

Post-2020 Global Biodiversity Framework

2030 Milestone on halving the footprint of production and consumption

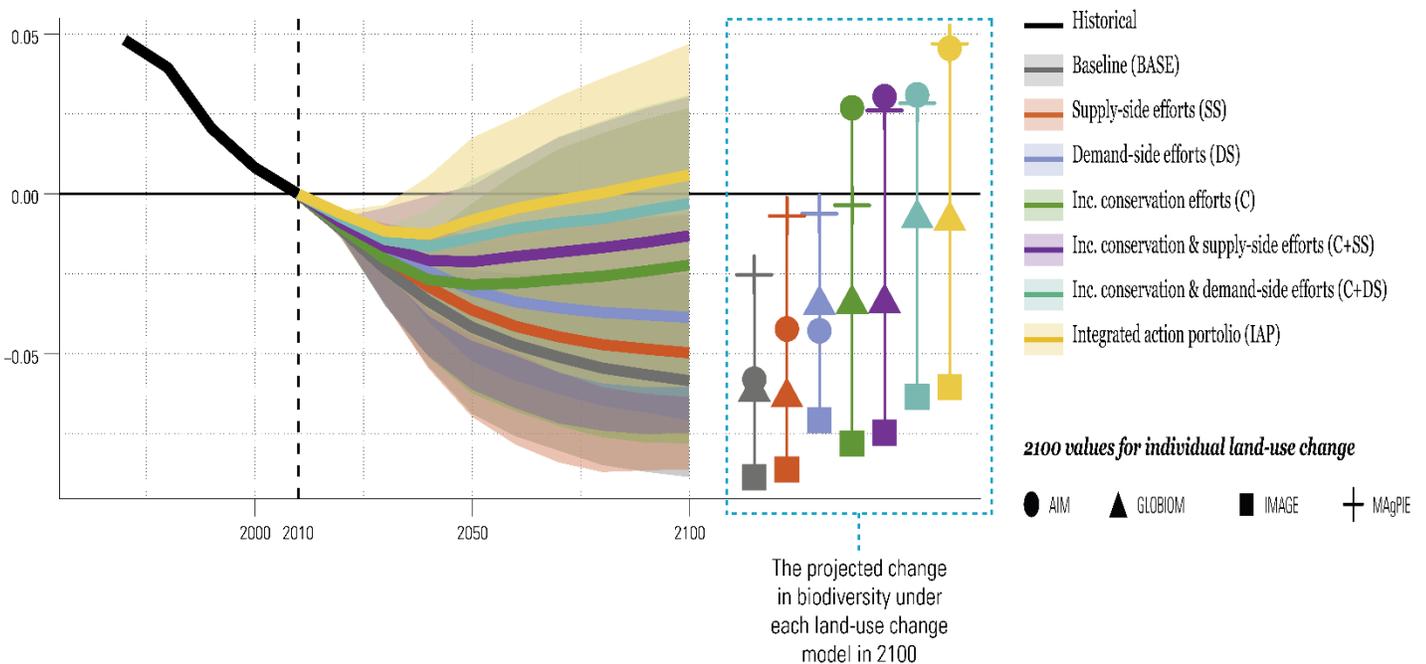
This note provides background information on the WWF proposal for a 2030 Milestone¹ on halving the footprint of production and consumption within the post-2020 Global Biodiversity Framework.

Why do we need to address the footprint of production and consumption?

In order to reverse biodiversity loss and achieve a nature positive world by 2030, we need both improved conservation action as well as ambitious and transformative action addressing unsustainable production and consumption.

This is clearly illustrated by the scenarios in the graph below that show that only by being ambitious on all the three elements (conservation, production and consumption) the post-2020 Global Biodiversity Framework can be successful.

Projected contributions of various efforts to reverse biodiversity trends from land-use change



Source: Leclère, D., Obersteiner, M., Barrett, M., Butchart, S. H. M., Chaudhary, A., et al. (2020). *Bending the curve of terrestrial biodiversity needs an integrated strategy*, Nature

¹ It is important that the framework defines the 2030 outcomes that will result from the implementation of the 2030 action targets. These 2030 outcomes are currently presented as milestones in the framework. If Parties prefer not to have milestones, outcome elements should be included at the target level.

Furthermore, halving the footprint of production and consumption is not only necessary to reverse biodiversity loss but will bring many other benefits for people. A [Dalberg report commissioned by WWF](#) shows that halving the footprint will bring major positive impacts for people's health and jobs, national economies and growth as well as more resources for governments.

Background on different concepts and methodologies on footprint and their advantages and limitations

The table below provides, for some of the major concepts/methodologies on footprint, background information on their methodologies, most recent annual per capita value and boundary as well as their advantages and limitations.

