

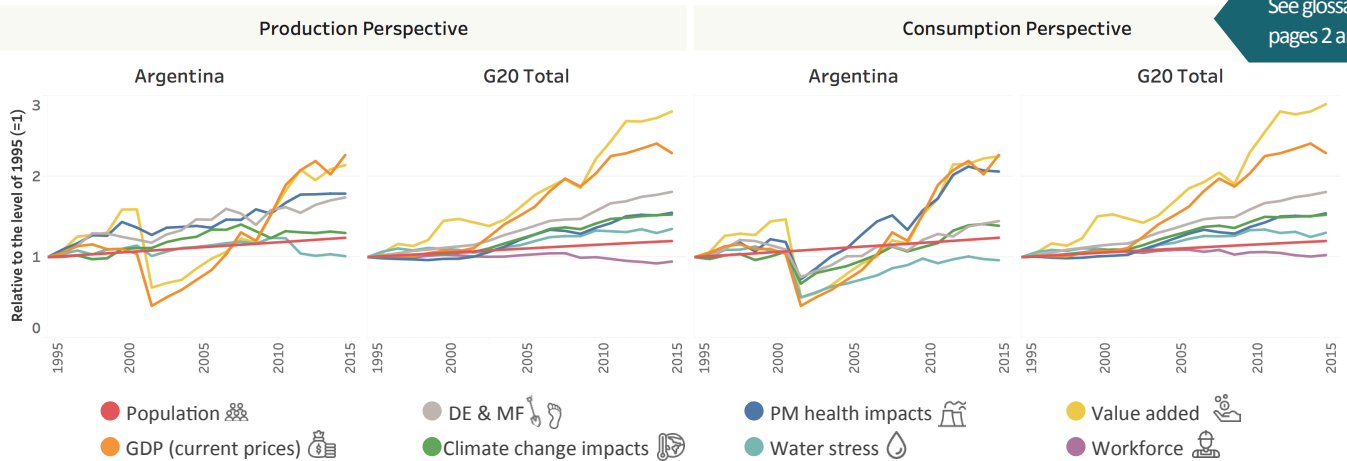
NATURAL RESOURCE USE IN THE GROUP OF 20

Status, Trends, and Solutions

Argentina

STATUS AND TRENDS OF NATURAL RESOURCE USE

Figure 1: Socio-economic indicators, domestic extraction, material footprint, and material-related environmental impacts in Argentina and in the G20 (1995-2015)*

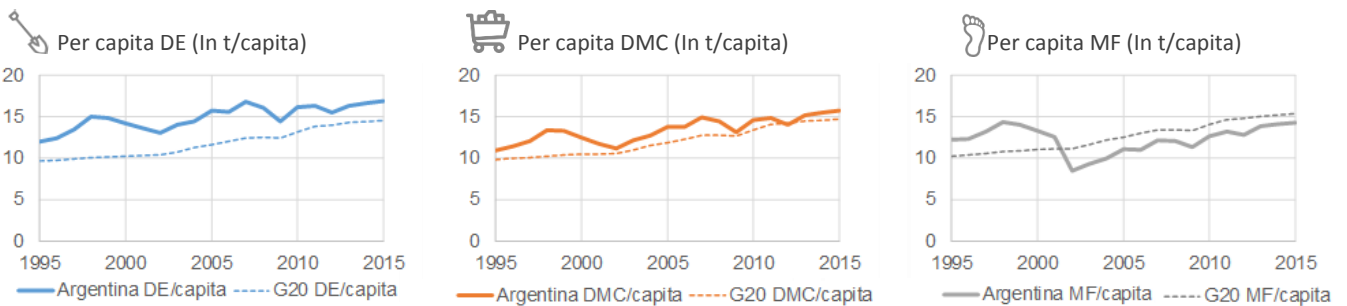


See glossary on pages 2 and 3

*Data after 2011 was nowcasted.

