



Observations and Feedback to the European Commission on the Proposed EU Directive on Soil Monitoring and Resilience

3 November 2023

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and



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ZERO WASTE ALLIANCE IRELAND

Towards Sustainable Resource Management



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COM (2023) 416 final, 05 July 2023

1. INTRODUCTION

Given the importance of soil for all forms of terrestrial life on Earth, and for an extraordinarily wide range of human activities and essential requirements, it may be considered surprising that the European Commission did not urge the need to protect Europe's soils until as recently as 2002, when the Sixth Community Environment Action Programme noted that soil is a finite resource under environmental pressure, and promoted the sustainable use of the soil, with particular attention to preventing erosion, deterioration, contamination and desertification, listed as objectives and priority areas for action on nature and biodiversity.¹

1.1 Developing the Concept of Soil Protection

It is likely that the European Union's concern about erosion and desertification of soils may have been inspired by the increasing awareness of these soil-damaging processes and the resulting soil loss, raised by the United Nations Environment Programme in the 1980s –

“95. As the decade ended, the priorities for the next decade in agriculture and forestry were clear: more action was needed to stop the loss of arable soil and desertification [our emphasis], to manage forests and water wisely, to use appropriate methods of cultivation, to

¹ Decision No 1600/2002/EC of the European Parliament and of the Council of 22 July 2002 laying down the Sixth Community Environment Action Programme, 10 September 2002; Article 6 – objectives and priority areas for action on nature and biodiversity.

*develop environmentally sound pest control methods, and to reduce losses of food actually produced”.*²

*“... there was also **considerable waste of environmental resources through soil loss, desertification** [our emphasis], *salinization and other consequences of poor management*”.*³

*“**Co-operation will also be important for action to combat soil degradation** [our emphasis] and provide guidance on the ground to people endeavouring to develop land in areas vulnerable to erosion and diminishing productivity”.*⁴

Even these early concerns about loss of soil and waste of environmental resources, some 40 years ago, were preceded by work undertaken by the **Soil Association in Britain, established in 1946** [our emphasis] by a group of people concerned about the health implications of increasingly intensive farming systems following the Second World War. The Soil Association raised concerns about:

- The loss of soil through erosion and depletion;
- Decreased nutritional quality of food;
- Exploitation of animals; and,
- The adverse impacts of intensive farming on the countryside and wildlife.⁵

“*The Living Soil*” (1943) by Lady Evelyn Balfour, one of the founders of the Soil Association, is considered a seminal classic in organic agriculture, the organic movement, and awareness of the importance of caring for soil. The book is based on the initial findings of the Haughley Experiment, the first formal, side-by-side farm trial to compare organic and chemical-based farming, started in 1939 by Lady Evelyn Balfour on two adjoining farms in Haughley Green, England.

The philosophical and practical approaches developed and adopted by this pioneering group were appropriately summarised in a talk given by Lady Evelyn Balfour in Switzerland in 1977, in which she described the characteristics and nature of good soil, how these features are neglected by modern agriculture,

² The State of the Environment 1972-1982. United Nations Environment Programme, Nairobi, Kenya, 1982. Environmental Trends and Issues during the 1970s; C. Man and the Environment; 4. Bioproductive Systems; Paragraph 95, page 35.

³ *Ibid*, Paragraph 153, page 54.

⁴ *Ibid*, Paragraph 170, page 59.

⁵ <https://www.soilassociation.org/who-we-are/our-history>

and how this form of agriculture tends to destroy soil structure – “*All these faults are the outcome of failure to think ecologically--they are symptoms of a degree of fragmentation in our approach to the living world which has become a real threat to our survival*”.⁶

1.2 The European Union takes up the Challenge of Protecting Soil, Remediating Damaged Soils and Developing a Soil Strategy

After the very brief mention of soil in the EU Sixth Community Environment Action Programme (2002) noted above, the next reference to soil was in the Environmental Liability Directive 2004. Under the heading of “*Remediation of Land Damage*”, the Directive states that:

*“The presence of such risks shall be assessed through risk-assessment procedures taking into account the **characteristic and function of the soil** [our emphasis], the type and concentration of the harmful substances, preparations, organisms or micro-organisms, their risk and the possibility of their dispersion”.*⁷

This Directive aimed only at remedying damaged land, of which soil was a component, but didn’t consider the importance of ensuring soil health for the purpose of sustainable agriculture, food production, or biodiversity. This was a very narrow approach, in contrast to the much earlier ecological views and practices developed and implemented by the Soil Association.

In April 2002, the European Commission announced for the first time its intention to develop a Strategy for Soil Protection and to prepare the ground for a proposal for EU soil legislation. A first proposal was subsequently adopted by the Commission in 2006 but difficult political discussions took place in the Council of the EU under successive EU presidencies. No agreement was found due to a blocking minority of five Member States; and, as a consequence, the Commission unfortunately withdrew its proposal in 2014.

Nevertheless, in 2006, the European Commission had begun to consider the vital importance of soil in a more integrated way, through the publication of the

⁶ “Towards a Sustainable Agriculture – The Living Soil”. Address given by Lady Evelyn Balfour to an IFOAM conference in Switzerland in 1977.

⁷ Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on Environmental Liability with regard to the Prevention and Remedying of Environmental Damage. Annex II Remedying Of Environmental Damage, Section 2. Remediation of land damage.

EU Soil Thematic Strategy⁸ in that year; with the intention to address soil and land degradation in a comprehensive way and to fulfil EU and international commitments on land degradation, in accordance with the UN Sustainable Development Goal 15.3.

The next major step forward (after a period of nearly 15 years of apparent inaction, primarily for the reason given above) was the publication of the Commission's **EU Soil Strategy for 2030**, adopted in 2021, with the aim of having all of Europe's soils in a healthy condition by 2050, together with full protection, sustainable use and restoration of soils.⁹

The Soil Strategy for 2030 provides a vital background to the Commission's current proposal to develop a comprehensive EU legal framework for soil protection, and to give this valuable natural resource the same level of protection as water and air. The reasons for providing such protection, are clear and self-evident, as stated in the Strategy:

“Soil and the multitude of organisms that live in it provide us with food, biomass and fibres, raw materials, regulate the water, carbon and nutrient cycles and make life on land possible. It takes thousands of years to produce a few centimetres of this magic carpet.

Soil hosts more than 25% of all biodiversity on the planet¹⁰ and is the foundation of the food chains nourishing humanity and above ground biodiversity. This fragile layer will be expected to feed and filter drinking water fit for consumption to a global population of nearly 10 billion people by 2050.

Healthy soils are also the largest terrestrial carbon pool on the planet. This feature, coupled with their sponge-like function to absorb water and reduce the risk of flooding and drought, makes soil an indispensable ally for climate change mitigation and adaptation.¹¹ Healthy soils therefore

⁸ Thematic Strategy for Soil Protection — Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions. COM(2006)231 final. Brussels, 22.9.2006.

⁹ EU Soil Strategy for 2030 — Reaping the benefits of healthy soils for people, food, nature and climate. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. COM(2021) 699 final. Brussels, 17.11.2021.

¹⁰ FAO (2020). State of knowledge of soil biodiversity – Status, challenges and potentialities.

