



A PATHWAY TO

# PLANT OUR FUTURE

INITIATING THE PARADIGM SHIFT TOWARDS  
MORE PLANT-BASED PRODUCTION AND  
CONSUMPTION IN THE EUROPEAN FOOD SYSTEM



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Healthy Food  
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FOOD FOR DISCUSSION PAPER BY



NEW  
FORESIGHT

# COLOPHON

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FORESIGHT

Paper by NewForesight

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**Triodos**  **Foundation**

### About us

The **European Alliance for Plant-based Foods (EAPF)** brings together like-minded organisations in the plant-based value chain around a unique mission: to put plant-based foods at the heart of the transition towards more sustainable and healthy food systems. EAPF is the only European multi-stakeholder coalition representing the entire plant-based value chain, gathering organizations from different backgrounds: industry, NGO's, nutritionists, science and consumers. EAPF is a non profit association, founded in 2019. See also [plantbasedfoodalliance.eu](http://plantbasedfoodalliance.eu)

**Healthy Food Healthy Planet (HFHP)** is a pan-European movement uniting civil society and funders in the transition to healthy, just & sustainable food environments. Started in 2020, HFHP brings together organisations working on health, food, climate change, biodiversity, animal welfare, labour rights and just transitions to ensure that the whole is bigger than the sum of its parts in driving system change. We do this through movement building, (un-)learning and grant making. See also [healthyfoodhealthyplanet.eu](http://healthyfoodhealthyplanet.eu)

**Transition Coalition Food (TcV)** is a multi-stakeholder coalition of Dutch frontrunners in the field of agriculture, food, nature and health who strive to shape and speed up the transition. TcV is a coalition of approx. 200 peoples and parties, working on concrete solutions with the transition theory as a basis for their strategy and focusing on multidimensional value creation (4 returns) with underlying principles such as transparency, sustainability, health and fair price and incomes. The

mission of TcV is 'healthy food on a healthy planet'. The protein transition is one of the key themes TcV has been working on since its start in 2017. In 2020 TcV started the campaign 'Plant based the new normal' and initiated the Plant The Future Dinner. TcV is a non profit association.

See also [transitiecoalitievoedsel.nl](http://transitiecoalitievoedsel.nl)

**NewForesight (NFC)** is a strategy consulting firm dedicated to driving change. We partner with leading clients from the private, public and not-for-profit sectors who want to find structural solutions to some of the most critical sustainability challenges of our generation. NewForesight has been playing an active role in managing the transition towards more plant-based production and consumption in The Netherlands.

See also [newforesight.com](http://newforesight.com)

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# PREFACE

**A transition towards more sustainable, healthy, and resilient food systems is a critical component of the efforts of the EU and globally to urgently address our current and future environmental, health and socio-economic challenges.**

The present ratio between plant-based and animal-sourced protein in the Western diet is causing serious threats to both planetary and public health. The war in Ukraine has demonstrated that the shift towards healthier plant-based diets with less and nature-friendly animal products would both contribute to more sustainable and resilient food systems as well as enhance global food security. In short, promoting a shift towards more plant-based diets is key to future proof European food systems at all stages of the value chain: farming, processing, and consumption.

There is scientific consensus that the shift to more plant-based diets with 'less and nature-friendly' animal sourced foods is one of the key-elements to shift towards new food systems. Just recently the 2022 EAT Lancet report on health and climate change stated: "In the food sector, an accelerated transition to balanced and more plant-based diets would not only help reduce the 55% of agricultural sector emissions coming from red meat and milk production, but also prevent up to 11.5 million diet-related deaths annually, and substantially reduce the risk of zoonotic diseases <sup>1</sup>.

The European Commission is committed to deliver the Farm to Fork Strategy, as part of the European Green Deal. One of the key elements is to publish an EU Legislative Framework for Sustainable Food Systems (FSFS) before the end of 2023.

The overall objectives of the FSFS are to lay the foundations for the systemic changes that are needed by all actors of the food system, including policy makers, business operators and consumers to accelerate the transition to sustainable food systems at EU-level. The aim of the FSFS is also "to promote coherence at EU and National level, mainstreaming sustainability in all food related policies and to strengthen resilience of food systems"<sup>2</sup>.

Rather than incremental change (and effectively maintaining the status quo) we need to be bold and embrace the systems transformation needed towards new sustainable food systems. Our moment to "Plant the future" is now.

This is why the [European Alliance for Plant-based Foods](#), [Healthy Food Healthy Planet](#) and the [Transition Coalition Food](#) have joined forces with [NewForesight](#) to write a "Food for discussion paper" on the paradigm shift to plant-based food systems. With this paper we want to give insight in how transitions work, which stakeholders need to do what in which phase of the transition and what early lessons can be learned from the way the transition towards a more plant-based food system is developing in The Netherlands. At this moment, the Dutch government is the only EU-member state to have adopted a vision and time-bound targets on the shift to plant-based versus animal sourced to 50:50 in 2030 in NL<sup>3</sup>

With this "Food for discussion paper" we hope we can inspire and weave a common narrative. A narrative that helps to illustrate how transitions work and evolve as we learn, sparking discussions and collaborations between all stakeholders -even unusual ones-. These are critical ingredients to embark on a joint pathway to accelerate the needed diet shift towards more plant-based production & consumption in the EU.

**Because our time to Plant the Future is now.**

## **Siska Pottie**

Secretary-General European Alliance for Plant-based Foods

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# EXECUTIVE SUMMARY

**A transition towards a more sustainable, healthy, and resilient food system is essential to address the environmental, health and socio-economic challenges of our time. With the 'Farm to Fork' strategy the European Union is aiming to make its food system more fair, healthy and environmentally friendly.**

However, there is no clear definition yet of what a sustainable food system is. Plus, there is no formal recognition that we need to transition towards a more plant-based production and consumption. As a result, there is also no clear vision/ambition set allowing to create the right policies and incentives to guide and accelerate the transition towards more plant-based consumption and production.

In this paper we advocate for a more structured transition approach, starting with forming an EU-wide vision on the essential paradigm shift towards more plant-based production and consumption.

1

**CHAPTER 1** gives an overview of what policies in the EU are applicable regarding the transition towards more sustainable food systems. Although we see that food system-change is high on the agenda, we see a lack of formal recognition on the important role the shift towards more plant-based production and consumption has to play.

2

**CHAPTER 2** summarizes the importance of the shift towards more plant-based production and consumption. There is scientific consensus that this paradigm shift is one of the most significant improvements that can be made to come to a new and more sustainable food system. Seeing recent developments in the EU, we argue now is the right time to move this transition forward.

3

**CHAPTER 3** underlines the relevance of a transition approach to manage this complex transition. We introduce the most relevant take-aways from proven transition theories which can help identify strategies to accelerate the transition towards more plant-based production and consumption food-systems.

4

**CHAPTER 4** makes the transition theories more vivid by a case study on the ongoing transition in the Netherlands. Because this transition has been actively managed for years there are important lessons to be learned, both on an EU and at a national level.

