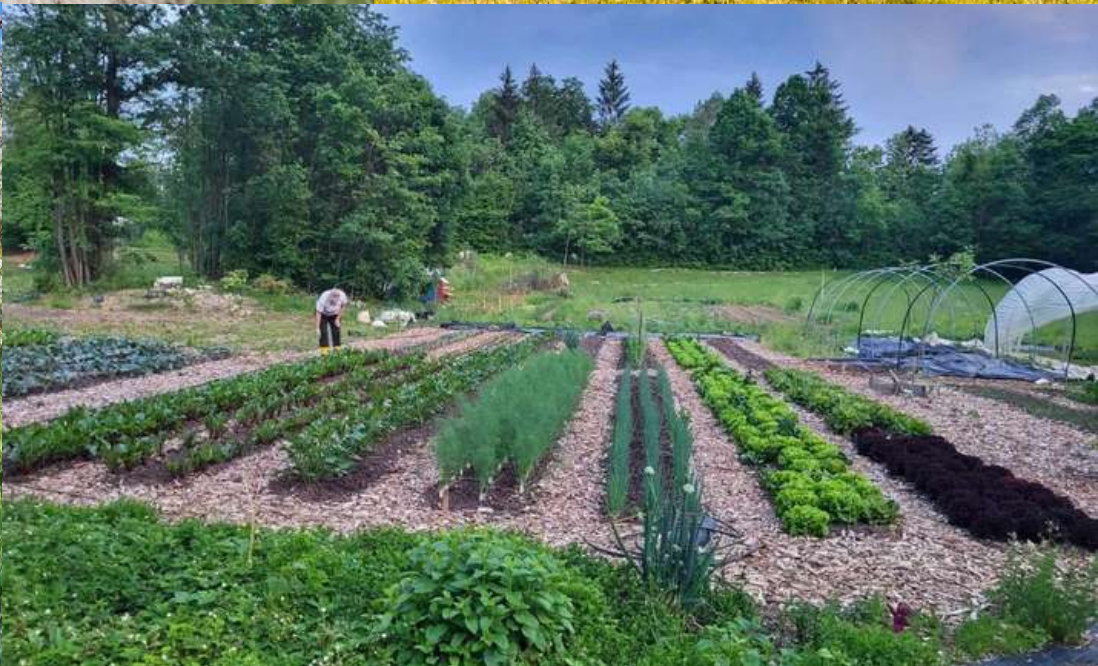


Together for Regenerative Agrifood Ecosystems



About the European Alliance for Regenerative Agriculture

The European Alliance for Regenerative Agriculture (EARA) is an independent, farmer-led coordination and political advocacy organization of the movement of regenerative agriculture at the European level. EARA is striving to enable the transformation of our agrifood ecosystems through accountable ecologic, economic and social regeneration.

www.eara.farm

Disclaimer

The work underpinning this White Paper was commissioned and stewarded by the Founding Farmers of the European Alliance for Regenerative Agriculture, to bring the voices of regeneration practitioners and pioneers into the heart of the political discourses on the transformation of agrifood systems. The work was executed by EARA's Operations Team (Alliance Builder Natascha Schwarzkopf & Policy Steward Simon Kraemer) together with the strong support of a number of experts and pioneering farmers.

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Preface

This White Paper shares EARA's vision for regenerative agrifood ecosystems. The document presents a reflection of our current system and its trajectory. It further proposes keystones of a governance program for holistic restoration and regeneration in agrifood ecosystems and beyond, centred around farmers and ecosystems, with the explicit aim to reverse the trends of degradation and degeneration in and around agrifood systems today. The paper has a global perspective and outreach, but a European focus in its explanatory elements, as Europe and the EU agrifood governance sphere is the more immediate context of EARA.

With the sharing of this White Paper, "Together for Regenerative Agrifood Ecosystems", EARA wants to inoculate the consensus- and alliance-building process of agents whose interests lie in a regenerating world. EARA invites everyone to continue working towards practical and political changes aimed at creating communities in economic and regulatory environments conducive to on-farm and systemic health.

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Executive Summary

In response to escalating and converging crises, with this White Paper the farmer-led European Alliance for Regenerative Agriculture (EARA) presents a visionary perspective to guide the regeneration of agrifood ecosystems.

In the context of fading ecological resilience, fragile agronomic performance and misguided paradigms of agricultural practice that over-rely on technical solutions, the current agrifood governance system produces compounding negative feedback loops, locking the current system dynamics in a path towards collapse.

EARA's White Paper advocates for turning our governance systems into positive agents, fostering economic, social and ecological prosperity and health, by positively co-stewarding the regeneration of our agrifood ecosystems.

Multiple regenerative farming operations, scientific case studies and proof of concepts developed by farmers across Europe and globally, successfully demonstrate that plenty of economically sound farming systems exist on the ground which reverse environmental damage, promoting biodiversity, soil health, plentiful nutritious food and also ecological and economic resilience.

