AGENTSCHAP INNOVEREN & ONDERNEMEN

Vlaanderen is ondernemen

DigitAF

2024

Roadmap 2.0

Towards an enabling environment for agroforestry in Flanders

Bert Reubens, Sarah Carton, Marlinde Koopmans, Helena Tavernier

AGROFORESTRY VLAANDEREN

Authors
Bert Reubens - ILVO
Sarah Carton – ILVO
Marlinde Koopmans - ILVO
Helena Tavernier - ILVO, KULeuven

Thank you
To the partners of the *Consortium Agroforestry Vlaanderen,* as they played an active role in the focus groups that inspired this roadmap.
To all farmers, advisors, policy actors, researchers and other actors who shared their experiences and participated in the agroforestry action clusters between 2020 and 2024.

Reference
Reubens B., Carton S., Koopmans M., Tavernier H. (2024). Towards an enabling environment for agroforestry in Flanders: Roadmap 2.0. 40p. DOI: 10.5281/zenodo.14006507.

Important note: This English version is a translation of the original Roadmap written in Dutch: Tavernier H., Koopmans M., Reubens B. (2024). Naar een stimulerende omgeving voor agroforestry in Vlaanderen: Roadmap 2.0. 41p. DOI: 10.5281/zenodo.14006507

More info and contact:
www.agroforestryvlaanderen.be
info@agroforestryvlaanderen.be

With the support of:

CONTENTS

5 PATHWAYS TO PROMOTE AGROFORESTRY

THE PATH OF SCIENCE AND TECHNOLOGY

Flanders is structurally committed to long-term research into the various dimensions (biophysical, socio-economic, etc.) and forms of agroforestry. This research starts from a system-oriented co-creation approach.

THE PATH OF ECONOMY

Agroforestry start-ups have tools to predict costs and benefits, making feasible and successful choices. Besides a correct price for harvestable products, ecosystem services are also valorised financially. Agroforestry products find their way.

THE PATH OF POLICY

Through an open discussion culture, the policy supports the scaling-up and scaling-out of successful and effective agroforestry systems so that choosing agroforestry on any farm is as viable an option as any other choice.

THE PATH OF EDUCATION

Every stakeholder in the agri-food system has a basic notion of agroforestry. To this end, these stakeholders are objectively informed through formal, non-formal or informal learning. The available knowledge is accessible and manageable.

THE PATH OF SOCIAL ENVIRONMENT

Agroforestry farmers experience support in their social environment. Local government, fellow farmers, local residents, and other actors in the immediate area know the added value of agroforestry systems and contribute to social support for them.

SUMMARY

Agroforestry is a farming system that is receiving attention for its considerable potential to respond to several major agricultural and societal challenges in Flanders and Europe. Although in Flanders we have been working on developing agroforestry policy and funding since 2011, practitioners still often find themselves in an uncertain context in terms of technicalities, financing and legislation. As a result, agroforestry initiatives largely remain the work of pioneers. Agroforestry is knowledge-intensive and requires a long-term commitment. The challenges faced by practitioners are often representative of the agricultural sector as a whole, but are particularly typical for pioneers in agroecological initiatives: land-based agricultural practices characterized by their commitment to diversity and multifunctionality, natural processes, enhancement of ecosystem services and offering a wide(r) diversity of (sometimes new) products.

Five pathways - Five future visions

The transformative potential of these agroforestry (and by extension other agroecological) initiatives is significant, but can only be realized if there is a willingness to institutionalize these innovative practices in our agrifood system based on a supportive base, cooperation and collaboration. Many actors play a guiding role in this story, and action must be taken simultaneously at several levels. The aim of this 'roadmap' is to offer a structured framework and inspiration for such action. We do this through five concrete development pathways: (1) the scientific and technological pathway, (2) the economic pathway, (3) the policy pathway, (4) the education pathway and (5) the social pathway. For each of these pathways, we identify the current bottlenecks and opportunities, put forward a future vision for 2035, and suggest priority actions to stimulate agroforestry in Flanders and beyond.

The visions for 2035 are as follows:

Scientific and Technological Pathway:

"Flanders is structurally committed to funding and facilitating long-term research into the various dimensions (biophysical, socio-economic, etc.) and various forms of agroforestry. This research starts from a system-oriented co-creation approach. This implies strong participation of all stakeholders, where each type of actor can contribute and share their role, experience and expertise, from the identification of the research questions to the execution of the research itself. This ensures that the solutions are practical, user-friendly and responsive to the real needs of all types of actors. Research focuses on the development of new techniques and technologies to support various agroforestry practices. In addition, research recognizes the complexity and addresses the need for (decision) support and unburdening of practitioners. Finally, an efficient research approach is pursued through a strong connection to the European research network and EURAF."

Economy Pathway:

"Farmers who want to start with agroforestry dispose of the necessary tools to predict the costs and benefits, also in the long term, and therefore make feasible and successful choices. In addition to a correct price for harvestable products, ecosystem services from agroforestry also receive recognition from society and are valued through innovative financing mechanisms. In addition, the value chain for the most common agroforestry products has been developed

through different levels and forms of cooperation, providing significant revenue from the production, processing and sale of these products."

Policy and Legislation Pathway*:*
"Policy supports scaling up of successful and effective agroforestry systems, to choose between implementing agroforestry on any farm as viable an option as any other choice. To this end, three major sub-objectives are realized: (1) A clear, coherent and workable legislative framework exists for agroforestry, fed by the sector and supported by a policy that recognizes the added value of agroforestry and actively stimulates its development, with sufficient room for experimentation, (2) a clear and quantitative ambition for the implementation of agroforestry has been formulated from the perspective of Flemish policy, and (3) continued efforts are made to support agroforestry entrepreneurs, both financially and in terms of guidance and advice."

Education Pathway:
"Every stakeholder in the agri-food system, or anyone who has an interest in or can play a role in the application of agroforestry, has at least a basic notion of what agroforestry entails and what opportunities it can offer. To this end, these actors are objectively informed through formal, non-formal or informal learning. The available knowledge and experience are accessible and manageable, and the necessary learning tools are developed for this purpose."

Pathway of Social Environment:

"Farmers who start agroforestry experience support in their social environment. Local government, fellow farmers, residents, others involved in the farm business, direct customers, land management authorities in the immediate vicinity and the general public recognize the added value of (products and services realized within) agroforestry systems and contribute to social support for it."

A clear and quantitative ambition

A successful transition depends on the formulation and pursuit of a clear vision (Kotter, 1996). Following the example of the Netherlands, at the Flemish level, a quantified objective of a certain (percentage of) agricultural area to be transformed into agroforestry can be set for 2035, with an associated binding policy framework with ambitions to achieve this objective.

Important to its success, one must also work to optimize synergies between policy objectives (e.g. climate, biodiversity, water quality, health, etc.) and translate these into agricultural policy. Ideally, this is designed through a region-oriented approach based on a strong vision for future agricultural development in the envisioned area. To develop agroforestry, interaction must be encouraged between policy domains and levels, between different links in the value chain, and together with consumers.

Support for practitioners, both financially and in terms of research, guidance and advice.

The current (mainly financial) support for agroforestry in Flanders is insufficient to significantly stimulate its growth. Therefore, there is a demand from practitioners for more and other types of support. One could envision facilitating learning networks, providing independent advice to agroforestry entrepreneurs and performing long-term research to develop practical insights and collect data that can motivate and convince other actors.

Joining forces for a coordinated and efficient approach to research and development

In Belgium, the Netherlands, and Europe as a whole, many (research and other) actors are working on agroforestry, sometimes also under the umbrella of the European Agroforestry Federation (EURAF). For each of the abovementioned pathways and priority actions, it is therefore very important to seek synergies and avoid overlap. This is particularly important in terms of research and development: a coordinated approach, where research and development results are shared transparently, but where priorities are also set jointly, contributes to an efficient and targeted approach. A coherent policy requires alignment across borders.

Umbrella initiatives such as the *Consortium Agroforestry Vlaanderen*, the Agroforestry Network Netherlands and EURAF contribute to maximizing connection by joining various actors in a network where they share results with each other and organize regular exchanges on a regular basis. Such cross-project collaborations should be strengthened further.

A roadmap as a compass and stepping stone

This roadmap should be read and used as a dynamic working document: it is never completely finished, evolves with changing circumstances and is intended as a guide and reference framework for the further development of customized actions and recommendations. The future visions formulated in this report thus serve as a kind of compass showing what has already been realized and what still needs to be realized. In short, they bring a focus and then also help give direction to activities that contribute to the future visions and the resulting objectives and action plans.

In the next phase, the predetermined visions and actions will still have to be operationalized into "SMART" (Specific, Measurable, Acceptable, Realistic and Time-bound) objectives and concrete action plans. Before this can be achieved, e.g. also success indicators will have to be identified.

This roadmap shows that creating a supportive environment for agroforestry (and even broader for all pioneering forms of agroecological agriculture) goes beyond making subsidies available to farmers. A systemic approach that focuses not only on farmers but activates all actors in the (circular) food system is needed. This requires adjustments in policy, education, research and the agri-food chain as a whole. Sometimes these are very small adjustments, sometimes they are structural and transformative of nature. Success will depend on support from a broad range of actors.

We wish to emphasize that this roadmap should also be read and used as a stepping stone. Realizing this tangible, concrete pathway around agroforestry could contribute to enabling many other forms of pioneering, agroecological agriculture.

Finally, please note that this English version is a translation of the original Roadmap written in Dutch, and developed specifically for the Flemish context. Some context-specific concepts or cases are hard to translate and therefore might read somewhat oddly.

INTRODUCTION

Times are changing: Striving for a transition in the agri-food system

Current agricultural development in our region is characterized by the growth of industrialization, large-scale farming and specialization. This has a major and often adverse impact on biodiversity, water quality and landscape development. In addition to the impacts on the environment and landscape, there is also an impact on the use of indirect components in an agri-food system. For example, the production and transportation of fertilizers, pesticides, concentrate feed and machinery results in massive use of energy, land, and labour in other parts of the world (Smit 2022). Finally, global trends such as urbanization, a growing world population, pollution and climate change are increasingly challenging “business as usual”. It is therefore not surprising that the UN Food Systems Summit 2021 fully recognized the need for food systems transformation as a way to achieve the Sustainable Development Goals by 2030 (UN FSS 2021).

The EU launched the Green Deal, which sets out how Europe can become the first climate-neutral continent by 2050. It includes a new, sustainable and inclusive growth strategy to boost the economy, improve people's health and quality of life, take care of nature and leave no one behind. An important part of this strategy is the Farm to Fork strategy launched in 2020 aimed at making food systems fair, healthy and environmentally friendly. The Farm to Fork and Biodiversity Strategies are put forward as the basis for the transformation to sustainable food systems at the European level to contribute to the goal of a climate-neutral Europe. Both strategies aim to bring together primary producers, businesses, researchers and innovators, the public sector and consumers, and work together towards a sustainable future.