5

**CHAPTER 5** comes to the conclusions. We argue that to come to a new sustainable food system, 1) the EU should formulate and set clear timebound targets on the shift towards more plant-based production and consumption and as a follow-up or in parallel 2) in-detail transition analyses should be conducted at EU member state level. Aim of these analyses is to identify what measures are needed at both EU and national level to accelerate the paradigm shift towards more plant-based production and consumption. The EU vision and targets should guide member state objectives. The member states should develop annual food transition plans to contribute to the overall EU ambitions and targets. A similar transition analysis approach can be used to guide, monitor and report on progress.



## A **TRANSITION** TOWARDS A NEW SUSTAINABLE FOOD SYSTEM IS **ESSENTIAL** TO TACKLE THE KEY CHALLENGES OF OUR TIME

The way we produce and consume food is engrained in our cultures. Countries, families, and individuals throughout whole Europe define themselves by what they cook and what they eat. However, our current food system contains externalities to us. Globally, current food systems are responsible for 34% of GHG emissions<sup>4</sup>. Additionally, it is estimated that in the EU in 2017 over 950.000 deaths were attributable to unhealthy diets (one out of five)<sup>5</sup>. A transition towards a new sustainable food system in Europe is essential to tackle the environmental, health and socio-economic challenges of our time".

**Making the food system healthier and more sustainable already is on the agenda for the EU**

The EU, within the context of the Green Deal and the Farm to Fork Strategy, already agreed on the transition towards a fair, healthy, and environmental-friendly food system. The Green Deal<sup>6</sup>, published in 2019, sets out how to make Europe the first climate-neutral continent by 2050. The aim is to ensure food security in the face of climate change and biodiversity loss, as well as to strengthen the EU food system's resilience. At the heart of the Green Deal is the Farm to Fork strategy, issued in 2020<sup>7</sup>. It is characterized by a positive approach: supporting the transition by putting emphasis

20%

IN 2017, ONE OUT OF FIVE DEATHS IN THE EU WERE ATTRIBUTABLE TO UNHEALTHY DIETS

34%

OUR CURRENT FOOD SYSTEMS ARE RESPONSIBLE FOR ABOUT ONE THIRD OF GHG EMISSIONS GLOBALLY

on new opportunities for citizens and organizations alike. At the end of 2023 the European Commission announced to adopt a Framework for Sustainable Food Systems (FSFS). The focus is on legislation: establishing new foundations for future policies by introducing sustainability objectives and principles based on an integrated food system approach.

**However, recognition is lacking on the crucial role of the shift towards more plant-based production and consumption**

We conclude that the transition to a more sustainable food system is high on the agenda for the European Union. However, although the above mentioned policies aim to make the current food system *more sustainable*, we argue the aim should be to define a *new food system*. The shift towards

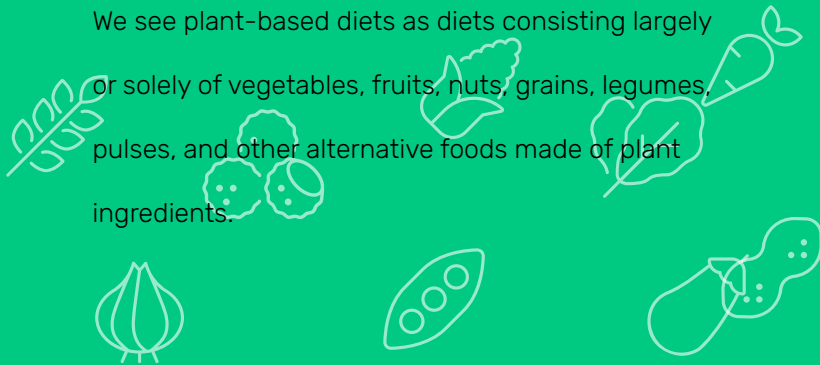
more plant-based production and consumption has a crucial role to play, as we further elaborate in chapter 2. In the current policies however, there is **no formal recognition of how promoting a shift towards more plant-based is key to address current and future challenges of European food systems.**

Even though the Farm to Fork strategy contains the following reference: *“Moving to a more plant-based diet with less red and processed meat and with more fruits and vegetables will reduce not only the risks of life-threatening diseases, but also the environmental impact of the food system”*. The promotion of a *“more plant-based diet with less red and processed meat [...] and more fruit and vegetables”* is also part of the European Commission’s ‘Europe Beating Cancer Plan’<sup>8</sup>.

In the next chapter we discuss why the paradigm shift to plant-based food systems is the most effective way of change and why now is the right momentum to move the shift forward.

## DEFINITION PLANT-BASED DIET

We see plant-based diets as diets consisting largely or solely of vegetables, fruits, nuts, grains, legumes, pulses, and other alternative foods made of plant ingredients.





## SHIFTING TOWARDS **MORE PLANT-BASED** IS THE **MOST EFFECTIVE** WAY TO CHANGE

### Consensus on the **most effective way** to change

There is scientific consensus that a shift to more plant-based production and consumption is one of the most significant improvements that can be made to make the EU food system more sustainable. Both the current ratio on animal-sourced versus plant-based, as well as the total over-consumption of proteins, are causing serious threats to public health and the environment.

The shift towards more plant-based food-systems is deemed the most effective strategy to make the food system more sustainable. By shifting towards more plant-based production and consumption greenhouse gas emissions can be almost cut in half as compared to the business-as-usual scenario<sup>9</sup>. The IPCC Climate Change 2022 report supports this line of thought, stating the greatest shift potential would come from switching to plant-based diets<sup>10</sup>.

Studies of Boston Consulting Group<sup>11</sup> calculate that the

***By shifting towards more plant-based food systems, greenhouse gas emissions can be almost cut in half as compared to the business-as-usual scenario***<sup>7</sup>

transition to plant-based is by far the most effective climate investment, saving >4 billion tonnes of CO<sub>2</sub> per \$1 trillion invested. Several decarbonization levers like Cement, Iron and steel, and Chemicals were included. The potential impact of shifting to more plant-based food systems is greater than any other decarbonization levers in all sectors.

