

#EUCircularTalks

## Trade, resource extraction and the circular economy



UNEP-IRP report

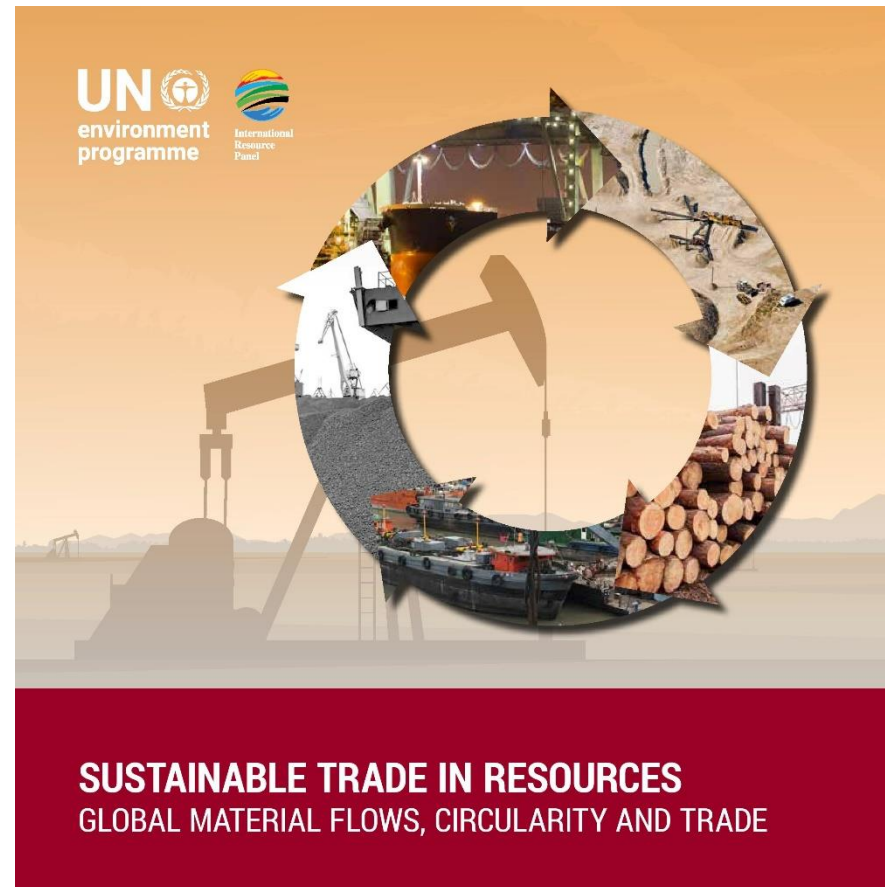
# *Sustainable Trade in Resources: Global Material Flows, Circularity and Trade*

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19 March 2021 / EU Circular Talk – Trade, resource extraction and the circular economy

## UNEP-IRP 2020 report on *Sustainable Trade in Resources*



Available to download at:

<https://www.resourcepanel.org/reports/sustainable-trade-resources>



### Sustainable Trade in Resources GLOBAL MATERIAL FLOWS, CIRCULARITY AND TRADE

Economic and human development are inextricably linked to demand for natural resources and energy. As global demand for material resources has increased dramatically in recent decades, rising international trade has become an essential means to overcome the constraints posed by local resource scarcity.

While the contribution of international trade in fuelling economic expansion has long been recognised, its impact on the environment is more ambiguous. Trade can prove damaging to the environment by boosting overall resource production and use, shifting production to countries with less-stringent environmental legislation, and increasing energy use and pollution linked to transportation. Yet, when accompanied by appropriate measures, trade can enable and accelerate the transition to a greener, more circular economy – for instance, by facilitating access to green technologies and to environmental goods and services.

#### Trends in international trade

Trade in material resources – biomass, fossil fuels, metals and non-metallic minerals – has grown strongly over the past half century. The volume of trade has increased at a faster pace than the volume of extracted resources, signifying a growing dependence of the global economy on material trade.

The composition of trade has changed in recent decades, with numerous countries shifting to becoming net importers of

resources, but very few switching to becoming net exporters. In the new millennium, emerging economies such as China and India have become net importers, whereas a number of high-income countries such as the United States and Australia have become important global exporters, in part in response to higher resource prices. The shift towards fewer net exporters of resources signals an increased vulnerability of the world trading system, as rising demand is being met by ever fewer producers.

#### Material footprints of trade

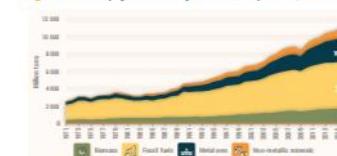
In addition to rising international trade in material resources, the so-called upstream resource requirements of traded commodities have also increased. These represent the additional materials, energy, water and land used in the extraction and production of traded goods but left behind as wastes and emissions in the exporting country. They can serve as useful proxies for the ecological impacts of trade.

When considering the whole life cycle of traded products, trade is responsible for much larger amounts of material extraction than direct trade flow indicates. One-third of the total volume of materials extracted in the world economy is linked to the production of traded goods. Furthermore, the indirect or embodied materials in trade (35 billion tons in 2017) far exceed – by a factor of three – the direct volume of goods traded across nations (11 billion tons in 2017).