Source: IRP database, Exiobase 3.4, Eora 26, FAOSTAT, Pfister and Bayer 2014, Boulay et al. 2017, Cabernard et al 2019

Figure 2: Domestic extraction, domestic material consumption, and material footprint per capita in Argentina and in the G20 (1995-2015)



Source: IRP database

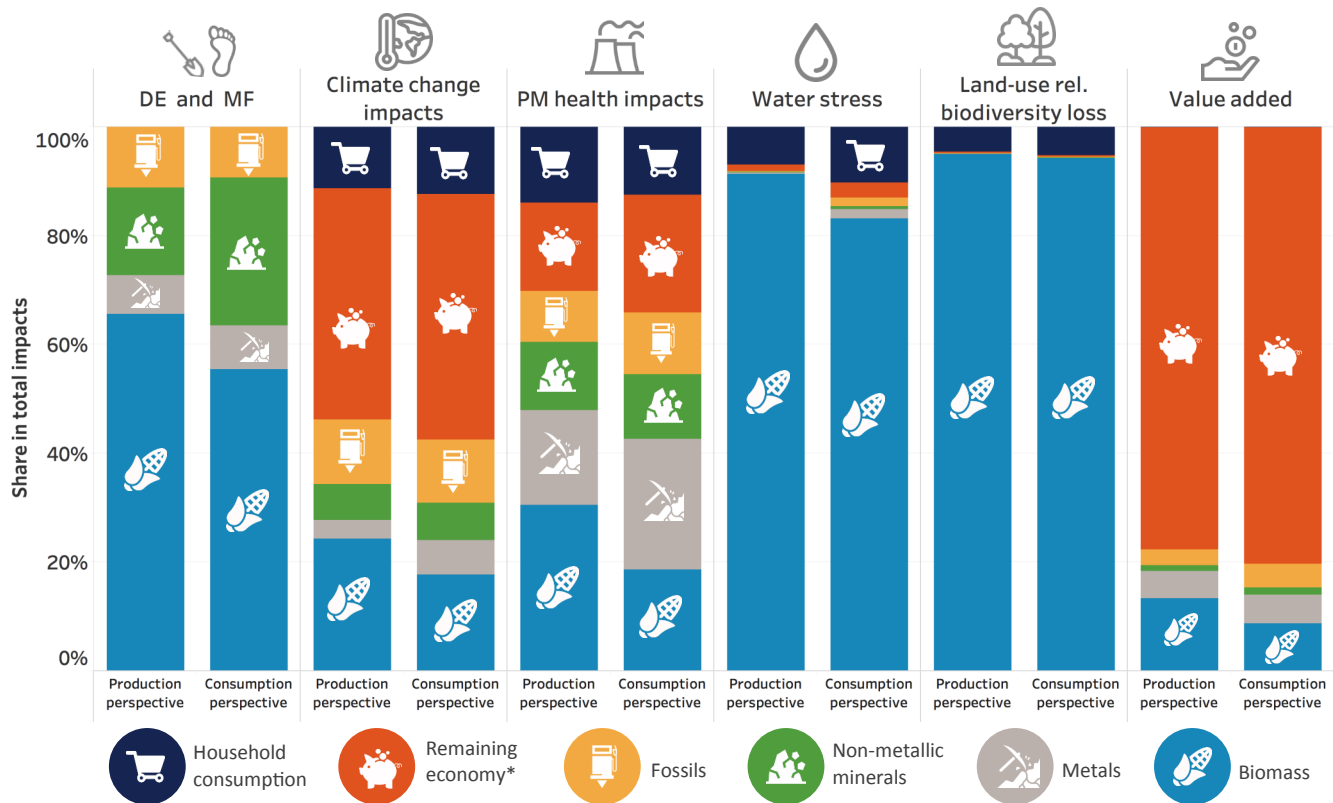
From 1995 to 2015

- Population grew by **24%** and GDP **doubled** (with a significant recession in-between).
- Domestic extraction, domestic material consumption and material footprint slightly increased and matched the G20 average in evolution and magnitude.
- Domestic extraction was **17** tonnes per capita and material footprint was **14** tonnes per capita.
- Material related environmental impacts decoupled from GDP.
- Per-capita climate change impacts related to material extraction and processing increased only slightly.
- Particulate matter related health impacts showed the same development as GDP from a consumption perspective.



CONTRIBUTION OF NATURAL RESOURCES BY CATEGORY

Figure 3: Contribution of resource types to domestic extraction, material footprint, and total environmental and socio-economic impacts in Argentina (2015)



*Remaining economy refers to activities other than resource extraction and processing (e.g. manufacturing of finished products, construction).

