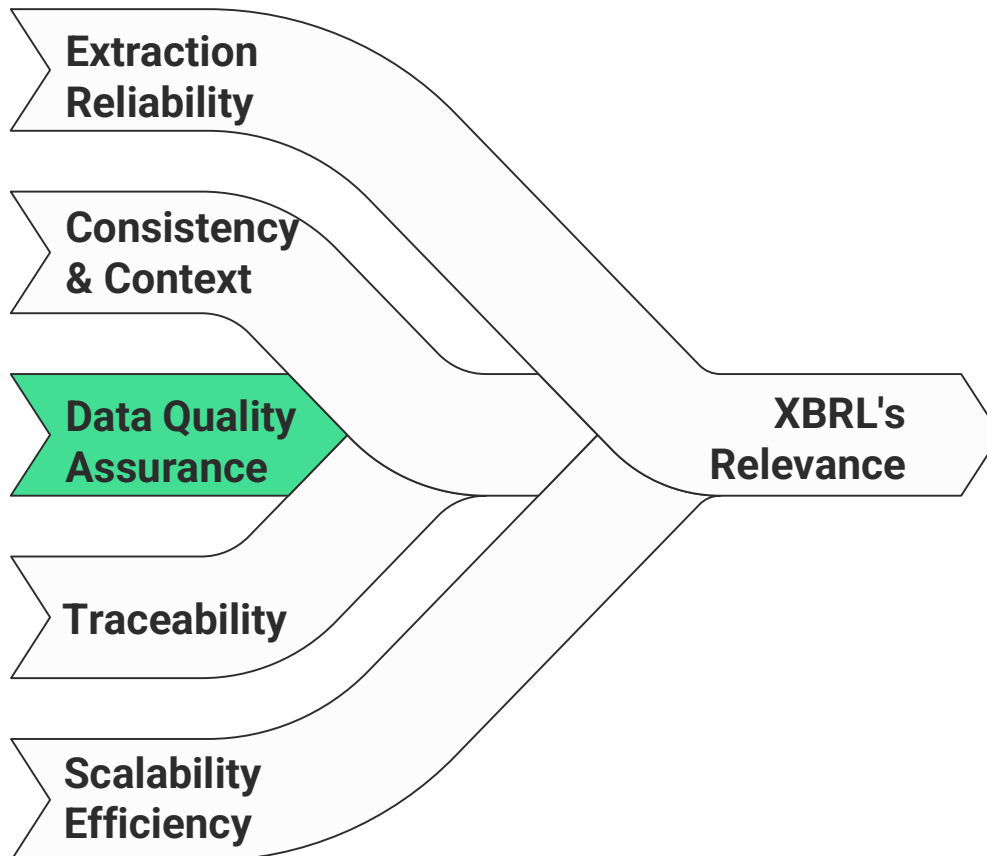
Rule evaluation on PDF report

Wrong evaluations / not reliable

3. Result

The Durational Aggregation rule (DQC_0084) is violated for the "Net loss" in both 2024 and 2023. The sum of the net loss for the three-month periods does not match the net loss for the nine-month periods, and the difference is significantly greater than the allowable tolerance.





XBRL provides
structured data +
framework to
define and execute
rules
unambiguously