¹¹ Forging a climate-resilient Europe – the new EU Strategy on Adaptation to Climate Change. Commission Staff Working Document, Impact Assessment Report, accompanying the Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions. SWD(2021) 25 final. Brussels, 24.2.2021.

integrate part of the Union’s climate, biodiversity and also long-term economic objectives”.

The vital need to protect European soils was sufficiently important to attract the attention of the European Court of Auditors¹², and the European Environment Agency¹³; while a European Citizens’ initiative “*People4Soil*” had previously gathered the support of more than 500 organization from 26 EU countries, and collected over 220,000 signatures.¹⁴

“*People4Soil*” was an international campaign, supported by European NGOs, research institutes, farmers associations and environmental groups, lobbying for the protection of soil at legislative level within the European Union.¹⁵

The principal objectives of the European Citizens’ initiative were to:

“Recognize soil as a shared heritage that needs EU level protection, as it provides essential benefits connected to human well-being and environmental resilience; develop a dedicated legally binding framework covering the main soil threats: erosion, sealing, organic matter decline, biodiversity loss and contamination; integrate soil related UN Sustainable Development Goals into EU policies; properly account and reduce greenhouse gases emissions from the farming and forestry sectors.”

Developing a strategy also requires a reasonably comprehensive knowledge of the environment to be protected, but unfortunately there is no comprehensive and updated body of knowledge for identifying healthy soils and those soils which have been degraded and require protection.¹⁶

The EEA (2023) report on soil monitoring in Europe identified that European soils are under increasing pressure, and the key trends are:

¹² European Court of Auditors (2018), Special report number 33: Combating desertification in the EU: a growing threat in need of more action.

¹³ The European environment — state and outlook 2020: Knowledge for transition to a sustainable Europe. European Environment Agency, 2019.

¹⁴ Commission Staff Working Document accompanying the document “*EU Soil Strategy for 2030 — Reaping the benefits of healthy soils for people, food, nature and climate; Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions*”. SWD(2021) 323 final. Brussels, 17.11.2021.

¹⁵ <http://www.alliance-network.eu/former-alliance-campaigns/environmental-sustainability-campaign/people4soil/>.

¹⁶ Soil monitoring in Europe — Indicators and thresholds for soil health assessments. EEA Report No 08/2022. European Environment Agency, 2023.

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- *“urban sprawl and low land recycling rates, which contribute to the continued loss of soil from sealing and replacement (e.g. by construction) and to pollution from traffic and industrialisation;*
 - *the intensification of agriculture resulting in increasing use of fertilisers and plant protection products and of heavy machinery; and,*
 - *climate change, which causes weather extremes such as drought, heavy rain, landslides and wildfires”.*

The report also noted that *“resilient, healthy soils are important to help reduce the ecological and economic impacts of unsustainable, intensive land use and weather extremes induced by climate change”*.¹⁷

The increasing emphasis by the European Commission on soil monitoring, soil health and resilience are therefore to be welcomed as tools and policies to prevent the waste of soil as a key natural resource.

1.3 Call for Evidence and Public Consultation

On 16 February 2022, the European Commission issued a call for evidence on which to base a proposed updating of the 2006 EU Soil Thematic Strategy, thereby giving a further opportunity to European citizens and stakeholders to give their views on the Commission's understanding of the problem of soil loss and soil degradation.

The call for evidence invited submissions on possible solutions, including how the very necessary high level of protection can be given to Europe's soils. Citizens and other stakeholders were asked to share any relevant information that they may have, including information on possible impacts of the different options available to the Commission in support of the approach and actions that constitute the new and developing EU Soil Strategy, and to expand the knowledge base contained in the Staff Working Document cited above (SWD(2021) 323 final).¹⁸

The call for evidence issued on 16 February 2022 stated that soils are the foundation for 95% of the food we eat, host more than 25% of the world's

¹⁷ Soil monitoring in Europe — Indicators and thresholds for soil health assessments. EEA Report No 08/2022. European Environment Agency, 2023. Executive Summary, page 9.

¹⁸ Commission Staff Working Document accompanying the document *“EU Soil Strategy for 2030 — Reaping the benefits of healthy soils for people, food, nature and climate; Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions”*. SWD(2021) 323 final. Brussels, 17.11.2021.

biodiversity, are the largest terrestrial carbon pool on the planet and play a key role in the circular economy and adaptation to climate change. They are also a finite and non-renewable natural resource. 60-70% of soil ecosystems in the EU are unhealthy and suffering from continuing degradation resulting in reduced provision of ecosystem services.

The call for evidence stated that unhealthy soils can be:

i) *In bad physical condition:*

- ✘ 12.7% of Europe is affected by moderate to high erosion;
- ✘ Between 2012 and 2018, more than 400 km² of land was taken per year in the EU for urban and artificial development on a net basis;
- ✘ More than 530 million tonnes of soil have been excavated and reported as waste; and,
- ✘ An estimated 30 to 50% of the most productive and fertile soils in Europe suffer from soil compaction.

ii) *In bad chemical condition:*

- ✘ Europe currently exceeds its safe operating space for the nitrogen and phosphorous cycles by factors of 3.3 and 2.0 respectively.
- ✘ Diffuse and local soil contamination is widespread; approximately 390,000 contaminated sites are considered to require remediation; yet, by 2018, only some 65,500 sites were remediated; and,
- ✘ Salinisation affects 3.8 million ha in the EU, with severe soil salinity along the coastlines, particularly in the Mediterranean.

iii) *In bad biological condition:*

- ✘ Peatland drainage across all land categories in the EU emits around 5% of total EU greenhouse gas emissions; every year mineral soils under cropland are losing around 7.4 million tonnes of carbon.
- ✘ In recent decades, soil biodiversity such as the species richness of earthworms, springtails and mites has been reduced; and,
- ✘ The risk of desertification is increasing across the EU and already affecting agricultural production.

The principal **causes of soil degradation** in the EU are listed as:

- land-use change;

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- urban sprawl, excessive and uncompensated spatial development and construction;
 - climate change, drought, extreme weather;
 - unsustainable soil management and intensification of agricultural and forestry practices;
 - industrial activities and emissions, unsustainable waste management and energy production, accidents and spills;
 - improper water management, reuse and irrigation; and,
 - overexploitation, unmitigated and uncompensated consumption of natural resources.

Zero Waste Alliance Ireland (ZWAI) answered the Commission's call for evidence; and submitted a 144-page feedback to the European Commission on 16 March 2022.¹⁹ A total of 189 submissions were received by the Commission during this stage of the public consultation.

In response to the second phase of public consultation, from 01 August 2022 to 24 October 2022, ZWAI did not make a submission to the European Commission, as we had already provided a detailed submission seven months previously. This on-line public consultation elicited 5,782 responses, an indication of the widespread interest in the topic and the need for EU-wide legislation specifically on soil.

Zero Waste Alliance Ireland (ZWAI) is very pleased to have the opportunity to provide feedback to the European Commission at this stage, when the Commission is considering the adoption of a draft proposed Directive on Soil Monitoring and Resilience,²⁰ which will be presented to the European Parliament and Council.

