Primary data – Geological Survey of Norway (NGU)

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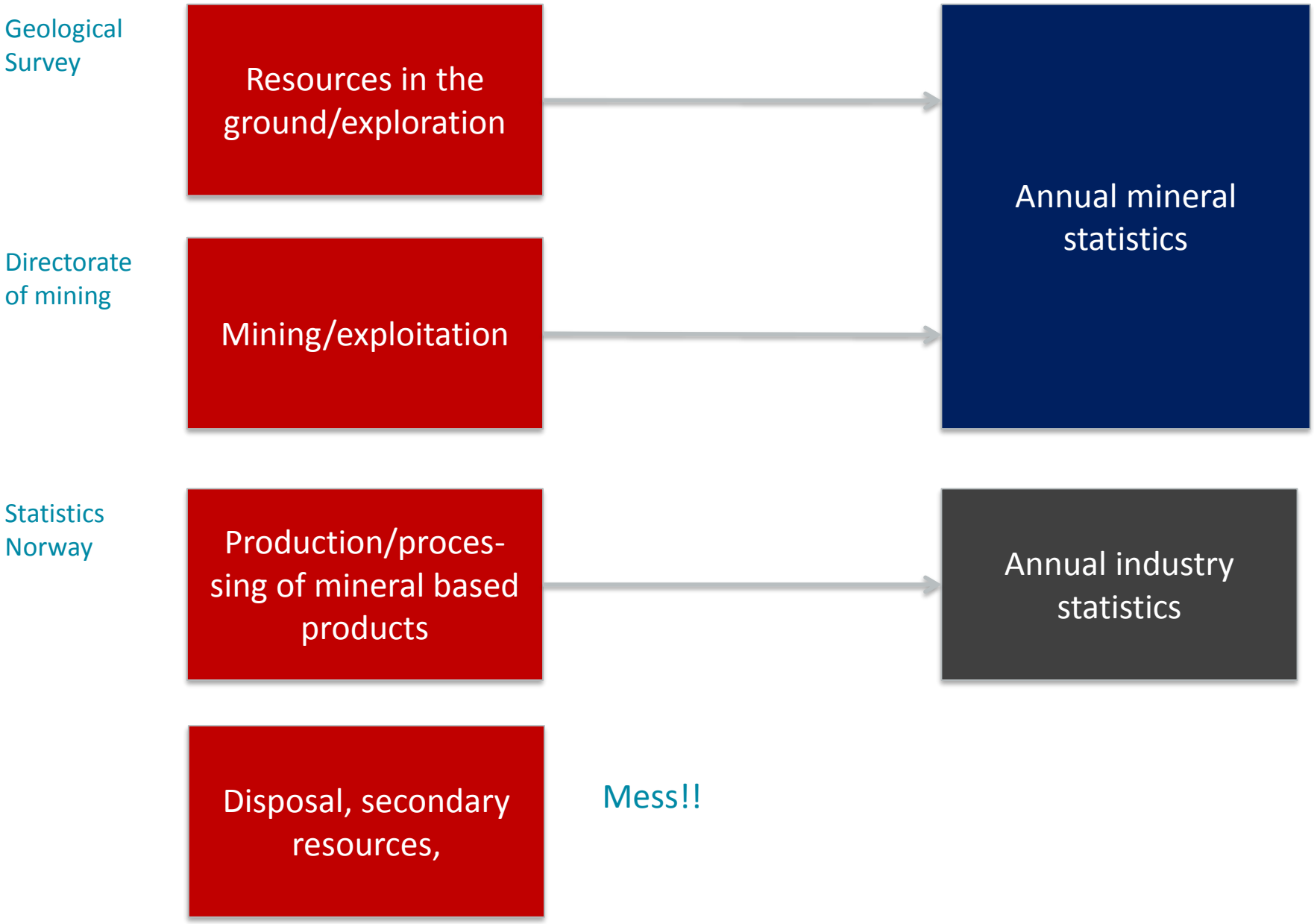
Norway

- State resources: all ores with spesific density above 5
- Landowner's resources: everything else (all industrial minerals and rocks, construction materials)


Geological Survey
Resources in the ground/exploration
Directorate of mining
Mining/exploitation
Statistics Norway
Production/proces-sing of mineral based products
Disposal, secondary resources,
Annual mineral statistics
Annual industry statistics
Mess!!

Resources in the ground – INSPIRE classification (ongoing)

Occurrence (”showing”) – point with high value of ore mineral

Prospect – target for prospecting, but rarely quantitative measurements

Deposit – quantities estimated or possible to estimate

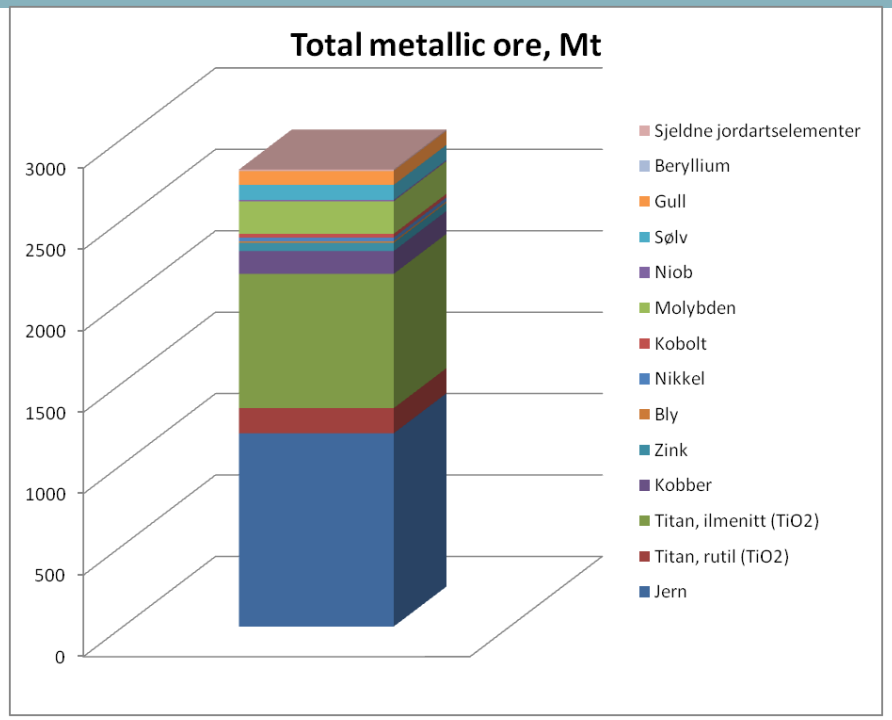
Province – area with high probality of locating deposits

