PBL Netherlands Environmental Assessment Agency

TOWARDS A SAFE OPERATING SPACE FOR THE NETHERLANDS

Using planetary boundaries to support national implementation of environment-related SDGs

Policy Brief

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Towards a Safe Operating Space for the Netherlands: Using planetary boundaries to support national implementation of environment-related SDGs

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This policy brief is a summary of the background report: Using planetary boundaries to support national implementation of environment-related SDGs by Lucas P. and Wilting H. (2018). PBL Netherlands Environmental Assessment Agency, The Hague.

Towards a safe operating space for the Netherlands

The 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs) sets an ambitious agenda to achieve a prosperous, socially inclusive and environmentally sustainable future for people and the planet (UN, 2015). It calls on governments to translate the SDGs' global ambitions into national targets and policies. However, many SDG targets that address global environmental challenges (e.g. climate change, nutrient pollution, biodiversity loss) are defined at the global level and phrased in non-quantitative terms. Furthermore, the 2030 Agenda provides little guidance on how to translate those global ambitions into national targets. The SDGs thus require further operationalisation, both globally and nationally (Lucas et al., 2016). In this policy brief, we discuss the normative choices in setting national policy targets that are in line with SDG ambitions related to global environmental challenges, as well as the role scientific knowledge can play.[1]

We conclude that setting national policy targets in line with global SDG ambitions involves normative political decisions about: 1) setting global quantitative targets where they currently do not exist; 2) deriving national policy targets based on fair and equitable distribution of global resource budgets or reduction objectives defined by the global targets; and 3) determining the environmental pressures that are taken into account when designing national target and policies, either with respect to national territory or across the whole value chain, including pressures abroad (footprint). Science can help setting global quantitative targets by providing insights into societal risks of various levels of global environmental change. Furthermore, it may help in translating these targets into national policy targets by systematically analysing the implications of alternative allocation approaches based on various interpretations of fair and equitable distribution. To make an analysis for the Netherlands, we used global quantitative targets based on Earth System Science (planetary boundaries) and various allocation approaches from the climate change literature. Dutch environmental footprints, including those for CO_2*, land use, nutrient pollution (N and P) and biodiversity loss, were found to be much larger than the global average. These footprints are also larger than what could be considered fair under the various approaches analysed. This suggests that the Netherlands, currently, is not living within its safe operating space.*

Setting national policy targets in line with global SDG ambitions involves normative political decisions with respect to global limits, distributive fairness and national responsibility

Setting global quantitative targets and translating them into national policy targets is a primarily political process. The 2030 Agenda includes a range of global environmental challenges to which the global community has committed. However, with the exception of climate change (under the Paris Agreement, the increase in the global average temperature is to be kept well below 2 °C above pre-industrial levels and efforts should be made to limit it to 1.5 °C), there are no globally agreed quantitative policy targets related to these challenges. Setting global quantitative targets where they currently do not exist, involves normative decisions related to risk acceptance (what level of global environmental change could be considered manageable), solidarity (are the expected societal impacts greater in other parts of the world and should this be taken into account) and precaution (how to account for uncertainties in the expected impacts). Science can help by providing insights into societal risks of various levels of global environmental change.

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[1] This policy brief is the executive summary of a more in-depth background report (Lucas and Wilting, 2018). The study builds on earlier research within the planetary boundaries research network (http://www.pb-net.org). The translation of the environment-related SDG ambitions to national policy targets uses the framework developed by Häyhä et al. (2016) and applied to the EU in Hoff et al. (2017) and Häyhä et al. (2018).

Scaling a global quantitative target to national levels essentially divides up a global resource budget or reduction objective, defined by the global targets. The idea of allocating resource rights or reduction objectives to countries is not new. Common but differentiated responsibilities (CBDR) is a central principle in international environmental law, which is reaffirmed in the 2030 Agenda. It balances the need for all countries to take responsibility for global environmental challenges, with that of recognising the wide diversity in national circumstances and capacities. There is no global consensus on what can be considered an equitable or fair distribution. What is favourable differs per country. Scaling global targets requires normative choices with respect to equity, environmental justice, burden sharing, and allocation of scarce resources. Science can help by systematically evaluating country-level implications of various distributive choices.