In Belgium, the Flemish Agency for Agriculture and Sea Fisheries is also striving for an accelerated "transition to a future-oriented sustainable food system" (*Transitie naar een toekomstgericht duurzaam voedselsysteem*, Department of Agriculture and Fisheries, 2022). It wants to focus on a resilient food economy, connecting farmers and citizens, circular and sustainable businesses for the future and healthy and sustainable food for all. This approach aims to provide sufficient incentives to accelerate the development of a sustainable food system.

The very recently published "Strategic Dialogue on the future of EU Agriculture (2024)" recognizes agroecology as a globally important concept that can lead the transition towards sustainability, resilience and social justice. This Strategic Dialogue calls for the promotion of agroecological practices at all levels by the European Commission and all EU member states, also very explicitly naming agroforestry practices.

Effectively, agroforestry is increasingly being mentioned as a very promising approach for supporting that transition to sustainable and regenerative agriculture.

> *"We have been changing the environment around us by oversimplifying it, towards maximizing production. Now, agroforestry is a tool for regeneration*."
> (Humberto Delgado Rosa, DG ENVI at the Agromix Policy Summit, April 2024)

Agroforestry is defined as a farming system where trees and/or shrubs are deliberately combined with an agricultural crop or farm animals on the same plot of land. This type of agriculture takes different forms. Traditionally in Flanders, we see the more classical forms such as standard fruit orchards or poplar meadows combined with grazing, pollarded willows along the edge of a plot, hedgerows and shelterbelts. But more modern forms of agroforestry

such as alley cropping, where rows of trees are alternated with rows of crops, are becoming more popular.

Agroforestry has great potential because of the numerous ecosystem services it can provide. For example, agroforestry can contribute regulatory services such as protection from erosion, shelter for livestock, climate adaptation through buffering, and climate mitigation through storing carbon in the woody biomass and the soil through leaf fall. Agroforestry also provides multiple products such as nuts, fruits and wood (productive services). Trees and shrubs also provide shelter and habitat for numerous - often functional - organisms, which certainly benefits biodiversity. Agroforestry also has much to offer on a socio-cultural level: think of the restoration of traditional landscapes with heritage value, assets for agritourism and opportunities for educational functions.

Partly because of these strengths, more and more governments are investing in agroforestry and we are noticing a strong increase in interest among farmers to get started with agroforestry. Yet there is still a long way to go.

Agroforestry is still in the pioneering phase

Many agroforestry initiatives are currently the work of pioneers. Current regulations as well as the market are often geared towards specialized and rather large-scale farms, which means that these pioneers, with their diversity of products and production methods, often find themselves in an uncertain context, both from economic perspective and in terms of rules and regulation. Investing in agroforestry today yields an income only in the (longer) term, which creates uncertainty: How will the market evolve? Is there even a market for my product? Can I get the right price for it? But also: will I be allowed to harvest the trees to market the wood? Can I process the fruits and nuts myself? What about legislation on food safety and animal welfare in combined cropping systems? What measures can (and may) I take to suppress disease and pests? This uncertainty about profitability and the lack of a (coherent) regulatory framework does not yet form a stable basis for most farmers to start agroforestry. In addition, an agroforestry system brings together knowledge of forestry and agriculture. The available knowledge is sometimes still limited and especially fragmented. Pioneers therefore build up new knowledge about the interaction between these two components and look for already available knowledge from research and other channels. They also experiment with (for our region) new products such as chestnut flour or walnut cheese, and develop new markets and chains.

In Geels and Schot's (2007) terms of transition, these pioneers are at a niche level in a regime and landscape that focuses on other types of agri-food systems. Geels and Schot visualize a transition as a connection between developments at three analytical levels: the regime, the niche and the landscape (Figure 1).

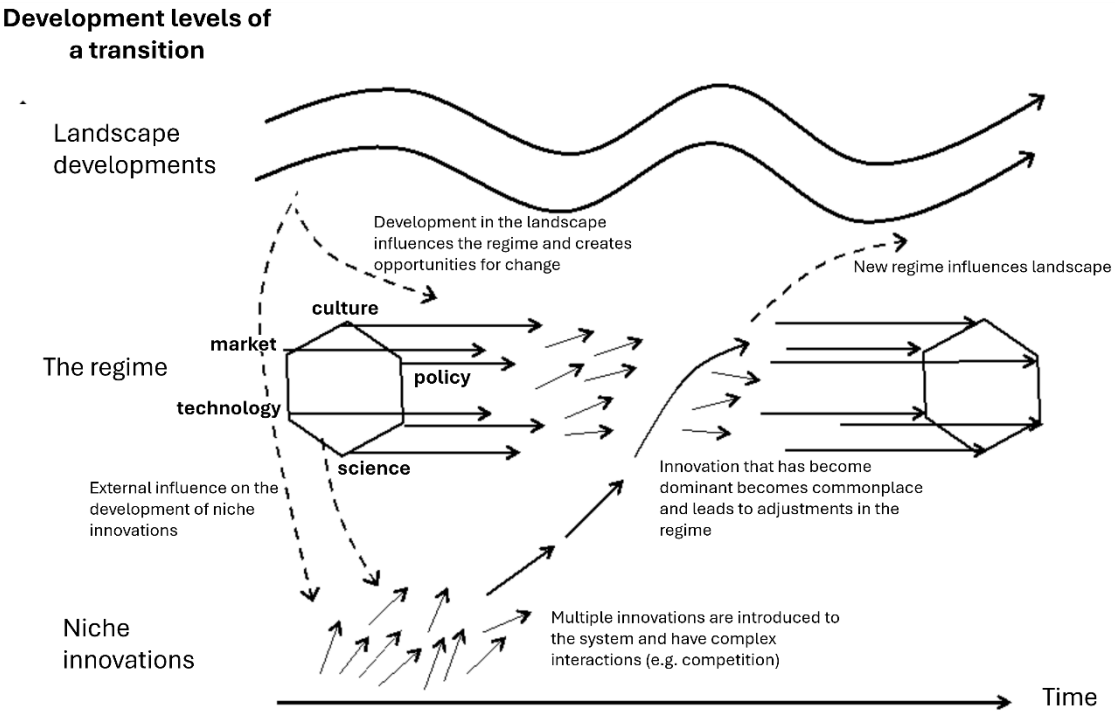

Figure 1: Multi-level perspective on transition (adapted from: Geels and Schot 2007)

Here, the regime refers to the existing, established industries, policies, regulations, infrastructure and societal norms. The niche, on the other hand, consists of relatively small networks of dedicated actors outside the regime. The rules within that niche are not institutionalized and therefore unclear and "in the making". It is at this level that radical innovations emerge. Compared to the regime, niche actors are persistent and accept setbacks and start-up challenges to bring about their expectations of future performance. Finally, "the landscape" refers to the broad macro-context, over which an individual usually has no influence.

A transition occurs when new policies, practices, norms and values are adopted by the regime, or when niche innovations develop enough momentum to challenge or replace elements of the existing regime. Often this occurs at times when changes in the landscape put pressure on the regime or the regime itself is destabilized, creating space for the adoption of new practices.

The number of agroforestry pioneers is growing, in Flanders and Europe. Yet, the transformative power of the pioneer initiatives can only be realized if this experimental approach is supported by a willingness to institutionalize newly developed practices even more widely in the food system, in education, research, policy as well as in the economic and social fabric. Government plays an important leadership role by supporting this very transition. Yet the government alone cannot facilitate a scale-up of a niche like agroforestry. Many other actors must jump on board as well.

Despite the important achievements of policy in the last several years, Flanders still faces many major challenges to realizing a transition toward more agroforestry acreage. Many of these challenges are not specific to agroforestry but are strongly intertwined with the structures and processes in our current agricultural and food system and policy. The lack of access to land, the conflicting regulations, complex and time-consuming administrative obligations and unstable market prices, for example, are also hot topics among agroforestry entrepreneurs.

Agroforestry in that sense need not always be an end in itself but acts as a kind of "shelter system" referring to the same concept in nature management. In nature management, a “shelter or umbrella species” covers a large habitat that contains different habitat types. That means that within the habitat of this species when a measure is taken for it, the other species within all of those habitats under the ‘umbrella’ or ‘shelter’ will also benefit. In the words of the ‘Agentschap voor Natuur en Bos’, a shelter species is a kind of "ambassador for the biodiversity of an area, exposing many kinds of problems in its large habitat - problems that other species also face." Translating this to the context of this Roadmap, agroforestry systems can be seen as a shelter for a whole range of other regenerative forms of agriculture: systems that work with agroecological practices, commit to diversity and multifunctionality, respond to natural processes and the enhancement of ecosystem services, develop new products and/or offer a large(r) diversity of products, but often in smaller quantities and staggered over time. Working on measures that support agroforestry will also support the development of these (often niche) systems.

STRUCTURE AND FOCUS OF THIS ROADMAP

The overarching goal of this roadmap is to inspire a transition toward more agroforestry acreage, and in so doing, to support the transition towards other forms of pioneering, agroecological agriculture. We also aim to draw up a plan for creating a stimulating environment for agroforestry. The knowledge base for this roadmap comes from discussions with various actors, from the thematic action clusters of the project Agroforestry 2025, from various reports of other recent agroforestry projects (e.g. FarmLife, Agromix, FoodForward, *Nood aan noot*, etc.), as well as from the experience gained within 10 years of *Consortium Agroforestry Vlaanderen*.

The specific purpose of this roadmap is to give direction to the development of agroforestry in Flanders. Another aim is to provide an overview of how to make agroforestry an option that is at least as viable for farmers as other choices and types of agriculture. The core of this document consists of the description of five concrete development pathways identified by Borremans et al (2019): (1) the scientific and technological pathway, (2) the economic pathway, (3) the policy pathway, (4) the education pathway and (5) the social pathway. The science and technology pathway focuses on research into the productivity, compatibility and optimization of agroforestry systems. The economic pathway investigates how farmers can obtain financing to start up agroforestry, but also how they can turn it into a profitable business model. The policy pathway provides an overview of existing regulations, support measures and policy aspects relevant to agroforestry and offers suggestions for adjusting these to the benefit of agroforestry practitioners. The education pathway focuses on strategies to increase agroforestry knowledge among (future) farmers and other relevant actors. The last one, the social pathway, looks at how the social environment of the farmer can provide support for starting with agroforestry and how society can become involved.

Each chapter starts by presenting the structural challenges and opportunities. We often start with concrete examples to make this more tangible. It is not our intention to create an exhaustive list, as details of all the specific challenges and opportunities are outside the scope of this roadmap. Based on these bottlenecks and opportunities, a future vision is formulated for each pathway and priority actions are suggested to work toward the proposed vision for 2035. In the concluding remarks, we discuss some overarching critical success factors and frame the roadmap within the broader perspective for developments toward a more sustainable, regenerative agriculture.

CHAPTER 1: THE SCIENCE AND TECHNOLOGY PATHWAY

Farmers that get started with agroforestry often face a multitude of questions and challenges regarding farm technical aspects, mechanization, pest and disease control, choices regarding crop (or crop rotations), tree species, etc. Every choice or decision has an impact on the final result, which makes setting up an agroforestry system highly knowledge-intensive. To make agroforestry a workable agricultural model, it is important to gather scientific insights and provide decision support. It is also important to bring knowledge and practical experience together in participatory research in which practitioners are given room to experiment, learn by trial and error, and exchange experiences.