Resources in the ground – information sources

- NGU own data collection
- Industry public data (may be old)
- Data collected by the Directorate, from concession applications (public) or annual reporting; it will still take a while to get those figures complete
- Reporting of exploration results from industry (only state minerals)
- **Note: resources and reserves are still confidential for many mining companies in Norway**

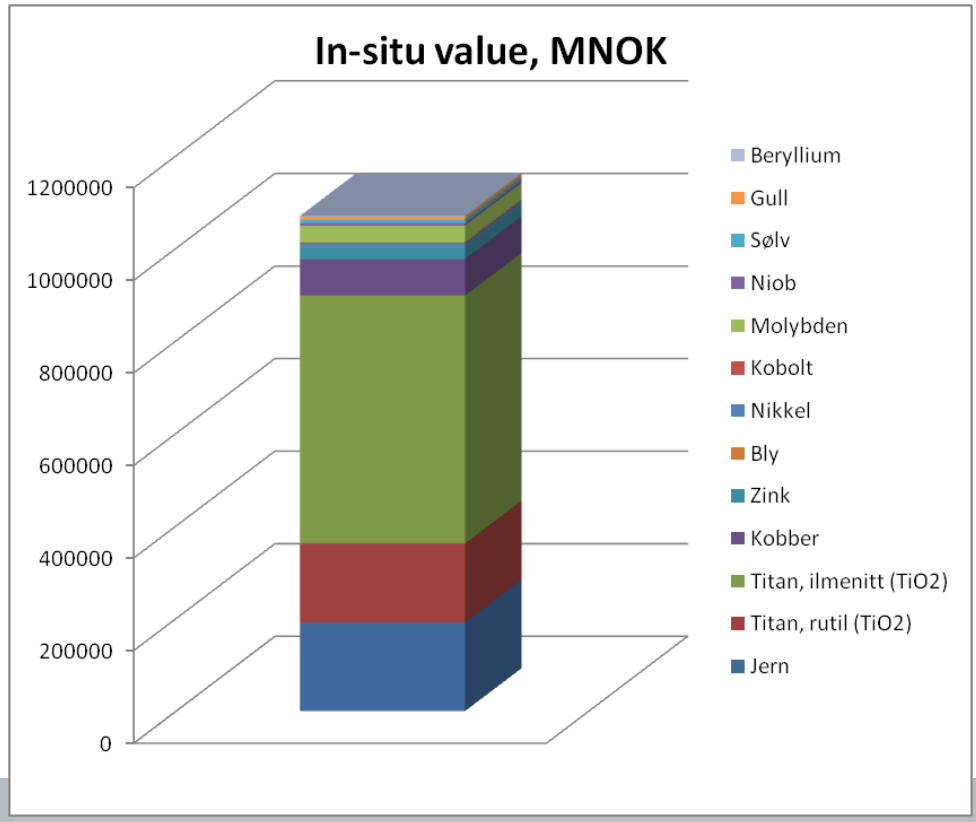
Resources in the ground – standards and reporting

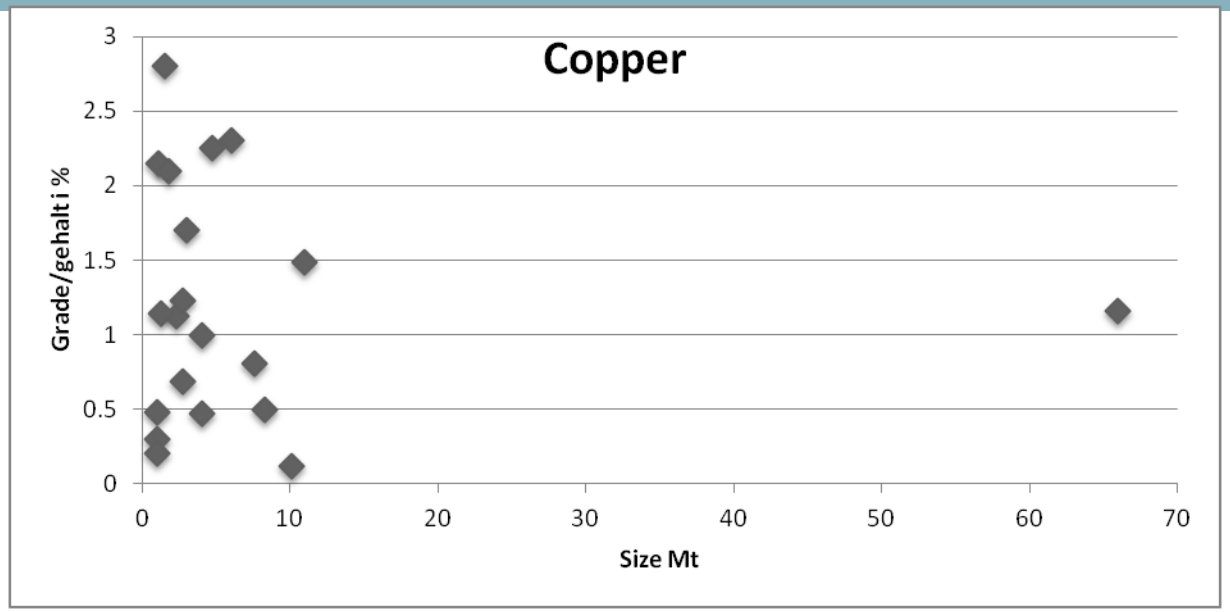
- Mix of standards, much are historical records, not standardized
- Moving towards UNFC
- From 2017, annual report with analyses



