

# The Global Farm Metric framework

Categories, sub-categories and indicators explained

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**GLOBAL  
FARM  
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## Summary

The Global Farm Metric framework presents a common language and holistic approach to thinking about farm sustainability. It has been developed with farmers to drive the transition towards more sustainable farming systems while avoiding unintended consequences of change. It enables all involved in food and farming, from farmers to policymakers to the CEOs of major companies, to navigate the confusing array of assessments, policy initiatives, projects, and media messaging which undermine trust in the sustainability agenda among farmers and the public.

This report presents the GFM framework, sustainability aims, and the indicators developed to support on-farm sustainability assessment. These resources inform a pathway to change. This pathway begins by providing farmers and others with a common overview of what farm sustainability means in practice, paving the way for the collection of baseline data on the state of a farm across the GFM categories. It recognises the need to evaluate and adjust changes in practice through repeated assessment and highlights the importance of using data on the system and its outputs to underpin evaluations of impacts beyond the farm gate.

By focusing on evaluating the outcomes of practices, rather than prescribing what farmers should do, the framework and its indicators aim to be neutral in terms of farming approaches and systems, so that farmers themselves, with support from peers and advisors, can find the best pathways to change in the unique contexts of their farms. The GFM framework and indicators are based on a view of sustainability which requires farms to meet current needs for food, fuel, and fibre, for this production to be sustained to meet the needs of future generations, and for farming to maximise positive and minimise negative impacts on people and planet beyond the farm-gate.

Over the coming months, the common language of the GFM framework will be incorporated into learning materials, helping farmers to understand how existing assessments and resources can support their sustainability journey and, along with the GFM indicators, supporting the development of more aligned, holistic assessments and farm advice. Projects to apply the GFM framework and indicators internationally will continue, and a proof-of-concept assessment tool, the GFM engine, will be used in trials to demonstrate the usefulness of holistic sustainability assessments in driving change. Trial outcomes will provide evidence for the value of the GFM approach and support the work of assessment tool developers.

We believe that a common language for understanding farm sustainability, a holistic perspective, and an agreed set of indicators to evaluate progress, enable bottom-up change by farmers and drive the realisation of a supportive economic and policy environment for the transition to a more sustainable food and farming system. We work with a coalition of over 100 partners across the food and farming sector. Our framework and indicators are provided open access and as a result our work is influencing the adoption of more holistic approaches to understanding and assessing farm sustainability on farms, in government, and along the supply chain.

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## Overview

Last December the Global Farm Metric team released a new version of its farm sustainability framework and began a period of communication and consultation on the framework. Here we present the framework, revised in response to this feedback and as the result of further work within the team. This report:

- describes what the framework is, how it works and what its uses are,
- presents indicators which can be used to apply the framework within sustainability assessments, and discusses the importance of this,
- identifies the next steps the Global Farm Metric team will take in the development of resources and trials to demonstrate the value of the framework and to support positive change in the farming sector.

### Who is the Global Farm Metric for?

Work on the Global Farm Metric framework and indicators has focused on its utility and value for farmers.

Our farm trials and consultations with farm advisors, showed that for many farmers, gaining a clear, holistic understanding of what sustainability means for their farm is a vital first step towards change. This is especially true in the context of a confusing array of assessments, policy initiatives, projects, and media messaging, which often undermine trust and confidence in the sustainability agenda among the farming community.

As a common language, the framework can be used by farmers to understand and discuss the sustainability of their farms, to think critically about different initiatives and assessments which might be put to them, and to make coherent plans for change.

We believe that the Global Farm Metric can help shape the policy and economic environment to drive the transition towards greater sustainability in the food and farming sector and beyond. The support of a broad coalition is vital to achieving this. The Global Farm Metric is supported by over 100 partners, including farmers, advisors, researchers, educators, environmental groups, certifiers, food companies, financial services, and government agencies. You can find out more about the coalition [here](#).

### What is the Global Farm Metric framework?

The Global Farm Metric framework is a way of thinking and learning about farm sustainability. It is designed to be understood by all those who affect and are affected by farming, from farmers to CEOs of major companies. It aims to drive change by:

- Enabling farmers and other stakeholders to make sense of farm sustainability and the myriad of approaches, policies, initiatives, and assessment tools related to it, using the framework as a common language.

- Helping farmers and other stakeholders to think about farm sustainability holistically, in order to avoid negative unintended consequences of change and to maximise opportunities to make changes that have multiple benefits.
- Through this, to support and encourage holistic monitoring of farm sustainability, so that changes in practice can be evaluated over time, and unexpected (positive and negative) effects recognised.

By building a common language for farm sustainability, we believe that the Global Farm Metric framework can spur continuous improvement in sustainability on farms, while helping to shape the policy and economic environment needed to support that improvement.

## From framework to indicators

We have developed a set of indicators to demonstrate how sustainability in each sub–category of the framework can be evaluated in assessments. While the framework, the wheel, its categories, and sub–categories will now stay unchanged, these indicators will evolve with scientific knowledge about farm systems and their sustainability, and the development of new technical options for data collection. They are also likely to be adjusted to fit the needs of the existing wide diversity of farming systems and contexts.

The indicators capture the state of the farming system at any one time, and when the data for these indicators are collected year on year (or at longer intervals where the changes are slower to occur), the outcomes of the farming system — including the effects of changes in farming practice – are measured.

Linking the Global Farm Metric framework categories to indicators enables farmers to take the next step, from understanding the different aspects of farm sustainability using the shared, holistic language of the framework, to collecting data to assess their performance in each category and to identify priorities for change.

## The Global Farm Metric and on–farm sustainability assessment

Our aim is for existing sustainability assessments to adopt the Global Farm Metric framework and indicators in order to align around a shared, holistic view of farm–level sustainability.

Every assessment and decision support tool has different aims and priorities, but if they can be viewed within a common way of looking at sustainability farmers and advisors will be better able to navigate the resources available to choose the best ones for their farm and needs.

