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Rebalancing agriculture and environment in the Fertile Delta

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Institute of International Relations

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1. Executive summary

The Green Deal and related consequences for the agricultural sector started on the wrong foot. Instead of managing transitions top-down with high ambitions, this report stresses the importance of managing transitions incrementally bottom-up. Ambitions are important, but given the many variables (e.g. water, air and different national welfare functions) and dimensions such as animal welfare and economic growth, long-term ambitions are hard to put into law. In conditions of complexity (from multiple pressures on land use to geopolitical unrest) and dynamics (changes in preferences, innovations, unpredictable developments) and with high levels of uncertainties, it is not possible to anticipate future preferences or to predict end-states.

Instead of revolutionary change and lofty long-term but uncertain ambitions, it is important to move away from the frictions identified which demands careful monitoring current trends and adapting accordingly. This requires national ownership for tailoring adjustments to EU ambitions. Hence, managing change requires first of all to carefully identify the dynamics in production processes, types of outputs, external effects, consumer demands, animal welfare and changes in the relevant international contexts. In addition, to define appropriate national and European policies to rebalance agricultural and environmental policies, it is important to coordinate landing zones for stepwise policies with surrounding and comparable member states. Hence, transitions depend on gradual adjustments grounded in national ownership. Through hands-on redirecting trends learning will take place regarding the use of instruments, and preferences will be adapted and future directions will emerge that are at present impossible to imagine.

To prevent reinventing the policy wheels, it is important to also see the EU's agricultural policy in light of other major EU policy areas. The Green Deal and related policies resemble how the euro (EMU: economic and monetary union) developed from fixed targets mentioned in the Treaty towards more flexible national adaptation approaches focussing on existing constraints in key trends. This more flexible approach resulted in – painful - adaptations, and produced instruments and outcomes that were unthinkable at the start of EMU. Similarly, the EU's agricultural sector needs a profound rebalancing of goals, values, (legal and economic) instruments, preferences, and policies (Box 1).

Looking at trends, data on public support in the Netherlands show the high importance attached to climate and the environment, as well as to farmers' interests and to safeguarding what is perceived as the traditions of the countryside. Key socio-economic trends identified include a scaling-up of agricultural businesses, a slight move from livestock to arable farming, and a related shift from animal-based to plant-based proteins in consumption patterns. When looking at environmental, nature and climate trends we see that in both the Netherlands and Flanders, the relative share of agriculture greenhouse gas emissions has increased significantly since the 1990s – although more progress has been made in Flanders than in the Netherlands, which could partly be explained by the fact that Flanders switched to natural gas, a change the Netherlands made before. In the Netherlands, we do see that serious progress has been made in lowering phosphate emissions whereas nitrogen levels plateaued at a rather high level. It remains uncertain whether Dutch and Flemish nitrogen measures will be sufficient to reverse this trend and achieve a reduction in emissions in the future.

Both the Netherlands and Flanders have large-scale agricultural industries, however, in Flanders this seems to be accompanied by better environmental standards. In the Netherlands too, progress has been made but it seems that lessons can be drawn from the Southern neighbours in terms of efforts aimed at rational use of energy and manure policies. This note discusses sustainability-

related advantages of upscaling but also stresses that much more than the size of individual farms, it is the size of the sector as a whole that is relevant for its overall sustainability and its ability to adapt its production methods.

This Discussion Note further argues that key bottlenecks that require prioritisation include water quality, inputs of nitrogen and animal welfare. While the impression presented in this paper is that agriculture will remain a vibrant economic sector in Flanders and the Netherlands, we argue that continuous adaptations towards more sustainable farming methods remain of key importance. In that context, trade-offs between climate and regional sustainability issues arise. To deal with those trade-offs more effectively, zooming out to a regional or EU-level could help.

There is consensus on what we want to achieve: sustainable food systems and food security (see Box 6). However, there is no consensus on how to achieve this goal as a variety of pathways are contested. This Discussion Note suggests a way forward based on the Fertile Delta region in Flanders and the Netherlands. It is important to work with future perceptions and perspectives, but what now seems to be needed is to steer away from frictions. Rather than projecting an ideal vision on a distant date, governments should have a close awareness of trends as key indicators and aim for a continued adaptation of trends using a variety of instruments. The use of permits and forms of true pricing could be a starting point.

Box 1 - Rebalancing EU agriculture policy

EU ambitions are generally directed at dilemmas that cannot be solved at the national level only and, hence, they tend to be complex (dynamic, involving a range of interconnected topics and characterised by unclear causalities and imperfect information). In this complexity, agriculture has to continuously rebalance values, ambitions, the position of actors (including the courts), the role of information, steering instruments, and principles that were held as a given (such as level playing field). In agriculture, this concerns continuous rebalancing:

- Equilibria between policy values: environment (quality of soil, air and water), nature preservation (biodiversity), economy (agricultural output and competitiveness, competing use of scarce land), public support and, where relevant, geopolitical tensions. Evidently, in the densely populated Fertile Delta, 'soil hunger' increasingly competes with the highly developed agricultural sector. In part, this concerns balances between different types of solidarity: solidarity with economic sectors, with consumers and with the environment.
- Tensions between ambitions (EU and national) and assumptions about feasibility. This includes finding realistic pathways between ambitions, technical feasibility, and institutional capacities for independent monitoring and control.
- The role of Courts has increased due to vagaries in legal texts and objectives while we also see a need for safeguarding public support as well as for the priority of politics over (legal) technocracy.
- National ambitions and European ambitions. An equilibration is necessary, and this raises a discussion about the meaning of the 'level playing field' within the EU. Should we aim at a level playing field based on minimum or maximum standards? Can ambitions in the Fertile Delta depart from European and international standards? Is there room for flexibility? 'Level playing field' is an often-used argument but countries vary considerably in terms of wealth, ambitions and support for transitions including the use of phosphate¹, nitrogen, pesticides and antibiotics. Regulatory harmonisation may not suit pluriform situations. Moreover, upward harmonisation may also lead to the protection of national sectors.
- The question of level playing field also concerns the balance between national and EU competencies.
- The balance between instruments. The transition processes involved in the Green Deal and the related trajectories such as From Farm to Fork are based on legislation (see Annexe 1 and Annexe 2). Yet, there are other instruments whose relevance warrants discussion (e.g. national and European dialogues, true pricing, permits, and subsidies). Is the current between legislation, market pricing and other forms of government interventions optimal (and optimal for whom)?
'Time' is a specific instrument. Time embodies at the same time an ambition as well as an instrument. The Green Deal (2050 'zero neutrality', FitFor55²) and other deadlines, have strict deadlines to which the member states are committed.³ The question is whether the time used to steer complex societal transitions squares with essential pre-conditions such as binding legislation, sustained public support and technical feasibility.

