



WHITE PAPER Regenerative Agriculture: How to Accelerate the Global Scale-up?

Key pathways to convert worldwide food systems to Regenerative Agriculture in the coming decade.



Foreword

The environmental transition is the biggest challenge of our century.

The agricultural sector and companies working with the vegetal and animal living material of our planet – from agri-food, luxury, fashion and cosmetics industries – **must contribute to this transition.**

Indeed, agriculture is currently responsible for almost a third of global greenhouse gas emissions. Additionally, it is and will remain the sector most affected by climate change, with an expected increase in droughts, famines, climate migrations, and severe production losses. Today, we have reached **a point of no return.**

We believe that agriculture must and will be part of the solution,

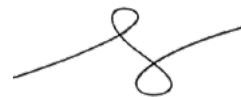
with practices that have the potential to benefit soil restoration, biodiversity conservation and the preservation of water cycles and oceans. Moreover, **agriculture can help sequester carbon in soils**, as nature is the most efficient carbon capture system to date. This combination of practices and impacts is **what we call Regenerative Agriculture.**

Beyond these convictions, the climate emergency raises a particular challenge: **our ability to rapidly deploy Regenerative Agriculture on a scale that will have a real impact on climate change and the resilience of farming systems.** Will we be able to shift a very significant part of the world's agricultural lands to an environmentally, socially and economically sustainable model?

What are **the levers, approaches and changes in paradigm that will enable this scaling up**, knowing that transitioning agriculture takes time? Who will be the main actors and what are the winning models that will enable these transformations?

We truly hope that this White Paper – which many of you have contributed to, through passionate discussions – will provide new insights, shed lights on these complex issues, and inspire you with practices based on the experiences of others. **We also hope it will give you the willingness and the energy to dig deeper, harder, further and faster, because we no longer have the luxury of choice in moving forward.**

Sincerely,



Marc Debets
CEO, Apexagri
& By.O Group



Yann-Gaël Rio
SVP Sustainability
& Agriculture, Danone

An aerial photograph of a rural landscape. A paved road curves from the top left towards the bottom right, intersecting with another road. The surrounding area is a mix of fields, some with distinct rows of crops, and clusters of trees. The lighting creates long shadows, suggesting it's either early morning or late afternoon. The overall tone is monochromatic, with shades of gray and sepia.

Contents

FOREWORD 3

ACKNOWLEDGEMENTS 6

INTRODUCTION 7

The Regenerative Agriculture Momentum: Where Are We At?

1. Common Practices of Regenerative Agriculture 14

2. Global Commitment from the Private and Public Sector 18

3. Financing Schemes and Carbon Market 21

4. Assessing Progress through Sound Indicators 23

Taking Action: What Levers to Scale-up the Global Effort?

1. Defining Sound Commitments and Assessing Maturation 29

2. Developing a Common Framework for Regenerative Agriculture 32

3. Adapting Supply Chains for the Transition 34

4. Improving Traceability and Transparency 36

5. Building Strong Collaborations between Companies 39

6. Starting with the Soils as the Common Foundation and Cornerstone of Ecosystems 40

7. Providing the Right Support to Farmers to Manage the Transition 41

8. Creating Reference Farms and Engaging Local Partnerships 44

9. Reviving a Strong Societal Meaning in Farming 45

10. Transforming our Global Food Systems 46

CONCLUSION 48

REFERENCES 50

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Introduction

The momentum for Regenerative Agriculture (Reg. Agr.) is generating a common interest across agricultural stakeholders worldwide. Although there are still differences of opinion on the impacts of Reg. Agr. practices or the means to implement them, there is a consensus that, if applied at scale, Reg. Agr. can translate into a significant positive impact on carbon sequestration, soil health, general ecosystems restoration and still provide its contribution to global food security. The question that remains is, therefore:

How can we ensure a rapid go-into-action and scaling-up of these practices at a global level to respond to ever more pressing climate challenges? How can we convert a predominant share of worldwide food systems to Reg. Agr. in the coming 10 years?

The wide variety of existing farming systems and pedo-climatic contexts, the numerous actors that need to be involved throughout internationalized supply chains and the complexity of agricultural cycles, make this transition a convoluted and intimidating journey.

But the certain consequences of inaction associated with the proven benefits of a successful transition have demonstrated a compelling necessity for a big shift. The private sector, especially leading companies of the agri-food industry, surely have a predominant role to play in ensuring a protected frame to farmers in reshaping our current food systems. But even if companies have a driving and restructuring role in the scale-up of Reg. Agr., it is the farmers who will be the acting forces of the transition and large-scale implementation of Reg. Agr.



Apexagri is an international consulting company specialised in sustainable and inclusive agri-food chain optimisation and agri-systems development with a strong field outreach. We provide targeted agribusiness solutions and technical expertise mobilization to a wide range of different actors from the public and private sector. Apexagri is currently working on strategic sustainable agriculture initiatives as well as upstream and downstream value chain management.

A SHARED DEFINITION OF REGENERATIVE AGRICULTURE?

The Rodale Institute introduced the foundations of regenerative agriculture in the 80s. At that time, the concept did not take on and disappeared from scientific publications, until 2014, when the movement gained momentum again, with a Rodale Institute's White Paper untitled: 'Regenerative Organic Agriculture and Climate Change'. In parallel, Allan Savory a Zimbabwean ecologist and livestock farmer, developed a method called Holistic Management, the animal counterpart of Reg. Agr., fighting desertification and helping grassland restoration.

Today Reg. Agr. is used on 12 million hectares and, according to the Drawdown project, could be scaled up to 221 to 332 million ha by 2050. The total cultivated area worldwide is 1.5 billion hectares and is predicted to increase by 220 million ha at best by 2050. Therefore, even if, today, Reg. Agr. represents less than 1/100th of the total cultivated land, it could increase to 1/6th by 2050.

Therefore, there is **no unanimous nor static definition**, but the particularity of **Reg. Agr. lies in a dynamic and result-focused system with constant on-farm ecosystem progress leading to greater regeneration**. Despite an increasing recognition of Reg. Agr. among the global agriculture community, it does not, to this day, create unity among all stakeholder communities in the sector rather than bringing innovative technical practices and methods of putting in place new positive systems.





FIGURE 1. FIVE OBJECTIVES TO REGENERATIVE AGRICULTURE

The purpose of this White Paper is to provide guidance to companies on how they can accelerate their transition. **Through internal changes, supply chain transformation, farmer support schemes and extended partnerships, we will explore how corporate engagement can lead to this massive change, thus securing our future access to food in a context of rapid and undeniable demographic surge.**

This White Paper is based on bibliographical research and interviews with a wide variety of actors – some driving transition to sustainable

and regenerative agriculture practices around the world, some that have just started the transition, and others that have a vested interest in transitioning.

Our intention is to equip anyone involved in agricultural materials sourcing with practical recommendations, applicable to all contexts, while bearing a positive impact on the environment and farmers' prosperity.