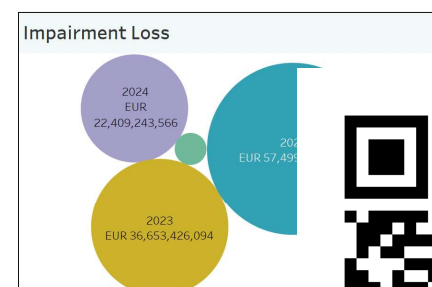
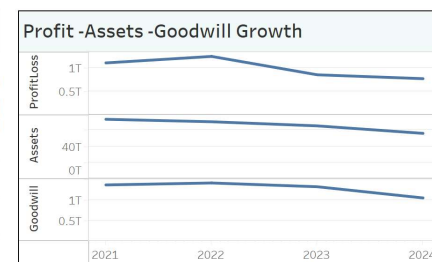
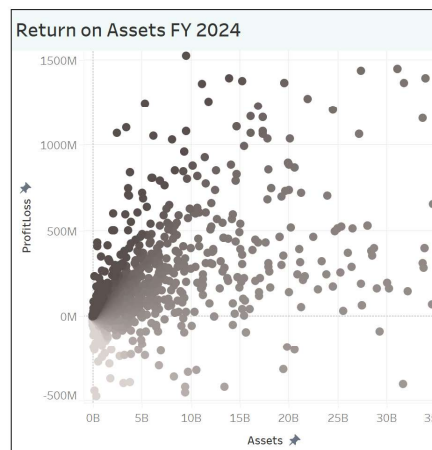
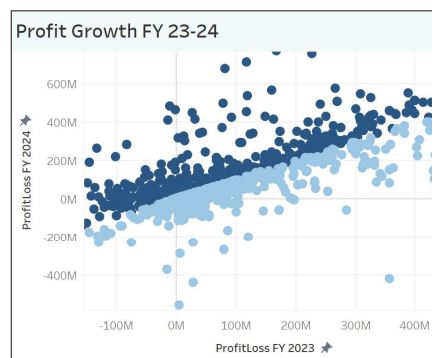
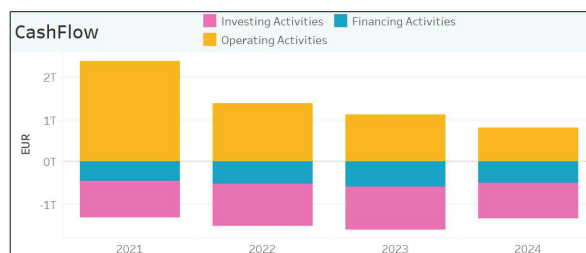
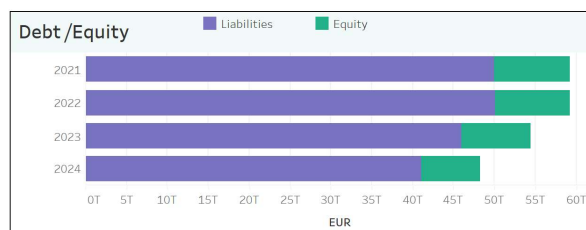
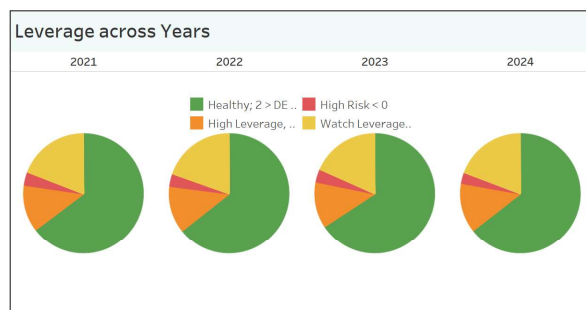
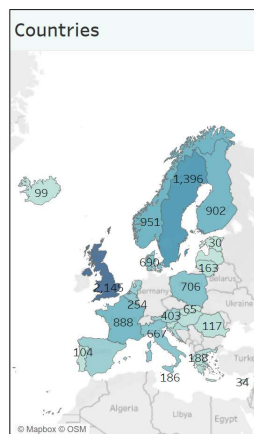


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Dashboard from ESEF reports

EU & UK Public Companies | Metrics
From XBRL ESEF filings

Reports	
2021	3,824
2022	3,587
2023	3,093
2024	2,188



Impairment Details

Average Counts	
Extended Facts	Number of F
2020	48
2021	51
2022	50
2023	50
2024	53