We believe that the proposed Directive on soil health, soil regeneration, soil monitoring and resilience will be extremely important legislative components of the overall environmental, agricultural and food policies of the EU.

We have undertaken research to provide the Commission with reasonably detailed observations on the draft Directive. We trust that the observations in this submission will be considered as a relevant and a positive contribution to EU strategies and measures for the protection and improvement of soil health,

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²⁰ Proposal for a Directive of the European Parliament and of the Council on Soil Monitoring and Resilience (Soil Monitoring Law) COM(2023) 416 final; Brussels, 5 July 2023.

for better monitoring of soils, for ensuring the resilience of soils and for the sustainable use and restoration of Europe's soils.

2. ZERO WASTE ALLIANCE IRELAND (ZWAI)

At this point we consider that it is appropriate to mention briefly the background to our submission, especially the policies and strategy of ZWAI.

2.1 Origin and Early Activities of ZWAI

Zero Waste Alliance Ireland (ZWAI), established in 1999, and registered as a company limited by guarantee in 2004, is a Non-Government Environmental Organisation (eNGO) and a registered charity. ZWAI has prepared and submitted to the European Commission, the Irish Government and to Irish State Agencies many policy documents on waste management, and continues to lobby the Irish Government and the European Commission on the issue of using resources more sustainably, on using resources sustainably, on promoting re-use, repair and recycling, and on development and implementation of the Circular Economy.

One of our basic guiding principles is that human societies must behave like natural ecosystems, living within the sustainable flow of energy from the sun and plants, producing no materials or objects which cannot be recycled back into the earth's systems, or reused or recycled into our technical systems, and should be guided by economic systems and practices which are in harmony with personal and ecological values.

Our principal objectives are:

- i) sharing information, ideas and contacts,
- ii) finding and recommending environmentally sustainable and practical solutions for domestic, municipal, industrial and agricultural waste management, and for more efficient and ecologically appropriate uses of natural resources such as scarce minerals, water and soil;
- iii) lobbying Government and local authorities to implement environmentally sustainable waste management practices, including clean production, elimination of toxic substances from products, re-use, repairing, recycling, segregation of discarded materials at source, and other environmentally and socially beneficial practices;
- iv) lobbying Government to follow the best international practice and EU recommendations by introducing fiscal and economic measures

- designed to penalise the manufacturers of products which cannot be re-used, recycled or composted at the end of their useful lives, and to financially support companies making products which can be re-used, repaired, recycled or are made from recycled materials;
- v) raising public awareness about the long-term damaging human and animal health and economic consequences of landfilling and of the destruction of potentially recyclable or re-usable materials by incineration; and,
 - vi) investigating, raising public awareness and lobbying Irish Government departments and agencies about our country's failure to take adequate care of vulnerable and essential natural resources, including clean water and air, biodiversity, and soil;
 - vii) advocating changes in domestic and EU legislation to provide for more ecologically appropriate, environmentally sustainable and efficient uses of natural resources; and,
 - viii) maintaining contact and exchanging information with similar NGOs and national networks in other countries, and with international zero waste organisations.

2.2 Our Basic Principles

Human communities must behave like natural ones, living comfortably within the natural flow of energy from the sun and plants, producing no wastes which cannot be recycled back into the earth's systems, and guided by new economic values which are in harmony with personal and ecological values.

In nature, the waste products of every living organism serve as raw materials to be transformed by other living creatures, or benefit the planet in other ways. Instead of organising systems that efficiently dispose of or recycle our waste, we need to design systems of production that have little or no waste to begin with.

There are no technical barriers to achieving a "zero waste society", only our habits, our greed as a society, and the current economic structures and policies which have led to the present environmental, social and economic difficulties.

"Zero Waste" is a realistic whole-system approach to addressing the problem of society's unsustainable resource flows – it encompasses waste elimination at source through product design and producer responsibility, together with waste

reduction strategies further down the supply chain, such as cleaner production, product repairing, dismantling, recycling, re-use and composting.

ZWAI strongly believes that Ireland and other Member States, and the EU as a whole, should have a policy of not sending to other countries our discarded materials for further treatment or recycling, particularly to developing countries where local populations are being exposed to dioxins and other very toxic POPs. Relying on other countries' infrastructure to achieve our "recycling" targets is not acceptable from a global ecological and societal perspective.

2.3 What We are Doing

Our principal objective is to ensure that government agencies, local authorities and other organisations will develop and implement environmentally sustainable resources and waste management policies, especially resource efficiency, waste reduction and elimination, the promotion of re-use, repair and recycling, and the development and implementation of the Circular Economy.

As an environmental NGO, and a not-for-profit company with charitable status since 2005, ZWAI also campaigns for the implementation of the UN Sustainable Development Goals, including (but not limited to) Goal 12, Responsible Consumption and Production; Goal 6, Clean Water and Sanitation (having particular regard to the need to avoid wasting water); and Goal 15, to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and to halt and reverse land degradation and halt biodiversity loss.

In responding to many public consultations, members of ZWAI have made submissions and given presentations on how Ireland and the European Union should address the problem of plastic waste (March 2019), on single-use plastic packaging by the Irish food industry (November 2019), on transforming the construction industry so that it could become climate-neutral (instead of its present position as a major emitter of greenhouse gases and toxicants), on the general scheme of the Irish Government's Circular Economy Bill (October 2021), on the recovery and reuse of the phosphorus and nitrogen content of wastewater (2019 to 2022), on a proposed revision of the EU Regulation on Shipments of Waste (January 2022), on Ireland's energy security situation (October 2022), on Ireland's Fourth National Biodiversity Action Plan (November 2022), on Ireland's National Bioeconomy Action Plan 2023-2025 (January 2023), on Ireland's draft Waste Management Plan for a Circular

Economy (July 2023), on the problem of disposable vaping devices,²¹ and on the rapidly increasing European and global problem of waste electronic and electric equipment (WEEE).²²

It will be clear that ZWAI is primarily concerned with the very serious issue of discarded substances, materials and goods, whether from domestic, commercial or industrial sources, how these become “waste”, and how such “waste” may be prevented by re-design along ecological principles. These same ecological principles can be applied to the many ways in which we abstract and use water as a resource, and to the equivalent volumes of wastewater produced as a consequence of these uses.

ZWAI is represented on the Irish Government’s Waste Forum and Water Forum (An Fóram Uisce), is a member of the Irish Environmental Network and the Environmental Pillar, and is funded by the Department of Communications, Climate Action and the Environment through the **Irish Environmental Network**.

In 2019 ZWAI became a full member of the **European Environment Bureau** (EEB); and a member of the **Waste Working Group** of the EEB. Through the EEB, we contribute to the development of European Union policy on waste and the Circular Economy. In November 2021, the EEB established a **Task Force on the Built Environment**; ZWAI is a member of this group, and we contribute to discussions on the sustainability of construction materials, buildings and on the built environment.

²¹ Submission to the Department of the Environment, Climate and Communications in Response to the Department’s Public Consultation on Disposable Vaping Devices; ZWAI, 27 July 2023.