Example: gross ore volume

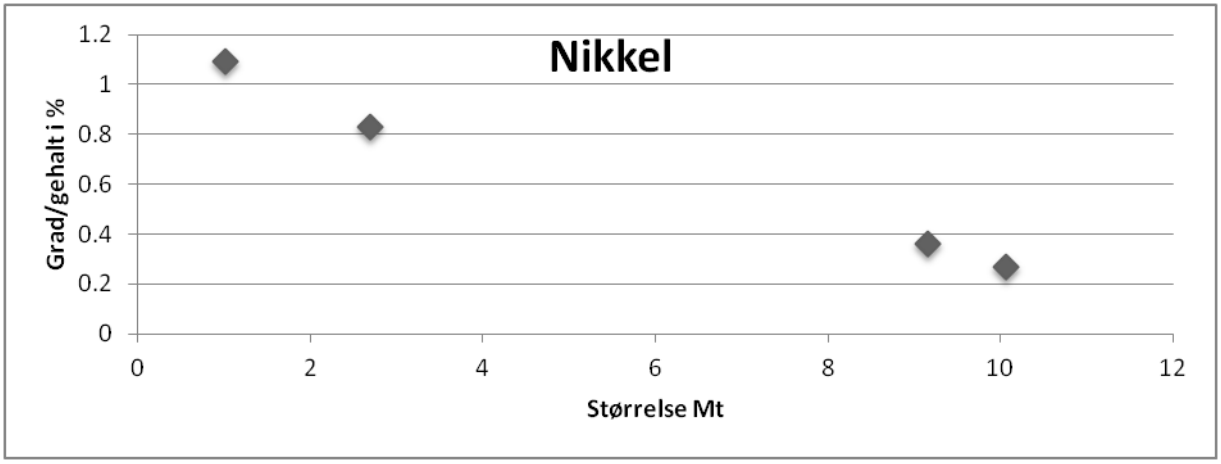
Example: gross in situ ore value





Ecample: grade and size of known copper resources

Example: grade and size of measured Nickel deposits



Resources and reserves

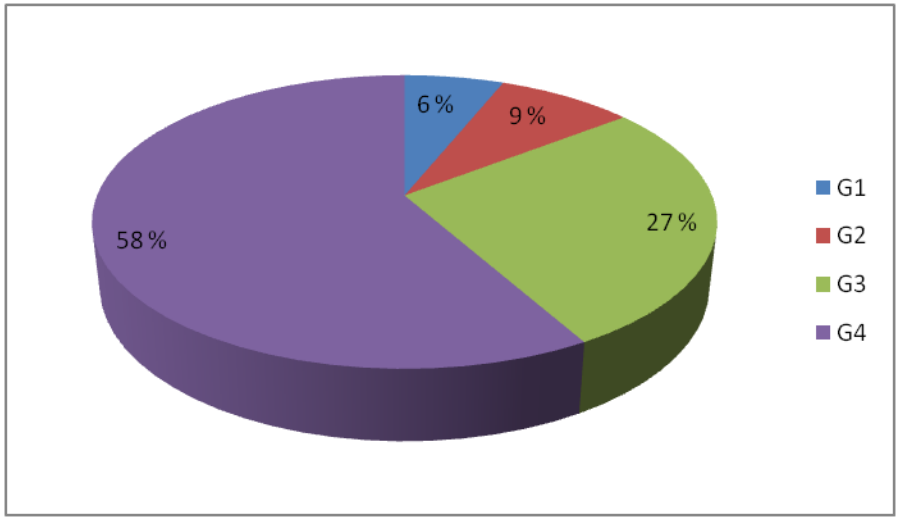
- NGU will remove the word ”reserves” from our databases, since:
- 1. Legally complicated: ”reserves” are what you plan to produce, and the day a company goes bankrupt they are reduced to ”resources”. Wrong wording may create problems
- 2. For a public agency, we believe that ”resources” and the grade of certainty they are estimated/measured is the best reporting practice.

UNFC

- For us, UNFC is the most interesting reporting format – in particular for aggregated data on regional and national scales

