Agroforestry Network

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SCALING UP AGROFORESTRY
A POLICY BRIEF

Agroforestry provides means to combat increasingly urgent challenges posed by climate change, biodiversity loss, food insecurity, and other global issues. It has the potential to improve ecosystem services, local economies and rural livelihoods (FAO 2013; FAO 2021). At present, agroforestry is gaining more prominence in international policy meetings and several countries have adopted national policy support, strategies or action plans to promote agroforestry adoption (FAO 2020; Lin et al. 2021). However, despite its benefits and recent policy progress, the agroforestry sector remains largely disadvantaged by several barriers which prevent agroforestry from being scaled up efficiently (Agroforestry Network 2018). This brief focuses on the most crucial opportunities, barriers and actions for disseminating agroforestry systems more widely. If the recommended actions are addressed, the expansion of agroforestry for sustainable landscapes and food systems can be accelerated.

This brief has been developed for policy decision-makers and advisors engaged in international affairs. The recommendations provided in this brief aim to stimulate private and public investments, as well as engagement towards accelerating the scaling-up process of agroforestry.

AGROFORESTRY IN A NUTSHELL
Agroforestry is an integrated land management system in which trees and shrubs are deliberately managed together with agricultural crops and/or livestock (FAO 2021). Agroforestry is a diversified production system that generates multi-solutions and suits various socio-ecological settings. It has been practised for millennia across the globe by land users on multiple scales (FAO 2021; World Agroforestry 2021c).

Maurice Onyara's agroforestry farm. Photo: Alex Kamweru.

AGROFORESTRY AND THE SUSTAINABLE DEVELOPMENT GOALS (SDGS)
When designed and implemented based on context, agroforestry combines sustainable agricultural practices with tree growing – resulting in ecologically intensified land use (FAO 2013). Its positive outcomes have the potential to contribute to a more resilient food system and at least nine of the 17 SDGs (Agroforestry Network 2020a; Agroforestry Network 2019).

For instance, agroforestry:
- increases agricultural productivity;
- helps protect and strengthen ecosystem functions;
- increases resilience to climatic fluctuations;
- ensures dietary diversity;
- diversifies rural activities and income sources;
- helps preserve indigenous farming knowledge (FAO 2013).

The FAO recognizes these advantages and agroforestry has been praised in international policy fora, such as: UN Food Systems Summit, Convention on Biological Diversity, United Nations Framework Convention on Climate Change, etc. (FAO 2020; FAO 2021).

SCALING UP – WHAT DOES IT MEAN?
Scaling up refers to the expansion, adaptation and replication of successful innovations, policies, knowledge and programmes that can deliver larger and more sustainable results for a greater number of people (IFAD 2021; Seghieri et al. 2021).

Agroforestry-related research distinguishes between four predominant ways to scale up agroforestry:
- Identify and develop markets for agroforestry products (e.g. create strategic and fair partnerships that connect farmers to local markets and processing industries through contract farming or outgrower schemes).
- Support farmer adoption (e.g. knowledge and information sharing, increase access to quality planting material).
- Improve extension delivery services (e.g. through processors, farmer organizations, government or private extension and advisory programmes).
- Improve agroforestry technology (e.g. farmer-centred participatory research, innovative research and development on more efficient agroforestry systems across larger spatial scales).
  (Government of India 2014; Buck et al. 2020).

ADAPTATION AND INCLUSION FOR SUCCESSFUL UPSCALING
A successful upscaling process should be adapted to local conditions (biophysical, socioeconomical, political, cultural, etc.), available resources and the priorities of farmers. Therefore, scaling agroforestry cannot succeed without participatory methods that consider local farmers' experience, capacity, needs and preferences (Moberg et al. 2016; Seghieri et al. 2021). For instance, it is crucial to identify the tree species diversity that farmers want depending on incentives from markets, traditional knowledge, labour availability, household needs and so forth (Seghieri et al. 2021; Franzel et al. 2004).

After all, scaling is not a value-free process, which means that ambitions to scale up can be driven by different goals and actors. Hence, trade-offs between different stakeholders may arise that need to be mitigated (Moberg et al. 2016; Seghieri et al. 2020). Social inclusion involving a wide range of stakeholders and sectors, designing context-based agroforestry options, collaborative knowledge production, building partnerships and institutional capacity in local communities are thus indispensable in identifying successful upscaling actions (Buck et al. 2020; Seghieri et al. 2021).

