

Nature Positive Food Systems

A working definition



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The last few years the term 'Nature Positive Food Systems' has gained attention as a result of global advocacy to rethink our food systems and the reciprocal relationship with nature. The food system is both impacting nature and benefiting from nature, and therefore key in achieving nature-positive ambitions. Most crucially the idea of 'Nature Positive' reflects the increasing global consensus on the ambition to not only halt biodiversity and ecosystem decline, but reverse the destruction of nature and regenerating nature. Moreover, the concept of 'Nature Positive' is not just about numbers, it is all about a different look: a positive look on nature and its interaction with the systems that feed us. The significant move from reducing harm to regenerating nature, raises the question if Food Systems can contribute and become nature positive themselves.

The concept of 'Nature Positive Food Systems' consists of two elements: 'nature positive' and 'food systems'. Food systems as the whole complex range from activities from farm to fork. In the food system approach the food system activities are already placed in between social and environmental drivers, addressing the functional relationships and interdependencies. If we define nature in its broadest sense, as often implied, this represents the environment in the food system approach: the external world in its entirety. It is not just about plants and animals, about habitats; it is also about soil, water and functioning ecosystems in all its diversity. Therefore, biodiversity and ecosystem functioning are often used as an indicator for the state of nature.

The figures are clearly pointing out the nature is under pressure. There is no single cause but most are involving human decision-making and are reflective of the human-nature relationship. Many of our key systems heavily depend on the benefits of nature, which have been deteriorating over time. To this end, it is also clear that urgent action is required since reversal and regenerating will also require time.



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Why nature positive in food systems?

- Food systems are both key driver and victim of climate change and biodiversity loss. Climate change and biodiversity loss lead to a staggering cascade of potential effects and risks to our wellbeing, health, safety and security. The negative effects of climate change and biodiversity loss on the food system call for an urgent reconsideration of the role of nature in the food system.
- The food system is under pressure to sustain reliable access to a sufficient quantity of affordable, nutritious food. Placing nature, in terms of biodiversity and ecosystem functioning, at the heart, can improve the continuing resilience and functioning of the food system.
- The concept of nature positive systems helps to move from remaining within planetary boundaries (doing less harm) towards healthy and flourishing natural systems [restore, regenerate, sustained] as a solid basis for society, economy and wellbeing (net positive). Thriving biodiversity and ecosystems are also fundamental in halting climate change.
- In food systems, an instrumental approach to nature often prevails, while the opportunities of close contact with nature in food systems, may foster shifts to intrinsic and relational perspectives that a nature positive approach implies.





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We refer to nature positive food systems as **food systems** that have **nature at the heart** of decision-making and that will lead to **increased biodiversity and improved ecosystem functioning** through **collective understanding and action**.

This definition thus defines nature positive food systems not as a state to be achieved, but as a continuous process towards increased biodiversity and improved ecosystem functioning.

This definition reflects five building blocks (see figure 1) that reflect different words in the term "Nature Positive Food Systems" and elements that were frequently mentioned in existing definitions of "nature positive".