In addition to the knowledge needs of practitioners, other relevant actors, including policymakers and actors in the agri-food chain, are asking for scientifically based insights into the potential impacts of agroforestry.

1.1. Opportunities and constraints

The opportunities and constraints for science and technology are in different areas but can be roughly divided according to two main objectives. First, there is a need for research that contributes to the numerical substantiation of the effects (advantages but also possible disadvantages) of agroforestry in terms of productivity, climate and ecosystem services, biodiversity, etc., taking into account the specific context and type of agroforestry. This demand comes from practitioners themselves, but often even more from policy and other actors. Second, there is a need (particularly from practitioners) for research and development of techniques that contribute to decision-making and practical support for agroforestry entrepreneurs.

1.1.1. Need for numerical evidence of agroforestry's impact on ecological and societal challenges

At the AGROMIX Policy Summit (Brussels, April 17, 024), Suzanna Gaoana Gaez (Research Program Officer at the European Commission) stated on agroforestry, "*We still need more evidence of what works, and what doesn't work. There is not yet enough evidence for all actors*." She is referring to the following: the development of agroforestry also involves many non-farmers, actors who all need insights and figures as part of their role, and/or need to be convinced of the added value of agroforestry from their specific perspective. Examples are bankers and other investors, consumers, policymakers and officials, processors, traders, etc.

This group of actors is looking for very concrete and context-specific figures to help them make decisions about how to include a role for themselves in the agroforestry development, and thus to see what agroforestry can mean for their objectives or responsibilities. Concrete questions may include: How much additional labor and cost does the planting or management of an agroforestry system require? What increase in bird numbers and species, as an indicator of biodiversity, do we see with agroforestry systems compared to conventional systems without a tree component? How much more carbon is stored in an agroforestry system and over what period? What is the impact of a row of trees on the yield of an arable crop? And to what extent will this change in the future, taking climate change into account? These types of insights are needed, for example, to decide to grant a farmer a loan, calculate fees (carbon credits,

payment for ecosystem services, subsidy for planting or maintenance, etc.), decide to purchase an agroforestry product, make land available, whether to grant a permit, etc.

1.1.2. Need for knowledge and support for agroforestry entrepreneurs

Need for system knowledge

While the extent to which farmers often quickly capture new insights and knowledge cannot be underestimated, fewer and fewer farmers have experience with managing trees in an agricultural context thus this knowledge is disappearing. Many farmers and advisors need technical knowledge of agroforestry, particularly to address and manage this cropping system as a coherent whole rather than merely as the sum of its components. One example is knowledge on disease and pest management in a mixed system. More and more tree species are facing often new and therefore difficult-to-tackle diseases and pests. Examples include ash tree mortality or elm disease, but also damage caused by the Asian fruit fly (*Drosophila suzukii*), which is a major problem in cherries, grapes and berries, the nut weevil (*Curculio nucum*) or the walnut husk fly (*Rhagoletis completa*), which is also on the rise in Europe. Agroforestry is distinguished from a monoculture forest or orchard by its mixed nature. This also means that other options for integrated and natural pest and disease control are emerging. For example, the Bird cherry (*Prunus padus* L.) can act as a trap plant for Drosophila, or chickens scavenging under hazelnut trees can peck away the larvae of the nut weevil. A well-designed plantation can also attract natural enemies such as birds or bats. More research is needed on these types of interactions and similar systems exercises.

A non-exhaustive list of needs for system-understanding and -approaches further also includes optimization of design, species and variety selection, or development of an appropriate water and soil management plan for an agroforestry parcel, taking into account insights into the interactions between the different components, soil environment and (micro)climate conditions.

Need for technical innovations

Besides the need for (cultivation and other) knowledge and insights, it is also very important that appropriate equipment for operating an agroforestry system is developed and made available. For example, farm machinery available on the market today is mostly intended for more traditional or large-scale farming systems and is not always usable in agroforestry systems. At the same time, labour is relatively expensive. The development of adapted, mostly smaller equipment to maneuver between and in tree lanes or around trees without damaging the trees is important. Some devices from (small) fruit farming may be suitable for this purpose, but customized development is still important. For machinery manufacturers, however, agroforestry is still a niche market. Except for a few smaller enterprises, manufacturers often do not see promise in developing new customized machines. Specialized machines and robots are also expensive and therefore mainly of interest to farm enterprises whose business model includes a large production volume.

At Flemish level, many steps have already been taken over the past five years, including surveying the availability and usability of devices for specific operations in agroforestry systems. Contacts with manufacturers or distributors have been very important in this regard and can be strengthened further.

The complexity of an agroforestry system and the need for decision support

Agroforestry is a complex system with many factors affecting outcomes, e.g. soil type, tree species and variety choice, pruning technique, harvesting technique, etc. In addition, agroforestry is pre-eminently a long-term investment, where today's choices have a huge impact on long-term outcomes. That long-term is also often very uncertain: how will markets evolve? Which wood species will be in demand in 50 years? Which tree species and varieties can cope with the changing climate? A mature tree doesn't get replaced in one year. Entrepreneurs therefore face the challenge of making the right choices today for a future that they can't predict. Decision support and being able to predict future effects and outcomes as realistic as possible are therefore crucial.

1.2. Vision for 2035

For the Science and Technology Pathway, we formulate the following vision of the future to be achieved by 2035:

Flanders is structurally committed to funding and facilitating long-term research into the various dimensions (biophysical, socio-economic, etc.) and various forms of agroforestry. This research starts from a system-oriented co-creation approach. This means a strong participation of all stakeholders, where each type of actor can contribute and share their role, experience and expertise, from the identification of the research questions to the execution of the research itself. This ensures that solutions are practical, user-friendly, and responsive to the real needs of all types of actors. Research focuses on the development of new techniques and technologies to support diverse agroforestry practices. In addition, research recognizes the complexity and addresses the need for (decision) support and unburdening of practitioners. Finally, an efficient research approach is pursued through a strong connection to the European research network and EURAF.

1.3. Priority actions

1.3.1. Commit to the further development of farm guidance and (digital) decision-support tools

Entrepreneurs face the challenge of making the right choices now for an unpredictable future. They need to be able to predict and prepare for the long term as accurately as possible. Farmers therefore benefit especially from support in making the right choices, taking challenges into account, both in the present and in the future. Which tree species and varieties can cope with the changing climate? Which design gives the best results? In what way is water control an issue? Is irrigation necessary? Which choice will result in the biggest carbon storage? In what time frame will my investment pay off?

To answer these questions, the importance of predictive models is strongly increasing. Based on the increasing amount of empirical data, more (and more accurate) predictions can be made under various future (climate) scenarios. This will lead to better-performing agroforestry systems being created in the field. Such predictive models can also meet the demand for long-term numerical support by other actors, such as policymakers and market players of all kinds.

In Flanders, the *Consortium Agroforestry Vlaanderen* currently offers support on two fronts: individual advice and farm guidance, and collective knowledge dissemination and the provision of digital decision support tools.

1. In terms of farm guidance, we observe that demand is growing but there is a lack of structural funding and operation. Ideally, there should also be more professional consultants who can provide agroforestry advice soon.
2. In terms of digital applications, the Consortium has already developed several decision support tools through the development of the Agroforestry Planner. However, most of these tools are still under development. Further validation, calibration and tailoring of the tools to the needs of the end user are still needed, together with the development of one coherent whole with a single user interface and interoperability between the different tool modules. Opportunities for further development include hosting, maintenance and IT technical support, for which structural funding is needed.

1.3.2. Facilitate a results-oriented, interactive co-innovation process

Every choice or decision affects the final result; therefore, setting up and managing an agroforestry system is very knowledge-intensive. To make agroforestry a workable agricultural model, it is important to gather scientific insights and bring together knowledge and experience. Knowledge development is done partly through a results-oriented, interactive process in which knowledge is jointly produced through the interaction of different types of actors (e.g., farmers, industry, consultants, researchers, consumers and other actors in the agri-food chain). Involving end users in the innovation process and combining different types of complementary knowledge is essential here. In short, research is preferably done together or in direct consultation with agroforestry entrepreneurs and other stakeholders. The network of actors developed over the years through various projects (under various headings such as Regional Agroforestry Innovation Networks, action labs, action clusters or agroforestry living labs, always facilitated by the *Consortium*) offers a strong basis for facilitating such processes.

1.3.3. Structural core funding

Agroforestry project work in Flanders is currently realized through project funding from various European and Flemish funding channels. This form of financing is not accessible to all actors. Partly because of this, farmers and other entrepreneurs, among others, sometimes have limited resources to contribute constructively to co-innovation processes. Therefore, to ensure continuity, structural core funding is also needed at the Flemish level. For example, to facilitate living labs or field labs in which (local) networks of farmers, other economic parties, government and educators work sustainably on change processes in which they develop, test, evaluate and adapt new ideas. To support these processes, the availability of data from long-term trials and an established monitoring network is crucial. This also requires structural resources for the maintenance and monitoring of these long-term trials and monitoring networks.

CHAPTER 2: THE ECONOMY PATHWAY

In addition to policy- or knowledge-related challenges, the lack of economic incentives for agroforestry is also a contributor to the limited expansion of acreage. Such incentives are necessary to make agroforestry attractive and feasible for farmers. However, there are many possible incentives, including government initiatives and financial market and community opportunities. Initiatives coming from the government are discussed in Chapter 3. Opportunities in the market and from the community are further explored in this chapter. Financial market opportunities are twofold: they can be related to the products of agroforestry systems themselves, or to the services these systems provide, such as carbon storage or erosion reduction. These incentives need to be further discovered, developed and adapted for application within agroforestry context.

2.1. Opportunities and constraints

2.1.1. Development of a value chain

One of the main challenges is the fact that the value chain and market forces are currently often not geared to (scale, volume and/or products coming from) agroforestry farms. The (long) value chain works with large quantities and limited diversity of supply. The farmer is in many cases a ‘price taker’. In contrast, agroforestry is generally characterized by a diverse supply with mostly smaller quantities and/or a dispersed availability over time (Tavernier et al., 2024). Especially for systems like food forests that work with a wide variety of plants in multiple layers, it is difficult to find sales through the more traditional path with a wholesaler. Other forms of agroforestry also tend to be rather small-scale and fragmented. This means that the rather large-scale players in the food sector are not yet interested in agroforestry products.