KEY OPPORTUNITIES TO SCALE UP AGROFORESTRY
Current challenges facing the agri-food sector, along with increased international attention on agroforestry, present key opportunities for supporting the scaling-up of agroforestry. The following opportunities are particularly significant and should be exploited.

Agroforestry provides a unique opportunity to address land degradation and biodiversity loss, and contribute to climate change adaptation and mitigation. Agroforestry practices increase the resilience of communities to climatic shocks and simultaneously sequester carbon in biomass and soils (Agroforestry Network 2018). Scaling agroforestry therefore contributes to the achievement of countries' Nationally Determined Contributions, Rio Conventions and other international frameworks and targets (FAO & ICRAF 2019).

The COVID-19 pandemic and other recent agri-food system shocks have exposed the vulnerability of regional supply and value chains. Diverse agroforestry systems can shorten supply chains and strengthen smallholder farmers' adaptive capacity to future shocks (Lin et al. 2021).

Agroforestry innovations already exist in policies. In numerous cases, public policy support, national strategies and action plans have played a major role in upscaling agroforestry. For instance, both India and Nepal (Box 1) have adopted a National Agroforestry Policy (Bernard et al. 2019), and nearly all ASEAN Member States have included agroforestry in their national agricultural and forestry programmes (Lin et al. 2021). Moreover, during the UN Food Systems Summit in 2021, Kenya's president acknowledged agroforestry as one of the country's specific actions to expedite ecosystem restoration efforts (UN 2021).

There is a growing body of scientific knowledge that illustrates the benefits of agroforestry. Globally, universities and agroforestry research centres contribute with vital context-specific research. World Agroforestry (ICRAF) has been at the forefront of agroforestry research since 1978 (Ajayi et al. 2012; World Agroforestry 2021a). Many agricultural and forestry universities in Africa have embedded agroforestry in their curricula (Bernard et al. 2019). This is a fundamental opportunity to further unlock agroforestry innovations.

Thanks to agroforestry, Consolata Chikombe had a greater variety of food than her neighbours during the COVID-19 pandemic. Photo: Alex Kamweru.

Across the world, successful agroforestry projects with far-reaching impacts are already completed or ongoing. Several projects are based on developing diversified market opportunities for agroforestry products, supporting the development of agroforestry value chains, providing site-specific agroforestry designs with indigenous tree species, and strengthening cooperative development between farmers and other stakeholders (World Agroforestry 2019; World Agroforestry 2021b; NIRAS 2021, unpublished data). In addition, various agroforestry systems are mechanized, practise precision farming and apply digital technologies (Pentagrama 2021; Honoré 2012; The Organic Research Center 2021). These practical experiences confirm that agroforestry is not limited to small-scale food production, and should be illustrated as a potential large contributor to diversified production systems where traditional knowledge is married with modern technology.

Agroforestry provides income diversification opportunities for rural people. Agroforestry farming is innovative, diversified and dependent on skilled labour. Agroforestry thus promotes employment opportunities for rural populations, which is especially important for women and youth. In turn, rural labour migration arising out of necessity can potentially be reduced. For more in-depth deliberations, see the previous policy brief "Agroforestry and migration" and the brand-new brief "Agroforestry and Youth" (Agroforestry Network 2019; Agroforestry Network 2021).

Agroforestry addresses malnutrition by diversifying diets for consumers and farmers. When correctly designed, agroforestry can provide farmers with a range of nutritious crops, nuts, fruits and leaves, for either household consumption or as market revenues. For more detailed information, see the previous policy brief "Agroforestry, food security and nutrition" (FAO 2018; Agroforestry Network 2020b).

Agroforestry reduces deforestation pressure on existing primary and secondary forests through supplementation with agroforestry products, such as fuelwood, charcoal, fodder and timber (FAO 2015).

OVERCOME BARRIERS FOR SCALING UP AGROFORESTRY

Unsupportive policies
Agroforestry spans many governmental sectors, but primarily agriculture and forestry. However, coordinated action and collaboration between sectors are lacking, which prevents future scaling-up (FAO & ICRAF 2019). Many countries also have national policies that directly impede the expansion of agroforestry practices, e.g. through restricted access to, use and sale of various tree products (Bernard

Bamboo seedlings. Photo: Linda Andersson.

et al. 2019; FAO 2013; Johansson et al. 2013). It is thus necessary to review whether policies assist the scaling of agroforestry and strengthen institutional coordination across ministries, departments and sectors – something Ethiopia has successfully accomplished (see Box 2). (Bernard et al. 2019).