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 have remained 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.

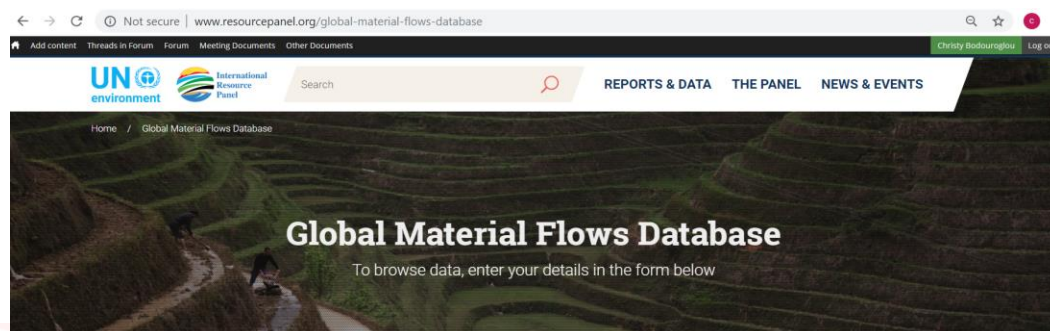
Such analysis of the material footprints of trade highlights that resource-intensive processes have shifted from high-income, densely populated importing countries to low-income, more sparsely populated exporting countries. This signifies a corresponding shift in associated environmental burdens.

Figure 1: Global physical trade by material composition, 1970-2017



Note: Physical trade is measured as (imports + exports)/2.  
Source: UNEP 2020

## IRP data & findings on Resource Trade



### Global Material Flows Database

**Select dataset:**

☐ National 4 category material flows
 ☐ National 13 category material flows

☐ National material totals and ratios

**Select query options:**

Afghanistan Africa Albania Algeria Angola Antigua and Barbuda	Biomass Fossil fuels Metal ores Non-metallic minerals	DE tonnes DMC tonnes DMI tonnes Exports tonnes Imports tonnes MF tonnes
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**Show results:**

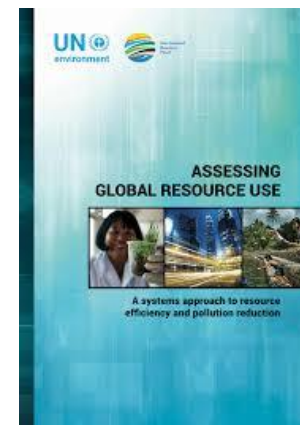
☒ On screen
 ☐ Export to CSV

**Sort order:**

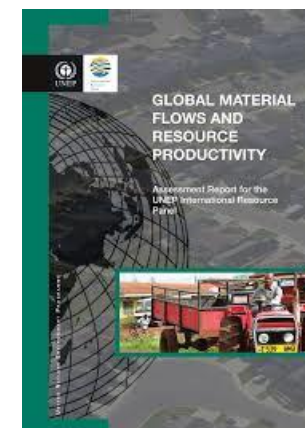
☒ Country
 ☐ Flow Type
 ☐ Category

#### Usage tips

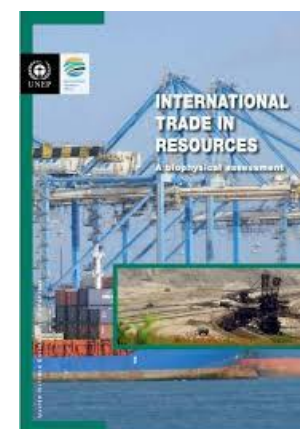
- Selecting none of the fields will return the entire dataset
- Use the Ctrl and Shift keys, or click and drag the mouse to select multiple items
- You can copy and paste directly from the on screen display table or export to CSV to do further data analysis.
- Refer to [information and contacts](#) or download the [technical annex](#) for further information



