



POLICY BRIEF

WWF FOOD PRACTICE • MARCH 2022



Response to the first draft post-2020 Global Biodiversity Framework: Grassland, savannah and rangeland ecosystems: Targets 2, 3 and 10

The post-2020 Global Biodiversity Framework provides a unique opportunity to focus attention on the protection, management and restoration of grassland, savannah and rangeland ecosystems.

Globally, these ecosystems are in urgent need of three overarching actions:

1. **Protect:** increasing the area conserved in ecologically representative protected and conserved areas to include viable, well-connected examples of all relevant ecoregions – **Target 3:** “Ensure that at least 30% globally of land areas ... are conserved through ... well-connected systems of protected areas and other effective area-based conservation measures”.
2. **Manage:** improving management of the world’s grassland, savannah and rangeland ecosystems to increase carbon storage, optimise grazing levels, boost biodiversity to support adaption to climate change, reduce compaction and erosion, and increase other ecosystem services, such as water security – **target 10:** “Ensure all areas under agriculture, aquaculture and forestry are managed sustainably...”
3. **Restore:** implementing large-scale restoration to re-establish ecosystem services and improve the livelihoods of over a billion people living on degraded farmland. The UN Decade on Ecosystem Restoration provides a mandate – **Target 2:** “Ensure that at least 20% of degraded ... ecosystems are under restoration...” should be increased to 50% to meet wider GBF goals.

Grasslands, savannahs and rangelands play critical but often hidden roles in a wide range of ecosystem services, including climate change mitigation and adaptation.

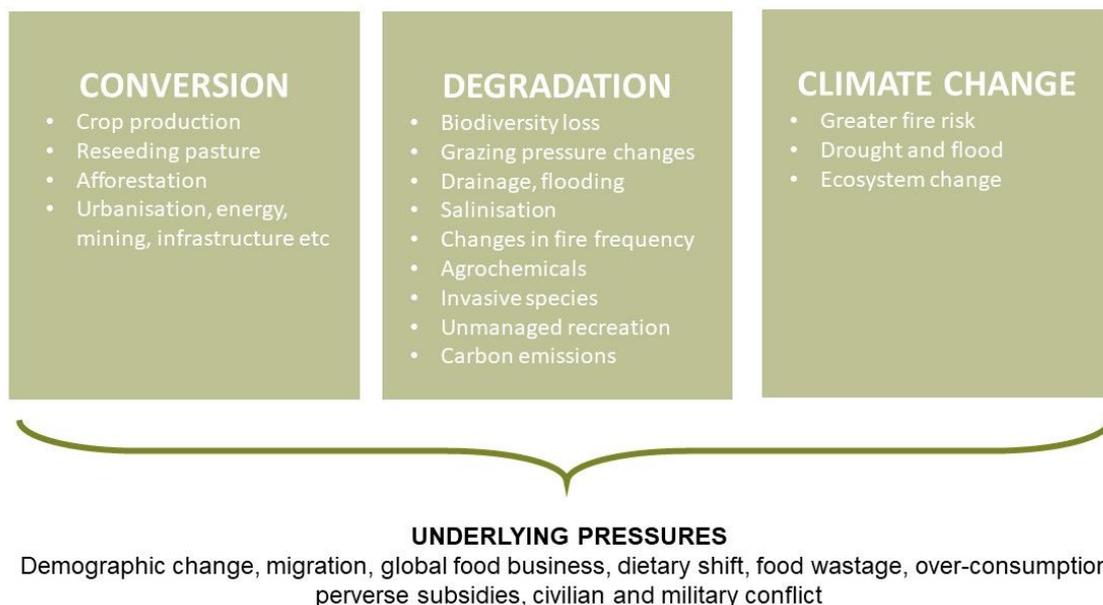


Figure 1: Some of the ecosystem services from grasslands, savannahs and rangelands

Ecosystem services from grassland, savannah and rangeland are far more valuable than usually recognised¹. They provide carbon stores to mitigate climate change², possibly more reliable than forests in places at high fire risk³, with huge restoration potential⁴. Grasslands reduce desertification⁵ and dust storms and protect water supplies⁶. Grasslands support a quarter of the world’s people with a huge cultural diversity, from gauchos in South America to nomadic pastoralists of Central Asia⁷, and many contain sacred landscapes⁸. They cover 54% of the land⁹ and support food security¹⁰ through livestock¹¹ and wild food collection¹², and are the basis for almost all agricultural lands.

But these ecosystems are amongst the most threatened in the world: under pressure on three fronts, from conversion, degradation and the impacts of climate change.