Finally, as a result of international trade, production (and related environmental pressures and impacts) and consumption of goods and services increasingly happens at different locations. Reduced environmental pressure in one country may come at the cost of increasing pressures elsewhere. A country's environmental pressure can be measured from a production perspective (pressures linked to domestic actors, including for exports) and a consumption or footprint perspective (pressures linked to consumption along the whole value chain, including imports) (Wilting and Ros, 2009). Many of the current national policies and international agreements address environmental pressures within national borders, related to domestic production and direct consumption. A consumption or footprint perspective includes environmental impacts beyond national borders. Normative decisions relate to the environmental pressures that are taken into account when designing national targets and policies, either with respect to national territory or over the whole value chain, including pressures abroad (footprint).

Planetary boundaries define a global safe operating space that can support setting global quantitative targets

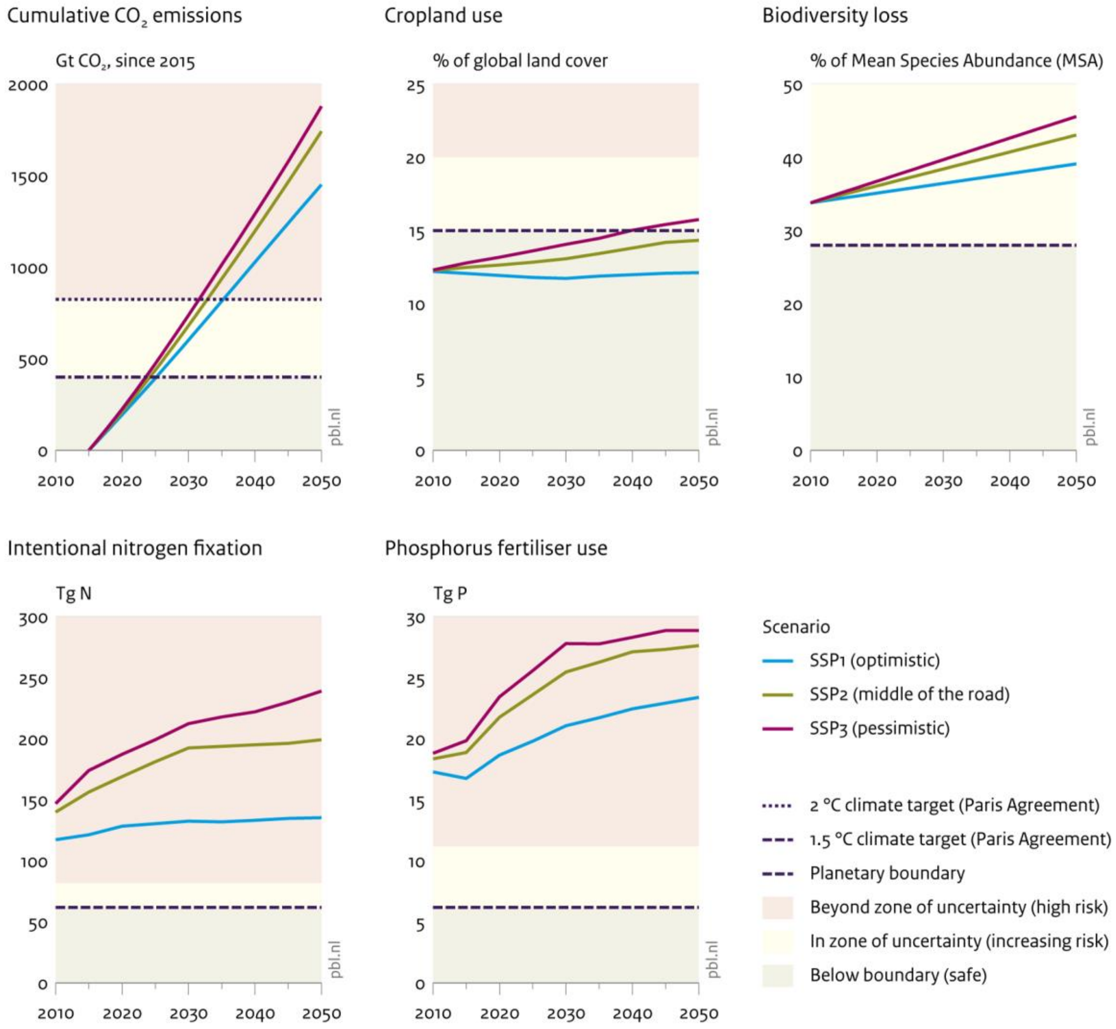
Earth System Science analyses interactions between various parts of the Earth's system (e.g. atmosphere, hydrosphere, biosphere) and their interrelations with human societies. The planetary boundaries framework, developed by Earth System Science, proposes maximum levels of global environmental change for nine critical Earth-system processes (e.g. climate change, biogeochemical flows, biodiversity loss) (Rockström et al., 2009; Steffen et al., 2015). Crossing any of the boundaries on a global scale would increase the risk of large-scale, possibly abrupt or irreversible environmental change, undermining the resilience of the Earth's system as a whole and impacting human well-being. The framework thus identifies precautionary limits to environmental modification, degradation and resource use. Together, the planetary boundaries define levels of global environmental change in which the risks are considered manageable, i.e. a global 'safe operating space' for human development. Several of the proposed planetary boundaries have been transgressed. Model projections show further increases in environmental pressures towards 2050 (Figure 1), stressing the urgency of global and national action.

