



©Photo by Tom Fisk on Pexels

Sustainable Trade in Resources

Global Material Flows, Circularity, and Trade

Infographics prepared by the International Resource Panel Secretariat in December 2020

KEY FACTS ON GLOBAL MATERIALS USE

Materials: Biomass, Fossil fuels, Metals, and Minerals

Status

From 1970 to 2017, the annual global extraction of materials **tripled**, per capita material demand also grew.



Projections

Following the current trend, global materials use could more than **double** by 2060 (IRP, 2019; OECD, 2019).

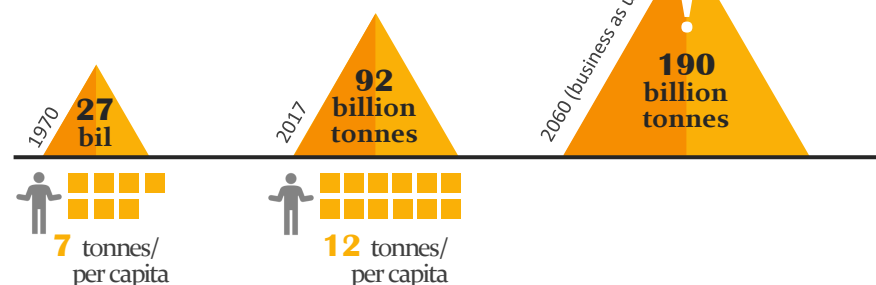
Environmental Impacts

IRP research shows that, in 2017 natural resource extraction and processing accounts for:

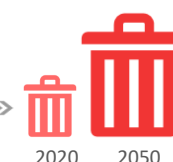
>90% of global biodiversity loss

>90% of water stress

~50% of global greenhouse gas (GHG) emissions. (IRP, 2019)



Today, the global economy is only **8.6%** circular — just two years ago it was **9.1%** (Circularity Gap Report 2020).



With the current trend, annual waste generation is projected to increase by **70%** by 2050 (World Bank, 2018).



THE GROWING MATERIAL RESOURCE TRADE

Trade in material resources - biomass, fossil fuels, metals and minerals - has grown strongly over the past half century.

The volume of trade in material resources has increased at a faster pace than the volume of extracted resources, signifying a growing dependency of the global economy on material resource trade.



Biomass



Fossil fuels

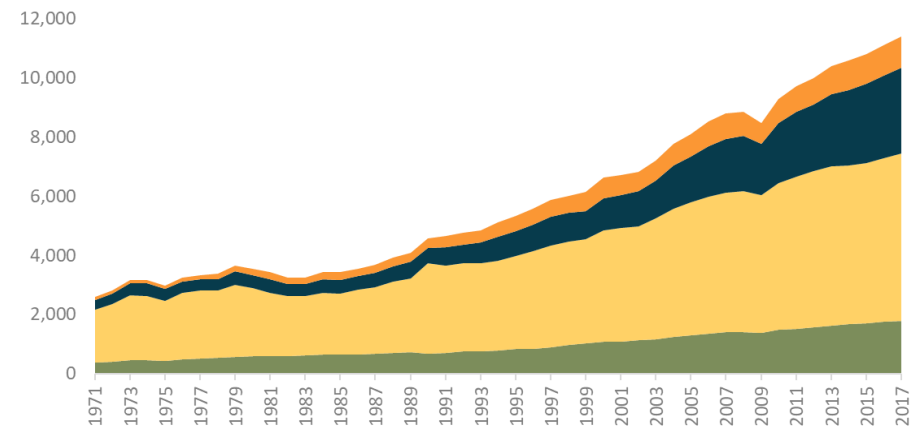


Metals



Minerals

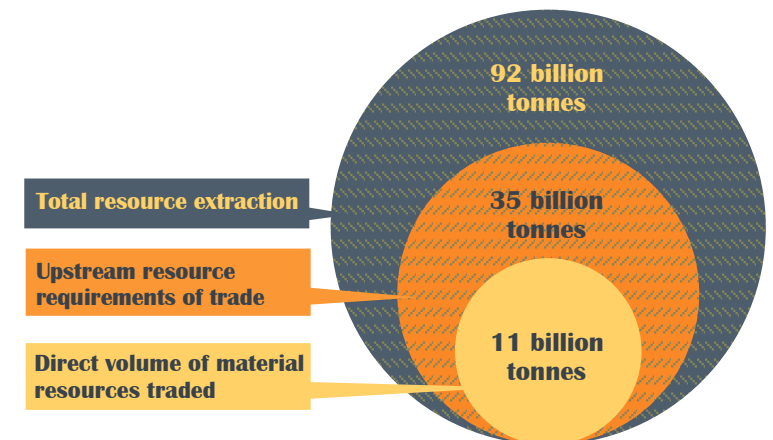
Global physical trade by material composition, 1970-2017
(Million tonnes)



UPSTREAM RESOURCE REQUIREMENTS OF TRADE

One-third of the total volume of materials resources extracted in the world economy are linked to the production of traded goods.