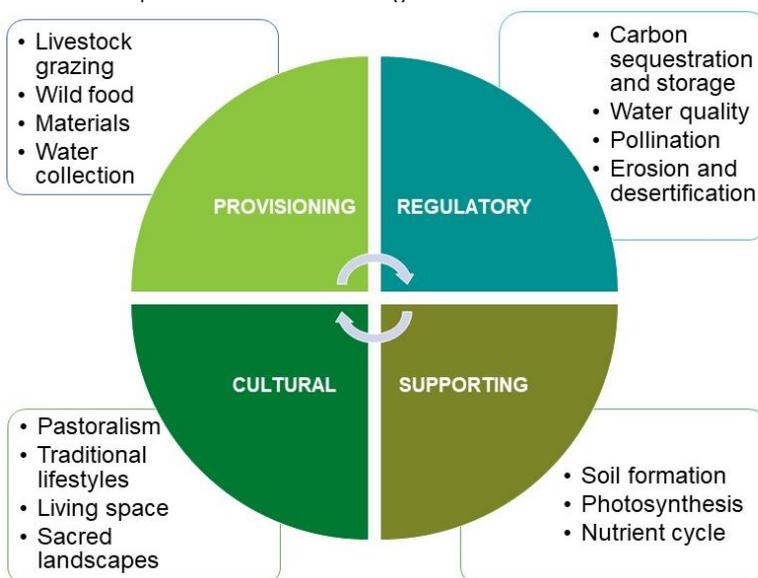


Figure 2: Threats to grassland and savannah ecosystems

Grassland, savannah and rangeland ecosystems are at high risk. Over 40% have been converted¹³. From 1998 to 2013, 19% of grasslands, and 27% of rangelands showed persistent declining productivity trends¹⁴. Grasslands are poorly protected, with only 4.5% of temperate grasslands protected,¹⁵ leaving the biome liable to fragmentation and loss,¹⁶ with national laws often too weak to provide security.¹⁷

Losses come from conversion to agricultural crops¹⁸ and tree plantations,^{19,20} the latter sometimes under the auspices of “reforestation policies”;²¹ from reseeded for intensive livestock production;²² and through the impacts of urbanisation,²³ transport infrastructure,²⁴ mining²⁵ and other factors.

Equally serious, but more difficult to measure, are the various forms of degradation, caused by changes in grazing pressure (both over-grazing²⁶ and under-grazing), drainage of wet grasslands, poor irrigation leading to salinisation,²⁷ agrochemical^{28,29} and other forms of pollution, the impact of invasive species³⁰ and poorly controlled recreational activities including off-road driving.³¹

Meanwhile, climate change increases the likelihood and severity of many of these pressures by increasing the chances of both droughts³² and floods, boosting the risk of disastrous fires³³ and shifting the baseline for entire ecosystems.

The GBF provides a unique opportunity to focus attention on the protection, management and restoration of grassland, savannah and rangeland ecosystems.

Globally, these ecosystems are in urgent need of three overarching actions:

1. **Protect:** increasing the area conserved in ecologically representative protected areas and other effective area-based conservation measures (OECMs) to include ecologically-representative, viable and well-connected examples of all grassland and savannah ecoregions – GBF Target 3.
2. **Manage:** improving management of the world’s rangelands to increase carbon storage,³⁴ optimise grazing levels, boost biodiversity to help adaptation to climate change,³⁵ reduce compaction and erosion,³⁶ and increase other ecosystem services – GBF target 10.
3. **Restore:** implementing restoration over large areas of degraded land to restore ecosystem services and improve the livelihoods of over a billion people living on degraded farmland. The UN Decade on Ecosystem Restoration provides a clear mandate – GBF Target 2.³⁷

WWF’s asks

Target 2 needs to increase its ambition and strengthen restoration of 50 % of degraded freshwater, marine and terrestrial ecosystems and pay a special attention to restoration of grasslands, savannahs and rangelands as over 40% have already been converted.

All ecosystems are to be given equal weighting in **Target 3**, which WWF supports, but given their high rate of loss and low level of protection, grassland, savannah and rangeland ecosystems require particular attention to level up with other biomes in terms of protected area coverage.

The sustainable management components of **Target 10** should include explicit recognition of ecosystem services alongside agricultural production, particularly in respect to carbon sequestration, water security and soil conservation.

Redirect, repurpose, reform or eliminate all incentives harmful for biodiversity (**Target 18**) including elimination of financial support for afforestation of ecologically significant natural grasslands ecosystems and increasing the targeted amount of subsidy redirecting, repurposing, reforming, or eliminating from US\$500 bn to \$US1 trillion.

