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Regenerative agriculture as a key contributor to European green prosperity and inclusive growth

OP2B's policy recommendations
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One Planet Business for Biodiversity (OP2B) is a unique international cross-sectorial, action-oriented business coalition on biodiversity with a specific focus on agriculture, initiated within French President Macron's One Planet Lab framework, launched at the United Nations Climate Action Summit in New York on 23 September 2019. The coalition is determined to drive transformational systemic change and catalyse action to protect and restore cultivated and natural biodiversity within the value chains, engage institutional and financial decision-makers, and contribute to policy recommendations in the framework of the EU Green Deal.

Executive summary

Biodiversity is a backbone of life, human communities and development. Today we are losing it at an unacceptable rate. After decades of investment focused on efficiency and productivity to meet the needs of a growing world population, our globalised and highly specialised agricultural system is impacting life in the soil, triggering loss of diversity on farms, of ingredients, product ranges and diets, and causing degradation of natural ecosystems.

OP2B members believe that regenerative agriculture, a set of practices that will leverage the power of plants to keep and sequester carbon in the soil, increase the capacity of soils to hold water, enhance the resilience of crops reducing chemical pesticides and excessive and inappropriate nutrient inputs, and support the livelihoods of farmers, is the way forward to restore biodiversity, for the benefit of the environment, farmers, businesses and citizens alike.

A fundamental overhaul to restore biodiversity[1]

The Stockholm Resilience Centre estimates that we have now crossed the world's boundaries for biodiversity. Biodiversity is the backbone of our human system, and today we are losing it at an unsustainable rate: according to the WWF, 50% of the world's topsoil has been lost over the past 150 years.

Within the past 50 years, the global agriculture and food system has brought an abundance of affordable consumption products to large swathes of the population, while considerably improving food security for the most vulnerable ones. This success has come at a considerable cost: the agriculture sector already accounts for 80% of deforestation, 70% of global fresh-water use, and a third of global greenhouse gas emissions. The food system alone is responsible for around 60% of global biodiversity loss, fueled by an increasingly specialized agricultural system, loss of both wild and cultivated biodiversity due to land use change, monoculture and intensive

[1] The use of the term "biodiversity" includes biodiversity and nature contribution to people and ecosystem services.

farming practices. As noted in the EU Biodiversity Strategy, nearly 75% of the world's surface has been altered by humans already.

The economic consequences of these trends are also dire. It is estimated that a reduction in global biodiversity resulted in losses of up to $20tn per year between 1997 and 2011. The World Economic Forum estimates that between $235bn and $577bn of global crop output is at risk each year from the decline of pollinators such as bees. This economic risk is particularly notable for companies from the agriculture, food and beverages and apparel sectors, which are amongst the most nature-dependent industries, deriving more than $4tn of gross value added from nature.

In the long term, biodiversity decline will also exacerbate the risk of food insecurity, as food prices are likely to rise: the WWF anticipates a significant rise in the global price of commodities such as oil seeds (+4%), fruit and vegetables (+3%) or even cotton (+6%) by 2050. This is already a critical issue in Europe: as the Farm to Fork Strategy points out, 33 million people cannot afford a quality meal every second day.

Agriculture uses a large share of land, and pressure on the sector is rising. The world's population continues to grow, with the UN predicting that it will reach 9.7bn in 2050. At the same time, the amount of arable land is decreasing, as a result of the combined growing urbanization trends and the positive ambitions to extend protected areas on land, which should reach 30% in the EU's Biodiversity Strategy. Any new sustainable agricultural model needs to have the ability to cope with the increasing global population and demand for affordable nutritious food, while adapting to less available land.

Lastly, along with other ongoing studies, a recent IPBES workshop highlights the close interlinkages between land use change and the raising occurrences of pandemics. Its conclusions are clear: "*Changes in the way we use land, the expansion and intensification of agriculture, and unsustainable trade, production and consumption, disrupt nature and increase contact between wildlife, livestock, pathogens and people and constitute the path to pandemics*".

Doing nothing is not an option anymore: agriculture-centric sectors can no longer afford to invest in unsustainable land management practices. Neither can we, as a society.

Alongside a firm commitment to end deforestation and ecosystem conversion, as well as to drastically reduce food waste, a fundamental overhaul of our current global agricultural model towards regenerative practices is needed to restore biodiversity, guarantee the world's growing population can be fed, and secure ongoing economic growth. OP2B members support regenerative agriculture as a key alternative to the conventional agriculture model.

This overhaul requires renewed political ambition and an appropriate regulatory framework to achieve the necessary agricultural transition in Europe. The European Green Deal's Biodiversity 2030 and Farm to Fork Strategies present a unique opportunity to build the EU's long-term agricultural resilience while enhancing the link between agricultural policy, food sovereignty, biodiversity protection and climate action.

Regenerative agriculture: a nature-based solution to achieve the European Green Deal's objectives

Regenerative agriculture is a nature-based solution that aims to transition agriculture from being a primary source of environmental degradation globally, to a primary source of regeneration of modified ecosystems. Regenerative agriculture involves transforming agricultural landscapes and practices to improve both the health of agricultural ecosystems, their functions and services they provide, and the quality of yields. It is based on disciplines like agroecology, which applies concepts and principles of scientific ecology to agro-ecosystem management. Finally, regenerative agriculture aims to restore soil health and fertility by increasing organic matter in the soil, improving water flows, increasing the agrobiodiversity of landscapes, and enhancing ecosystem services while respecting animal welfare.