While we have developed the Global Farm Metric framework as a common language for farm sustainability, we do not see ourselves as tool or assessment developers. At the same time, we recognise the need for us to demonstrate the value of using our indicators to collect data across sustainability categories.

To enable us to do this, we are developing and using a ‘proof of concept’ Global Farm Metric Engine for use in farm trials.

## What do we mean by sustainability in farming?

We build on previous sustainability definitions to capture what the term means for farming. For us, sustainability in farming means:

- providing sufficient, high-quality food (and other farm products) to meet society's current needs.
- safeguarding the ability of future generations to meet their needs by protecting and improving the environmental, social, and economic condition of every farm.
- moving from minimising the negative impacts of farming, towards farming which actively enhances the state of society and the environment beyond the farm gate.
- a continual process to meet changing environmental, social, and economic challenges and needs, rather than the realisation of a single target level or state.

**When so much is required of farming, we believe that achieving sustainability in the sector demands a holistic, systems approach to avoid the unintended consequences, confusion, and missed opportunities associated with focusing on specific aspects of sustainability in isolation.**

## What sort of farming systems does the Global Farm Metric favour?

Although the Sustainable Food Trust has clear views on how to move farming along a path of ever-improving sustainability, the role of the Global Farm Metric framework is not to favour or support any specific system or approach to farming. Instead, it lays out all the aspects of sustainability that any farming system must address. The framework highlights the importance of monitoring the state of the whole farm, and evaluating practices based on how they affect that state, rather than prescribing practices assumed to lead to desired outcomes. This approach facilitates learning between farmers following differing approaches, rather than focusing on specific practices as 'right' or 'wrong'. In this way, we can find the systems and practices that work best to achieve positive change in the unique contexts of different farms.

## Sustainability and production

The production of food, fuel, and fibres from farming is essential to human life and is the reason we farm. The amount of food, fuel and fibres produced is the key positive impact of farming on the outside world. On farms, crop and livestock products are produced alongside a range of other positive and negative outputs.

Yields from a farm, alongside the amounts of waste (including emissions) it produces and the other services it provides (from farm education to the maintenance of genetic diversity or care for historic sites) are included in the Global Farm Metric framework within the 'Impacts' category.

In this way, the Global Farm Metric framework highlights the importance of considering the positive and negative external impacts of farming, including the production of food, fuel and fibres, holistically and alongside each other. This holistic consideration of farming impacts is

vital to enable judgements to be made about whether, on balance, the positives of the farming system outweigh the negatives.

While a farm may be able to sustain itself as a business while producing very little — depending, for example, on the prices received for what it does produce — producing very low yields would mean that it was not contributing much to what farming exists to provide.

We must support farmers as they balance the need to keep their businesses going while producing the products we require and minimising negative impacts. The Global Farm Metric framework and indicators are designed to make this challenge clear, and to emphasise its centrality to pursuing ever more sustainable farming systems.

## Valuing what farms produce

The Global Farm Metric framework and indicators can help the farmer, and society, to understand the state of a farm and what it produces. But how we value what is produced will always be subjective. We can choose to care about future generations, or we can choose not to, we can choose to worry about biodiversity, or we can choose not to, and so on.

No framework or assessment can make those choices for us, but with a common, holistic view of what is happening on farms we can use our beliefs, ethical principles, and societal priorities to decide together what levels and types of farming outcomes we — farmers, customers, citizens, business-people, in fact, all of us — find acceptable.

Many approaches have been developed for determining agreed values for the positive and negative impacts of human activities such as farming — from monetisation to democratic processes which enable everyone's views to be expressed when choices are made. Each approach has its strengths and weaknesses.

The issue of whose values are taken into account, what is valued, and how, remains perhaps the biggest challenge for sustainability and arguably, for the future of humankind.

How society chooses to value the impacts of farming and its products is something we all have strong views on. The Global Farm Metric team believe that the common, holistic overview of farm sustainability provided by our framework can facilitate more effective choices, whatever systems of value we choose to implement. As such, our framework and indicators are independent of specific approaches to valuing farming outcomes, but we will work to explore different systems of valuation and how they fit with the Global Farm Metric, to support work in this area.

## Recognising farms as open systems

The Global Farm Metric framework takes a farm-centric view of sustainability and farmers have been at the forefront of framework development. However, farmers are not the only people affecting farm sustainability. The framework reflects this by highlighting that the outside world affects every farm.

For many, frameworks and assessments of farm sustainability should focus only on things that the farmer can change. There is a strong and valid reason for this — people are much more likely

to change if they feel that their actions will make a difference. However, if we are to transform our farming systems, a holistic view of farm sustainability must recognise the role that everyone has in that transformation.

There are many aspects of sustainability a farmer has control over, and many meaningful things they can achieve as individuals and together with other farmers. But there are many other challenges which farmers will have to adapt to, and many aspects of farm sustainability which depend on change by others.

We can only achieve what we need to in food and farming if the open nature of farming systems is taken into account. Highlighting the indivisible connection between farms and the wider world emphasizes the vital role those of us outside the farm gate must play to enable food systems to deliver long term food security and bolster our natural life support systems.

While society rightly demands that farmers reduce negative impacts which occur beyond the farm-gate, we must also take responsibility for supporting rather than undermining them in providing the food and protecting the ecosystems services on which we rely.

## Where does the Global Farm Metric fit in the process of change?

The GFM indicators show how the holistic view of farm sustainability delivered by the framework can be monitored in on-farm assessments. Assessing the state of a farming system in relation to the 12 central categories in the GFM wheel is particularly important, as a starting point for change and further exploration.