²² Submission by ZWAI to the European Commission on Waste from Electrical and Electronic Equipment — Evaluating the EU Rules; ZWAI, 22 September 2023.

3. THE PROPOSED DIRECTIVE – STRENGTHS AND WEAKNESSES

3.1 Preliminary Observations

ZWAI welcomes the proposal for a Directive on soil health, soil monitoring and resilience by the European Commission. We hope this measure will help bring soil protection and management to the same level of recognition as air and water quality protection. The importance of soil protection for securing food sustainability for a growing human population, sequestering carbon dioxide to combat climate change, and to provide vital ecosystem services cannot be overstated. As such, a rigorous and targeted Soil Health Directive can be a cornerstone of the European Green Deal and can synergise with the Circular Economy Action Plan, Farm to Fork Strategy, EU Forest Strategy and can contribute to the goals of the Paris Agreement. A strong Soil Health Directive will help achieve the aims of the EU Biodiversity Strategy for 2030. Finally, the transition to a plant-based diet will have positive outcomes for soil health and human health.

The introduction to the proposed EU Directive on soil health and monitoring is excellent, as it sets out comprehensive arguments for a single Directive which would address many issues connected with the need to increase our knowledge of Europe's soils, their state, type and quality, and the need for protection and restoration where soils have been damaged.

The proposed EU directive:

- primarily focuses on soil monitoring, including the establishment of criteria for healthy soil condition, options for monitoring soil, and a methodology for reporting;
- aims to complement existing environmental legislation by providing a coherent EU-level framework for soils and addressing soil contamination; but,
- it does not include a legally binding objective to achieve soil health across the entire EU territory by 2050, which has been a point of concern for some stakeholders.

If the proposed directive on soil monitoring and resilience is implemented, EU Member States will be required to undertake a very significant number of complementary measures, including:

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- Establishing soil districts throughout their territories, to manage the soils and the requirements of the directive;
 - Appointing the relevant authorities, to be tasked with carrying out the obligations set out in the directive;
 - Carrying out regular soil measurements and assessing soil health, based on regular soil measurements to ascertain whether the soils are healthy;
 - Implementing sustainable soil management principles which aim to maintain or enhance soil health;
 - Following and implementing the directive's proposed mitigation principles in the event of land take;
 - Tackling unacceptable risks for human health and the environment caused by soil contamination to help create a toxic-free environment by 2050;
 - Identifying, investigating, assessing, and remediating contaminated sites to generate jobs and long-term employment;
 - Providing a comprehensive EU legal framework for soil protection;
 - Integrating soil-related UN Sustainable Development Goals into EU policies;
 - Monitoring and assessing soil health and reviewing the effectiveness of the measures taken;
 - Improving the harmonization of soil monitoring systems used in the Member States and exploiting the synergies between Union and national monitoring systems to have more comparable data across the Union;
 - Facilitating access to soil health data for relevant stakeholders such as farmers, foresters, landowners, local authorities, non-government environmental protection organisations and citizens;
 - Providing explanatory documents to equip the Commission for overseeing transposition of the proposed directive;
 - Reporting to the Commission every 5 years, and providing the necessary information which the Commission needs to fulfil its role in overseeing implementation of the directive, evaluate it and report to the other EU institutions;

In section 1.3 above, we referred briefly to our lengthy and detailed feedback to the European Commission on 16 March 2022, in response to the Commission's call for evidence. It is therefore good to see that the proposed directive on soil monitoring and resilience appears to reflect many of the suggestions made in the 2022 submission by the Zero Waste Alliance Ireland:

- ✓ The need to protect European soils and grant them the same level of protection as water and air;
- ✓ The proposed directive recognizes that soil is a vital, limited, non-renewable, and irreplaceable resource that is crucial for the economy, the environment, and society; and it aims to ensure the full protection, sustainable use, and restoration of soils and to reduce soil pollution to levels no longer considered harmful to human health and the environment.
- ✓ The importance of providing a comprehensive EU legal framework for soil protection: The proposed directive requires EU member states to provide a comprehensive EU legal framework for soil protection. The legal framework should include definitions and criteria for good soil status and sustainable use, objectives, harmonized indicators, a methodology for monitoring and reporting, targets, measures, and financial resources.
- ✓ The need to ensure the full protection, sustainable use, and restoration of soils: The proposed directive aims to ensure the full protection, sustainable use, and restoration of soils. It requires member states to carry out regular soil measurements and assess soil health based on regular soil measurements to ascertain whether the soils are healthy. Member states must also implement sustainable soil management principles that aim to maintain or enhance soil health.
- ✓ The importance of addressing soil and land degradation in a comprehensive way and fulfilling EU and international commitments on land degradation: The proposed directive seeks to stop soil degradation and achieve healthy soils across the EU by 2050, so ensuring that EU soils can supply multiple ecosystem services at a scale sufficient to meet environmental, societal, and economic needs, and reducing soil pollution to levels no longer considered harmful to human health and the environment. It also corresponds to the preferred option for all building blocks except for the building block on soil restoration.
- ✓ The need to integrate soil-related UN Sustainable Development Goals into EU policies: The proposed directive seeks to contribute to

addressing the big societal challenges of achieving climate neutrality and becoming resilient to climate change, reversing biodiversity loss and fulfilling international commitments on biodiversity, reducing pollution to levels no longer considered harmful to human health and the environment, and fulfilling international commitments on land degradation neutrality.

- ✓ The need to properly account and reduce greenhouse gas emissions from the farming and forestry sectors: The proposed directive includes provisions for financial support for farmers and foresters who apply sustainable soil management practices, which can generate additional funding for a network of real-life sites for testing, demonstrating, and upscaling of solutions, including on carbon farming. The proposed directive also aims to make the EU more resilient and reduce its vulnerability to climate change by enhancing the capacity of soils to retain water and sequester carbon.

3.2 Need for Greater Integration – the Nexus Approach

In section 3.1 above we referred briefly to the importance of addressing soil and land degradation in a comprehensive way, but it is our submission that soil, land and water must also be addressed in an integrated way.

This integration is suggested or mentioned in the Explanatory Memorandum of the Directive, which states that –

*[Soil] “degradation processes are continuing and worsening. The drivers and impacts of the problem go beyond country borders, reducing the soil’s capacity to provide these vital services throughout the EU and neighbouring countries. This creates **risks for human health, the environment, climate, economy and society, including risks for food security, water quality, increased impacts from flooding and droughts, biomass production, carbon emissions and a loss of biodiversity**” [our emphasis].*

One of the most important points we therefore wish to make in our submission is that all soil health monitoring and management issues should be addressed, not only on the proposed territorial approach, but on an integrated land and water management framework which takes into account the way in which land is used and managed, how those land uses affect soil health, soil quality, water quality and both terrestrial and aquatic ecosystems; how soil type and soil characteristics dominate and affect actual and potential land uses; and how soil

is affected (and most frequently altered, often irretrievably) by certain types of land uses.

