

Integrating data reported using various standards



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Same data. Three names. A machine cannot tell.

All three concepts below mean the same thing: Gross Scope 1 GHG Emissions.

ESRS

`esrs:GrossScope1GreenhouseGasEmissions`

ISSB

`ifrs-sds:AbsoluteGrossScope1GHGEmissions`

GRI

`gri:GrossDirectScope1GHGEmissions`

Without a concordance, a machine comparing these three reports cannot know these are the same fact.

A concordance maps facts between taxonomies

Example 1: 1:1 numeric -- machine resolves the name difference automatically

```
{ "type": "concordance:numericAssertionType", "assistance": "none",  
  "source": { "concept": "ifrs-sds:AbsoluteGrossScope1GHGEmissions" },  
  "target": { "concept": "esrs:GrossScope1GreenhouseGasEmissions" } }
```

Example 2: M:1 sum -- ESRS mandates Scope 1 and Scope 2 separately; ISSB permits reporting them combined

```
{ "type": "concordance:numericAssertionType", "assistance": "none",  
  "sources": [ { "concept": "esrs:GrossScope1GreenhouseGasEmissions", "calculation_id": 1 },  
               { "concept": "esrs:GrossLocationBasedScope2GreenhouseGasEmissions", "calculation_id": 2 } ],  
  "target": { "concept": "ifrs-sds:AbsoluteGrossScope1And2GHGEmissions", "calculation": "[1]+[2]" } }
```

The concordance is infrastructure for interoperability -- not a statement that any standard is superior. ESRS, ISSB and GRI each remain authoritative in their own domain.

Six assertion types cover every mapping situation

Each assertion type describes the structural relationship between source and target fact-spaces.

numericAssertionType	1:1, M:1 sum, 1:M split, unit conversion
Numeric facts -- same or different units	<code>ifrs-sds:AbsoluteGrossScope1GHGEmissions -> esrs:GrossScope1GreenhouseGasEmissions</code>
nonNumericAssertionType	Same concept, different name; methodology descriptions
Text blocks or strings -- 1:1 correspondence	<code>ifrs-sds:ApproachUsedToMeasureGHGEmissions -> esrs:DisclosureOfMethodologies...</code>
textBlockAssertionType	1:M split (one text into several); M:1 merge (several into one)
Text blocks that need splitting or merging	<code>esrs:MethodologyTextBlock -> gri:Scope1Methodology + gri:Scope2Methodology</code>
textToNonTextAssertionType	Read prose to extract a boolean, integer or enumeration
Text block to structured value	<code>ifrs-sds:WhetherRemunerationLinked... (textBlock) -> esrs:ClimateRemunExists (boolean)</code>
nonTextToTextAssertionType	Render boolean + integer + enum as a coherent narrative
Structured values combined into a text block	<code>esrs:CarbonPricingApplied (bool) + Price -> ifrs-sds:ExplanationTextBlock</code>
nullAssertionType	Documents a coverage gap -- not a missing value, an explicit absence
No equivalent exists in the target taxonomy	GRI has no carbon price concept; ISSB has no governance gender concept

Every assertion carries an assistance hint

The hint is a contract with consuming tools -- it says not just what to do, but how much help is needed.

AUTO

Machine applies the assertion automatically

1:1 numeric, M:1 addition, unit conversion, explicit dimension member

ASSISTED

AI assistance recommended but not essential

Merging multiple text blocks, entity-extension lookups, typedToExplicit where labels are unambiguous

REQUIRED

AI or human must act -- machine cannot proceed alone

textBlock to boolean, typed dimension with non-obvious values (e.g. Feminino), 1:M disaggregation

Note: nullAssertionType has no assistance level -- it is a distinct assertion type documenting an explicit absence, not a difficulty level.