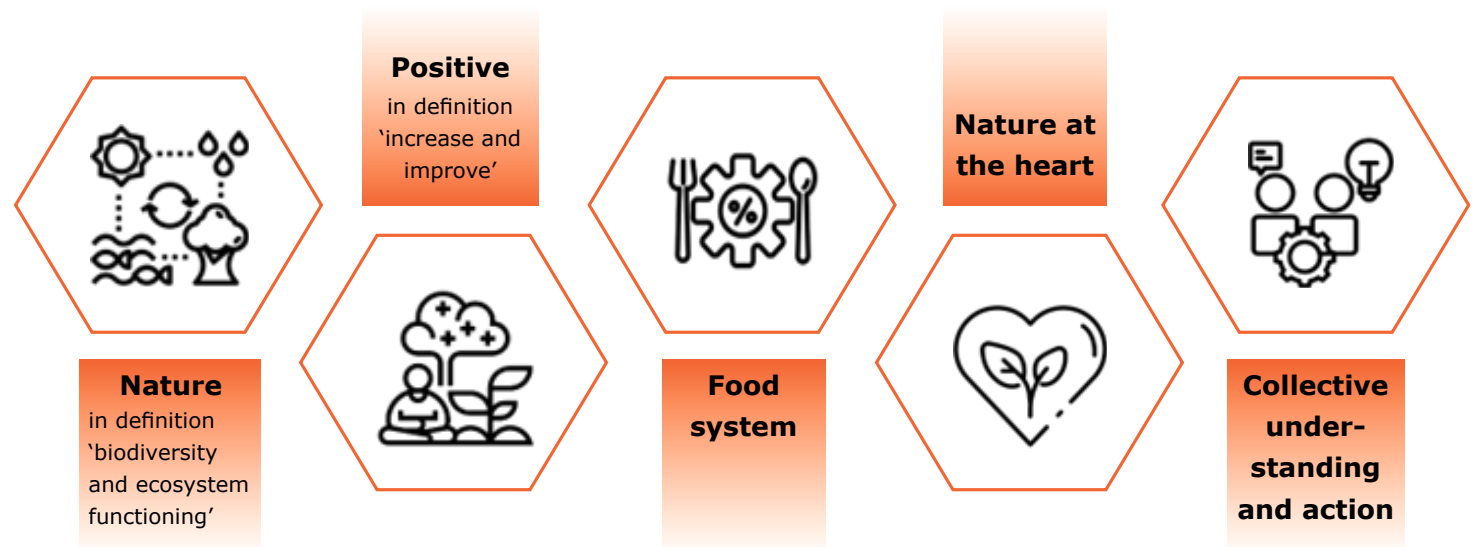


Figure 1. Five building blocks of Nature positive food systems

Nature – biodiversity and ecosystem functioning



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Definitions of nature are inherently context-bound, influenced by subjective, normative, and dynamic worldviews and values, whether explicitly or implicitly. To understand what 'nature' means in the context of 'Nature Positive Food Systems' we consider the purpose of the nature positive food system concept. Key to the idea of nature positive, is to increase the health, abundance, diversity and resilience of species, populations and ecosystems, bolstering the capacity of ecosystems to fulfil critical roles, such as climate regulation and the provisioning of vital ecosystem services. This can be referred to as biodiversity and ecosystem functioning, which refer to the various qualities and quantities of living and non-living parts of ecosystems. Biodiversity is the part of nature that is alive, and includes every living thing on Earth, humans too; nature is all biodiversity together with the non-living systems – the soils, water, climate, mountains and all other inanimate components – that comprise the biosphere of our planet.

They may be measured using a variety of biodiversity indicators to grasp the health, abundance, and diversity of species and populations, as well as additional ecosystem indicators to measure the health and resilience of ecosystems, including their non-living parts such as water, soil, air and climate, and the intricate web of interactions that sustain life on Earth. Therefore, these are the basic elements that are needed to provide the ecosystem services and resources fundamental to the food system.

In this working definition, biodiversity and ecosystem functioning is a frame that highlights the impact of the human-driven food system on other living and non-living systems, reducing the emphasis on humans as distinct from nature. This does, however, not imply that the human part is removed in the concept of 'nature positive food system'. Humans coexist and are deeply interconnected with animals and the entire ecosystem. Hence, the food system element still underscores the significance of livelihood security and human well-being while emphasizing the need to strike a balance and not overlooking human interests.



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Positive – framing ‘increase and improve’

The term ‘positive,’ within the framework of a ‘nature-positive food system,’ encapsulates a fundamental objective: bringing biodiversity and ecosystem functioning to a level that guarantees the stability and sufficient productivity of the Earth’s system. Increasing biodiversity and improving ecosystem functioning inherently imply a reference compared to which biodiversity is to be increased and ecosystem functioning is to be improved. Several NGOs have embraced a global goal of becoming nature positive by 2030. This Global Goal for Nature identifies the level of ambition needed to achieve a nature-positive world with three measurable temporal objectives: Zero Net Loss of Nature from 2020, Net Positive by 2030, and Full Recovery by 2050. This ambition implies a baseline of 2020, compared to which biodiversity should increase.