2015



2016



2017

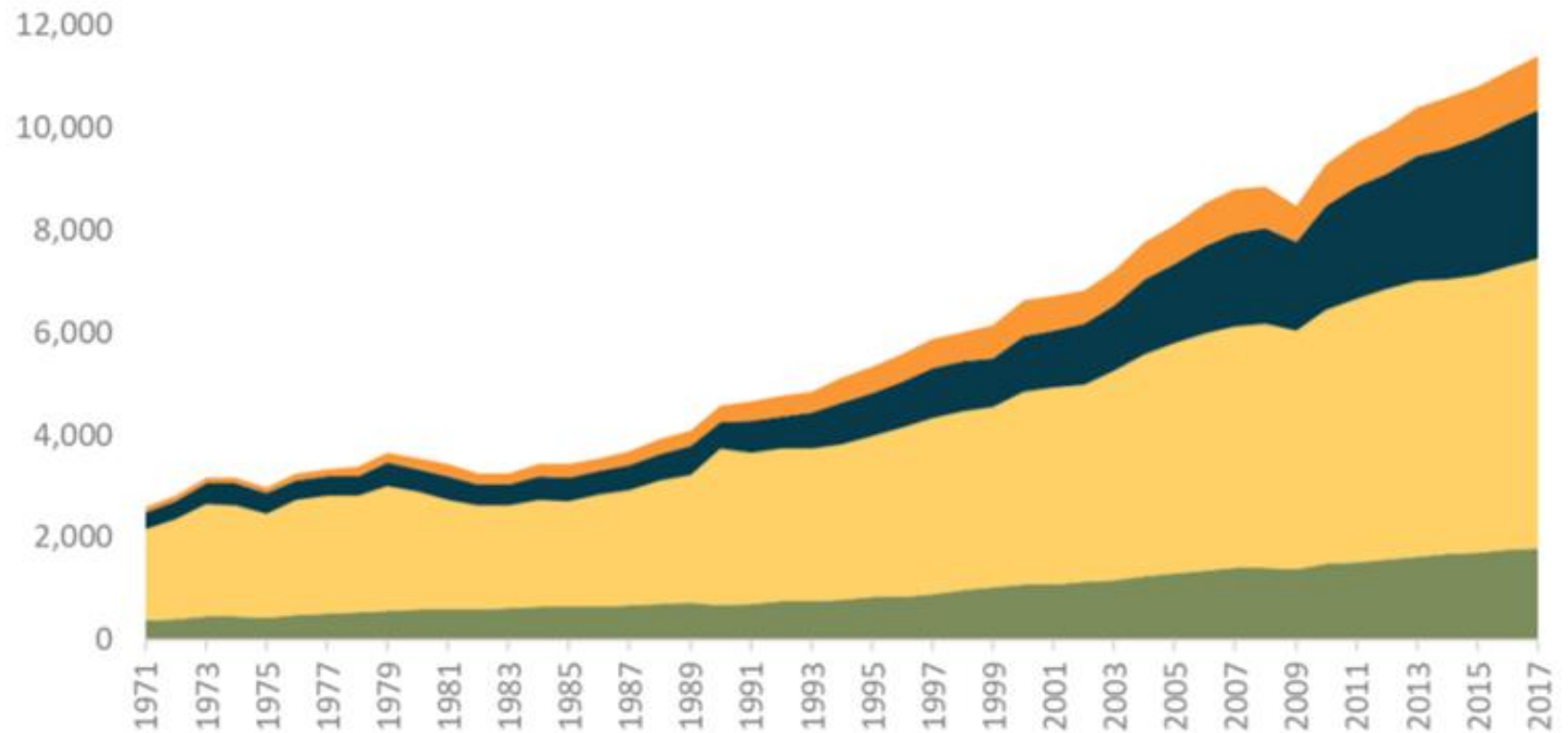


2019

## International trade in resources

### GLOBAL PHYSICAL TRADE

Million tonnes



Biomass



Fossil fuels



