



SHAPE

Sustainable development pathways
achieving Human well-being while
safeguarding the climate And Planet Earth

Fact Sheet:

Target-seeking scenarios and the target-space



Understanding
target-seeking
scenarios

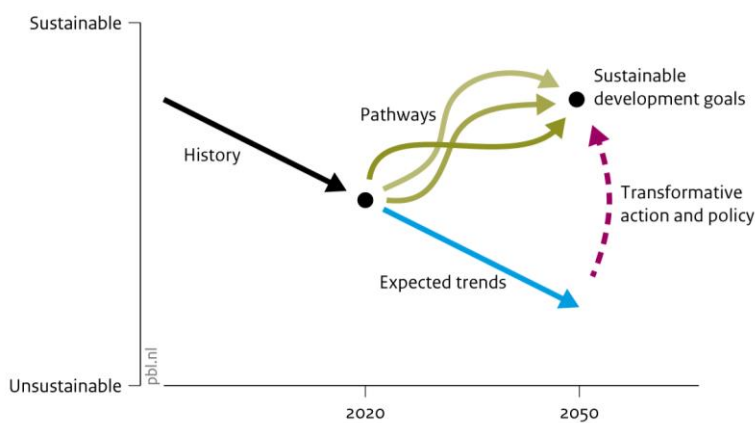
More information about SHAPE's
Sustainable Development Pathways:

<https://shape-project.org/>

Scenarios are not predictions of the future. Instead, scenarios provide plausible storylines of future developments to help analyze consequences of action and inaction. In the "classic" definition of **exploratory scenarios**, this means envisioning a wide range of projections of what could happen, often spanning from utopian to dystopian futures.

Target-seeking scenarios, on the other hand, represent pathways from the present to specific future outcomes. SHAPE's *Sustainable Development Pathways* (SDP scenarios) are scenarios that outline pathways to reach the internationally agreed 2030 Agenda's SDGs and the 1.5°C Paris climate target.

Pathways for meeting sustainable development goals



Source: PBL

The illustrated pathways in green each outline *alternative* transformative action and policies towards sustainable development beyond 2030.

SHAPE's SDP scenarios:
Alternative **Sustainable Development Pathways** (SDP scenarios) were formulated and modelled in SHAPE to identify reinforcing synergies or challenging trade-offs between the targets of the 2030 Agenda's SDGs and action to reach the goal of the Paris Agreement.

The target-space translates the political 2030 Agenda's targets into analytic targets and indicators that can be used for the modeling and scenario analysis of the Sustainable Development Goals and climate action. The SDP scenarios are benchmarked against the target-space to analyze what action the alternative pathways require to reach the 2030 Agenda's SDGs and the Paris Agreement together.

The target space was developed by the scientific community for global application (Van Vuuren et al. 2022). It proposes a set of science-based indicators and associated global target values that are quantifiable and actionable to make scenario analysis meaningful and relevant on the one hand, for instance by reflecting societal goals, while also being simple enough for a transparent and communicable analysis.

While the climate goals (e.g., 1.5°C) as specified in the Paris Agreement have already been used widely in scenario modeling, this has so far not been the case for the broader 2030 Agenda's SDG targets. The target-space can thus serve as a guide for researchers to develop target-seeking scenarios that **address the 2030 Agenda holistically.**



Understanding
the target-space

Examples of the target-space for the analysis of the SDP scenarios

No poverty:

- Number of people below international poverty line (1.90\$/cap/day): **0 by 2030**

Zero hunger:

- Number of people undernourished (below MDER*): **0 by 2030**
- Number of people with obesity (BMI >30): **0 by 2030**

Climate target: 1.5 °C



Inequality:

- Reduce relative poverty rate (below 50% of median income) to **15% (2030) and 10% (2050)**

Affordable and clean energy:

- Population cooking with traditional biomass: **0 by 2030**
- Population without basic electricity access: **0 by 2030**
- **Energy requirements for decent living met** (as defined by Kikstra et al. 2021)

*minimum daily energy requirement (kcal/capita/day)

In pink are indicators and targets that characterize “decent living”, based on Van Vuuren et al. (2022). The SDP scenarios are benchmarked against these targets. Contrary to the targets in pink, climate targets (in blue) have been integrated into scenario modeling for a long time already.

FAQ:



What are other examples of target-seeking scenarios, besides the SDP scenarios developed in SHAPE?

Launched in 2012, the Report *Roads from Rio+20* describes three alternative pathways (scenarios) that meet targets within SDG 2, 3, 6, 7, 13 and 15. A first SDP scenario targeting the full SDG agenda was developed in Soergel et al. 2021 (it also features as Illustrative Mitigation Pathway “Shifting Pathways” in the IPCC AR6 WG3 report). The SHAPE SDP scenarios build upon and extend these earlier works by modeling different SDP scenarios that reflect various societal perspectives on how to best pursue sustainable development.



Do target-seeking scenarios recommend concrete actions towards a target, for example a tax or how to change consumer behavior?

Generally, target-seeking scenarios aim to inform decision makers about the option space to meet the stated target. In some cases, concrete policy actions are already part of the scenario narrative, and the scenario quantification shows the outcome of these policies. In the case of SHAPE’s SDP scenarios, this for example holds for the pricing of greenhouse gas emissions. In other cases, we do not directly capture the concrete policy action, but work with scenario assumptions that capture different possible and desirable outcomes. An example is the assumption of a healthier and more sustainable nutrition: concrete policies that could steer a transition to such diets are however not recommended in the SDP scenarios.

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References:

IPCC, 2022: *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926

Kikstra et al. (2021), Decent living gaps and energy needs around the world. *Environ. Res. Lett.* 16, 095006. <https://doi.org/10.1088/1748-9326/ac1c27>

PBL Netherlands Environmental Assessment Agency (2012), Roads from Rio+20. Pathways to achieve global sustainability goals by 2050, The Hague: PBL Netherlands Environmental Assessment Agency.

Soergel et al. (2021), A sustainable development pathway for climate action within the UN 2030 Agenda. *Nat. Clim. Chang.* 11, 656–664. <https://doi.org/10.1038/s41558-021-01098-3>

Van Vuuren et al. (2022), Defining a sustainable development target space for 2030 and 2050. *One Earth* 5, 142–156. <https://doi.org/10.1016/j.oneear.2022.01.003>

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