EARA's founding farmers are stepping up to co-steward the transformation of agrifood ecosystem governance so that economic and regulatory environments are created in order to promote on-farm, rapid and systemic regeneration based on the following Defining Principles for Stewarding Regenerative Agriculture (each with sub-principles that are outlined in the paper):

- Regeneration is a life-enhancing process, rather than a permanent state
- Regeneration is outcome-oriented regarding social, ecological and economic health
- Regeneration is context-specific
- Regeneration is systemic

Farmers cannot bear the sole responsibility for this transformation. By stewarding the transformation along these principles, rapid systemic changes are possible, which can foster an environment of trans-disciplinary and -sectoral cooperation between all levels and actors. Further, pluralism in governance and knowledge systems is required to enable up-to-date, context-specific and evidence-based policy-making, derived from on-farm research and analyses.

EARA's Founding Farmers advocate for outcome-focused agricultural policies that remunerate agroecosystem health performance, in order to give agency, capacity and planning security back to farmers and underline their capacities to guide regenerative transformations.

Such policy schemes ought to embrace the health of living soils and agroecosystems as agronomy's first priority, so that the policies have guiding functions for agronomic practice in the direction of regenerative agriculture. It is the prerequisite for achieving yield quantity, quality and resilience (primary productivity) as well as ecosystem services, rural development, the improvement of the livelihoods of farming communities, food and national security.

In summary, an agrifood system governance that is anchored in an outcome-oriented agricultural policy, while embracing system change and pluralism in governance and knowledge systems, holds vast potentials for a wider transformation of governance in policy-making. Such agrifood system governance serves the interests of land stewards and food security, as well as economic and ecological health, as the fundamental conditions for stewarding towards the overall health of our planet and all its inhabitants.

This White Paper outlines EARA's understanding of the immense needs for, and potential of, regenerative agrifood system governance. The White Paper stewards and motivates decision-makers involved in agrifood ecosystems to ensure that:

- their thinking is guided by a deep understanding of the regenerative paradigm (putting emphasis on achieving holistic positive impact by working in alignment with living systems)
- the transition towards regenerative agrifood ecosystems is farmer co-led, as well as farmer-, people- and ecocentric
- claims on regenerative agriculture go beyond the surface, are systemic, holistic, transparent and solidly documented
- agricultural subsidies are transformed into simple agroecosystem health performance-based payments for land stewards
- indigenous, peasant and farmer land rights and long-term access to land is guaranteed
- stranded assets as well as market- and power asymmetries in agrifood systems are faced head-on
- agrifood systems are de- and re-grown into their ecoregions

In the spring of 2024, EARA will publish a comprehensive science-based policy paper and proof of concept study for a renewed EU agrifood ecosystem governance. EARA will make a detailed and actionable proposal for a governance approach, rooted in simple but holistic agroecosystem health performance-based payments, for a farmer- and soil-health-centred Common Agricultural Policy post-2027.





1 EARA's Vision

We envision regenerative agrifood ecosystems¹ that are farmer- and people-centric, outcome-focused and context-specific, striving for social, ecological and economic health.

Regenerative agrifood ecosystems are guided by land stewards² caring and intimate relationship with the land. Farming for regeneration enhances natural processes, fostering resilient ecosystems that yield nutrient-dense food and other necessities, while constantly improving biodiversity and ecological functions, as well as innovation and efficiency. Nutrient flows nurture cooperative exchanges, amplifying cycling on a bioregional scale.

With a long-term and future-oriented perspective, regenerative agrifood ecosystems promote trust and equity as well as healthy communities, ecologies and economies. They embrace the interdependence between all actors and ecosystems.

This awareness of actors in the system is cultivated from and rooted in their lived experience. It recognizes the importance of health, well-being and social cohesion of working together towards these and other external interconnected goals, along with the inner development of communities and individuals.

The outcomes of such transformed system dynamics are characterized by social, ecological and economic regeneration, enabled by transdisciplinary action, participatory processes and inclusive decision-making. The outcomes foster a dynamic and thriving agrifood ecosystem that respects and enhances the eco-consciousness, capacity-building and shared responsibility of all stakeholders involved.

In our vision, the spreading of regeneration processes to various actors, ecologies, and spheres of our agrifood ecosystems is primarily driven by pioneering land stewards practising regenerative agriculture, from indigenous³ and marginalized people to smallholders and large-scale farmers. This movement is supported by rural, peri-urban and urban communities, all actors in the agrifood ecosystem and its governance bodies. All of them adopt a pioneering, farmer-, people- and ecology-centred approach, promoting power-sharing across disciplines and scales to re-create a liveable planet earth for future generations.

¹ 'Agrifood ecosystem' describes the totality of actors and ecologies involved in the production, distribution, and consumption of food and fibre, the relations between them, and the regulatory apparatus governing these arrangements. By differentially using 'agrifood ecosystem' and 'agrifood system' we want to signify where and when ecology is or is not properly taken into account.

² Land stewards are individuals or organizations managing, using, owning and/or overseeing land use and associated activities in our agrifood ecosystems. We use land stewards and farmers interchangeably.

³ We understand the concepts of 'indigenous' and 'in(di)genuity' as a holistic approach to describe the types of initiatives that are integrally developing sustainable relations between people and ecosystems. We are guided by the great indigenous wisdom and science on abundant food systems for humans and non-humans.