Metals



Minerals



## Materials embodied in trade

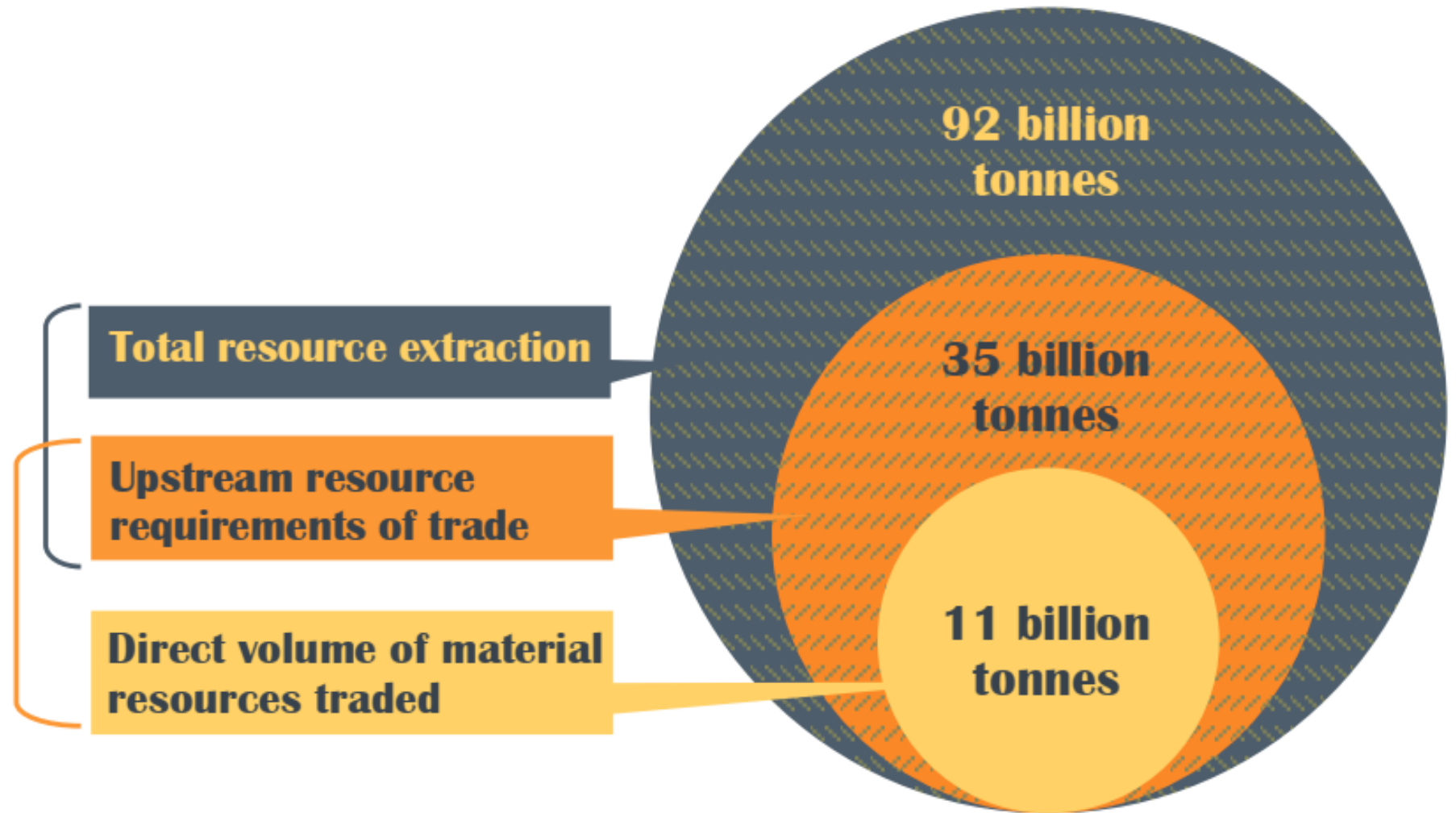
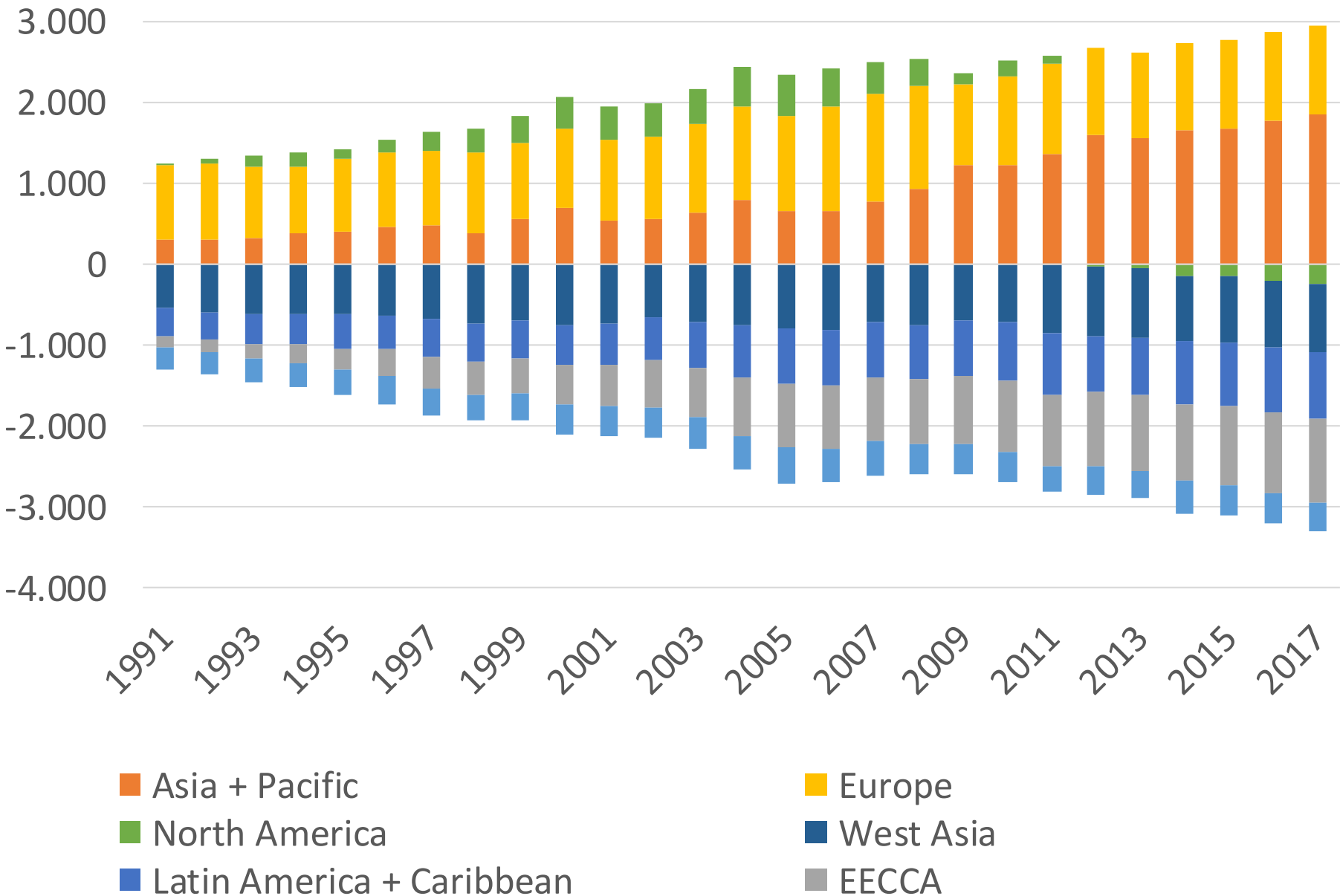
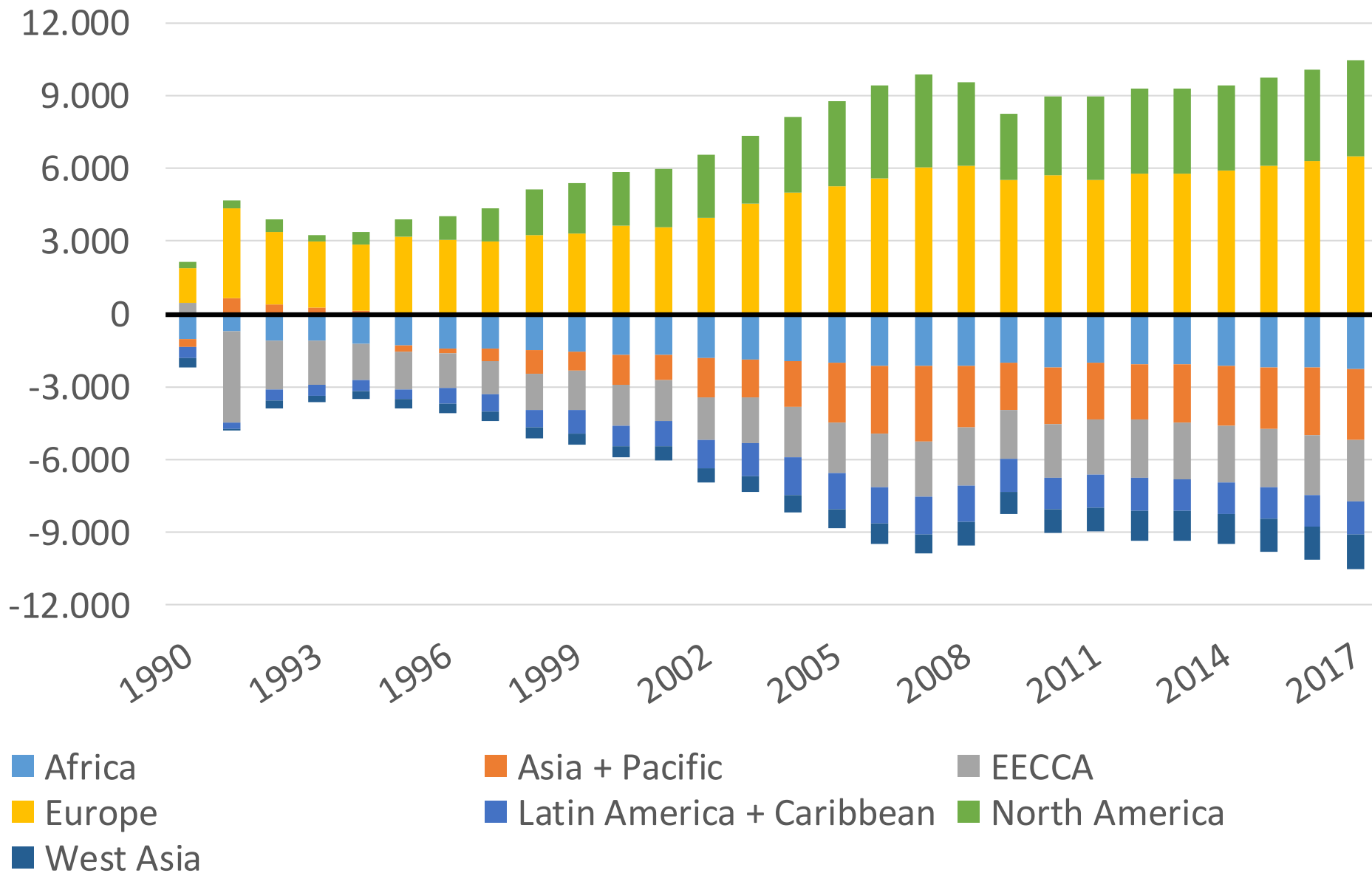