Source: IRP database, Exiobase v3.4, Eora 26, FAOSTAT, Pfister and Bayer 2014, Boulay et al. 2017, OECD, Pfister et al. 2011, Chaudhary et al. 2016, Cabernard et al. 2019



Unlike G20 average, biomass dominated domestic extraction amounts and material footprint.



The extraction and processing of natural resources accounted for more than 40% of Argentina's total climate change impacts from both a production and a consumption perspective (the G20 average was approximately 50% from both perspectives).



Resource extraction and processing caused more than 60% of outdoor particulate matter health impacts, much higher than G20 average.



Water stress and land use-related biodiversity impacts were caused mainly by biomass production (same as other G20 countries).



The material sector contributed to about 20% of value added, which is similar to G20 average.

Glossary

Consumption perspective:

The consumption perspective allocates the use of natural resources or the related impacts throughout the supply chain to the region where these resources, incorporated in various commodities, are finally consumed by industries, governments and households

Decoupling: Decoupling is when resource use or some environmental pressure either grows at a slower rate than the economic activity that is causing it (relative decoupling) or declines while the economic activity continues to grow (absolute decoupling)

Domestic extraction (DE): Direct, gross physical extraction of materials within a country's territory (production perspective)

Domestic material consumption (DMC): Amount of materials directly used by an economy (DMC = DE + Material Imports – Material Exports)

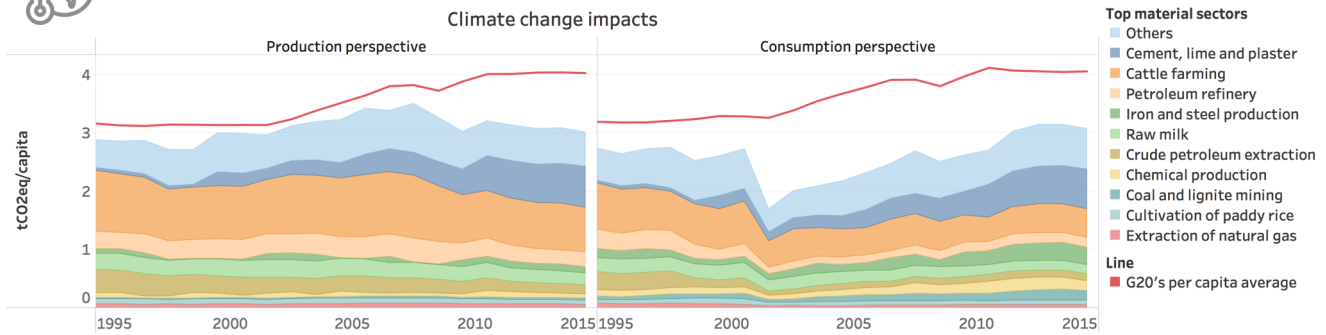
Material resources:

- metals,
- non-metallic minerals,
- biomass,
- fossils

KEY SECTORS AND RESOURCES



Figure 4: Climate change impacts from material sectors in Argentina (1995-2015)*

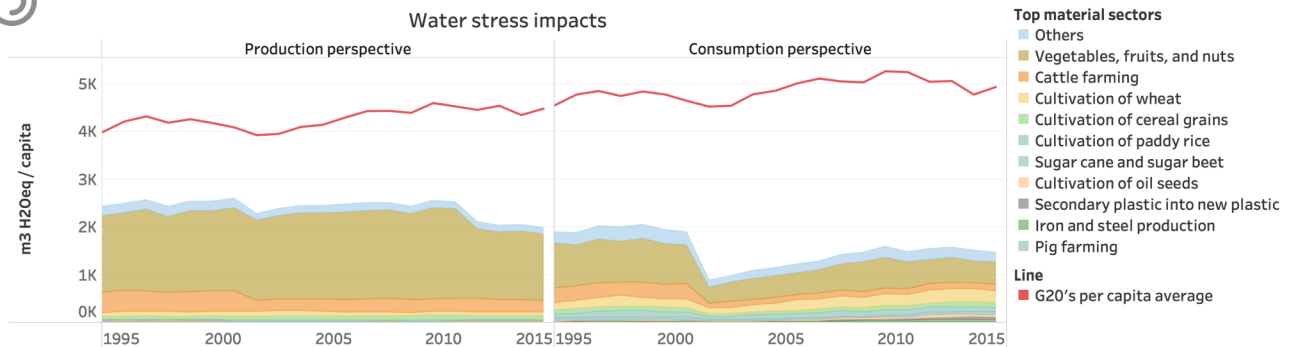


*Data after 2011 was nowcasted.