The additional objective of “full recovery by 2050” implicitly refers to a level of biodiversity that matches a level of biodiversity that is sufficient for securing the stability of the Earth system.

In the context of nature-positive food systems, the system-level approach plays a pivotal role in mapping the synergies and trade-offs of food system activities. Taking a system approach entails striving to trace all effects on nature of food system activities. These may be positive for some species, negative for others, positive in some areas, or negative in others. This leads to the question of whether all effects on nature should be positive, or only the overall effect, and how to measure such an overall effect. Whether this is actually possible and whether a food system that has a positive effect on many aspects of nature but a negative impact on some can be called positive remains an open question. Classifying a food system as overall nature-positive or not may be irrelevant as long as sufficient progress is achieved towards desirable biodiversity levels.

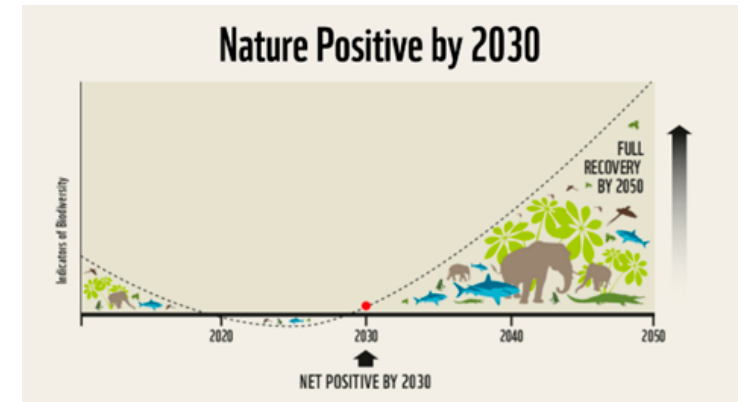


Figure 2. Bending the curve



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Food systems comprise all activities from food production to consumption and their links with socio-economic and environmental drivers. Setting boundaries of a food system is necessary and is often demarcated by choices. A food system can be defined on multiple spatial scales and with different scopes.

In example, a food system approach could focus on the consumption of Dutch consumers; including all food consumed and the preceding steps of processing, transportation and production, within and outside the Netherlands. In such example, all activities not related to production for Dutch consumers would fall outside the system boundaries. Rather than focusing on all consumption, the food system approach may also focus on a single category of products, for example European dairy consumption; including all dairy products consumed and the preceding steps of processing, transportation and production, within and outside Europe. Alternatively, the food system approach could focus on production rather than on consumption, for example on coffee production in Ethiopia; and the subsequent steps of transportation, processing and consumption in all parts of the world. So, although system boundaries may be different, they are clearly defined in all of the examples above.