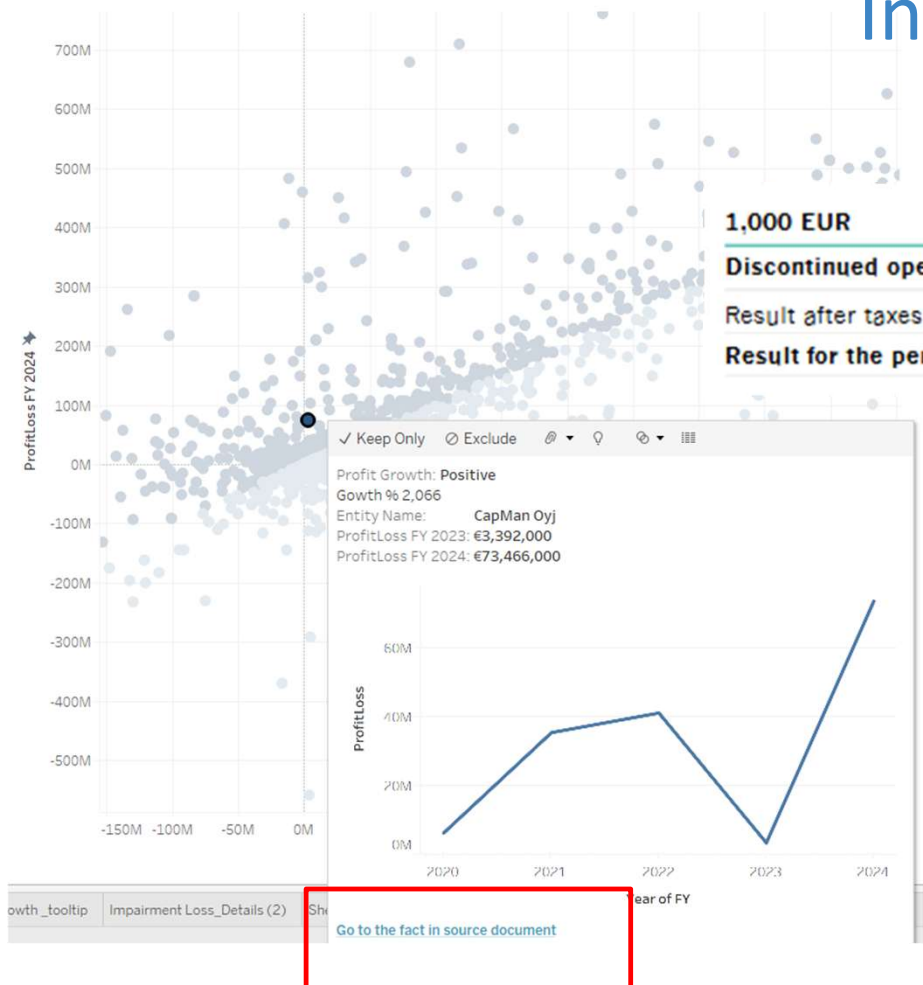


https://public.tableau.com/app/profile/revathy6435/viz/timeseries_ESEF/Macro



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Profit Growth FY 23-24



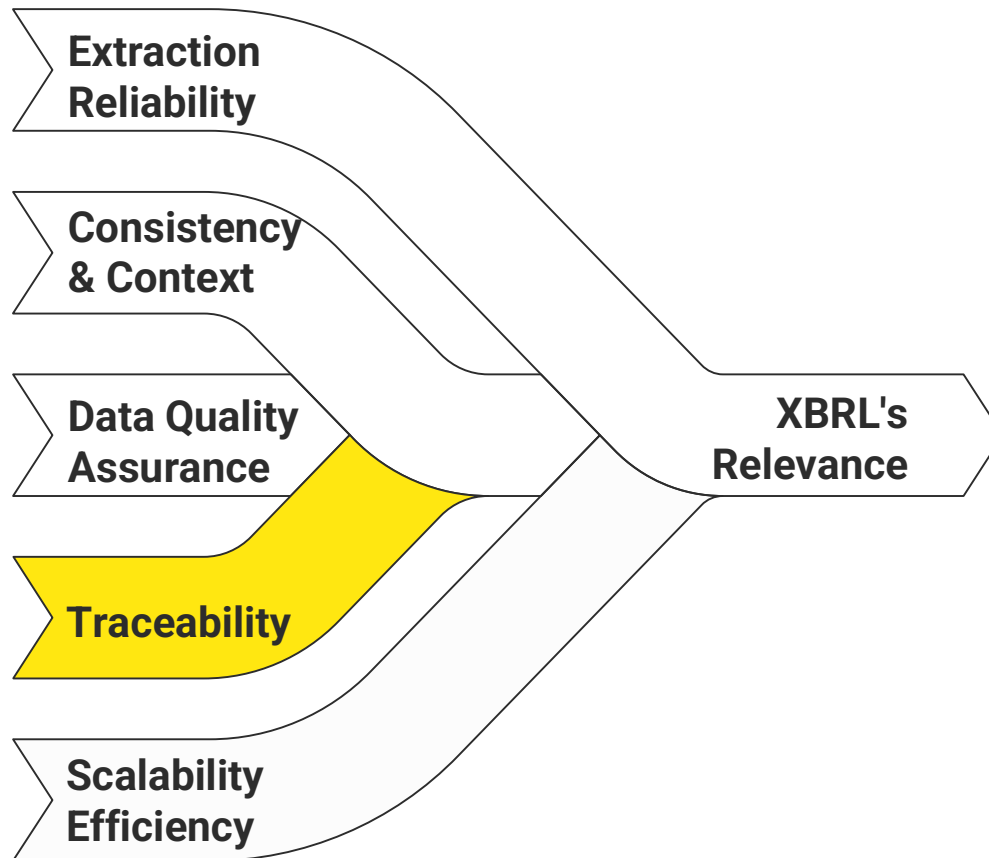
Insights linked to the source facts

1,000 EUR	Note	1.1.–31.12.2024	1.1.–31.12.2023 restated
Discontinued operations:			
Result after taxes from discontinued operations	13	64,081	4,677
Result for the period		73,466	3,392

Cap Man

<https://filings.xbrl.org/743700498L5THNQWVL66/2024-12-31/ESEF/FI/0/CapManPlc-2024-12-31-0-en/reports/ixbrlviewer.html?nopopup#f-fact-31>





