1 Supplementary Material

Table 1 shows a summary of the categories which were not found in either one of the databases and comments on how certain categories were homogenised. It should be noted that TEAM makes very specific distinctions between passenger cars due to its inclusion of European vehicle classifications as well as freight types while some categories used for larger transport modes are not as detailed. In turn, Mat-dp database contains several bus and airplane sizes, but these are not distinguishable in TEAM and not all fuel types are used in Mat-dp.

Table 1 Comments on homogenising the classification of transport technologies between Mat-dp an TEAM

General category	Technology code(s)	Comments
2-3 wheeler	Electric two-wheeler (e.g., 20, 25 or 26 in TEAM)	Mat-dp has a single electric two-wheeler category called Electric moped, thus this is assigned to all electric two-wheelers in TEAM
	Bicycle, E-bicycle, E-scooter, 3 wheeler	Not in TEAM
Light duty vehicle	PHEV medium car	Not in TEAM
	Multiple	Powertrains not in Mat-dp: Biodiesel, bioethanol, Liquid Petroleum Gas (LPG) or Compressed Natural Gas (CNG).
HGV	Medium trucks (e.g., 1520 in TEAM)	Medium-sized trucks are not included in Mat-dp. Instead, only small and large lorries are included. TEAM in turn has no small truck classification. Thus, we assumed medium trucks found in TEAM could be classified as small rigid lorries in Mat-dp.
	BEV small SUV/pickup , ICE small SUV/pickup	In TEAM as Pick up 4x4 van for freight transport, whereas Mat-dp classifies pickups as passenger transport. Thus, the small SUV category in Mat-dp is not used and instead the Large SUV/pickup one is used for all pickup categories in TEAM. The freight classification will not affect the results, since categories in the results of this study are grouped differently and pickups are then classified as freight to align with TEAM.
Bus	Hydrogen mini bus (e.g., 854)	Not in Mat-dp
	ICE midibus	Not in TEAM. Bus categories are only coach, mini or urban.
Railway	Tram, Regional train, Long distance train , High speed train, Freight train,	Not in TEAM. All trains were classified as the Standard Railway category in Mat-dp. TEAM classifies rail as being diesel or electricity powered and under standards 1-3, but Mat-dp does not make a powertrain distinction. There was

	High speed railway	also no distinction for normal or high speed so this was not included in the classification.
Aircraft	Small narrow body aircraft, Large narrow body aircraft , Small wide body aircraft, Large wide-body aircraft	Not in TEAM. Aircraft classifications in TEAM did not make size distinctions. Thus, the regional aircraft categories from Mat-dp used were only: Regional aircraft with three different fuels: traditional, electric or H2. These fuels align with the categories in TEAM.
HGV	Articulated lorry (40t)	Not in TEAM. The types of trucks in TEAM were heavy and medium with no distinction for articulated types, so this category was not used in this study.

Table 2 Classification of technologies and materials used for the remainder of this study.

Material type	Material subcategory	Material names
Bulk	Metals & Alloys (non-critical)	Ag, Brass, Bronze, Cast iron, Cd, Fe, Mo, Pb, Steel
	Construction Materials	Aggregate, Asphalt, Bitumen, Cement, Clay, Concrete, Granite, Lime, Sand, Stone wool
	Paints/Coatings	Alkyd paint
	Other Bulk Material	Asbestos, B, Carbon black, Ceramic tile, Clinker, Magnesia, P, Pitch, Se
	Fossil-related compounds	Creosote, Lubricating oil
	Chemical Compounds	Dimethyl carbonate, Ethylene, Ethylene carbonate, Ethylene glycol, Hydrochloric acid, Organic solvent, Propylene glycol, Sodium chloride, Sodium hydroxide, Sulfuric acid
	Fibers & Insulation	Cellulose, CFRP, GFRP, Glass, Glass wool
	Polymers & Plastics	Epoxy resin, Phenolic resin, Polymers, PVC, Synthetic rubber
	Specialty Chemicals	Glyphosate, Refrigerant R134A
	Biological/Natural Materials	Wood
Critical	Metals	Al, Co, Cu, Ni, Pd, Pt, Ru, Ti, V, Zn
	Rare Earth Elements (REEs)	Ce, Dy, Er, Eu, Gd, La, Nd, Pr, Sc, Tb, Y, Yb

	Battery Materials	Graphite, Li, LiFePO4, LiMn2O4, LiPF6, NMC111 oxide, NMC 532 oxide, NMC 622 oxide, NMC 811 oxide
	Metalloids & Non-metals	Ge, Si
	Refractory/High-Performance Materials	Hf, Mg, Mn, Nb, Ta, W, Zircon
	Industrial Use Minerals	Cr
	Other Critical Material	Ga, In, Neodymium oxide, Sa, Sn, Te