Just the completion of a simple state of the system assessment is valuable — it:

- Enables farmers to prioritise change and spot risks and opportunities for their farms.
- Provides a baseline of farm data for use in other assessments and reporting, making these easier for farmers to use.
- Provides information to policymakers and investors about which areas of a farm require most support to improve sustainability.
- Enables certifiers and policymakers to assess the effects of their standards or policies on farming, including on the state of nature, soil & water on-farm.
- Across farms, acts as a policy warning system for aspects of farms which are in a generally negative or declining state, enabling prompt and effective action to safeguard sustainability (including food security).

From the basis of assessing the state of their farm system, farmers can choose to explore:

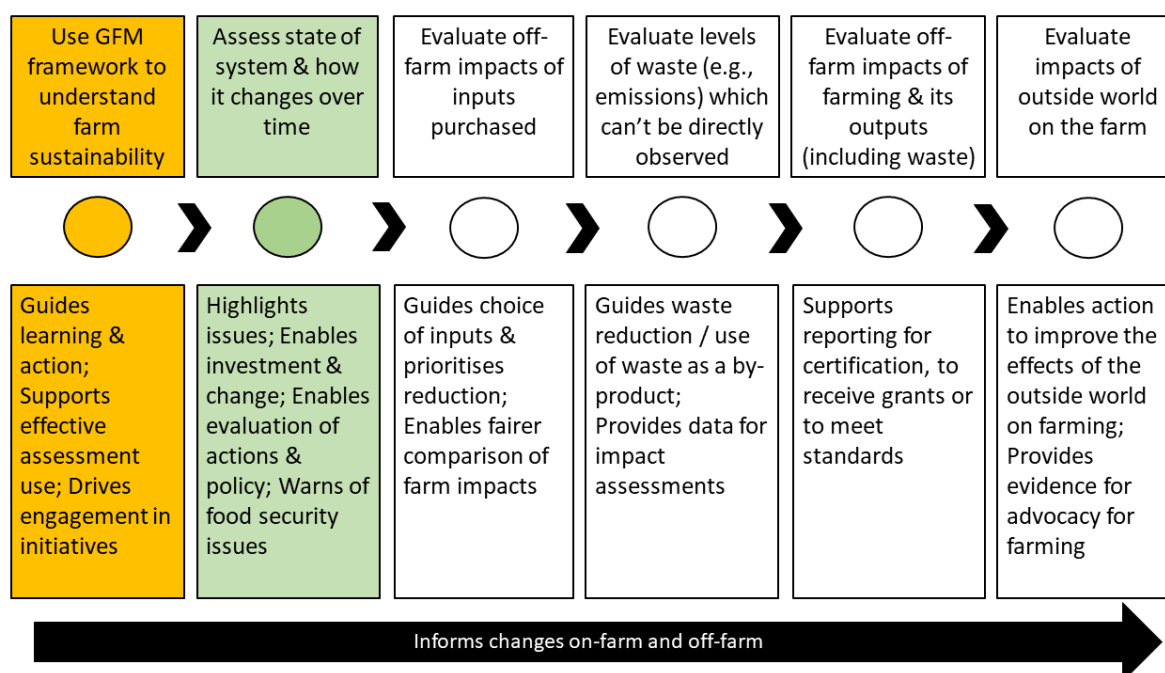
- How their practices might be altered to improve the state of their system, for example by comparing results with other farmers, talking to advisors, accessing knowledge exchange materials, or using decision-support tools to model the likely impacts of changes in practice.
- The sustainability of producing the inputs they purchase for the farm, to guide them in their choice of products and help them prioritise which they might reduce. This could involve checking out information from suppliers on product sustainability.
- The levels of waste they are producing (including things like greenhouse gas emissions) to guide its reduction or profitable use. Waste levels can be estimated in a simple way



from information about farm inputs and outputs. More precise estimates are likely to require information on practices.

- The impacts of their farm, its practices, and its products, on society and the environment beyond the farm gate, in order to access rewards, inform customers or meet reporting requirements. The potential scale of impacts can be estimated in a simple way from information about farm inputs and outputs. More precise estimates are likely to require information on practices.

The chart below sums up these steps — which do not necessarily need to be followed in order. Using the GFM framework (orange) and GFM state of the system indicators (green) provides a basis to further explore the farm system and the impacts it causes and faces.



## Making data collection practical

Our approach of a step-by-step process of farm sustainability assessment is one solution to avoid impractical levels of data collection for farmers. At the same time, technological advances are improving the efficiency with which data can be collected in two ways.

Firstly, advances in technology for monitoring farm sustainability are helping to make the collection of data faster and more accurate. These range from the use of sensors and satellites to gather data, to apps to assist the manual collection and input of data about farms. In addition to technological advances, researchers (including our own) are continually working to simplify protocols for data collection, applying our expanding knowledge of farm systems to reduce effort while retaining data quality.

Secondly, the different groups who use farm data are actively exploring how data can be shared to reduce the number of times farmers are asked to provide it, while maintaining farmer control over their data and who gets to see it.

In itself, the Global Farm Metric framework, as a common, holistic way to understand farm sustainability, promotes the alignment of data collection, minimising the costs and maximising the benefits of assessment for farmers. Through farm trials of our GFM Engine, our team is also working to simplify data collection and increase data sharing. Underlying all of this, the Global Farm Metric team promotes the importance of farmers maintaining control of data about their farm.

## The Framework



Displayed as a wheel, the twelve central categories of the Global Farm Metric framework describe the different parts of the farm system. The state of each of these parts represent strengths of, and risks to, the sustainability of the farm (its ability to keep producing to meet the needs of future generations) and its likely impacts on sustainability beyond the farm gate.

These sustainability risks and strengths are shaped and influenced by farming practices (inner edge of the wheel).

Impacts (outer edge of the wheel) captures the fact that a farm is an ‘open system’ – it has effects on the outside world and the outside world has effects on it.

A fundamental principle of the Global Farm Metric framework is that no category of sustainability should be considered in isolation. Actions taken to make improvements in one category need to consider trade-offs and benefits for every category.