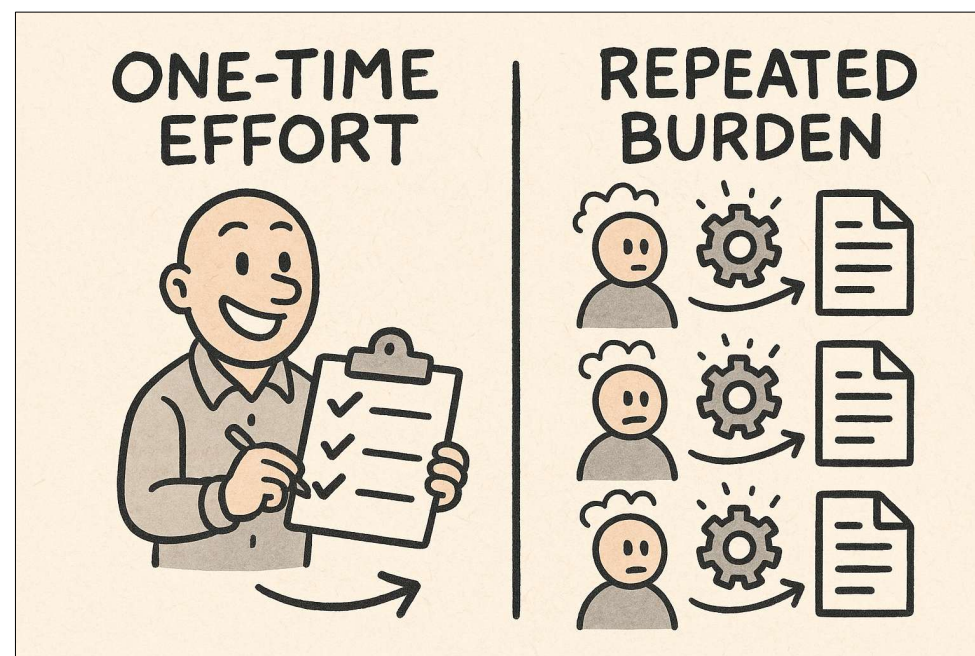
XBRL enables
traceable and
trustworthy
insights

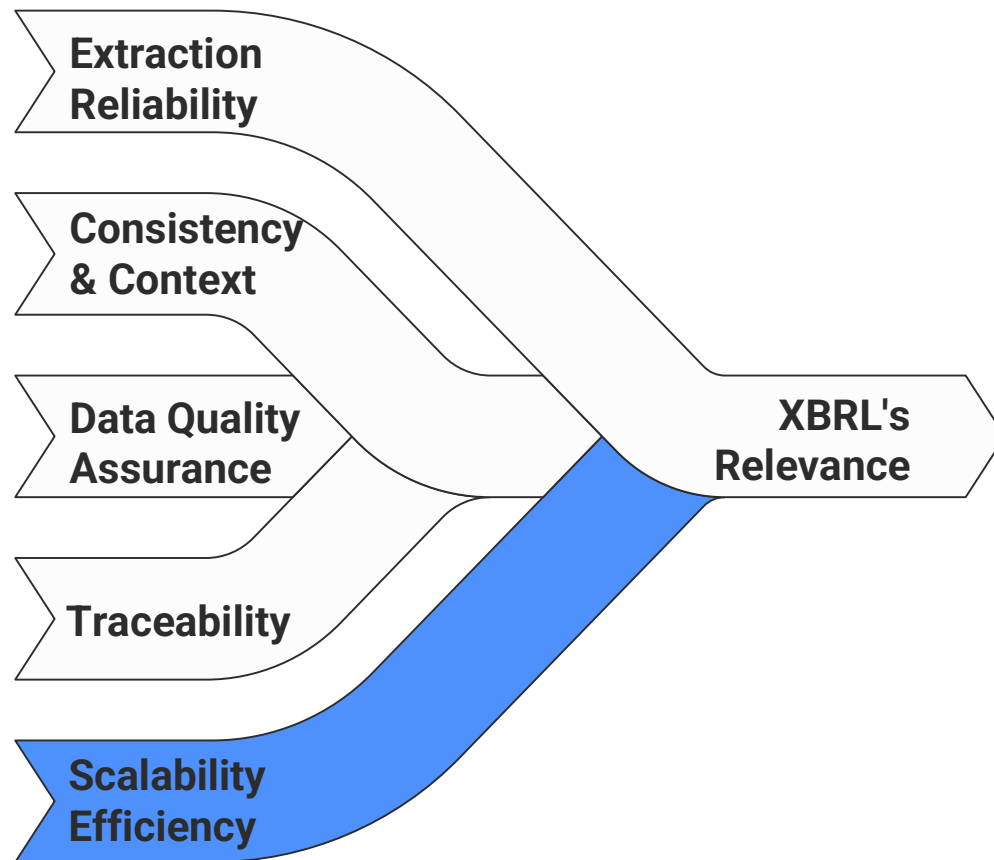


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The multiplier effect

- Need to analyse disclosures over multiple years and filings
- It's costly, especially when AI computation is involved
- The magnitude of cumulative effort !
- Custom AI isn't a strength—it's a symptom for unstructured data problems