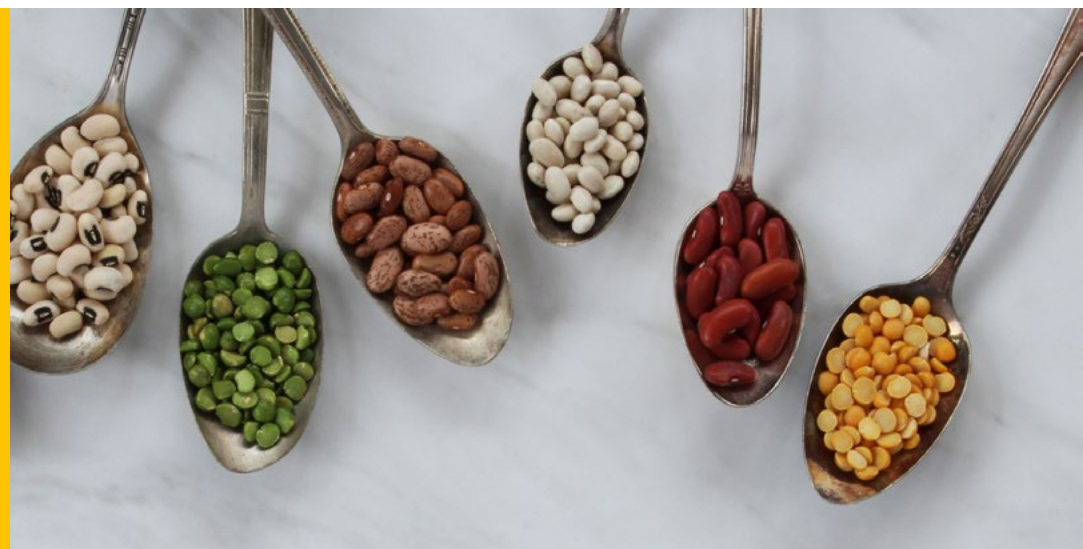
### Momentum in initiating the **paradigm shift** towards a more plant-based food system

Seeing recent developments, we believe now is the right time to move this transition forward. End of 2021, Austria and France adopted a joint declaration<sup>12</sup> to relaunch the European plant-based strategy of 2018. Aim is to increase the production of plant-based produce such as soy beans, legumes, and oilseeds in the EU to strengthen self-sufficiency of the EU. Additionally, in March 2022 the Council of the EU adopted a resolution<sup>13</sup> with the following statement:

*“Plant-based proteins are essential and indispensable components of human nutrition as well as animal feed and contribute to the objectives of the Common Agricultural Policy 2023–2027 (CAP) and the European Green Deal. Therefore, they are crucial for the transition towards sustainable food systems. “...” Member states call on the European Commission to build upon its report on the development of plant proteins in the European Union published in 2018 by working out a European protein*

*strategy, taking into account national strategies and practices, tailored to the individual needs and agronomical circumstances of Member States. Furthermore, such strategy shall foster research and innovation, in particular within the framework of Horizon Europe, promote the diversification of protein intake, and its use for feed production, and incorporate all the above-mentioned priorities.”*

The European Commission has consented looking into an EU-wide strategy on this. We argue now is the right time to follow up on this not just focussing on feed but mainly on food, while at the same time linking production to consumption. Europe needs to set an overall vision on production and consumption and needs to define the **new** food system. Clear ambitions need to be set for the whole EU to increase plant-based production and consumption. We conclude that the shift towards more plant-based food systems is crucial in coming to a new and sustainable food system, and that now is the right time to move this transition forward. In the next chapter we elaborate on what we can learn from transition theory in accelerating this complex transition.







## WHAT WE LEARN FROM **TRANSITION THEORY** TO **ACCELERATE** THE SHIFT TOWARDS MORE PLANT-BASED PRODUCTION AND CONSUMPTION

So, if the shift is that effective, why have we not moved to plant-based production and consumption already? The simple answer is that this is a complex transition. That means that moving to more plant-based production and consumption requires deep socio-economic and technical changes, implemented by a broad range of actors. For example, the transition requires the development of new products, technologies to make plant-based products, growing of different crops locally, creation of new supply chains, but also different consumption behaviour, adjustments in the food environment, and creation of new recipes.

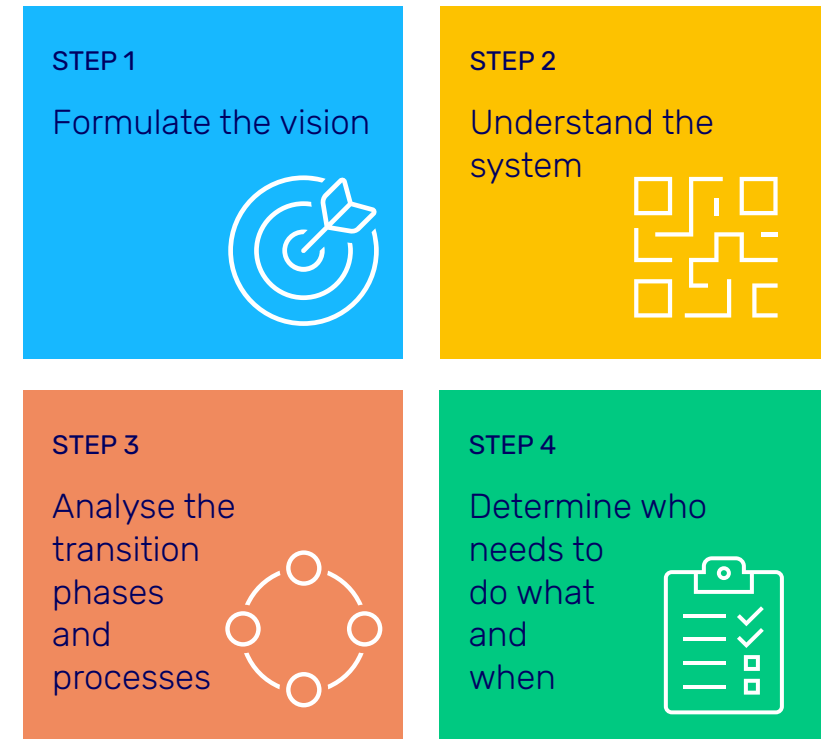
Or, as stated by the Joint Research Centre: *“to shift towards more plant-based diets, not only does production need to make sure that the relevant foods are available and appealing, but the consumers also have to be willing, able and knowledgeable about how to prepare attractive meals with these foods, in a way which is compatible with the necessary cultural and social parameters corresponding to their circumstances”<sup>14</sup>.*

To achieve all this, we need the involvement of governments, consumers, farmers food processors, retailers, research institutes, schools, restaurants; to name a few. No single actor can drive this transition by itself, even not the EU as a government. This means an approach is needed where a transition is analysed and actively managed.

NewForesight, Nyenrode University, and Utrecht University have together developed TransMission: an integrated approach to accelerate mission-driven sustainability transitions. TransMission is based on leading transition theories<sup>15 16 17</sup> and starts from the idea that while transitions are complex and cumbersome, they can be steered. The approach helps actors determine mutually reinforcing actions that will drive a transition towards a certain sustainability goal. In this chapter we introduce the most relevant take-aways from proven transition theories which can help identify strategies to accelerate the transition towards more plant-based production and consumption. The chapter will not set out what to do when, but rather presents the key principles and steps to serve as a blueprint for more detailed transition analyses. The below described principles and blueprint are based on TransMission. Please see the appendix for an introduction to TransMission.

## Blueprint on developing an approach to drive transitions towards more plant-based food systems

Based on these principles we argue that the four steps below can help to develop an approach to drive the transition towards more plant-based production and consumption.