Besides sales, there are also challenges in terms of harvesting, processing and storage capacity, especially for products that are relatively "new" to the Flemish context. Consider, for example, the harvesting, cleaning, cracking and drying of products such as nuts. Also for wood from agroforestry systems, it is currently uncertain whether the processors that can currently handle small volumes of wood will remain profitable in the long term and thus continue to exist. The number of sawmills in Belgium has evolved from 330 in 1992 to about 95 in 2023 (figures: Belgian Timber Confederation). Domestic (deciduous) wood is increasingly being bought by Asian countries that offer a higher price than domestic sawmills. This trend makes it difficult for local sawmills to replenish their stock and it threatens their survival**.**

2.1.2. Uncertain profitability

Currently, investing in agroforestry remains an uncertain business for many farmers. They wonder whether the system will be profitable in the end. For a significant proportion of farmers currently starting agroforestry, the business viability does not depend on the agroforestry component, and so there is some room both financially and in terms of time and acreage to experiment and try something new. Another typical profile of farmers starting agroforestry is that of the farmer working with citizens through CSA or farmer-citizen cooperatives. These farmers share harvest risk (CSA) and/or investment risk (farmer-citizen cooperative) with citizens. Because these farmers temper their financial risks with these specific strategies, they also have more room to experiment. However, agroforestry must become a valuable option for a broader population of farmers to reach its full potential.

In the Flemish context, *the Consortium Agroforestry Vlaanderen* strives for a realistic view so pioneers know what they are getting into. In that context, we are working on key figures and factsheets describing the potential profitability of several concrete, inspiring agroforestry cases, to give an idea of what one can expect financially and which factors are determining for a success story. The simulated farm for each case is fictitious but was chosen, in consultation with farmers, to represent the most realistic case possible. In addition, an interactive decision-support financial tool (INTACT) was also developed, where the farmers, advisors or other users themselves can input their specific agroforestry system to get an overview of costs and benefits. Despite these tools, it remains challenging to predict long-term profitability with sufficient certainty, as it is highly context-dependent and we cannot possibly foresee how the market, policy and climate will evolve over the next few decades.

Agroforestry is a long-term investment: it takes at best about 5 years for the trees to produce a substantial amount of fruit or nuts, and it takes decades before (quality) wood can be harvested. A lot can happen over such a time. Wood prices fluctuate strongly, which implies uncertainty about market demand at the time the tree is ready to be felled. (This info sheet provides more information). On the other hand, standing timber offers the flexibility to wait for better prices before harvest. The investments and maintenance costs of the agroforestry component must be made, despite the uncertainty of how much the trees will yield after many years. Many farmers are not used to the greater time lag between the investment and the final yields: normally they harvest crops and vegetables in the (relatively) short term.

In addition, the difference between an agroforestry product (such as fruit, nuts or wood, for example) or another product from an agroforestry system (such as crops planted next to rows of trees or eggs from free-range chickens under trees, for example) is not always distinguishable from products from more conventional systems. Consumers do not know the difference and are unlikely to buy agroforestry products if they are priced higher. Consumers need to be sensitized about agroforestry: what is it and why is it worth a premium price? On the supply side, more thought also needs to be given to marketing and sales. What products do I want to use to differentiate myself as an agroforestry farmer? How do I market them and with what story do I convince consumers? Currently, there is too little focus on marketing and sales.

2.1.3. Growing attention for payment for ecosystem services (incl. carbon farming)

At the time of writing, compensation for certain ecosystem services through different financing mechanisms is increasingly being explored. Examples are premium price agreements between grower and buyer, and biodiversity certificates (see https://agora-natura.de/nl/). Often this is currently still done within exploratory pilot projects, but particularly for carbon storage, several market mechanisms worldwide exist on which CO_2 is traded. These different markets use crediting mechanisms that validate a particular storage or avoided emissions, and thereby the amount of CO_2 that can be traded on the market. There are different types of carbon markets, where a distinction can be made between market mechanisms that arise at the initiative of governments (e.g., the international and national compliance market, financing through eco-schemes, etc.) versus the voluntary carbon market. Companies and individuals can voluntarily participate in the latter market to offset their emissions. They buy carbon credits to neutralize their emissions or to support sustainable projects that promote carbon sequestration (Facq et al. 2023).

These new developments offer opportunities in terms of financing and revenue models for agroforestry. New players are entering the market as intermediaries between buyer and seller,

or to verify and certify the amount of carbon stored. Online platforms such as Treecological (https://www.treecological.be/) are also being exploited to connect companies, organizations and/or individuals looking to finance carbon storage with farmers storing carbon through carbon farming practices. These initiatives are already being used by pioneering agroforestry farmers. Research on farmer preferences in such contracts and an appropriate policy framework for these initiatives could help accelerate this pathway.

See also the policy developments on carbon removal described in the "policy" pathway.

2.2. Vision for 2035

For the Economy Pathway, we formulate the following future vision to be achieved by 2035:

Farmers who want to start doing agroforestry dispose of the necessary tools to predict the costs and benefits (including in the long term) and thus make feasible and successful choices. In addition to a correct price[1] for harvestable products, ecosystem services from agroforestry also receive recognition from society and are valued through innovative financing mechanisms. In addition, the value chain for the most common agroforestry products is developed through different levels and forms of cooperation, providing significant revenue from the production, processing and sale of these products.

2.3. Priority actions

2.3.1. Facilitating collaboration

The fragmented appearance of agroforestry initiatives and the relatively small volumes of products derived from the tree component produced by individual farms often lead to difficult sales at a good price. Farmers can counter this by working together. Two major pathways here are setting up a cooperative with different agroforestry farms or working with third-party intermediaries.

- Agroforestry cooperative: a form of collaboration between several individual farms working with agroforestry, whether legally established or not. Farms can cooperate in many ways, such as by pooling their sales and selling together at the right price or purchasing and sharing machinery together. This acts as a kind of scaling up: marketing, purchasing and deploying certain machinery are done more efficiently. In addition, cooperatives can act as a learning network: farmers communicate more often, visit each other's farms and learn certain techniques from each other or get advice on problems.
- Collaboration through a third-party intermediary is also possible. Some inspiring examples of already existing initiatives:
    - Forest Groups ("*Bosgroepen*") is an organization that aims to support forest owners in the sustainable management of their forests. This includes help and support for the felling and sale of the trees. Most Forest Groups hold an annual industrial timber sale where wood from various private forests is bundled and offered for sale. This

[1] A correct price stands for a price that is affordable for consumers and on the basis of which everyone in the chain can earn a living (Rikolto.be)

empowers the forest owners and allows them to obtain a better price for their timber. Currently the Forest Groups focuses on forest owners but the possibility of including farmers could be examined.

- AgroforestryBlueprint is an initiative in the Netherlands that aims to stimulate agroforestry through (1) experiments and research close to farmers and (2) getting farmers and other chain actors to work together. At the moment of writing, 5 farms and 5 chain actors have joined this initiative. AgroforestryBlueprint aims to expand locally with partners from the entire chain: planting, maintenance, harvesting, storage, processing, marketing and sales.
- Agronuts is a Walloon company that wants to kick-start the hazelnut value chain in Belgium and is setting up cooperation with farmers. The company focuses on the selection and cultivation of planting material, as well as the processing of the harvested nuts into a nut paste for the chocolate industry. For all links in between (advice, planting, management, harvesting, guaranteed purchase, ...) agreements are made between Agronuts and the farmers with a hazelnut plantation.

The Living Lab Agroecology and Organic Agriculture (LLAEBIO) published "*The Power of Collaboration in Fair Food Chains*" in May 2024[2] . This document explains why it can be interesting to collaborate in agricultural supply chains and provides guidance on how best to do so. Below we briefly summarize these lessons: where is the power of working together in the food chain and what are the challenges in doing so? We also briefly look at what this can mean for agroforestry.

The power of collaboration: why collaborate with others?

- To expand the market for a particular product and get a fair price. By working together farmers can bring volumes together and thus offer larger volumes or different products. For example, different agroforestry farmers can each specialize in a branch, e.g. walnuts or fruit, and still offer it together. Or farmers who each have a smaller acreage of walnuts can pool their volumes and thus gain access to larger markets and negotiate a correct price together. In addition, they can work together to offer products through one easily accessible point of sale or an online platform. An example of such an online platform in Flanders is *Vanier*. [3]
- To best utilize available skills, knowledge and expertise. In a collaboration between different profiles, different talents can be deployed complementarily. There will also be more knowledge present in a network. If certain knowledge or skills are lacking, it is easier to bring in an external party by sharing the costs.
- To invest together in infrastructure for processing and/or marketing and gain better access to the necessary financial resources. Marketing or processing at the own farm can require large investments, which are not always feasible or profitable investments for an individual farm due to smaller volumes. Sharing infrastructure can be a solution. An example could be machines to dry, crack and possibly press larger quantities of nuts into oil. Collaborations between farmers and/or other actors get easier access to financial resources in the form of project funds because more impact is expected from a joint project.

[2] https://llaebio.be/brochure#:~:text=In%20de%20brochure%20'The%20power,come%20to%20a%20fair%20price.

[3] https://www.vanier.gent/index.php#headerAndBoxes

An example of this is the "*Leader Waasland 2024*" project[4] . Through this project, a network of different agricultural and horticultural companies, civil society organizations and local administrations are committed to increasing knowledge and support for restorative agriculture in the region.

- To reduce the gap between farmer and consumer. Farmers and partners can use their collaboration to jointly promote products or services and inform about agroforestry. They are each other's ambassador and an ambassador for agroforestry.

Challenges collaboration can bring:

- Time-intensive startup. For cooperation between farmers and/or other chain actors to succeed, time must be invested into making agreements and preparing the start-up. Gaining each other's trust also requires some time. Lack of time is something many farmers and other chain actors struggle with. Once the cooperation has been established and everything is running smoothly, however, it should lead to time savings for each partner.
- Collaboration often requires a certain financial investment, which is not easy for everyone. Support can be requested from the government through a project but that support is usually only temporary. So creating a solid business plan together is a must.
- Collaboration requires good organization and "collective thinking". Clear agreements must be made and everyone in the alliance must be more or less on the same page: vision, division of tasks, agreements on dealing with conflicts, participation and the business plan. Costs and benefits are shared and each partner must agree on the distribution of these. A partner in a partnership can no longer expect complete independence, but each partner still has autonomy in deciding with whom to collaborate and how. An exclusive focus on one's personal gains is not a winning strategy.
- Need for certain skills and knowledge. Skills around IT, communication, marketing and financial insight are indispensable for a smooth short-chain collaboration. Learning new skills or having a taste of them is a good idea to also understand each other better and understand some of the choices that another person makes in the collaboration.
- Need for a trigger. Someone with charisma and leadership who is an entrepreneur and innovator with a clear vision is needed to keep a group together and face challenges. Ideally, this person should be one of the partners.

Finally, we add here that collaboration often leads to entrepreneurship and creativity. Such a co-creative process can be quite rewarding.

2.3.2. Collaborate with good example farms ("Lighthouses").

Farmers get convinced when they are shown something that works. To give farmers inspiring and proven examples of how agroforestry can be implemented in a financially successful way, a network of so-called "Lighthouses" or demo farms is valuable. A Lighthouse is an active farm that applies "state of the art" agroforestry, has sufficient maturity and cooperates with researchers, advisors and other (chain) actors. Such Lighthouses meet the following conditions:

- There is transparency around all aspects related to agroforestry on the farm.

