Table S2: List of definitions extracted from bibliographic research.

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| Reference | Definition |
| (de Haas & El Harradji, 2001) | “...agricultural areas in arid environments where agriculture is normally not possible without irrigation” |
| (Jia et al., 2004) | “...specific landscape that exists with deserts in arid regions.” |
| (Qi, Li & Duan, 2007) | “..specific and unique intrazonal land scapes that exist with deserts in arid and semi-arid regions of the world.” |
| (Zhang et al., 2012) | “...a unique geographic entity that appears as a well-vegetated ‘‘island’’ surrounded by large areas of drylands or deserts. It is characterized by having persistent water supply, abundant vegetation, and being isolated within semiarid to hyperarid regions.” |
| (Xie et al., 2014) | “...unique geographical landscape that has allowed flourishing vegetation and human settlements due to a stable water supply in an arid region” |
| (Powell & Fensham, 2016) | “...an island of verdant fertility sustained by ground-water in a barren and desolate landscape...” |
| (Wei et al., 2020) | “...efficient eco-geographical landscape that allows flourishing vegetation or human settlement due to a stable water supply” |
| (Chen et al., 2022) | “...an area with flat terrain, stable water supply, and high productivity that can support human activities such as agriculture and animal husbandry and industrialized production with deserts as the landscape matrix” |
| (Liu, Wang & Xin, 2022) | “...heterogeneous ecological landscapes with significant microclimatic qualities effects that can be maintained in a stable manner” |
| (Sraïri & Ouidat, 2022) | “...areas with intense farming activities located in very arid environments, where conditions for human development are hostile” |
| (Cui et al., 2024) | “...exist in dryland climates [...] surrounded or partially surrounded by desert environments [...] with stable water supply (non-rainfed), landscape units with higher vegetation coverage (VC)/productivity have been formed.” |

References:

Chen P, Wang S, Liu Y, Wang Y, Li Z, Wang Y, Zhang H, Zhang Y. 2022. Spatio-temporal patterns of oasis dynamics in China’s drylands between 1987 and 2017. *Environmental Research Letters* 17. DOI: 10.1088/1748-9326/ac740b.

Cui B, Gui D, Liu Q, Abd-Elmabod SK, Liu Y, Lu B. 2024. Distribution and Growth Drivers of Oases at a Global Scale. *Earth’s Future* 12:e2023EF004086. DOI: 10.1029/2023EF004086.

de Haas H, El Harradji A. 2001. *Migration, Agricultural Transformations and Natural Resource Exploitation in the Oases of Morocco and Tunisia*.

Jia B, Zhang Z, Ci L, Ren Y, Pan B, Zhang Z. 2004. Oasis land-use dynamics and its influence on the oasis environment in Xinjiang, China. *Journal of Arid Environments* 56:11–26. DOI: 10.1016/S0140-1963(03)00002-8.

Liu X, Wang Y, Xin L. 2022. China’s oases have expanded by nearly 40% over the past 20 years. *Land Degradation and Development* 33:3817–3828. DOI: 10.1002/ldr.4425.

Powell O, Fensham R. 2016. The history and fate of the Nubian Sandstone Aquifer springs in the oasis depressions of the Western Desert, Egypt. *Hydrogeology Journal* 24:395–406. DOI: 10.1007/s10040-015-1335-1.

Qi S-Z, Li X-Y, Duan H-P. 2007. Oasis land-use change and its environmental impact in Jinta Oasis, arid northwestern China. *Environmental Monitoring and Assessment* 134:313–320. DOI: 10.1007/s10661-007-9622-5.

Sraïri MT, Ouidat L. 2022. Understanding diversified oasis farms’ economic performances through an analysis of labor uses and their relation to the invested capital. *JOURNAL OF OASIS AGRICULTURE AND SUSTAINABLE DEVELOPMENT* 4:18–32. DOI: 10.56027/JOASD.032022.

Wei W, Li Z, Xie B, Zhou J, Li C. 2020. Spatio-temporal change and driving force of oasis for desert reservoir from 1988 to 2016 in northwestern China. *Polish Journal of Environmental Studies* 29:871–884. DOI: 10.15244/pjoes/100368.

Xie Y, Gong J, Sun P, Gou X. 2014. Oasis dynamics change and its influence on landscape pattern on Jinta oasis in arid China from 1963a to 2010a: Integration of multi-source satellite images. *International Journal of Applied Earth Observation and Geoinformation* 33:181–191. DOI: 10.1016/j.jag.2014.05.008.

Zhang Q-B, Li Z, Liu P, Xiao S. 2012. On the vulnerability of oasis forest to changing environmental conditions: perspectives from tree rings. *Landscape Ecology* 27:343–353. DOI: 10.1007/s10980-011-9685-0.