According to the Food and Agriculture Organisation of the United Nations (FAO), the soils and ecosystems which provide the foundation for sustainable agriculture in productive landscapes are being degraded, their integrity disrupted at unprecedented rates, and the natural resource base of soils, water, land, and ecosystems upon which food production depends is under stress, degraded, or already significantly depleted.²³

A paper published some three years ago provides the following comment on the need for an integrated land-use strategic framework which, we would argue, must also include protection, management and conservation of soil, land and water resources:

*“Sustainable land management is at the heart of some of the most intractable challenges facing humanity in the 21st century. It is critical for tackling biodiversity loss, land degradation, climate change and the decline of ecosystem services. It underpins food production, livelihoods, dietary health, social equity, climate change adaptation, and many other outcomes. However, interdependencies, trade-offs, time lags, and non-linear responses make it difficult to predict the combined effects of land management decisions. Policy decisions also have to be made in the context of conflicting interests, values and power dynamics of those living on the land and those affected by the consequences of land use decisions. This makes designing and coordinating effective land management policies and programmes highly challenging. The difficulty is exacerbated by the scarcity of reliable data on the impacts of land management on the environment ...”*²⁴

Landscape and territorial approaches that focus on people and their aspirations are among the most effective ways to address development needs while restoring and protecting natural resources. The rationale for applying integrated approaches at landscape scale is three-fold: landscapes offer a platform that is comprehensive in scope across sectors and domains, addressing issues at their appropriate scale, and thereby improving the likelihood of project success and sustainable outcomes.

²³ Landscapes for Life – Approaches to Landscape Management for Sustainable Food and Agriculture. Food and Agriculture Organization of the United Nations, Rome, 2017.

²⁴ McGonigle D.F., Rota Nodari G., Phillips R.L., Aynekulu E., Estrada-Carmona N., Jones S.K., Koziell I., Luedeling E., Remans R., Shepherd K., Wiberg D., Whitney C., and Zhang W. (2020). A Knowledge Brokering Framework for Integrated Landscape Management. *Front. Sustain. Food Syst.* 4:13. doi: 10.3389/fsufs.2020.00013.

The methodology used by the FAO is through watershed management, similar to river basin management, and is one of the more traditional and recognized approaches utilised throughout the world. This approach has a long history of addressing complex problems and providing solutions to support integration and collaboration across sectors, scales and actors, balance competing needs to generate simultaneous benefits for people and environment. It follows the principles of common concern, multiple scales, multifunctionality and multi-stakeholders.

But ZWAI is advocating in our submission that the proposed soil health and soil monitoring Directive should go further, and should include not only the management and protection of soil, but should follow the principle of multifunctionality, to provide environmentally and socially sustainable management of a wide range of ecosystem services and goods, such as timber, agricultural crops, other types of human and animal foods, fibres and useful plant species, together with protection and enhancement of terrestrial biodiversity, water storage, nutrient cycling, regulation of water flows, mitigation of climate change effects, and protection of air quality. This multifunction approach is well-described in the introduction to the draft Directive, but is not clearly followed through in the Directive itself.

It is clear to us that such a multi-faceted approach will need far more inter-agency and inter-departmental cooperation than exists at present in Ireland and (as far as we know, in many other EU Member States), despite the absence of any legal or administrative barriers to such integration, and the presence of many benefits – both environmental and socio-economic. The draft Directive clearly establishes the need for an EU-wide co-operation between Member States and between Member States and the European Institutions, but there is very little in the Directive which would encourage Member States to adopt internal cooperative approaches within and between departments of their own Governments to ensure the protection of soil health, to undertake monitoring, to share the results of such monitoring, and to ensure the necessary degree of resilience.

It is our submission that multiple benefits can be derived from strengthening the inter-linkages between soil and water resources management, biodiversity protection, ecosystem services, agriculture and other land uses through practices such as:

- forest restoration and sustainable forest management which will support air and water purification, carbon sequestration and storage;
- sustainably managed agricultural lands, forests and watercourses which will reduce risks and damage from floods, storms, bogslides (peat slides) and droughts;

- sustainable land management practices and properly managed permanent vegetation cover, which will promote nitrogen fixation processes and will strongly contribute to combating soil erosion and soil loss, maintaining soil health and fertility, and reducing the quantities of silt entering streams and rivers;
- sustainable livestock grazing, which will support balanced ecological mosaics, ecosystem diversity, nutrient cycling, and the dispersal of seeds, and will also support resilience, primary productivity, and protection from pests and diseases; and,
- integration of fisheries enhancement and maintenance, which will support good management of watercourses and water bodies, primary productivity in freshwater ecosystems, protection from waterborne pests and diseases, nutrient cycling and water purification.

An integrated land, soil and water management framework would take into account the way in which land is used and managed, how those land uses affect water quality and aquatic ecosystems, and how soil (in every form) dominates and affects actual and potential land uses:

*“Sustainable land management is at the heart of some of the most intractable challenges facing humanity in the 21st century. It is critical for tackling biodiversity loss, land degradation, climate change and the decline of ecosystem services”.*²⁵

The viewpoint which we are advocating is supported by the key messages from a recent report by the European Environment Agency.²⁶

- ✓ *Managing natural resources has historically focused on individual resources and value chain-based approaches. While these provide valuable insights, wider systems thinking is needed to address the complex interactions between different natural resources. For example, the links between food, energy and water resources point to the need for such a systems approach.*
- ✓ *The **resource nexus** concept fulfils this need, as it specifically looks at resource inter-linkages. Applying it to policy interventions generates important information about synergies and trade-offs across several*

²⁵ McGonigle D.F., Rota Nodari G., Phillips R.L., Aynekulu E., Estrada-Carmona N., Jones S.K., Koziell I., Luedeling E., Remans R., Shepherd K., Wiberg D., Whitney C., and Zhang W. (2020). A Knowledge Brokering Framework for Integrated Landscape Management. *Front. Sustain. Food Syst.* 4:13. doi: 10.3389/fsufs.2020.00013.

²⁶ Resource nexus and the European Green Deal, EEA Briefing Number 24-2021, published 17-Mar-2022.

resource-related goals as a contribution to more effective management strategies.

- ✓ *The findings of three case studies on organic farming, advanced biofuels and electric vehicles point to the usefulness of the approach for identifying knowledge gaps, imbalances in policy focus, potential “winners and losers”, and as a basis for informed discussions.*
- ✓ *Resource nexus assessments add to the systemic understanding of sustainability challenges and responses. Combined with other tools and frameworks, e.g. foresight and governance approaches, they could effectively support the European Green Deal’s ambitions of strengthening policy coherence and integration.*

The concept of the “**resource nexus**” was first introduced in resource management in 2011, to address key interdependencies among resources and their use, and it has since gained prominence in the international research community and among international organisations operating at the science-policy interface.

The Food and Agriculture Organization of the United Nations defines the resource nexus as a “*conceptual approach to better understand and systematically analyse the interactions between the natural environment and human activities, and to work towards a more coordinated management and use of natural resources across sectors and scales*”.²⁷

While early applications focused on exploring the inter-linkages between water, energy and food, further developments embraced other natural resources, including land and soil, extraction and use of materials, production of waste, protection of ecosystems, and other dimensions such as climate and human health. Collating these applications results in a complex web of direct and indirect interactions, which define the ‘nexus’ among the resources. Understanding this network of interactions provides important information, as a given intervention might have different effects across resources – positive or negative – depending on the way they interact. For example, demand for food can be met through various agricultural practices that may require different levels of land, energy, water and other inputs, and the same is true for demands on other resources.