[4] https://www.pomonavzw.be/projecten/leader-waasland2024

- The Lighthouse reveals their finances. There is a clear overview of all costs and benefits incurred, of which benefits come from where, and it gives an insight into the salary the farmer gets from a particular agroforestry system. For this, data from one's own farm is collected but also data from other (cooperating) agroforestry farms is looked at.
- The Lighthouse works as a demo platform. Demos on numerous practical matters are organized at regular intervals. These can be about planting, maintenance and harvesting of the tree component but also about how to market certain products and all the steps involved.
- Inspiration can be drawn from the recently established demo farm in the Netherlands.

2.3.3. Develop decision support tools

Decision support tools are currently being developed in Belgium and abroad. These are never finished and are becoming stronger as more and better data become available. It is therefore important to continue to focus on the development and improvement of tools to predict costs and benefits. This includes:

- Further develop and optimize digital calculation tools such as INTACT.
- Commit to long-term data collection of, for example, crop yields of different crops, labor investment, investment costs, etc.
- Facilitate a constant exchange of knowledge about the business models and business choices of agroforestry entrepreneurs in Belgium and Europe.

CHAPTER 3: THE POLICY PATHWAY

Given the still often experimental nature of agroforestry, it is somewhat logical that not all the rules of the game in terms of legislation and policy are yet fully in place nor equally clear to all stakeholders. In recent years a number of very important steps towards this have already been taken in Flanders: first to explicitly recognize agroforestry in legislation, and second to develop financial incentives through subsidies. Nevertheless, we observe several remaining uncertainties, ambiguities, contradictions and barriers around legislation and subsidy conditions that negatively affect the choice to start with agroforestry.

We must therefore build on the foundation laid in recent years. A crucial first step is to take this complex set of laws, regulations and subsidy policy, and to create an overview and clarity. Above all, a solution-oriented approach with a focus on the ultimate (policy) objectives, with room for dialogue and based on cooperation and trust, would make a very meaningful difference. Such constructive approach to evaluating whether agroforestry practitioners meet the set conditions (in terms of legislation or support measures) will help to create a positive, stimulating environment and better achieve everyone's goals. Farmers are strongly demanding a solution-oriented approach rather than a controlling one, both in the agroforestry context and in farming in general.

In addition, the extent to which agroforestry can contribute to certain larger policy objectives (such as climate change adaptation and water management, for example) is not sufficiently clear to many policy actors, or the response to that potential is very fragmented. Strengthening policy actors' affinity with exactly what agroforestry is and with practice on the ground is imperative. So does mutual coordination between policy actors from various departments, services, domains and levels. This is with a view to a more efficient connection with policy goals and actions, and further elimination of barriers and contradictions within regulations and policies that agroforestry practitioners face.

3.1. Opportunities and constraints

3.1.1. Agroforestry offers broad opportunities for Flemish and EU policies

Agroforestry brings the promise of a new agricultural production system. It encompasses a transformative set of agricultural practices that purposefully integrate trees into farming systems at the field, farm or landscape scale to harness the delivery of ecosystem services and goods, improve ecological interactions, increase farm income and provide a range of agronomic and social benefits. This approach reduces reliance on external inputs, improves soil health, promotes biodiversity and supports animal welfare while contributing to sustainable food systems and economic diversification. It is a mixed cropping system in all its aspects: permanent and non-permanent crops, a mix of animal and plant-based, multi-layered, etc.

The reasons for promoting agroforestry within the policy framework of the EU and thus Flanders are convincing and supported by robust scientific evidence. Agroforestry supports multiple objectives of the Common Agricultural Policy (CAP), including food security, environmental protection, climate action and rural development. Agroforestry systems also align with the Farm to Fork strategy, which aims to create a fair, healthy and environmentally friendly food system. By embracing agroforestry - and by extension many forms of regenerative, agroecological agriculture - the EU can lead the way toward a sustainable,

resilient and equitable food system that meets the needs of current and future generations (Dauby et al. 2024). The widely supported Agromix White Paper "*Transforming European Food Systems with Agroforestry*" (2024) makes a strong case for the development of an EU Agroforestry Strategy to support a policy framework for agroforestry development in Europe. We also refer for detailed substantiation at the EU level to EURAF's comprehensive series of policy briefings (https://euraf.net/policy-briefings/).

In Flanders, there is also a very direct connection to a number of policy frameworks, including the Flemish Energy and Climate Plan (VEKP), the (draft) LULUCF action plan and the Go4Food Food Deal (deal Agro-ecology).

But the new Flemish Governmental Agreement 2024-2029 also offers many opportunities. A non-exhaustive list includes several key concepts found in that Agreement:

- Flanders recognizes the crucial role of agriculture and horticulture in providing services for the benefit of society, environment and climate;
- Avoids unnecessary administrative burdens;
- Agricultural vision 2030-2050: profitable agricultural model within ecological limits;
- Ongoing transition of our food production system;
- Attention to mutual reinforcement between agricultural and food policy, rural policy and environmental and climate policy (carbon agriculture - storing & sequestering CO_2);
- Accelerates the growth of sustainable production methods such as agroecology;
- CAP puts extra effort into supporting the transition to sustainable agriculture;
- Rules for payment reductions and penalties for minor noncompliance are reviewed;
- Green-blue infrastructure in agricultural areas - securing biodiversity, climate adaptation and conservation of natural resources;
- Animal welfare: natural shelter is preferred.
- …

3.1.2. Support measures for agroforestry practitioners: limited uptake and disappointing experiences

Since 2007, the European Union has provided subsidies through its Common Agricultural Policy to stimulate the development of agroforestry. Flanders joined in from this initial phase. However, in the period from 2007 to 2014, only 6% of the available budget was spent. In the subsequent period from 2014 to 2021, ambitions were reduced and an even smaller share of only 2.5% was effectively spent. In short, in most European member states, including Flanders, there is a very significant underspending of the budget for afforestation and agroforestry (EURAF policy briefing #69).

Since the introduction of the agroforestry planting subsidy in Flanders in 2011, some 280 ha of agroforestry was installed with the help of this subsidy (up to Autumn 2024). However, the actual acreage of agroforestry is higher: it is estimated that the newly planted acreage since 2011 is about twice as high and was financed either with own funds or through other channels[5] such as through the Regional Landscapes, the "*Boomgaardenstichting*" or the (former)

[5] A complete overview can be found in the knowledge sheet 'Overview of financial and practical support for planting and management of trees and shrubs on or along agricultural parcels' on the site of Agroforestry Vlaanderen via the following link: Overview of financial and practical support for planting and management of trees and shrubs on or along agricultural parcels - Agroforestry (agroforestryvlaanderen.be)

“*Voedselbosfonds*”. In addition to the planting subsidy, active farmers ("actieve landbouwers") can also claim a maintenance subsidy (BLO) since 2023. The subsidies are adjusted every CAP period, according to the requirements from Europe but also based on suggestions from research and practice. Nevertheless, a comparison of the acreage of new agroforestry to the 674,817 ha of agricultural use in Flanders reveals how much room for growth is still left. Moreover, we are currently observing an alarming downward trend in the number of applications and the associated acreage. A significant proportion of farmers who applied for the agroforestry subsidy in the period 2011-2023 reported a feeling of disappointment or dissatisfaction regarding the application procedure, control and/or (partial) rejection of subsidy applications (Vanpoucke 2024 and personal communication). We intend to reverse that trend through collaboration with all stakeholders. We are at a tipping point. But given the right approach, things can still be steered in the right direction.

3.1.3. Fragmented and restrictive regulations.

Agroforestry entrepreneurs often face a huge load of laws and regulations with many administrative rules and obligations – a challenge which is already quite big for more conventional ways of farming and even becomes more complex when combining agriculture with a type of forestry. A non-exhaustive list includes all aspects directly related to the planting or felling of trees in an agricultural context, aspects related to animal welfare and animal health care in silvopastoral agroforestry, and guidelines on food safety when growing, harvesting and processing (agroforestry) products for human consumption. Furthermore, there are points of attention in terms of fiscality, where the multi-year nature of trees does not make things easier. Or spatial planning regulations: can trees be planted? Where can trees be planted? Is an environmental permit needed? From which authorities should I get permission?

Practitioners find it difficult to find their way in the web of rules, and the regulations at the various levels are not always encouraging or even coherent. For example, there are various contradictions between agricultural regulations (including conditions for good management and conditions for support measures agroforestry) versus regulations on forest policy, nature policy or spatial planning. These barriers and contradictions perpetuate the tension between agriculture and nature.

Except for a few explicit mentions of agroforestry (e.g., in the Forest Decree and the Flemish Codex on Spatial Planning) agroforestry is generally not listed separately as a regulated practice and thus falls under legislation of the generally applicable model of agriculture ('the regime'). Many of these regulations are “designed” for activities that take place on a large scale and often in a specialized context (e.g., production of a single product or only processing as an activity). However, many agroforestry entrepreneurs start or continue to operate on a smaller scale and often work with a wide variety of products. This quickly creates a mess of regulations with exceptions that may or may not apply, and high costs for administration and control relative to the volumes produced. This can significantly limit further development opportunities for agroforestry, but this also applies to many innovative forms of agriculture. An overview of relevant policy frameworks and legislation for Flanders can be found on the Agroforestry Vlaanderen online knowledge hub.

Having said that, the willingness to listen is quite big from the side of the administration services. There is a noticeable will to support agroforestry for the better, and active efforts are being made to this end. But policy actors are also often "stuck in the system," and agroforestry is not (yet) a big issue for many policymakers. At present, the climate and ecosystem services that an agroforestry system can provide are insufficiently recognized. This leads to a vicious circle: a measure that is too small can hardly justify a considerable (time) investment by policy

actors, but precisely because of this, the measure is also given insufficient opportunity for further development.

In summary, there is a clear need for a policy where different agencies recognize agroforestry and the added value of this form of agriculture and work together to develop a unified regulatory framework and policy plan for agroforestry, taking into account the specific characteristics and assets of this system.

"We are reaching the end of tweaking around with the existing framework and regulations. Time to codesign the rules together with farmers, based upon understanding what they need." (Patrick Worms, IUAF president, at the Agromix Policy Summit, April 2024).

3.1.4. Need for experimental space

All of the above, and in particular the fact that agroforestry pioneers are often venturing into virgin territory, means that existing regulations and enforcement are insufficiently adapted to new developments and therefore counterproductive to innovation and experimentation. Farmers who want to get started with some form of agroforestry or devise an innovative approach are faced with incompatibility with applicable regulations, which often leads to stopping prematurely or even a total lack of action. This in turn also discourages others from taking initiative. Sufficient space (physical, financial and legislative) is a necessity to allow farmers to get back to being creative, offer freedom of enterprise and explore the various possibilities of agroforestry (and agroecology in general).

In this context, there are many opportunities to work towards a win-win-win. Currently, farmers are clashing with constraints, researchers are looking for farmers to collaborate with, and the government wants to encourage innovation but needs to be able to justify its policies. Experimentation in a specially designed policy framework for "regulation-free zones" offers opportunities here. After all, according to Article III.121. of the Administrative Decree, in a 'regulation-free zone' one can, under certain conditions, "deviate from and allow deviations from the decree and legal provisions if that deviation is necessary to achieve its objective[6] ."