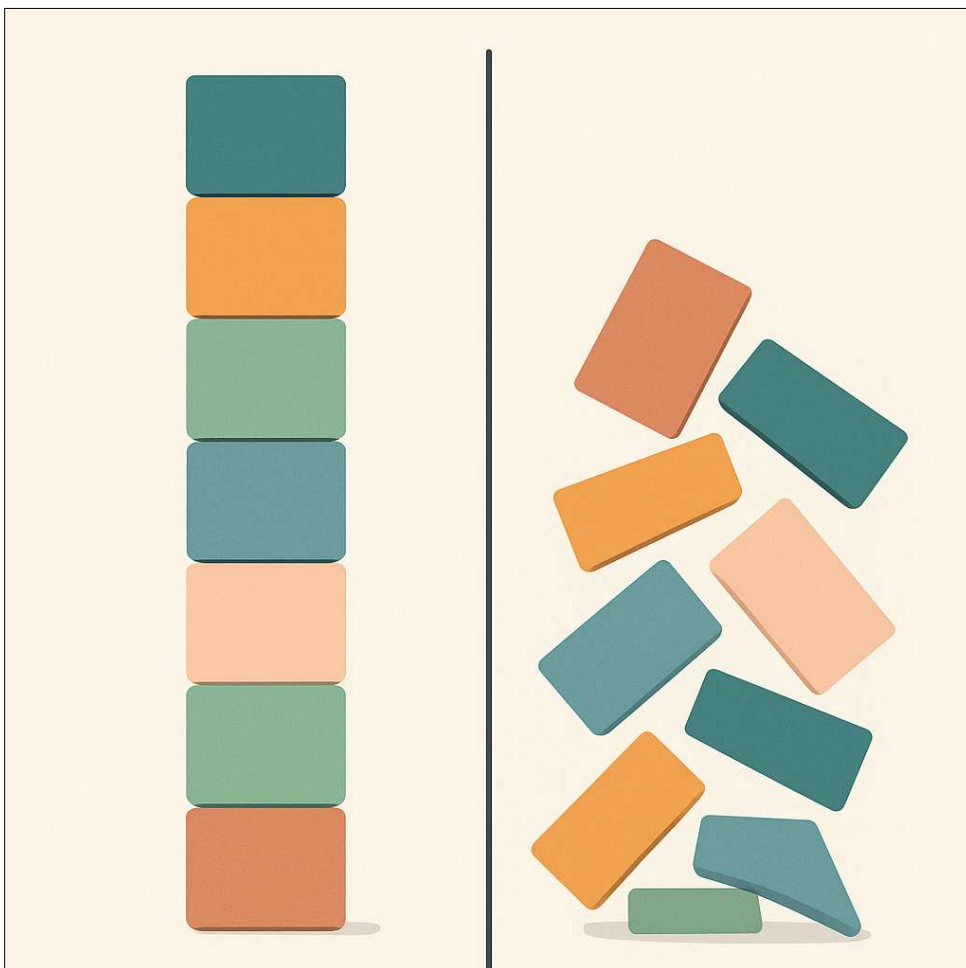




Structure enables
scale — without
it, we lose access
and usability



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- XBRL delivers machine-readable, context-rich data
- Without it, we lose accuracy, comparability, and trust

AI Powerful — When Applied Right



AI + XBRL: smarter ways to analyse



Numeric Data

Statistical models,
ML models for
forecasting, trend
analysis, detecting
anomalies