### Principles at the core of complex sustainability transitions

Following TransMission, the below four principles are at the very core of every sustainability transition:

- **Transitions can be steered towards achieving a vision.** Transitions are change processes that can be steered and managed towards achieving a sustainability goal.
- **Markets play a key role in the problem and solution.** Unsustainable outcomes are caused by unsustainable market dynamics, therefore it's key to change the 'rules' by which a market operates.
- **Transitions go through phases.** Transitions go through different phases in which new solutions are developed and scaled up, while the old system is broken down.
- **Each phase has its own characteristics.** In each phase, it is key to know who should do what and when.

## Step 1: Formulate the vision



To successfully steer a transition, it needs to be clear where you want to go. Therefore, you need to formulate a vision and concrete goals where you want to work towards. The vision aims to describe how you envision your desired future, while the goals set out more concrete (quantified and timebound) objectives you want to achieve. A vision goes beyond a high-level agreement that a shift is needed.

Strong visions need to appeal to, and be supported by, different stakeholders. Involving different stakeholders from the start in setting the dot on the horizon is key as it improves the chances of the vision being accepted. However, involving all possible stakeholders – especially those who show most resistance to the transition – will make formulating an ambitious vision more difficult. While the EU has to define a vision at EU-level, the implementation may differ per EU member state, depending on what is desired and feasible in that country. An ideal outcome is that everyone involved gives the same answer to the question: “What exactly is the transition towards more plant-based production and consumption?”

## Step 2: Understand the system



The sustainability problems we see are not the actual problems; they are only the symptoms or outcomes of other deeper underlying structures. They are the unintended results of our behaviour and how we produce and exchange goods in markets. Changing the ‘rules’ that shape our behaviour and influence the dynamics in a market is therefore key to realising more sustainable outcomes. To change these outcomes, it is important to look at the incentives and thus the ‘rules of the game’, rather than trying to change the outcome itself.

To change the system and alter market dynamics, we first need to understand what the system currently looks like and how it operates. This requires answer several key questions:

- **Who are the key actors in the market and wider system?** This includes value chain actors (producers, consumers) but also governments, NGOs, financial and research institutes, media, etc.
- **What is their behaviour and what drives it?** Clarifying why each actor does what they do and what the incentives are that drive this behaviour.
- **What is the value chain structure?** Identifying the main value chain segments, flows of products and services, how many actors there are in each segment, and how they interact.
- **What does the enabling environment look like?** Understanding which laws, regulations and policies influence how actors operate.
- **What are the resulting market dynamics?** Understanding how these structures shape the collective behaviour in a market.

The answers to these questions do not only help understand why a market produces unsustainable outcomes, but also help to identify which actors you need to involve and where in the value chain you can intervene to drive change. The transition to more plant-based products needs both an increase in supply and demand. Both should be considered as separate sub-transitions, although they are interdependent. In example, the EU stimulates locally grown proteins to increase its independence and decrease deforestation in other parts of the world. Production of field beans, algae and duckweed are promoted via EU policies. This alone is not enough to change the unsustainable outcomes; simultaneously the demand on these products should be stimulated and actively managed. Understanding the system enables an active management of these different aspects of it.

### Step 3: Analyse the transition phases and processes



As described in the Appendix a successful transition requires sustainable solutions to be developed and scaled up, while undesirable practices are phased out and the old system is broken down. This process goes through phases, in which a set of key processes play an important role. To develop a strategy for accelerating the plant-based transition, it's important to understand:

- **Most promising solutions.** These include socio-economic solutions such as a food environment that stimulated plant-based choices, and technical solutions such as extracting high-quality protein from crops for example. It makes sense to focus on the solutions with the highest expected impact.
- **Undesirable practices.** These include the 'old solutions' which are currently the normal way of doing things but cause unsustainable outcomes and need to be phased out.
- **Maturity phase of each solution.** Understanding the phase of a solution is key to determining the strategy. Some solutions will be situated in early phases and require research, pilots, or uptake by businesses, while other solutions will be situated in later phases and are ready to be scaled up or institutionalized.
- **Gaps in underlying processes.** To move solutions from one phase to the next and phase out undesirable practices, each of the underlying transition processes needs to function well. Understanding the gaps in each process is key to determining the right actions that need to be taken to drive the transition.

Based on the phase of each solution and the functioning of each key process, a suitable strategy and appropriate interventions can be determined. The TransMission intervention matrix in the Appendix can help with this.

### Step 4: Determine who needs to do what and when



As described before, no single actor can drive a transition by themselves. Therefore, different stakeholders have a role to play. To ensure a transition is accelerated and not stalled (or goes in reverse), it is important that the different stakeholders take the right actions at the right time in each phase. If done well, this creates the right circumstances so that individual actors with opposing, short-term interests gradually become willing and able to collaborate and find shared solutions to shared problems.

### Roles for the EU and its member states

Further transition analyses would be needed based on above blueprint to understand the transitions, both on EU level and on national levels. However, to fulfil its commitment within the Green Deal and the Farm to Fork Strategy, it is up to the EU to now formulate and adopt a vision towards more plant-based production and consumption. The vision should be comprehensive and focus on the potential benefits: protecting the climate, safeguarding human health and improved food security and resilience for the EU. In 1962, the EU launched the Common Agricultural Policy (CAP); managed by the EU, improving agricultural policies on a national level. We argue now is the right time to initiate the Common Food System Policy. With the strong involvement of relevant stakeholders (amongst others market players, NGOs, knowledge institutes) the EU should determine the high-level vision; the member states should tailor the vision to the national context and develop actionable strategies.



## TRANSITION THEORY **APPLIED** IN THE NETHERLANDS: **LESSONS LEARNED?**

In the Netherlands the transition towards more plant-based food systems has been ongoing for several years. The Transition Coalition Food and the [Green Protein Alliance](#), with support of NewForesight have been managing this transition for several years. Because of this active management, the below lessons can be taken from the way the transition in the Netherlands is developing.

### **Lesson 1** The importance of a common vision

The formulating and adoption of a vision is essential for any successful transition. By setting the dot at the horizon it becomes clear and explicit what one is aiming to reach. The vision goes further than just underlining the importance of a certain transition. For the plant-based transition in the Netherlands, the below points are essential in the shaping of a vision towards more plant-based production and consumption:

- **A clear definition.** It begins with clearly defining what we see as the shift towards more plant-based food system. Making this explicit from the start mitigates confusion in the process.
- **Include the current and desired ratio** of plant-based to animal-based production and consumption, based on scientific evidence. Included should be how the desired ratio should be attained, as well as when it should be achieved (time-specific).
- **Include ambitions on overall protein intake.** In the Netherlands the overall protein intake is too high, as it is in many other Western countries. For a vision on plant-based food systems to be comprehensive, ambitions on how to reduce overall protein intake should be included.
- **Consider the relationship between production and consumption** (see also Lesson 2)

In the Netherlands, a vision was first shaped by a platform of NGOs and industry players already in 2016. Some of the main events that took place once a vision was adopted, illustrate the subsequent developments that took place: in 2020 the government adopted a national protein strategy, however mostly focusing on feed rather than food and only partly linking consumption to production<sup>18</sup>. In 2021 Transition Coalition Food started a campaign: Plant-based the new normal. A ten-point plan<sup>19</sup> was published after the first “Plant the Future diner<sup>20</sup> in The Hague, inviting all the stakeholders involved in the protein transition in The Netherlands. This brought more than 250 representatives together from farmers, industry, NGO’s regional and national governments to retail etc. In 2022, the Dutch government defined a vision on plant-based consumption moving from 60:40 to 50:50 animal sourced to plant-based consumption in 2030 within the evaluation of the national food policy<sup>21</sup>. During this whole process, both NGO’s, industry frontrunners, science, financial institutions (to a lesser extend) and government were in continuous dialogue. It goes without saying that the above-mentioned developments are to be seen as examples of a process involving many stakeholders.