Knowledge-intensive and time-demanding
At the farm level, constraints to scaling up agroforestry include:
- Longer gestation period of trees in comparison to annual crops, slow return on investments, cost of planting trees, and farmers' previous inexperience with managing trees.
- Inadequate funding and training of extension services.
- Lack of quality planting material (germplasm for indigenous trees, seeds, nurseries etc.), post-harvesting technologies and infrastructure.
(Government of India 2014; Buck et al. 2020).
For these reasons, developed specialized extension and advisory services, improved access to quality planting material and funding to farmers (e.g. institutional credit or insurance cover) during the implementation period are vital ways to support farmers during the scaling process (Government of

Joinging a savings and loans group has helped Sandra Nakigudde scale up. Photo:Edward Echwalu.

India 2014; Agroforestry Network 2018; FAO 2013). Farmer cooperatives, learning networks and further integration of local agroforestry management in basic education (short-term extension courses, audiovisuals, etc.) are also recommended for transferring traditional knowledge to and within communities (van Noordwijk 2019; Bernard et al. 2019).

Lack of large-scale research
The majority of available research is often retained in education institutions and limited to farm level, whereas participatory research on larger agroforestry models viable across different agro-ecological regions is scarce (Government of India 2014; FAO 2013; Ajayi et al. 2012; Franzel et al. 2004). Consequently, large-scale implementation of agroforestry is held back.

Poor market structures
At the market level, the scaling of agroforestry is restricted as a result of poorly developed value chains and markets for non-timber forest products (NTFPs), inadequate marketing infrastructure, high transaction costs (risk of lowering the profit) and limited governmental incentives for investing in ecosystem services (Agroforestry Network 2018; Buck et al. 2020). Previous experience indicates that the upscaling process is triggered when market opportunities for agro-

forestry products are created (Ajayi et al. 2012). Adopting measures to increase the economic benefits of agroforestry technologies is therefore a prerequisite for scaling, especially for smallholder farmers.

Such measures include:
- Implementing governmental initiatives through e.g. payment schemes for ecosystem services, grants, costsharing programmes, subsidies or microcredits for agroforestry.
- Strengthening farmers' access to markets for NTFPs (Government of India 2014; FAO 2013; Lin et al. 2021)
- Forming inclusive producer groups for collaborative activities on marketing and value addition of agroforestry produce (Agroforestry Network 2018; Government of Nepal 2019).
- Developing agroforestry-based industries and supply chains for quality planting material as well as NTFPs (Government of India 2014).

Unclear land rights
Insecure land tenure is a significant issue due to the long time required for farmers to test, adapt and adopt agroforestry practices. In the absence of clearly defined and stable property rights, farmers and pastoralists are reluctant

to invest capital and labour in tree crops (Buck et al. 2020; Bernard et al. 2019). Gender inequity likewise restricts the upscaling process since female farmers in particular have less access to markets and often lack complete land ownership. If agroforestry is to be widely adopted, securing land rights is a must (FAO & ICRAF 2019).

INSPIRATIONAL MULTI-STAKEHOLDER PLATFORM
Ethiopia established in 2019 a National Watershed and Agroforestry Multi-Stakeholder Platform (NWAMP) which aims to develop agroforestry strategies and accelerate the scaling-up of agroforestry throughout the country. The initiative is co-chaired by both the environmental and agricultural ministries, and aspires to facilitate awareness-raising and harmonization across sectors. NWAMP will mobilize greater financial support for agroforestry, and assist monitoring and evaluation of the performance of agroforestry practices and the scaling-up progress (Bernard et al. 2019; Getahun 2019).

RISKS WHEN SCALING UP

Standardized public policies and programmes tend to neglect the local context in which they are implemented (Seghieri et al. 2021) and are influenced by the political economy, e.g. intensifying trade flows of specific goods (Ajayi et al. 2012). One risk is therefore that policy measures prioritize market-oriented tree species and large tree-planting initiatives which often give rise to homogeneous agroforestry innovations that reduce biodiversity. In scientific literature, these systems are referred to as "agroforestry plantations" or "commercial agroforestry" (Ollinaho et al. 2021). The role of agricultural and forestry policies is rather to incentivize land users to invest in a wide variety of options in terms of appropriate tree species and agroforestry practices (Franzel et al. 2004; van Noordwijk 2019) and simultaneously mitigate negative effects of commercialization (Moberg et al. 2016).