Summarising, there are major imbalances in terms of expectations, capabilities and realism about the 'malleable society' (*maakbare samenleving*).

¹ CBS, PBL, RIVM & WUR, "Nutriëntenoverschotten in de landbouw, 1970-2021 (indicator 0096, versie 22, 20 maart 2023)," CLO, 20 March 2023.

² Consilium, "Fit for 55 - The EU's plan for a green transition," Consilium.Europa.eu, Accessed 12 February 2024; Dilan Yeşilgöz-Zegerius, "Kamerbrief over beoordeling van het Fit-for-55-pakket van de Europese Commissie," Ministerie van Economische Zaken en Klimaat, 17 September 2021.

³ Also at more technical levels, strict deadlines are agreed such as the goal to half the use of pesticides by 2030 (SUR: Sustainable Use Regulation).

2. Introduction

There are vast differences between the regions of the European Union (EU), and each of them has its challenges and opportunities. The EU's agricultural and environmental ambitions, directives and guidelines land differently in each respective part of the Union. The 'Fertile Delta' region⁴ (covering this Discussion Note the Netherlands and Flanders⁵) has several specificities that imply that the set EU ambitions and targets have profound impacts on the agricultural sector. The Dutch and Flemish region has one of the most fertile soils in the world, is a major producer of agricultural commodities, and is an important import-export hub facilitated by amongst others its closeness to the sea and major ports such as Rotterdam and Antwerp. The combination of on the one hand, the geographical strengths with fertile soils and an excellent trading position, and on the other hand one of the world's most densely populated areas, has also created competitive challenges given the high demand and density of land use. Scarcity has triggered investments in leading technological and scientific infrastructure and resulted in unparalleled productivity growth.

Current EU policies, as well as national and regional policies, are rather volatile. The impacts of environmental pressures are evident and competition for space (or even 'land hunger') is forcing new choices. In addition, the European Commission felt compelled to formulate ambitious packages including the Green Deal and the Farm to Fork strategy ([Annexe 2](#)). However, in light of societal resistance, new political realities and the European Parliament elections coming up in June 2024, the Commission felt obliged to lower its ambitions and targets.⁶ This sudden swing towards lowering ambition does not only affect agriculture⁷ but concerns market regulation more generally while concerns over investments in (critical) industry and employment grow.⁸ In the meantime, the focus of discussions over greening has been complemented with concerns over the viability of the EU's industrial base.⁹

Yet, there is more on the agenda that affects agriculture: the increasing demands on the EU budget, shifts in migration policy and (preparation for) EU enlargement each affect EU agricultural policy (see Box 2).

⁴ This term is introduced by LTO and also used by the Netherlands Minister for Agriculture Piet Adema: Chris van Mersbergen, "[Landbouwminister Adema: Nederland verdient als grote voedselproducent speciale status in EU](#)," AD.nl, 19 January 2024.

⁵ Other regions in the EU, like Italy's Po valley share similar characteristics.

⁶ Alice Hancock, "[EU backs down on agricultural emissions after farmers' protests](#)," FT, 5 February 2024; Ellen Milligan and Lyubov Pronina, "[EU Withdraws Push to Cut Pesticide Use After Farmer Protests](#)," Bloomberg, 6 February 2024; Karl Mathiesen and Eddy Wax, "[Facing farm protests, EU eases demands in 2040 climate proposal](#)," POLITICO, 6 February 2024; Jorge Liboreiro & Gerardo Fortuna, "[Von der Leyen withdraws contentious pesticide law amid right-wing backlash and farmer protests](#)," 6 February 2024; Bartosz Brzeziński,

"[EU takes the ax to green farming rules](#)," POLITICO, 13 March 2024; Eddy Wax and Sarah Wheaton, "[Von der Leyen's pitch for 5 more years: Yes to farmers, no to the far right](#)," POLITICO, 7 March 2024.

⁷ Angelo Di Mambro and Maria Simon Arboleas, "[Commission unveils new package exempting small farms from environmental controls](#)," Euractiv, 15 March 2024.

⁸ Anna Brunetti, "[Scope of EU supply chain rules cut by 70% ahead of key Friday vote](#)," Euractiv, 15 March 2024.

⁹ See the [Antwerp Declaration](#) from February 2024: "[Europese industrie roept met 'Antwerp Declaration' op tot Industrial Deal met 10 dringende acties om de internationale concurrentiekracht te herstellen](#)," Essencia, 20 February 2024 and Roel Beetsma, Marc Salomon and Henk Volberda, "[Den Haag wordt langzaam wakker maar kwaad is al geschied](#)," FD.nl, 10 March 2024.

This situation forces both the EU and the member states to rebalance their environmental, industrial, agricultural and wider societal objectives. Looking at a broader trend of EU policies, one could argue that EU governance in general is in a structural crisis (see Box 3). The EU has moved from technical harmonisation in the 1980s towards ambitious transformation processes, especially after 2000. The transition ambitions have included the Economic and Monetary Union, the expectation that the rule of law would adequately restructure after enlargement, and the Green Deal and related ambitions. Given the mixed and sometimes even disappointing results, a debate has emerged on whether the EU is failing more generally ('failing forward': agreeing on high objectives but not having the required governance systems).¹⁰ The way forward developed here is that top-down EU steering is bound to run into difficulties and that bottom-up processes based on analysis of trends offer better perspectives for managing change. Also for agriculture applies that the future is open given all the uncertainties and emerging trends.

As elaborated below, the question is not how to steer towards a desired outcome (that no one knows) but: how to redirect existing trends? The first three sections address public opinion trends, socio-economic indicators, and trends regarding climate, the environment and nature. Thereafter we will look at geopolitical trends, trade performance and dependencies. Finally, we will discuss trends regarding instruments including EU law and the use of the price mechanism.

Box 2 – Topics on the EU agenda that will influence agriculture policies

- The EU budget will have less space for agriculture. Although the EU's budget is rather sticky, the financial demands are increasing. Although the existing EU budget is approximately 1.5% of the EU's gross income, there are major new priorities for which politicians have demanded EU funds including financing defence cooperation, combating climate change, environmental protection, industrial policies (also in the light of the USA's Inflation Reduction Act (IRA)), and interest payments on the COVID-19 response fund (RRF).¹¹ Given that national budgets are already overstretched, unless other political decisions are made, it is likely that EU spending on agriculture will decrease.
- Limitation of (labour) migration could threaten the horticulture sector if further automatization is not in place. The member states are planning to curtail external and possibly also internal migration flows. This will have major implications for sectors, such as horticulture, that rely on lower-wage segments of the labour markets.¹²
- A future enlargement round will require a new agricultural balance. Enlargement, particularly the gradual accession of Ukraine, already affects European markets with the inflow of among others grain and eggs. At the time of writing, expectations regarding the consequences have not yet crystalised but the EU's agricultural output will increase and a phaseout of area-based payments could be a consequence.¹³

¹⁰ For a discussion see: Adriaan Schout, "[Europese integratie en Europese samenwerking: als meer van hetzelfde niet werkt](#)," Radboud Universiteit, 2021.