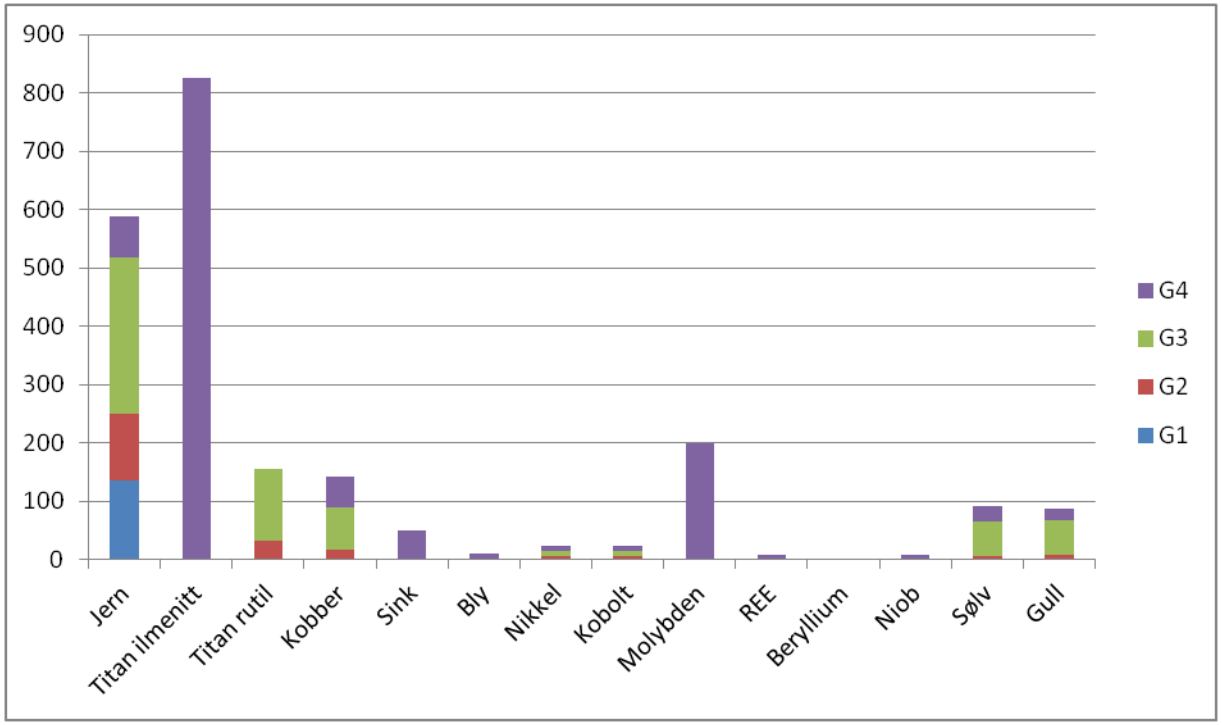
- It is also interesting that UNFC is now becoming the preferred system for the Norwegian Petroleum Directorate, and that we in the future will see adaption to other energy resources and ground water

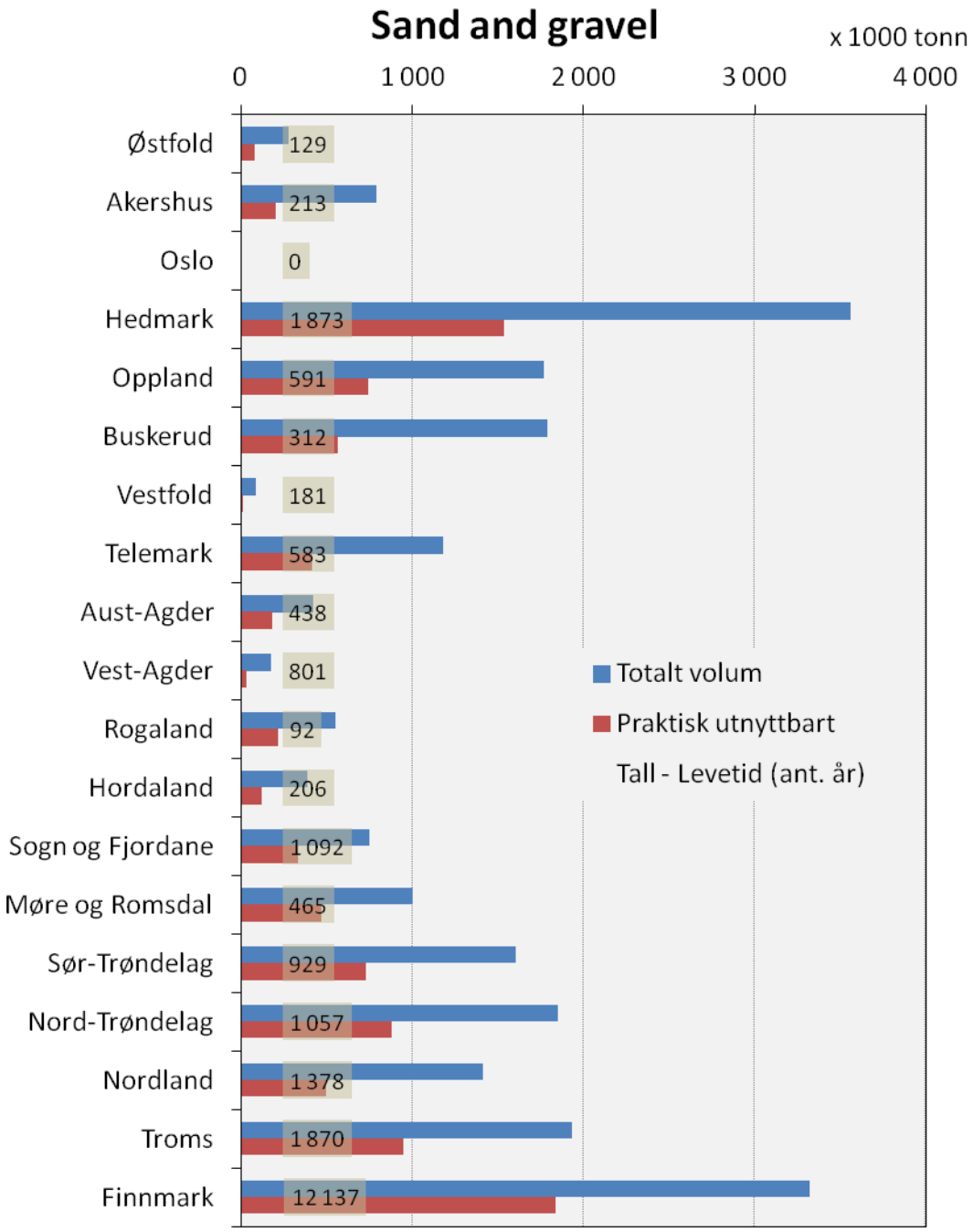
- However, needs for translating G-axis to low-value minerals, such as aggregate



Metallic ore and the UNFC G-axis (Note: all historical data has been put in the G4. Detailed evaluation of such data may upgrade the classification.)