Although the planetary boundaries framework was designed to advance Earth System Science, it can also be considered in the context of the much wider 2030 Agenda for Sustainable Development. From an environmental perspective, the 2030 Agenda aims to steer human development towards a safe and just operating space for society to thrive in. Safe, by avoiding the negative impacts of global environmental change, for people, worldwide. And just, by ensuring that all people can enjoy access to the resources that underlie human well-being, now and in the future. While not mentioned explicitly, the 2030 Agenda includes all nine planetary boundaries, either as the focus of a specific goal (e.g. SDG15: halt biodiversity loss) or included in specific targets (e.g. target 14.1: prevent and significantly reduce marine nutrient pollution).

The SDGs can be clustered in three groups (Figure 2). The three clusters of SDGs are bi-directionally connected in the sense that the environment provides the natural resource base on which human development and ultimately human well-being is built, while unsustainable resource use can have an adverse impact on both the environment and human well-being. The clustering links to the 'doughnut' of Kate Raworth (Raworth, 2017), who combined the planetary boundaries framework with social boundaries (e.g. food security, energy access, health care, education, gender equality) and called the 'doughnut-shaped' area between the two boundaries the *safe and just operating space*.

Figure 1

Future developments of control variables for selected planetary boundaries

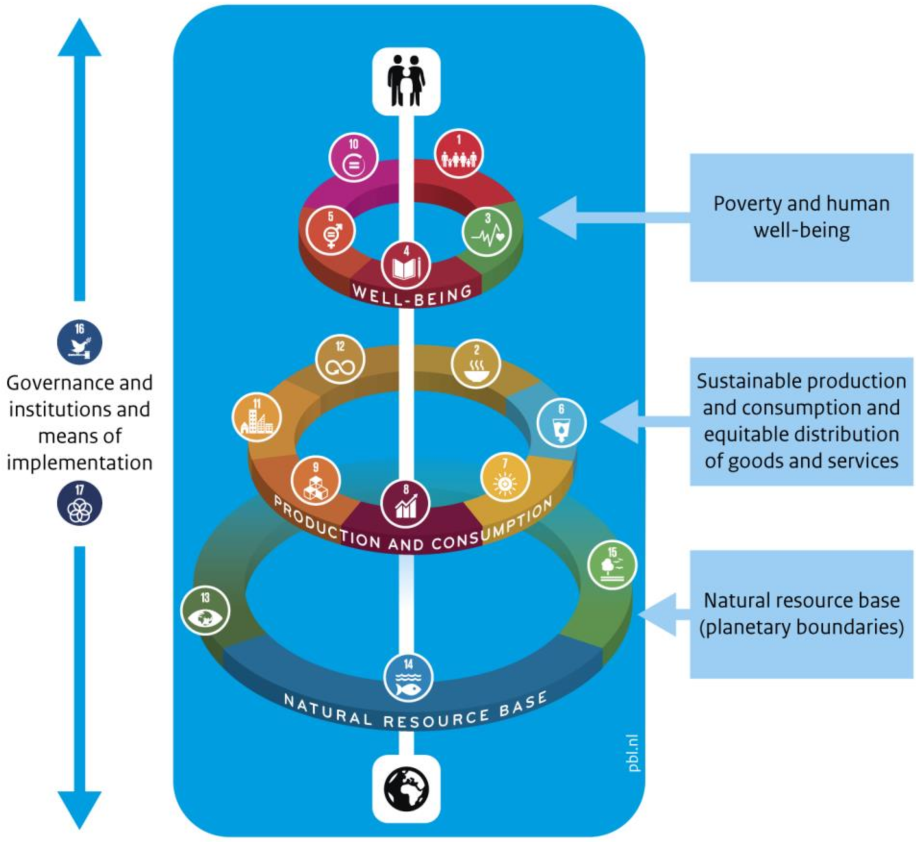


Source: IMAGE

The scenarios are based on divergent future socio-economic developments (SSPs). SSP1 describes a world in which relatively good progress is made towards sustainable development, with low population growth and high economic development; SSP2 describes a world in which the trends of recent decades continue, with both population growth and economic development being at intermediate levels; SSP3 describes a world that is fragmented, characterised by extreme poverty and pockets of moderate wealth, with high population growth and low economic development. Data sources: CO_2 emissions: Van Vuuren et al. (2017); cropland use: Doelman et al. (2018); intentional nitrogen fixation: Mogollón et al. (2018b); phosphorus fertiliser use: Mogollón et al. (2018a); and biodiversity loss: Van der Esch et al. (2017).

The planetary boundaries framework can thus support global target setting for environment-related SDGs beyond climate change. It should be noted that, although the framework suggests strong thresholds, there is an ongoing scientific debate about the boundary processes themselves, the global limits identified, and the control variables used for monitoring progress. Setting targets on the basis of these limits depends on political will, risk acceptance, solidarity and precaution.

Figure 2
Clustering of SDGs from an environmental perspective



Source: PBL

Adapted from PBL (2017) and Lucas et al. (2016)

The climate change literature provides insights and methodologies to support the translation of global limits into national policy targets

