

## 23. Extractive waste

### Key points:

- Extractive waste raises important environmental and economic issues for the EU raw materials sector.
- A more consistent and longer time series of data is required to support solid conclusions as to volume and quality trends.
- The available data show that the generation of extractive waste in the EU was relatively constant between 2004 and 2014.

### Overview and context

Extractive industry generates the second largest waste stream in the EU, a minor part of which is hazardous. Waste volumes and characteristics vary significantly across commodity groups.

The EU's waste management legislation is based on a hierarchical approach<sup>269</sup>: prevention – re-use – recycling – recovery – disposal. This framework can be also applied for extractive waste. For instance, the placing-back of extractive waste into excavation voids is preferred when feasible. The reworking (reprocessing) of historical waste heaps and tailings, and the extraction of valuable raw materials from them are also encouraged. Recovery of copper, gold, tungsten and zinc from tailings in Bulgaria, Greece, Italy, Poland, Romania, Spain are reported. However, the available data on the recovery of secondary raw materials from extractive

waste show that recovery is rather low, for reasons of economic and technological feasibility<sup>270</sup>. Volumes of extractive waste and their hazardous or non-hazardous nature depend on many factors, such as demand and price, production volume, ore grade, type (e.g. underground vs. quarry) and efficiency of extraction and processing, applied technology, backfilling and by-production, recovery, etc.

To prevent or reduce as far as possible any adverse effects on the environment and any resultant risks on human health, the EU has deployed the Extractive Waste Directive and its implementing decisions that aim at improving the environmental performance of the sector. The amended Seveso Directive<sup>271</sup> focuses on accident risks and 'best available techniques' (BATs) are specified in the BAT reference document (BREF) on the management of tailings and waste-rock<sup>272</sup>, which has recently been revised but not yet adopted.



© Courtesy of Limeys Filtration and Performance Additives Europe, Middle-East and Africa

270 Mathieux, F., et al., 2017, 'Critical Raw Materials and the Circular Economy — Background report'. EUR 28832 EN, Publications Office of the European Union, Luxembourg.

271 Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (OJ L 197, 24.7.2012, p. 1).

272 <http://eippcb.jrc.ec.europa.eu/reference/mmr.html>.

269 <http://ec.europa.eu/environment/waste/framework/>.

### The search for suitable data...

No comparable datasets are available on extractive waste volumes and quality that would allow to assess extractive waste management performance on a global scale or for the EU<sup>273</sup>.

Eurostat provides data on waste volumes covering Member States' extractive industry (Table 23.1). However, more consistent and longer time series of data are required to support solid conclusions. According to the available data, extractive waste volumes in the EU changed moderately between 2004 and 2014. They decreased slightly in the period to 2008 and then increased, probably due to the broader materials coverage of 'extractive waste' introduced with the adoption of the Extractive Waste Directive in 2006. Domestic mineral extraction followed somewhat different trends (see related data in Table 23.1).

Efforts to compile updated, complete and comprehensive extractive waste time-series data, including work by the Commission<sup>274</sup> and geological surveys and research projects aimed at improving information on deposits and waste<sup>275</sup>, have provided some limited results. The relevant draft BREF<sup>276</sup> pointed out data gaps and discrepancies among different datasets<sup>277</sup>, thus confirming that none of the global raw materials information services has fully suitable data collections.

**Table 23.1:** Volumes of extractive waste and extracted materials (EU-28, 2004-2014)<sup>278</sup>.

Volumes (1000 tonnes)	2004	2006	2008	2010	2012	2014
Extractive waste (Eurostat)	752 770	606 420	554 720	672 180	733 990	704 630
Domestic mineral extraction (Eurostat)	3 896 340	4 281 882	4 427 340	3 573 223	3 375 901	3 259 536

Other data options were examined, e.g. the number and category of licensed extractive management facilities, but dismissed due to a lack of reliable data (see the Commission's report on the implementation of the Extractive Waste Directive<sup>279</sup>).



© Courtesy of EuroGeoSurveys

273 BIPRO-Oakdene Hollins, 2016: provision and analysis of information for the preparation of the Commission's report on The implementation of Directive 2006/21/EC on the management of waste from extractive industries (COM(2016) 553 final); [http://ec.europa.eu/environment/waste/studies/mining/waste\\_extractive\\_industries.pdf](http://ec.europa.eu/environment/waste/studies/mining/waste_extractive_industries.pdf)

274 DG Environment; <http://ec.europa.eu/environment/waste/mining/index.htm>

275 e.g. Minerals4EU (<http://www.minerals4eu.eu/>);

Prospecting Secondary raw materials in the Urban mine and Mining wastes (ProSUM) (<http://www.prosumproject.eu/>);

SmartGround (<http://www.smart-ground.eu/public/20161118141030.pdf>).

276 JRC, 2016, draft BREF for the management of waste from the extractive industries (Seville);

[http://susproc.jrc.europa.eu/activities/waste/documents/MWEI\\_BREF\\_Draft.pdf](http://susproc.jrc.europa.eu/activities/waste/documents/MWEI_BREF_Draft.pdf)

277 e.g. the WU global material flow database;

<http://www.materialflows.net/materialflowsnet/home/>

278 Source: Eurostat data on extractive waste and domestic material extraction volumes. See methodological notes for description of the content of each data series.

279 Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the implementation of Directive 2006/21/EC on the management of waste from extractive industries and amending Directive 2004/35/EC (COM(2016) 553 final); <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1489760330450&uri=CELEX:52016DC0553>

## Methodological notes

### Table 23.1

Waste volumes are taken from the Eurostat waste database ([‘generation of waste by economic activity’ dataset \(code ten00106\)](#)), which covers the waste volumes generated by the extractive industry. The data refer to section B (mining and quarrying) and come from Member States’ reporting to Eurostat, which was reinforced by the Extractive Waste Directive in 2009.

Eurostat categories are based on the NACE classification, [waste statistics](#) and the [European list of waste \(LoW\)](#). They correspond only partially to the categories used in the Extractive Waste Directive; for example, certain wastes covered by Eurostat’s section B, e.g. machinery maintenance waste, are not regarded as extractive waste for the purposes of the Directive. Conversely, certain wastes (e.g. removed inert overburden rocks) were not reported to Eurostat before the implementation of the Directive.

Domestic mineral extraction volumes are taken from the [Eurostat economy-wide material flow accounts \(EW-MFA\)](#). Domestic extraction is the total amount of material extracted from the natural environment for further processing in the economy, by resident units. The following sectors were selected:

- B.2. (metal ores and concentrates, raw and processed)
- B.3. (non-metallic minerals, raw and processed)