## Lesson 2 Differentiate between sub-transitions

As we have seen in the previous chapter, the paradigm shift towards more plant-based production and consumption with all its stakeholders involved is too complex to be one straightforward path to a new status quo. Rather, there are different solution directions or sub-transitions gradually moving through the different phases (see also the Appendix on TransMission).

In the Netherlands the following sub-transitions were considered:

- **Consumer-side.** The shift towards a more plant-based diet through mainly steering food environment.
- **Production – more sustainable plant-based.** The shift towards more sustainable plant-based food production.
- **Production – less and more sustainable animal-based.** The shift reducing animal-based food production and making the production of animal-based produce more sustainable.

Differentiating between these sub-transitions facilitates a clearer discussion. It shows that different worlds are out there and mitigates confusion on what we are talking about. Moreover, the differentiation enables the solutions directions to be actively managed separately. Different measures can be set up for different sub-transitions, depending on the phases and barriers applicable to that context. In 2019 this was put into practice: NewForesight conducted a report to analyse the status of the transition in the Netherlands<sup>22</sup>. At the request of Transition Coalition Food and the Green Protein Alliance, an assessment was made of all sub-transitions. Recommendations were adopted on who needed to focus on what activity during the phase the transition was in at that very moment.

Specific to the Netherlands, 75% of the food products are imported, while 70% of the food products that we produce are exported. Consumption and production are therefore not fully correlated. As such, impacting one of the two is not enough, and a holistic approach is needed. Thinking in terms of sub-transitions enable us to actively manage these solution directions separately.

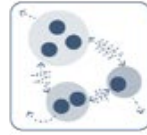
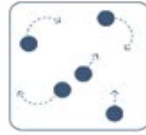
### Lesson 3 Each phase asks different actions from different stakeholders

To give an impression of what has happened in the Netherlands and how this can be understood from a transition approach, please see the below visual. Please note: This is not in any way a summary of the transition in the Netherlands, but rather examples of activities of different stakeholders that have taken place in the various phases.

During the whole process the transformation stakeholder matrix of NewForesight supported in identifying which different solutions or interventions were in different phases of maturity. In order to advance the solution different stakeholders needed to do different activities. It also supported the Transition Coalition Food and Green Protein Alliance to take the lead in the transition and continue the dialogue with all stakeholders involved to move into the right direction.



\*Although the pilots of regional governments occurred after the initiation of GPA, we see this as an example of a phase 1 activity. The transition to a new phase is a period in which activities of both phases can occur in parallel.



	Phase 1: Inception	Phase 2: First movers	Phase 3: Critical mass	Phase 4: Institutionalization
<b>Industry</b>	<ul style="list-style-type: none"> <li>• Stop denying the issue</li> <li>• Partner with NGOs</li> <li>• Pilots, CSR projects</li> <li>• Identify solutions</li> </ul>	<ul style="list-style-type: none"> <li>• Business models</li> <li>• Use labels</li> <li>• Engage value chains</li> <li>• Rankings and benchmarks</li> </ul>	<ul style="list-style-type: none"> <li>• Communicate a non-competitive agenda</li> <li>• Join platforms</li> <li>• Inclusive sector strategy</li> </ul>	<ul style="list-style-type: none"> <li>• Lobby new normal</li> <li>• Recognize politicians</li> <li>• Comply legislation</li> <li>• Take on subsequent issues</li> </ul>
<b>Government</b>	<ul style="list-style-type: none"> <li>• Embrace the crisis</li> <li>• Long-term vision</li> <li>• Experiments and fund projects</li> <li>• Solution principles</li> </ul>	<ul style="list-style-type: none"> <li>• long-term vision</li> <li>• Challenge companies</li> <li>• Launching customer</li> <li>• Recognize leaders</li> </ul>	<ul style="list-style-type: none"> <li>• Develop measures</li> <li>• Support platforms</li> <li>• Influence behavior of consumers</li> <li>• Tax incentives</li> </ul>	<ul style="list-style-type: none"> <li>• Political leadership</li> <li>• Announce legislation</li> <li>• New normal</li> <li>• Remove the laggards</li> </ul>
<b>NGOs</b>	<ul style="list-style-type: none"> <li>• Raise awareness</li> <li>• Join projects</li> <li>• Campaign against laggards</li> <li>• Argue for next steps</li> </ul>	<ul style="list-style-type: none"> <li>• Reward first movers</li> <li>• Support frontrunners</li> <li>• Name and shame</li> <li>• time to move on</li> </ul>	<ul style="list-style-type: none"> <li>• Engage frontrunners</li> <li>• Join platforms</li> <li>• Be a watchdog</li> <li>• Transparency about desired future</li> </ul>	<ul style="list-style-type: none"> <li>• Lobby</li> <li>• Policy developers</li> <li>• Monitor progress</li> <li>• Shift attention to new issues</li> </ul>
<b>Financial Institutions</b>	<ul style="list-style-type: none"> <li>• Donate to charity</li> <li>• Finance projects</li> <li>• Apply negative screening</li> <li>• Clear positioning</li> </ul>	<ul style="list-style-type: none"> <li>• Provide funding</li> <li>• Financial benefits</li> <li>• Engage all clients</li> <li>• Best-in-class screening</li> </ul>	<ul style="list-style-type: none"> <li>• Join platforms</li> <li>• Collaborate</li> <li>• Create financial solutions for scaling</li> <li>• Invest long-term</li> </ul>	<ul style="list-style-type: none"> <li>• Lobby</li> <li>• Investment criteria</li> <li>• Exclude clients</li> <li>• Potential risks linked to new issues</li> </ul>
<b>Research Institutions</b>	<ul style="list-style-type: none"> <li>• Prioritize issues</li> <li>• Study system loops</li> </ul>	<ul style="list-style-type: none"> <li>• Showcase good practices</li> <li>• Investigate failures</li> </ul>	<ul style="list-style-type: none"> <li>• Change agenda</li> <li>• Be objective</li> </ul>	<ul style="list-style-type: none"> <li>• Provide overview</li> <li>• Argue policies</li> </ul>





The stakeholder matrix has served as guidance over the past years in transitioning towards a more plant-based food system, and still is until this day. In parallel, a new matrix has been defined under TransMission. This TransMission matrix describes the different strategies required, depending on the different characteristics and dynamics of each transition phase. The TransMission intervention matrix can be found on the last page of the Appendix.