The additional materials, energy, water and land used in the country of origin to extract and produce traded goods but left behind as wastes and emissions – the so called upstream resource requirements of trade – are three times higher than the direct volume of material resources traded across nations.



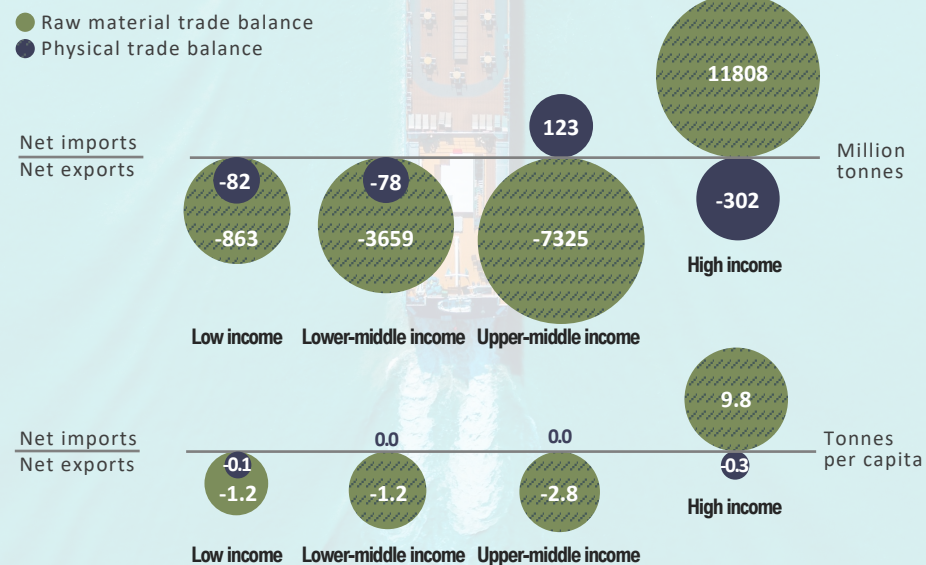
Global, 2017

MATERIAL FOOTPRINTS OF TRADE ACROSS THE GLOBAL ECONOMY

When looking at the raw material trade balance, based on the attribution of globally extracted materials to traded goods, as compared to the physical trade balance, this reveals that only Europe and North America are net importers of materials. By contrast, Asia and the Pacific has shifted to becoming a net exporter of materials driven by large export volumes of manufactured goods.

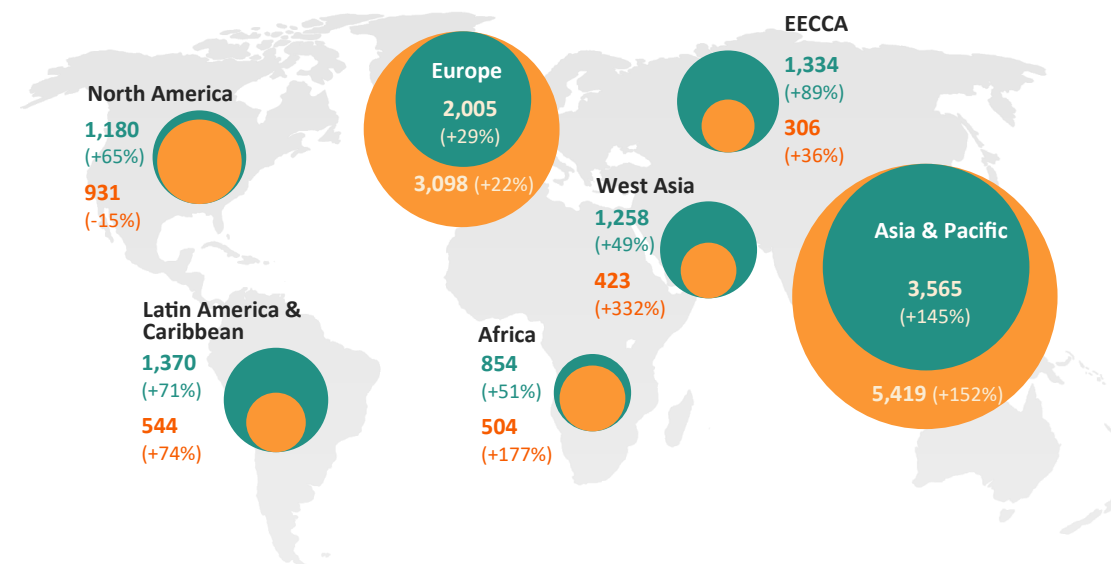
Such analysis of the material footprints of trade highlights that resource-intensive processes have shifted from high-income importing countries to low-income exporting countries. This signifies a corresponding shift in associated environmental burdens.