Figure 1. Physical trade balance (PTB) by seven subregions, 1990–2017, million tonnes



**Figure 2. Raw material trade balance (RTB) by seven world regions, 1990-2017, million tons**



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

Raw Material Trade Balance

Physical Trade Balance

net imports

million tonnes

net exports

0

-82

-863

Low income

-78

-3659

Lower-middle income

123

-7325

Upper-middle income

11808

-302

High income

net imports

tonnes per capita

net exports

0

-0,1

-1,2

Low income

0,0

-1,2

Lower-middle income

0,0

-2,8

Upper-middle income

9,8

-0,3

High income

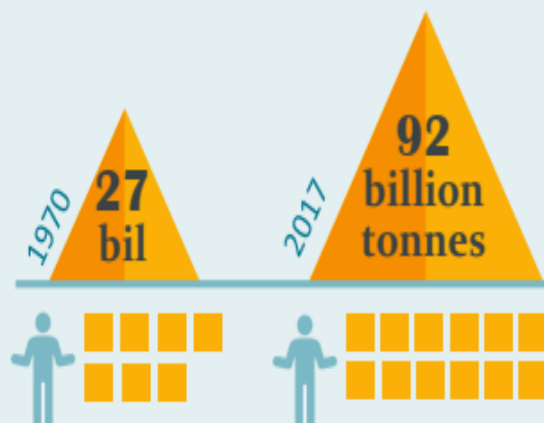
Source: IRP (2019). *Global Resources Outlook – Summary* (Figure VI)