G-axis on metallic ore commodities





Total and available volume of sand and gravel deposits, per county, and remaining years of production.

Next: to include ”legal volume” (concession) – then the years will be reduced drastically

County	Deposits with sales in 2014 or 2015	Resource volume mill. tonn	Life time*
Østfold	25	135,8	54
Akershus	22	193,3	44
Oslo	2	19,8	34
Hedmark	32	153,6	53
Oppland	38	262,2	164
Buskerud	34	255,3	96
Vestfold	15	54,5	25
Telemark	30	240,4	142
Aust-Agder	16	48,7	73
Vest-Agder	18	27,2	29
Rogaland	41	590,1	32
Hordaland	24	201,9	56
Sogn og Fjordane	42	2 680,8	414
Møre og Romsdal	46	209,9	69
Sør-Trøndelag	45	155,2	43
Nord-Trøndelag	53	599,8	289
Nordland	53	1 332,1	432
Troms	14	93,5	119
Finnmark	11	29,3	73
Sum	561	7 283,4	118

Rock aggregate life time

Production figures (Directorate of mining)

Annually collected through online services (penalty for no delivery)

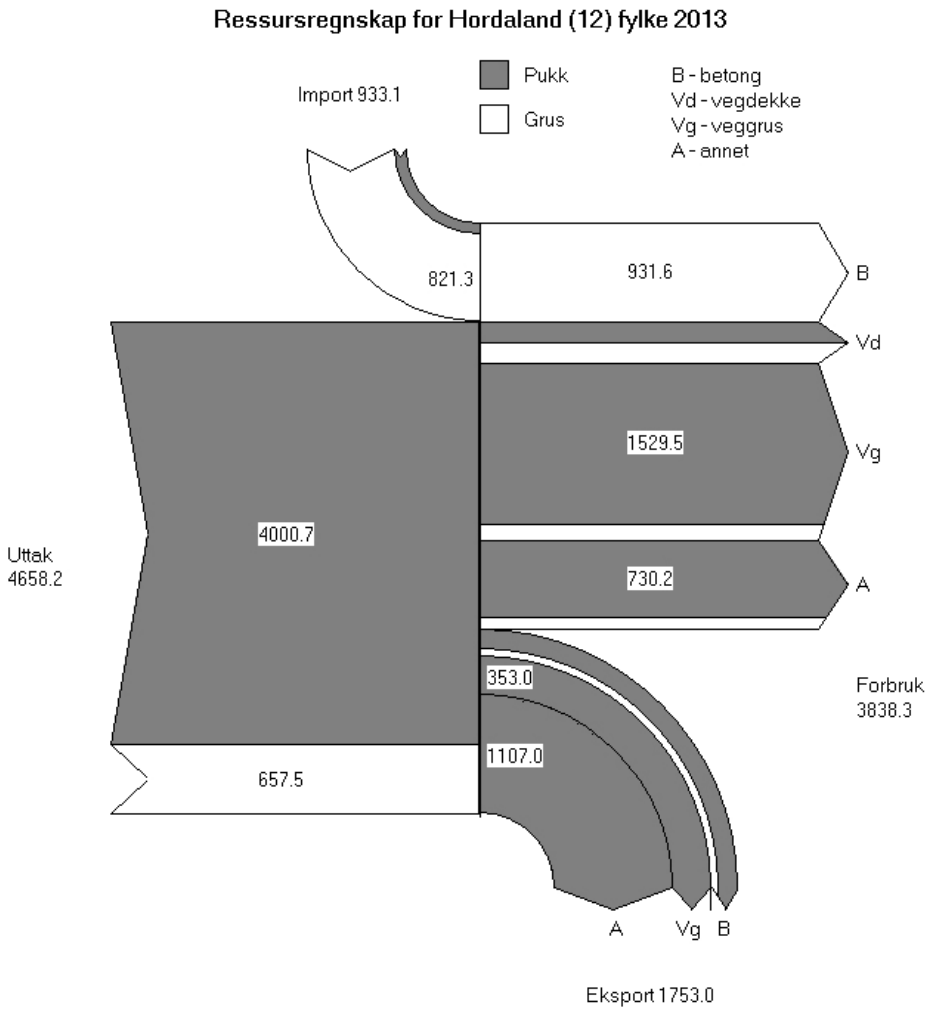
Production in t and value (NOK), and non-salable products