<https://scholarworks.alaska.edu/handle/11122/13122>;

<https://www.sciencedirect.com/science/article/abs/pii/B978012801231400032X>



The agrifood governance system is outcome-focused, systemic and context-responsive agrifood governance embracing living systems worldviews⁴ for One Health⁵ through global stewardship, social cohesion, hope and a deep recognition of climate change and biodiversity loss as societies' major crises.

In regenerative agrifood ecosystems, the health of living soil ecosystems is the root of land stewards' and rural communities' empowerment. It also serves as the focus that brings together diverse actors from larger systems, enabling context-specific social, ecological and economic health and peace through farming for regeneration.

2 The Dynamics of our Current Agrifood Systems

In order to sketch the keystones of a holistic governance programme for the transformation towards regenerative agrifood ecosystems, an analysis of the current dynamics is needed.

For a global perspective, scientific research states that the current agrifood system:

- is the greatest driver of the degradation of our planetary health⁶
- is the primary driver of biodiversity loss⁷
- has severely impacted freshwater resources and their availability⁸
- is the economic sector emitting the greatest amount of greenhouse gasses⁹
- fails to supply sufficient and healthy food for all¹⁰

The European agrifood system has an immense historical and ongoing socio-ecological footprint and responsibility in these global system dynamics. This places a particular responsibility on contemporary Europeans to contribute to regenerating agrifood ecosystems globally.

⁴ Living Systems Thinking by Gregory Bateson: "The major problems of the world are the result of the difference between the way nature works and the way people think."

⁵ One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes that the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and interdependent. OHHLEP One Health definition, 2021; <https://www.regenerativehealthcoalition.com/manifestoonehealth>

⁶ <https://www.semanticscholar.org/paper/Agriculture-production-as-a-major-driver-of-the-Campbell-Beare/2ebe00e2ef4a203c33262fed907ea6899245778d>

⁷ <https://www.unep.org/news-and-stories/press-release/our-global-food-system-primary-driver-biodiversity-loss>

⁸ <https://www.nature.com/articles/s43017-022-00287-8>

⁹ <https://www.nature.com/articles/s43016-021-00225-9>

¹⁰ <https://www.fao.org/publications/home/fao-flagship-publications/the-state-of-food-security-and-nutrition-in-the-world/en>

2.1 Fading Ecological Resilience

It is estimated that one species goes extinct every seven minutes globally. However, most of the biodiversity that lives in soil ecosystems and enables them to function has not yet been described¹¹. Similarly, the functionality of the largest biogeochemical cycle, the cycle of water, the most important substance for life on earth, has only recently been understood from an ecological perspective¹². This novel understanding of water cycles was translated into a planetary boundary last year – Green Water. Green Water describes terrestrial precipitation, evapotranspiration and soil moisture, and is fundamental to the planet's climate and our agricultural production. Research found that we have significantly overstepped the planetary boundary of water¹³. This is largely due to degradative soil use and land use changes. Likewise, the disruption of the second and third largest biogeochemical cycles, carbon and nitrogen, is largely due to standard ways of agricultural production, contributing to climate change and weather extremes¹⁴.

2.2 Fragile Agronomic Performance

From 2021 to 2022, EU agricultural production dropped significantly across all categories. For example, vegetables and horticultural products dropped 6.5% in produced volume in 2021-2022¹⁵. The core reasons for this are crop and animal diseases, as well as droughts, all of which are largely caused by the ecological impact of the agrifood system itself¹⁶. Furthermore, drought is also the main reason for the compound annual growth rate of per hectare production of the main crops in major EU agricultural sectors to have come to a standstill in the last 20 years¹⁷. The impacts of droughts on EU agricultural production continue to intensify¹⁸. Water-related soil functions such as water infiltration, storage and percolation are decisive variables for agricultural production in times when droughts and torrential rains alternate.

2.3 Food and Health Crises

Globally, acute food insecurity has not decreased since 2015 and is quickly rising since 2020¹⁹ – over 3 billion people cannot afford a healthy diet to date²⁰. Similarly, in 2020 more than 8.6% of the population in the EU was unable to afford an adequate meal every second day²¹. At the same time overweight, obesity and diet-related non-communicable diseases (NCDs) are a major public health challenge in Europe and worldwide²². It is estimated that the major NCDs cost each EU citizen more than 411€ annually, while the costs of all NCDs in total are considered to be much higher and predicted to continue to rise rapidly²³. Emerging medical science associates this epidemic of NCDs with the destruction of soil microbiomes, which feed the microbiomes of plants. Those feed the microbiomes of animals and humans²⁴. As a result the destruction of the health of living soil ecosystems has considerable effects on humans' health, that are so far seldomly recognized²⁵.