Explicit indicators are needed to focus attention on grasslands, savannahs and

Experience with the Aichi targets shows that targets without measurable indicators tend to fail. Quantitative targets hold governments accountable and help them plan coherent action programmes. To highlight the key role of grasslands and savannahs, we suggest:

- Data on the World Database on Protected Areas, WD-OECMs and Protected Planet is broken down by major biome to help to achieve ecological representation in protected and conserved area networks (Target 3)
- Carbon sequestration in livestock rangelands and natural grasslands and savannahs be included as an indicator to measure progress in sustainable management (Target 10)
- The restoration target be increased to 50%, to match better the ambitions of other conventions and the overarching target of living in harmony with nature by 2050 (Target 2)

References

- ¹ Bengtsson, J., Bullock, J.M., Egho, B., Everson, T., O'Connor, T. ... Lindborg, R. 2019. Grasslands – more important for ecosystem services than you might think. *Ecosphere* **10** (2): [e02582](#).
- ² Conant, Richard T. 2010. Challenges and opportunities for carbon sequestration in grassland systems. FAO, Rome.
- ³ Dass, P., Houlton, B.Z., Wang, Y. and Warlind, D. 2018. Grasslands may be more reliable carbon sinks than forests in California. *Environmental Research Letters* **13**: [074027](#).
- ⁴ Yang, Y., Tilman, D., Furey, G. and Lehman, C. 2019. Soil carbon sequestration accelerated by restoration of grassland biodiversity. *Nature Communications* **10**: [718](#).
- ⁵ Bo, T.L., Fu, L.T. and Zheng, X.J. 2013. Modelling the impact of overgrazing on evolution processes of grassland. *Aeolian Research* **9**: [183-189](#).
- ⁶ Siebert, S., Burke, J., Faures, J. M., Frenken, K., Hoogeveen, J., et al. 2010. Groundwater use for irrigation – a global inventory, *Hydrology and Earth System Sciences* **14**: [1863-1880](#).
- ⁷ UNCCD. 2017. *Global Land Outlook*. UN Convention to Combat Desertification, Bonn
- ⁸ Duan, C., Shi, P., Zhang, X, Zong, N., Chai, X. et al. 2017. The Rangeland Livestock Carrying Capacity and Stocking Rate in the Kailash Sacred Landscape in China. *Journal of Resources and Ecology* **8** (6): [551-558](#)
- ⁹ ILRI, IUCN, FAO, WWF, UNEP and ILC. 2021. *Rangelands Atlas*. [ILRI](#), Nairobi Kenya.
- ¹⁰ O'Mara, F.P. 2012. The role of grasslands in food security and climate change. *Annals of Botany* **110** (6): [1263-1270](#).
- ¹¹ Michalk, D.L., Kemp, D.R., Badgery, W.B., Wu, J., Zhang, Y. and Tomassin, P.J. 2018. Sustainability and future food security: a global perspective for livestock production. *Land Degradation and Development* **30** (5): [561-573](#).
- ¹² Michalk, D.L., Kemp, D.R., Badgery, W.B., Wu, J., Zhang, Y. and Tomassin, P.J. 2018. Sustainability and future food security: a global perspective for livestock production. *Land Degradation and Development* **30** (5): [561-573](#).
- ¹³ Sayre, R., Karagulle, D., Frye, C., Boucher, T., Wolff, N.H. et al. 2020. An assessment of the representation of ecosystems in protected areas using new maps of World Climate Regions and World Ecosystems. *Global Ecology and Conservation* **21**: [e00860](#).
- ¹⁴ UNCCD. 2017. *Global Land Outlook*. UN Convention to Combat Desertification, Bonn.
- ¹⁵ Carbutt, C., Henwood, W.D. and Gilfedder, L.A. 2017. Global plight of temperate grasslands: going, going, gone? *Biodiversity Conservation* **26**: [2911-2932](#).
- ¹⁶ Jacobson, A.P., Riggio, J. Tait, A.M. and Baille, J.E.M. 2019. Global areas of low human impact ("Low Impact Areas") and fragmentation of the natural world. *Scientific Reports* **9**: [14179](#).
- ¹⁷ Nelson, R. 2006. Regulating grassland degradation in China: shallow-rooted laws. *Asian-Pacific Law and Policy Journal* **7** (2): [385-417](#).
- ¹⁸ Lambin, E. F. and Meyfroidt, P. 2011. Global land use change, economic globalization, and the looming land scarcity. *Proceedings of the National Academy of Sciences* **108** (9): [3465-3472](#).
- ¹⁹ Veldman, J.W., Overbeck, G.E., Negreiros, D., Mahy, G., Le Stradic, S. et al. 2015. Tyranny of trees in grass biomes. *Science* **347** (6221): [484-485](#).