In the climate change negotiations and the literature, many proposals for a fair and equitable sharing of emission reduction obligations have been submitted and discussed, based on a range of equity principles (i.e. general concepts of distributive fairness). Commonly discussed equity principles include:

- *Sovereignty*: current resource use constitutes a 'status quo right'
- *Equality*: all people have equal rights to the ecological space
- *Right to development* or *needs*: meeting basic needs of poor people is a global priority
- *Capability* or *capacity*: the greater the capacity to act or pay, the greater the share in global mitigation

The challenge for policy-making is that not only various equity principles, but also differing implementations of these equity principles in approaches may lead to very different outcomes.

Table 1
Global, European and Dutch environmental pressures and impact, 2010

	CO_2 emissions (tCO_2/cap)	Cropland use (ha/cap)	Intentional N fixation (kg N/cap)	P fertiliser use (kg P/cap)	Biodiversity loss (ha/cap)
Global					
Total	4.4	0.20	17.4	2.3	0.77
EU					
Production-based	7.9	0.21	23.6	2.1	0.92
Consumption- based	9.5	0.32	30.0	3.1	1.21
Netherlands					
Production- based	12.2	0.05	13.4	0.8	0.74
Consumption- based	12.5	0.38	32.6	3.6	1.34

Insights into country-level implications of alternative allocation approaches could be used to assess if a country's pledge corresponds with what could be considered fair. Furthermore, such calculations can help define national targets in line with global ambitions (i.e. national fair shares). What could be considered fair is a political decision. However, there is no global process that guarantees the global target will be achieved. The Emissions Gap Report (UNEP, 2017) annually reports on the 'gap' between the emission reductions necessary to achieve the globally agreed target and the likely emission reductions from full implementation of the Nationally Determined Contributions (NDCs). The report informs policymakers of a potential mismatch between globally agreed targets and their individual contributions combined. The report could be an example for monitoring progress with respect to other global environmental challenges.

Dutch environmental footprints are large compared those of other countries

With the exception of CO_2 emissions, Dutch consumption-based environmental pressures (footprints) are much larger than production-based environmental pressures (Table 1). Furthermore, Dutch environmental footprints per capita are larger than the EU average and much larger than the global average. A large share of the environmental pressures beyond national borders relates to agricultural activities in other countries, including land use, nutrient pollution and biodiversity loss. Most of these environmental footprints remained constant since 1995, whereas the share of environmental pressures and impacts abroad increased, which indicates an externalisation of environmental pressure. With many planetary boundaries already being transgressed significantly, this points towards Dutch consumers sharing the responsibility for global environmental changes.