## Environmental impact of extraction



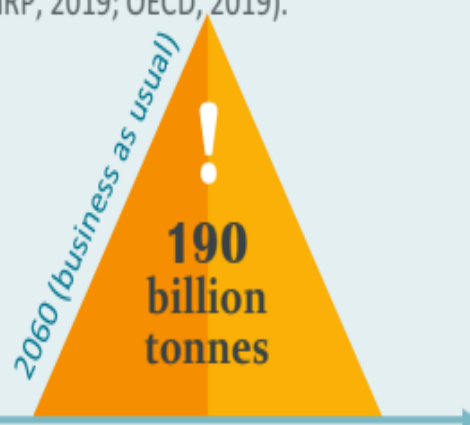
### Status

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



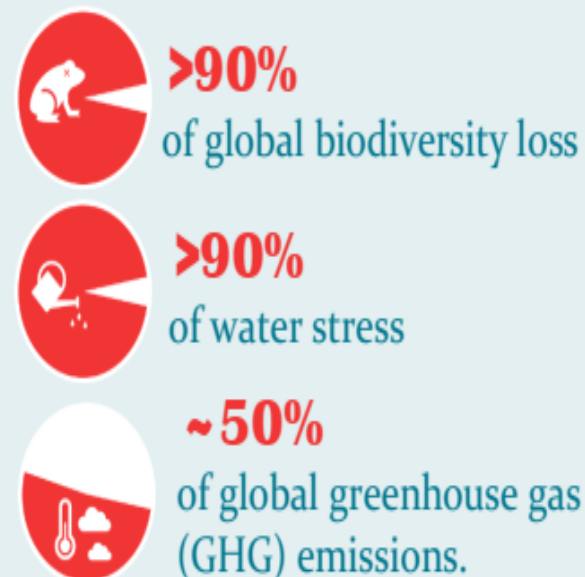
### Projections

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:



## Environmental impact of trade

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- Trade often **shifts environmental burden** from high-income importing to low-income exporting nations
- Increased trade **can damage the environment** and accentuate inequalities
- With **appropriate policies**, international trade can support a transition towards a greener and more circular economy

# Reducing demand for resources through a green and circular economy transition

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, 2020)

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.