### Moving the **transition** in The Netherlands **forward**

We have learned – through trial and error – that the constructive dialogue of defining a vision between government, multi-stakeholder platforms and other stakeholders leads to a broader consensus. While the Dutch government has formulated its vision, there is still need for an implementation plan and strategic frameworks to achieve these goals to move towards Phase 3 (Critical Mass). Again, the Transition Coalition Food and the Green Protein Alliance, with support of NewForesight, are seeking to define a non-competitive strategic agenda with all stakeholders involved to move the shift to plant-based food system forward, both on increasing demand and supply, also aligning with farmers organisation to increase supply of sustainable produced plant-based crops. Thus, together with government shaping a strategic framework both on consumption and production to get to the objectives of the vision by 2030.



## HOW TO MOVE THE TRANSITION IN EUROPE FORWARD

In this paper we have argued a transition towards a new, more sustainable food system is essential for Europe to tackle the key challenges of our time. In the current policies the important role that the shift towards more plant-based production and consumption must play has not been formally recognized yet. Scientifically there is consensus that this shift is the most effective way of coming to a more sustainable food system. This paradigm shift towards altered production and consumption does not follow a linear path. A transition approach like TransMission enables us to actively manage the phases and barriers the (sub-)transitions encounter. Based on this line of thinking we argue the following to be essential:

### 1 The EU is to **formulate and adopt a vision towards more plant-based production and consumption**

First, it is up to the EU to shape and adopt a shared vision on how to increase plant-based production and consumption. As argued in chapter 3 and 4, this vision should include a clear definition and timebound targets to a new ratio of plant-based versus animal-sourced. By shaping the vision, the EU should set long-term directions for European food systems with clear time-bound targets on what is to be achieved. The vision also allows to create the right policies and incentives to guide and accelerate the transition and should therefore be seen as a starting point rather than an end station. EU member states should then follow the line of thinking and formulate visions regarding plant-based transition with the EU vision as a fundament. It is up to the member states to develop actionable national strategies, the EU can support; financially, by giving direction, and by setting frameworks for policy making. After the 1962 Common Agricultural Policy, it is now time for an EU Common Sustainable Food System Policy.

## 2 In-detail **transition analyses** are to be conducted on EU member state level

Once the EU vision and ambitions are set, the Member States can work out in-detail transition analyses on the national level. Europe consists of member states, each with their own cultures, transition phases and processes to be considered. Analysing the transitions in-detail will both feed into the EU strategies, as well as enable actionable strategies on national levels to identify barriers to accelerate the transitions. The actionable strategy should outline the vision, the solutions they want to stimulate, the practices they want to phase out, which interventions they will implement to make this happen, who will execute these interventions and within what timeframe. Moreover, insights of these transition analyses can be converted into an inventory for the EU: what would be needed to support the transition of the member states. Comparing this with the current focus on EU policies will illustrate the gaps and motivate the EU to fill these. The steps discussed in Chapter 3 of this paper can serve as a blueprint for these in-detail transition analyses.



With this paper we emphasize the importance of a more structural transition approach on the paradigm shift towards more plant-based production and consumption within the EU. This journey is not a new one, sub-transitions are already ongoing and are in different phases throughout Europe. To consolidate and to come to a new, healthy and sustainable European food system, an approach is needed that crosses country borders. In this case, all roads lead to Brussels. Only together we can initiate the paradigm shift towards more plant-based production and consumption in Europe, safeguarding a healthy planet for many generations to come.



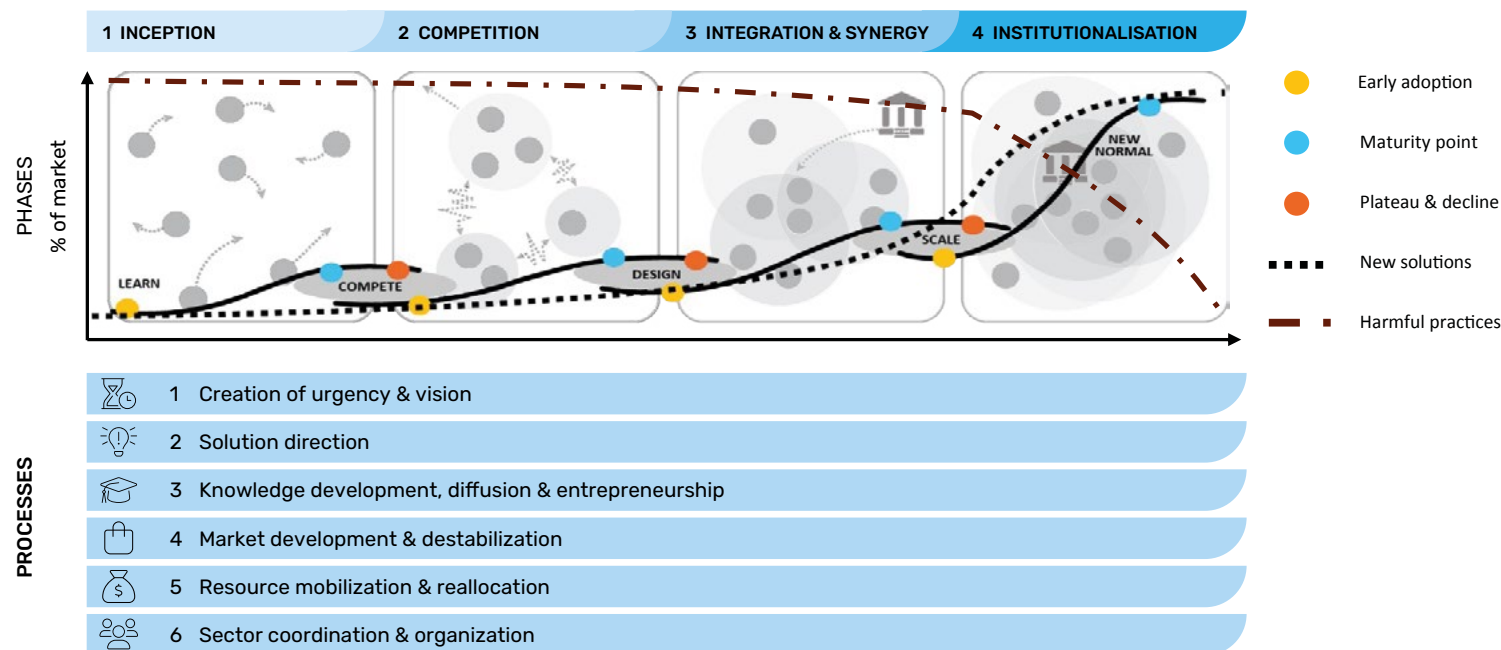
# APPENDIX

## Introduction to TransMission

### What is TransMission?

The TransMission framework is a practical tool that helps to understand, analyse, and steer sustainability transitions. It can be applied by any stakeholder – whether they be policymakers, NGOs, sector initiatives, think-tanks, or research institutes – to develop strategies and mutually reinforcing actions that drive transitions towards a particular sustainability goal (the mission).