The material footprint is the only footprint indicator that is officially listed in the global SDG indicator set (i.e. it monitors the progress towards SDG8 and SDG12 (UN, 2017)). The second Dutch performance monitoring of the SDGs (CBS, 2018a) and the Monitor of well-being (CBS, 2018b) also include the carbon footprint. However, other global footprint indicators, including those on land use, biogeochemical flows (P and N) and biodiversity loss, are equally relevant. These footprint indicators should also be included in the national indicator sets, in order to monitor progress of global environmental pressures that are linked to Dutch consumption.

There is no single safe operating space for the Netherlands; normative choices on distributive fairness play out differently between countries

In an analysis for the Netherlands, we used the 1.5 °C target of the Paris Agreement as the global limit for climate change and the global limits defined by the planetary boundaries framework for other global environmental challenges (i.e. land-use change, nutrient pollution and biodiversity loss). Interpreted as global budgets, these limits are translated to the Dutch national level, using allocation approaches from the climate change literature (see Box 1 for methodology). The results provide insights into what a safe operating space for the Netherlands could look like, as well as into national implications of various interpretations of what could be considered fair.

Table 2

Per-capita allocation results for the Netherlands, for the 6 approaches

	CO_2 emissions (tCO_2/cap)	Cropland Use (ha/cap)	Intentional N fixation (kgN/cap)	P fertiliser use (kgP/cap)	Biodiversity Loss (ha/cap)
The Netherlands					
Grandfathering	1.9	0.5	16.8	1.4	0.9
Equal per capita	0.7 [0.5–0.7]	0.3 [0.2–0.3]	9 [5.9–9]	0.9 [0.6–0.9]	0.5 [0.4–0.5]
Cumulative equal per capita	0.6 [0.6–0.6]	0.3 [0.2–0.3]	8.1 [7.3–8.5]	0.8 [0.7–0.8]	0.5 [0.4–0.5]
Ability to pay	-1.7 [-3.1–0.9]		9 [5.4–14.3]	0.2 [-0.4–1]	0.8 [0.7–0.9]
Development Rights	-6.6		-10.8	-3.7	0.1
Resource efficiency			19.3	2.2	
Full range	-6.6–1.9	0.1–0.5	-10.8–19.3	-3.7–2.2	0.1–0.9
Global	0.7	0.3	9.0	0.9	0.5

See Box 1 for the description of approaches. Not all approaches could be applied for all planetary boundaries. For the approaches that use current environmental pressures, consumption-based pressures are used. For several approaches, differing parameterisations are possible. The first value is based on default settings. Numbers between brackets represent the range over the alternative settings.

The analysis showed that a national safe operating space cannot be defined uniquely. The various allocation approaches result in large differences between allocation results for countries and planetary boundaries (see Table 2). Translation of global budgets to countries essentially, divides up the global safe operating space. Approaches that allow higher environmental pressures for one country, inevitably allow less for other countries. Differences resulting from the various approaches relate to normative choices regarding the underlying equity principle (e.g. sovereignty, equity, capacity) and to whether and how future generations and economic developments are taken into account (e.g. using 2030 population numbers instead of those of 2010). Differences between countries relate to their current environmental pressures and their impact, current and future developments in population and income growth (e.g. using differing assumptions on future socio-economic developments), and current levels of resource efficiency. Differences between planetary boundaries depend on the level of global transgression of the respective boundary and, thus, on the available space for further increases in global environmental pressure (land-system change), or the required reduction in global pressure or impact (climate change, biogeochemical flows and biodiversity loss).

Grandfathering based on current environmental footprint leads to relatively high allocation results for the Netherlands, compared to the global average. Current environmental pressures and their impact related to Dutch consumption are high compared to those in developing countries. In essence, this approach constitutes an equal reduction objective between countries, making it more difficult for developing countries to accommodate the projected future population numbers and economic growth without significant improvements in resource efficiency. Grandfathering based on production-based environmental pressure leads to much lower allocation results for the Netherlands for most planetary boundaries, as the production-based environmental pressure is much lower than the footprint (not shown in Table 2).