Instead of being solely yield-focused and favouring standardization, the regenerative agricultural model places an important emphasis on soil and regional specificities, putting farmers' knowledge and capacities at the centre of the equation. It allows for farmers to be able to substitute external for internal resources, run a multi-product farm, identify and implement synergies and restore ecosystems functions and services.

Regenerative agriculture

Centred on preserving soil health, regenerative agriculture uses a systems-based approach to land management, based on five principles:

1. Support the livelihoods of farmers;
2. Leverage the power of plants to keep and sequester carbon in the soil;
3. Enhance biodiversity both on and off the farm;
4. Enhance the resilience of crops while reducing chemical pesticides and excessive and inappropriate nutrient inputs;
5. Increase the capacity of soils to hold water.

Regenerative agriculture would largely contribute to achieve European Green Deal's targets

Scientific research has repeatedly shown that regenerative agricultural practices, such as cover crops or tillage reduction of perennials, have the biophysical capability to contribute significantly to both soil health and climate change mitigation. Emerging modelling exercises such as Ten Years For Agriculture and exercises based on FABLE modelling have suggested that a shift to such practices, coupled with the adoption of healthier diets and the end of plant protein imports, could contribute to a reduction of agriculture greenhouse gas emissions of 15% at global level by 2030, and up to 40% in Europe by 2050, in line with the objectives set out in the European Green Deal.

Regenerative agriculture practices would also increase the potential for soil carbon sequestration in soils, although there are debates on the scale of sequestration. The World Resources Institute estimated that soil can sequester the equivalent of 5% of annual man-made greenhouse gas emissions. More ambitiously, the 2014 IPCC report estimates that globally 1.2 billion tonnes of carbon could be stored every year in agricultural soils if advances are made in carbon sequestration technology and carbon emissions are priced globally.

Europe's agriculture landscape is already highly organized and managed, and therefore more reactive to incentives and regulations. Thus, the transition to regenerative practices is likely to thrive in Europe, if the right policies are implemented, notably if the EU's Biodiversity and Farm to Fork strategies follow through on their ambitions.

Regenerative agriculture benefits the economy

Regenerative agriculture is an economically viable and beneficial model. Economically-speaking, the World Economic Forum estimates that a transition towards regenerative agriculture by 2030 could generate $1.14 trillion in economic opportunities and 62 million jobs globally.

The picture for individual companies is also clear. Investors increasingly look at unsustainable supply chains as business risks that they can no longer ignore. Companies that invest proactively in more sustainable production methods therefore considerably decrease their business risks, and become more attractive for investors.

Companies that adopt sustainable sourcing mechanisms are also more likely to gain favour with modern consumers who have a heightened awareness of biodiversity, and to respond to the evolution of societal demand towards the inclusion of sustainability considerations in consumer brands' products and strategies. Furthermore, a bigger focus on sustainable consumption through eating less meat, more fruit and vegetables and reducing food waste are both positive for biodiversity and can provide commercial opportunities for industry stakeholders.

In the long-term, regenerative agriculture also ensures the economic and financial viability of the broader processing and retailing part of the value chain and of businesses associated with farmers, by allowing more diversity and added value in the products that are cultivated, processed and sold.

Regenerative agriculture benefits farmers

Farmers would be the main beneficiaries of this transition in the long-term. Regenerative agriculture practices lead to a more resilient economic model with reduced operational expenses and production risks, through diversity of productions and incomes, and improved hardiness against drought. Indeed, research shows that by using methods of regenerative agriculture, it is possible not only to increase the amount of soil organic carbon in existing soils, but to build new soil, which has the effect of drawing down carbon from the atmosphere, while simultaneously improving soil structure and soil health, soil fertility and crop yields, water retention and aquifer recharge. This improved business model would also allow a better valuation of the products through marketing and the creation of complementary incomes such as soil sequestration carbon bonds.

Several examples have shown the link between regenerative agriculture practices and a higher profitability: a study led by Danone showed that in France the top 10% of the most environmentally-friendly dairy farms, those emitting the least CO_2, are also the most cost-effective. Similarly, in the United States, a recent study demonstrated that corn grown out of regenerative agriculture practices reaped 78% higher profits than corn grown via industrial practices. These higher profits are in part due to the reduced need for inputs like pesticides and fertilizers as regenerative farmers are better able to manage pest populations.

Regenerative agriculture benefits innovation

A transition to regenerative agriculture and an increased focus on biodiversity is also an opportunity for innovation to thrive. It has been named "a 7th agricultural revolution", requiring more knowledge and research than intensive agriculture. One key aspect that will be needed to guarantee the uptake of regenerative agriculture is the massive development of a "*certification-related*" market for regenerative agriculture products. Indeed, beyond the growing demand of consumers for transparency and growing interest of investor for extra financial performances disclosure, the development of "green impact bonds" system would push companies to massively resort to technologies enabling a close monitoring and precise measurement of in land activities or in soil impact. Development of tech-enabled certification, using different solutions such as drone technology, will thus become necessary to enable this more precise and larger scale monitoring.

Another area where regenerative practices can kickstart innovation is optimising fertiliser use and development of products that support the restoration of degraded soil and larger ecosystems. The transition provides an opportunity for ag-tech companies to develop a new range of plant nutrients and reduce the use of pesticides. Finally, ag-tech innovation in precision farming can help to use geospatial data and sensors to monitor crops and enable farmers to optimise production.