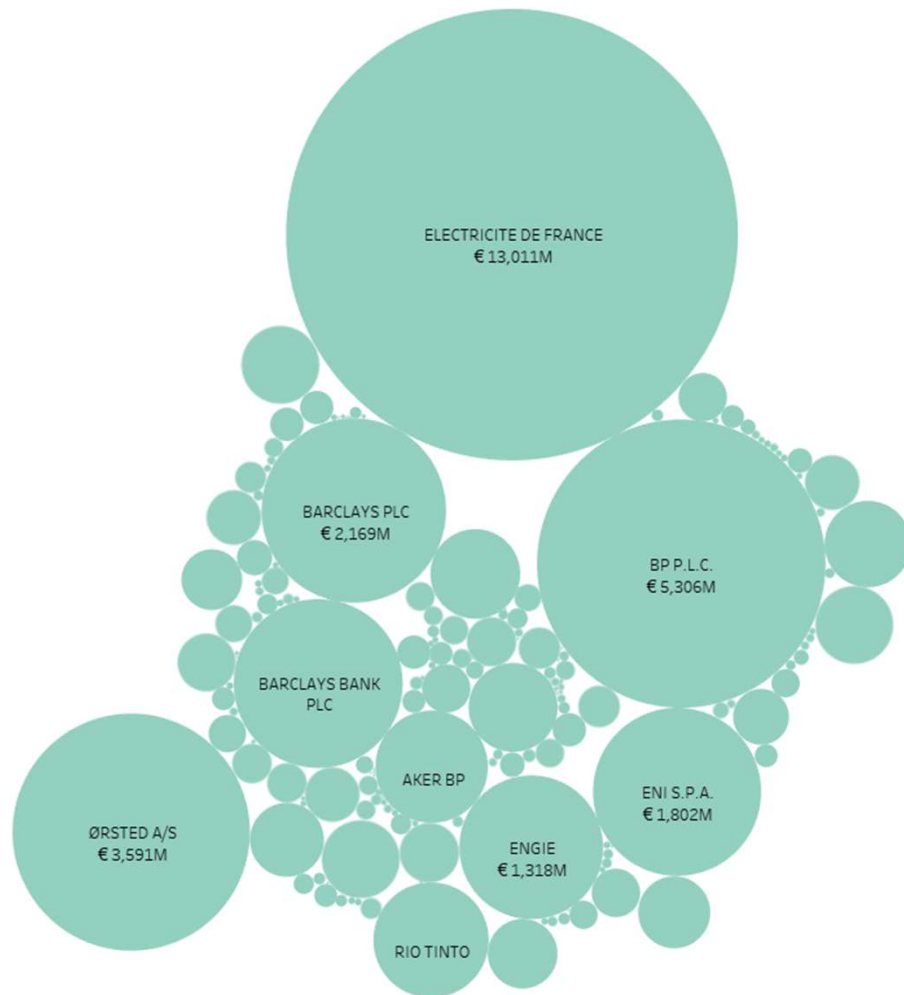


Narrative Disclosure

NLP for identifying
themes, sentiment,
and emerging risks



Impairment Losses 2023 - Select ESEF reports



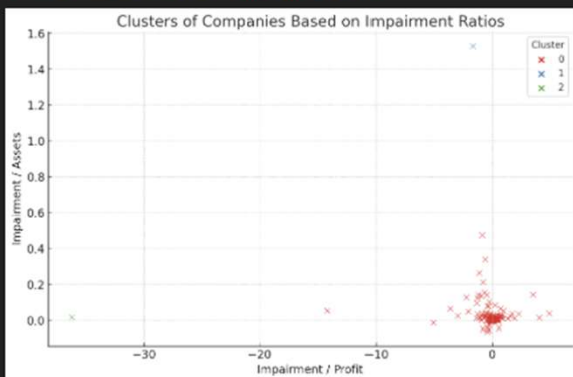
Numeric data analysis

- Thematic analysis of impairments
- Absolute numbers not much of great insight
- 2700+ ESEF reports that have reported impairment loss

Clustering to detect outliers

Cluster the companies based on the ratio of impairments /Profit and impairments /Assets - find outliers and explain your analysis.

Clusters Of Companies Based On Impairment Ratios



The scatter plot shows the clustering of companies based on two ratios:

1. **Impairment to Profit** (how much of their profit is affected by impairments)
2. **Impairment to Assets** (how significant impairments are relative to total assets)

Key Observations:

- **Cluster 0 (Red):** These companies have moderate impairment ratios. They tend to be in the middle of both metrics and might represent typical or average behavior across companies.
- **Cluster 1 (Blue):** These are outliers—they have **very high impairment to profit ratios**, meaning impairments represent a large proportion (or more) of their profits. Some even show negative values (possibly negative profits), indicating financial stress or one-time significant losses.
- **Cluster 2 (Green):** These entities have relatively **low ratios**, implying that impairments are minor relative to both their profits and assets. These could be financially healthier or more conservative in impairment recognition.

- Clustering analysis for impairments relative to profit and assets
- Simple prompt

Example outlier – bank

The company VANQUIS BANKING GROUP PLC has been identified as an outlier within the original majority group (Cluster 0), specifically in Sub-Cluster 2.