By definition, Equal per-capita allocation leads to per-capita results similar to the global average. Cumulative equal per-capita allocation (also accounting for expected population growth) leads to slightly lower results, as many developing countries have much higher projected population growth than the Netherlands. As the two equal per-capita approaches allocate the available global budget based on current or future population shares, the approaches can allow an increase in environmental pressure for countries than currently have relatively low environmental footprints (see Table 1). This is not possible under the other approaches.

Box 1: Methodology used for translating global limits into national levels

For the translation of global limits into national levels, the framework developed by Häyhä et al. (2016) was used. The analysis focuses on a subset of planetary boundaries about which there is general agreement on a global limit (climate change) or a global limit could be identified because cumulated effects can have global-scale impacts (land-use change, biogeochemical flows and biodiversity loss). We did not test the planetary boundaries framework, but used it as it is now. Nevertheless, we are critical in our interpretation, and focused on a subset of boundary processes for which we believe a global perspective has added value and used alternative metrics where relevant (Table 3).

For climate change, the global limit is based on the Paris Agreement. For the other planetary boundaries, the respective global limits from the planetary boundaries are used. The limits are interpreted as global budgets, which, in a consecutive step, are allocated to countries on the basis of alternative allocation approaches. The global CO_2 budget is interpreted as a budget over time, i.e. total CO_2 emissions that could still be emitted worldwide in order to stay below a 1.5 °C increase. Current CO_2 emissions reduce what can be emitted in the future, resulting in a decreasing budget over time. For the other planetary boundaries, the budgets are interpreted as annual budgets (i.e. current use does not interfere with future availability). For example, if managed sustainably, total available cropland will remain constant over the years.
The allocation of global budgets to countries builds on the broad knowledge base in the climate change literature about fair or equitable distribution (Fleurbaey et al., 2014; Höhne et al., 2014). We assessed allocation results from a range of allocation approaches:

- Grandfathering (*sovereignty*): Allocation of the global budget based on a country's current share in global environmental pressure or impact
- Equal per-capita allocation (*equity*): Allocation of the global budget based on a country's share in the global population (now or in the future).
- Equal cumulative per-capita allocation (equality and needs): Allocation similar to *Equal per-capita allocation*, but based on cumulative population numbers (e.g. 2010–2030).
- Ability to pay (*capability*): Allocation of the reduction objective based on a country's GDP per capita, relative to that of other countries (now or in the future). Not applied for land-use change.
- Development Rights (*capability*): Allocation similar to *Ability to pay*. The approach is based on *Greenhouse Development Rights* (Baer et al., 2008) that allocates greenhouse gas emissions on the basis of quantified capacity (GDP per capita and income distribution) and responsibility (contribution to climate change). Here, only the capacity term is used.
- Resource efficiency (*cost-effectiveness*): Reductions are allocated to where the largest efficiency gains can be expected. Only applied for biogeochemical flows.

For several approaches, different parameterisations are possible. For example, approaches based on population shares or per-capita income can base allocation on current levels, but also on projected future development (2030, 2050). The latter takes into account future generations and divergent future socio-economic developments between countries.

Table 3
Selected planetary boundaries, control variables and global limits

Planetary Boundary		Control variable	Global limit
Climate Change		Cumulative CO_2 emissions	400 $GtCO_2$
Land-use change		Percentage of global land cover converted to cropland	15%
Biogeochemical flows	N	Nitrogen fertilizer use and nitrogen fixation by legumes	62 Tg N/yr
	P	Application of phosphorus in fertilizer	6.2 Tg P/yr
Biodiversity loss		Loss in Mean Species Abundance (MSA)	28%

Ability to pay results in relatively low allocation results for the Netherlands, compared to the global average, and leads to negative allocation results for certain boundaries. The approach allocates the relative global reduction objective. With intentional nitrogen fixation and biodiversity loss being much closer to the global boundary, their allocated reduction objectives are much lower, resulting in allocations close to or even above the global per-capita average. Using future estimates of GDP per capita, leads to higher allocation results, as most low- and medium-income countries are projected to have much higher economic growth and can therefore contribute more in the future, from a capability perspective.