¹¹ Marco Buti, "[When will the European Union finally get the budget it needs?](#)," Bruegel, 7 December 2023.

¹² A trend that was also visible after Brexit: Martin Guzi, Martin Kahanec and Lucia Mýtna Kureková, "[The impact of immigration and integration policies on immigrant-native labour market hierarchies](#)," *Journal of Ethnic and Migration Studies*, 49 (16), 2023.

¹³ Eddy Wax and Douglas Busvine, "[EU told to act now on farm reform or risk blowing Ukraine's accession](#)," POLITICO, 28 September 2023; "[Preparing European agriculture for the accession of Ukraine to the EU – Information from the Polish delegation](#)", General Secretariat of the Council, 7 December 2023.

Box 3 – The EU’s struggle with transformational ambitions

The EU has a tradition of ‘failing forward’: starting with high ambitions that result in impressions of ‘permacrisis’ due to slow national adaptations and belated recognition of societal implications. A comparative perspective helps to understand the frustrations of the impact of EU environmental policies (broadly defined) on the transitions in agriculture. The introduction of the euro (EMU), the EU’s rule of law agenda, and migration policy are some of the comparative momentous EU policies that have shown the dilemmas of managing profound transitions based on setting ambitious legal targets. Realities have proven to be much harder than anticipated, societal changes cannot be planned, instrumentation only develops gradually and based on learning by doing, the initial goals turn out to be changed profoundly, and that national ownership is key for success. Smooth transition trajectories cannot be expected, and frustrations have resulted in new *eurospeak* of ‘permacrisis’ and ‘pluricrisis’. Underlining the political uneasiness Commission President Juncker made ‘the EU that delivers’ his motto and in response, Prime Minister Rutte emphasised that “the EU needs to under-promise and over-deliver.”¹⁴

- The ‘completion of the internal market by 1992’ is a positive place to start a comparison.¹⁵ In 1985, the deadline of 1992 was formulated. It consisted of approximately 300 pieces of legislation to open up the internal market based on minimum harmonisation. This programme was a great success: it was widely supported by the public and the market mechanism was reinforced. The ingredients for its success included: the *deadline* was a major tool to focus attention, there was a *clear agenda*, and the substance was hardly political (*technical* product specifications). It did not require major and painful national transformations.

- Other examples are less unqualified successes. Schengen delivered the popular free movement of people and abolished border controls. Yet, Schengen also showed the difficulties and unintended consequences in terms of migration from within and outside the EU (including e.g. shortages in the housing market, lack of wage inflation, and contributing to Brexit). The demands of border control were found out later and Frontex is still in a development phase.

- EMU (the introduction of the euro) started with the formulation of the deadline of 1999 at the Maastricht Summit (December 1991) and of legal requirements of the 3% maximum of the budget deficit, the 60% limit to public debt, the no-bailout rule and the independence of the ECB. This deadline was not met (it became 2002) and the legal objectives have been breached more or less on a routine basis. As it appeared member states had much more difficulties with reforming their economies (pension systems, economic monitoring and control mechanisms, education systems, legal systems, etc.) than anticipated. Economic convergence has not been achieved.¹⁶

- There are other complex and allegedly slowly progressing EU policies that can be included in the list, such as defence cooperation, or CO₂ neutrality by 2050.

Despite major differences between these areas, some generalisable conclusions can be drawn from this list of complex European ambitions that are relevant to agriculture:

- Complexities, political realities, and administrative requirements are easily underestimated if not ignored.
- Outcomes can be highly different from expected. E.g. the legal objectives in EMU have been redefined into flexible objectives (including more leeway for the ECB, and the

¹⁴ Mark Rutte, “The EU needs to under-promise and over-deliver, says Dutch PM,” European Parliament, 13 June 2018. Yet, ‘under promising’ should not mean having less ambitions but seems useful in terms of pretending to know more than we know about the what and how of policies.

¹⁵ Other earlier monumental European ambitions that could be chosen would be the aborted European Defense Community in 1950, or Mansholt’s agricultural policy.

¹⁶ Adriaan Schout and Arthur van Riel, “The state of economic convergence in the Eurozone: Two decades of monetary union and economic governance,” Clingendael Institute, 13 January 2023. Policy Paper written for the Ministry of Foreign Affairs to support the Dutch input on SGP reform.

abolition of the cherished no-bail-out rule) and unforeseen problems and opportunities emerge along the way. The related transition processes can only be managed when problems emerge and new responses are required.

- Considerable administrative capacity is involved in managing the EU's ambitions.¹⁷
- Deadlines are bound to fail and a multitude of instruments have to be introduced and adjusted as experience is gained.
- Enforcement mechanisms in the EU are often weakly and unevenly developed at national and EU levels.

In sum, complex and politically sensitive transitions that are imposed top-down are bound to run into legal, political, and administrative difficulties. The EU's tendency towards juridification of ambitious political objectives and deadlines is bound to fail.¹⁸ This also triggers uneasiness about the grey zone between politics and technocratic legalistic decision-making.¹⁹ Moreover, dots on the horizon for transition processes can only be formulated at a general, non-legal, level as the future is unknown.

Yet, this does not mean that the ambitious European policies should be avoided or that they have been failures. Politics is the art of continuous re-balancing. The euro for example has at the same time been a source of continuous frustration as well as a successful necessary process towards adapting European economies.²⁰

Box 4 – 2023: When politics kicks in

Some trends became – painfully – clear in 2023 in the Fertile Delta. After years and even decades, of agreeing to ambitious environmental intentions and plans in the EU, consequences started to hit the political scene. The Farmer-Citizens-Movement (BoerBurgerBeweging - BBB) won an overwhelming surprise victory at the provincial elections in March 2023. In Flanders, tensions started to grow, amongst others on social media and a comparable, but separate, political party (Boer Burger Belangen - BBB) was created. The reverberations were quickly visible in the European Parliament and resonated in the State of the Union of Commission president Von der Leyen. The technocratic goal-oriented approach has reached its limits. Comparable Gordian knots and political turbulence emerged in Germany, Flanders, Spain, France and Slovakia - among increasingly many others. Each of these protests have been triggered by specific incidents and backgrounds, yet the common denominators are concerns over increasing food prices and costs of living for consumers, tighter margins for farmers, trade deals, tensions related to insecurity and risks arising from the Green Deal agenda, administrative burden and “annoying” EU regulations and interference, permit policies, and annoyance over lack of recognition. In addition, societies at large have become concerned over ‘our way of living’ when it comes to the future of the traditional agricultural countryside without farmers (see 2.1 Trends in public support).