Why It's an Outlier:

- **Impairment / Profit = -14.15:**
Impairments are over 14 times larger than its profit (which is negative), indicating significant financial stress or a major write-down.
- **Impairment / Assets = 0.052:**
While impairments represent only about 5.2% of assets (not extremely high), the disproportionate relationship to profits is the key outlier trait.

This suggests that the company may have undergone an extraordinary or aggressive impairment event relative to its recent profitability. Let me know if you want further drill-downs, comparisons, or export options. [↗]

Total income		488.8	480.7
Impairment charges	13	(166.1)	(66.1)
Risk-adjusted income		322.7	414.6
Operating costs		(327.1)	(304.5)
Statutory (loss)/profit before taxation from continuing operations	1,6	(4.4)	110.1
Tax charge for continuing operations	7	(1.6)	(27.8)
Statutory (loss)/profit after taxation from continuing operations	1	(6.0)	82.3
Loss after taxation from discontinued operations	2	—	(4.9)
Statutory (loss)/profit for the year attributable to equity shareholders		(6.0)	77.4

VANQUIS BANKING GROUP PLC 2023 Annual Report

<https://filings.xbrl.org/213800U93SZC44VXN635/2023-12-31/ESEF/GB/0/213800U93SZC44VXN635-2023-12-31/reports/ixbrlviewer.html?nopopup#f-fact-24>

The impairment charge in respect of amounts receivable from customers can be analysed as follows:

	Group	
	2023 £m	2022 £m
Impairment charge on amounts receivable from customers		
Credit cards	130.0	16.8
Vehicle finance	15.2	40.8
Personal loans	20.9	8.5
Total impairment charge	166.1	66.1



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Example outlier– mining company

Another notable outlier is **COBURN RESOURCES PTY LTD**, based on its **Impairment to Assets** ratio:

Key Details:

- **Assets:** ~202.9 million
- **Impairment:** ~68.7 million
- **Profit/Loss:** -112.8 million (significant loss)
- **Impairment / Assets: 33.8%**
 - One-third of the asset base was impaired — a very high percentage, suggesting major asset devaluation.
- **Impairment / Profit: -0.61**
 - Impairments are a major contributor to losses, though not the sole cause.

Coburn Resources Pty Ltd
<https://filings.xbrl.org/9845006AB745B93F1590/2024-06-30/ESEF/NO/0/9845006AB745B93F1590-2024-06-30-en/reports/ixbrlviewer.html#-ixv-11>

STATEMENT OF PROFIT OR LOSS FOR THE PERIOD ENDED 30 JUNE 2024



	Notes	2024 \$	2023 \$
Sales revenue	4	86,087,518	60,769,375
Cost of sales	5	(138,351,952)	(55,473,317)
Other income		474,407	-
Exploration and evaluation expenditure		(1,497,925)	-
Corporate and administrative expenses		(9,896,805)	(1,172,364)
Impairment - Coburn Project - Mine Properties in Development	11	(110,787,020)	-
Operating loss before income tax		(173,971,777)	4,123,694

An impairment assessment was undertaken at 30 June 2024 as the Company determined that indicators of impairment are present in relation to the carrying value of Coburn Mineral Sands Project, considering a number of factors including the progress made with the ramp-up of production and an estimate of the recoverable carrying amount of the asset. Consequently, the value-in-use for the CGU has been estimated based on discounted future estimated cash flows (expressed in nominal terms). To determine the extent of the impairment loss, the estimated future cash flows are discounted to their present value using a pre-tax, nominal discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. The Company bases its impairment calculation on detailed budgets and forecast calculations, which are prepared for the Coburn Mineral Sands Project CGU to which the individual assets are allocated. The CGU includes Property, Plant and Equipment less the rehabilitation provisions.



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Narrative Disclosure

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Example narrative disclosure

. Carbon emissions

. There may be certain environmental aspects or risks arising from production or disposal of the Company's products / services

. Risks involved in end of life treatment & Final disposal of product

. Risks arising from final disposal of product packaging

. Outsourced jobs are envisaged to involve environmental aspects

. Environmental concerns, if any arising out of usage / disposal of the product at customer's end

. Environmental concerns may arise on account of carbon emission during vehicular movement at the time of material transportation.

. NA

. Not applicable. The Company is in the business of providing telecommunication services.

. Not applicable

. Not Applicable, as the Company is in the process of carrying out the LCA in the coming years.

. NIL

. NA

. Not applicable since LCA is not conducted

- Indian sustainability reporting extract
- Risks identified from product lifecycle assessments
- Free form narrative disclosure



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Organising disclosures for analysis

Thought for 15 seconds >

I've classified each "Value" entry into three buckets:

- **Risk Reported** – the text describes an actual risk or concern.
- **No Risk Reported** – the narrative indicates no risk (e.g. "Nil", "NA", "Not applicable", "No risk identified", etc.).
- **Missing** – blank or null entries.