In particular, farming practices adjusted to improve one part of the system are also likely to have positive or negative effects on others. By monitoring the state of the twelve central Global Farm Metric categories, the effects of changes in practices on the sustainability of the farm can be evaluated, and unexpected effects recognised. By monitoring the impacts of the farm, the effects of changes in practice on the outside world can be evaluated.

By highlighting the interactions between different categories of farm sustainability, and how the farm ‘nests’ within wider systems, the wheel shows that changes will be needed beyond the farm–gate as well as on–farm, to improve and maintain the sustainability of our farming system. Therefore, finding ways to make improvements across multiple sustainability categories is a challenge not only for farmers, but also for others within and beyond the sector who have an effect on farming, and whom it affects.

## Reading the Global Farm Metric framework wheel

Reading from the top of the wheel and working around clockwise, **climate, community, nature, and soil & water** form the basis of the farm system and support farming activities.

The farming system is then shaped by the **governance** of the farm, the use of its **resources** and the **inputs** brought into the system.

The **farmer & workers** support the production of **crops & pasture** and **livestock**.

This system produces a range of **products**, including the food, feed, fuels or fibres which farming exists to provide as well as a range of waste products, by–products, and services.

The **economics** of the farm reflects the value the outside world places on farm products and impacts, as well as the costs of the business and the financial resources available to it.

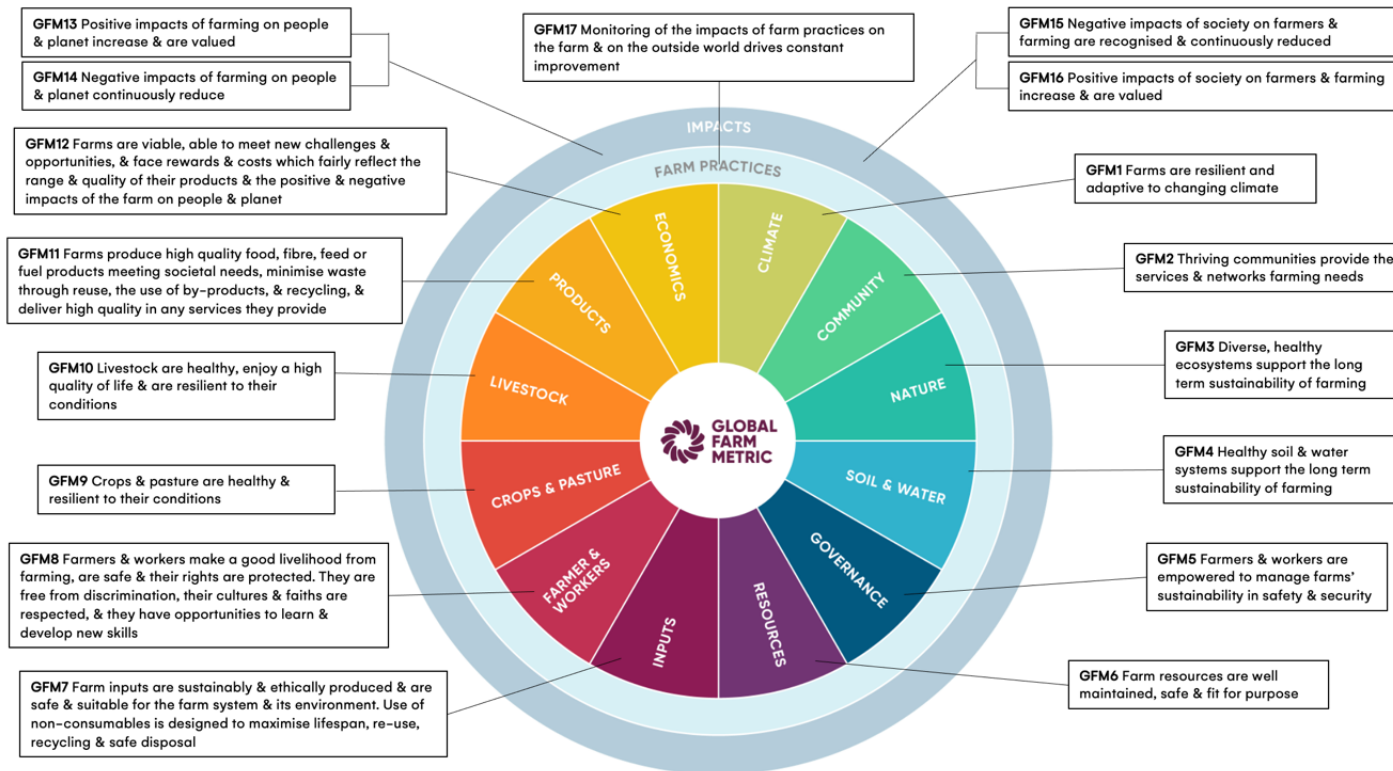
**Farm practices** (inner edge of the wheel) affect all of these aspects of the farm system. Along with the state of the system and the impacts of the outside world on the farm, practices determine whether the needs and priorities of the farm are met.

The system, its products and its economic state produce positive and negative **impacts** (outer edge of the wheel) on the sustainability of the outside world, and on the sustainability of the farm system itself. At the same time, the farm is affected by positive and negative impacts from the outside world (e.g., nitrogen deposition, toxins, pollination services, in–flow of biodiversity).

Finally, the values of the outside world are imposed on the governance of the farm (e.g., through laws, regulations, advice etc.)



The aims of the Global Farm Metric framework



*Note: aims also included in full category descriptions.*

**Framework aims (GFM1–12)** define how farms need to improve in relation to each central category of the wheel in order to move towards greater sustainability. Changes in the state of these categories over time represent the farm moving towards or away from more sustainable states. Such changes are caused both by farming practices and by external impacts which affect the farming system. In turn the farm affects the wider world through impacts on people and planet.