YIELD AND NATURAL RESOURCE PRESERVATION ARE A CRUCIAL CONDITION FOR AGRICULTURAL GROWTH AND PERPETUATION

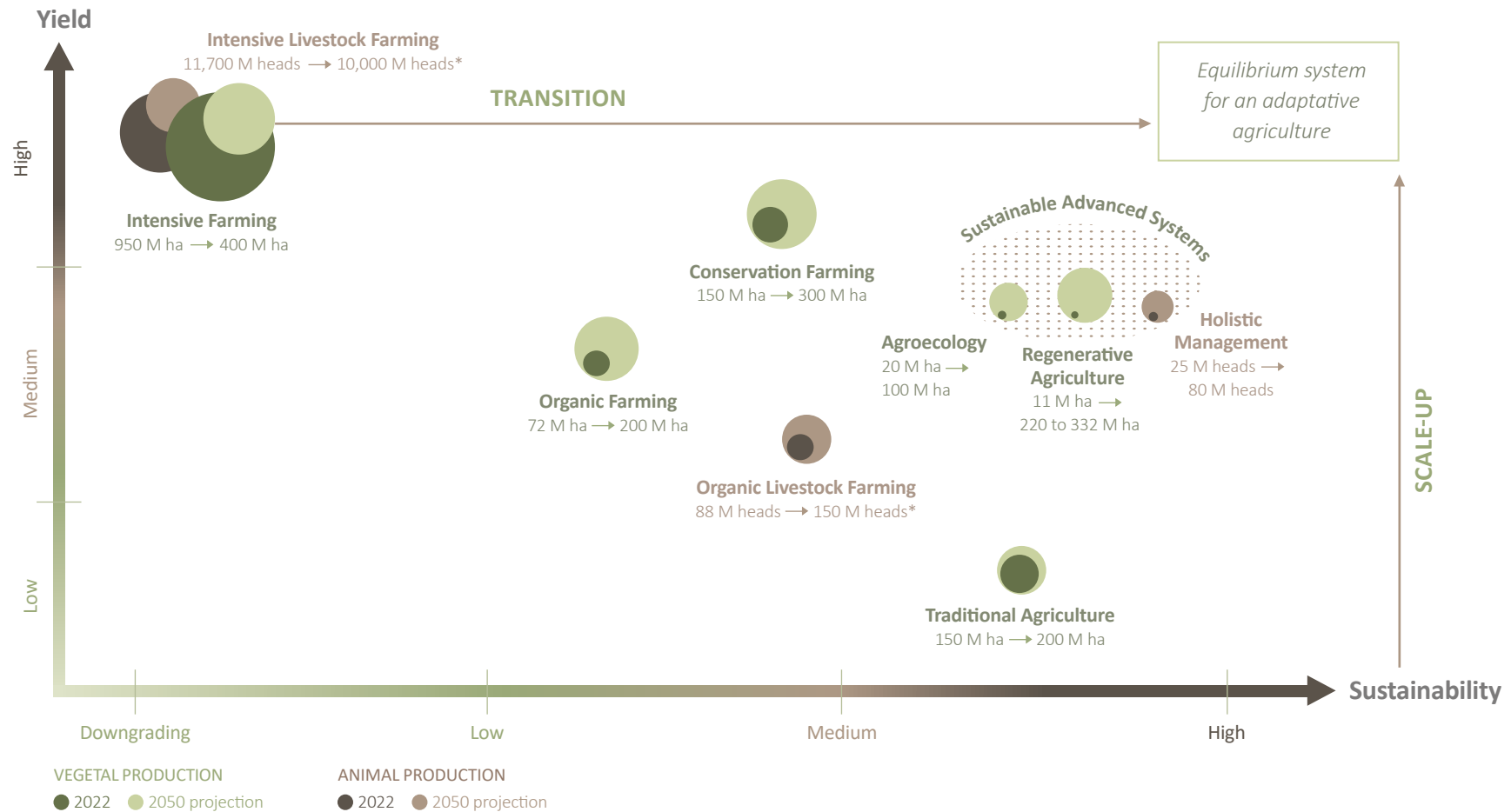



FIGURE 2. IMPORTANCE OF PREDOMINANT TYPES OF AGRICULTURE IN THE FACE OF CLIMATE CHANGE AND DEMOGRAPHIC SURGE, 2022 VISION AND 2050 PROJECTION

If projections in population rise over the next 40 years are expected to be lower than the occurred growth between 1970 and 2010, **limitations in food production in the face of a growing global population have been and will remain a major preoccupation.** Climate change adds a consequent layer of complexity, with the uncertainty of ensu-

ring the right conditions for growing food because of the massive global rise in droughts, rainfalls and change in seasonality. The need for more food, water and energy and the limited arable land are threatening both people's food security and natural resources.

As shown in Figure 2, **a convergence of yield optimization – to stay within the limits of arable land extension and securing forests and natural habitats – coupled with a sustainable and cautious use of natural resources is the only way to ensure the future of agriculture production and feeding humanity on the planet.** Yields are improving and the OECD-FAO Agricultural Outlook 2021-2030 is projecting that *‘87% of the expected overall expansion in crop production by 2030 will come from yield growth, including through digitalisation, and the adoption of new technologies and seed varieties. Yield growth limits the additional land requirement for agricultural production’.*

The Figure was based on a literature estimation and enabled us to rank the effect of each type of agriculture or livestock management based on the impact on yield and 5 sustainability criteria (biodiversity, water management, chemical usage, soil health and GHGs) on levels from 1 to 3 with 3 being the highest. Projections are also based on the existing bibliography (see References) and are a simulation of various types of agricultural status and evolution in the next 25 years. It clearly appears that sustainable advanced systems (such as Reg. Agr. and Agroecology) will grow significantly in surface coverage and scale-up.



All systems need to gain in sustainability in the coming decades, while lighter impact systems need to gain in efficiency and yield optimization. The ideal model for the future is finding the point of convergence enabling both scale-up and adaptation.

Disclaimer: all numbers provided in the graph are hypothetical and based on selected literature. It does not provide an exact ratio and is mainly meant to show a simulation of current and projected state with close to realistic figures. Types of agriculture such as traditional or agroecology are often not inventoried or fully mapped, up-to-date available figures can only be based on rough estimates.



Agroecology is a multidisciplinary field that studies and applies the interactions between plants, animals, humans and the environment within agricultural systems for the common benefits of nature and livelihoods.



Conservation agriculture is a set of techniques that avoid the loss of arable land while regenerating degraded land. Inputs tend to be reduced without being banned.



Holistic livestock & grazing management describe a system thinking that seeks to restore grassland ecosystems by using livestock as a proxy for the herds of grazing ruminants that the prairies and savannas of the world co-evolved with and depend on.



Indigenous agriculture and traditional livelihood practices include small scale farming, pastoralism, shifting cultivation, fishing, hunting, gathering and other forms of wild harvesting, or a combination of such practices. Such traditional livelihoods provide for sustainable management of resources, biodiversity and ecosystems, and are based on traditional knowledge, reciprocal labour and traditional agricultural calendars.



Intensive agriculture aims at optimizing agricultural production by using all available technical and technological means. Here it represents business as usual, with no restriction regarding inputs, tillage or crop management.



Intensive livestock farming is a type of industrial agriculture, specifically an approach to animal husbandry designed to maximize production, while minimizing costs.



Organic farming uses cultivation and breeding practices that exclude the use of synthetic chemicals and GMOs and limit the use of inputs.



Organic livestock farming is managed differently than conventional livestock, with an emphasis on pasture and restrictions on the use of antibiotics and hormones, organic livestock benefit people, the environment and animal welfare.



Regenerative agriculture is a holistic, principle-based approach to farming and animal husbandry that support synergetic interspecies dependences, living soils and low-input agriculture, following five major objectives: improving soil health and fertility, sequestering carbon, restoring the water cycles, increasing biodiversity and empowering farmers.





Common Practices of Regenerative Agriculture

Regenerative agriculture is commonly known as a practice-based system. As Andrew Smith, COO of the Rodale Institute, puts it: ***“Practices should be placed on a continuum: they can either have a degenerative or regenerative impact on living resources.”***

Agricultural stakeholders across sectors, continents and disciplines each have their own definition of Regenerative Agriculture, such as:

A system of farming principles and practices that increases biodiversity, enriches soils, improves watersheds, and enhances ecosystem services. TERRA GENESIS (2017)

Built on biological principles, regenerative agriculture seeks to concurrently enhance productivity and environmental management. SHERWOOD AND UPHOFF (2000)

To enable the most structured and optimized regeneration of agri-systems, several best practices can be selected as the most effective in terms of restoration of resources and contribution to the reduction of greenhouse gases emissions (carbon dioxide CO₂, Methane CH₄ and nitrous oxide N₂O). **Major pollutants occur at all stages of the supply chains and are resulting, according to the Food and Agriculture Organization of the United Nations (FAO), to agriculture, forestry, and other land affectation accounting for 24% of worldwide GHG emissions.**

To reduce GHG emissions and more generally renew with our living heritage, many actions can be taken. After a broad comparison of existing literature and extensive consultations among the scientific and academic community, we identified **15 best practices** (Figure 3) as the most effective and popular ones within the field of regenerative agriculture, all having a positive impact on GHG. They relate mainly to vegetal and animal production practices, preservation of resources, and on the improvement of CSR considerations.

It is important to note that a single practice cannot be a standalone lever. Farms should be taken rather as agroecosystems where all components are interconnected. Change needs to come by combining several prioritized practices toward a clear set of targets. Moreover, Reg. Agr. is not a one-time solution and the system needs to be maintained to preserve its positive outcomes.