	Most recent annual per capita value (and year) ²	Current annual per capita boundary	Reduction required	Methodology background, advantages and limitations
Ecological Footprint	2.7 gha (2021) ³	1.5 gha (2021)	- 44.4%	<p>The Ecological footprint is a methodology that compares the demand of nature (calculating the Ecological Footprint of production and the net Ecological Footprint of Trade) and Earth's biocapacity. All the values are normalized in "global hectares" (gha). More details on the methodology can be found here.</p> <p>The advantage of this methodology is that it is very well known and it is a very good instrument to communicate with and mobilize the general public.</p> <p>However, it has major limitations that make the concept not suitable as a policy instrument⁴. It is based on a calculation of biocapacity that is not based on planetary boundaries and therefore can and has been increasing (in the last 50 years, the planet's total biocapacity has increased from 9.9 to 12 billion gha). This implies e.g. that a country may see its Ecological Footprint decrease by increasing agricultural production in a totally unsustainable way with massive negative impacts on biodiversity. This</p>

² All values mentioned in this table, except those with specific footnotes, are based on O'Neill, D. W., Fanning, A. L., Lamb, W. F., & Steinberger, J. K. (2018). A good life for all within planetary boundaries. *Nature sustainability*, 1(2), 88-95.

³ Ecological footprint based on 2021 data. Source: <https://www.overshootday.org/content/uploads/2021/07/Earth-Overshoot-Day-2021-Nowcast-Report.pdf>

⁴ Wiedmann, T., & Barrett, J. (2010). A Review of the Ecological Footprint Indicator—Perceptions and Methods. *Sustainability*, 2010, 2 1645-1693.

Non Paper

				would also put the methodology of the Ecological Footprint in potential contradiction with Aichi Target 7. In addition there are challenges on how fisheries and forestry are measured.
Embodied Human Appropriation of Net Primary Production	4 tons C (2007) ⁵	2.62 tons C	-35%	<p>Human Appropriation of Net Primary Production (HANPP) is the proportion of terrestrial net primary productivity consumed directly and indirectly through human land use. More information can be found here.</p> <p>A limitation is that it is not widely used and therefore it is not calculated frequently (last global figure found is from 2007) and not for all countries. In addition, there are important definitional and measurement issues to be solved⁶.</p>
Material footprint	12.2 ⁷ tons (2017)	7.2 tons	-41%	<p>Material footprint refers to the total amount of raw materials extracted to meet final consumption demands. Additional information on the methodology can be found here.</p> <p>This concept/methodology has the advantage of being part of the SDGs monitoring framework. Therefore methodology has been approved by the UN Statistical Commission and its Inter-Agency Expert Group on SDG indicators with the involvement of UN Member States.</p> <p>The main limitation is that the methodology sums up all types of materials consumed based on their weight no matter the actual impact on nature. Therefore, reducing a ton of coal consumed has the same impact on the indicator as reducing the consumption of a ton of sustainably produced wood. It is a useful indicator but needs therefore to be used in conjunction with other metrics to measure progress on footprint.</p>
Nitrogen Boundary	19.3 kg N (2020 estimate) ⁸	8.9 kg N	-54%	<p>More information can be found here. The main limitation is that it focuses only on a specific element: nitrogen. It is therefore an important metric but that needs to be accompanied with others.</p>

⁵ Kastner, T., Erb, K. H., & Haberl, H. (2015). Global Human Appropriation of Net Primary Production for Biomass Consumption in the European Union, 1986-2007. *Journal of industrial ecology*, 19(5), 825–836.

⁶ Paudel, S., Ovando-Montejo, G. and Lant, C. (2021), Human Appropriation of Net Primary Production: From a Planet to a Pixel, *Sustainability*, 13, 8606.

⁷ Data based on Oberle, B., Bringezu, S., Hatfield-Dodds, S., Hellweg, S., Schandl, H., & Clement, J. (2019). *Global Resources Outlook: 2019*. International Resource Panel, United Nations Envio

⁸ Calculation from: FAO. 2019. World fertilizer trends and outlook to 2022. Rome, <https://www.fao.org/3/ca6746en/ca6746en.pdf>

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Phosphorus Boundary	2.04 kg P ⁹	0.89 kg P	-57%	See above.
CO2 footprint	4,48 tons CO2 (2018) ¹⁰	1.61 tons of CO2	-64%	The CO2 footprint is very well established. Limitation is that it measures only CO2 and doesn't take necessary into account other types of footprint that have impacts on biodiversity. However, it provides an indication of the level of ambition needed.

Implications for the GBF: the level of ambition required, concept to be used and how to measure progress towards

How should a footprint milestone be framed?