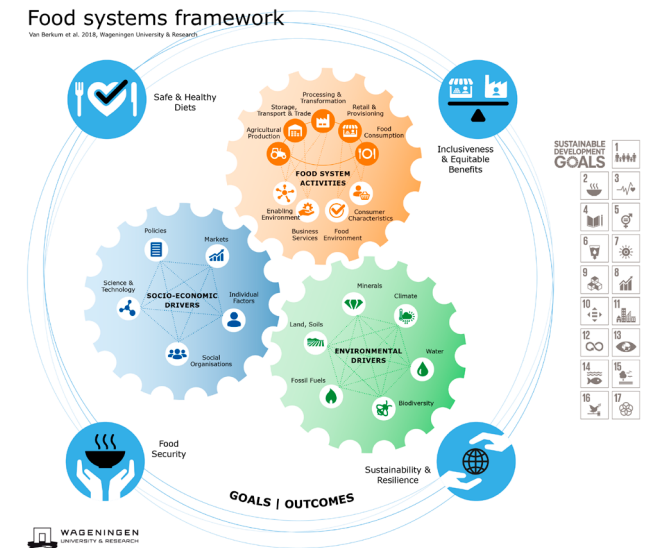


Figure 3 Food system framework

The way a food system is defined highly depends on how it is used: using a food system approach. In a food system approach it is not just about analyzing the different activities, but especially their relationships and the social, economic and environmental impacts of proposed interventions and trade-offs between the objectives in these dimensions. The food system functions as a socio-ecological system, where socio-ecological factors determine what the food system looks like. Furthermore, the food system interacts with nature, which is already implicitly present in the food system approach in the notion of environmental drivers and outcomes: food systems are both a key driver and affected by climate change and biodiversity loss. It highlights the importance of the balance between humans and nature in the food system.



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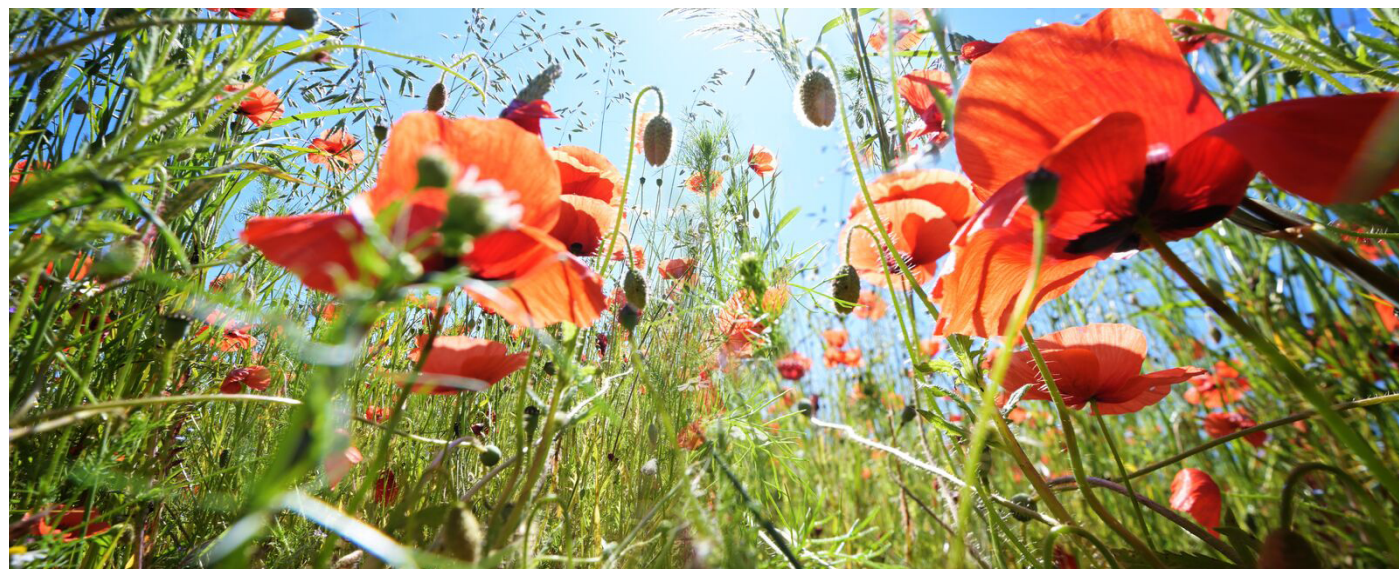


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Nature at the heart of decision making

There is a conceptual shift inherent in the nature-positive global goal, from viewing nature as something external to viewing it as the context for all life, including humans. This shift in view and value is highlighted by putting nature at the heart of decision making, thus not viewing nature as just a contextual factor or externality to take into account but rather as something that guides decision-making. This shift in valuing nature should lead to the development and implementation of metrics and standards that consider the 'real value' of nature throughout the supply chain. This will enable fundamental change for transformation towards sustainable food systems. This principle is for example applied in approaches where water and soil conditions steer spatial planning decisions, or in sustainable agroecosystems.