Example reports

Company	Country	Taxonomy	Sub-sector
Nordvik Foods AS	Norway	ESRS	Dairy processing
Iberian Harvest SA	Spain	ESRS	Olive oil and preserved vegetables
Meridian Beverages Ltd	UK	ISSB	Soft drinks and juice
Sakura Foods KK	Japan	ISSB	Packaged snacks and instant noodles
Prairie Grain Co.	USA	GRI	Grain milling and flour production
Verde Alimentos Ltda	Brazil	GRI	Coffee processing and export

Demo concordance app ...

CONCORDANCE EXPLORER

FOOD AND BEVERAGE - 6 COMPANIES - 3 TAXONOMIES - 7 METRICS

! RAW MODE -- concept names differ by taxonomy. Some values are blank where no single structured concept exists. Toggle to WITH CONCORDANCE to align.

COMPANY	Scope 1 GHG (tCO ₂ e)	Scope 2 (location) (tCO ₂ e)	Scope 3 GHG (tCO ₂ e)	Total Energy (MWh)	% Female Governance	% Climate Remuneration	Carbon Price (EUR/t)	Scope 1+2 Combined (tCO ₂ e)
Nordvik Foods (Norway) [ESRS]	28,400	12,600	485,000	185,000	42%	15%	55	41,000
Iberian Harvest (Spain) [ESRS]	4,200	1,800	98,000	28,000	35%	8%	NO MAPPING	6,000
Meridian Beverages (UK) [ESRS]	8,900	3,400	312,000	62,000	NO MAPPING	18%	40	12,300
Sakura Foods (Japan) [ESRS]	--	--	528,000	298,000	NO MAPPING	0%	NO MAPPING	73,300
Prairie Grain Co. (USA) [GRI]	11,300	8,700	187,000	74,000	44.4%	AI NEEDED	NO MAPPING	20,000
Verde Alimentos (Brazil) [GRI]	2,100	380	94,000	11,200	31.2%	AI NEEDED	NO MAPPING	2,480

Legend: AUTO (machine applies automatically), ASSISTED (AI assistance suggested), REQUIRED (AI or human must act)



CONCORDANCE EXPLORER

FOOD AND BEVERAGE - 6 COMPANIES - 3 TAXONOMIES - 7 METRICS

* CONCORDANCE ACTIVE -- assertions identify which facts correspond across taxonomies. No taxonomy is transformed into another. Click any cell to trace the assertion.

COMPANY	Scope 1 GHG (tCO ₂ e)	Scope 2 (location) (tCO ₂ e)	Scope 3 GHG (tCO ₂ e)	Total Energy (MWh)	% Female Governance	% Climate Remuneration	Carbon Price (EUR/t)	Scope 1+2 Combined (tCO ₂ e)
Nordvik Foods (Norway) [ESRS]	28,400 (AUTO)	12,600 (AUTO)	485,000 (AUTO)	185,000 (ASSISTED)	42% (REQUIRED)	15% (REQUIRED)	55 (AUTO)	41,000 (AUTO)
Iberian Harvest (Spain) [ESRS]	4,200 (AUTO)	1,800 (AUTO)	98,000 (AUTO)	28,000 (AUTO)	35% (AUTO)	8% (AUTO)	NO MAPPING (AUTO)	6,000 (AUTO)
Meridian Beverages (UK) [ESRS]	8,900 (AUTO)	3,400 (AUTO)	312,000 (AUTO)	62,000 (ASSISTED)	NO MAPPING (AUTO)	18% (AUTO)	40 (AUTO)	12,300 (AUTO)
Sakura Foods (Japan) [ESRS]	-- (REQUIRED)	-- (REQUIRED)	528,000 (AUTO)	298,000 (ASSISTED)	NO MAPPING (AUTO)	0% (AUTO)	NO MAPPING (AUTO)	73,300 (AUTO)
Prairie Grain Co. (USA) [GRI]	11,300 (AUTO)	8,700 (AUTO)	187,000 (AUTO)	74,000 (ASSISTED)	44.4% (REQUIRED)	AI NEEDED (REQUIRED)	NO MAPPING (AUTO)	20,000 (AUTO)
Verde Alimentos (Brazil) [GRI]	2,100 (AUTO)	380 (AUTO)	94,000 (AUTO)	11,200 (ASSISTED)	31.2% (REQUIRED)	AI NEEDED (REQUIRED)	NO MAPPING (AUTO)	2,480 (AUTO)

