World Resources Institute
Material Flows Database
Workbook Contents and Glossary

Workbook Contents

Four of the Excel workbooks—agricultural flows, forestry flows, mineral and metal flows, and nonrenewable organic material flows—contain the following year-by-year data:

1. Summary sheet containing overview data and indicators
2. A raw data sheet (the basic data with notes included)
3. Reported uses (this is the same as DMC)
4. Sum of individual uses (this is not the same as reported uses in some cases)
5. Outputs with M,Q,V notation (this provides the DPO and NAS data)
6. M, Q, and V summary sheet
7. Hidden flows, split by domestic and foreign (this provides basis for TDO and TMR)
8. Recycling data
9. Incidental outputs data
10. Exports and imports (this is the data for calculating DMI)

The infrastructure and earthmoving workbook contains the following:

1. Summary sheet providing overview data
2. Hidden flows (all flows in this category are domestic hidden ones)
3. Calculation and data sheet (provides basic data on housing, road mileage, and dollar values, along with conversion methodology from dollars to tons)

The national summary workbook contains the following:

1. National Indicators Summary
2. Per Capita Indicators Summary
3. National Indicators (annual details)
4. Outputs Classified by Category

Glossary of terms used on Material Data Sheets

Commodity: Name of Commodity (e.g. coal, corn, cobalt, etc., referred to in this document as "commodity X")

Level: Ranges from 1-4; increases as materials progress through their life cycle. Directly extracted or harvested commodities are assigned to level 1, primary products of extracted commodities are assigned a level 2, secondary products are assigned a level 3 (these are frequently finished goods), and waste products are assigned a level 4 designation.

Associated Flows: Other commodity flows generated by or closely related to production or use of commodity X, e.g. mercury emissions from coal combustion.

Descriptor: Clarifies the nature of flow.

Output Characteristics: Any flow that enters the environment is given an M, Q, and V designation to allow for a rudimentary classification of the environmental impacts of these flows.

M designates the mode of first release into the environment, showing the level of dispersion and freedom of movement of waste materials.

M0) Flows that become a "permanent" part of the built infrastructure, and do not exit the economy during the period under consideration, that is, for more than 30 years.

M1) Flows contained, controlled, on land as solids (landfills, overburden).

M2) Flows contained on land as liquids or partial solids (tailings ponds, impoundments).

M3) Flows dispersed directly onto land in a solid, partial solid, or liquid form (fertilizers, pesticides, and fungicides).

M4) Flows discharged into water systems in a solid, partial solid or liquid form (dredge spoil, soil erosion, sewage effluent, and deep well injection). While it could be argued that deep well injection is a controlled release more appropriate to category M1, the degree of containment in the geologic structure can be uncertain.

M5) Flows discharged into air from point sources in a gaseous or particulate form (power plant and industrial source stack emissions).

M6) Flows discharged into air from diffuse sources in a gaseous or particulate form (auto emissions, household heating plants, spray paints).

M7) Flows that take many, or no clearly defined path, or which are not classifiable.

Output characteristics, cont'd.

Q describes the quality of a waste material, providing information on whether the environment can assimilate a flow and whether it is biologically harmful.

Q1) Flows that are biodegradable (agriculture, forest, and fishery products).

Q2) Flows that replicate rapid continuous geologic processes (particle size reduction and movement only).

Q3) Flows that have not been chemically processed but are chemically active (salt), or biologically hazardous (asbestos).

Q4) Flows that have undergone chemical processing. These may or may not be chemically active (fuel emissions, fertilizers, industrial chemicals, certain mineral processing wastes).

Q5) Flows that are heavy metals, synthetic and persistent chemical compounds, or radioactive.

V describes the velocity of a flow, or the residence time of a material in the human economy as a useful end product.

V1) Flows that exit within two years after entry (food, fertilizer, packaging, petroleum used as fuel).

V2) Flows that exit after from 3 to 30 years in the economy (durable consumer goods, automobiles). It would be useful if V2 could be further divided into 3-10, and 10-30 year categories, but it is not clear that the available data permits this distinction to be made.

V3) Flows that stay in the economy for more than 30 years and are additions to the stock of built infrastructure (highways, buildings).

Economic Sector: Standard Industrial Classification (SIC) or North American Industry Classification System (NAICS) code for the economic sector from which a flow originates

Source: Full reference for data source for quantity

Notes: All information related to assumptions made, calculations performed and alternative data sources

Cycle Phase: In the database, the mass of commodity is measured as it enters each phase in its life cycle. These individual "cycle phases" used by WRI to measure flows are enumerated below:

Input – Production: Quantity of commodity X produced domestically

Input - Secondary Production (old scrap): Quantity of commodity X produced using post consumer scrap

Input - Secondary Production (new scrap): Quantity of commodity X produced using new scrap

Input - Byproduct Production: Quantity of commodity X produced as byproduct of other industrial process

Input – Imports: Includes imports of raw materials and semi-manufactures, does not include mass of commodity X in imported finished goods

Input - Changes in Inventory: Net amount of commodity X drawn from industry inventory

Exports: Includes exports of raw materials and semi-manufactures, does not include mass of commodity X in exported finished goods

Imports (finished goods): Mass of commodity X contained in imported finished goods

Exports (finished goods) : Mass of commodity X contained in exported finished goods

Reported Use (if available): Published amount for 'reported use' of commodity X

Hf-Extractive Waste – Domestic: Quantity of mass discarded during domestic extraction of commodity X

Hf-Processing Waste – Domestic: Quantity of mass discarded during domestic processing of commodity X

Hf-Manufacturing Waste – Domestic: Quantity of commodity X discarded during domestic manufacturing of commodity X

Hf-Extractive Waste – Foreign: Quantity of mass discarded during foreign extraction of commodity X

Hf-Processing Waste – Foreign: Quantity of mass discarded during foreign processing of commodity X

Hf-Manufacturing Waste – Foreign: Quantity of commodity X discarded during foreign manufacturing of commodity X

Use - 1: Quantity of commodity X going to use 1

Use - 2: Quantity of commodity X going to use 2

Output - Use 1: Quantity of commodity X going to use 1 minus Quantity of commodity X recycled from use 1

Output - Use 2: Quantity of commodity X going to use 2 minus Quantity of commodity X recycled from use 2

Output - Incidental 1: Quantity of commodity X entering environment from sources other industrial production of commodity X

Recycling - Use 1: Quantity of commodity X recycled from use 1

Recycling - Use 2: Quantity of commodity X recycled from use 2