University of Stuttgart
Germany

KlimaOasen

Entwicklung eines
resilienten Campus durch
naturbasierte Lösungen

Funding Statement

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References

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Green Office

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The Nature Conservancy
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Recommendations for Nature-based Solutions at the University of Stuttgart

Nature-based solutions (NBS) can improve the resilience of University of Stuttgart's campuses as 'climate oases' by helping tackle climate change related challenges, supporting and enhancing biodiversity, and improving the quality and comfort of outdoor and indoor areas for people.

The European Commission[1] defines nature-based solutions (NBS) as:

> "Solutions that are inspired and supported by nature, which are cost effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes through locally adapted, resource-efficient and systematic interventions. Nature-based solutions must benefit biodiversity and support the delivery of a range of ecosystem services ."

Such NBS include the protection of existing healthy ecosystems (Type 1), restoration or sustainable management of ecosystems (Type 2), and the design and management of new ecosystems (e.g. development of green and blue infrastructure; Type 3)[2].

The KlimaOasen Workshop Series

The recommendations presented in this brochure resulted from the outcomes of a three-part workshop series with actors interested or involved in the implementation and management of NBS at the University of Stuttgart.

The workshops aimed to bring together actors to stimulate the exchange of ideas, identify further actors and initiatives that could be involved in the process, identify critical aspects for NBS development, and discuss concrete proposals for potential NBS at both University of Stuttgart campuses.

In the final workshop, actors discussed critical aspects of NBS development and potential actors and contact points for each aspect, based on two real-life inspired scenarios.

Workshop participants expressed a strong desire to continue exchanging on the topic of NBS development, which will be realized as an NBS round table.

Support for Developing NBS at the University of Stuttgart

The results of the final KlimaOasen workshop were synthesized into the following figure that presents potential relevant contact points for each stage of NBS development for German universities in general. Specific examples for the University of Stuttgart are indicated with lime green circles, numbers 1-13.

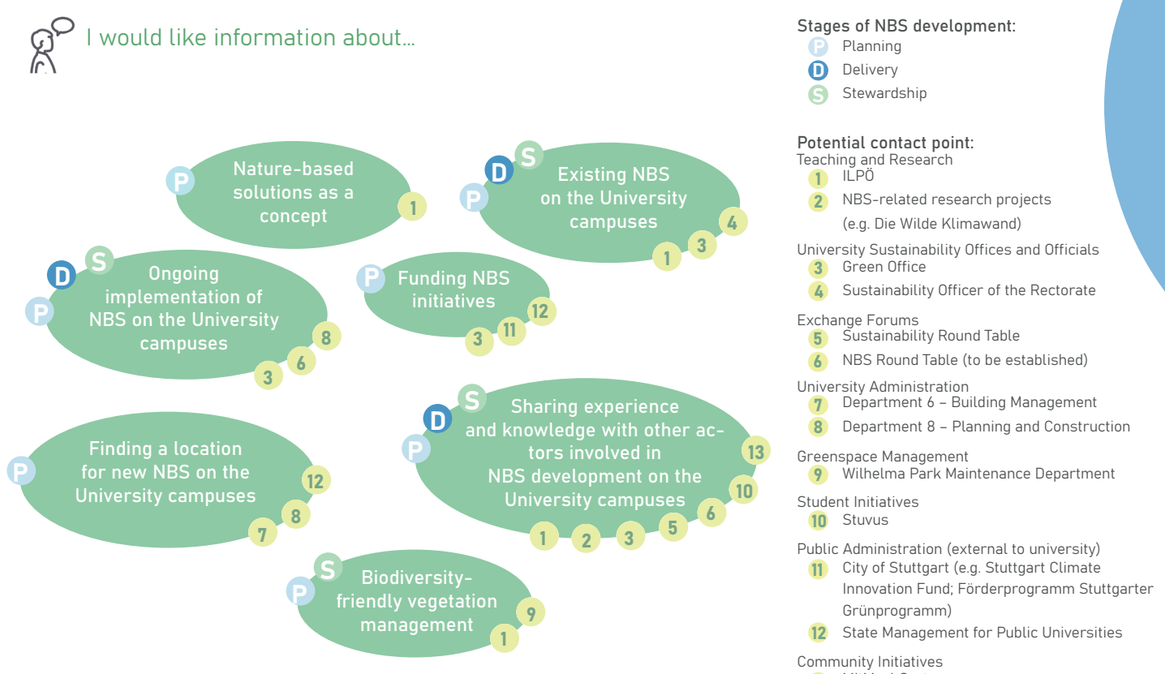

Figure 1: Relevant Actors for NBS-Development for German Universities

Recommendations for the Nature-based Solutions Implementation Process

The following recommendations to improve the implementation of NBS at the University of Stuttgart were identified through the KlimaOasen workshop series. Considering these recommendations in each stage of NBS development (i.e. planning, delivery, stewardship)[3] will help achieve the full potential of benefits they offer:

Integrate NBS in the overall Sustainability and Climate Change Concepts of the University. Beyond climate change mitigation (i.e. reducing overall greenhouse gas emissions), it is also important to consider climate change adaptation – adjusting to current and future impacts of climate change. NBS can contribute to each of these factors and additionally deliver other benefits (e.g., for biodiversity).

Involve a broad range of actors in developing NBS on campus. This includes actors with different responsibilities at the university, in public administration, as well as potential NBS users, among others. The KlimaOasen project has identified several relevant actors for NBS development, some of which are presented in Figure 1.

Aim to generate multiple benefits through NBS development on campus. These benefits include climate change adaptation, biodiversity support, and improving the quality of experience for a broad range of potential users. Regarding biodiversity, **native species should be prioritized,** considering their adaptive capacity to future environmental conditions. Regarding quality of experience, surveys, interviews, and open discussions on concrete ideas for NBS should be used to **consider the needs of potential users.**

Weigh the potential multiple benefits of NBS against aspects related to NBS implementation and maintenance. It may be necessary to consider water and energy consumption, maintenance requirements, and needed human resources.

Exchange and join efforts both internally and externally with other organisations or initiatives working on NBS development on academic campuses. The actors involved in the KlimaOasen workshops strongly supported the establishment of an NBS round table at the University of Stuttgart for regular exchange on this topic. External exchange can be best achieved through national and international networks like the Netzwerk der Hochschulinitiativen für Biodiversität[4], or the International Sustainable Campus Network[5].

Develop NBS monitoring plans and define procedures and responsibilities. Monitoring NBS after implementation is often overlooked in NBS development, but is important to evaluate NBS performance, including how an NBS is being used and perceived, and its evolving ecological condition. Monitoring should already be considered in the planning phase of NBS development.

Promote synergies with teaching. The KlimaOasen project demonstrated that integrating teaching in the development of NBS on campus can be synergistic. Considering NBS development, this can offer opportunities to explore innovative approaches in a safer learning environment. For students, it offers the opportunity to work on projects that can have a real impact on their academic community, while receiving feedback from the "real-world."

Examples of Nature-based Solutions at the University of Stuttgart's Vaihingen Campus