As per the table above, no matter what footprint concept and methodology is used, we are living well beyond environmental limits. In addition to the increasing impact of our growing footprint on biodiversity, this exposes nature and people to increased risks of generating large-scale abrupt or irreversible environmental changes. Therefore, **the only level of ambition possible is to reduce our footprint as fast as possible in order to return to within safe limits.**

Also, based on Aichi Target's lesson learned, the best way to achieve an objective is to make it SMART and include numerical values. For this reason we suggest to frame the milestone around a X% decrease of the footprint of production and consumption instead of calling, in a more general manner, for ensuring that production and consumption are within planetary boundaries.

What level of ambition is necessary?

WWF suggests that the footprint of production and consumption globally should be **halved** as most footprint metrics show that we need to reduce our footprint in the 40-60% range. In addition, we can expect that some of the reductions required highlighted in the table above (e.g. on material footprint) will be higher when 2020 data will be available.

In addition, the proposed level of reduction of the footprint of production and consumption is in line with the SDG 12, that aims to ensure sustainable consumption and production patterns by 2030 (e.g. by halving food waste), as well as the level of ambition of UNFCCC that aims to reduce GHG emissions by 50% by 2030.

Is it feasible?

⁹ Metabolic (2020), Halving the footprint of production and consumption. A proposed framework for measurable outcomes and actions, https://wwfint.awsassets.panda.org/downloads/halvingfootprint_report_wwf_metabolic.pdf

¹⁰ Source:

<https://www.google.com/url?q=https://data.worldbank.org/indicator/EN.ATM.CO2E.PC&sa=D&source=docs&ust=1638351410647000&usq=AOvVaw3lXtrDqSeH-CrMjz4n-nOT>

Non Paper

A 50% reduction of the footprint of production and consumption can be achieved by 2030 by taking transformative actions in key areas where we can dramatically decrease our footprint.

For example, [WWF research](#) shows that by moving to sustainable, healthy and culturally appropriate diets we can reduce agricultural land use by at least 41% and wildlife loss by up to 46% (while reducing premature deaths by at least 20%). Transformative actions in other key areas such as agricultural production, infrastructure and fisheries are equally impactful.

The feasibility of halving the footprint by 2030 becomes even clearer when looking into specific country actions. For example, WWF together with 3Keel produced a [study](#) that shows how the UK can achieve a reduction of its footprint of production and consumption by three quarters by 2030¹¹ through the implementation of specific and feasible action targets.

What concept should we use?

As the information in the table above shows, each method to measure the footprint has significant limitations that require the inclusion of additional metrics to provide an adequate and comprehensive picture of the footprint of production and consumption.

For this reason, WWF suggests to avoid using concepts linked to specific methodologies in the Milestone and instead use the more comprehensive concept of “footprint of production and consumption”.

The “footprint” refers to the impacts of extraction, production, consumption and related socioeconomic activities on nature and the functioning of natural systems, as well as the drivers and pressures that cause this impact¹².

How can we measure progress?

Progress on a Milestone on halving the footprint of production and consumption cannot be measured with a single indicator but with a set of indicators that measure overall progress on production and consumption and impacts on natural capital as well as progress on specific sectors and natural resources.

Most of those indicators are already included in the current [draft monitoring framework for the post-2020 global biodiversity framework](#). Those include the following headline indicators:

1. Material footprint per capita (HL indicator for target 16);
2. National environmental economic accounts of ecosystem services (HL indicator for Goal B); and
3. Indicators measuring progress in specific footprint dimensions including:
 - a. Proportion of fish stocks within biologically sustainable levels (under target 5);
 - b. Index of coastal eutrophication potential; Plastics debris density, and pesticides use per area of cropland (under target 7);

¹¹ The size of this proposed reduction in footprint is designed to reflect a fair and equitable contribution of the UK to reduction of the global impact given its disproportionate responsibility for the impacts, capacity to address them and allowing less developed economies to realize the right to sustainable economic development.

¹² WWF (2020). Halving the footprint of production and consumption is critical to protecting nature and ourselves. <https://wwf.medium.com/halving-the-footprint-of-production-andconsumption-is-critical-to-protecting-nature-and-ourselves-cc6d7754ff02> and Metabolic (2020).

Non Paper

- c. Proportion of agricultural area under productive and sustainable agriculture and progress towards sustainable forests management (under target 10);
- d. Dependencies and impacts of businesses on biodiversity (under target 15);
- e. Food waste index (under target 16).

While the current proposed headline indicators will provide a good picture of the size of the footprint of production and consumption, there will also be a need to add indicators to measure progress towards sustainable and healthy diets as well as the extent of natural vegetation in terrestrial ecosystems conversion due to soft commodity production.