- ²⁰ Wilson Fernandes, G., Serra Coelho, M., Bomfim Machado, R., Ferreira, M.E., Moura de Souza Aguiar, L. et al. 2016. Afforestation of savannas: an impending ecological disaster. *Natureza & Conservação* **14**: [146-151](#).
- ²¹ Bond, W.J., Stevens, N., Midgley, G.F. and Lehmann, C.E.R. 2019. The trouble with trees: Afforestation plans for Africa. *Trends in Ecology and Evolution* **34** (11): [963-965](#).
- ²² Molinari, N. and D'Antonio, C.M. 2014. Structural, compositional and trait differences between native- and non-native-dominated grassland patches. *Functional Ecology* **28**: [745-754](#).
- ²³ Williams, N.S.G., McDonnell, M.J. and Seager, E.J. 2005. Factors influencing the loss of an endangered ecosystem in an urbanising landscape: a case study of native grasslands from Melbourne, Australia. *Landscape and Urban Planning* **71**: [35-49](#).
- ²⁴ Laurance W.F., Clements, G.R., Sloan, S., O'Connell, C.S., Mueller, N.D., et al. 2014. A global strategy for road building. *Nature* **513**: [229-232](#).
- ²⁵ Wilson Fernandes, G., Barbosa, N.P.U., Alberton, B., Barbieri, B., Dirzo, R. et al. 2018. The deadly route to collapse and uncertain fate of Brazilian rupestrian grasslands. *Biodiversity Conservation* **27**: [2587-2603](#).
- ²⁶ Pulido, M., Schnabel, S., Lavado Contado, J.F., Lozano-Parra, J. and González, F. 2016. The impact of heavy grazing on soil quality and pasture production in rangelands of SW Spain. *Land Degradation and Development*. [DOI: 10.1002/ldr.2501](#).
- ²⁷ Barati, A.A., Asadi, A., Kalantari, K., Azadi, H. and Witlox, F. 2015. Agricultural land conversion in Northwest Iran. *International Journal of Environmental Research* **9** (1): [281-290](#).
- ²⁸ Costantini, D. 2015. Land-use changes and agriculture in the tropics: pesticides as an overlooked threat to wildlife. *Biodiversity Conservation* [DOI 10.1007/s10531-015-0878-8](#).
- ²⁹ UNEP. 2014. *UNEP Year Book 2014: Emerging issues in our global environment*. United Nations Environment Programme, Nairobi, pp. 6-11.
- ³⁰ Paini, D.R., Sheppard, A.W., Cook, D.C., de Barro, P.J., Worner, S.P., et al. 2016. Global threat to agriculture from invasive species. *Proceedings of the National Academy of Sciences* **113** (27): 7575-7579.
- ³¹ Bhandari, M.P. 2018. Impact of tourism of off road driving on vegetation biomass: a case study of Masai Mara National Reserve, Narok, Kenya. *SocioEconomic Challenges* **2** (3).
- ³² Craine, J.M., Ocheltree, T.W., Nippert, J.B., Towne, E.G., Skibbe, A.M. et al. 2012. Global diversity of drought tolerance and grassland climate-change resilience. *Nature Climate Change* **3**: [63-67](#).
- ³³ Zong, X., Tian, X. and Yin, Y. 2020. Impacts of climate change on wildfires in Central Asia. *Forests* **11**: [802](#).
- ³⁴ Derner, J.D. and Schuman, G.E. 2007. Carbon sequestration and rangelands: a synthesis of land management and precipitation effects. *Journal of Soil and Water Conservation* **62** (7): [77-85](#).
- ³⁵ Van Oijen, M., Bellocchi, G. and Höglind, M. 2018. Effects of climate change on grassland biodiversity and productivity: the need for a diversity of models. *Agronomy* **8** (2): [14](#).
- ³⁶ Zhu, H., Fu, B., Wang, S., Zhu, L., Zhaang, L. et al. 2015. Reducing soil erosion by improving community functional diversity in semi-arid grasslands. *Journal of Applied Ecology* **52**: [1063-1072](#).
- ³⁷ Dudley, N., Eufemia, L., Fleckenstein, M., Periago, M.E., Petersen, I. and Timmers, J.F. 2020. Grasslands and Savannas in the UN Decade on Ecosystem Restoration. *Restoration Ecology* **28** (6): [1313-1317](#).

For more information

Martina Fleckenstein, Global Policy
Manager Food, WWF
mfleckenstein@wwfint.org

Karina Berg, Lead Global Grassland &
Savannah Initiative, WWF
karinaberg@wwf.org.br

Nigel Dudley, Equilibrium research
www.equilibriumresearch.com



Working to sustain the natural
world for the benefit of people
and wildlife.

together possible. panda.org

WWF® and ©1986 Panda Symbol are owned by WWF. All rights reserved.

WWF, 28 rue Mauverney, 1196 Gland, Switzerland. Tel. +41 22 364 9111

CH-550.0.128.920-7