Source: Exiobase v3.4, Eora 26, FAOSTAT, Cabernard et al 2019



Figure 5: Water stress from agricultural crop and material sectors in Argentina (1995-2015)*

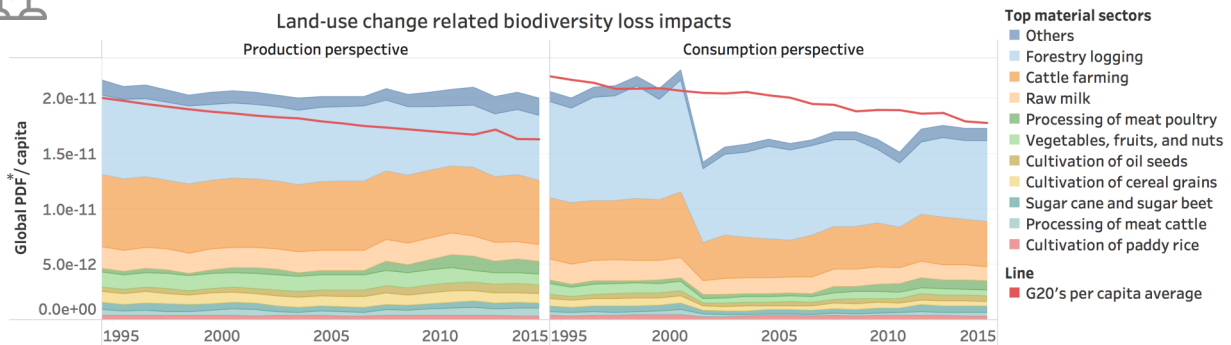


*Data after 2011 was nowcasted.

Source: Exiobase v3.4, Eora 26, FAOSTAT, Pfister and Bayer 2014, Boulay et al. 2017, Cabernard et al 2019



Figure 6: Land-use related biodiversity loss from agricultural crops and material sectors in Argentina (1995-2015)*



*Data after 2011 was nowcasted.

*PDF: Potentially disappeared fraction of species

Source: Exiobase v3.4, Eora 26, FAO, OECD, Pfister et al. 2011, Chaudhary et al. 2016, Cabernard et al 2019

- From a production perspective, material-related climate change impacts were mainly caused by cattle farming, cement production, and petroleum refinery (together they represented 50% of material related climate impacts).
- From a consumption perspective, cattle farming and petroleum refinery mattered less due to exports of beef and petroleum. The iron and steel as well as the coal mining sectors caused an important share of material-related climate change impacts due to imports.
- Material related climate-change impacts were more than 25% lower than G20 average from both a production and consumption perspective.
- Argentina has water-scarce regions, but overall water stress impacts are lower than the G20 average.
- Water stress was dominated by the production of vegetables, fruits, and nuts (mostly for export).
- Land use related biodiversity loss was more than 20% higher than the G20 average from a production perspective. From a consumption perspective, the impact was close to the G20 average. Forestry, beef and dairy production were main causes, from both perspectives.

Material footprint (MF): A nation's MF fully accounts for material extraction in other countries used for local consumption in the nation of interest (consumption perspective)

Material intensity (MI): Indicates efficiency of material use (MI = DMC/GDP)