Here's the breakdown over all 359 rows:

Classification	Count
Risk Reported	228
No Risk Reported	81
Missing	50

Sample "Unclear" entries

- **Axita Cotton Limited** – "Cultivation of cotton using conventional practices has more... cotton cultivated through Organic or Better Cotton practices."
- **Chambal Fertilizers & Chemicals Limited** – "Not determined"
- **GHCL Limited** – "Land use, dusting"
- **Johnson Controls – Hitachi Air Conditioning India Limited** – "HCFC (Refrigerant) Gas used in the Air Conditioners"
- **SCHNEIDER ELECTRIC INFRASTRUCTURE LIMITED** – "Contains SF6 Gas & PCBA"

- Classify disclosures, making them easier to analyse
- Leverage LLMs' capability of semantic understanding



Thematic analysis of risks identified

Visualize cluster distributions by sector to see which industries emphasize which risks.

Thought for 13 seconds >

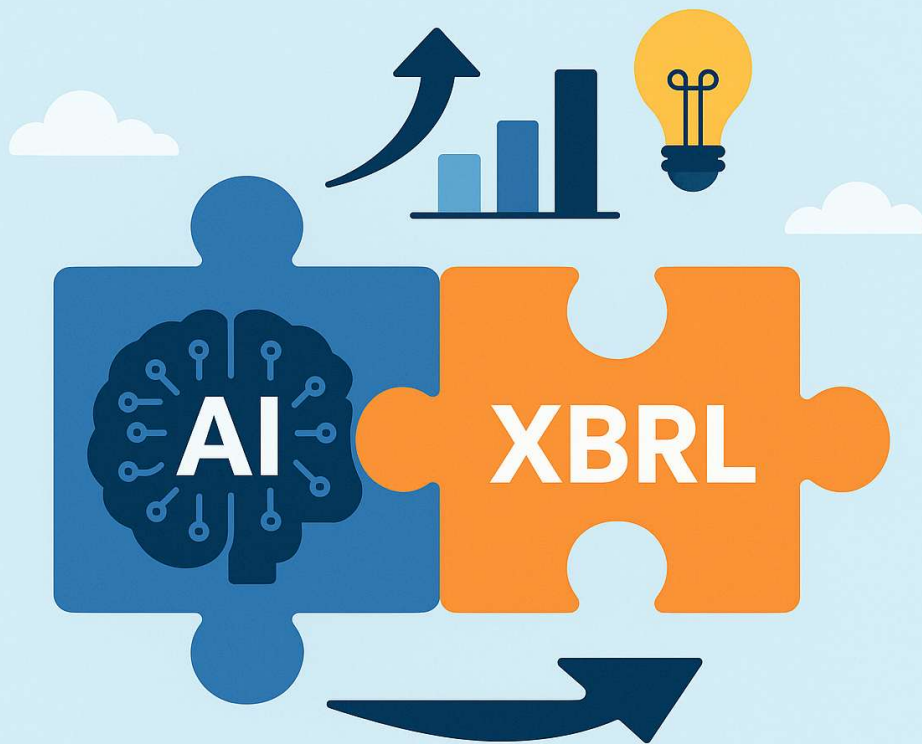


The stacked bar chart above shows, for each sector, how many narratives fall into each of the five risk clusters:

- **Consumer Discretionary** and **Industrials** lead in overall counts, with strong representation in Clusters 1 (Emissions & Pollution) and 2 (LCA & Consumption).
- **Commodities** also shows a mix, notably in Cluster 1 (Emissions) and Cluster 4 (Waste & Effluent).
- **Fast Moving Consumer Goods** narratives are exclusively in Cluster 2 (LCA & Consumption) and Cluster 1 (Emissions).
- **Financial Services** and **Utilities** have relatively few narratives, centered in Cluster 2 (LCA) and Cluster 1 (Emissions), respectively.
- **Energy** is dominated by Cluster 0 (General Concern) and Cluster 4 (Waste & Effluent).
- **Healthcare** leans toward Cluster 1 (Emissions & Pollution).
- **Information Technology** and **Services** have smaller volumes but show emphasis on Clusters 1 and 2.

- Advance narrative disclosure analysis with simple English queries
- AI + structured data = patterns revealed, anomalies flagged, insights improved






- It is not AI vs XBRL
- AI needs structure
- XBRL brings that structure
- Together, they enable
 - *Smarter reporting*
 - *Faster analysis*
 - *More meaningful insights*

Questions

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