¹⁷ For a review, see Adriaan Schout and Ingrid Blankesteijn, “[Diagnosing enforcement of EU border control](#),” Clingendael Institute, 2020.

¹⁸ NOS, “[Raad van State: Nederlandse aanpak stikstof deugt niet](#),” NOS.nl, 29 May 2019. This can be called the ‘regulatory trilemma’: “when law seeks to relate to other sub-systems, law may either be irrelevant to the other sub-system and therefore may have no effect whatsoever (termed ‘mutual indifference’), or through creeping legalism law may inhibit the other sub-system, therefore constraining that other system’s viability, or law’s self-reproductive capacity itself may be harmed through being ‘oversocialized’ by the other sub-system” (Robert Baldwin, Martin Cave and Martin Lodge, *Understanding Regulation*, Oxford University Press, 2012, 77).

¹⁹ See for example the role of the *Bundesverfassungsgericht* in case of EMU and the Raad van State in relation to nitrogen.

²⁰ Daniel Gros and Adriaan Schout, “[Scenarios for the Euro: A realistic Perspective Between Hope and Fear](#),” Brussels: The European Parliament, 9 March 2023.

3. Trends

A general pattern in large-scale EU policies is that they start with highly ambitious goals that subsequently stumble over complexities, political sensitivities, unintended side-effects, limited administrative capacities, and lack of appropriate technologies. Yet, in all sensitive EU policy areas, we see a gradual -but often painful- convergence process in a range of related sub-areas while building new governance systems and adapting objectives in the meantime. The contours of landing zones are emerging over time, as we have seen for example in EMU (see Box 3) where fixed targets have become flexible and national leeway has been increasingly accepted with a view to building ownership for the range of change processes involved. In comparison, the developments in agricultural transition have remained at the early stages of equilibrating ambitions and targets, instruments, production methods, and related adjustments.

To anticipate the switch towards more flexible national approaches, we have to limit ourselves at this stage to a selection of trends in Flanders and the Netherlands. The socio-economic trends presented below display considerable parallels between Flanders and the Netherlands. Yet, when looking at nature/environment and climate-related trends, we see parallels as well as some divergences within the Fertile Delta. Based on these trends, this discussion note will suggest to increase the importance of monitoring trends and steering away from frictions using relevant instruments, careful monitoring and enforcement.

3.1 Trends in public support

Given the overriding importance of public support, the first trend concerns public opinion regarding climate change and improving the state of the environment, as well as regarding the importance of agriculture and the safeguarding the integrity of the countryside. The figures show that environment is in particular a Dutch political theme ([Annexe 3](#)), but the figures do not show *why* environment is a political issue. Nevertheless, the Dutch numbers are significant in comparison to neighbouring countries Belgium and Germany. Eurobarometer Standard surveys show that in the last ten years, more and more Dutch citizens listed the environment and climate change in the top 2 most important issues facing their country, a number that grew from around 5% in 2012 to 66% in 2019. These numbers stand out significantly not only when comparing the Netherlands to Belgium and Germany, but also when assessing EU27 average answers. On average, never more than 21% of EU citizens considered climate and the environment a top 2 issue. Moreover, the top 2 classification tends to be resilient to major crises (such as COVID-19 and the Russian invasion of Ukraine) in recent years. During each crisis, the percentage dropped a little but regained ground afterwards.²¹ Interesting, however, is a slight decrease in both the Netherlands and EU-wide numbers in the past year ([Annexes 3-4](#)).

At the same time, Dutch citizens consider agriculture and rural areas overwhelmingly important for their future. According to Eurobarometer data, well over 90% of Dutch people consider this “fairly” or “very important”, while this percentage slightly increases every year still ([Annexe 5](#)). European-wide data shows similar results, albeit a few percentage points lower. Eurobarometer data also shows what citizens consider to be the main responsibilities of farmers in “our society”. In the Netherlands, the main priority is awarded to “providing safe, healthy and sustainable food of high quality” at around 60%. This is also priority number one across the EU (around 52%), however, both in the Netherlands and EU-wide, this percentage is dropping, mainly at the expense of “securing a stable supply of food in the EU at all times” which is gaining significantly as one of

²¹ Taking into account the recent surge of BBB could also imply that the recent figures on the importance of ‘environment’ relates to concern over the feasibility of the Dutch nitrogen policy.

the two main perceived farmers' societal responsibilities, in the Netherlands from 19% in 2018 to 34% in 2022. The 'food security' responsibility also wins at the expense of "ensuring the welfare of farmed animals", which has gone down from 49% to 41% but remains the number two responsibility. Finally, going up and down around third/fourth place is the responsibility of "protecting the environment and tackling climate change" ([Annexe 6](#)).

The Netherlands Institute for Social Research also concludes that climate, nature and environment policy are high on the list of priorities amongst Dutch citizens ([Annexe 7](#)). A strong support for an EU role is mentioned too, but the EU's role in agriculture is not well-supported.²² As indicative as these figures are regarding overall trends, more research is needed to examine the explanations for these shifts.

In Flanders, we see that climate-friendly behaviour varies widely depending on the specific behaviour. It fluctuates between 55% (i.e., % that always make short trips on foot or by bike) and 2% (i.e., % that eat vegan daily). On average, Flemish people formulate a stronger intention to adopt climate-friendly behaviour in the future than what they are already doing today. Support for specific policies to facilitate climate-friendly behaviour also varies, reaching a 73% acceptance rate for stricter standards in new construction/renovation for capturing and allowing water to seep into the ground, while 36% would accept that vegetarian meals be offered at least half the week in government institutions. The strong fluctuations in support among climate-friendly behaviours underline the importance of a domain- and behaviour-specific approach.²³ During the farmers' protests in Flanders in 2024, the Flemish Centre for Agricultural and Fisheries Marketing surveyed Flemish citizens on their attitude regarding the farmer protest, revealing large support for the situation of Flemish farmers among Flemish citizens. Around 80% of citizens understand and accept the protest actions and more than 80% say they understand the situation farmers are in.²⁴ In a survey executed for WWF Belgium, also during the farmer protests, it was shown that 82% of Belgian citizens are in favour of more nature restoration.²⁵

In short, in both Flanders and the Netherlands, there seems to be large public support for a strong agricultural sector, including an understanding for the recent protests, and strong public support for more nature restoration. Moreover, there is strong public support for climate change mitigation policies and measures in general.