TransMission integrates important insights and elements from leading transition theories, most importantly the phases of sustainable market transformation<sup>14</sup>, the functions of Mission-Driven Innovation Systems<sup>15</sup>, and the X-Curve of system build up and breakdown<sup>23</sup>. Based on research and practical experience in applying these theories, we know that transitions are complex, cumbersome, and cannot be planned to the detail. However, we also know transitions follow similar paths in which new solutions are developed and scaled up, while the old system is broken down and harmful practices are phased out. This goes through phases, in which certain key processes play an important role.



### How does TransMission work?

Transitions move through 4 phases of maturity. In each phase there are 6 processes that need to function well to ensure that you can move to the next phase. Important to note is that solution directions (technical such as solar panels, or socio-economic such as reducing energy consumption) move through phases, not

entire sectors. At any time, there will be different solutions situated in different phases of maturity. Completing a larger transition will require moving different solutions to the final phase. For example, to realise the energy transition, technologies for renewable energy production and storage, but also electrification of industry and consumer appliances will need to be institutionalised.

## What are the phases in a transition?

(Relevant process between brackets)

**PHASE 1 – INCEPTION PHASE** A sustainability problem is signalled, and awareness is spread (1). A sense of urgency, for example through public pressure, causes governments and other stakeholders (e.g., NGOs, industry, universities) to formulate a vision to solve the problem and look for solutions (2). Knowledge is built up and solutions are developed through isolated pilots and projects (3).

**PHASE 2 – COMPETITION PHASE** Many of pilots and projects in phase 1 never scale, however some solutions are developed further (2, 3) and brought into the market. The right conditions are created so that industry frontrunners can use sustainable solutions to differentiate themselves in the market and attain a competitive advantage (4). For example, using standards and certification. Industry competitors develop their own version of the solution, spurring innovation and investment (5). Some frontrunners might work together to ensure they attain a competitive advantage over incumbent industry players (6).

**PHASE 3 – CRITICAL MASS PHASE** Sector stakeholders increasingly understand that competition alone will not solve the sustainability issues. Through multi-stakeholder collaboration different stakeholders from industry, government, civil society, and academia work together non-competitively (6) to adopt a non-competitive agenda for the sector (2) and create an enabling environment to scale up shared solutions (4). They collectively catalyse investment in solutions, supporting infrastructure and required human capital (5). Stakeholders also organize a joint lobby towards the government to institutionalise solutions and ban harmful practices (2).

**PHASE 4 – INSTITUTIONALIZATION** The government institutionalises new solutions in laws, regulations, and policies, making these solutions the 'new normal' (2). Meanwhile, harmful practices are banned or made unprofitable (1). Industry players are forced to comply through taxes, adjusting standards or outright bans. In turn, companies and banks disinvest in harmful practices and remove stranded assets (5). Sector frontrunners might formalize their collaboration by forming a special interest group or industry association (6). Other stakeholders will shift their attention to the next sustainability problem or solution that needs to be developed.

Since each phase has different characteristics and dynamics, each phase also requires different strategies. Understanding the phase and underlying processes, is key to determining the right actions to move a solution to the next phase. The TransMission intervention matrix on the next page can help identify these.



# TransMission Framework Index

PROCESS	1 INCEPTION	2 COMPETITION	3 INTEGRATION & SYNERGY	4 INSTITUTIONALISATION
<b>1 Creation of urgency and vision</b>	<ul style="list-style-type: none"> <li>Increase priority of problem</li> <li>Define vision and direction</li> <li>Start lobby against harmful practices</li> </ul>	<ul style="list-style-type: none"> <li>Anticipate delaying strategies of organisations that don't want change</li> <li>Name and shame groups of resistance</li> </ul>	<ul style="list-style-type: none"> <li>Build unsupportive context for harmful practices / old system</li> </ul>	<ul style="list-style-type: none"> <li>Use legal means to make harmful practices unprofitable or impossible</li> <li>Address unexpected, undesirable effects</li> </ul>
<b>2 Solution direction</b>	<ul style="list-style-type: none"> <li>Assess possible solutions</li> <li>Define mission general goal and direction</li> </ul>	<ul style="list-style-type: none"> <li>Develop a mission roadmap</li> <li>Engage stakeholders and compare visions</li> <li>Raise awareness about high potential solutions</li> </ul>	<ul style="list-style-type: none"> <li>Assess solution impact, feasibility and legitimacy</li> <li>Rescope mission roadmap</li> <li>Remove legal/policy barriers</li> <li>Build enabling context</li> </ul>	<ul style="list-style-type: none"> <li>Lobby to institutionalize solutions</li> <li>Focus mission on scaling and learning effects</li> <li>Create legal/financial fast-track options for solution uptake</li> </ul>
<b>3 Knowledge development, diffusion &amp; entrepreneurship</b>	<ul style="list-style-type: none"> <li>Test and experiment with new solutions</li> <li>Support promising innovations / initiatives</li> <li>Identify knowledge demands and develop research agenda</li> <li>Study how to break open old system</li> </ul>	<ul style="list-style-type: none"> <li>Ensure frontrunners can access knowledge</li> <li>Initiate innovation and pilot projects with broad stakeholder involvement</li> <li>Build the value case for larger transition</li> <li>Restrict research into harmful practices</li> </ul>	<ul style="list-style-type: none"> <li>Research what is needed to scale solutions</li> <li>Create structures for knowledge sharing and research into solution optimization</li> <li>Stop research old system/practices</li> </ul>	<ul style="list-style-type: none"> <li>Facilitate knowledge circulation for scaling solutions (e.g. knowledge hubs, help desks, instruction material)</li> </ul>
<b>4 Market development &amp; destabilization</b>	<ul style="list-style-type: none"> <li>Assess what value can be created and for whom</li> <li>Remove barriers for experiments (financial, legal, infrastructural)</li> <li>Understand what is preventing competitiveness of solutions</li> </ul>	<ul style="list-style-type: none"> <li>Develop new business models</li> <li>Create options for market differentiation</li> <li>Recognize and reward frontrunners</li> <li>Articulate demand and nudge consumers</li> <li>Standardise solutions, organise supply and remove risks</li> <li>State intention to stop harmful practices</li> </ul>	<ul style="list-style-type: none"> <li>Make solutions more attractive</li> <li>Incentivize suppliers and clients to adopt new solutions</li> <li>Create conditions for scaling up supply and demand</li> <li>Harmonize solutions, standards</li> <li>Restrict demand for harmful practices</li> </ul>	<ul style="list-style-type: none"> <li>Adjust laws, policies, regulations, taxes to remove harmful practices and make sustainable solutions the 'new normal'</li> <li>Exclude clients and suppliers</li> <li>Ensure compliance through fines or exclusion</li> </ul>
<b>5 Resource mobilization &amp; reallocation</b>	<ul style="list-style-type: none"> <li>Mobilize R&amp;D and innovation budgets for the broad mission</li> <li>Limit R&amp;D and investment funding for harmful practices</li> </ul>	<ul style="list-style-type: none"> <li>Ensure access to finance for new solutions and business models</li> <li>Limit access to finance for harmful practices</li> </ul>	<ul style="list-style-type: none"> <li>Develop required infrastructure</li> <li>Develop new trainings and education curricula</li> <li>Catalyse large scale investment</li> </ul>	<ul style="list-style-type: none"> <li>Disinvest in old system</li> <li>Remove stranded assets</li> </ul>
<b>6 Sector coordination &amp; organization</b>	<ul style="list-style-type: none"> <li>Recognise and stimulate ecosystem self-organisation around new solutions and initiatives</li> <li>Organise knowledge sharing</li> </ul>	<ul style="list-style-type: none"> <li>Create frontrunner groups</li> <li>Collaborate on developing shared knowledge, creating a joint standard</li> </ul>	<ul style="list-style-type: none"> <li>Organize pre-competitive, multi-stakeholder collaboration to further the mission objectives</li> <li>Create conditions for scaling up solutions</li> <li>Organize joint lobby for mission</li> </ul>	<ul style="list-style-type: none"> <li>Institutionalise sector organization, for example in a special interest group / industry association</li> </ul>