3.1.5. Importance of regional approach and opportunities for cooperation

Because some of the benefits of agroforestry systems only manifest themselves at a certain scale (e.g., at the basin or landscape level), it is important that policies not merely focus on development at the parcel level but also seek to encourage a more regional development of agroforestry systems. Also, the relatively small-scale and fragmented nature of Flemish agricultural plots is an additional argument for focusing on cooperation and development across plots. Policy frameworks that stimulate cooperation beyond plot boundaries - between farmers themselves or between farmers and other actors in the open landscape - are therefore desirable. This is both at the Flemish level and by extension using area-specific policy frameworks. Important examples of the latter are the Landscape Parks, National Parks, Regional Landscapes and/or Heritage Landscapes, but also the Flanders Spatial Policy Plan ("*Beleidsplan Ruimte Vlaanderen*") and the Flemish Climate and Nature Adaptation Strategies can provide guidance here.

[6] Legislation experimental regulations and regulatory zones
https://navigator.emis.vito.be/detail?woId=78579&woLang=nl

3.1.6. Increasing importance of a coherent policy around carbon farming

Under the Economy Pathway, we already referred to the growing attention to carbon farming initiatives. However, there was no coherent legislative framework for all these initiatives for a long time. This changed on April 10, 2024: the European Parliament came out with a regulatory framework for EU-wide voluntary certificates for carbon farming, carbon removal and carbon storage in products in Europe: "Provisional agreement on the Carbon Removals and Carbon Farming (CRCF) Regulation". This contains quality criteria and the description of proper monitoring and reporting processes. It also recognizes the value of agroforestry in this context and is thus a leap forward in properly certifying and reimbursing carbon storage as one of the climate and ecosystem services provided by agroforestry systems.

This framework can provide an important basis for developing concrete, quantitative ambitions for agroforestry in Flanders and more broadly in Europe, according to EURAF policy briefing #8 (https://euraf.net/2024/03/28/policybriefing8/). This policy brief summarizes current estimates of the carbon sequestration potential of agroforestry in Europe, provides a timeline and references for carbon farming studies in the EU; looks at how agroforestry projects can meet the specific monitoring requirements of the CRCF; suggests that the data needed for carbon farming certification can be shared at local, regional and national scales; and outlines overlap with other key European policies and initiatives. In doing so, EURAF suggests that new agroforestry systems on mineral soils with few trees have the greatest potential to sequester carbon while maintaining agricultural production and providing environmental benefits. A program of 750,000 ha of agroforestry planting per year on cropland and grassland in the EU-27 (i.e., 11.2 million ha by 2040) would ensure that at least 10% of this type of land in all NUTS3 areas ("districts") is covered with trees. This land would remain in agricultural use and would contribute 56 Mt CO_2 e per year from the tree and soil component - assuming an average yield of 1.35 t C/ha/year, or 5 t CO_2 /ha/year. Integrating CAP support from Pillar I and Pillar II with long-term funding from voluntary or statutory carbon agriculture schemes will be essential to successfully set up these ambitions.

3.2. Vision for 2035

For the Policy and Legislation Pathway, we formulate the following future vision to be achieved by 2035:

The policy supports the scale-up of successful and effective agroforestry systems to choose between implementing agroforestry on any farm as viable an option as any other choice. To this end, three major sub-objectives will be achieved: (1) There is a clear, coherent and workable legislative framework for agroforestry, fueled by the sector and supported by a policy that recognizes the added value of agroforestry and actively stimulates its development, with sufficient room for experimentation, (2) Flemish policy has formulated a clear and quantitative ambition for the implementation of agroforestry, and (3) there is a continued commitment to support agroforestry entrepreneurs, both financially and in terms of guidance and advice.

3.3. Priority action: agroforestry policy initiative group.

To pursue this vision for 2035, the most urgent and overarching need is to bring together policy actors from different policy areas and levels in an active and coordinated manner to work on a coherent plan of action for the abovementioned challenges and vision. This can take shape in many ways and grow step by step, but it is important (1) that a clear vision, mission and

ambition are put forward and (2) that the initiative comes from the interested policy actors themselves, albeit in close cooperation with the *Consortium Agroforestry Vlaanderen*. We refer to it as the 'Agroforestry Policy Initiative Group', and with this name we want to emphasize the (pro)active and goal-oriented character, but at the same time suggest a more informal status, with a minimum of administrative burden and a maximum of impact.

Such an Initiative Group is ideally coordinated from the Agency for Agriculture and Fisheries, with additional representatives from, among others, *Consortium Agroforestry Vlaanderen*, the Agency for Nature and Forests, Flanders Real Estate Heritage Agency, Department of Environment, Flemish Land Agency and possibly other relevant policy actors at the Flemish level. However, this composition can be flexible depending on what is being addressed at what time. In that sense, (temporary) policy labs can be used, per theme or geographical area. In addition, ad hoc representation from or coordination with the provinces, municipalities (e.g., via the VVSG; *Association for Flemish Cities and Municipalities*), experienced agroforestry practitioners but certainly also policy actors from the surrounding EU member states can be relevant. The Initiative Group identifies at various levels of government (Flemish, provincial, municipal) obstacles and opportunities in policy, legislation and regulations concerning agroforestry systems. Building on the work that has already been done, the Initiative Group rigorously and unambiguously documents the current rules of the game while also actively removing obstacles and working to create a situation where the choice of agroforestry on any farm can be as viable and valuable an option as any other. To this end, the Initiative Group engages and shares knowledge gained with other relevant parties. A promising framework in which the Initiative Group could be embedded in Flanders is the Flemish food strategy (Go4Food) where attempts are being made to get different policy areas to work together to develop a supported vision and approach to our food system.

Inspiration can be drawn from the Dutch example of a "Taskforce on Legislation and Regulation"[7] and the Masterplan Agroforestry, an advisory document for achieving a scale-up in agroforestry in the Netherlands. A second source of inspiration is the Grond+Zaken. This program engages with local actors to find projects to improve soil quality. Every two years, the program organizes a platform where policy, practice and knowledge about soil can meet. From here, certain challenges were looked at and priority actions were determined to improve soil quality.

This Initiative Group can be used to bring actors together, for example, at a kind of 'agroforestry introduction day' to create links between different bodies and levels. Besides bringing together, optimizing and aligning the currently fragmented legislation and policy, the Initiative Group can also provide 'agroforestry experimentation space', for less obvious but promising forms of agroforestry. In such an experiment, optimal conditions can be sought for new forms of agroforestry to succeed. To this end, it will be necessary to explore the possibilities of using the legislation on restricted zones[8] .

[7] https://www.agroforestrynetwerk.nl/werkgroep/4-taskforce-wet-regelgeving

[8] See § 2. Legal Framework Articles III.119 to III.122 of the Administrative Decree ("Experimental Regulation and Regulation-Free Zones") contain a generic regulation on experimental regulation and regulation-free zones, https://codex.vlaanderen.be/PrintDocument.ashx?id=1030009#H1089403

CHAPTER 4: THE EDUCATION PATHWAY

To build up a solid knowledge base and support for agroforestry in Flanders in the longer term, introducing experiences in the field and new scientific insights into our education system at all levels is important. Only in this way can be guaranteed that (future) farmers have easy access to these insights and that other actors with an interest or role in agroforestry applications also develop sufficient affinity with this cultivation system, its assets, and challenges.

Therefore, the knowledge and experience acquired need to be transferred in a manageable way and in an appropriate format to reach the right target groups. Roughly 10 years ago, there was little interest in agricultural education for agroecology and agroforestry, but now interest is gradually increasing. Since 2021, for example, agroecology has been included in the curricula of several educational associations in Flemish secondary schools. The *Consortium Agroforestry Vlaanderen* aims to support different levels of education by, among other things, developing accessible online teaching modules with open access and enabling farm visits.

4.1. Opportunities and constraints

4.1.1. Agroforestry: unknown to many actors

Agroforestry is not yet known to many actors. Actors in the agrifood chain such as farm advisors, consultants and farmers still have relatively little knowledge about agroforestry, as was evident from actions within the FarmLIFE project and other agroforestry-related projects. Farmers who have heard of agroforestry and who are interested in agroforestry often do not know where to start: Which agroforestry system should I choose? Which trees and/or shrubs should I choose? How can I best harvest my agroforestry products? How do I sell my products? Even farmers who have already started agroforestry sometimes have practical questions that arise later on. Traditional agricultural advisors often cannot help them yet: they do not yet know (the great diversity of) the system itself or may be reluctant to learn. Also in policy (and certainly at the municipal level), not everyone is aware of what agroforestry exactly entails, or people have an incomplete or incorrect picture of it. Through various research projects over the last several years, *Consortium Agroforestry Vlaanderen* has focused on stronger dissemination of knowledge about agroforestry, both through a digital offer on the website of Agroforestry Flanders and through informative activities in the field (excursions, farm visits, training or master classes). The well-attended master classes organized by the FarmLIFE project and the meetings of the action clusters, for example, show that many actors continue to need more knowledge exchange and especially physical networking opportunities. At the moment, it is also possible to apply for subsidized advice from the *Consortium Agroforestry Vlaanderen* as an active farmer ("actieve landbouwer") under the Common Agricultural Policy through the Kennisportefeuille. So far, the reach remains inadequate and the organization is very ad hoc and project-dependent. Structural funding for such training opportunities or advisory services is limited.

4.1.2. Insufficient focus on agroforestry (and agroecology) in education

Until recently, agricultural education (and education in general) paid little attention to agroforestry. However, this is rapidly changing. Since 2024, agroecology has been part of the curricula of the higher grades in more than half of Flanders' secondary agricultural schools (those under the GO! and Catholic Pillar). In addition, six online and open-accessible teaching modules were developed in the framework of the LIFE project "FarmLIFE" and the VLAIO project "Agroforestry 2025". At the same time, at some vocational schools, colleges and universities, attention to agroforestry and agroecology and its concrete application is still relatively limited. Agroecology is often an elective subject. However, agroecology and agroforestry form an interesting bridge between agricultural and nature education.

In terms of the next steps, it seems appropriate to review the currently embedded themes and educational goals, further question teachers about their needs in this regard, and then provide agroforestry teaching materials that are as closely aligned with these as possible.

"The broader your view, the more complex things become, but it is just better to acknowledge that complexity, embrace it and work with it than to come up with solutions for partial problems that ultimately have unwanted side effects." (Ruben Savels, Lecturer at Ghent University, 2024).

4.1.3. Shortage of agroforestry consultants is being addressed

Intending to promote agroecological practices, the Strategic Dialogue for the Future of EU Agriculture (2024) advocated for independent agroecological advisory services and training for farmers.

However, because many consultants, information officers and advisors still have little understanding of agroforestry, it is important that these "trainers" are also trained themselves. Such a 'train-the-trainers' program is already planned within the ongoing Interreg project called CAMBIUM. One of the tasks within this project is to set up and implement a training course for 30 professional agroforestry advisors so that these agroforestry advisors can then support farms in starting up an agroforestry project.