3.2 Socio-economic trends

The economic situation of farmers in the Fertile Delta indicates increasing income levels and land prices, as well as a generation and succession trend in family business. We see furthermore a decreasing number of agriculture businesses and land use, but an intensification of businesses, and shifts in consumer expenditures. In Flanders, with respect to specialisation, animal husbandry remains the largest share in both farm numbers and total land use. The share of total land devoted to livestock farming in Flanders is more than half of the total available agricultural land. Some shifts within these sectors are visible, such as a decrease in pigs and beef cattle in favour of dairy

²² More information is required to interpret this trend in support for agricultural policy. It may relate specifically to support for the current Common Agricultural Policy (CAP) and its position in the EU budget.

²³ Maarten Vansteenkiste, Ann DeSmet, Sofie Morbée, Nele Flamant and Joachim Waterschoot, "[Opstart monitoring van het draagvlak inzake de klimaattransitie bij de Vlaamse bevolking](#)," Departement Omgeving, December 2023, 7.

²⁴ Vlaams Centrum voor Landbouw- en Visserijmarketing, "[Protestacties doen sympathie voor de boeren groeien](#)," VLAM.be, 14 February 2024.

²⁵ WWF Belgium, "[Persbericht: 82% van de Belgen wil meer natuurherstel, maar Belgische politici willen natuurherstelwet toch nog doen mislukken](#)," WWF.be, 19 March 2024.

cattle and poultry in the livestock sectors, a decrease in sugar beet and cereals in favour of potatoes, and an overall decrease in land devoted to arable farming in favour of horticulture.²⁶ In the Netherlands, the land devoted to arable farming has decreased too, yet to a much smaller extent than for dairy farming ([Annexe 8](#)).

In the Fertile Delta, land prices ([Annexes 9-13](#)) and income levels ([Annexe 14](#)) have risen steadily in recent years but finally dropped a little in 2023. At the same time, differences in income have increased significantly between farmers.²⁷ While the share of the 'agri-complex' (agriculture, nature and fisheries) in the Dutch GDP has decreased slightly from around 7.4% to 6.7% between 2010 and 2021, employment as a share of the national economy remained stable, indicating an average drop in income ([Annexe 15](#)). In Flanders, employment numbers in agriculture have steadily dropped over the past 30 years ([Annexe 16](#)). Moreover, it must be noted, that within agriculture, income levels vary significantly and increasingly between different farmers' sectors as well as between different company sizes ([Annexes 17-18](#)). On average, larger farms seem better able to provide income levels for farmers that are comparable to the average income in non-agricultural employment. Even though comparing farm and non-farm income levels remains difficult, in part due to a lack of comparable statistics, the available data suggests that the income gap between farm and non-farm income has disappeared on a substantial share of farms in both the Netherlands and Flanders. A recent study showed that across the EU, the lowest quartile (in terms of income) of farm households is considerably worse off than the lowest quartile of non-farm households. Yet, the highest quartile of farm households is better off than the highest quartile of non-farm households.²⁸ This suggests that for a substantial part of farm households, the income gap has not just disappeared but reverted in favour of farm households. Further, it points to the large differences in farm incomes, even within countries, and shows that for a proportion of farm households, income levels are very low compared to the national average. These trends underline the benefits of economics of scale (below we will link this to a parallel relative increase in environmental indicators), among others to keep up with higher costs.

The effects of upscaling in the Fertile Delta is also reflected in what is known as 'the generation trend' of an ageing farmer population with fewer successors. Both in the Netherlands and in Flanders, the average farmer is getting older.²⁹ Population ageing as a trend is a broader societal phenomenon and is equally relevant to the agricultural sector. Fewer farmers have a successor, such as in Flanders where only 13% of owners (aged 50+) declare to have a likely successor.³⁰ Moreover, an increasing number of Dutch farmers decides to quit their business ([Annexes 19-21](#)). Even though data suggests that there is no uniformity regarding the generational renewal problem across the EU as a whole (with amongst others, countries such as Bulgaria, Slovakia, Italy and Slovenia where the share of young farmers is actually increasing and the share of old farmers is decreasing³¹), the farming population in the Netherlands and Flanders is indeed ageing. The

²⁶ ["Agriculture report 2024,"](#) Departement Landbouw & Visserij, 2024.

²⁷ Sjoerd Mouissie and Bart Kamphuis, ["De' boer bestaat niet, grote inkomensverschillen tussen bedrijven en sectoren,"](#) NOS.nl, 11 February 2024.

²⁸ Maria Marino, Benedetto Rocchi, Simone Severini, ["Assessing the Farm–Nonfarm Households' Income Gap along the Income Distribution in the European Union,"](#) JCMS: Journal of Common Market Studies 62(2), 28 April 2023, 318-340.

²⁹ Statbel, ["Kerncijfers Landbouw 2023,"](#) StatBel.fgov.be, 2023, 5.

³⁰ ["Agriculture report 2024,"](#) Department Landbouw & Visserij, 2024, 73. (In smaller companies this percentage is even lower.)

³¹ Isabeau Coopmans, Joost Dessein, Francesco Accatino, Federico Antonioli, Camelia Gavrilescu, Piotr Gradziuk, Gordana Manevska-Tasevska, Miranda Meuwissen, Mariya Peneva, Bárbara Soriano, Julie Urquhart

proportion of Dutch farmers aged 50+ has risen rapidly, while the proportion of farmers at 50+ who have a successor stagnates. For Flanders, the reasons behind the stagnation of successors could be related to the seven main stress factors which have an impact on the well-being of Flemish farmers as studied by ILVO.³² LTO suggests that drivers include concerns about the accumulation of crises and new measures. Moreover, polling suggests that a quarter of farmers (in the province of Noord-Brabant) consider quitting for the same reasons.³³ Research into this topic has highlighted a multitude of factors that – interactively – affect generational renewal and farm succession, whereby often mentioned reasons such as low profitability and too strict – environmental – regulations are among those factors but certainly not the only ones.³⁴

In parallel, the number of agriculture businesses has dropped significantly in past decades (Annexes 22-23). However, the decrease in land use is much less (Annexes 24-25 for the Netherlands; Flemish data in Annexe 26 shows a similar trend). While agriculture businesses dropped by 65% since the 1980s, agriculture land use decreased only by 11% in the same period. This implies a scaling up of agricultural businesses in the Fertile Delta (for Flemish data, see Annexes 27-28).