Legend: AUTO (machine applies automatically), ASSISTED (AI assistance suggested), REQUIRED (AI or human must act)

ASSERTION TRACE: Prairie Grain Co. - GRI (REQUIRED)

SOURCE (GRI): gri:DescriptionOfRemunerationPolicyRelatedToImpacts (textBlock)

ASSERTION: textToNonTextAssertionType (assistance: required)

TARGET CONCEPT: esrs:PercentageOfRemunerationLinkedToClimate (REQUIRES AI (textBlock source))

GRI reports remuneration policy as textBlock narrative only. In RAW mode this is blank. In concordance mode it is marked as requiring AI assistance -- AI must read the prose and extract the climate-specific percentage. This is the textToNonText assertion type in action.

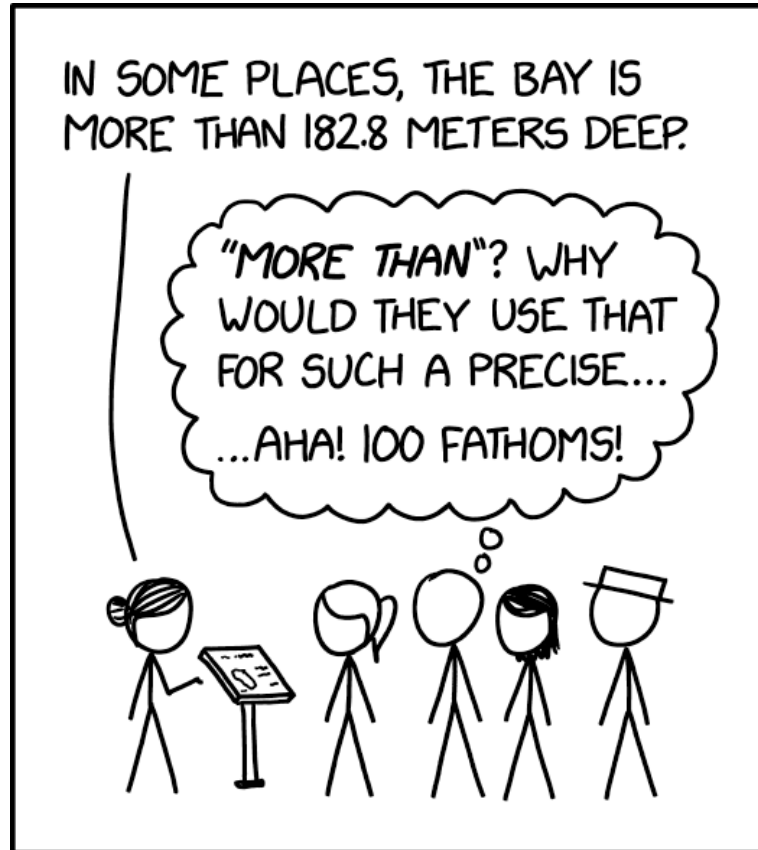
Legend: AUTO (machine applies automatically), ASSISTED (AI assistance suggested), REQUIRED (AI or human must act)

Without concordance: three separate, incomparable charts

Total Energy Consumption -- RAW mode -- Y axes independent -- Iberian: null (no total concept) -- Prairie: GJ not MWh



There's always an XKCD ...