¹¹ <https://www.sciencedirect.com/science/article/pii/S0960982219310231>

¹² http://www.waterparadigm.org/download/Water_for_the_Recovery_of_the_Climate_A_New_Water_Paradigm.pdf

¹³ <https://www.nature.com/articles/s43017-022-00287-8>

¹⁴ <https://www.semanticscholar.org/paper/Agriculture-production-as-a-major-driver-of-the-Campbell-Beare/2ebe00e2ef4a203c33262fed907ea6899245778d>

¹⁵ <https://capreform.eu/2022-a-record-year-for-farm-income/>

¹⁶ <https://capreform.eu/2022-a-record-year-for-farm-income/>

¹⁷ https://www.nabu.de/imperia/md/content/nabude/landwirtschaft/230323-the_case_for_regenerative_agriculture_longversion-engl.pdf

¹⁸ <https://iopscience.iop.org/article/10.1088/1748-9326/abf004>;

<https://www.unepfi.org/themes/climate-change/climate-risks-in-the-agriculture-sector/>;

<https://www.euronews.com/green/2023/04/19/drought-threatens-grain-harvests-in-spain>

¹⁹ <https://www.who.int/news/item/06-07-2022-un-report--global-hunger-numbers-rose-to-as-many-as-828-million-in-2021>

²⁰ <https://ourworldindata.org/diet-affordability>

²¹ <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220225-1>

²² https://www.jpi-pen.eu/images/reports/Food-EPI_EU_FINAL_20210305.pdf

²³ https://knowledge4policy.ec.europa.eu/health-promotion-knowledge-gateway/cost-non-communicable-diseases-eu_en; https://health.ec.europa.eu/system/files/2022-06/eu-ncd-initiative_publication_en_0.pdf

²⁴ <https://www.fao.org/documents/card/en/c/645883cd-ba28-4b16-a7b8-34babbb3c505/>

²⁵ <https://doi.org/10.1038/s41579-022-00779-w>; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7399920/>

2.4 Worldviews and Pedagogy

Many discourses surrounding agricultural paradigms portray a corrupted, alienated or inferior image of the farmer. Exposing such biases where they are unsubstantiated is pivotal to tackling prevalent challenges within the agricultural sector. These biases expose the complexities and distortions embedded in societal perceptions regarding farming practices. They are shedding light on discrepancies between idealized representations and lived realities.

Moreover, the prevailing technocratic mindset in agricultural strategies and research underscores the inherent problems stemming from an over-reliance on technological solutions that are divorced from the contextual intricacies of farming communities. Contrarily, an emphasis on context exposes the limitations and drawbacks of such narrow approaches, fixated dominantly on technological advancements. As the food security in the current system is highly dependent on stable geopolitical relations and fossil fuels, agricultural strategies and research require a more holistic contextual consideration of socio-cultural, -economic and -ecological dimensions.

Additionally, the slow emergence of educational programs promoting an up-to-date understanding of agriculture is a glaring concern. This deficiency in educational initiatives deepens existing disparities and hampers the enabling of individuals to address the multifaceted challenges within agricultural systems. It underscores a critical need for comprehensive educational reforms, tailored to equip individuals with the necessary understanding and capacities to navigate the complexities of contemporary agriculture.

2.5 Agrifood System Governance in Disarray

Various policy-making narratives employed to address these deeply interlinked crises (i.e. Sustainable Intensification, Organic Agriculture, Veganism and Nature Conservation) have resulted in a political stalemate. This is hindering the required systemic and fast-paced shifts towards regenerative processes in agrifood ecosystems. Existing agricultural policy constructs like the EU Common Agricultural Policy are largely unjust, practice-based (meaning not context-specific), overly bureaucratic, short-term focused and co-responsible for many of the devastating system dynamics observed today. They encompass a long history of prioritizing the interests of groups which own the concentrated market and power asymmetries in the current system, undermining the interests of farming communities, people and the health of our ecosystems.

This governance system produces negative agri-sociological feedback loops, in which land stewards are held devoid of planning security and subjected to prescribed 'practices' for monetary gain. The stewards of the local agro-ecological contexts are thus deprived of agency and denied their capacity for systematic learning, planning and agency.

Funding and financial streams in the current system support reductionist research efforts, driven by market influences while neglecting the involvement of relevant independent stakeholders. This results in insufficient or incomplete analyses in various fields, ranging all the way from conventional agronomic theories to soil monitoring systems. An example is the measure of chemical and in some cases physical parameters while disregarding a wide range of biological parameters that are essential to soil health. This approach produces results that are correct in a narrow context, but incorrect in a wider context. Where such findings are used as guidelines for decision-making, they result in unintended negative consequences.

The dominance of profit orientation and capitalism in the current market fosters short-term focused predatory competition and egocentric worldviews, as well as rapid vertical and horizontal market and power concentration²⁶, contributing massively to ecosystem degradation and social fragmentation.

²⁶ <https://www.etcgroup.org/content/food-barons-2022>

In summary, the current mode of agrifood system governance is top-down, reductionist, undemocratic and profit-focused, thus perpetuating increasing social and economic inequalities, as well as the degradation of our ecosystems.

In order to strengthen the capacity of our societies to work towards a future-proof and equitable water, food, fibre, energy and national security in Europe and beyond, agrifood ecosystem governance must focus on supporting land stewards in their regenerative journey.



3 EARA's Defining Principles for Stewarding Regenerative Agriculture

EARA's following principles and sub-principles are not absolute and supreme, but they are constantly evolving symbionts of our consensus in making regenerative agriculture effective for ensuring the long-term viability of our agrifood ecosystems for future generations.

We understand Regenerative Agriculture as an inclusive umbrella term for a movement of pioneering farmers from all parts of agrifood ecosystems, who are striving for accountable ecological, social and economic regeneration. We acknowledge and foster the essential role of indigenous cultures and marginalized communities, their territories and their traditional knowledge, which inspire the regenerative agriculture movement.