Only concession minerals

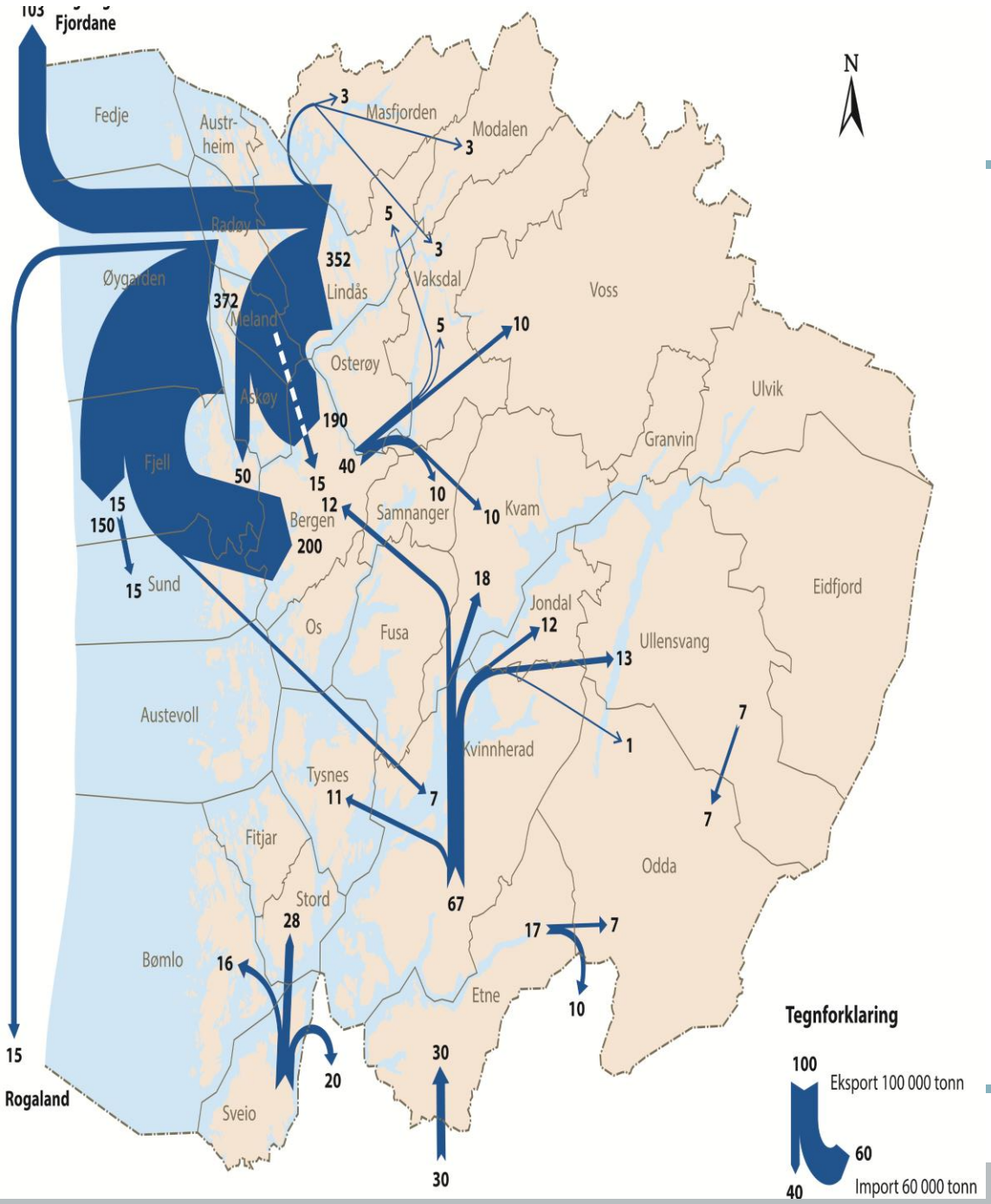
Coordination with resource data

New roles; Directorate stronger ownership of data since 2015

MFA Hordaland county sand/rock aggregate



NGU have been doing analyses of MF since 1993



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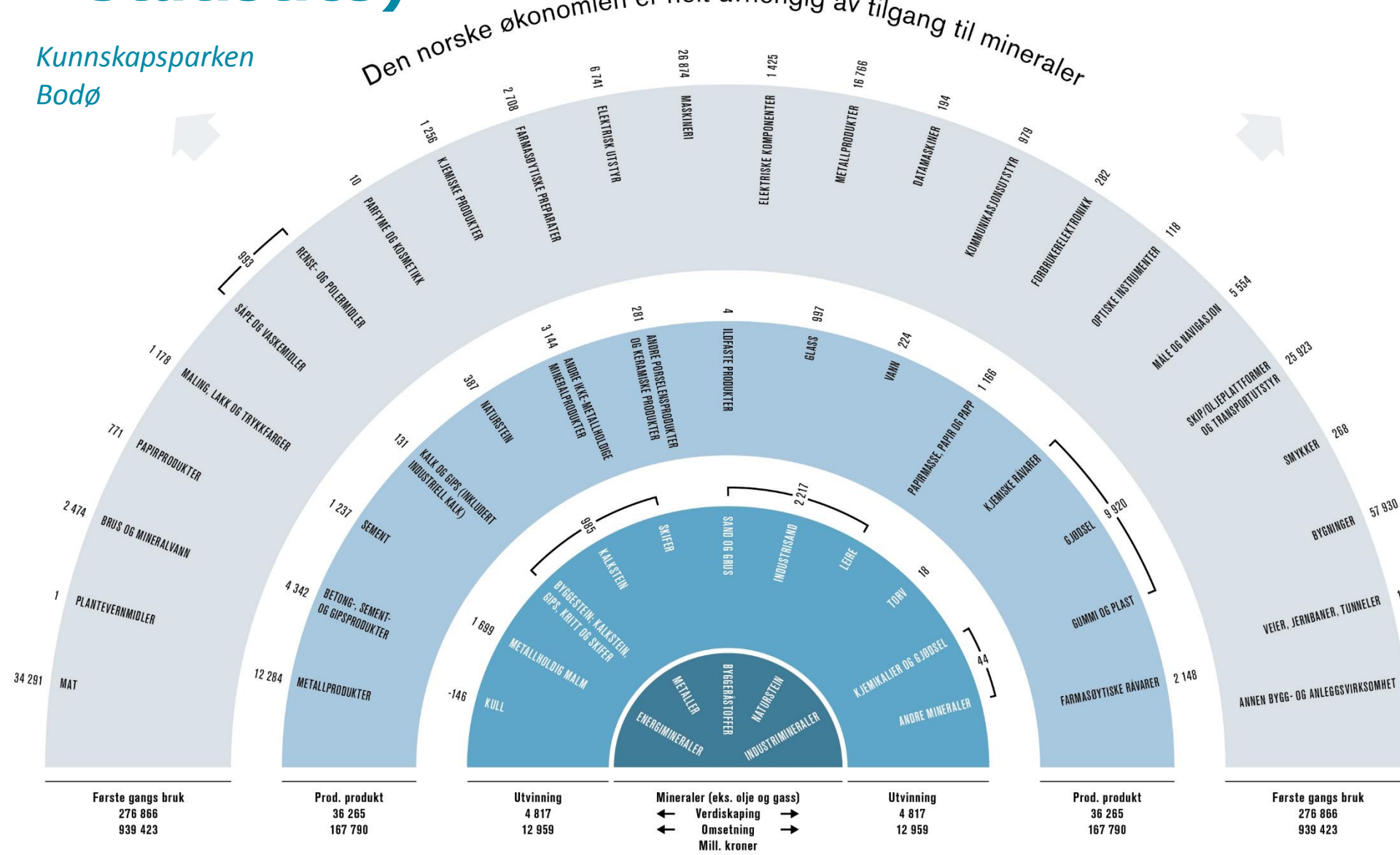
Downstream data (Norwegian Statistics)

