

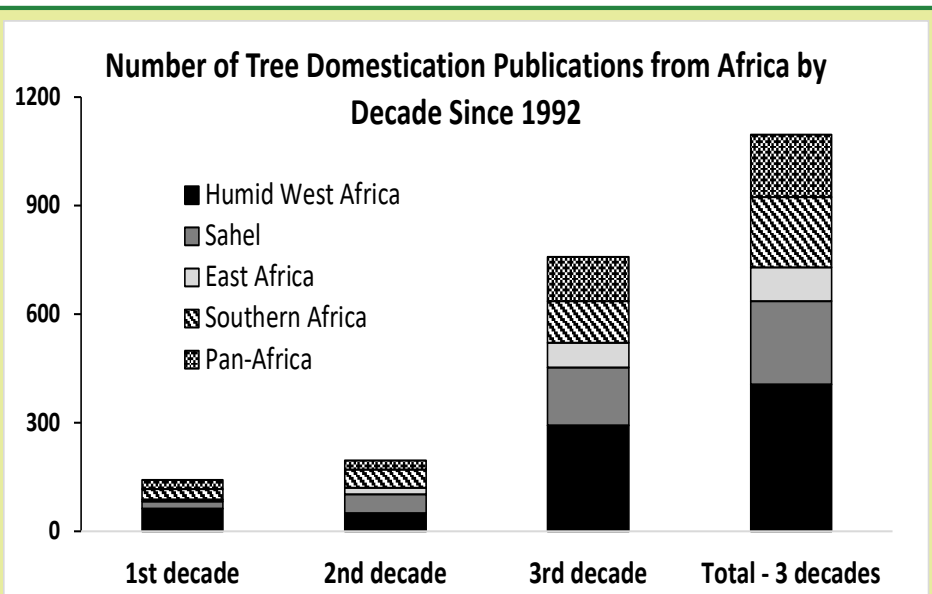
Green Revolution, which has been perpetuated by globalisation.

The perception has been fed strongly into research and development across the continent due to a failure to recognise the very different social, economic, and environmental conditions prevailing in temperate and tropical countries. For example, there is a general blindness to the day-to-day impacts of these differences on poor and marginalised smallholder subsistence households across African communities. These impacts arise from the very substantial differences in farm size, mechanisation, the inequalities in the social and economic structure of rural communities, and the poor access to financial capital.

Furthermore, inappropriate intensification policies, unfair international trade and the lack of income generation opportunities combine to constrain agricultural productivity by driving the downward spiral of 'Land Degradation and Social Deprivation'.

The effects of these outcomes are manifested as 'Yield Gaps' in staple food production which impede national programmes for food and nutritional security, social justice, climate change mitigation and protection of biodiversity habitat. Intricately intertwined with all this are issues of culture, community, dignity, and environmental rights, which are linked to the use of traditional foods, medicines and other everyday items originating from indigenous plants.

The solution, I believe, is to question, understand and address the complex drivers of Yield Gaps by thinking 'outside the box' embodied by the conventional approach to farm intensification. In much of Africa, this common approach is based on the growth of a small number of staple food crops as monocultures by households living on the brink of



The growth of tree domestication research in Africa done by 532 research teams from 34 African countries over the last three decades. Source: "The future of food: domestication and commercialisation of indigenous food crops in Africa over the third decade - 2012-2021", *Sustainability* 14:2355.

## Correcting the global imbalance in agricultural development: mainstreaming indigenous African species as new crops

By Prof Roger RB Leakey

**MEDIA** reports sometimes tend to portray African agriculture as more about feeding the urban population than rebuilding resilient livelihoods for poor, food-insecure and marginalised communities across the continent.

Hopefully this article will show many of those engaged in up-stream technologies and business, ways in which their work could contribute to a stronger focus on

the local cultivation of indigenous African species to produce new foods, nutraceuticals, cosmetics and medicines.

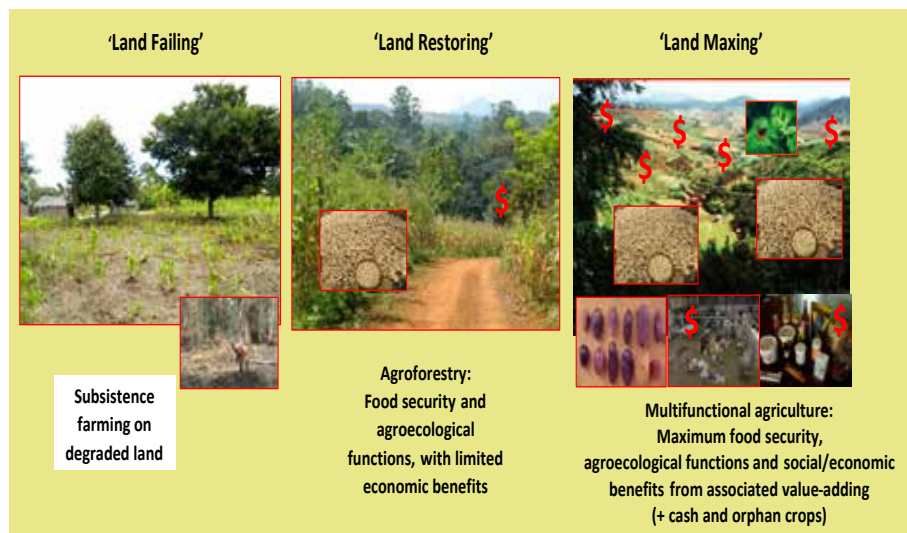
The dominant line of thought in international institutions, and even many in Africa, is that African agriculture must mirror that pioneered elsewhere in the world. It is a legacy from colonisation, the industrial revolution and the