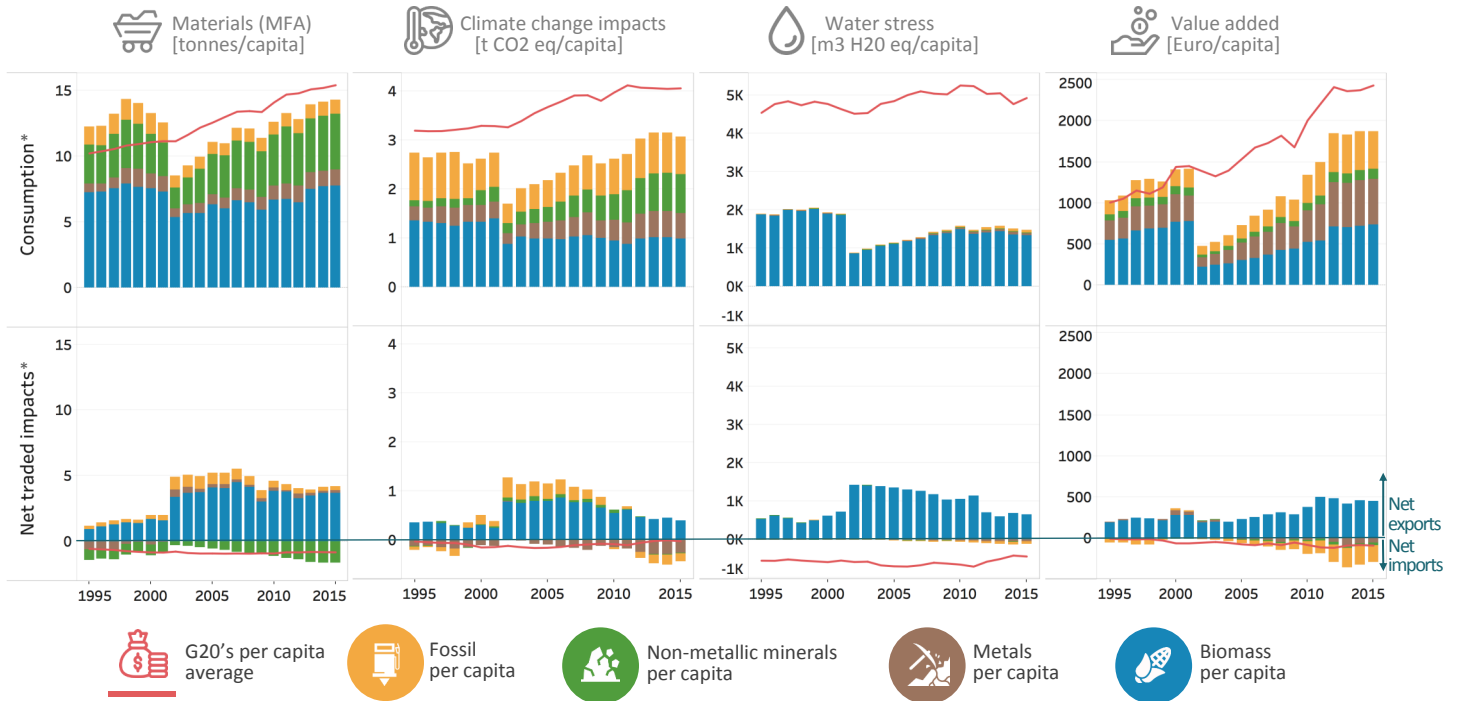
Material-related impacts: Impacts related to the extraction and processing of material resources (including the upstream supply chain, such as electricity generation and transport)

Net traded materials/impacts: Difference between material-related impacts from a production and consumption perspective. In the case of environmental impacts, a positive value means that the material-related impacts from exports are greater than the impacts from imports (and vice-versa: environmental impacts with negative values mean that the material-related impacts from imports are greater than the impacts from exports)

Production perspective: The production perspective allocates the use of natural resources or the impacts related to natural resource extraction and processing to the location where they physically occur

THE ENVIRONMENTAL EFFECTS OF TRADE

Figure 7: Per-capita consumption footprints (above) and net traded impacts (below) in Argentina (1995-2015)*



*Data after 2011 was nowcasted.

*Consumption: Impacts throughout the supply chain from goods imported and consumed in Argentina.

*Net traded impacts: Difference between material-related impacts from a production and consumption perspective.

Source: IRP database, Exiobase v3.4, Eora 26, FAOSTAT, Pfister and Bayer 2014, Boulay et al. 2017, Cabernard et al 2019

- Argentina is a net exporter of biomass, metals and fossils, but a net importer of non-metallic minerals.
- More climate change, water stress and land use related biodiversity impacts were caused by biomass exports (particularly beef) than for biomass imports.
- More climate change, water stress and land use related biodiversity impacts were caused by imports of metals and fossils than by exports.

FUTURE TRENDS AND POTENTIAL DECOUPLING

- Ambitious resource efficiency and circular economy policies could decrease material related environmental impacts.
- Argentina harbors valuable ecosystems and further efforts for biodiversity protection could achieve large ecological benefits.
- The energy mix relies on primarily on fossil fuels. Increasing the share of renewable energies and making use of the large potential, particular for solar based technologies, could lower the impacts of fossil mining and greenhouse gas emissions during the use phase.

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