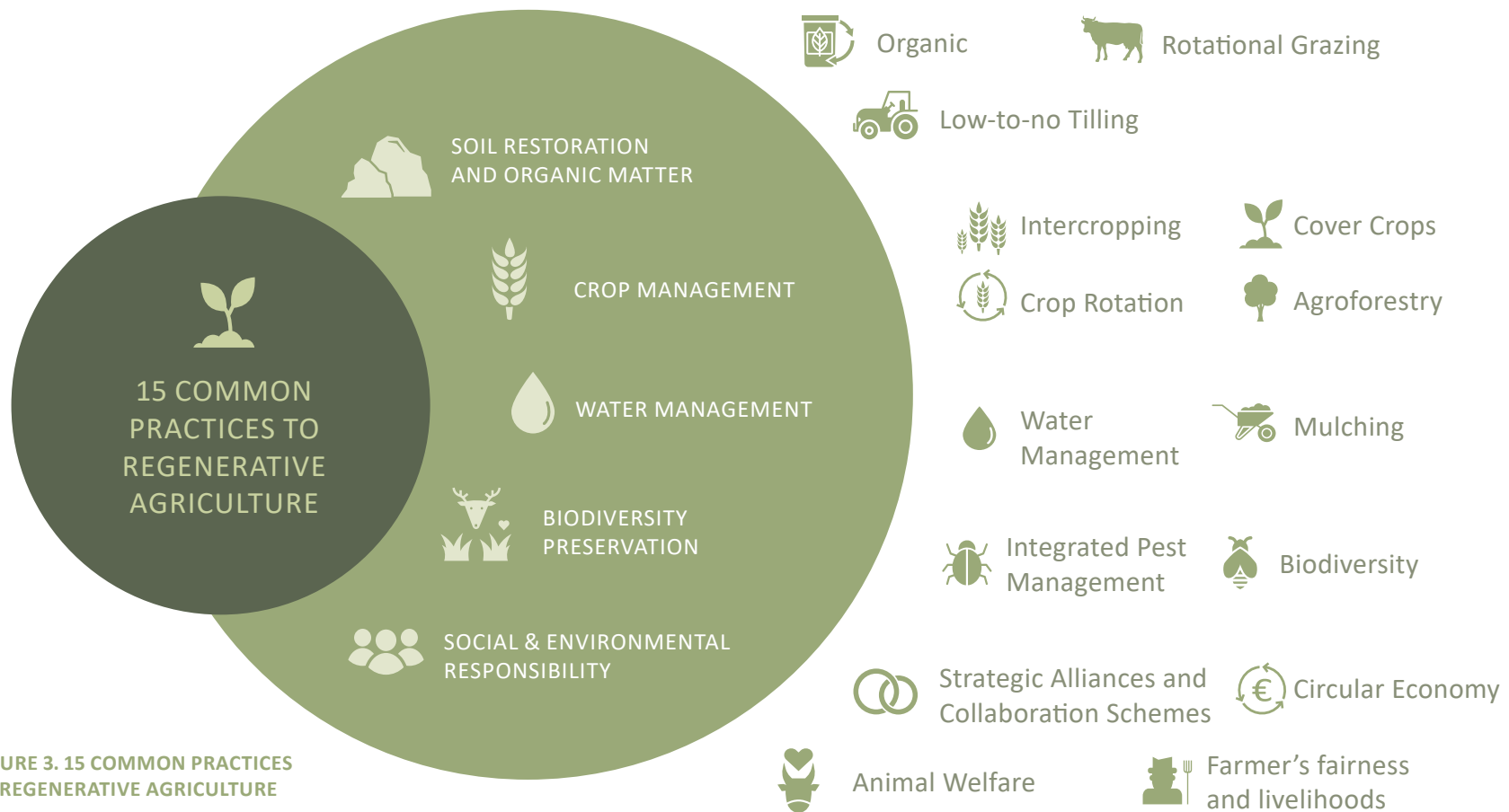


FIGURE 3. 15 COMMON PRACTICES TO REGENERATIVE AGRICULTURE

“Reality is way more contrasted than what we think. The transition is achievable but requires careful local adaptation. There is a lot of vigilance to have.”

Extensive consultations also highlighted the importance of adaptation to the very specific context of farmers across diverse territories. Several factors can influence farming systems such as on-farm pedo-climatic conditions, international trade and national policies. It is primordial to adjust the transition accordingly to the local agricultural governance,

market linkages, environmental concerns and all factors requiring tailored adaptation. Finally, given the complexity of each context and condition, it is important that farmers remain sovereign of their land and decisions, thus land tenure and governance around the use of resources are key dimensions to be looked at.

“We can put guidelines and objectives but at the end farmers know best what their fields needs”.

Practices	Targeted impact on ecosystem restoration	Other positive outcomes
Organic Agriculture		<ul style="list-style-type: none"> • Improve soil health and plant growth • Allows for circular use of resources
Low to no-till Farming		<ul style="list-style-type: none"> • Savings in mechanization, time and labor force
Rotational Grazing		<ul style="list-style-type: none"> • Improve grass quality (meat or dairy quality) leading to better market price
Intercropping		<ul style="list-style-type: none"> • Better valorization of the soil's resources • Diversification of income sources
Crop Rotation		<ul style="list-style-type: none"> • Repulses diseases and pest • Securing the crops
Cover Crops		<ul style="list-style-type: none"> • Lesser risk of soil depletion in the longer term • Income diversification
Agroforestry		<ul style="list-style-type: none"> • Improving the productivity of the field • Income diversification
Mulching		<ul style="list-style-type: none"> • Improvement through better crop and tree's health, leading to greater production
Integrated Water Management		<ul style="list-style-type: none"> • Improving water availability allows for better plant growth improving productivity
Integrated Pest Management		<ul style="list-style-type: none"> • More loss can occur due to pests and pathogens.
Biodiversity		<ul style="list-style-type: none"> • Provides ecosystemic services (repulsing pest, fertilizing flowers, etc.), which can help productivity

FIGURE 4. 11 TECHNICAL PRACTICES TO REGENERATIVE AGRICULTURE



Global Commitment from the Private and Public Sector

During the past two years, an increasing number of global agri-food, cosmetics and luxury companies have taken up the issue of regenerative agriculture and integrated it into their CSR plans. After analysing CSR commitments from the 40 top international agri-food industries (based on active watch and benchmarking) few criteria were extracted to evaluate the progress of each company in the transition to regenerative agriculture. These results provide a quantitative overview of indicators and ambitions of the agri-food sector in 2021.

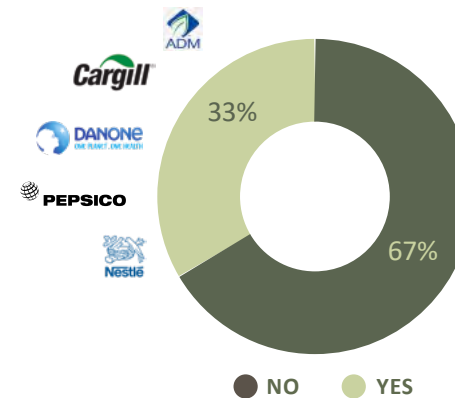


FIGURE 5. CLEAR REGENERATIVE AGRICULTURE AMBITION (2021)

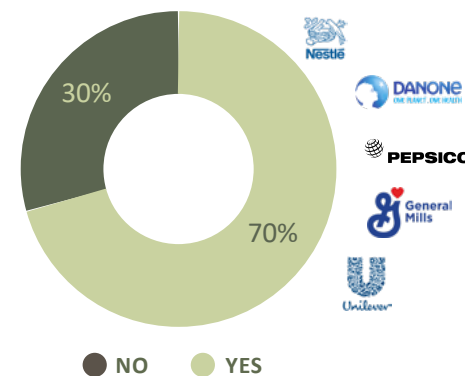


FIGURE 6. SUSTAINABLE AGRICULTURE PROJECT WITH MEASURABLE GOAL (2021)

We noted that 70% of the companies have quantified targets, even if some do not specifically mention Reg. Agr. but are directly targeting pillars of Reg. Agr. such as water consumption and quality, or GHG emissions. For example, Suntory has pledged to reduce its GHG emission by 30% in all its value-chain by 2030 and Heinz pledged to have 100% of their tomatoes sourced sustainably by 2025.

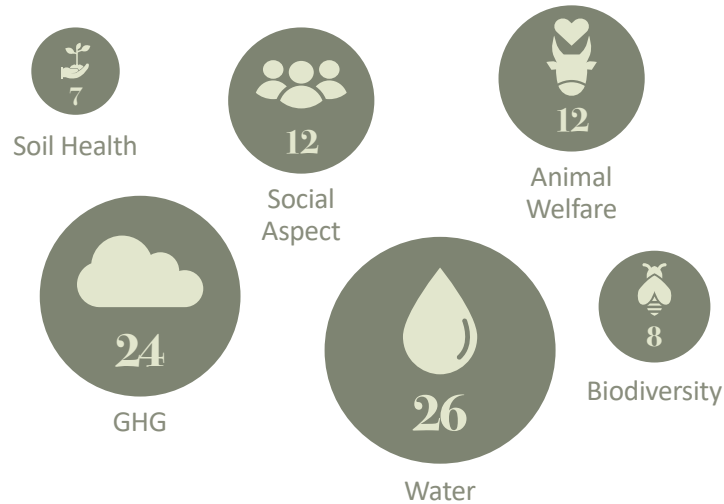
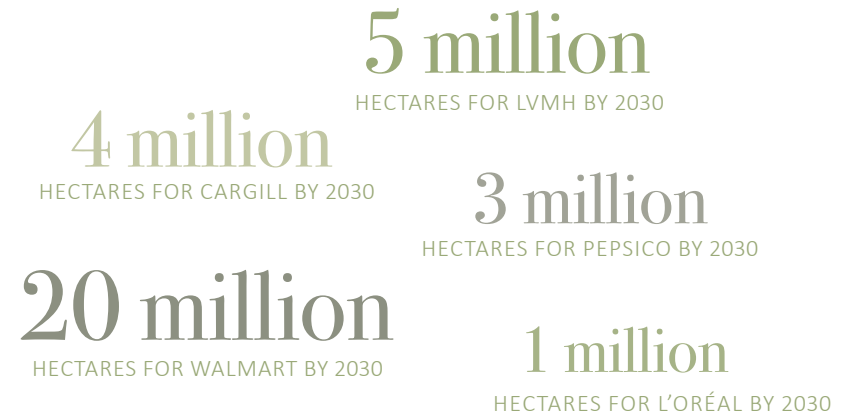


FIGURE 7. OVERSIGHT OF MAIN SUSTAINABLE COMMITMENTS BY THE TOP 40 INTERNATIONAL AGRIFOOD COMPANIES

This brings up an important concern shared by all: where does Reg. Agr. start and where does it end? On the top 40, almost all companies have sustainable commitments. But are these commitments enough to be considered as a first step toward Reg. Agr.?

If no precise delimitation yet exists, we can ensure better consistency within corporations, either by following global targets (e.g. 4p1000 initiative for carbon) when available, scientific targets, situation-based targets, national set targets or in coordination through existing networks (e.g. SAI platform).



PRODUCTION AREA CONVERSION TO RA: COMPANIES COMMITMENTS BY 2030




In terms of convertible production areas, companies have a real ability to scaling-up Reg. Agr. quickly, as they can influence the way of production of a consequent share of farmers and supply chains.

Solely based on these examples, Reg. Agr. could increase by a factor of 2.6 in the 8 coming years. In comparison, areas grown under organic farming have increased by a factor of 4.6 in the last 18 years, that now stands at 71,5 million hectares.