# REFERENCES

- 1 The 2022 report of the Lancet Countdown on health and climate change: health at the mercy of fossil fuels. [www.thelancet.com](http://www.thelancet.com), vol 400 November 5, 2022, p.3 <https://www.thelancet.com/action/showPdf?pii=S0140-6736%2822%2901540-9>
- 2 Communication from the commission to the European parliament, the council, the European economic and social committee and the committee of the regions. May 20, 2020 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0381>
- 3 Kamerbrief over evaluatie voedselagenda 2016-2020 en het voedselbeleid. Kamerstuk. March 3, 2022 <https://www.rijksoverheid.nl/documenten/kamerstukken/2022/03/29/evaluatie-voedselagenda-2016-2020-en-het-voedselbeleid>
- 4 Crippa, M., Solazzo, E., Guizzardi, D. et al. Food systems are responsible for a third of global anthropogenic GHG emissions. *Nat Food* 2, 198-209 (2021). <https://www.nature.com/articles/s43016-021-00225-9>
- 5 Factsheet: From farm to fork: Our food, our health, our planet, our future. May 20, 2020 [https://ec.europa.eu/commission/presscorner/detail/en/fs\\_20\\_908\\_9](https://ec.europa.eu/commission/presscorner/detail/en/fs_20_908_9)
- 6 The European Green Deal. December 12, 2019 [https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en)
- 7 Farm to fork strategy. European Union. 2022 [https://food.ec.europa.eu/horizontal-topics/farm-fork-strategy\\_en](https://food.ec.europa.eu/horizontal-topics/farm-fork-strategy_en)
- 8 Europe's Beating Cancer Plan. European Commission. February 3, 2021 [https://health.ec.europa.eu/system/files/2022-02/eu\\_cancer-plan\\_en\\_0.pdf](https://health.ec.europa.eu/system/files/2022-02/eu_cancer-plan_en_0.pdf)
- 9 Michael A. Clark, Nina G. G. Domingo, Kimberly Colgan, Sumil K. Thakrar, David Tilman, John Lynch, Inês L. Azevedo and Jason D. Hill (). Global food system emissions could preclude achieving the 1.5° and 2°C climate change targets. *Science* 370 (6517), 705-708. <https://vanguardrenewables.com/wp-content/uploads/2020/12/Global-Food-System-Emissions-Science-Magazine-110620.pdf>
- 10 IPCC Sixth Assessment Report <https://www.ipcc.ch/report/ar6/wg3/>
- 11 The Untapped Climate Opportunity in Alternative Proteins. BCG Consulting. July 2022 <https://web-assets.bcg.com/6f/f1/087a0cc74221ac3fe6332a2ac765/the-untapped-climate-opportunity-in-alternative-proteins-july-2022.pdf>
- 12 Towards a European protein strategy and thereby increasing the EU's self-sufficiency. French-Austrian Conference on Plant-Based Proteins. December 17, 2021 <https://info.bml.gv.at/dam/jcr:e056d439-b736-439d-a0a2-fe03a02a5e44/Deklaration%20EN.pdf>
- 13 Enhancing the potential of plant-based proteins in Europe in line with the objectives set out in the European Green Deal. General Secretariat of the Council. March 16, 2022 <https://data.consilium.europa.eu/doc/document/ST-7141-2022-INIT/en/pdf>
- 14 Bock, A., Bontoux, L. and Rudkin, J., Concepts for a sustainable EU food system, EUR 30894 EN, Publications Office of the European Union, Luxembourg, 2022 <https://publications.jrc.ec.europa.eu/repository/handle/JRC126575>
- 15 Simons, Lucas en Nijhof, André. (2020). "Changing the Game: Sustainable Market Transformation Strategies."
- 16 Elzinga et al. (2020) "Het Missie-gedreven Innovatiesysteem: Uitbreiding 'Technologisch Innovatie Systeem'-raamwerk ter monitoring van de Circulaire Economie." Working Paper.
- 17 <https://drift.eur.nl/about/transitions/>
- 18 Nationale Eiwitstrategie. Kamerstuk. December 12, 2020 <https://www.rijksoverheid.nl/documenten/kamerstukken/2020/12/22/nationale-eiwitstrategie>
- 19 Plantaardig het nieuwe normaal – 10 punten plan. Transitie Coalitie Voedsel. [https://transitiecoalitievoedsel.nl/wp-content/uploads/10-puntenplan-Plantaardig-het-Nieuwe-Normaal\\_def.pdf](https://transitiecoalitievoedsel.nl/wp-content/uploads/10-puntenplan-Plantaardig-het-Nieuwe-Normaal_def.pdf)
- 20 <https://plantthefuture.eu>
- 21 Kamerbrief over evaluatie voedselagenda 2016-2020 en het voedselbeleid. Kamerstuk. March 3, 2022 <https://www.rijksoverheid.nl/documenten/kamerstukken/2022/03/29/evaluatie-voedselagenda-2016-2020-en-het-voedselbeleid>
- 22 Voorlopen in de eiwittransitie – transitie analyse. NewForesight. June, 2019 <https://www.newforesight.com/wp-content/uploads/2019/07/NewForesight-Voorlopen-in-de-Eiwittransitie-Transitie-analyse-2.pdf>
- 23 Silvestri, et al. (2022) "X-Curve: A sensemaking tool to foster collective narratives on system change."