The steady decline in the number of farms is a phenomenon which has been going on for decades. This decline has not been associated with a decline in aggregate production (and in some sectors such as poultry and dairy in Flanders, aggregate production has even increased), meaning the scale enlargement of remaining farms has largely compensated for the decline in the number of individual farms. Hence, there is no straightforward evidence suggesting that the further decline in the number of farms should lead to a decline in aggregate production and hence this decline should not be a worry from a food security point of view.

Nonetheless, a number of dynamics could lead to certain tipping points causing more structural readjustments in the food sector. For example, the pig sector in many parts of Germany or Denmark³⁵, where aggregate pig production has sharply declined to the extent that closures took place in auxiliary industries such as slaughterhouses and processing facilities. This suggests that the pork industry in those countries might have reached a tipping point after which structural readjustment takes place. While this evolution (sometimes characterised as “de-intensification of the European livestock industry”) should not raise concerns for food security on the short term (see Box 6 at the end of section 2.4 for an overview of food security related trends mentioned in this Discussion Note), it could cause – temporary – social and economic issues as we have already seen for decades (e.g. related to employment and the question of how to re-use empty pork barns).³⁶

and Erwin Wauters, “Policy directions to support generational renewal in European farming systems,” *EuroChoices*, 19(2), 2020, 30-36.

³² Those seven stress factors are regulation, financial uncertainties, occupation risks, weak negotiation position, uncertain future prospects, achievement and appreciation, and how the job is demanding. See: Lies Messely, Charlotte Prove and Arthur Sanders, “Naar een geïntegreerde aanpak voor welbevinden in de Vlaamse land- en tuinbouw”, ILVO-nota, January 220.

³³ Frank van den Heuvel, “Meer dan een kwart van Brabantse boeren overweegt te stoppen: ‘Waarom zo weinig waardering voor wat we doen?’,” Brabants Dagblad, 13 June 2022.

³⁴ Isabeau Coopmans, Joost Dessen, Francesco Accatino, Federico Antonioli, Daniele Bertolozzi-Caredio, Camelia Gavrilescu, Piotr Gradziuk, Gordana Manevska-Tasevska, Miranda Meuwissen, Mariya Peneva, Andrea Petitt, Julie Urquhart and Erwin Wauters, “Understanding farm generational renewal and its influencing factors in Europe,” *Journal of Rural Studies* 86, August 2021, 398-409.

³⁵ To some extent also observable in the Fertile Delta region.

³⁶ Gus Trompiz, “EU pork on a lean streak as higher standards drive up costs,” Reuters, 12 June 2023.

3.2.1 Consumer expenditure

Consumption patterns are changing as well. The percentage of consumers' expenditures spent on vegetables and fruits is on the rise and taking over from the share of meat and fish products in the Netherlands ([Annexe 29](#)). In Flanders, we note that in the past ten years, the food expenditure for vegetables has grown significantly more than meat expenditure ([Annexe 30](#)).

Looking at the expenditure pattern of consumers more broadly we see another changing trend. Historically, food used to be a big part of the expenditure pattern, but this has changed enormously in the last 75 years. According to CPB, the percentage of the expenditure of the Dutch spent on food went from 70% to 40% during the 1950s alone, and from 40% to 10% since, a plateau that was reached at the beginning of this century ([Annexe 31](#)).³⁷ Most interesting is that in recent years the percentage of spending on food has started to increase again in both the Netherlands and Flanders ([Annexes 30](#) and [32-33](#)). Does this trend might show consumer awareness, optimism or a willingness to pay more for (sustainably produced) food?

At the same time, we see that the prices of meat and dairy products are stabilising and/or rising globally while general food prices steadily decrease ([Annexe 34](#)).

In sum, the socio-economic indicators indicate an upscaling in farming, and an increase in income levels and in land prices. Moreover, consumers are willing to pay more for food and have slightly shifted consumption expenditures towards vegetables. The causes need to be studied more, but it could be a necessary trend at a time when societal discussions centre around the question of the true price for agricultural output.

3.3 Climate, environment and nature trends

Looking at several related trends, we see several plateaus and statuses quo. Livestock levels have barely shrunk, if not grown slightly ([Annexe 35](#)), while animal manure production remains stable and even slightly increases with cow manure increasing strongly ([Annexe 36](#)).

As a consequence, agriculture in the Netherlands is lagging when it comes to bringing down greenhouse gas (GHG) emission levels. While nationally CO₂ emissions have decreased, agriculture emission levels have remained relatively stable. Hence, the relative share of agriculture in GHG emissions is increasing ([Annexes 37-38](#)). In Flanders, we see slightly different numbers as GHG emissions have dropped since the 1990s. However, since this decrease was smaller than the relative decrease of Flanders as a whole, the agricultural share increased relatively too ([Annexe 39](#)). Moreover, since 2008 GHG emissions have been on a slight rise again for Flemish agriculture ([Annexe 39](#)).³⁸ In order to better understand the origin of Flemish GHG emission reduction, a brief explanation is in place. In Flanders, GHG emissions from agriculture consists of energy emissions (CO₂) and non-energy emissions. Regarding the former, a fuel switch has been made from petroleum products to natural gas, which led to an emission reduction. In terms of non-energy emissions, livestock is the main driving factor and the decrease in GHG between 1990 and 2008 was partly the result of manure policies in place, changes in manure management, shrinking livestock population (in part due to buy-back schemes, dioxin crisis and economic cycles) and more efficient production.³⁹

The same goes for nutrient surpluses, both phosphor and nitrogen levels have plateaued in the Netherlands (see Box 5). While for phosphor a plateau near zero was reached, nitrogen levels

³⁷ CPB, "De Nederlandse economie in historisch perspectief," 11 July 2023, 31.

³⁸ "Agriculture report 2024," Departement Landbouw & Visserij, 2024, 100.

³⁹ VMM, "Milieudata," 2023.

plateaued at a still too elevated level ([Annexes 40-42](#)). Parallel to this, groundwater levels have plateaued instead of further improved ([Annexe 43](#)).

Box 5 – Worrying state of nitrogen-sensitive nature in the Netherlands

Recently, the Dutch Ecological Authority published a study that underlined that notwithstanding serious efforts, the state of nitrogen-sensitive nature in the Netherlands is worrying.⁴⁰ One of the underlying problems, the report reads, lies in the quality of monitoring. This relates to the complexity of factors at play such as water quality, drought, climate change and water management. One of the Ecological Authority's pieces of advice is, therefore, to make goals and obligations clear and concrete, to invest in monitoring and to safeguard a multi-annual and consistent approach.⁴¹

Scale enlargement (the increase in the size of individual farms) has, mainly in popular press, often been blamed as the culprit for many environmental issues. However, there is no converging scientific evidence on the link between farm size and environmental sustainability. When impacts are observed, they are often highly context-specific, depending on the sectors, on regions and on individual sustainability issues (e.g. climate, water, air, biodiversity) that are being investigated, and on both positive and negative (and insignificant) links between farm size and environmental sustainability. For the environmental burden caused by agricultural production, it is more the aggregate size of the sector rather than the size of individual farms that matters for the overall state of the environment.

