Overall, there are a lot of missing datapoints to be able to nicely combine all the data. Annual timestamps do not always align, disaggregated geographic information is generally missing in all sheets except the Enablers > Metal recycling facility sheet, some units are hard to interpret, etc.

It is complicated to work without a clear use case, and specific users in mind. The assignment mentions that the work should be suitable for an IEA audience, but I am guessing this is a very diverse crowd, ranging from policy makers to everyday internet users.

# Working assumptions

I am guessing there is an issue in the Market > Global market size sheet. Scenario A has two sets of projections for 2035 for each sector, while Scenario B has two sets of projections for 2050. I am guessing both scenarios should have values for both 2035 and 2050. I am assuming the first column under each scenario is for 2035 and the second for 2050.

* Is Scenario B the NZE by 2050 scenario?

The Market > Market status sheet is hard to make sense of. I am guessing it is how the rest of the data are filtered, showing only Emerging and Mature markets—as is the case in the Market > Share of demand sheet. This seems like a generic download from a platform like PowerBI or Tableau that outputs the filters applied as data, although they are not really useful.

* I am further assuming that the same applies to the Competitiveness > Competitiveness status sheet, although the Competitiveness > Top 10 recycling rates sheet shows values for other “statuses” than the one ticked in the prior sheet.

It would be helpful to unpack some of the acronyms like NZE in the Market > Share of demand sheet, which I am assuming is for Net Zero Emissions, and after an online search, I am further it is a scenario of [Net Zero Emissions by 2050](https://www.iea.org/reports/global-energy-and-climate-model/net-zero-emissions-by-2050-scenario-nze).

I am guessing that paper and plastic in the Market > Share of demand sheet are for reference, as they seem to be outliers given all other resources are types of metal.

The Competitiveness > Top 10 recycling rates sheet is very hard to make sense of. The hierarchy in the .xlsx is not clear at all. I am assuming that the % values are all recycling rates—overall for 2024 and disaggregated somehow between emerging and mature (markets I assume) for 2015. If this is correct, the information is somewhat redundant, as the asterisk indicates whether the market was emergent, and it would have been a lot simpler to combine the Emerging and Mature rows together, seeing there are no overlapping values.

The NULL value in the Enablers > Metal recycling facility sheet for Cairo is hard to interpret. Is this a missing value or a 0 (zero recycling facilities per million)? I am assuming it is a missing value. Also, the unit of recycling facilities per million is not clear: per million what? I am guessing it is per million people.

I am assuming the Enablers > Paper recycling cost sheet give aggregate data for (at least) several European countries, given the currency of reference is Euros. I am also assuming the fact that it is the cost of recycling paper is to provide a baseline. It would have been more interesting to provide disaggregated data for each European city referenced in the Enablers > Metal recycling facility sheet. Further, while I am indeed assuming paper is for reference, it is hard without any other data to translate what this means for metal recycling.

There is also a discrepancy between materials listed in the Market > Share of demand sheet and those listed in the Competitiveness > Top 10 recycling rates and Competitiveness > Top 10 investment 2024 sheets. Gold, Platinum, and Silver are missing from the prior, while Graphite, Rare Earth Minerals, and Plastic are missing from the latter two.

I am assuming the share of demand is for recycled materials, compared to the overall demand for the material.

Globa investment in recycling?

# Dashboard

The dashboard visualization uses a tryptic approach, as suggested in the assignment. I have intentionally omitted the data from the Market > Market status and Competitiveness > Competitiveness status sheets since, as I have mentioned above, I believe them to be filters applied to the provided dataset.

A standard version of the dashboard puts all chart modules at the same size and at the same level. Seeing the audience and analytic tasks are not defined, there is no real reason to elevate one chart module (and the set of data it visualizes) above another. That said, because the Competitiveness > Top 10 recycling trends data can be show in a relatively compact chart, I have chosen to reduce its screen estate in favor of the map, which is visually more complex and benefits from a little more room.

It is purposefully designed as an interactive wireframe. A lot more understanding of the data, and its interconnectedness would be needed before putting this dashboard into production. I have therefore avoided the use of color. This leaves the channel open for other uses, e.g. graphic design compliance with organizational design guidelines, or for redundancy in certain encodings, for example the different materials. I am however dubious about using color to indicate the different materials, as these have commonly associated colors, like “gold” that would feel semantically dissonant if shown in the dashboard e.g. in blue. One option could be to use the actual color of each material in the data, although these would likely often be hard to distinguish, since most metals are of only slight variations of gray.

Ultimately, the current grayscale version also best follows Tufte’s [“data-ink ratio”.](https://infovis-wiki.net/wiki/Data-Ink_Ratio)

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