In most EU Member States (including Ireland, with which we are familiar) this concept has not been adopted or applied, despite what we strongly believe is an urgent need for this type of systematic and integrative approach.

²⁷ FAO, 2014, The water-energy-food nexus. A new approach in support of food security and sustainable agriculture, Food and Agriculture Organization of the United Nations, Rome, Italy.

For example, in Ireland, the planning system has failed to provide any kind of sustainable or integrated land, soil and water management approach; planning matters are highly centralised, with local authorities being subject to strict rules laid down by the Department of Housing, Planning and Local Government and (more recently) by the Office of the Planning Regulator. While these rules may be intended to prevent type of “developer-led” planning which has so undermined good planning in Ireland, they have also had the effect of reducing local democratic involvement in planning, and they are contrary to the principle of subsidiarity.

A further problem (common to many Member States, except for a few which have integrated land use planning successfully) is caused by the almost complete lack of integration between planning for settlements (town planning), rural planning generally, agricultural planning, and policies for other land uses such as forestry, industry, transportation, inland fisheries, and amenity uses of inland and coastal lands and waters. Policies and objectives affecting these land uses are split between departments and agencies which frequently hold conflicting views, and which rarely take into account land, types of soil, or uses of soil or water, other than those for which a particular department or agency is responsible.

It is therefore one of our key recommendations that the proposed Directive should be based on integrated land, soil and water management, using the ‘nexus’ approach and framework described above, taking into account the way in which land is used and managed; and how land uses and water resources interact with each other. This approach also requires new legislation and an appropriately designed management structure.

3.3 The Relationship between Soil, Agriculture, Food Supply and Food Security, while Maintaining Biodiversity

The vitality of our soils is the bedrock of agricultural sustainability and environmental equilibrium, foundational to the success of farming practices, the preservation of biodiversity, and security of food supplies. As the European Commission embarks on the formulation of a EU European Commission Initiative on Soil Health – Protecting, Sustainably Managing and Restoring EU Soils, the primary objective is to address the imperative of nurturing and fortifying soil health and the interconnected biodiversity. This Directive recognizes that the condition of our soil not only dictates agricultural productivity but also profoundly influences broader ecological health, water quality, and climate resilience.

The proposed Directive seeks to establish a robust framework that champions sustainable practices, biodiversity conservation, and the enhancement of soil health. By integrating a multitude of strategies, such as promoting organic farming, advocating for reduced tillage, and preserving natural habitats, the Directive aims to foster a holistic approach to soil preservation. Emphasising education, innovation, and policy integration, this Directive aims to empower farmers, engage stakeholders, and educate citizens about the pivotal role of soil health in environmental sustainability.

This section of our submission provides a list of essential soil conservation and preservation practices that the Directive must absolutely include for EU Member States to adopt nationally.

3.3.1 Promotion of Organic Farming Practices

How can this be achieved?

- ✓ Incentivize organic farming through subsidies, tax breaks, or grants, encouraging farmers to adopt practices that maintain and enhance soil health without relying on synthetic chemicals.
- ✓ Provide education and training programmes to help farmers transition to organic methods, emphasising soil-friendly techniques such as composting, crop rotation, and natural pest control.

3.3.2 Crop Rotation and Diversification

How can this be achieved?

- ✓ Support farmers in implementing diverse crop rotations to break pest cycles, reduce the need for chemical inputs, and improve soil structure and fertility.
- ✓ Encourage the cultivation of cover crops, which can protect the soil, fix nitrogen, and add organic matter, contributing to improved soil health.

3.3.3 Reduced Tillage Techniques

How can this be achieved?

- ✓ Offer financial incentives for adopting reduced tillage practices, which minimise soil disturbance and erosion.

- ✓ Provide guidance on the implementation of specific no-till or reduced tillage methods suitable for different farming systems, climates, and soil types.

3.3.4 Conservation of Natural Habitats

How can this be achieved?

- ✓ Create policies that safeguard natural habitats within or near agricultural areas, preserving biodiversity and providing corridors for wildlife.
- ✓ Provide support for farmers who maintain or establish wildlife-friendly areas on their land, such as hedgerows, wildflower strips, or ponds.

3.3.5 Promote Soil Cover

How can this be achieved?

- ✓ Offer support and subsidies for farmers to employ techniques that keep the soil covered, such as mulching, using cover crops, or practising agroforestry.
- ✓ Educate farmers on the benefits of soil cover, such as reducing erosion, conserving moisture, and improving soil structure.

3.3.6 Regulate Chemical Inputs

How can this be achieved?

- ✓ Implement strict regulations on the use of agrochemicals, ensuring proper usage, storage, and disposal to minimise their negative impact on soil health and biodiversity.
- ✓ Encourage the use of biological or ecological pest management strategies to reduce the reliance on chemical inputs.

3.3.7 Soil Monitoring and Assessment

How can these be achieved?

- ✓ Develop standardised protocols and tools for farmers to assess soil health, providing access to affordable soil testing services.
- ✓ Establish a database or platform to record and analyse soil health data, offering recommendations and best practices based on the results.

3.3.8 Education and Support Programmes

How can these be achieved?

- ✓ Develop comprehensive training programmes and workshops for farmers, agricultural advisors, and extension services to disseminate knowledge on sustainable soil management practices.
- ✓ Provide financial support for farmers to invest in equipment or infrastructure needed for adopting sustainable practices.

3.3.9 Promotion of Agroecology

How can this be achieved?

- ✓ Integrate agroecological principles into agricultural policies, promoting diversified farming systems that work in harmony with natural ecosystems.
- ✓ Support agroecology research and demonstration projects to showcase successful models and encourage widespread adoption.

3.3.10 Research and Innovation Funding

How can this be achieved?

- ✓ EU Member States need to allocate funding for research institutions, universities, and agricultural organisations to conduct research on innovative soil health practices, technologies, and sustainable farming techniques.
- ✓ Encourage collaboration between scientists, farmers, and policymakers to bridge the gap between research findings and practical applications in the field.

3.3.11 Integration of Soil Health in Policies

How can this be achieved?

- ✓ Ensure coherence across various policies, linking agricultural, environmental, and land-use planning regulations to prioritise soil health and biodiversity conservation.

- ✓ Foster collaboration between different government bodies and stakeholders to implement a unified approach to soil health and biodiversity management.

3.3.12 Public Awareness and Outreach

How can these be achieved?

- ✓ EU Member States should conduct public campaigns, workshops, and educational programmes to raise awareness about the importance of soil health and its relationship to food quality and the environment.
- ✓ Engage with consumers and the general public to encourage support for sustainably produced food and farming practices.

By expanding and elaborating on these points, the European Commission can develop a robust and multifaceted Soil Directive that addresses the improvement of soil health and associated biodiversity in a comprehensive and effective manner.

3.4 Where the Directive could be Improved

There are many features of the Directive which are excellent and very well-conceived, but we have also identified areas where we believe improvements could be made.