4.2. Vision for 2035

For the Education Pathway, we formulate the following vision of the future to be achieved by 2035:

Every stakeholder in the agrifood system, or anyone who has an interest in or can play a role in the application of agroforestry, has at least a basic notion of what agroforestry entails and what opportunities it can offer. To this end, these actors are objectively informed through formal, non-formal or informal learning. The available knowledge and experience are accessible and manageable, and the necessary learning tools are developed for this purpose.

4.3. Priority actions

4.3.1. Strengthen and utilize existing initiatives

There are currently several "learning" initiatives that either already provide content on agroforestry or have the potential to incorporate this theme. These initiatives can be further strengthened and used by various organizations (government, but also civil society organizations, companies and education). Here are several concrete examples and avenues:

- Six online teaching modules (language: Dutch) have been available on the Agroforestry Flanders website since the end of 2023. To make these modules, experts in pedagogy and agroforestry joined forces, resulting in the E-Academy. These teaching modules consist of a basic module (introduction to agroforestry), three technical modules and finally two practical modules on design. The modules are made at the level of college students. This means that instructors can include this E-Academy Agroforestry in their course as a self-study component. At the same time, the module is an accessible introduction for other actors in the agrifood chain who (may) have to deal with agroforestry, such as policy actors, farm advisors, consultants, etc.
- Sector organizations that offer evening classes and lectures often have a large reach within the agricultural sector and also reach farmers who might not come to a specific agroforestry training on their own initiative. Agricultural organizations such as "De Groene Kring" regularly offer classes. Their range currently includes, for example: Driving license G (the tractor driving license), agricultural entrepreneurship, installation certificate in agriculture and horticulture, and so on. A regular course on 'agroecological principles and agroforestry' would not be out of place here.
- Existing curricula and goals: formulating new learning goals so that agroforestry fits into them may not be necessary. It can be examined within which learning objectives agroforestry fits, whereby this can be offered and shared within educational organizations. The following questions need to be considered: where do we fit agroforestry? For which courses? How do we link agroforestry to existing coursework? For this, it is best to discuss this with the relevant teachers themselves. It is important that agroforestry receives attention at all levels of education to guarantee the flow of knowledge to future farmers, processors, policymakers, etc.
- Making an overview of existing platforms (both in Flanders, the Netherlands and further abroad) to transfer knowledge and possibly set up collaborations. A strategy must be developed: with which platforms do we reach a large part of our target group? What kind of material do we offer there?

4.3.2. New formats to offer agroforestry

In addition to the known formats of traditional teaching within current formal structures, there are many other ways to learn more about agroforestry. A selection of ideas and recommendations:

- Learning through videos and podcasts is also increasingly popular because they are less bound to time and place. This type of learning is often used in an initial exploratory phase.
- In a second in-depth phase it is important to offer opportunities for farmers and students to become acquainted with agroforestry in practice through internships, field trips and farm visits. Research recommends learning through such experimental, hands-on learning methods embedded in a social and authentic context as a learning environment. Students also often prefer to learn in this way. Farmers who like to offer internships can indicate this on the agroforestry map that is currently under development and will be freely available for consultation on the platform website of Agroforestry Flanders (through this link).

- When getting started with agroforestry, access to knowledge and advice tailored to the farm is crucial. This is where independent advisors play an important role. Farmers who have been working with agroforestry for a long time are our “experts in practice”. This should be recognized through, for example, the Kennisportefeuille platform of the Flemish Government. This subsidy measure aims to encourage active farmers ("actieve landbouwers") to follow certain courses or to meet with agricultural advisors. Agroforestry farmers who want to share their knowledge should get a place here among the eligible training opportunities and advice. The Consortium Agroforestry Flanders - through ILVO - is also registered for advisory services through the Kennisportefeuille, and could involve and compensate experienced farmers in the process.
- Finally, facilitating learning networks is important in supporting the change process. Adopting new practices requires trust, knowledge and skills. A network of colleagues working on the same practices, possibly facilitated by an advisor or consultant, supports this process.

4.3.3. A systemic perspective on agriculture in education

In a broader context, agriculture must be approached from a more systemic perspective in training. Today, education is often based on one specific discipline, and there is a lack of a broader framework in which this discipline fits.

To avoid long-term conflicts between different visions or unworkable rules, future players in the broad agrifood chain, but also the nature and environment sector and policy, must learn to recognize the complexity of reality already during their education, interact with students and teachers from other disciplines, and gain field experience, e.g. through agricultural internships (Savels, 2024[9]). Such an approach is particularly important for agroforestry, a system in which many disciplines come together.

[9] https://vilt.be/nl/nieuws/docent-landbouwkunde-pleit-voor-meer-bredere-landbouwaanpak-in-scholen

CHAPTER 5: THE SOCIAL ENVIRONMENT PATHWAY

To embark on agroforestry and make it a success story, it is also of great importance, in addition to all the previous "stimulating pathways", that the farmer experiences support in the immediate social environment. Local government, fellow farmers, residents, family members and others involved in the farm business, direct buyers, farmyard owners, land management agencies in the immediate area and the general public all play a role in this. They can severely limit or boost development opportunities. This requires, of course, a certain basic understanding of agroforestry.

5.1. Opportunities and constraints

5.1.1. Public opinion opposed to tree felling

In Flanders, citizens often protest against the planned felling of trees. This attitude is often justified because we should take care of the limited area of forest and woody landscape elements on our Flemish territory. Nevertheless, these reactions are often unqualified or not relevant in every situation. For example, in agroforestry, where farmers deliberately plant trees to also obtain products from them. If we give farmers enough flexibility, the result will be that there will be more agroforestry and, therefore, more trees in agricultural areas. However, the reluctant attitude of both government and public opinion against cutting down trees in general prevents many farmers from starting with agroforestry. Such headlines or permit disputes create uncertainty among agroforestry farmers or potential starters. Will they be able to harvest the trees once they are ready for felling? Does this lead to negative reactions from residents?

5.1.2. Limited personal understanding of the changing environment

The social-added value produced in agroforestry systems will be easier to monetize when there is sufficient social appreciation for this. For regulation of ecosystem services, however, this is not self-evident. This has to do with the difficulty of (financially) valorizing and quantifying certain services, but also with an inadequate social awareness of what we have already lost. People refer to this as the "shifting baseline syndrome," the *collective lack of a natural history consciousness. In the words of Marc Argeloo, "There is a lack of an unambiguous and realistic picture of how nature has changed over short and especially long time scales under human influence. This is because there is little or no transfer of nature knowledge between people and generations, or through education and the media, for example. The creeping changes in nature hinder the emergence of a collective natural history awareness. That is why there is virtually no sense of urgency for the preservation or protection of biodiversity*."[10] At the same time, it is known that people with stronger pro-environment attitudes are more likely to support the protection of endangered species and vegetation enhancement and are also more willing to pay more for it[11] . How exactly this latter works in an agroforestry context needs to be further analyzed.

[10] https://www.naturetoday.com/intl/nl/nature-reports/message/?msg=30420
[11] https://link.springer.com/article/10.1007/s13412-023-00869-y

5.2. Vision for 2035

For the Pathway of Social Environment, we formulate the following vision of the future to be achieved by 2035:

Farmers who start agroforestry experience support in their social environment. Local government, fellow farmers, residents, others involved in the farm business, direct customers, land management authorities in the immediate vicinity and the general public recognize the added value of (products and services realized within) agroforestry systems and contribute to social support for this.

5.3. Priority actions

5.3.1. Continue to focus on broad public support

Actors can learn about agroforestry and agroecology in many different ways. For example, through education and other forms of learning (see Chapter 4), through information signs at agroforestry parcels, through ambassadors (agroforestry practitioners who open up their farms to fellow farmers, citizens or other stakeholders, sharing their experiences, choices and motivations; see Lighthouses in Chapter 2) or more broadly through the products themselves (QR code with info about the production system and farm, label, etc.).

It is equally important to support connections and forms of cooperation in which citizens and consumers are actively involved in (activities on) agroforestry farms, thus strengthening their affinity with the method and farm choices. This can be done, for example, through actions such as 'adopt a tree', through crowdfunding, open days, joint harvest moments or directly through engagements such as in e.g. CSA (community supported agriculture) systems. Through these avenues, citizens and consumers can be informed about e.g. the life cycle of trees in an agroforestry system.

5.3.2. Encouraging Community Involvement

Citizens and consumers will need to be informed and sensitized primarily through education, civil society organizations, and media about the role of agriculture concerning challenging issues such as the impact of climate change, pressure on open space, the relationship between biodiversity and disease and pest management, water management, access to fresh food, etc. At the same time, raising awareness is not enough. Encouraging community involvement is also necessary.

It is expected that stimulating social involvement in nature and biodiversity can also contribute to the involvement and interest in agroforestry. To achieve this, we must focus on nature-inclusive thinking and actions of citizens and companies. According to Bredenoord et al. (2020), this means that citizens must be able to understand *"how local action can contribute to social tasks at the (inter)national level."* In other words, (international) nature objectives must be translated into a local trade perspective. How can citizens and businesses contribute to the proposed (regional) policy objectives in the context of nature or water? What can they do concretely in their municipality? Through concrete action plans, citizens can be encouraged such as subsidizing a tree for carbon storage or contributing to the conservation of protected field birds, for example, through their consumption of bread.

Concluding Observations

Agroforestry is one of the avenues being pursued to support the transition to sustainable and restorative agriculture. Partly because of its various advantages (contribution to biodiversity, carbon storage, etc.), more and more governments are investing in agroforestry, and we notice a strong increase in interest among farmers to get started with agroforestry.

Full recognition of (the assets of) this cultivation system is not only necessary within the agri-food chain, by, for example, the Agency for Agriculture and Fisheries and other actors in the chain, but goes broader. As often with alternative agricultural systems, the innovation and added value of agroforestry is not only in the production aspect (the focus of the agri-food chain), but precisely in entering into and optimizing synergies. Synergies between crops, between food production and health, between food production and climate adaptation, ... That recognition also includes a recognition of "freedom of choice and operation." Or in the words of one pioneer:

"Agroforestry is the result of farmers growing trees for the reasons they want" (Rowan Reid, owner of Bambra Agroforestry Farm, at EURAF Congress 2024).

Government support through some structural measures (such as a planting and maintenance subsidy, a specific code in the LPIS system, etc.) therefore provides an important basis but is not sufficient. Rather, agroforestry development involves scaling, aligning and supporting complex interactions between a variety of factors, including biophysical, social, economic and institutional factors. An agroforestry farm can, through the additional labour and natural environment needed, play a role in caring for people with burnout symptoms, for example. The value of agroforestry systems also lies in the avoidance of external costs such as costs for fauna management for achieving biodiversity objectives or costs for purifying drinking water or clearing sediment. In short, it requires a food system-level approach.

In this regard, there is still a long way to go. Many agroforestry initiatives are currently the work of pioneers. Current regulations, as well as the market, are often geared to specialized and rather large-scale farms, which puts these pioneers with their diversity of products and production methods often into an uncertain context. Also, many of the actors involved still lack the knowledge and experience to properly support these pioneers. In short, creating a stimulating environment for agroforestry is crucial for the development of agroforestry. To achieve this, clear future visions have been formulated.