Evidence of the impressive outcomes produced by regenerative farmers

Biodiversity

20x
more birds

Water

33 °C
less surface temperature

Water

275 %
improvement of the soils' water functions

Carbon

300 %
better CO₂e balance

Productivity

46 %
increase of forage production on pastures

Crop Health

1.000 %
less 'pest' abundance

Nutritional Quality

45 %
higher nutrient density

Economic Health

70 %
more on-farm profit

Own illustration²⁷

²⁷ Sources: <https://www.ft.dk/samling/20201/almedel/KEF/bilag/109/2300225/index.htm>; <http://aufbauende-landwirtschaft.de/70c-auf-dem-boden/>; <https://access.onlinelibrary.wiley.com/doi/abs/10.1002/sai2.20162>; https://polyfarming.eu/wp-content/uploads/2022/02/Laymans-report_Polyfarming.pdf; https://peerj.com/articles/13750/?trk=public_post_comment-text; <https://peerj.com/articles/4428/>; <https://peerj.com/articles/12848/>; <https://peerj.com/articles/4428/>

EARA is providing public and private stakeholders in agrifood ecosystems with guidance from the perspective of regeneration practitioners. This guidance is derived from the living proof of concept demonstrated by pioneering farmers of regenerative agriculture, whose voices should lead the agrifood-discussions going forward.

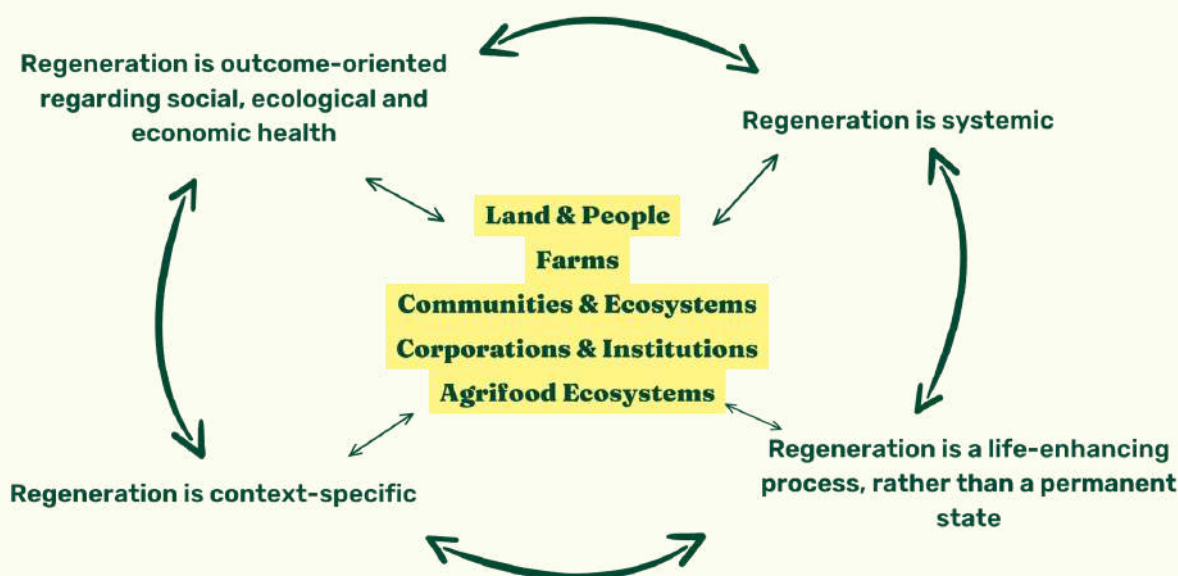
The principles are farmer- and people-centric, systemic, outcome-focused and context-specific. They are guidelines for private as much as public actors who aim to work towards regenerating our ecologies and health in crisis, fostering resilient food security and peace through reenvisioning our mode of governance, which is currently in disarray.

The Defining Principles for Stewarding Regenerative Agriculture are designed to support public regulation and subsidies, as well as private incentivization, due diligence, verification, communication, etc. When establishing regulation, incentivization and reporting standards, it is important to take into account the future state and development of the system that one is aiming to facilitate.

Regeneration is about continuously increasing the life-giving capacity of places and people. Regeneration practitioners optimize positive ecological, economic and social outcomes, rather than solely minimizing negative impacts. Their shared objective is to facilitate the ecosystem's highest potential, because all life and that of future generations depends on it.

The following four defining principles and explanatory sub-principles have been produced collaboratively and ratified by consensus by 50 pioneering regenerative farmers from across Europe. The principles follow no hierarchy, as all four work in symbiosis.

Schematic Visualization of EARA's defining principles for stewarding regenerative agriculture and their symbiotic interactions with agrifood ecosystems



Regeneration is a life-enhancing process, rather than a permanent state

'Regenerative' or 'regenerating' farm system refers to a farm in the 'process of regeneration', not a farm in an assumed final state.

Regeneration builds on the fundamental principle of evolution: life compounds into more symbiotic complexity when the conditions are conducive to life.