Companies and multinationals thus have a strong part to play in the transition and are among the main actors capable of scaling-up Reg. Agr. at a global level with high impact. In addition to their respective commitments, some companies also take part in global initiatives, bringing together a wide range of stakeholders. Many of these initiatives, both public and private, address specific issues of regenerative agriculture.

Example of public initiatives supporting strategic and operational commitments

KORONIVIA JOINT WORK FOR AGRICULTURE Strategic & Regulatory




-  This initiative was conducted to assess the potential mitigation and adaptation of agriculture to climate change.
-  For 4 years, the KJWA, as a global consultative process, gathered submissions from different actors on 6 topics until coming into a global agreement for all. The topics were: (i) Soil; (ii) Nutrient uses; (iii) Water; (iv) Livestock; (v) Method for assessing adaptation and (vi) Socio-economic and food security dimension
-  Today, solutions regarding the six topics and state-of-the-arts have been compiled and agreed on.

NDPE: NO DEFORESTATION NO PEAT AND NO EXPLOITATION Operational

-  This initiative sets common standards for all companies that may have an impact on deforestation, development on peats and exploitation of local communities.
-  NDPE has created a framework for companies to assess and monitor their production processes that may have an impact on deforestation, peatlands, and exploitation of local communities.
-  46% of the world's largest oil palm producers and traders have comprehensive commitments to NDPE.






4 PER 1000 Regulatory & Operational

-  The 4per1000 initiative aims at building the soil carbon content by 4%o each year to compensate for the carbon emissions and therefore recreate a balance in the atmosphere, slowing climate change.
-  4p1000 has created a roadmap with 6 general long-term objectives defining the realisation of the vision: creation and conceptualisation, implementation, promotion, collaboration, monitoring and transversal actions.
-  More than 500 members and partners are involved.



OP2B Operational & Strategic

-  The goal is to limit the impact businesses have over biodiversity.
-  OP2B created a framework for regenerative agriculture using a collaborative, science-driven approach and in close partnership with farming groups, scientists, and civil society.
-  27 companies are involved in the OP2B coalition, including Nestlé, Unilever or Danone, and carry projects around the world.



Financing Schemes and Carbon Market

Transitioning from one farming model to Reg. Agr. has a cost and requires adequate financial resources.

The below five types of financing schemes represent viable alternative funding sources for Reg. Agr. projects as compared to dominant financial investment patterns. The latter are indeed known to exacerbate unsustainable outcomes in food systems by supporting businesses involved in high-input industrial agriculture and less demanding on social or environmental impacts.

1. Public finance and subsidy schemes

Public finance is much dependent on the governments' will to support the transition agenda. A recent study analysing public funds for agriculture showed that 79% of the funds coming from major EU and international organisations are still targeting conventional agriculture. Example of funding institutions: Root Capital, European Commission Agriculture and Rural Development, AgDevCo, USDA Natural Resource Conservation Service, Agroecology Fund, etc.

2. Social financing

Social financing is known as a set of investment structures that feature measurable targets for social and environmental impact alongside calculations of return on investment.

It is a growing field of investment and practices that adheres to the economic growth paradigm while aimed at supporting the success and spread of social and sustainable innovations. Example of impact investors include the Moringa Fund, Iroquois Valley Farms, Soil Capital, RSF Social Finance, etc.

3. Carbon remuneration

Carbon remuneration: payment attributed to farmers each year for the carbon credit that they generate by storing carbon in the soil through their practices, such as:

Low-carbon label, launched by the French government to help 131 projects in obtaining this remuneration.

The carbon remuneration represents a great opportunity for farmers: by implementing better practices, not only will they get a better productivity in the long run, but they also can be paid during the first years - which are always the toughest- for their ecosystemic services.



Moreover, they remain in control during this 5-step process (Fig. 8) as they are the ones choosing the newly implemented practices and the audit is done by a third party. The carbon market represents a win-win system for farmers, firms and governments by compensating the efforts and contributing to countries' and firms' CO2 commitments. The agricultural community agrees that the risk should be taken by big holdings and protecting smallholder farmers from getting into debt and bankruptcy. Example: Rize Ag, ClimateSeed, Climat local, etc.

4. Participatory financing

Participatory financing, or crowdfunding, is an exchange of funds between individuals and farmers, outside institutional financial channels, to finance an agricultural project via an online platform. It is a good way to involve citizens in the transition. Example: MiiMosa, Bluebees, KissKissBankBank, etc.

5. Private financing

Private financing represents an important source of funds as displayed in section II-B of this document, including through dedicated funding schemes such as: Livelihoods Funds, Regenerative Fund for Nature, etc.



FIGURE 8. EXAMPLE OF PROCESS FOR CARBON CREDIT

Assessing Progress through Sound Indicators

Monitoring the progress and impact remain specifically complicated tasks for companies and cooperative associations with high number of farms across several geographic places. There are few options on how to generalize baseline data collections, as shown in Figure 9. All methods can be used simultaneously and can be interconnected, depending on resources available and timeframes.

Progress tracking can either take place on a yearly basis, every two years or over five years, depending both on resources available and the kind of impact that one aims to measure. Practices are implemented on a farming-season basis, so change will for instance be measurable quicker for perennial plants than for trees. Progress tracking on agroforestry may indeed take a few years to show results, whereas others, such as mulching and organic fertilization, may show quicker results.

Each practice will have specific outcomes by influencing different parameters. The indicators should therefore reflect these desired impacts.

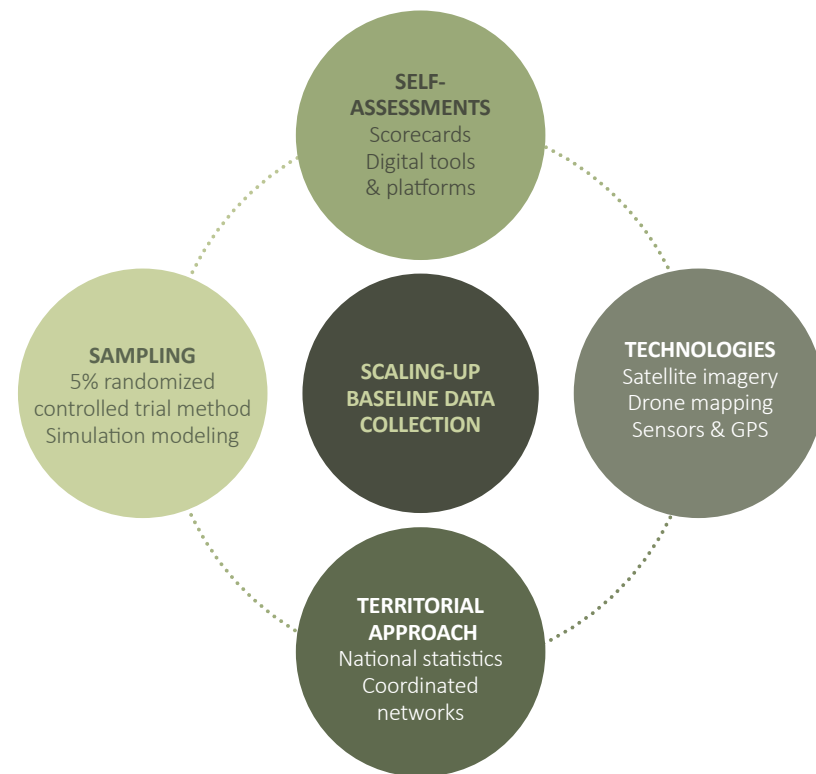


FIGURE 9. FOUR WAYS TO EVALUATE BASELINE ESTABLISHMENT IN THE CONTEXT OF REG. AGR. SCALING-UP



“We cannot misconceive in transitioning to more respectful agriculture systems. It is the only way to go, although it can be done through a wide range of pathways”

For carbon sequestration, evaluation can be done at the farm level, but carbon being integrated into a cycle and being a prominent question in today's world, evaluation can also be conducted at a larger scale. Much similarly to the farm scale, the assessment is based on field sampling and modelling, and specific data can sometimes be found in national databases (topographic, geographic, soil, etc.). In France, for instance, several programmes exist, regularly mapping soil physico-chemical parameters, including carbon content.

Tools such as ABC'Terre developed by INRAE, the Carbon Benefits project developed by the Colorado State University or Ex-ACT, developed by FAO, IRD and the World Bank, can estimate the carbon sequestration capacity of a project, using environmental and farm information entered by operational and technical managers in the field. These are examples of the tools developed by the leading actors, but many others exist. They can be used at a national scale and on large timeframe making them potent tools to manage projects.

How can we converge global efforts in ensuring scaling-up the Reg. Agr. model to at least a quarter of conventional agriculture systems? In the second chapter, we will look at sets of practical drivers and solutions that will respond to everyone's concern in the sector: giving keys and pathways to the acceleration and generalisation of Reg. Agr.







This second chapter is meant to provide a deep dive into the pathways and levers for scaling-up regenerative agriculture at a global level, alongside the responsibility of stakeholders in this transition's deployment. After numerous interviews from various players and farmers that have initiated their sustainable or regenerative journey, Apexagri

has identified several guiding principles that can be applied to most contexts, companies, farm types, geographical zones and production systems. This aims **at engaging in a call for action and initiate immediate impactful transformations.**



1.
SOUND OBJECTIVES
AND COMMITMENTS



2.
COMMON
FRAMEWORKS



3.
ADAPTATION
OF THE SUPPLY CHAINS



4.
TRACEABILITY
AND TRANSPARENCY



5.
STRONG
COLLABORATION



6.
SOIL: FIRST
AND FOREMOST



7.
RIGHT SUPPORT
TO FARMERS



8.
REFERENCE FARMS
AND PARTNERSHIPS



9.
FARMERS AS DECARBO-
NATING ACTORS



10.
TRANSFORMATION
OF FOOD SYSTEMS

Defining Objectives and Commitments

There is a global consensus that firms need to **act now**. It is in the interest of every actor in the agri-food, cosmetics, luxury, or fashion industry to have a **roadmap building on Reg. Agr.** As public concern over sustainability grows rapidly worldwide, especially amongst advanced nations, it will not only bring these firms healthier relationships with their supply chains but will also showcase their commitment and improve the resilience of their businesses in the long term.