The future visions formulated in this report thus serve as a kind of compass showing what has already been realized and what still needs to be realized. In short, they bring a focus and then also help give direction to activities that contribute to the future visions and the resulting objectives and action plans. In the next phase, the predetermined visions and actions will still have to be operationalized into "SMART" (Specific, Measurable, Acceptable, Realistic and Time-bound) objectives and concrete action plans. Before this can be achieved, e.g. also success indicators will have to be identified.

This roadmap shows that creating a supportive environment for agroforestry (and broader than that for all pioneering forms of agroecological agriculture) goes beyond making subsidies available to farmers. A systemic approach which focuses not only on farmers but activates all

actors in the (circular) food system is needed. This requires adjustments in policy, education, research, the agri-food chain and the social environment. This requires the involvement of different actors, in different domains (health, nature, agriculture, etc.) and at different levels (citizens, farm owners, municipal officials, national government, etc.).

These actions are furthermore connected to the broader framework of agricultural development in which critical factors need to be addressed. In addition to the challenges specific to agroforestry systems, there are several challenges in the agricultural sector in general that also make it difficult for agroforestry farmers to start or sustain in the current agricultural landscape. True pricing, access to land and tension between agriculture and nature, are some of these general, critical issues.

True pricing

A major general challenge in the current system is the failure to assign the "true price" of food to the farmer. There are increasing insights from research about the true cost of our food ("true pricing"). Based on a study by FAO, for example, it appears that food and agricultural systems worldwide have hidden environmental, social and health costs worth at least $10 trillion, nearly 10% of global GDP. WWF calculated from those figures that food costs roughly one-third of what it really would if these externalities were included in food prices. The challenge now is how to correctly "internalize" or account for this social cost.

Access to land

In addition, the high price of agricultural land in Flanders makes it difficult for many agroforestry farmers to start or expand. The number of professional farms fell from almost 38,000 to 22,449 between 2002 and 2022. A lot of farm buildings were given other destinations such as a 'wellness farm', horse riding schools, storage places, etc. The number of farmlands not used for agricultural purpose is also increasing: in 2018, 28% of the agricultural area in Flanders already had no professional agricultural registration. Some 180,000 ha of agricultural land is used for other purposes: private gardens, keeping horses, and sports infrastructure. Private individuals are often willing to pay a high price for farmland, and farmers cannot compete with the rising prices for farmland created as a result. Thus, access to land is coming under increasing pressure for farmers in Flanders. This general problem also affects (starting) agroforestry farmers.

Tension between agriculture and nature

Finally, today there is still a great tension between nature and agriculture. Farmers do not always understand nature conservationists and sometimes see them as competitors taking up open (agricultural) space. In addition, nature conservationists often have little understanding of or affinity for agriculture. This creates a fierce duality, a kind of black-and-white thinking. Agroforestry can be a strong connecting component between these two sectors in certain contexts but still lacks support.

Attention is being paid to this theme through, among other things, the project "*Farmer seeks nature, nature seeks farmer*," a collaboration between Natuurpunt and ABS (a farmers union) that spent two years looking for ways to counter this polarization. The most important conclusion from this project was that farmers and nature conservationists need to get to know each other's environment, both technically/practically and on the human level.

Role of agroforestry

In other words, the development of agroforestry occurs within a broader framework of general agricultural development. This development should make dramatic efforts to be more conscious about and highly saving on increasingly scarce resources (energy, land and raw

materials), taking into account both direct and indirect use. A way of farming that contributes to climate adaptation and mitigation, and builds to restore (bio)diversity. A way of farming that stands close to the community and is valued for all its products and services.

Agroforestry is an obvious part of that transition movement. This transition can only take place with clearly defined goals and ambitions, a systemic approach at different policy and geographical levels, and intersectoral and interdisciplinary cooperation.

Agroforestry is thus not necessarily a goal in itself, but acts as a ‘shelter’ or ‘umbrella’ for comparable, land-based agricultural practices: practices that focus on diversity and multifunctionality, respond to natural processes and strengthen ecosystem services, and that develop new products and/or offer a greater(er) diversity of products. Working on measures that support agroforestry will also support the development of these other systems. We also refer to the promising Voedseldeal Agroecology in the framework of the Flemish Food Strategy. With this roadmap, we hope to provide a first frame of reference that can form the basis to adjust and imagine new pathways for change.

REFERENCES

Agroecology Europe positions papers & policy briefs, https://www.agroecology-europe.org/position-papers-policy-briefs/.

Agroforestry 2025 (2021-2023)., action cluster meeting reports.

AgroforestryBlueprint (2024). https://www.agroforestryblueprint.nl/ accessed 15/07/2024.

Agroforestry Network Netherlands (2024). Opportunities and bottlenecks within laws and regulations for agroforestry. https://kennisbank.agroforestrynetwerk.nl/informatiebronnen/boeren-bomen-kansen-en-knelpunten-binnen-wet-en-regelgeving-voor-agroforestry/.

Agromix Policy Event, https://agromixproject.eu/events/agromix-policy-summit/.

Agromix Policy Recommendations, https://agromixproject.eu/policy-recommendations/

Agromix Land Use Change Map, http://Agromixproject.eu/tools/land-use-change-interactive-map.

Annys S. Facq E., Beirinck S., Lemeire E. & Ruysschaert G. (2022). A system analysis of carbon farming schemes in support of the wider implementation of carbon farming in Flanders (Belgium).

Borremans, L., Visser, M., Wauters, E. (2019). The development of agroforestry systems in Flanders. A Farming systems approach to social, institutional and economic inquiry.

Bijttebier J., Fosselle S., Koopmans M., Tavernier H., Tessier L., Vandermaelen H., Wustenberghs H., Van den Bossche L., Debruyne L., Triste L., Mingolla C., De Cock L., Feyaerts D., Crivits M. (2024). Opportunities and obstacles for agroecology in the Flemish food system. ILVO policy advice 2024.02. https://ilvo.vlaanderen.be/uploads/documents/PB/2024.02-NL-Kansen-en-hindernissen-voor-agro-ecologie-in-het-Vlaamse-voedselsysteem-3.pdf.

Forest Groups (2024). Timber sales, https://bosgroepen.be/.
Bredenoord et al. (2020), Social commitment to nature in policy and practice -.
Exploratory study among citizens and businesses, The Hague,
https://www.pbl.nl/sites/default/files/downloads/20200115_maatschappelijke_betrokkenheid_totaal.pdf

Consortium Agroforestry Flanders (2023). Knowledge Desk, www.agroforestryvlaanderen.be.

Consortium Agroforestry Flanders (2023). Agroforestry Planner, www.agroforestryvlaanderen.be.

Consortium Agroforestry Flanders (2023). Information sheet "Overview of financial and practical support for planting and managing trees and shrubs on or along agricultural plots," www.agroforestryvlaanderen.be.

Department of Agriculture and Fisheries (2022) Go4Food, A Flemish food strategy for tomorrow. Background report, Brussels.

Department of Agriculture and Fisheries, personal communication (2021-2023).

Department of the Environment (2024). Soil+Matter, https://omgeving.vlaanderen.be/nl/grondzaken, accessed 15/07/2024.

Dauby et al. (2024). Transforming European food systems with agroforestry: Agromix policy white paper. https://agromixproject.eu/wp-content/uploads/2024/10/AGROMIX-WHITE-PAPER-24102024.pdf.

EU biodiversity strategy for 2023 https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en accessed 20/06/2024DigitAF Project (2023). www.digitaf.eu.

EURAF Policy Briefings overview, https://euraf.net/policy-briefings/.

EURAF Policy Briefing #69, https://zenodo.org/records/12706886

European Parliament (2024). EU Carbon Removals and Carbon Farming Certification (CRCF) Regulation, https://climate.ec.europa.eu/eu-action/carbon-removals-and-carbon-farming_en accessed 15/07/2024.

Facq, E., Ruysschaert G., Gerits F., De Waegemaeker J., Beirinckx, S., and De Mets. L. (2023). A roadmap for upscaling carbon farming in Flanders (Belgium). Deliverable of the LIFE CarbonCounts project. D/2023/04. 21 pages.

Farm to Fork Strategy, https://food.ec.europa.eu/horizontal-topics/farm-fork-strategy_en.

Farmlife Project (2022). Discussion master classes.

FoodForward Project (2022). Meeting reports.

Geels, F.W., Schot, J.(2007). Typology of sociotechnical transition pathways. Res. Policy 36, 399-417. https://doi.org/10.1016/j.respol.2007.01.003

Guiot. O (2022). Short chain success factors, ILVO (Institute for Agriculture, Fisheries and Food Research), available online at https://llaebio.be/node/235

ILVO-LLAEBIO, Bioforum, CCBT, Voedsel Anders, Steunpunt Korte Keten (2024), The Power of Cooperation in Fair Food Chains, available online at https://llaebio.be/brochure

Luske, B., Bestman, M., van Veluw, K., Prins, E., Rombouts, P. (2020). Masterplan Agroforestry - Advice for achieving a scale-up of agroforestry in the Netherlands.

Tallieu R., Kerckhove Y. (2023). Need for note: market study. https://praktijkpuntlandbouw.be/wp-content/uploads/2022/04/Factsheet_Marktstudie.pdf.

Tavernier, H., Borremans, L., Bracke, J., Reubens, B., & Wauters, E. (2024). Assessing the potential of different economic incentives for stimulating temperate agroforestry. A study in Flanders, Belgium. *Agroforestry Systems*, *98*(6), 1873-1889.

Participation Society Flanders (2021).

Sannen K., Indeherberg M., Lauwers L. and Dumortier M. (2024). Exploring green-blue business models for farmers. Reports of the Institute for Nature and Forest Research 2024 (9). Institute for Nature and Forest Research, Brussels. DOI: doi.org/10.21436/inbor.102077566.

Smit M. (2022). Towards sustainable agriculture in 2040. A new perspective. 298p.

Strategic Dialogue on the Future of EU Agriculture (2024). A shared prospect for farming and food in Europe. https://agriculture.ec.europa.eu/document/download/171329ff-0f50-4fa5-946f-aea11032172e_en?filename=strategic-dialogue-report-2024_en.pdf.

UN FSS. (2021b). Summit Vision. https://www.un.org/en/food-systems-summit/vision-principles (accessed 10/06/2024).

Vandaele S. (2024). Wood yields from agroforestry. Wood yields from agroforestry - Agroforestry (agroforestryvlaanderen.be).

Vanpoucke S. (2024). Already 10 years of forest agriculture subsidies in Flanders, what lessons can we learn from practice? Master's thesis UGent, program Biosciences: agricultural and horticultural sciences. 76p.

Voedseldeal Agroecology. https://lv.vlaanderen.be/beleid/go4food-vlaamse-voedselstrategie/voedseldeals#Agro

We work toward the further development of agroforestry in Flanders:

www.agroforestryvlaanderen.be