3.4.1 Soil Testing

ZWAI considers that the criteria for soil testing are not sufficiently rigorous, and thus what defines a “healthy soil” may be loosely interpreted. For example, the requirement for soil respiration rate testing may not accurately reflect the biodiversity of the soil. A higher respiration rate does not equal higher biodiversity. Moreover, these results can vary under different conditions of moisture, temperature, soil nutrient loads, time of year, or human impact such as ploughing. It’s important to consider that different soils will have greater or lesser capacity to perform various ecosystem services.

3.4.2 Soil Functions for Sustainable Land Management



Figure 3.4.1 Land management functions, as defined by the LANDMARK project

We suggest applying the soil functions concept innovated by the LANDMARK project (Land Management: Assessment, Research, Knowledge base) (see Figure 3.4.1 above). This project defined the following 5 soil functions for sustainable land management:

- Primary productivity (white);
- Water purification and regulation (blue);
- Carbon sequestration and regulation (black);
- Functional biodiversity (green); and,
- Provision and cycling of nutrients (purple).²⁸

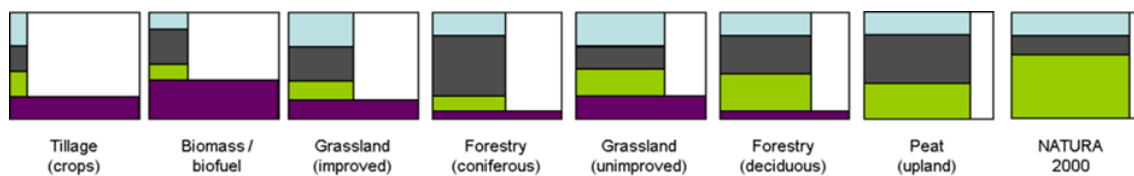


Figure 3.4.2 Land management functions, from the LANDMARK project.

Assessing soils under these criteria will reveal the ecosystem services which a soil district can provide. For example, a tillage crop field can provide relatively large primary productivity along with some water purification, carbon sequestration, biodiversity, and nutrient cycling. Introducing agro-ecological management principles to the tillage crop field can boost these additional soil functions while maintaining the high primary production. The soils in Natura 2000 sites, conversely, can be highly valuable in providing water purification, carbon sequestration, functional biodiversity and nutrient cycling.

3.4.3 Applying Agroecological Principles

In our previous submission “**Feedback to the European Commission on a Proposed Directive on Soil Health – Protecting, Sustainably Managing and Restoring EU Soils 16 March 2022**” we suggested an agroecological approach to soil health management. This means considering agricultural systems as part of nature, rather than as a separate entity. Agricultural land of course impacts surrounding organisms and environments through nutrient and pesticide run-off, water table depletion and habitat destruction. On the other hand, agricultural land can provide pollination opportunities, structural habitats, and the 5 functions listed above.

²⁸ <https://landmark2020.eu/soil-functions-concept/>

Therefore, we were disappointed that the “Annex III Sustainable Soil Management Principles” did not introduce enough agroecological management tenets. We support the Commission’s proposed measure of using vegetative soil cover, minimising soil disturbance, avoiding damaging soil inputs, avoiding damaging machinery, prioritisation of circular solution to fertilisation, crop rotation and crop diversity, and the recommendation for targeted measures to regenerate soil functions.

However, we would not support the focus on integrated pest management, which is no longer supported by the scientific community.²⁹ Instead, we propose the concept of **agroecological crop protection (ACP)**,³⁰ which aims to maximise soil and crop health by relying on ecosystem services. This can be achieved by introducing:

- Crop rotation ³¹
- Crop diversification ³²
- Pesticide reduction ³³
- Agroforestry ³⁴
- Intercropping ³⁵
- Semi-natural field margins ³⁶

²⁹ Deguine, J.P., Aubertot, J.N., Flor, R.J., Lescourret, F., Wyckhuys, K.A. and Ratnadass, A., 2021. Integrated pest management: good intentions, hard realities. A review. *Agronomy for Sustainable Development*, 41(3), p.38.

³⁰ Deguine, J.P., Gloanec, C., Laurent, P., Ratnadass, A. and Aubertot, J.N. eds., 2017. *Agroecological crop protection*. Springer.

³¹ D’Acunto, L., Andrade, J.F., Poggio, S.L. and Semmartin, M., 2018. Diversifying crop rotation increased metabolic soil diversity and activity of the microbial community. *Agriculture, Ecosystems & Environment*, 257, pp.159-164

³² Romaneckas, K., Adamavičienė, A., Šarauskius, E. and Balandaitė, J., 2020. The impact of intercropping on soil fertility and sugar beet productivity. *Agronomy*, 10(9), p.1406.

³³ Deguine, J.P., Jacquot, M., Allibert, A., Chiroleu, F., Graindorge, R., Laurent, P., Lambert, G., Albon, B., Marquier, M., Gloanec, C. and Vanhuffel, L., 2018. Agroecological protection of mango orchards in La Réunion. In *Sustainable Agriculture Reviews* 28 (pp. 249-307).

³⁴ García de Jalón, S., Graves, A., Palma, J.H., Williams, A., Upson, M. and Burgess, P.J., 2018. Modelling and valuing the environmental impacts of arable, forestry and agroforestry systems: a case study. *Agroforestry systems*, 92(4), pp.1059-1073.

³⁵ Jensen, E.S., Carlsson, G. and Hauggaard-Nielsen, H., 2020. Intercropping of grain legumes and cereals improves the use of soil N resources and reduces the requirement for synthetic fertilizer N: A global-scale analysis. *Agronomy for Sustainable Development*, 40(1), pp.1-9.

³⁶ De Cauwer, B., Reheul, D., Nijs, I. and Milbau, A., 2006. Effect of margin strips on soil mineral nitrogen and plant biodiversity. *Agronomy for sustainable development*, 26(2), pp.117-126.

- Set-aside ³⁷
- Perennial crop plants ³⁸
- Reduction of livestock; conversion of pasture to intensive tillage and semi-natural habitats ³⁹
- Maintaining and creating suitable habitats for birds, mammals, amphibians, pollinators, and other invertebrates within agricultural lands. ⁴⁰



Figure 3.4.3 Agroecology allows natural systems such as rivers and forests to co-exist with intensive agriculture

Some of these suggestions were included in Annex III, which is a welcome step in the right direction, but we believe the principles do not go far enough. The opportunity now exists to rectify the Annex to include more effective

³⁷ Hopkins, A., 2009, May. Relevance and functionality of semi-natural grassland in Europe—status quo and future prospective. In International workshop of the SALVERE-Project (pp. 9-14).

³⁸ Kreitzman, M., Toensmeier, E., Chan, K., Smukler, S. and Ramankutty, N., 2020. Perennial staple crops: yields, distribution, and nutrition in the global food system. *Frontiers in Sustainable Food Systems*, p. 216.

³⁹ Bhatia, V., Gopi, G. and Behera, P., 2021. Plant-based diet: A solution to the sustainability of life and environment. *Indian Journal of Community and Family Medicine*, 7(1), pp.19-24.