[1] *Converting 'trade-offs' to 'trade-ons' for greatly enhanced food security in Africa: multiple environmental, economic and social benefits from 'socially modified crops'* | SpringerLink

the cash economy with only small, often fragmented, farms of 1-3ha. This means that with little income to support the family's health, education and other social expenses, the farm is managed with almost zero access to inputs to enhance soil fertility and/or combat pests and diseases. Under these conditions, sustainable food production is extremely difficult. A practical alternative, with a different philosophy, is to find ways of farming that harness local natural resources and traditional knowledge through community engagement.

Thirty years ago, farmers in Cameroon asked for help to cultivate their traditionally and culturally important trees, overlooked by agricultural science – species that used to provide many of their daily needs before deforestation made them hard to find. Since then, amazing progress has been made with the domestication of about 60 indigenous, highly nutritious, and marketable food tree species for cultivation as new crops (Figure 1), especially when implemented by communities. Typically, the wide range of products from these trees are informally traded in local markets, but there is great potential to select and multiply the elite trees found in wild populations that produce fruits/nuts/leaves with the exceptionally high-quality traits needed by new local businesses and industries: supported by local processing and value-addition to extend shelf life and open-up wider and more prolonged trade.

To achieve all this, a multidisciplinary package of relevant strategies using low-cost, appropriate and practical technologies has been developed with farmers and published in two books: “Multifunctional Agriculture – Achieving Sustainable Development Goals in Africa” for academic readers and “Living with the Trees of Life” for general readership. In addition, these publications describe how this community-based participatory tree domestication can be coupled with the well-known agroforestry techniques



***The transition from agriculture failure to Land Mxing by resolving the 'Cycle of Land Degradation and Social Deprivation' through the combination of agroforestry and the domestication and commercialisation of indigenous African food and non-food species as novel crops that produce domestically useful and marketable products for new business in combination with restoration of wildlife habitat and the mitigation of climate change.***

using nitrogen-fixing leguminous trees and shrubs to restore soil nitrogen fertility and create functional and sustainable agroecosystems on a smaller area of land (<https://news.mongabay.com/2018/01/trees-are-much-more-than-the-lungs-of-the-world-commentary/>).

This then results in a three-step generic model for rural development by seeking income generation opportunities from the processing and marketing of these new products to diversify and enhance the rural economy (The Great Reset Project – International Tree Foundation). (<https://internationaltreefoundation.org/the-great-reset-project/>) Together this offers a better future for the local population within a diversified and much more sustainable form of agriculture, which additionally generates positive global impacts including the restoration of wildlife habitat and the reduction of greenhouse gas emissions). This has been described as 'Rebooting tropical agriculture' recognising that 'African Lives Matter'.

Importantly, in a related initiative, the further diversification of these mixed cropping systems can be achieved by adding some of the neglected African herbaceous food species to create even healthier landscapes and diets, as described in “My Food is African” published by the Natural Food Barefoot Guides of the Alliance for Food Sovereignty in Africa. These under-utilised indigenous food species have been called 'orphan crops' because they were overlooked by the Green Revolution.

In conclusion, enhancing sustainable smallholder productivity using indigenous and wild foods is an important international policy and business intervention. I believe that this is vital for achieving the 2030 Sustainable Development Goals and the rebalancing of the global economy by restoring and recapturing natural, social and human capital within new African indigenous food industries. What is the missing ingredient? – it is our political, corporate and personal will to change the status quo.

***Prof Roger RB Leakey is the Vice President of the International Tree Foundation, Oxford, UK.***

2. [Multifunctional Agriculture - 1st Edition \(elsevier.com\)](#)
3. [Living with the trees of life. Towards the transformation of tropical agriculture | CABI Books \(cabidigitallibrary.org\)](#)
4. [A re-boot of tropical agriculture benefits food production, rural economies, health, social justice and the environment | Nature Food](#)
5. <https://doi.org/10.3390/su13137252>
6. [Sustainability | Free Full-Text | The Future of Food: Domestication and Commercialization of Indigenous Food Crops in Africa over the Third Decade \(2012&ndash;2021\) \(mdpi.com\)](#)