Whether it is biodiversity, deforestation-free, soils health, carbon sequestration or water management, a commitment clearly stated and widely shared is the key to moving forward. Each company has their very own KPIs that, although it may translate differently, have very **similar overall purposes: achieving a cohabitation between ecosystems and business.** For instance, companies such as Kering and L'Oréal may focus on biodiversity and the agro-ecological balance, Danone and BEL groups focus rather on soil health, while Patagonia will be looking more deeply at carbon sequestration. In the end, these actions share similar purpose, leading to translating conventional agriculture practices into regenerative solutions for nature and CO2 sequestration.

While communicating on the move toward action, companies can take public engagements which will generate a positive pressure to successfully deliver on the achievements expected by all.

As stated by Emmanuelle Rouais, Sustainable Sourcing Project Manager at Yves Rocher **“Having clear, common objectives, stated loud and clear, helps to get the field teams on board, and can inspire others”**. It is not surprising that the very first step of the Reg. Agr. transition is to build sound and strong commitments to encourage a measurable momentum and inspire other stakeholders to follow, building up the global movement. It is also key within an organisation to have all departments and players aligned and putting forces in place transversely. Defining strong, quantifiable ambitions and targets can be complicated for many, at a time when the impact is dependent upon several factors. Our interviews revealed that stakeholders do not always have a systemic approach to the scale-up of Reg. Agr., being unsure of what to include or how to go about it. Even companies already committed to a sustainable agenda are in the expectation of **clearer global frameworks, stronger scientific back-ups** or data-based and tailored to needs **transition plan** to minimize their risks.

To ease the creation of a strong and ambitious plan, companies can focus on finding the **lowest common denominator** among their suppliers (a specific set of practices, supply chain, geographic zone to start with or a unique pillar), launch minimum **baseline collection** and kick-in the transition. **Quick milestones** need to be put in place to feed-in the scalability to other suppliers, brands, farmer organisations or value chains.

A few challenges may be encountered on the road of formulating tailored ambitions, thus the following recommendations may help in re-defining goals, through:

1	Positioning cursor at Reg. Agr. practices	Positioning practices with sound and system-based targets Putting efforts on defining the progress line towards improvement
2	Grassroot-fed ambition	Conducting randomized farm visits to better understand environmental problematics making consensus
3	Co-creation with stakeholders	Engaging primary buyers and suppliers to define collective goals and keep everyone aligned
4	Central homogeneity and decentralized adaptability	Building and drawing a common general ambition for the mere group and allowing for sub-entities (brands, houses, etc.) to draw their own specific and adapted targets.

The process of creating a clear and strategic ambition is to have a good understanding of a company's maturity and get to know how far it can aim in the first years: **"It is necessary to go through a stage of internal maturation"** (Pascal Chapot, Head of Sustainability at Nestlé). We suggest undertaking an internal assessment process to identify the most tailored roadmap phased in time along with the **internal changes** for a proper deployment of the ambition.

This internal diagnostic may for instance lead to internal organizational changes: **50% of companies** interviewed by Apexagri confirmed the need to start from organisational change to take on the Reg. Agr. challenge adequately. It may take different forms depending on the needs and wants of the company, as we can see in the few below examples:

Another point to consider is resources. As stated by Philippe Blouin, (Purchasing VP at MOM), **"We also need to integrate more agronomists to the teams"**. Agronomists and technical specialists will bring a valuable, continued expertise and can adapt goals and ambitions to different contexts of players and suppliers.

They should however not be the only knowledgeable persons on these concepts. It is important to sensitize all teams to these topics as they may all have a role to play, from Finance to Marketing and Human Resources. To reach their objectives, firms need to translate long-term objectives into long-term actions as **"There is a continuity issue: the results are visible in the long term, so we must not slacken our efforts"** (Philippe Blouin). For the transition to be effective, it is necessary to **provide suppliers with long term and volume-specific commitments** so that they can make the necessary changes to align with the company's ambitions and timeframes.

blédina

Building a new team of people interested in the subject and willing to work on it. Different profiles emerged, which now enable the team to function properly. This strategy redirects staff members toward the transition, thus creating a team committed solely to it.

MAÏSADOUR
NOTRE CULTURE. VOTRE BIEN-ÊTRE

Creation of a dedicated "agriculture department", connecting the marketing land operations and sales. Linking these departments was found to better valorise field by the marketing team. It works for firms who need to promote initiatives already existing.

YVES ROCHER

Creation of an expert team within their sustainable sourcing pole to carry out scoping missions to evaluate where they stand at global level – and to ensure the implementation of the action plan.



APEXAGRI'S INSIGHTS

While a heterogeneity of frameworks is being developed, we suggest starting with your own standard as all these experiences will feed in stronger common frameworks development and scale-up. Many actions can be initiated, improved and accompanied.

Developing a Common Framework for Regenerative Agriculture

Many stakeholders are expecting the creation of a common general framework for Reg. Agr. and this can translate differently in the need for tools, strategic approaches or networks to help the process: **“What I don’t see yet is the common approach”** (Pascal Chapot, Head of Sustainability at Nestlé).

Despite this global thirst for a common framework, some are more sceptical regarding the ability to create such a framework and consider Reg. Agr.’s forces laying in its adaptability in the ground: **“It’s a complex system to understand, to judge, and so it’s difficult to put indicators on it.”** (Gérard Tubéry, President of the Avril Foundation and farmer).

With the Reg. Agr. transition still being in its early stages, tailored and adapted frameworks rather than one for all would make it possible to define the main principles and guidance and avoid inaction without falling into dogmatism. **For the movement to be sustained and remain dynamic, innovation, creativity, adaptation, and progress must remain at the heart of any call to action.**

To answer this global demand, actors can create a baseline for Reg. Agr. and define a set of sound result-based indicators to monitor their transition by considering its results rather than the means to achieve it. It allows companies to focus more on the “what we achieved out of it” than the “how we did it”.

The timing aspect should be taken into consideration in such frameworks, as agricultural cycles can be slow depending on the types of productions (e.g. arboriculture). It can take up to 3 or 4 years for such projects to show impact in the field, thus pilot projects and quick wins are always beneficial to keep all stakeholders engaged and motivated in concise timelines.

Nevertheless, some organisation like SAI platform and SBTi, have launched the development of frameworks on Reg. Agr. respectively with the help of 17 agri-food companies and 2,000 businesses and financial institutions involved in those networks. These initiatives intend to bring consistency to the industry as Reg. Agr. continues to be shaped and take root.

Even though **“The more people who turn towards a common goal, the easier it is to act together”** (Juliette Rembert, Regenerative Agriculture Project Manager at Blédina), the creation of a framework does not rely solely on firms. Public bodies can also create rules and frameworks to ease the development of Reg. Agr. at political and regulatory levels, farmer organisations can raise the voice and promote a grassroot framework, international institutions can also provide common tools for application and public policies for a favourable scaling-up environment.

“A balance must be found between formalisation and action”

(Emmanuelle Rouais, Sustainable Sourcing Project Manager at Yves Rocher).

Finally, the framework for Reg. Agr. can also be imposed by certification frames. Today, two recognized labels exist. They are result-based and evolutive enough to accompany the transition of farmers toward regenerative practices, as shown through the below figure:

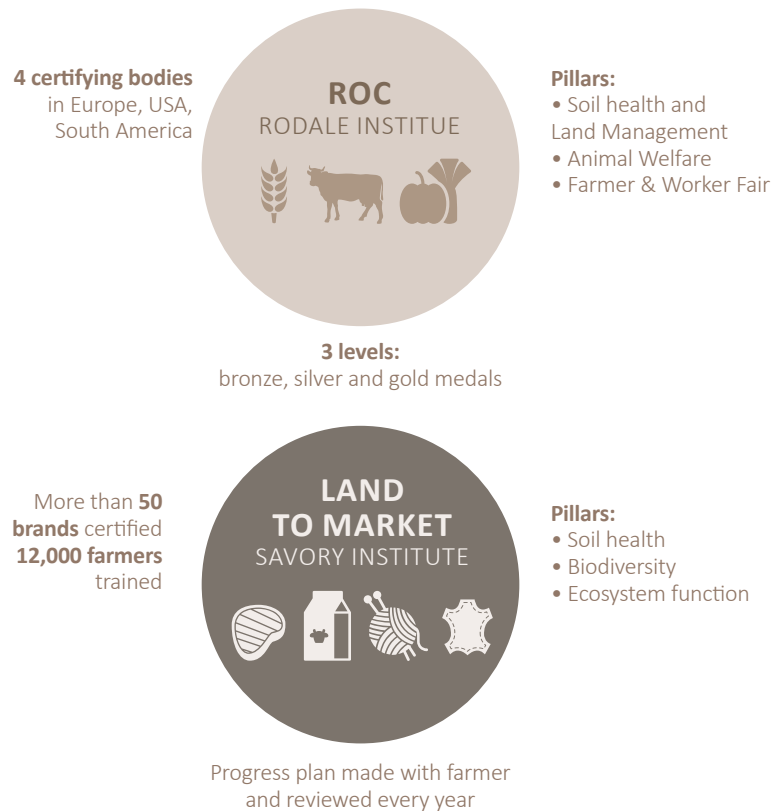


FIGURE 10. DETAILS OF TWO LABELS VALUING REG. AGR.