**Framework aims (GFM13–17)** describe what is required if the farm system is to positively affect its own state over time, and to improve its affects on sustainability beyond the farm–gate.

## Next steps

*A shared, holistic understanding of farm sustainability.* Learning resources for specific audiences based on the Global Farm Metric framework will be developed in 2023 to drive change by sharing a more holistic, accessible, understanding of farm sustainability. These resources, created together with partners from the relevant sectors, will include:

- Training materials for farm advisors
- Knowledge exchange materials for farmers
- Teaching guides for primary education
- Materials for higher education

*Global adaptation:* The Global Farm Metric framework is already being used as a basis for sustainability assessments being tested and trialled in the US and Malawi, with discussions for similar applications underway with partners in Laos, Australia, Canada, and Europe. In addition, the Sustainable Food Trust, through its work on the Global Farm Metric, is a core partner of Regen10, a multi-stakeholder platform which aims to develop and apply a global model of regenerative food production. This initiative provides the opportunity to explore the potential use of the framework and indicators as the basis for the sustainability assessment of farming systems across the globe.

*Continued collaboration on indicator development:* Via continuing research within the Global Farm Metric team and engagement in joint initiatives with other researchers and stakeholder organisations, we will continue to improve the robustness of GFM indicators and the practicality of approaches to collecting data against these indicators.

*Proof of concept assessment trials:* An updated assessment tool is under development to be applied in farm trials this year. The aim of this work is to demonstrate the usefulness of this data to farmers and other stakeholders, and to contribute to efforts to make on-farm data collection simpler and more robust.

*Transparency:* Peer reviewed journal articles are being developed to detail the development and use of the framework, its indicators and the ‘proof of concept’ assessment used in trials.

*In the commons:* The GFM framework will be registered in the commons to ensure that it remains free to access for all.

## The detail

### How was the Global Farm Metric framework developed?

The Sustainable Food Trust have been developing the Global Farm Metric framework for the last six years. Our work began with a focus on assessment, using and adapting the Public Goods Tool, a holistic sustainability assessment developed by the Organic Research Centre which explored how the delivery of public goods could be measured and rewarded.

In 2021, the Global Farm Metric framework was embedded into a research tool that enabled farmers to self-assess their sustainability, and in 2022 we ran trials on 40 UK farms, collecting feedback from a range of farming systems across the country. Workshops were held with farm advisors to explore how a sustainability assessment can help farmers transition towards more sustainable farming. Through the trials, data from farmers and farm advisors were collected and analysed to inform the revision of the framework and to build our understanding of the practicalities of on-farm assessment. An overview of the trial results can be found in the [trials case studies report](#).

Alongside this work, researchers from the Sustainable Food Trust, MVArc and the University of Reading undertook desk-based research to revise the categories and subcategories of the Global Farm Metric framework, and to develop sustainability indicators. This included a scoping review of indicators used by existing sustainability frameworks and assessments; a review of recent academic literature; and for the nature category, expert consultation via a Delphi process (academic review), involving three rounds of surveys and a one-day workshop.

As these trials, workshops and accompanying research continued, they led us to focus more and more on the value of a framework for understanding farm sustainability, distinct from the importance of an assessment or tool. Feedback from farmers and advisors showed that having a clear, shared, holistic view of what sustainability meant for farming would be hugely beneficial to driving change in the sector.

The realisation of the value of the Global Farm Metric framework in its own right, has led to its evolution into its current form, as a basis for understanding farm sustainability across and beyond the sector. The value of the framework's holistic view of sustainability as a basis for assessment to monitor and manage farm sustainability is being tested using a revised 'proof of concept' assessment, to support and drive the use of more holistic approaches to farm sustainability among tool developers.

### Global Farm Metric framework categories, subcategories and indicators

The table below summarises the Global Farm Metric framework categories and sub-categories along with the indicators which have been developed to support a more aligned and holistic assessment of farm sustainability. These indicators represent key aspects of the farm which can be monitored to assess farm sustainability in terms of the viability of the system and the sustainability of its impacts on people and planet beyond the farm gate. Underneath the table, each framework category is listed with a more detailed explanation of its importance for farm sustainability.

Category	Sub-category	Indicators
Climate	Average conditions	Stability in climatic conditions
	Extreme events	Climate risks to crop yields & quality & livestock health
	Growing season	Limitations of growing season
Community	Local services	Access to key amenities
	Farming services	Access to key services for farming
	Farmer network	Support from community of practice
Nature	Farm biodiversity	Health of farm biodiversity
	Farm habitats	Quality of land for farming
		Farm habitat health
	Environmental hazards	Level of air pollution
		Level of soil pollution
		Level of water pollution
Soil & water	Soil health	Structural health of soil
		Health of soil biology
	Soil fertility	Level and availability of soil nutrients to plants
	Water	Availability of water for plants
		Level of water reserves on farm
Governance	Status	Level of legal protection
		Management stability
	Priorities & support	Prevalence of sustainability in farm priorities
		External support for farm sustainability
	Decision-making	Approach to managing decisions
		Level of inclusivity
Resources	Buildings	State of buildings
	Infrastructure	State of infrastructure
	Equipment	State of equipment
Inputs	Inputs of consumables	Use of external inputs
		Use of inputs from off-farm land
	Inputs of non-consumables shared or used by agreement	Use of external infrastructure & equipment
	Inputs of services	Use of contractors & service providers