Development Rights, a specific case of Ability to pay, leads to very low to negative allocation results for the Netherlands. In contrast to Ability to pay, this approach allocates the absolute reduction objective. Due to the relatively high income levels in the Netherlands, this results in a reduction objective that is much larger than the current footprint. Here, future estimates of GDP per capita also leads to higher allocation results.

Finally, in the Resource efficiency approach, the global budget is allocated equally over current global cropland use (footprint). The approach is only applied to the biogeochemical flows planetary boundary (nitrogen and phosphorus). Because of a large cropland footprint, the approach leads to the highest allocation for the Netherlands of all approaches. Using production-based cropland use leads to very low to negative results for the Netherlands (not shown in Table 2).

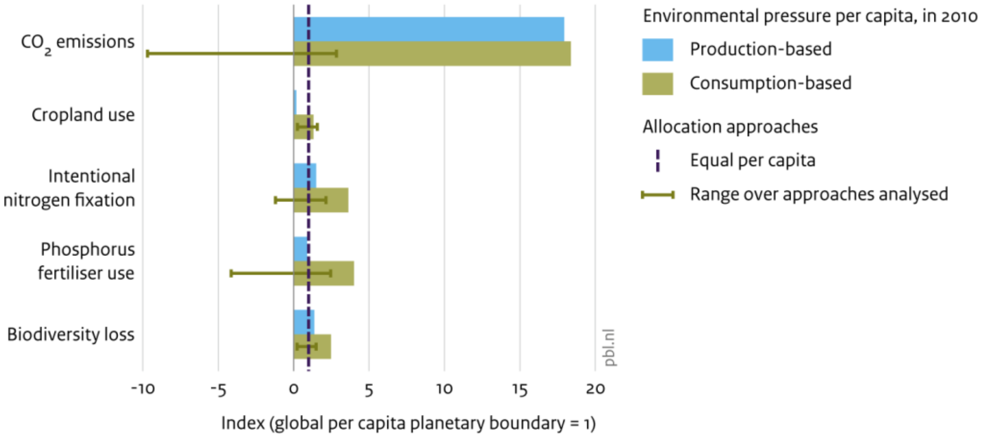
Future analyses should pay more attention to the spatial and temporal characteristics of the global environmental challenges

The methodology applied does not account for spatial heterogeneity that is inherent in most selected planetary boundaries. Calculations are only straightforward for climate change, as this is a global problem caused by rather homogenous pressure (greenhouse gas emissions). However, for example for cropland, not only its availability varies greatly across the world, but also its quality is very heterogeneous distributed, significantly influencing how effective land can be used. The same holds for biogeochemical flows, where N and P fertiliser use is largely dependent on local requirements. Furthermore, not all budgets are per definition constant. For example, for cropland use, land degradation is a serious concern, while phosphorus accumulation in soils and water can remain an environmental concern, although global levels are being brought below planetary boundaries. Finally, biodiversity loss and related loss of ecosystem functions are not readily interchangeable, as is the case for CO_2 emissions, while local tipping points could make it difficult to restore biodiversity when moving back within the safe operating space. Local conditions and temporal variability thus play a crucial role in determining the level of sustainable use or tolerable emission levels. Although the allocated budget should thus be interpreted with care, the approach taken does provide relevant insights for national target setting that includes environmental impacts along the whole supply chain. This is especially the case for a country such as the Netherlands, with its small, open economy and large environmental footprint abroad.

Under most allocation approaches, the Netherlands is not living within its safe operating space

To assess if the Netherlands is living within the safe operating space, Dutch national environmental pressures (both production-based and consumption-based) can be used as a benchmark against the translated planetary boundaries (Figure 3). Despite the large range resulting from the alternative allocation approaches, most allocation results are lower than current Dutch environmental footprints. Compared to production-based environmental pressure, only the climate change boundary is being transgressed under all approaches. Still, many allocation results are also lower than current production-based environmental pressures. From this can be concluded that, for most planetary boundaries and allocation approaches, the Netherlands is not living within its safe operating space.

Figure 3
Dutch environmental pressures compared to allocated planetary boundaries



Source: PBL

Environmental pressures per capita and allocated planetary boundaries are scaled to the global per capita planetary boundary. For the approaches that use current environmental pressures in their calculation, consumption-based pressures are used. As the climate change boundary is defined as a budget over time (see Box 1), the allocated budget is equally distributed over the remaining years of the 21st century.