Taking this into account in discussions on how to reconcile food security, upscaling, economic growth, and the environment inevitably leads to trade-offs. The first trade-off concerns the relation between climate mitigation and (many) other environmental objectives. Climate change is a global issue and climate change does not depend on where greenhouse gasses are being emitted. Prioritizing climate over, for instance, nature, biodiversity and ground and surface water quality, can provide arguments for increasing production in the EU as a whole and in highly efficient regions such as Denmark and the Fertile Delta regions in particular as in these regions, much more food can be produced per unit of greenhouse gas emissions. The EU has already been blamed for “outsourcing” its carbon emissions, whereby the total outsourcing is not offset by its “insourcing” due to exports of agricultural commodities, and some claim that the EU's Green Deal will exacerbate this. When the EU would produce more (for instance meat and dairy) in their “carbon-efficient” way and export, this would offset a larger share of the carbon emissions that are being outsourced by reducing carbon leakage.

Yet, increasing (or even maintaining) intensive agricultural (and especially livestock) production in the EU, based on these climate mitigation motivations, could lead to an increase local environmental problems due to nitrogen deposition, water pollution, air pollution and biodiversity degradation – or at least to a stagnation or slowing down of some of the improvements in these areas that have been observed over the past years. Put differently, the question could both be: Should the EU play its role in global food security and global climate mitigation at the expense of its local environment, or should the EU decrease efficient production in the EU at the expense of global GHG emissions?

Admittedly, large improvements in the eco-efficiency of agricultural production in the EU have led to substantial improvements in agricultural GHG emissions, also at an aggregate scale. Between

⁴⁰ Ecologische Autoriteit, “[Doen wat moet en kan](#),” 26 January, 2024.

⁴¹ Ecologische Autoriteit, “[Doen wat moet en kan](#),” 26 January, 2024, 3.

2005 and 2021, the EU's agricultural GHG emissions had an overall decreasing trend (3%).⁴² Yet, it remains uncertain whether future technological progress will be enough to continue this improvement. Plateaus in the improvement in several environmental problems that are currently being observed question to what extent the EU in general and the Fertile Delta, in particular, can continue to improve the sustainability of its agricultural production by technological progress alone, without reducing the aggregate size of certain types of production such as livestock.

The second trade-off, concerns the spatial trade-offs within specific sustainability domains. Although it is hardly feasible in reality, given the high level of efficiency in production (e.g. in terms of carbon emissions), at a global scale it could be beneficial from the argument of climate mitigation that – when production of for instance meat and dairy in the EU would increase or at least maintain at current high levels – this increase would happen in, amongst others, the Fertile Delta. The trade-off question arises to what extent less (high quality) nature in the Fertile delta could be compensated by more (high quality) nature elsewhere in Europe, Considering the negative effects that this could have for the Fertile Delta's land use situation.

3.4 Geopolitical trends and trade performance of the Fertile Delta

Concerns over geopolitical disturbances are well-founded and discussions on European autonomy in different areas, including in food security and safety, have triggered debates on the EU's strategic autonomy, reshoring, near-shoring, and diversification of trade flows.⁴³ These debates also display the complex interrelations between trends. For example, if food security (the availability of food) is at stake, food safety (i.e. its quality for human consumption) also becomes an issue. Similarly, outsourcing efficient and relatively sustainable agriculture from the Fertile Delta may result in imports from countries with markedly higher levels of environmental degradation.

In these debates, we can see strong – and conflicting – views regarding the geopolitics of food security. The pressures and challenges are indeed causes of great concern. Some of the worrying developments and facts include the threats climate change poses to agriculture in specific regions.⁴⁴ Spain, among others, already suffers from water shortages. Similarly, the use of arable land in the Netherlands is also affected by the fluctuations in rain during the winter and summer months. Outside the EU, China suffers from limited arable land but also from unreliable rainfall. The use of the Panama Canal has been limited by changes in water supply among others due to drought as well as deforestation with the result that trade flows are less secure and more costly.⁴⁵ Yet, climate change also results in milder conditions elsewhere. For example, even Scandinavian countries are exploring opportunities for producing wine⁴⁶ and some regions are witnessing longer growth seasons.⁴⁷

⁴² European Environment Agency, "[Greenhouse gas emissions from agriculture in Europe](#)," 2023.

⁴³ See for example: Economist, "[Europe's ambivalence over globalisation veers towards scepticism](#)," The Economist, 20 October 2022; EU Science Hub, "[JRC publishes foresight report on the future of the EU's Open Strategic Autonomy](#)," European Commission, 8 September 2021.

⁴⁴ For a recent overview, see EEA, "[European Climate Risk Assessment](#)," Luxembourg: Publications Office of the European Union, 2024.

⁴⁵ Monica de Bolle, "[The Panama Canal may dry up because of Amazon deforestation](#)," PIIE, 31 January 2024.

⁴⁶ Euronews Green and AP, "[Swedish wine: How global warming is shifting Europe's vineyards northwards](#)," Euronews, 21 August 2023.

⁴⁷ EPA US, "[Climate Change Indicators: Length of Growing Season](#)," EPA.gov, Accessed 15 March 2024.

Change in climate and food scarcity generally leads to social and geopolitical tensions and, possibly, wars.⁴⁸ When it comes to geopolitical tensions, China is a case in point with its efforts to buy land for its grain consumption in Africa and its increase in imports of soya beans from Latin America in order to be less dependent on the USA. Food security has been a traditional concern for Chinese leaders: “[T]he people’s rice bowl must be firmly held in their own hands at all times.”⁴⁹ The Chinese efforts have consequences for food security, deforestation and social security in Africa.⁵⁰ The strive towards independence from China also exposes international food securities and related vulnerabilities elsewhere including in the EU due to increasing prices and uncertainties in terms of supply of input. China is also a threat given its hostilities towards Taiwan, which may ultimately have grave implications for supply routes (also related to agricultural inputs and outputs), price stability and the general debates on independencies.

Having underlined the challenges, there are three specific points we would like to flag to contextualise the debate on food security in the realities of international trade. Firstly, disruptions of trade flows are to some extent hard to predict or to anticipate and, if they occur, they can be a source of new (dangerous or productive) developments that are difficult to foresee. For example, the Russian invasion of Ukraine in 2022 was a step-function for the acceleration of the EU’s renewable energy infrastructure.