⁴⁰ Olimpí, E.M., Garcia, K., Gonthier, D.J., Kremen, C., Snyder, W.E., Wilson Rankin, E.E. and Karp, D.S., 2022. Semi-natural habitat surrounding farms promotes multifunctionality in avian ecosystem services. *Journal of Applied Ecology*, 59(4), pp.898-908.

agroecological principles to maximise primary production while improving soil health and ecosystem services.

Furthermore, a core assertion of our previous feedback submission was the reduction of meat and dairy production in EU agriculture. We were disappointed to learn the proposed Directive did not recommend a transition to a more plant-based diet. The benefits of a plant-based diet are:

- Less land is required to feed the current EU population with a plant-based diet;
- Agriculture can support a growing population with a plant-based diet without shortages;
- Reduced Greenhouse Gas emissions (GHG);
- Pastures can be converted to semi-natural land types such as wildflower meadows, wetlands, forests, agroforestry;
- Improved green infrastructure (ecosystem services) such as carbon sequestration, water purification, biodiversity support, flood risk management, halting desertification, reducing soil erosion, recreation and tourism, preserving cultural heritage and improving landscape aesthetic value; and,
- Improved human health due to less meat consumption, reducing cardiovascular diseases and obesity.⁴¹

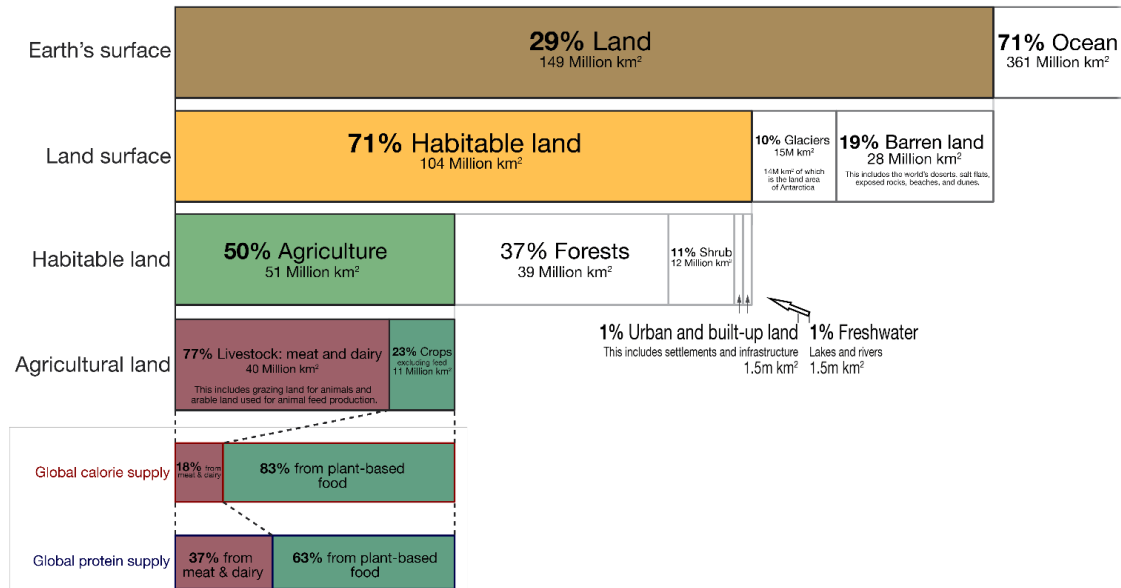


Figure 3.4.4 Conversion of pasture to cropland and semi-natural habitats such as wildflower meadows, forests and wetlands can improve soil health and ecosystem services while maintaining food production for the growing human population

⁴¹ <https://eatforum.org/lancet-commission/eatinghealthyandsustainable/>

Global land use for food production

Our World in Data



Data source: UN Food and Agriculture Organization (FAO) OurWorldinData.org – Research and data to make progress against the world's largest problems.

Licensed under CC-BY by the authors Hannah Ritchie and Max Roser in 2019.

Figure 3.4.5 38.5% of all habitable land on Earth is used for livestock, which produces just 18% of global calorie supply. A switch to protein-rich crops could free up habitable land to provide ecosystem services

3.4.4 Penalties for Damaging Soil

Paragraph (30) on page 24 of the draft proposed Directive draws attention to the fact that –

“soil is a limited resource subject to an ever-growing competition for different uses. Land take is a process often driven by economic development needs, that transforms natural and semi-natural areas (including agricultural and forestry land, gardens and parks) into artificial land development, using soil as a platform for constructions and infrastructure, as a direct source of raw material or as archive for historic patrimony. This transformation may cause the loss, often irreversibly, of the capacity of soils to provide other ecosystem services” [our emphasis].

It is clear that damage to soil is a very serious matter, and that such damage or loss of the soil’s capacity may be irreversible. Soil takes geological time scales to form, and regeneration of damaged soil is time-consuming and costly, even if it can be achieved at all. Despite this reality, the penalties for “violations of the Directive” are only vaguely described as “*fines proportionate to the turnover of*

the legal person or to the income of the natural person having committed the violation”.

It is our submission that deliberate soil damage, or damage to soil caused by neglect or inappropriate use, should be specified in more detail in the Directive, and should be much stronger, commensurate with the seriousness of the offence; and we would further suggest that imprisonment should be an appropriate penalty for serious and continuous or repeated soil damage.

A further problem concerning soil damage is that it frequently results from activities economically valuable to the person or entity which caused the damage. Agricultural practices in many Member States are causing widespread damage to soil, as shown in the examples below.



Figure 3.4.4.1 Soil damage in southern Spain (photographed by one of the authors of this submission).



Figure 3.4.4.2 Soil erosion, with loss of topsoil, caused by road construction.

4. CONCLUSIONS


We hope the recommendations in this submission will be considered by the Commission before the final adoption of the Directive. ZWAI supports many aspects of the proposed Directive, for example the requirement for soil health monitoring by Member States, the establishment of soil districts and the mention of circularity of agricultural fertilisers. Annex III mentioned crop rotation, crop diversification and reduction of chemical use, which was most welcome.

However, some aspects of the Proposed Directive are lacking. For example: the testing of total respiration rate of soil samples will not accurately reflect soil biodiversity. Furthermore, there was a total absence of livestock reduction principles, nor a recommendation for a transition to plant-based diets. Agro-ecological principles were not mentioned; we argue that these principles are crucial to the success of the Directive. Violation penalties are also inadequate.

In conclusion, the comprehensive approach in the proposed Soil Directive may result in a more sustainable and resilient agricultural landscape in Europe. The promotion of organic farming practices, encouragement of crop rotation, and the preservation of natural habitats collectively form the cornerstone of this initiative, aimed at safeguarding soil health and nurturing biodiversity. Moreover, through education, innovation, and policy coherence, the Directive will not only support the agricultural community but will also engage citizens in recognizing the critical role of soil health in environmental sustainability.

By implementing these multifaceted strategies, the European Commission can endeavour to pave the way for a future where soil health and biodiversity thrive, ensuring sustainable food production and ecological equilibrium for generations to come. The Directive represents a good step towards creating a harmonious balance between agricultural needs and environmental preservation.

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03 November 2023

ZWAI Submission on Soil Health, final, 03-Nov-2023.docx