These labels cover almost all supply chains, enabling all types of production to be certified, thus taking Reg. Agr. out of a niche market, and bringing together actors of the transition under the same set of constraints and evaluation.

Their authenticity is validated by the commitment of major/emblematic brands:

- ROC has been developed by the regenerative organic alliance, which includes Patagonia and Patagonia Food. This company is known for its strong regenerative commitment.
- The Land to Market label is also used by more than 50 brands such as UGG, Timberland, Kering, etc. Once again, these actors are known for their implication in the improvement of their supply chains and practical action to meet their goals.

Adapting Supply Chains for the Transition

For Reg. Agr. to be scaled up, it is necessary in ordinary frames that not only farmers undergo changes but the entire supply chains, re-distributing responsibility but also risks to all parties.

The two very first steps to consider are thus to:

- 1. Get suppliers engaged and convinced;**
- 2. Proceed with method by targeting prioritised value chains.**

Choosing which supply chain to begin the transition with can be a real challenge for companies, and we listed four examples of strategy for prioritization:



Volume-led approach

Starting with the highest volume of purchases could be a strategy allowing for a leading shift with important results, although it could take more time to have everyone on board on such a strategic commodity.

Building on the greener commodity

Transitioning the supply-chain of a specific commodity already engaged in sustainable transitions or green labels can be a good starting point for quicker efforts and already engaged stakeholders.

Closer relation to the impact

Starting with the supply chain of a specific commodity in which firms have direct contract with their farmers could enable an easier transition as there are fewer actors to be convinced since they are closer to the ground and impact.

Networks already in place

Starting with existing partnerships that can be a catalyser for scale up joint efforts toward specific commodities.

The below example with a Californian fashion brand looks at a new model of supply-chain for their Reg. Agr. clothing line showing strong adaptation and simplification.

Supporting smallholder farmers aggregating into stronger groups, initiating change on the whole farm rather than just on the production supplied to the firm, working directly with farmers, reducing the number of intermediaries working in partnership with other firms sourcing from the same suppliers could all be solutions for better structuring the supply-chain and reducing the risks encountered by the suppliers and the company.

EXAMPLE OF A NEW TYPE OF SUPPLY-CHAIN

Christy Dawn, a Californian fashion brand, remodelled their entire supply-chain for a Reg. Agr. clothing line. The company started this Reg. Agr. journey in 2019 by buying a 4-acres pilot farm of degraded land in India, paying 3 times the local salary to their farmers, and working closely with local spinners, weavers, natural dyers, and dressmakers to make the collection from the Reg. Agr. cotton.

The brand pushed the remodelling of its supply chain even further as it created the Land Stewardship program. Similarly, to CSA (community-supported agriculture), customers invest \$200 into the programme, which covers the cost of transition for 3,485 square feet of land from conventional to regenerative. When harvest time comes, Christy Dawn pays them \$3.57 of store credit per pound of cotton harvested. This system redesigns the entire supply chain. The company is in close relation to the farmers and customers are directly involved in the production process. This is a new farm-to-closet structure.

Getting closer to farmers and creating proximity has shown to truly benefit both parts.

For instance, working under **direct contracting frameworks** avoiding multi-layered suppliers' ecosystems can result in fruitful collaborations taking root in the heart of the operational problematic and fully owned by farmers as stated by Emmanuelle Rouais (Sustainable Sourcing Project Manager at Yves Rocher): ***“Choosing between direct and indirect sourcing is key: when buying from suppliers, there is no visibility on the practices put in place or the monitoring”***. Grassroot problem-solving, decentralisation, smoother communication and traceability can thus be greatly enhanced in the longer run. On the other side, farmers can have a more equitable price repartition for their production and a frame to express their interest, it is a win-win situation: ***“Farmers are not in direct contact with the customer, so firms' expectations are hard to translate directly on the farm.”*** (Adrien Chassan, Head of Agro-Ecological Innovation at Maïsadour). By working with direct contracting framework, firms improve one of the most important aspects needed to rightly implement the transition: progress monitoring.



APEXAGRI'S INSIGHTS

Not all supply chains are going to transition at the same pace as shown above, but will require strong data management systems to track progress and store data coming from the chosen indicators.

Improving Traceability and Transparency

Mentioned during several interviews, traceability within every firm and supply-chain needs to be looked at carefully as to follow the evolution of companies in the implementation of their Reg. Agr. ambitions ***“The first challenge to scaling-up is traceability”*** (Pascal Chapot, Head of Sustainability at Nestlé).

Not only traceability systems are key to optimized value chains and a better knowledge of supply chains – often having a very complex nature – but it has also become a crucial parameter for consumers, critically wanting to get answers and proofs on social and environmental credentials, wanting to understand conditions associated to the food they buy. In a United Nations Global Compact and BSR report (2019), traceability is defined as:

“The ability to trace and identify the history, distribution, location and application of products, parts and materials; to ensure the reliability of sustainability claims in the areas of human rights, labour (including health and safety), the environment and anti-corruption.”

The very first step to engaging traceability is by documenting data in ways that make them accessible and retrievable.

Emerging digital technologies are a good way to track what happens on the ground, including where a commodity is sourced (thus respecting for instance deforestation-free standards, natural habitat etc.) and processed. For instance, new monitoring and operational management tools are emerging on natural resources or deforestation tracking, linking to territories and global supply chains, such as The World Resource Institute tool or the Global Forest Watch Commodities platform. Such platforms can provide companies with farms and municipalities located on risk areas via traceability work and being able to track sustainability from farm to customer.

Mars, Unilever, Cargill and Mondelez are already using these tools to assess tree cover loss and deforestation risks in their palm oil, soy and cocoa supply chains across a collective area of land the size of Mexico. These initiatives can enforce harmonisation and convergence of actions in operating through territory approaches with aligned stakeholders.





Building Strong Collaborations between Companies

As shown with the example of converging efforts across prioritised geographic areas to focus collective action in fighting against climate change, collaborations between companies are central in developing favourable business ecosystems to the transition.

In certain contexts, companies may be one amongst other buyers getting supplied from the same farm and thus producers may receive quite different technical and sustainable guidelines from one another: ***“There is a lack of pragmatism and global vision. The vision is too sectoral and too segmented”*** (G rard Tub ry, President of the Avril Foundation and farmer). For companies sourcing similar raw materials or in similar farms, working together is the greatest mean to ensure a quick and consistent scale-up of Reg. Agr. Some companies may focus on their chosen production while transitioning to regenerative agriculture, regardless of the other crops in the farm. **Valorising all productions is a responsibility that buyers and companies will only take forward by synergizing together.**

Coordinating and converging actions on the ground as well as presenting common expectations to their suppliers is the fastest way for companies to see an impact. Several multi-stakeholder’s platforms (MSPs) promote for instance regenerative agriculture by bringing together numerous actors in the agri-food, cosmetics, and luxury industry, but also financing companies, researchers, and associations. These networks and platforms proceed together in defining common objectives, creating a roadmap for the development of the ambition, and appointing tools with KPIs to monitor the actions.

These multi-stakeholder initiatives are also found to be more effective by partnering on the ground with local cooperatives, associations, government agencies and NGOs to co-design technological solutions with farmers, so that they are tailored to their goals, livelihoods’ strategies and market conditions.

Starting with the Soils as the Common Foundation and Cornerstone of Ecosystems

Nowadays, all eyes turn toward the soil, left behind in these past years and heavily threatened, although it is at the centre of agricultural production. **Soils health is the basis for a restored ecology and a living environment**, and the cornerstone in which sustainable and regenerative agriculture need to converge all efforts in the upcoming years. It has been widely backed up by science, and we can find an extensive research bibliography showcasing the importance of soil health restoration and its ties with climate change through components of the ecosystem such as biodiversity, carbon capture, water quality, soil erosion and crop productivity.

We know for instance that **a quarter of the worldwide biodiversity** is contained in the soils and, according to INRAE, one gram of soil may contain more than a billion bacteria and hundreds of thousands to a million different species (bacteria, fungi, insects, mites etc.), making it one of the most complex and diversified ecosystems on earth. Soils also play a **central role in human health** through water:

in living soils, water is filtered and stored, and microorganisms contribute to degrading pollutants and thus to a better-quality water for human and animal consumption. Thanks to ground cover, soils also play a crucial **role in regulating climate change through CO₂ absorption and organic matter storage**. More than a thousand and 1.5 billion tons of organic carbon are contained in worldwide soils. ***“The priority is the soil because improving the health of the soil is a win-win situation: it’s the water we drink, the productivity of tomorrow, and it protects against erosion”*** (Pascal Lheureux, Director of FARM, President of Crédit Agricole Normandie and farmer).

It is therefore an essential component that must be addressed to ensure the regeneration of the entire ecosystem, and we cannot go wrong by starting with it. This subject is one that can have various levers and monitoring KPIs, outcomes can be observed relatively fast after few years.