Regeneration is outcome-oriented regarding social, ecological and economic health

Regenerative agriculture is non-dogmatic. Each farmer chooses, based on a deep analysis of their context, the practices appropriate to that context.

Outcomes need to be contextualized regarding climatic, environmental, economic and other related conditions.

The development towards symbiotic interdependence on a bioregional scale is essential.

Regenerative agriculture distinguishes itself through its bridging of holistic ecological improvements with highly productive agriculture.

Any legitimate verification process of outcomes must demonstrate significant and continuous improvement regarding social, ecological and economic health.

Regeneration is context-specific

Initiating the regeneration process begins with a thorough recognition and understanding of a farm system's unique context, within and beyond the farm.

It involves developing a comprehensive (social, ecological and economic) starting point and an evolving vision for the system's health and functional properties, progressing towards key outcomes that guide decision-making.

There are no universally applicable or single regenerative practices; instead, there are practices that can guide regeneration within a specific context.

Effective farm-level practices must align with and contribute to larger social, ecologic and economic health.

Flexibility and adaptability are key in tailoring approaches to unique environmental and socio-economic circumstances.

Regeneration is systemic

Systemic regeneration unfolds as synergies/symbioses in which more soil biodiversity leads to better ecological functions, to more healthy plants, to more productivity and to other benefits, because regeneration is addressing living systems as wholes. Regeneration is not a zero-sum bargain in which agricultural productivity is traded off for better socio-ecological impact of land use.

Regeneration is fostered through the whole system in question, not just on the farm.

Principles Applied - The Case of Synthetic Pesticide Use

Today's scientific advances verify the increased agronomic efficiency and effectiveness of regenerative farmers²⁸. In this context, the belief in the indefinite need of a plethora of synthetic pesticides²⁹ at current or near to current conventional use rates for assuring agricultural productivity can be seen as a sign of agronomic illiteracy, reflecting an immature or misinstructed understanding of agronomic praxis, agroecosystem functions and of a farm's basic resource base. Today the predominance of this belief results in short and long term compounding negative effects on farmers' financial situation, ecosystem health and food quality rather than in the of the belief-holder's proclaimed 'food security'.

Regenerative Agriculture regenerates, as the name suggests, the ecosystem functions and overall health, mainly by not disturbing living soil ecosystems while reestablishing the natural food webs from below the ground to above the ground. With this the ecosystem not only is enabled to better react to pests, diseases and weeds through natural predators and antagonists, but the enhanced biological soil functions also increase the soil's capacity to detoxify the environment.

In regards to synthetic pesticides, EARA's core principles allow for flexibility within the context of regenerative agriculture, without compromising on ambition in stewarding for holistic improvement.

While synthetic pesticides might be used initially or in certain contexts, the emphasis is on drastic reduction from conventional use rates by an ambitious and context-specific phased-out approach. The approach most suitable to systemic health is farm context specific and to be decided by the farmer. A farm's context may include variables such as the farm system's financial independence/restrictions, labour availability, pedoclimatic and market conditions and more. The considered outcome is primarily ecological health through improved soil health, in this case possibly measured as the development of total toxicity load used per hectare/yield and/or of soil biodiversity.

The farm can be considered 'regenerative' or 'regenerating' if it consistently reduces within its context, and thus moves toward phasing-out, synthetic pesticides, ultimately, for ecological, economic and social health. This aligns as well with the principle of regeneration being systemic, as the focus is on the overall health of the farm and (agrifood) ecosystem rather than a strict adherence to specific, externally prescribed, practices.

A farm could not be considered regenerative if the usage of synthetic pesticides is not a temporary necessity, but an unreflected mainstay of the farming practice. This would both limit its ecological regeneration, and maintain it in a state of economic dependence with non-optimal outcomes for overall health.

In summary, a farm can be understood as regenerative when it demonstrates a commitment to context-specific, outcome-oriented, continuous, and systemic regeneration. The use of synthetic pesticides is acceptable within this framework if there is a clear trajectory towards their reduction and eventual phase-out, in harmony with the Defining Principles of Stewarding Regenerative Agriculture produced and consensually ratified by the Founding Farmers of EARA.

²⁸ <https://peerj.com/articles/4428/>; <https://access.onlinelibrary.wiley.com/doi/abs/10.1002/saj2.20162>; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7953945/>

²⁹ We define 'synthetic pesticides' as man-made chemicals designed specifically to kill or repel 'pests' manufactured in off-farm factories.

4 Keystones for Stewarding the Transformation Towards Regenerative Agrifood Ecosystems

The above outlined principles can guide the transdisciplinary and multi-actor-driven holistic transformations required to achieve the turnaround of the current agrifood system dynamics.

4.1 Embrace System Change

Agrifood system feedback loops and production patterns must be reversed from extraction to regeneration, in order to ensure agricultural productivity and One Health. Resilience of high and nutritious crop yields can only be achieved through the regeneration of our ecologies, their soils, biodiversity and natural cycles.

The transformational burdens of this shift cannot lay on farmers alone, but must be a shared and equitable responsibility amongst all actors. The transdisciplinary, multi-actor facilitation of regeneration in agrifood ecosystems requires transitions in the fields of science, agronomy, political economy, health, diet and more.