Approaches that allocate a global reduction objective (Ability to pay and Global Development Rights) can lead to negative resource shares when the absolute reduction target is higher than current environmental pressure. Negative emissions are common for climate change mitigation, as there is a range of negative emission technologies (e.g. biofuels combined with carbon capture and storage, and reforestation) and emission trading schemes between countries. This is not directly the case for the other planetary boundaries. For example, certain resources, such as land and N/P fertiliser, remain essential for agricultural production and cannot easily be compensated. However, negative resource use can result from restoration projects or environmental offsetting (i.e. compensation for environmental impacts with equivalent benefits generated elsewhere). Introducing some sort of trading scheme could allow investments in efficiency gains or restoration projects to counterbalance national environmental pressures.

Translated planetary boundaries can help policymakers to operationalise environment-related SDG targets

The Dutch Government has clear ambitions on climate change, but is less clear about what it wants to achieve with the SDGs. The planetary boundaries framework provides an Earth System perspective on global environmental change that goes beyond climate change. The framework can support defining the 2030 Agenda's global ambition level for other environment-related SDG targets, such as those linked to land-use change, biogeochemical flows (N and P) and climate change. Setting national policy targets in line with this ambition can build on the experiences and insights from climate change negotiations and the literature.

Differences between the translated planetary boundaries and current environmental pressures can help to define national policy targets or reduction objectives (Table 4). Overall, many normative choices can be made. These choices may play out differently between countries, resulting in diverging perceptions of fair and equitable distribution. For one country, Equal per-capita allocation can be most favourable, while, for others, Ability to pay or Resource efficiency results in the lowest reduction objectives. These distributive differences should be taken into account when discussing national targets. It should be noted that the presented reduction objectives are not time-bound. Setting a target year is part of the political process. It defines the speed with which a country decides to move towards their safe operating space.

Table 4

Reduction objectives compared to environmental footprints, resulting from alternative allocation approaches

	Nether-lands (%)	EU (%)	USA (%)	China (%)	India (%)	Global (%)
Climate change	85 – 113	85 – 104	85 – 118	65 – 87	49 – 85	85
Cropland use	-40 – 31	-40 – 19	-40 – 41	-180 – -40	-134 – -40	-40
Intentional N fixation	40 – 202	43 – 161	42 – 150	28 – 99	8 – 85	62
P fertiliser use	41 – 133	47 – 100	48 – 90	23 – 84	9 – 54	49
Biodiversity loss	31 – 91	31 – 69	31 – 77	-3 – 31	-116 – 31	31

Negative values represent growth instead of reduction

Further operationalisation of the SDGs in the Netherlands requires dialogue and cooperation between scientists and policymakers

The scientific knowledge of global systemic risks is evolving at the same time as environmental pressures are intensifying, globally. Furthermore, operationalisation involves normative political decisions about equitable or fair distribution of the global safe operating space. Science can help setting global quantitative targets by providing insights into societal risks of different levels of global environmental change. Furthermore, science can help with translating these targets into national targets and policies, by systematically analysing the implications of alternative allocation approaches based on various interpretations of fair and equitable distribution. Global climate change negotiations have proven that such scientific knowledge and insights are invaluable for incorporating global environmental challenges into national policy-making.

Further operationalisation of SDGs that address global environmental challenges in the Netherlands requires more dialogue and closer cooperation between scientists and policymakers. Cooperation could provide legitimacy and scientifically sound underpinning. Attention is needed for the translation of global targets into usable measures on resource use, ecosystem effects and environmental quality standards. Furthermore, it is important to specify the overarching objective, clarifying how the SDGs may add value to local-to-regional environmental management, and specifying if and how environmental pressures beyond national borders could be factored in. Finally, it may be necessary to determine which global environmental challenges are most relevant or have the most leverage within a national context.

Ongoing policy processes and new policy programmes may serve as entry points for newly developed targets. This includes the Dutch Government-wide programme for a Circular Economy and discussions around a transition in food and agriculture. Furthermore, the knowledge gained is relevant in the context of the discussion in the Dutch Parliament about a broader definition of welfare (‘Brede Welvaart’) to assist the public and political debate on well-being (see CBS, 2018b).

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