Providing the Right Support to Farmers to Manage the Transition

Farmers are at the heart of the transition. They are the ones implementing practices on the ground and having to adapt their business model smartly enough to keep their production viable. In this process, the role of firms as well as funding bodies, development banks and organisations, are crucial. There are different types of support mechanisms, and we chose to display three common groups of funding support schemes (Fig. 11). A fundamental point in ensuring sound management of the transition is having a continuous progress approach with intermediary indicators and results which are key to support change that may take months and years to show outcomes: ***“We create action plans based on continuous improvement, in the short and medium term.”*** (Adrien Chassan, Head of Agro-Ecological Innovation at Maïsadour). And even more importantly, those intermediary results need to be economically valorised with farmers.

For example, the first step implemented by the cooperative group **Maïsadour** in their IDEEAL initiative aiming at transitioning their farms to more regenerative practices was to build an environmental assessment of each farm: ***“Practices will then be improved through a progress plan adapted to each farmer. The particularity of the approach is to consider the particular case of each farm”***. Supporting farmers in building these types of assessments, self-evaluating and defining progress actions will support better ownership and mutual understanding of what needs to be put in practice.





Following up on the definition of a progress plan, firms can provide tailored technical support to farmers. Accompanying them along the transition with dedicated technicians on the ground is key as well as promoting collaborations with local experts and scientists for grassroots innovations. This step will be easier with agronomists among the dedicated team.

Farmers also need financial support during the transition: **“The transition is possible if the farm is profitable”** (Marcos Spinella, Co-Managing Partner at Agropecuária Kehrle). Initial years of the transformation can present financial risks for the farmers. A strong base is needed before beginning the journey, and financial support can reduce a part of the risk. Several support options can be considered:



FIGURE 11. EXAMPLE OF FUNDINGS AVAILABLE TO FARMERS

For direct investments, few tools have been developed allowing firms to track the cost of the scale-up to Reg. Agr. and therefore review not only financial but also ecological and social benefits of the allocated funding, such as the environmental profit and loss (EP&L). This method, developed by Puma in 2011 and now further advanced by Kering, measures carbon emissions, water consumption, air and water pollution, land use, and waste production among the entire supply chain. These impacts are then converted into monetary value allowing the company and investors to compare the revenues and their environmental footprint as they are both expressed in currency. This method allows an efficient and precise follow-up of the environmental impacts and savings of the company and thus can be used to track the scale-up of Reg. Agr.

Those financial risks need to be equally redistributed along the production chain and mitigated through proper measures: ***“I believe that the whole chain will absorb the risk. No one has in mind that the farmer should be the only one to absorb everything”*** (Pascal Chapot, Head of Sustainability at Nestlé). If companies choose contract farming, they ensure a higher or steadier revenue to their farmers, directly redistributing the price increase.



TOWARD A NEW ECONOMIC MODEL?

The integration of farmers within the supply chain can go even further. For example, FairAfric, a chocolate producing social enterprise in Ghana, developed yet another economic model rewarding farmers for the part they play in the company's development and allowing them to become shareholders. They created a foundation in Germany that, relying on donations, buys shares in the company and give the profit back to the farmers. This model involves farmers even deeper into the transition and reward their dedication to the company's growth and CSR development.



Creating Reference Farms and Engaging Local Partnerships

Beside the scaling-up strategy, which must be carried out in collaboration between different companies and players, implementation of the transition must also translate into local partnerships and joint multisectoral initiatives. ***“If a pioneer in a region succeeds in its transition, the region will see a high conversion rate. The forces of transition will come from below, from entrepreneurship. Our role [as a company] is to value the pioneers and to support them”*** (Damien Chapoulart, Global Fruit Sourcing Manager at Andros).

Companies and farmer organisations will benefit from local initiatives as they are often a model within a given territory born organically, usually through entrepreneurship or government-owned projects. Joining efforts by getting close to local authorities to map those innovative or value chains initiatives and propose strategies for federating them throughout the Reg. Agr. transition programme is generally found to be impactful, more inclusive and carried out on a human scale.

Another driver is to support the transition by funding research programmes (e.g. with CIRAD knowledge transfer hubs and laboratories on the ground) for technical expertise building and ownership, as

well as easing the implementation of new practices through strengthened local technological ecosystem. ***“We have regular contact with the field and a dynamic research activity”*** (Emmanuelle Rouais, Sustainable Sourcing Project Manager at Yves Rocher). The research component is very important and put forward by companies, as it leverages their approach and provides them with scientific data with a strong added value in the eyes of farmers, but also for consumers.

Learning new techniques and understanding the potential that Reg. Agr. holds within itself is much better apprehended by examples than by speech and presentations. Therefore, pilot farms can support the scale-up of Reg. Agr. by initiating transition movements within each region. In addition, by making it a commercial pilot farm, companies can also demonstrate the economic viability of the transition and create business models that can be projected into the region.

“We did a lot of experiments until we reached what works best in our own context” (Beatrice Gatumbo, Admin, Sales, & Networking Supervisor at Tamalu Farm, Kenya)

Reviving a Strong Societal Meaning in Farming

We often tend to forget that the very first victims of climate change are farmers, observing on a regular basis changes in the land of their ancestors, depletion of water resources and soils fertility, soil erosion, decrease in pollinators population, etc.

“The transition can be a response to our quest in finding back the sense, pride and a strong meaning to the profession integrated back into society, but also for our very own ecological awareness”
(Gérard Tubéry, President of the Avril Foundation and farmer).

Farmer’s role can be valorised as we give farmers the tools to double their function and communicate around it: from **feeding humanity** to adding an **environmentalist function** recognized within their communities. They can be strong decarbonating actors and want to be part of the transition with a special role that is legitimately theirs. Farmer’s efforts need to be understood by all in mitigating the

impact of climate change through restoring degraded lands and decarbonating the atmosphere, because it cannot be achieved without their agreement, consent, and action on the ground.

Technical and economic concerns are not the limiting factors in this process as changing mindsets is often more complex than changing production techniques: ***“Technical solutions travel well and sometimes can be adapted fast, but the change in mindsets takes time [...] When farmers will understand the challenges and stakes of transition, they will give themselves the means to achieve it”*** (Gérard Tubéry). This is an important milestone in the transition. Therefore, valorising efforts of leader farmers toward community chiefs, local authorities and farming community is also a good way to initiate social support and provide farmers with tools to tell their story in search for meaning of healing the planet.



Transforming our Global Food Systems

For scale-up to be impactful, it cannot rely solely on a change in the farming systems. Reg. Agr. products need to have a market, which requires a change in the overall food systems: ***“We need to work on markets and agricultural conditions at the same time”*** (Pascal Lheureux, Director of FARM, President of Crédit Agricole Normandie and farmer).

Working on markets necessarily means working on educating consumers about the issues behind regenerative agriculture: ***“There is a problem of consumer education: they don’t know Reg. Agr. and are suspicious of food companies”*** (Juliette Rembert, Regenerative Agriculture Project Manager at Blédina).

Consumers indeed do not fully trust food companies in the current climate of over-emergence of marketed green initiatives and labels. In France for instance, 73% of consumers consider that there are too many environmental labels in the market, and 67% do not know exactly what they certify (Opinionway). With consumers being increasingly concerned about the environmental impact of their consumption, especially in the food sector, there is indeed a climate of mistrust regarding commitments made by companies.





It is therefore necessary for firms to be as transparent as possible in order to reassure consumers about the integrity of their commitments.

There is also a marketing effort to be made. As Gérard Tubery says: ***“We need legible and transparent products to be able to finance sustainable farming methods.”***

Consumers also need to be further educated in the way they consume and their quality criteria. Indeed, even today, quality criteria are largely based on visual appearance and size. But these criteria do not necessarily reflect the production methods. There is therefore a gap between the expectations of consumers and buyers - focused on environmental impact - and the selection criteria currently used by retail companies.

Moreover, the criteria imposed on farmers can distract them from their environmental aspirations, as their priority is to sell their products and ensure a monthly income.

Finally, for regenerative agriculture to develop further and be generalised worldwide, there is some societal learning to be done to reconsider our criteria and our expectations regarding agricultural products. In conclusion, all stakeholders starting from farmers to suppliers, companies and down to consumers are leaders and agents of change and must carry their efforts by joining forces, to ensure a systemic transition and a future to our food systems.

Conclusion

In the face of the climate crisis and emergency, **we are at the turning point where we have no choice but scaling-up the global effort, engaging all stakeholders in the run for climate change mitigation, nature restoration and decarbonation with an equitable distribution of food worldwide.** It is now clear that by maximizing plant's ability to generate biomass and restoring productive functions of the soil, regenerative agriculture will support general ecosystems' performance along with yield optimization. The latter are major prerequisites of the global scale-up, and will need to be fed by growing research, investments, best practices, and tools development. We believe that special attention must be given in **adapting agriculture and consumption behaviours to climate change.**

Fundamental uncertainties in grasping the climate system and variability will keep growing in the coming decades, and both the impact and response to these changes will greatly differ from one place to another. **These challenges will need to be addressed through extensive climate risk management, early detection systems, diversification of income sources and livelihoods, dynamic policy approach and more agile and efficient markets.** Efforts must also be put in anticipating the impact of various factors on land, natural resources, trade, and food systems and put in place the right mitigation and adaptation strategies.