Farmer & workers	Health	Health & safety of farmer & workers
	Work & life	Rewards for farm work
	Skills	Level of skills, knowledge & experience in workforce
Crops & pasture	Crop establishment	Germination success level
	Lifecycle	Level of pre-harvest losses
		Perennial crop productive lifespan
Health	Crop & pasture health level	
Livestock	Lifecycle	Livestock losses
		Productive longevity
		Fertility level
	Health	Health level of livestock
	Quality of life	Quality of life of livestock
Products	Quality	Quality of products
	Diversity	Spread of production risk
	Waste	Quantity of unutilised materials & substances
Economics	Profit & costs	Economic sustainability of farming
		Vulnerability to cost price changes
	Financial resources	Financial flexibility
	Diversity	Spread of economic risk
Impacts	Off-farm impacts of farm	Impacts of the production, processing, & transport of farm inputs on people & planet
		Impacts of farming activities on people & planet
		Impacts of farm products, services & waste on people & planet
		Impacts of farm spending on external economic sustainability
	On-farm impacts of farm	Impacts of farming activities on the state of the farm
		Impacts of farm products, services, & waste on state of farm
	On-farm impacts of societal inputs & practices	Impacts of external actions on the state of the farm
Practices	Farming practices	Extent to which on-farm & off-farm impacts of farming practices are monitored



		Extent to which farming practices are adjusted to improve farm sustainability & optimise impacts on people & planet
	Buying practices	Extent to which buying choices are adjusted to improve farm sustainability & optimise impacts on people & planet
	Economic practices	Extent to which the farm invests to improve farm sustainability & optimise impacts on people & planet

### Farm system (wheel spokes) categories

These 12 categories provide a comprehensive view of the farm system, highlighting the importance of each part for the sustainability of the farm. If the farm is in a healthy condition in relation to all these parts, there is a good chance that it will also have more positive than negative impacts on the world beyond the farm gate. Conversely, if any of these parts is in a poor state, there is a good chance that the farm will be having negative impacts beyond the farm-gate, while failing to deliver some of the benefits it has the potential to.

## Climate

**Aim:** GFM1 Farms are resilient and adaptive to changing climate

Explanation: While global warming is most often seen as something which agriculture must help to reduce, it is essential to understand that it is also a major threat to the sustainability of production. Understanding how average conditions, the frequency and severity of extreme events like excess rainfall, drought, floods, and heatwaves, and the length of the growing season is changing on-farm is vital to making timely adaptations to the farm. Even fully housed livestock or indoor horticultural systems may need to adapt if conditions alter the use of temperature control or affect infrastructure. Without monitoring change, problems can 'creep up' year by year, and extreme events can have a bigger impact than if adaptations had been made in advance.

Indicators in this category represent things which farmers are not in control of; the scoring highlights the challenges the farm is facing in order to enable appropriate adaptation and support.

### **Subcategories and indicators:**

Average conditions:

- Stability in climatic conditions

Climate risks to crop yields & quality & livestock health

- Climate risks to crop yields and quality and livestock health

Growing season

- Limitations of growing season

## Community

**Aim:** GFM2 Thriving communities provide the services & networks farming needs

Explanation: The existence of a thriving local community is vital for farmers, their families, and their workers. This category focuses on services which may provide direct value to the farm, such as farm suppliers, abattoirs, financial services, and veterinary centres, as well as others — like schools, doctors' surgeries, hospitals, and local transport infrastructure — which are important both for farming and for the lives of those who work in the agricultural sector. Professional networks and engagement with peers and others are also vital aspects of farm resilience, providing knowledge, insights, support, and advice when it is needed.

Indicators in this category represent things which farmers are not in control of; the scoring highlights the challenges the farm is facing in order to enable appropriate adaptation and support.

### Subcategories and indicators:

Local services

- Access to key amenities

Farming services

- Access to key services for farming

Farmer network

- Support from community of practice

## Nature

**Aim:** GFM3 Diverse, healthy ecosystems support the long-term sustainability of farming

Explanation: For food production and essential ecosystems services to be maintained, biodiversity needs to be incorporated across and within all landscapes. Productive farming systems can provide vital habitat, cover, and resources for organisms — for example, flowering crops for pollinators, open grassland for some bird species, and coppiced woodland for dormice. Farmers can also nurture the habitats which surround their productive land, like hedgerows, scrub, heath, wetlands, and woodlands. In return, healthy natural systems buffer production from extreme events like heatwaves, floods, and droughts, provide pollination services and natural pest control, as well as creating a pleasant working environment for farmers and workers. Issues of air, soil, and water quality threaten the health of individual species and their habitats. They have widespread impacts off-farm and threaten the ability of the farm to produce high quality food, fuel, and fibre products.

Many indicators in this category are things which a farmer has a large amount of influence over, and so a poor score represents something that can be addressed through change on-farm. However, outside activities will also affect the indicators — for example, if pollutants enter the system from a neighbouring land use. The suitability of land for farming relates to factors such as soil type and topography and is also something that the farmer cannot change. As a result, on-farm changes, adaptation to underlying conditions and external impacts will be needed to fully tackle problems with nature on the farm.

### Subcategories and indicators:

#### Farm biodiversity

- Health of farm biodiversity

#### Farm habitats

- Quality of land for farming
- Farm habitat health

#### Environmental hazards

- Level of air pollution
- Level of soil pollution
- Level of water pollution

## Soil & water

**Aim:** GFM4 Healthy soil & water systems support the long-term sustainability of farming

Explanation: Healthy soil is a prerequisite for the long-term sustainability of food, feed, fibre, and fuel production on-farm as well as underpinning natural ecosystems and the services they provide. Soil health and fertility are key determinants of which crop and pasture species can grow, how they grow, how resilient they will be to environmental conditions including pests and diseases, and what nutritional qualities they will have. Closely linked to soil health, the availability of water for plant growth is key to farming, while reserves of water on-farm, including held naturally in soil and farm habitats, reduce risks from droughts and heatwaves.

The farmer has some, but not total control over these indicators, which can be used to monitor the state of system over time. For example, the farmer can influence the structural health of the soil through management practices but is limited by the soil type and depth.