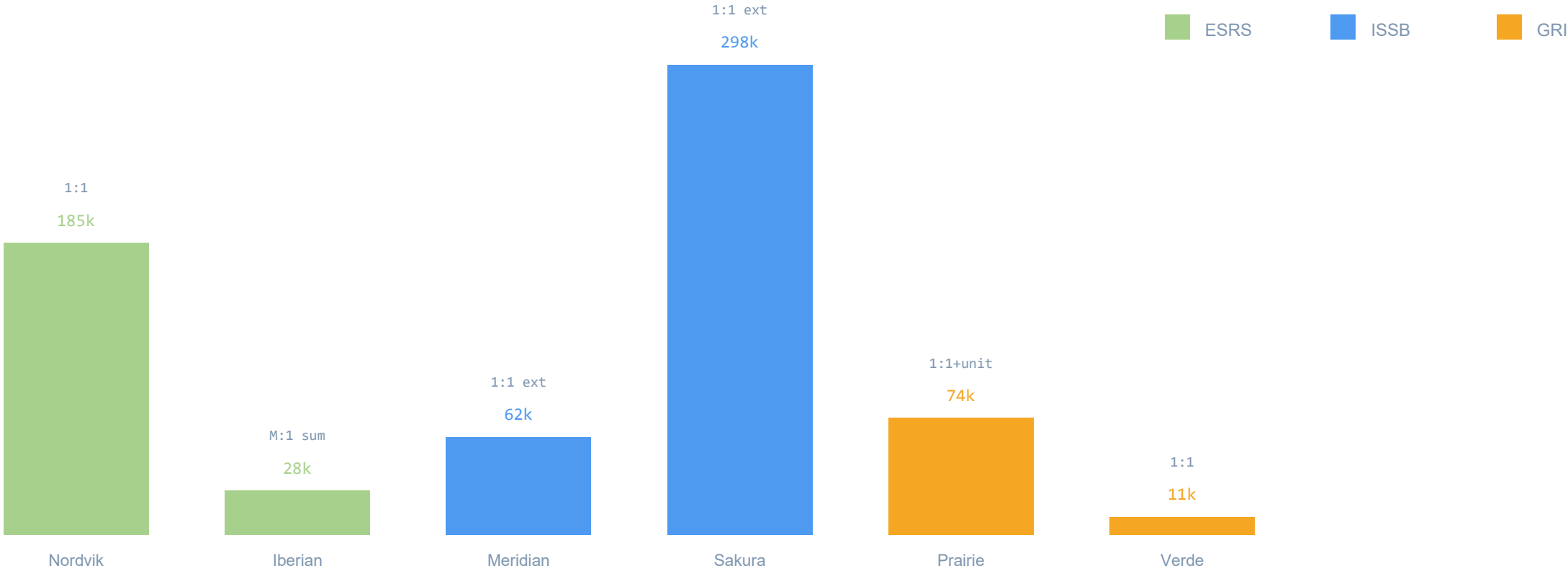


MY HOBBY: REVERSE-
ENGINEERING ORIGINAL UNITS

With concordance: one unified chart, shared axis

Total Energy Consumption -- CONCORDANCE mode -- GJ to MWh conversion applied -- M:1 sum for ESRS reporters

MWh



Every aligned value is traceable through its assertion

Two ISSB reporters, same taxonomy, different reporting choice -- same output metric, different concordance path.

Meridian Beverages (ISSB)

```
SOURCE
AbsoluteGrossScope1G
HG Emissions
(8,900 tCO2e)
+
AbsoluteGrossLocatio
nbasedScope2
(3,400 tCO2e)
```



```
AUTO
numericAssertionType
M:1 sum
[1]+[2]
assistance: none
```



```
TARGET CONCEPT
AbsoluteGrossScope1A
nd2
GHG Emissions
= 12,300 tCO2e
```

Meridian reported both individual concepts. M:1 sum is fully automatic.

Sakura Foods (ISSB)

```
SOURCE
AbsoluteGrossScope1A
nd2
GHG Emissions
= 73,300 tCO2e
(only concept
reported)
```



```
REQUIRED
numericAssertionType
1:M disaggregation
CANNOT SPLIT
assistance: required
```



```
TARGET CONCEPT
GrossScope1Greenhous
e
Gas Emissions
= CANNOT DERIVE
```

Sakura reported only the combined figure. Individual Scope 1 cannot be disaggregated.