Collective efforts and initiatives are emerging at all scales and giving hope for a brighter future with more respect to the natural elements, resources and living species around the globe. It is the time to join forces to make a real impact on the ground. **Regenerative agriculture is within our reach and adaptive agriculture could even be the genuine way forward.**





References

1. **L. Schreefel, R.P.O. Schulte, I.J.M. de Boer, A. PasSchrijver, H.H.E. van Zanten. 2020.** *Regenerative agriculture – the soil is the base.* ScienceDirect. <https://doi.org/10.1016/j.gfs.2020.100404>
2. **Rodale Institute. 2020.** *Regenerative Organic Agriculture and Climate Change.* <https://rodaleinstitute.org/wp-content/uploads/rodale-white-paper.pdf>
3. **CJ Rhodes. 2012.** *Feeding and healing the world: through regenerative agriculture and permaculture.* <https://pubmed.ncbi.nlm.nih.gov/23469709/>
4. **INRAE pour la Fondation FARM. 2021.** *Comment assurer les disponibilités alimentaires du continent africain à l'horizon 2050 ?* https://www.inrae.fr/sites/default/files/pdf/INRAE_Synth%C3%A8se_AFRIAGRI2050_FARM_191021.pdf
5. **Project Drawdown. 2021.** *Regenerative Annual Cropping.* <https://drawdown.org/solutions/regenerative-annual-cropping>
6. **INRAE. 2020.** *Place des agricultures européennes dans le monde à l'horizon 2050.* <https://www.inrae.fr/actualites/agricultures-europeennes-horizon-2050>
7. **INRAE. 2013.** *Quelle contribution de l'agriculture française à la réduction de gaz à effet de serre ?* <https://www.inrae.fr/sites/default/files/pdf/37cdee0e58f99f555be7f4655faf63c0.pdf>
8. **INRAE. 2019.** *Stocker du carbone dans les sols français.* https://www.inrae.fr/sites/default/files/pdf/etude-4-pour-1000-resume-en-francais-pdf-1_0.pdf
9. **OECD, FAO. 2021.** *OECD-FAO Agricultural Outlook 2021-2030.* <https://www.oecd-ilibrary.org/sites/19428846-en/index.html?itemId=/content/publication/19428846-en>
10. **FAO. 2016.** *Emissions de gaz à effet de serre issues de l'agriculture, de la foresterie et des autres affectations des terres.* <https://www.fao.org/3/i6340f/i6340f.pdf>
11. **V. Bellassen, I. Shishlov. 2017.** *Pricing Monitoring Uncertainty in Climate Policy.* <https://link.springer.com/article/10.1007/s10640-016-0055-x>
12. **FAO and The Nature Conservancy. 2021.** *Nature-based solutions in agriculture – Sustainable management and conservation of land, water, and biodiversity.* <https://www.fao.org/3/cb3140en/CB3140EN.pdf>
13. **FAO and The Nature Conservancy. 2021.** *The case and pathway for adoption.* <https://www.fao.org/3/cb3141en/cb3141en.pdf>
14. **Bedfordshire, UK: Cranfield University. 2019.** *Regenerative Agriculture: Identifying the impact; enabling the potential. Report for SYSTEMIQ.* <https://www.foodandlandusecoalition.org/wp-content/uploads/2019/09/Regenerative-Agriculture-final.pdf>
15. **SAI Platform. 2019.** *FSA Supply Chain Implementation Guide.* <https://saiplatform.org/resource-centre/fsa/page/3/>
16. **Corporate Sustainability. 2021.** *Suntory | Sustainability | The Suntory Group's 7 Sustainability Themes 02 CO2.* <https://www.suntory.com/csr/themes/co2/>
17. **Corporate ESG Index. 2021.** *The Kraft Heinz Company: Environmental Social Governance.* <https://www.kraftheinzcompany.com/esg/index.html>
18. **Agence Bio. 2020.** *L'agriculture bio dans le monde.* https://www.agencebio.org/wp-content/uploads/2021/01/Carnet_MONDE_2020-1.pdf
19. **PROFOREST. 2020.** *Understanding commitments to No Deforestation, No Peat and No Exploitation (NDPE).* https://www.proforest.net/fileadmin/uploads/proforest/Documents/Publications/infonote_04_introndpe.pdf
20. **4p1000 Initiative. 2018.** *Bienvenue sur le site de l'Initiative « 4 pour 1000 ».* <https://www.4p1000.org/fr>
21. **4p1000 Initiative. 2020.** *Plan stratégique.* https://4p1000.org/wp-content/uploads/2021/01/plan_strategique_FR.pdf
22. **K. Netel. University of Colorado Boulder. 2020.** *Consumer Interest in and Awareness of Sustainable Food: the Case of the «Regenerative Organic Certified» Eco-Label.* https://scholar.colorado.edu/concern/undergraduate_honors_theses/3f462647q
23. **OP2B. 2021.** *Scaling-up Regenerative Agriculture* https://op2b.org/wp-content/uploads/2021/09/OP2B-Regenerative-Agriculture-Leaflet_FINAL.pdf
24. **CIDSE. 2020.** *Finance for agroecology: more than just a dream? an assessment of european and international institutions' contributions to food system transformation.* <https://www.cidse.org/wp-content/uploads/2020/09/CIDSE-Agroecology-and-Finance-Briefing-Sept-2020-1.pdf>
25. **Carrot Project. 2020.** *About Us | Carrot Project.* <https://www.thecarrotproject.org/about-us/>
26. **FOODSHED INVESTORS. 2019.** *Invest | Foodshed Investors.* <https://www.foodshedinvestors.com/invest.html>
27. **Ministère de la Transition écologique. 2020.** *Label bas-carbone : récompenser les acteurs de la lutte contre le changement climatique.* <https://www.ecologie.gouv.fr/label-bas-carbone>
28. **FAO. 2014.** *EX-Ante Carbon balance Tool (EX-ACT).* https://www.fao.org/fileadmin/templates/ex_act/pdf/Flyer/Ex-act_flyer-FR_apr2014.pdf
29. **Agro Transfert. 2016.** *Agro Transfert-Méthode ABC'Terre.*

- <http://www.agro-transfert-rt.org/abcterre/methode-abcterre/>
30. **CIFOR. 2013.** *The Carbon Benefits Project: Modelling, Measurement and Monitoring.* https://www.cifor.org/publications/pdf_files/cop/session%204/7-Sumba-4-7-6-Carbon%20Benefit-UNEP-DGEF.pdf
 31. **Kering. 2021.** *EP&L : a measurement tool for sustainable Luxury.* <https://www.kering.com/en/sustainability/measuring-our-impact/our-ep-l/>
 32. **Finistere ventures. 2020.** *2020 Agrifood Tech Investment Review.* <https://finistere.com/wp-content/uploads/2021/04/Finistere-Ventures-2020-Agrifood-Tech-Investment-Review.pdf>
 33. **FAO. 2001.** *Contract farming Partnerships for growth.* <https://www.fao.org/3/y0937e/y0937e00.pdf>
 34. **FAO. 2020.** *Agricultural markets and sustainable development: global value chains, smallholder farmers and digital innovations.* <https://www.fao.org/3/cb0665en/cb0665en.pdf>
 35. **Life, M. F. A. 2021.** *Regenerative agriculture: A brief history of the movement to unseat industrial farming in pursuit of sustainability.* <https://musicfoodandlife.com/regenerative-agriculture-a-brief-history-of-the-movement-to-unseat-industrial-farming-in-pursuit-of-sustainability/>
 36. **Otsuka, K., Nakano, Y., & Takahashi, K. 2016.** *Contract Farming in Developed and Developing Countries. Review in Advance.* <https://doi.org/10.1146/annurev-resource-100815-095459>
 37. **Fairafric. 2020.** *Making our Farmers Co-Owners of fairafric – fairafric – Chocolate Made in Africa.* <https://fairafric.com/en/our-journey/making-our-farmers-co-owners-in-fairafric/>
 38. **Vogue Business. Cernansky, R. 2021.** *How a California label is advancing farm-to-closet fashion.* <https://www.voguebusiness.com/sustainability/how-a-california-label-is-advancing-farm-to-closet-fashion>
 39. **WALMART.2021.** *Groundbeef- Walmart.* https://www.walmart.com/search?q=ground+beef&affinityOverride=store_led
 40. **Farms, J. 2021.** *Heritage Grass-Fed Ground Beef.* <https://joyce-farms.com/collections/all-in-stock-products/products/ground-beef>
 41. **Patagonia 2021.** *Regenerative Organic Certification.* <https://eu.patagonia.com/fr/fr/our-footprint/regenerative-organic-certification.html>
 42. **SAI Platform. 2021.** *SAI Platform introduces Regenerative Agriculture Framework to align agricultural value chain.* <https://saiplatform.org/our-work/news/sai-platform-introduces-regenerative-agriculture-framework-to-align-agricultural-value-chain/>
 43. **EIT Food. 2021.** *5 ways to accelerate the transition to sustainable agriculture.* <https://www.eitfood.eu/blog/post/5-ways-to-accelerate-the-transition-to-sustainable-agriculture>
 44. **Carrier, T. 2021.** *Certified Regenerative. A Greener World.* <https://agreenerworld.org/certifications/certified-regenerative/>
 45. **Soil Carbon Initiative. 2021.** *Soil Carbon Initiative.* <https://www.soilcarboninitiative.org/>
 46. **Pour une Agriculture du Vivant. 2021.** *L'indice de régénération.* <https://agricultureduvivant.org/indice-de-regeneration/>
 47. **SM Howden. 2007.** *Adapting agriculture to climate change.* <https://www.pnas.org/doi/10.1073/pnas.0701890104#core-B2>

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