Kunnskapsparken Bodø



The big unknown

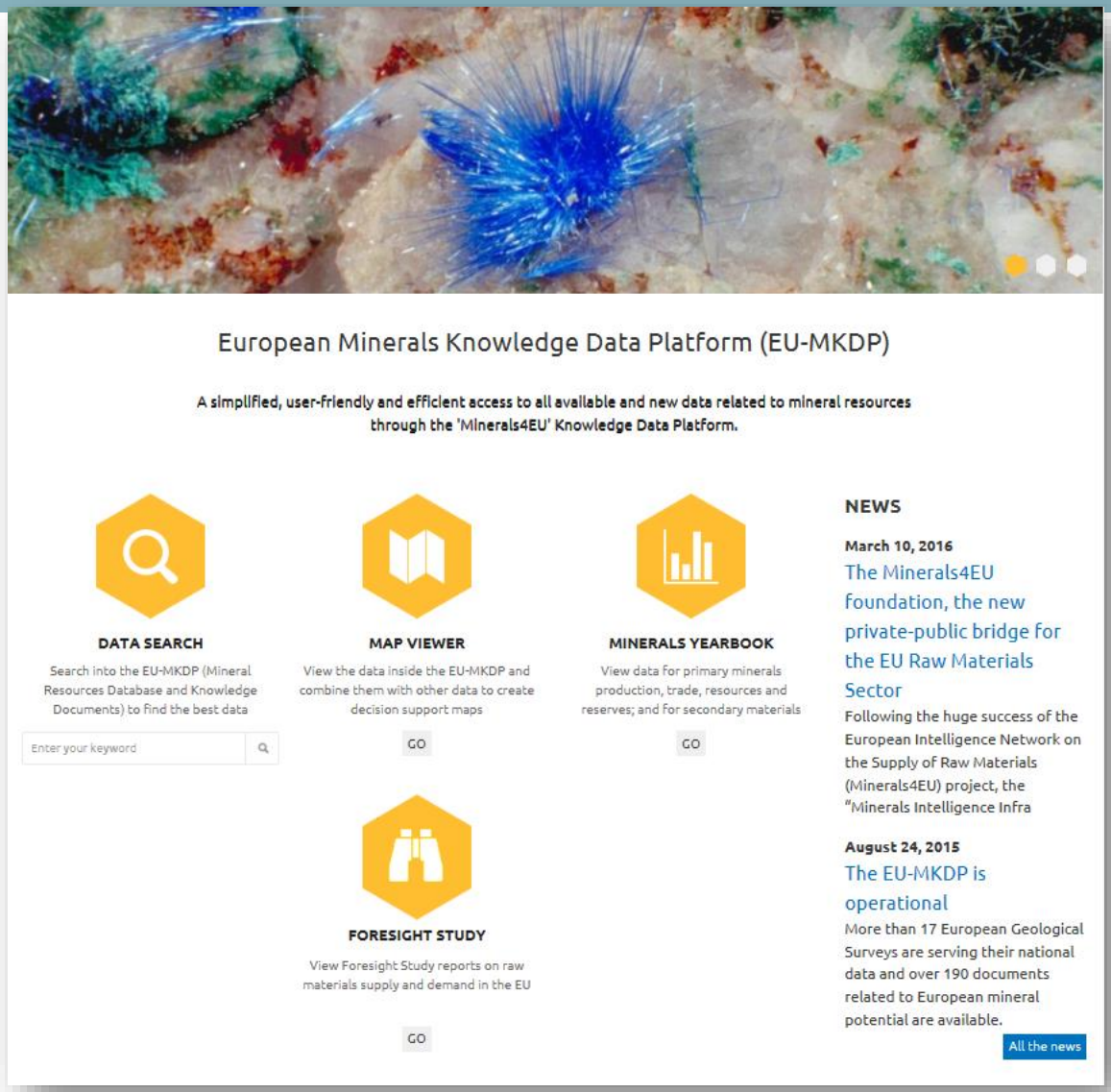
- Non-concession exploitation (predominantly aggregate from tunnelling or industrial site construction): Should be reported in the future
- Unclear and innaccurate reporting
- Reporting duty: One company deliver and publish all data on resources (if it is on the stock market), Another need not report anything (like a family owned company)
- No company utilizing waste from mineral exploitation need to report