Distribution of physical trade balance and raw material trade balance, by country income, 2017



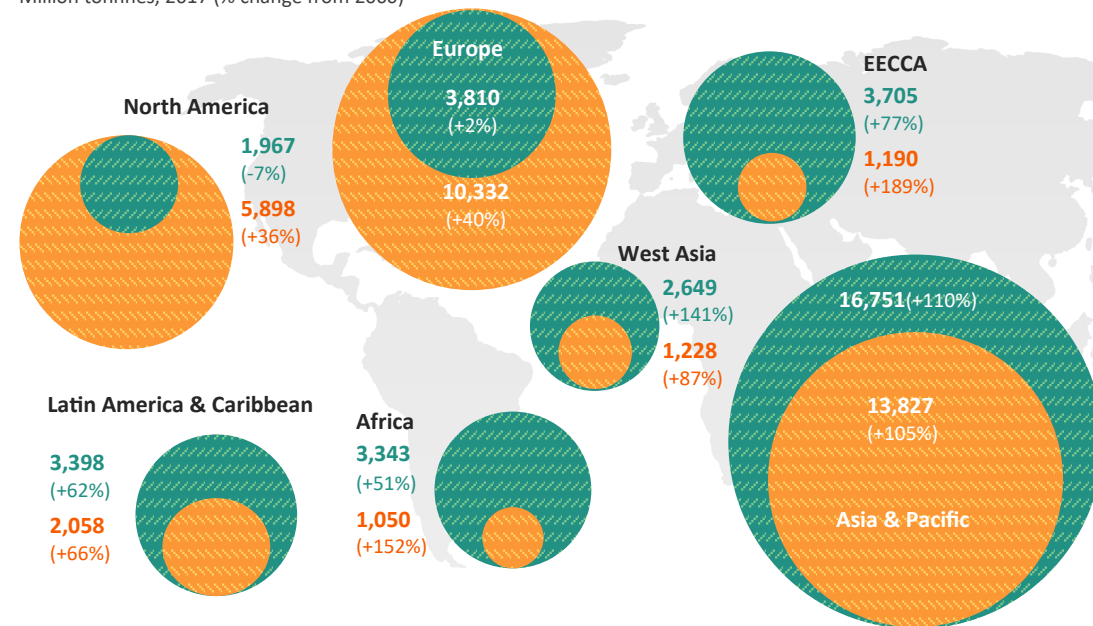
Material resource exports & imports by region

Million tonnes, 2017 (% change from 2000)



Raw material equivalents of exports & imports by region

Million tonnes, 2017 (% change from 2000)






BENEFITS OF DECOUPLING, RESOURCE EFFICIENCY, AND CIRCULAR ECONOMY

Decoupling natural resource use and environmental impacts from economic activity and human well-being is essential to aid the transition to a sustainable future.

Research from UNEP's IRP indicates that investments in resource efficiency represent one of the least-costly approaches to help meeting the **Sustainable Development Goals** and the **Paris Climate Agreement**.

By 2060, **resource efficiency** and sustainable consumption and production measures could globally:

-  **Reduce 25%** resource use
-  **Reduce 90%** GHG emissions
-  **Increase 8%** economic activity (IRP, 2019)

By 2050, adopting **circular economy** methods for 4 key industrial materials (cement, steel, plastic and aluminium) could globally:



Reduce 40% GHG emissions. If include food systems, a total of **49%** GHG emissions can be reduced. Overall such reductions could bring emissions from these areas **45%** closer to their net-zero emission targets (Ellen MacArthur, 2019).

POLICY RECOMMENDATIONS FOR SUSTAINABLE TRADE IN RESOURCES

The extraction and processing of resources for export depletes natural assets, while increasing waste, emissions, loss of biodiversity, land degradation and water pollution. Appropriate policies are therefore needed to address the adverse environmental impacts of trade and ensure that trade helps drive the transition towards a fairer, more sustainable and circular economy.



Enhance alignment between international trade and environmental legal frameworks



Ensure that trade agreements move towards a circular economy that is inclusive of developing countries



Advance the development of international standards for circularity



Align domestic circular economy policies in developing countries with trade agreements



Proactively use regional trade agreements to advance circularity and reduce demand for primary raw materials

Source: UNEP and IRP (2020). Sustainable Trade in Resources: Global Material Flows, Circularity and Trade. The full report can be downloaded at: <https://www.resourcepanel.org/reports/sustainable-trade-resources>



International
Resource
Panel