Long-term planning is particularly important when scaling agroforestry innovations, since tree crops require time before yielding harvest. There is however a risk of pseudo-adoption in projects, i.e. farmers who use agroforestry technologies only when a project actively supports them (Kiptot et al. 2007). In addition, offering free inputs or providing payment to farmers who plant trees often risks suppressing private sector nurseries and investment in germplasm improvement. To conclude, projects must ensure sustained adoption of diverse agroforestry activities – not create dependency on external inputs and stifle private actors (FAO 2013).

RECOMMENDATIONS FOR POLICY- AND DECISION-MAKERS

1. Develop national agroforestry policies, strategies and action plans that acknowledge the importance of trees in rural development, provide distinct guidance for the scaling-up process, and organize cross-sectoral coordination across ministries responsible for agroforestry.

2. Ensure a participatory approach and context-specific implementation of diversified, indigenous agroforestry systems. Agroforestry cannot develop or succeed without the cooperation of local people and adaptation to local conditions.

3. Identify and reform restricting land tenure to promote agroforestry adoption and development. Securing farmers' access to land must be a participatory process with gender dimensions fully taken into consideration.

4. Communicate the know-how by increasing investments in both private and public extension and advisory services for agroforestry. This must be done with strong links to research institutions that broadcast agroforestry research and traditional knowledge to agricultural/forestry advisory staff.

5. Invest in adaptive and inclusive agroforestry research and development (R&D) that ensures co-learning amongst researchers, farmers, private sector actors, government and other stakeholders. Initiate capacity building and pilot studies/testing of agroforestry in major agro-climatic zones, moving beyond farm-level research.

6. Increase financial incentives and investments that enable and add value to the agroforestry sector. Provide necessary arrangements for implementing payment schemes for ecosystem services, grants, cost-sharing programmes, subsidies, microcredits, certification schemes, institutional credit or insurance systems for agroforestry practices.

7. Improve market access and develop value chains for agroforestry products by linking farmers to local markets and promoting agroforestry-based businesses.

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NWAMP will mobilize greater financial support for agroforestry, and assist monitoring and evaluation of the performance of agroforestry practices and the scaling-up progress.

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References

Agroforestry Network. (2018). *Scaling up agroforestry, Potential, challenges and barriers.* ISBN: 978-91-985041-0-1

Agroforestry Network. (2020a). *Migration and Agroforestry.* Policy brief. https://agroforestrynetwork.org/

Agroforestry Network. (2020a). *Agroforestry, Biodiversity and Ecosystem Services.* Policy brief. https://agroforestrynetwork.org/

Agroforestry Network. (2020b). *Agroforestry, Food Security and Nutrition.* Policy brief. https://agroforestrynetwork.org/

Ajayi, C.O. et al. (2012). Policy Support for Large-Scale Adoption of Agroforestry Practices: Experience from Africa and Asia. In: Nair, D., Garrity, D. (eds.). *Agroforestry – The Future of Global Land Use.* Dordrecht Heidelberg New York London: Springer. pp. 175-201

Bernard, F. et al. (2019). *Policy Gaps and Opportunities for Scaling Agroforestry in sub-Saharan Africa: Recommendations from a policy review and recent practice.* Policy brief. Regreening Africa.

Buck et al. (2020). Using integrated landscape management to scale agroforestry: examples from Ecuador. *Sustainability Science,* 15. pp. 1401–1415. https://doi.org/10.1007/s11625-020-00839-1

Coe, R. et al. (2014). Scaling up agroforestry requires research 'in' rather than 'for' development. Environmental Sustainability, 6. pp. 73-77. https://doi.org/10.1016/j.cosust.2013.10.013

FAO. (2013). *Advancing Agroforestry on the Policy Agenda: A guide for decision-makers,* by G. Buttoud, in collaboration with O. Ajayi, G. Detlefsen, F. Place & E. Torquebiau. Food and Agriculture Organization of the United Nations, Rome.