### Subcategories and indicators:

#### Soil health

- Structural health of soil
- Health of soil biology

#### Soil fertility

- Level and availability of soil nutrients to plants

#### Water

- Availability of water for plants
- Level of water reserves on farm

## Governance

**Aim:** GFM5 Farmers & workers are empowered and supported to implement sustainable farm management in safety & security

Explanation: This category focuses on the legal status of the farm, its priorities and standards, the robustness and inclusivity of its decision-making processes, and the external constraints and support which bolster or undermine its ability to effectively foresee, plan for, and respond to challenges. All these things are vital to the survival of the farm in the context of everchanging external conditions.

The indicators in this category include aspects such as farm priorities, management stability and the approach to and inclusivity of decision-making, which the farmer can control. However, it also highlights the extent to which the outside world can affect the sustainability of the farm and constrain or support management choices. There is need for a supportive political and legal context for farming and for farmers — especially those who may be more marginalised or vulnerable — based on a holistic view of farm sustainability.

### Subcategories and indicators:

#### Status

- Level of legal protection
- Management stability

#### Priorities & support

- Prevalence of sustainability in farm priorities
- External support for farm sustainability

#### Decision-making

- Approach to managing decisions
- Level of inclusivity

## Resources

**Aim:** GFM6 Farm resources are well maintained, safe & fit for purpose

Explanation: Deteriorating, unsuitable, or poorly planned buildings and infrastructure, as well as poorly maintained equipment, can cause problems for the efficiency and economic viability of the farm and pose risks for farmers and workers, farm visitors, and livestock. On the other hand, well maintained buildings, infrastructure, and equipment will help to maximise the efficiency, safety and potential of the farm, and to minimise the risk of failures and issues which could jeopardise the viability of the system.

The indicators in this category are things which the farmer is likely to have a lot of control over, although economic challenges affecting farm investment should be recognised and may need to be tackled through changes beyond the farm-gate.

### Subcategories and indicators:

#### Buildings

- State of buildings

#### Infrastructure

- State of infrastructure

#### Equipment

- State of equipment

## Inputs

**Aim:** GFM7 Farms recognise and manage the risks of reliance on inputs.

Explanation: Inputs can be used to help the farm system cope with difficult conditions, but the amounts, types, and sources of inputs used also create vulnerability relating to problems with their supply. Sharing inputs can provide access to equipment that a farm might not easily afford alone, delivering benefits to the farm business. However, its risks need to be recognised and managed, for example by reducing use or by making sure several potential suppliers are available in case one faces difficulties.

The indicators in this category are in the control of the farm. However, external action might be needed to support access to alternative supplies and types of vital inputs when these are not provided by the market, or to support the uptake of approaches which reduce or alter inputs in ways which decrease the risks of over-reliance.

### Subcategories and indicators:

Inputs of consumables

- Use of external inputs
- Use of inputs from off-farm land

Inputs of non-consumables shared or used by agreement

- Use of external infrastructure & equipment

Inputs of services

- Use of contractors & service providers



## Farmer & workers

**Aim:** GFM8 Farmers & workers make a good livelihood from farming, are safe & their rights protected. They are free from discrimination, their cultures & faiths are respected, & they have opportunities to learn & develop new skills.

Explanation: As employers of permanent and temporary staff, and as workers themselves, farmers are responsible for ensuring that the conditions, pay, and tasks undertaken by people working on the farm enable them to meet their minimum needs and to lead fulfilling, meaningful lives, with opportunities for learning and expression. These needs should be met without discrimination in pay, conditions, treatment, or roles. Poor conditions for the farmer and their workers undermine the sustainability of the farm by increasing staff turnover, making it harder to fill positions, negatively affecting working standards, increasing days lost to sickness, and reducing buy-in to the business aims of the farm.

The indicators in this category are mostly in the control of farmers, with employment laws and regulations in place to reduce the risks of poor conditions being allowed to develop. However, economic challenges and stress can negatively affect the farmer and other workers and may require action by others outside the system to improve things, for example around farm payments or training and support.

### Subcategories and indicators:

#### Health

- Health & safety of farmer & workers

#### Work & life

- Rewards for farm work

#### Skills

- Level of skills, knowledge & experience in workforce

## Crops & pasture

**Aim:** GFM9 Crops & pasture are healthy & resilient to their conditions

Explanation: Healthy crops produced for food, fibre, feed, or fuel, as well as grasslands managed to produce forage for grazing animals, are key to the efficiency of production and the quality of products and, therefore, to the sustainability of the farm.

Once the farm's dependencies and risks to external factors are taken into account, the indicators in this category are in the control of the farmer, with actions to improve and safeguard outcomes guided by information on the state of the other Global Farm Metric categories.

### Subcategories and indicators:

#### Crop establishment

- Germination success level

#### Lifecycle

- Level of pre-harvest losses
- Perennial crop productive lifespan

#### Health

- Crop & pasture health level

## Livestock

**Aim:** GFM10 Livestock are healthy, enjoy a high quality of life & are resilient to their conditions

Explanation: Good health and a good quality of life for farm animals are important for improving the sustainability of the farm through increased production efficiency, improved product quality, reduced risks to the farmer and workers from zoonoses or injury by livestock, and the maintenance of market demand among customers for whom animal well-being is a key concern.

Once the farm's dependencies and risks to external factors are taken into account, the indicators in this category are in the control of the farmer, with actions to improve and safeguard outcomes guided by information on the state of the other Global Farm Metric categories.

### Subcategories and indicators:

#### Lifecycle

- Livestock losses
- Productive longevity
- Fertility level

#### Health

- Health level of livestock

#### Quality of life

- Quality of life of livestock

## Products

**Aim:** GFM11 Farms produce high quality food, fibre, feed, or fuel products meeting societal needs, minimise waste through reuse, the use of by-products, & recycling, & deliver high quality in any services they provide.