Prairie Grain Co. (GRI) -- Scope 1 -- unit conversion chain

```
gri:GrossDirectScope1GHG Emissions [11.3 ktCO2e] → unitMapping ktCO2e→tCO2e (x1000) [AUTO] → esrs:GrossScope1GHG Emissions = 11,300 tCO2e
```

GRI reporters commonly use ktCO₂e (kilotonnes). The concordance unitMapping converts automatically (x1000). Without this, 11.3 appears incomparable to ESRS values in the tens of thousands.

Hard case: the ISSB governance gender gap

ISSB (ifrs-sds:) has no structured concept for governance body gender diversity -- a real coverage gap.

<p>Nordvik</p> <p>ESRS</p> <pre>esrs:BoardsGenderDiversityRatio [esrs:FemaleMember]</pre> <p>42%</p> <p>Explicit member -- AUTO</p>	<p>Meridian</p> <p>ISSB</p> <pre>-- no ifrs-sds: governance gender concept --</pre> <p>ABSENT</p> <p>nullAssertionType ISSB coverage gap</p>	<p>Prairie</p> <p>GRI</p> <pre>gri:PctGovernanceBodies [typedAxis: "Female"]</pre> <p>44.4%</p> <p>typedToExplicit assistance: REQUIRED</p>
---	--	---

The concordance does not paper over this gap. nullAssertionType explicitly documents that no ifrs-sds: concept exists -- not a missing value, a known absence. Sakura Foods (ISSB) reported 18% in a MetricsAxis extension but without a structured concept the concordance cannot map it reliably.

Hard case: typed dimensions and language

GRI uses a typed (reporter-defined) GenderAxis. Verde Alimentos reported in Portuguese.

ESRS -- explicit dimension

```
esrs:FemaleMember  
esrs:MaleMember  
esrs:GenderOtherThanFemaleAndMaleMember  
esrs:GenderNotReportedMember
```

Members are fixed and known. Concordance can pre-specify target strings.
assistance: recommended

```
ESRS -> GRI: esrs:FemaleMember -> "Female"
```

GRI -- typed (reporter-defined)

```
Prairie: "Female"  
Verde: "Feminino"  
(could be: "Women", "F", "fem", ...)
```

Strings are unknown until a specific report is read. Matching requires language awareness.
assistance: required

```
GRI -> ESRS: "Feminino" -> esrs:FemaleMember (AI needed)
```

Taxonomy design implication: explicit dimensions make concordance reliably automatic. Typed dimensions (and entity defined explicit) give reporters flexibility but shift effort to consumers. Both are valid choices -- but the concordance must be honest about the difference.

The concordance is infrastructure for interoperability

Preparers

Already reported under GRI?

- Your concordance shows which concepts map to ESRS automatically
- and which need review -- before you start writing.
- Reduce duplicate effort across reporting cycles.

Consumers

Comparing companies across a sector?

- Six companies, three taxonomies, one analysis.
- Unit conversions, structural gaps, and coverage differences
- are documented -- not silently wrong.

AI tools

Building automation on top of XBRL data?

The assistance hint tells a tool exactly where:

- it can act mechanically
- and where to ask a human.

Meaning:

- No guesswork
- No silent errors.

Write the concordance once. Use it everywhere.

Thank you

About the dataset

Claude was fed:

- the 3 real taxonomies converted to a draft version of the OIM Taxonomy JSON
- The concordance requirements in markdown with JSON samples

Claude generated (with a little steering):

- All the concordance pairs (ISSB to GRI; ESRS to ISSB ...)
- All the samples as xBRL-JSON
- The demo app

Get in touch

Happy to catch up in person or by email.

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Questions?