FAO. (2015). *Environmental concerns and agroforestry solutions.* https://www.fao.org/forestry/agroforestry/89999/en/

FAO. (2018). *Scaling up Agroecology Initiative.* FAO, Rome. https://www.fao.org/3/I9049EN/i9049en.pdf

FAO. (2020). *The potential of agroforestry to improve food security and land restoration.* https://www.fao.org/rwanda/news/detail-events/fr/c/1272673/

FAO. (2021). *Agroforestry.* https://www.fao.org/forestry/agroforestry/en/

FAO & ICRAF. (2019). *Agroforestry and tenure.* Forestry Working Paper no. 8. Rome. Licence: CC BY-NCSA 3.0 IGO

Franzel, S. et al. (2001). Scaling up the benefits of agroforestry research: lessons learned and research challenges. *Development in Practice,* 11 (4). pp. 524-534

Franzel, S. et al. (2004). Scaling up the impact of agroforestry: Lessons from three sites in Africa and Asia. *Agroforestry Systems,* 61. pp. 329–344. https://doi.org/10.1023/B:AGFO.0000029008.71743.2d

Getahun, E. (2019). Towards a National Watershed and Agroforestry Multi-Stakeholder Platform in Ethiopia. *World Agroforestry.* October 22. https://www.worldagroforestry.org/blog/2019/10/22/towards-national-watershed-and-agroforestry-multi-stakeholder-platform-ethiopia

Government of Nepal. (2019). *National Agroforestry Policy.* Ministry of Agriculture and Livestock Development. Kathmandu.

Government of India. (2014). National Agroforestry Policy. Ministry of Agriculture: Department of Agriculture and Cooperation. New Delhi.

Honoré, T. (2012). Trees breathing new life into French agriculture. *The Guardian.* August 21.

IFAD. (2021). *Scaling-up results.* https://www.ifad.org/en/scaling-up-results

Johansson, K-E. et al. (2013). The Pattern and Process of Adoption and Scaling up: Variation in Project Outcome Reveals the Importance of Multilevel Collaboration in Agroforestry Development. *Sustainability,* 5. pp. 5195-5224. doi:10.3390/su5125195

Kiptot, E. et al. (2007). Adopters, testers or pseudo-adopters? Dynamics of the use of improved tree fallows by farmers in western Kenya. *Agricultural Systems,* 94(2). pp. 509-519. DOI:10.1016/j.agsy.2007.01.002

Lin, T. et al. (2021). *State and outlook of agroforestry in ASEAN – Status, trends and outlook 2030 and beyond.* FAO, ICRAF, CGIAR Research Program on Forests, Trees and Agroforestry, SEARCA. Bangkok. https://doi.org/10.4060/cb7930en

Moberg, F., et al. (2016). *Scaling up agroecology for food security, empowerment and resilience.* Policy brief. SIANI.

O'Connell, E. (2020). Nepal: the second country with a national agroforestry policy. *CGIAR.* December 15. https://www.foreststreesagroforestry.org/news-article/nepal-now-the-second-country-with-a-national-agroforestry-policy/

Ollinaho, O. et al. (2021). Agroforestry transitions: The good, the bad and the ugly. *Journal of Rural Studies,* 82. pp. 210-221. https://doi.org/10.1016/j.jrurstud.2021.01.016

Pentagrama. (2021). *Large-scale Agroforestry Systems.* https://www.pentagramaprojetos.com.br/en/large-scale-agroforestry-systems/

Seghieri, J., et al. (2020). Research and development challenges in scaling innovation: a case study of the LEAP-Agri RAMSES II project. *Agroforestry Systems,* 95. pp. 1371–1382. https://doi.org/10.1007/s10457-020-00532-3(0

Seghieri, J. et al. (2021). Introduction to the special issue "scaling up of agroforestry innovations: enhancing food, nutrition and income security". *Agroforestry Systems,* 95. pp. 1245–1249 https://doi.org/10.1007/s10457-021-00689-5

The Organic Research Center. (2021). *Stephen Briggs.* https://www.agricology.co.uk/field/farmer-profiles/stephen-briggs

UN. (2021). *Food Systems Summit Statement Kenya.* United Nations. https://www.un.org/sites/un2.un.org/files/FSS_statement_Kenya.pdf

van Noordwijk M, ed. (2019). Sustainable development through trees on farms: Agroforestry in its fifth decade. Bogor, Indonesia: World Agroforestry (ICRAF).

World Agroforestry. (2019). *About Regreening Africa.* https://regreeningafrica.org/about/

World agroforestry. (2021a). *About us.* https://worldagroforestry.org/about-us

World Agroforestry. (2021b). *Agroforestry and Forestry in Sulawesi: Linking Knowledge with Action.* https://www.worldagroforestry.org/project/agroforestry-and-forestry-sulawesi-linking-knowledge-action

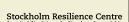World Agroforestry. (2021c). *What is Agroforestry.* https://www.worldagroforestry.org/about/agroforestry

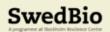Leonidas Kahima's agroforestry plot in Northwest Tanzania. Photo: Katie O'Sullivan.

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