Stranded assets³⁰ within the current agrifood systems must be identified, called out and written off. Stakeholders that are path-dependent on extractive production patterns must be analysed from a perspective of equity, and accordingly guided. Where necessary, their context-specific adaptation to regenerative production patterns should be financially supported. In this context, feedstock, fibre and fuel from extractive production patterns must rapidly retire from structural competition with human food, while animals must be raised in ways that support natural cycles, biodiversity, animal health, nutritional quality and well-being.

Stranded assets in agrifood systems are closely connected to stranded assets in concentrated trading regimes. Both the hyper-financialised food commodity trading, whose sole purpose lies in monetary profit maximization³¹, and other highly concentrated elements of the system, need heavy regulation and proper transformational strategies and commitments.

The required system change ought to be achieved through fostering an environment of cooperation between all levels and actors, on both vertical and horizontal spheres. The agency of all system actors needs to be constantly enhanced to be future-fit, resilient and on a path of regeneration.

4.2 Pluralism in Governance and Knowledge Systems

In order to govern in a regenerative way, the method of governance must be regenerative in itself.

In this regard, acknowledging the interdependence of all aspects of our society, economy and ecosystems with our agrifood system is key to understanding its transformation as an overarching potential to our entire governance system. The following aspects promoting more pluralism in governance therefore don't only bring value to agrifood ecosystem governance, but to the understanding of policy-making as a whole.

Governance of private and public institutions ought to be inclusive (bringing all actors to the table), equitable (giving all actors the same level of voice), localized (with an identity in the place that it is governing). It needs to be able to evolve a shared sense of belonging, in order to increase personal identification with the agrifood ecosystem and its governance. As the demands of people and places are always changing, so must their governing structures.

³⁰ 'Stranded assets', where environmentally unsustainable assets suffer from unanticipated or premature write-offs, downward revaluations or are converted to liabilities, can be caused by a range of environment-related risks.

³¹ <https://www.routledge.com/The-Political-Economy-of-Food-and-Finance/Schmidt/p/book/9781138299375>

Public institutions must invest in their own capacity to aid the agrifood ecosystem actors, particularly land stewards, with extension services and data gathering and processing. The current over-reliance on private actors for extension work and data, brings in false priorities into governance decision-making (i.e. focus on quarterly results and GDP rather than public goods). Public institutions must themselves be able to be the main focal point that agrifood ecosystem actors look to for advice. This can only happen if significant financial and governance investments happen into purposeful public institutions.

Research institutions ought to further integrate land steward-led research, as well as the collection and sharing of existing knowledge. Opening up the 'ivory tower of research' enables knowledge dissemination in bottom-up, horizontal and top-down directions. With such a paradigmatic shift, research and knowledge sharing can change and enable mutually beneficial solutions, where knowledge gained from research has immediate practical value and vice versa.

In regards to metrics, research and knowledge institutions ought to support the metric and measurement of localities and systems. There are no one-size-fits-all metrics. It is necessary to truly understand locations and systems to collaborate at all levels with all actors to understand and facilitate present and future regenerative outcomes.

Evolving the capacity and resilience of land stewards is of major importance for ecological, economic and social regeneration. Their voices are central and need to be acknowledged. The importance of land stewards is frequently talked about, but not given a decision-making place at the table. By building up the capacity, resilience and decision-making agency of land stewards, we will decisively increase also the quality and resilience of the vast amount of public goods that are generated by agrifood ecosystems – to the benefit of the whole of society.

4.3 Towards an Outcome-oriented Agricultural Policy

We understand regenerative governance as a mode of governance that aims primarily at evolving the capacities of and empowering all stakeholders in the governed system. The lived experience of land stewards to lead regenerative processes is decisive for the local and contextually-specific adaptation of our societies to the climate and health crises. Land stewards' capacities are central for creating resilience of high and nutritious crop yields through the regeneration of our ecologies, their soils, biodiversity and natural cycles.

The current governance approach fails to engage farmers, their stakeholders and our governance bodies in a systematically and jointly pursued quest to reverse the dire trends we are currently observing globally: the plummeting resilience and poor nutritional quality of our food production, as well as of biodiversity loss, uncoupling of natural cycles, land stewards' mental health and rural depopulation, amongst others.

Despite their huge financial resources, US\$ 817 billion per year 2019-2021 globally³², the ineffectiveness of the current agricultural policy approaches, (i.e. uncoupled hectare-based direct payments and/or practice-based payments) is ever more obvious³³. To date, outcome-oriented / performance-based agricultural policy is rapidly becoming technologically feasible³⁴. However, holistic but simple payment design remains poorly understood.

An outcome-focused agricultural policy that simply but holistically remunerates agroecosystem health performance can give agency, capacity and planning security back to farmers, allowing them to embark on or strengthen their contextual journey of regenerative agriculture.

To achieve an outcome-focused agricultural policy, we need to move towards paying for results and/or outcomes (performance) of agroecosystem health. An outcome-focused agricultural policy could take the

³² https://www.oecd-ilibrary.org/agriculture-and-food/agricultural-policy-monitoring-and-evaluation-2022_7f4542bf-en

³³ <https://www.oecd-ilibrary.org/sites/32810cf6-en/index.html?itemId=/content/publication/32810cf6-en>

³⁴ <https://cordis.europa.eu/project/id/101081964>

shape of a hybrid scheme rooted in context-specific payments for agroecological performance, and be complemented by payments for context-specific practices.