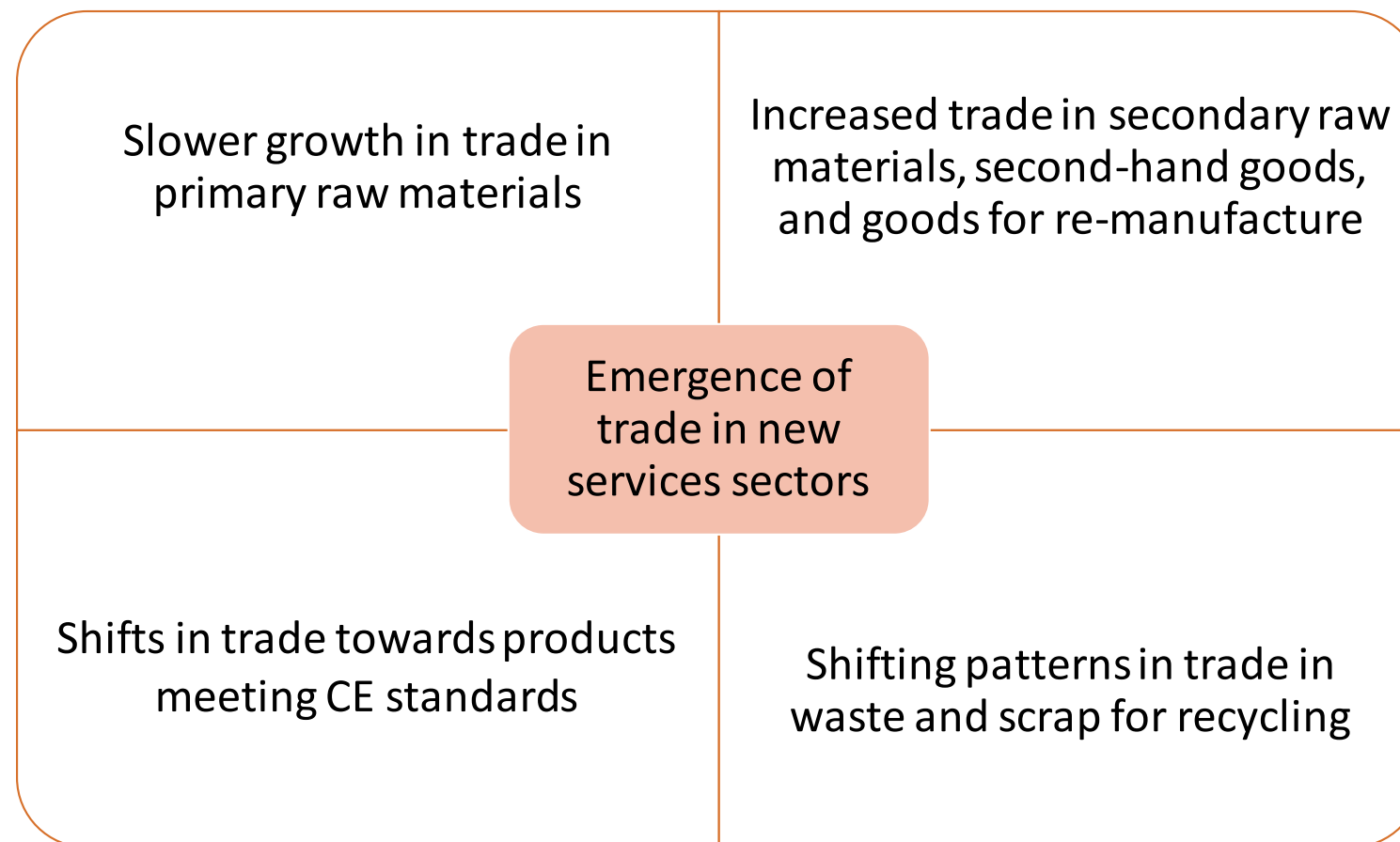


Overall such reductions could bring emissions from these areas **45%** closer to their net-zero emission targets (Ellen MacArthur, 2019).