Putting nature at the heart of decision making does not mean that increasing biodiversity is more important than other values, such as improving food security or livelihood. However, nature at the heart of decision making does mean that striving for food security and other values, should always seek ways that work with nature instead of against it. Put differently, the nature-positive goal is not to find the "sweet spot" where competing interests coincide but rather to continually improve the context for all life. Therefore, a nature-positive goal recognizes that the Sustainable Development Goals can only be realized if the Biosphere related goals are met.





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Collective understanding and action are crucial for creating nature-positive food systems due to the complexity and interconnectedness of the challenges and opportunities within our food systems and the broader environment. This highlights that nature positive food systems are not a state to be achieved, but a continuous process in which collective understanding and action are central.

Whereas this perhaps is a less obvious building block, it does refer to nature positive mindset being part of an interconnected system and its stakeholders. Of course, individual actions can also lead to nature positive outcomes along the system, but collectiveness is foundational for system change. As referred to during the UN Food summit “It is critical that rather than blaming farmers, companies, or countries, we listen to the concerns of different stakeholders, including those from producing countries, and find ways to work together to make this system shift in a collaborative way”. This emphasizes that a change needs to be carried by all relevant stakeholders who are involved in decision-making (e.g., across scales, geographics, disciplines, sectors) and have influence in placing ‘nature at the heart’. The global nature of food supply chains requires cooperation at all levels, from farmers to consumers, to ensure sustainability and resilience.

This building block still recognizes that there is plurality in knowledge, values, cultures and contexts of these stakeholders, but that there is a need to be proactive in creating dialogue, understanding and action including navigating inevitable tensions. For example, the way we have organized our society and projects is still very siloed. In addition, collective understanding and action is also needed in the context of a globalized world where ecosystem and human systems are interconnected around the world (i.e. telecoupled systems). This means that nature positive transformations in one area can have consequences for biodiversity and ecosystems in other areas. This also implies that success is not only judged by the outcomes for individuals but for the wider system in which it is embedded (related to the idea of net-positive).



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Locke, H., Rockström, J., Bakker, P., Bapna, M., Gough, M., Hilty, J., Lambertini, M., Morris, J., Polman, P., Rodriguez, C. M., Samper, C., Sanjayan, M., Zabey, E., & Zurita, P. (n.d.). A Nature-Positive World: The Global Goal for Nature. Retrieved August 2, 2023, from <https://www.naturepositive.org/en/our-work>

Mommer, L., Nel, J., van Apeldoorn, D., van Hattum, T., Jones-Walters, L., Polman, N., Richter, A., Westerink, J., Alpízar, F., Candel, J., van Doorn, A., van Duinkerken, G., Maas, J., Fraanje, W., Groot, A., Jongeneel, R., Navarro-Matser, M., Riemens, M., Ritzer, S., ... Wertheim-Heck, S. (2022). Nature-positive futures.

Obura, D. O., DeClerck, F., Verburg, P. H., Gupta, J., Abrams, J. F., Bai, X., Bunn, S., Ebi, K. L., Gifford, L., Gordon, C., Jacobson, L., Lenton, T. M., Liverman, D., Mohamed, A., Prodani, K., Rocha, J. C., Rockström, J., Sakschewski, B., Stewart-Koster, B., ... Zimm, C. (2023). Achieving a nature- and people-positive future. *One Earth*, 6(2), 105–117. <https://doi.org/10.1016/j.ONEEAR.2022.11.013>

Van Berkum, S., Dengerink, J., & Ruben, R. (2018). The food systems approach: sustainable solutions for a sufficient supply of healthy food. www.wur.eu/economic-research

Berkum, S. van (2021), Food system boundaries: how they are defined and what that implies for research outcomes and policy recommendations UN Food Summit 2021, Sustainable Food Systems: Nature positive Food Systems for a Healthy Planet & Healthy People



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This interactive document has been developed as part of the project Nature Positive Food Systems (NPFS).

This research is subsidized by the Dutch Ministry of Agriculture, Nature and Food Quality as part of the KB Programs Food Security and Valuing Water (KB35).

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