Explanation: Product quality is central to the sustainability of the farm, as poor quality products are unlikely to be valued by the market, and can have an impact on human and the planet's health. The yields of crops and the amounts of livestock products produced does not necessarily or directly reflect farm sustainability, as high yields might come at the expense of the long-term sustainability of the farm. Low yielding but highly valued crops may be better for viability than high yields of crops not valued so highly by the market. Producing a diversity of crops and animals in sustainable systems spreads the risk of crop failure and can support the resilience of farm production. Farms may also produce a range of non-farming services such as tourist accommodation or education which can buffer the farm against poor yields from farming. For farm sustainability, it is essential to minimise the amount and types of waste produced by a farm which is not turned into products (such as energy) as these represent the loss of valuable materials and substances from the system as well as presenting a risk to the farm system.

The indicators in this section are mostly controllable by the farmer, although action by others beyond the farm-gate may be needed to reduce negative external impacts which could affect crop and livestock product quality.

### Subcategories and indicators:

#### Quality

- Quality of products

#### Diversity

- Spread of production risk

#### Waste

- Quantity of unutilised materials & substances

## Economics

**Aim:** GFM12 Farms are viable, able to meet new challenges & opportunities, & face rewards & costs which fairly reflect the range & quality of their products & the positive & negative impacts of the farm on people & planet

Explanation: For farming to be sustainable in the long run, it needs to provide a good, secure living for farmers, their families, and workers. Their aim might not be to make or maximise profit but, the business should at least break even or provide enough produce to be worthwhile versus other uses of time. The farm also needs to have sufficient resources to adopt more sustainable practices, respond to immediate challenges, take advantage of new opportunities, and adapt to projected long-term change. For farmers who do not sell their produce, viability relates to the ability to continue farming; ensuring that farming is compatible with their long-term livelihoods is still relevant for these systems.

The indicators in this section are mostly controllable by the farmer, although the value that the outside world places on the farm products has a significant impact on farm economics.

### Subcategories and indicators:

#### Profit & costs

- Economic sustainability of farming
- Vulnerability to cost price changes

#### Financial resources

- Financial flexibility

#### Diversity

- Spread of economic risk

### Impacts and Farm practices (wheel edge categories)

The categories 'impacts' and 'practices' relate to the whole farming system; although specific farming impacts and practices might be more closely associated with some parts of the system than others, those parts are interacting parts of a whole. It is key to sustainability that those interactions are taken into account when changing practices and considering their likely impacts.

## Impacts

### Aims:

GFM13 Positive impacts of farming on people & planet increase & are valued

GFM14 Negative impacts of farming on people & planet continuously reduce

GFM15 Negative impacts of society on farmers & farming are recognised & continuously reduced

GFM16 Positive impacts of society on farmers & farming increase & are valued

Explanation: The state of the farm system, its products (including waste) and the practices undertaken to manage it have a range of impacts, positive and negative, on the outside world. Estimating the extent and importance of the positive and negative impacts of farming systems on the wider world is complex, requiring mathematical modelling and approaches such as life cycle assessment. However, maintaining and improving the state of the farm system itself can be expected to reduce risks and maximise benefits from farming for people and planet. While the descriptions above of the 12 Global Farm Metric wheel categories focus on how their state is likely to affect the sustainability of the farm itself, it is important to remember that improving their state is also likely to have positive impacts on sustainability beyond the farm. As a result, broad estimates of off-farm risks and potential benefits can be based on data relating to outcomes from the 12 wheel categories — for example, the risk of pollution impacts could be estimated based on the amount of unused waste produced.

Impacts of the farm include the effects of discrimination and bullying on workers — their inclusion here is the reason why these issues are not directly dealt with in the wheel category ‘Farmer & workers’

Actors beyond the farm gate must work to prevent farmers being faced with situations where their short-term economic survival is in opposition to the long-term sustainability of the farm and of the outside world. They must also assess the extent and nature of the impacts of the outside world on farms more generally; avoiding and correcting practices which have negative impacts on the systems which provide the food and the many other benefits farms provide.

### Subcategories and indicators:

#### Off-farm impacts of farm

- Impacts of the production, processing, & transport of farm inputs on people and planet
- Impacts of farming activities on people & planet
- Impacts of products, services & waste on people & planet
- Impacts of farm spending on external economic sustainability

#### On-farm impacts of farm

- Impacts of farming activities on the state of the farm
- Impacts of farm products, services, and waste on the state of the farm itself

#### On-farm impacts of societal inputs & practices

- Impacts of external actions on the state of the farm

## Farm Practices

**Aim:** GFM17 Monitoring of the impacts of farm practices on the sustainability of the farm & on the outside world drives constant improvement

Explanation: Farming practices, including the choice of farming aims and system and management practices, represent the way in which the farmer and their workers affect the state of the farm system, including its products and economic performance, and ultimately its sustainability. Farming practices determine the impacts of the system and its outputs on the outside world, along with external pressures and influences affecting the farm. As a result, it is essential that the effects of chosen practices on the farm and beyond are monitored in a holistic way, to check their efficacy in meeting their desired goals and to reveal any (negative or positive) unintended consequences on- and off-farm. Of course, in addition to monitoring effects of implemented practices, farmers can seek advice or use decision support tools to gain an idea of known risks and benefits of changes to practice before they are made. However, monitoring is still vital as every farm is unique and the outcomes of practice change might affect things beyond the scope of support tools or via mechanisms they do not account for. Therefore, farmers should assess how their system is changing over time and adjust their practices accordingly to improve the sustainability of the farm system and its impacts on the sustainability of the wider world.

### Subcategories and indicators:

#### Farming practices

- Extent to which on-farm & off-farm impacts of farming practices are monitored
- Extent to which farming practices are adjusted to improve farm sustainability & optimise impacts on people & planet

#### Buying practices

- Extent to which buying choices are adjusted to improve farm sustainability & optimise impacts on people & planet

#### Economic practices

- Extent to which the farm uses economic rewards to improve farm sustainability & optimise impacts on people & planet.