Net-zero  
emission

# Anticipated shifts in trade resulting from a transition to a circular economy



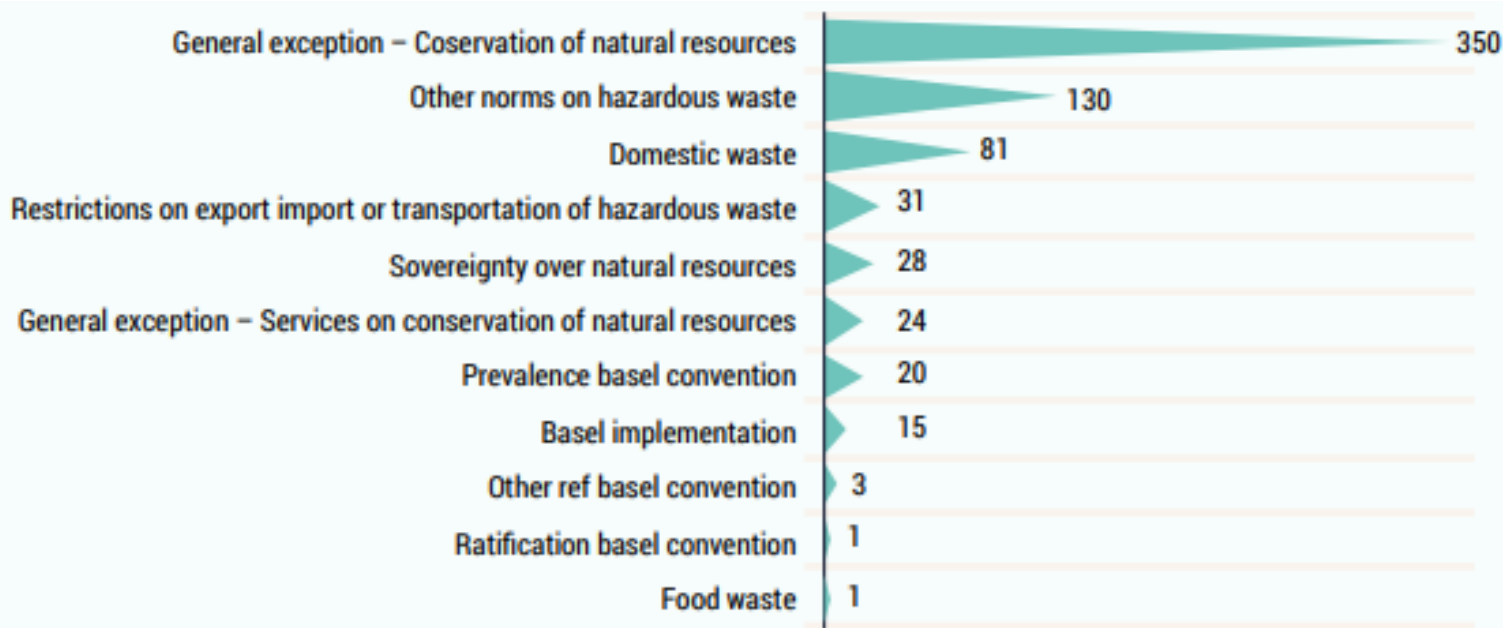


Domestic  
policies

Regional  
Trade  
Agreements

World Trade  
Organization

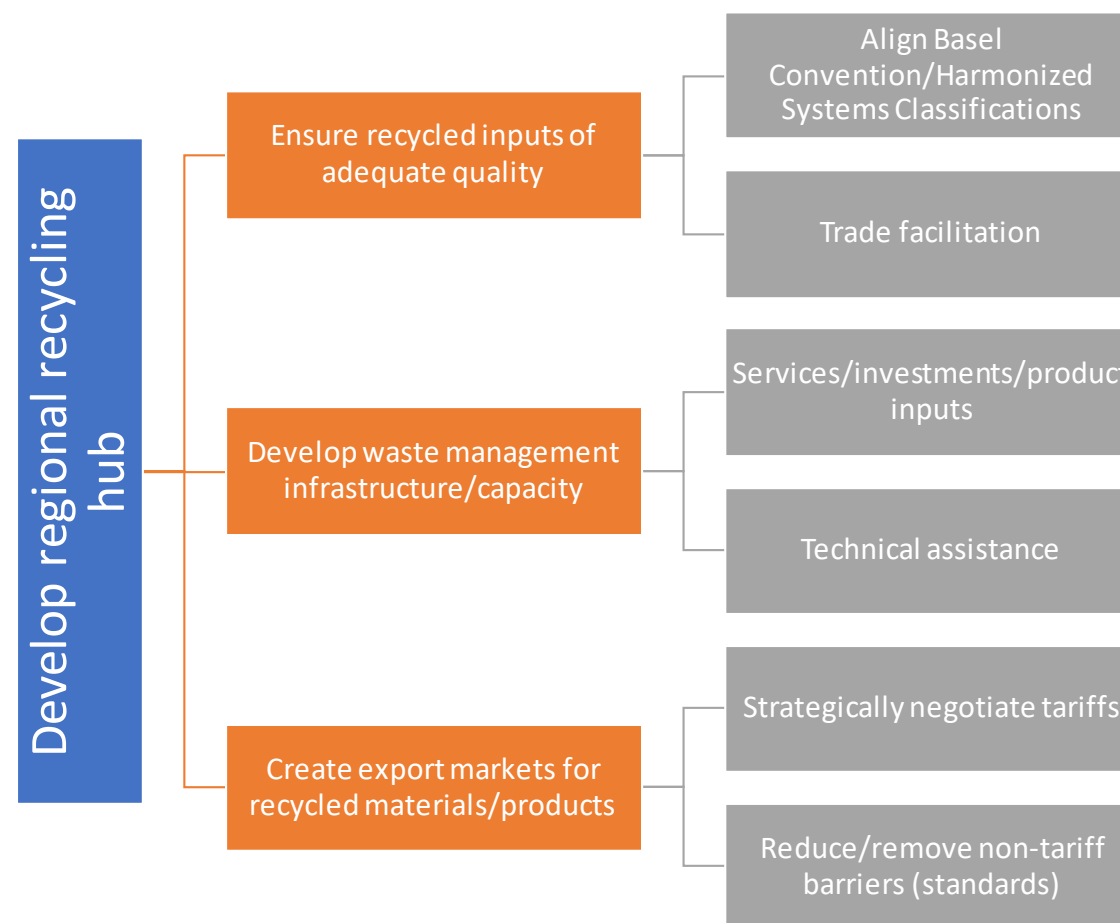
## Regional trade agreements as circular enablers (1)



Source: OECD 2021

- Strategically negotiate market access
  - Tariffs on goods (machinery for waste processing, materials needed for eco-design, etc.)
  - Make commitments in relevant services sectors
- Control circular economy-related inputs
- Reduce heterogeneity in relevant standards
- Other provisions: subsidies, investment, procurement

# Aligning circular economy objectives and RTAs



## WTO's role in advancing transition to a circular economy

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- Build on existing **transparency** and **cooperation** functions (e.g., TBT Committee meetings, build-in transparency provisions in various WTO Agreements)
- Advocate for a statement focused on advancing **circular economy/sustainability as a priority area** for the 12<sup>th</sup> Ministerial Conference
- Use WTO as convening platform to **advance specific circular economy-related issues** (e.g., plastic waste, better aligning trade and environmental agreements)
- Provide targeted circular economy support to developing countries through **Aid for Trade**

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**The new report is available here:**

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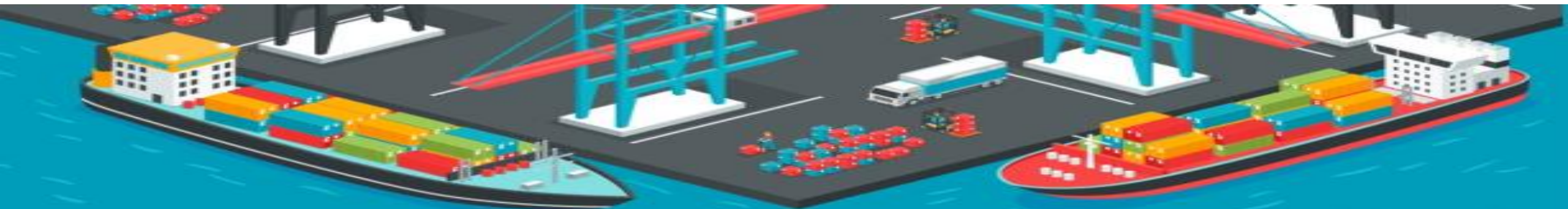
[www.unenvironment.org/explore-topics/green-economy/what-we-do/environment-and-trade-hub](http://www.unenvironment.org/explore-topics/green-economy/what-we-do/environment-and-trade-hub)

and

<https://www.resourcepanel.org/reports/sustainable-trade-resources>

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[www.unep.org](http://www.unep.org)  
[www.resourcepanel.org](http://www.resourcepanel.org)



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## Trade, resource extraction and the circular economy



# Thank you

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