When designing the legislative and operational infrastructure necessary to realize an outcome-focused agricultural policy, it is of utmost importance that the insights of the pioneers of regenerative agriculture, as well as of the co-evolving agricultural living soil and plant sciences, are taken as core guidance. Hence, such a policy scheme ought to embrace the health of agroecosystems, particularly of living soils, as agronomy's first priority. Agroecosystem and soil health are the prerequisites for achieving yield quantity, quality and resilience (primary productivity), as well as ecosystem services, rural development, the improvement of the livelihoods of farming communities, food security and national security.

The contextual benchmarking of indicators/metrics that inform the monitoring of results and/or outcomes, enabling performance-based payments, must have a guiding function for agronomic practice in the direction of regenerative agriculture. Payment design ought to be of multiple benefits to land stewards, such as alleviating the injustices and bureaucratic burdens of current agricultural policy approaches.

As such, the monitoring of agroecosystem health performance of land can enable simple, guiding and direct payments to land stewards that are coupled through the proxies of contextually and systematically benchmarked indicators to holistic outcomes of ecological, social and economic regeneration.



5 The Potentials of Regenerative Agrifood Ecosystem Governance

Agrifood ecosystem governance that is anchored in such an outcome-oriented agricultural policy, while embracing system change and pluralism in governance and knowledge systems, holds vast potentials for a wider transformation of governance modes in policy-making. Such agrifood ecosystem governance serves the interests of land stewards and food security, as well as economic and ecological health, as the fundamental conditions for stewarding towards the overall health of our planet and all its inhabitants.

Multiple, self-reinforcing benefits are urgently needed and practically feasible:

For land stewards & governance:

- Long-term planning security for farmers (drastic reduction of transfer costs)
- New societal appreciation of the positive agency of farmers in our climate and biodiversity crises (alleviation of demographic bomb in the sector)
- Decreasing bureaucratic burden for farmers
- A more level playing field for farmers
- Context-responsive regulation & subsidies
- Production-integrated payments for public goods
- Fairness to Regenerative Leaders in farming
- Indirect penalizing effect on polluters
- Transformation and innovation inoculation in the agricultural sector
- Fostering of farmer motivation and ability for continuous learning and capacity building
- Possible positive feedback loops through regional peer-to-peer synergies

For One Health:

- Increased biodiversity in agroecosystems
- Addressing water quantity, cycling and quality issues
- Addressing the epidemic of non-communicable diseases at its core root
- Increase of nutrient density in foods and significant reduction of micronutrient deficiencies
- Decrease of healthcare costs
- Significant decrease in the pressure of diseases in animal and plant production
- Regenerating biogenic carbon and nitrogen cycles
- Detoxifying our environment
- Building resilience and climatic adaptation of the agricultural production
- Deflating food prices in the long-term
- Building food security, food sovereignty, national security and peace

In the spring of 2024, EARA will publish a comprehensive science-based policy paper and proof of concept study for a renewed EU agrifood ecosystem governance.

EARA will make a detailed and actionable proposal for a governance approach rooted in simple but holistic agroecosystem health performance-based payments, for a farmer and soil health-centred Common Agricultural Policy post-2027.

Annex: EARA's Theory of Change

EARA's theory of change is guided by the agronomic theory of change expressed in the principles outlined above, that pioneering farmers developed to regenerate the health of their soils and ecosystems, with the aim of fostering the resilience of their farms and caring for the well-being of all the stakeholders in their wider ecosystems.

A core component of the agronomic theory of change of farmers in the regenerative agriculture movement is to restore (at this trophic level) the diversity, vitality and balance of bacteria and fungi in soils. Fungi bind elements of soil ecosystems together into integrated aggregates and enable living soils to function as a cohesive whole. Similarly, EARA's farmers themselves seek to function as the inoculants of the missing 'fungi' in our society and governance, bringing people and ecologies closer together towards a functional cohesion guided by cooperation, diversity and peace, rather than competition, scarcity and fragmentation.

The movement of regenerative agriculture itself can be viewed as having a larger 'fungi-function', bringing together the pioneering farmers from different realities (Conservation Agriculture, Organic Agriculture, Agroecology, Agroforestry, Animal Husbandry, Market Gardening, Indigenous and Natural farming, etc.), jointly with the pioneering actors of the larger agrifood ecosystem, as well as pioneers from other fields and traditions³⁵.

EARA serves to enable the evolving and necessary self-organization of pioneering stakeholders in the EU agrifood ecosystem, especially the grassroots farmer movement of regenerative agriculture. These farmers share knowledge and insights that can and should become references and inspiration for more regenerative farmers in the future. Its aim is to build and protect our shared interests, as well as widen our knowledge and capacity to drive our ecological, social and economic regeneration.



The Founding Farmers present at the EARA Founding Farmer Conference at Akademie Schloss Kirchberg in Kirchberg/Jagst, Germany, November 2023

³⁵ <https://link.springer.com/article/10.1007/s11625-022-01281-1>