Loosing information on the way

Non-stockmarket company

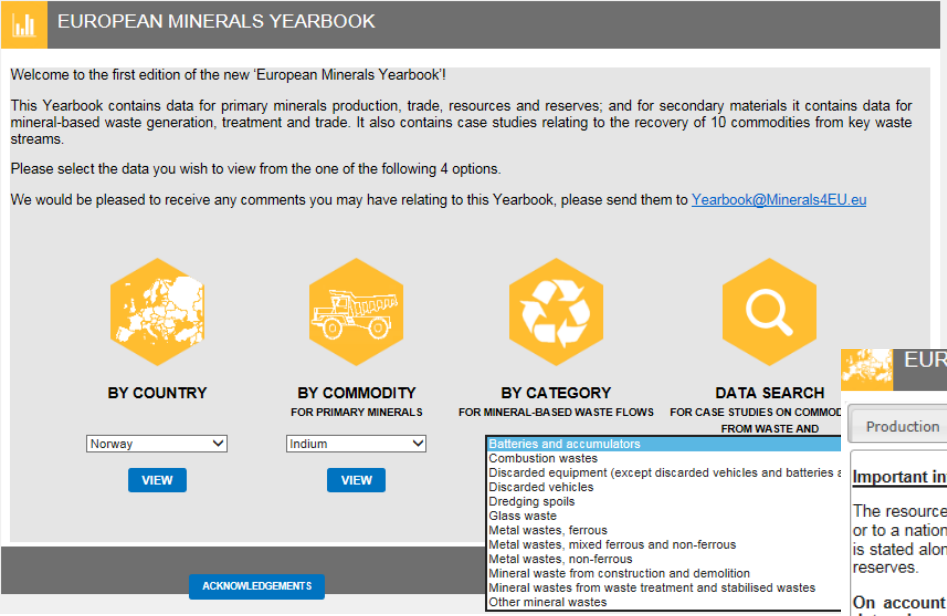
Non-concession minerals

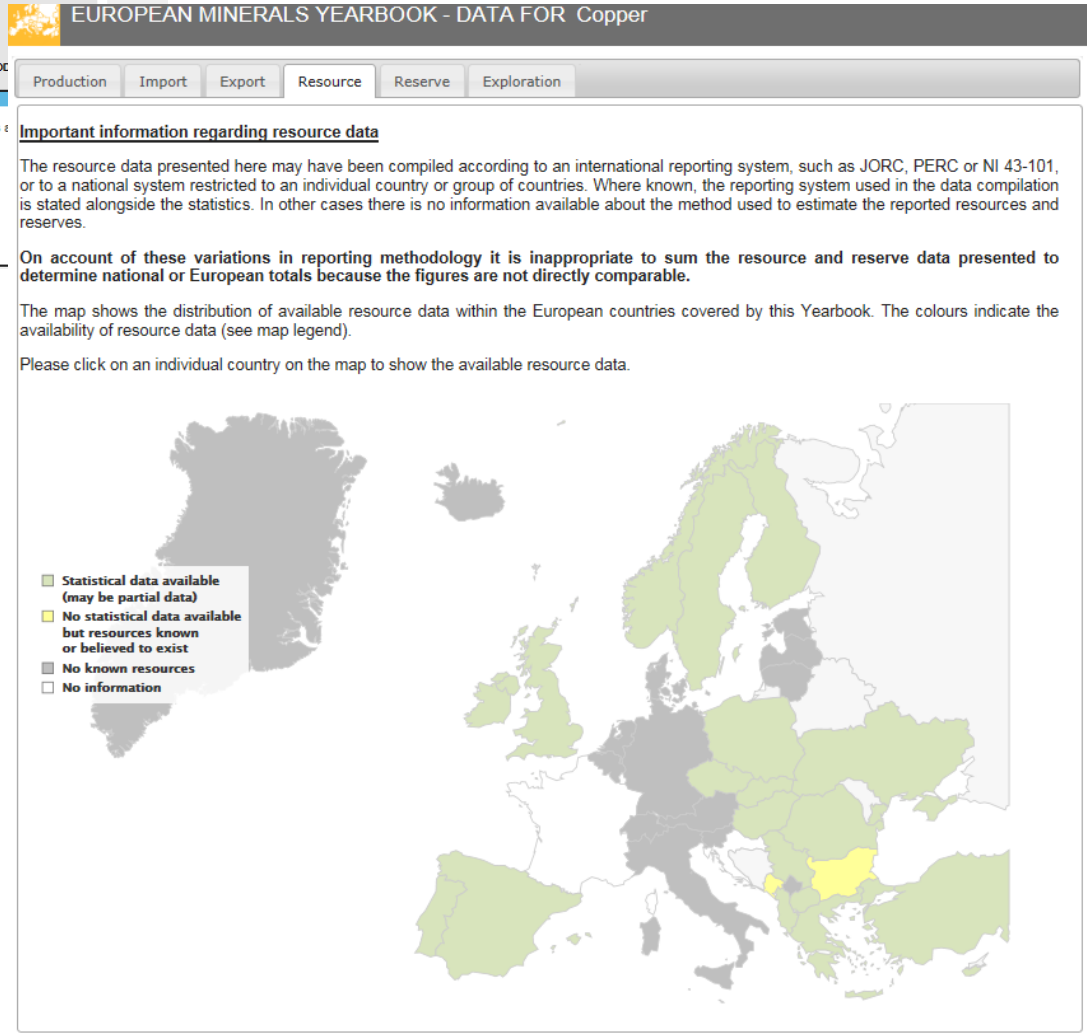
Utilizing waste from primary production



Minerals4EU

Mineral yearbook; reported statistical data from participating countries.





Harmonization

No standard/common procedure for collecting national data

Through European platform: each national database harvested and proccessed to harmonized spatial data

Norway: gradually turning primary spatial datasets INSPIRE compliant