Secondly, the danger of geopolitical crises and trade disturbances often tends to cause a headache but not a veritable crisis. As shown in [Annexe 44](#), the EU is in many ways self-sufficient. Moreover, case studies show that trade flows are resilient and trade flows can adapt sometimes surprisingly quickly, such as the replacement of Russian gas with liquid gas from the USA. Similarly, the Russian invasion of Ukraine was highly disruptive for amongst other grain and fertiliser markets, and prices spiralled upwards. The result was inflation, particularly in food prices. Yet, prices had fallen by the end of the year ([Annexes 34](#) and [45-46](#)) although consumer prices remained elevated.⁵¹

Thirdly, even without accession of Ukraine, the self-sufficiency trends further down show that there are no shortages in European food production. Moreover, there are ample opportunities in the EU for better land use, transitions away from animal proteins, and innovations and intensification if enabled by the EU policy framework. Moreover, even with an increase in size of the world population food production can be increased with available technologies. The key problems are unsustainable (threats to environmental quality and biodiversity) production, unequal distribution and waste of food.⁵² Moreover, acknowledging the benefits from forms of self-sufficiency in terms of reliability and stabilisation of markets, trends towards reshoring and self-sufficiency harm the effectiveness and efficiency of international trade (variety of suppliers and markets, differentiation of inputs and products, specialization related to suitability of

⁴⁸ Rob de Wijk, *Power Politics*, Amsterdam University Press, 2016. See also: Clingendael’s [Planetary Security Initiative](#).

⁴⁹ Economist, “[When China worries about food, the world pays](#),” The Economist, 9 April 2022.

⁵⁰ Jevans Nyabiage, “[Can African soybeans help ease China’s reliance on US to feed insatiable demand?](#)”, SCMP.com, 18 November 2023.

⁵¹ Price increases following the Russian invasion of Ukraine were sharper, lasted longer and had a more profound impact on countries with less means to respond. FSIN and Global Network Against Food Crises, “[Global Report on Food Crises 2023](#),” Rome, 2023, 8.

⁵² FSIN and Global Network Against Food Crises, “[Global Report on Food Crises 2023](#),” Rome, 2023, 8.

production factors, development opportunities).⁵³ The resilience in trade flows also implies that sanctions turn out to be less effective due to the possibilities for finding detours.⁵⁴

Furthermore, whereas many still adhere to the prediction of a peak global population around 2080 of more than 10 billion, many agencies and population experts forecasts are lowering their prediction year after year, with some even expecting a peak population reached by 2040 at a much lower figure of less than 9 billion. Fertility rates in many African countries are also declining faster than previously forecasted. If these developments manifest themselves, the challenge of erasing hunger would shift even more from production to distribution, affordability, health and waste.

Besides global demography proving a smaller issue, climate change's effects on global hunger may decrease too. A recent EEA report showed that the global risk of hunger as a consequence of climate change is likely to decrease (as studied by Van Dijk).⁵⁵ Moreover, according to EEA, food choices are not influenced directly by climate change, "but indirectly through food prices."⁵⁶ As such, the effects of climate change on food security should not be overstated.

A final comment on geopolitics concerns the often-felt responsibility of the EU to contribute to feeding the world. However, the real worry is the negative effects the efficient – and to some extent, subsidised – agricultural production in the EU has on the development of competitive agricultural sectors in other parts of the world. Moreover, there are also ample opportunities to innovate and develop agriculture in other parts of the world. Less European exports could stimulate production elsewhere. Rather than exporting agricultural goods from the Fertile Delta, focus on world food security could lay on Dutch and Flemish know-how.⁵⁷

3.4.1 Dependency trends in food security and inputs

In terms of inputs, we see that regarding nitrogen and phosphorus, the EU produced more than what it consumed.⁵⁸ However, we have a dependency for potash and phosphates, necessary to develop other types of fertilisers used in agricultural production (Annexes 47-48).⁵⁹ However, on the other hand, we have an import dependency on several selected inputs (Annexe 49).⁶⁰

For animal products, import dependency for protein-rich feed materials, soya bean and soya bean meal in particular, is particularly severe (up to 84% and 97%). It varies depending on the different animal species (Annexe 44).⁶¹ When it comes to the countries where these products come from, our dependency is located mainly in Brazil and USA for soybeans, Brazil and Argentina for soybean meals, Morocco and Russia for phosphates, and Russia and Belarus for Potash.

⁵³ See for example: Economist, "Europe's ambivalence over globalisation veers towards scepticism," The Economist, 20 October 2022; EU Science Hub, "JRC publishes foresight report on the future of the EU's Open Strategic Autonomy," European Commission, 8 September 2021.

⁵⁴ Richard N. Haass, "Economic Sanctions: Too Much of a Bad Thing," Brookings, 1 June 1998.

⁵⁵ Van Dijk et al., 2021, in: EEA, "European Climate Risk Assessment," Luxembourg: Publications Office of the European Union, 2024, 140.

⁵⁶ EEA, "European Climate Risk Assessment," Luxembourg: Publications Office of the European Union, 2024, 90.

⁵⁷ See also: Frank Bekkers, Koen Aartsma en Tim Sweijts, "Barsten en Blokken Confrontatie en Samenwerking in een Wereld van Wisselende Coalities," The Hague Centre for Strategic Studies & Clingendael Institute, 13 February 2024.

⁵⁸ European Commission, "Fertiliser production," Agridata, 2023.

⁵⁹ Eurostat, "Agri-environmental indicator – mineral fertilizer consumption," Eurostat, Accessed March 2024.

⁶⁰ (soya bean(s)/meals), iron ore, phosphates, copper ore and concentrates and potash)

⁶¹ Alberico Loi et al., "Research for AGRI Committee – The dependency of the EU's food system on inputs and their sources," European Parliament, Policy Department for Structural and Cohesion Policies, Brussels: March 2024, 23.

3.4.2 Import and Export Dependency Trends and the Geopolitical Role of the Fertile Delta

The Fertile Delta is known to be a global actor in agriculture and it is important to understand how this role is touched by current trends. Both export and import figures show an increasing cross-linking (internationalisation/specialisation), but this is mainly with neighbouring countries in the EU ([Annexes 50-52](#)). A strong increase of China as an export partner remains at relatively low levels so poses no major threat to the Dutch or Flemish agricultural sector as a whole ([Annexes 53-56](#)).

Food security has been achieved for the vast majority of the population in Flanders and the Netherlands. There is a sufficiently large and affordable food supply available. However, food poverty in Flanders has been on the rise for years: in 2020, Belgian food banks collected and distributed 24% more food than the previous year. However, the problem of food poverty is not so much related to food production or supply but to inadequate social policies, local food environments and food affordability. That said, self-sufficiency levels are steadily around, or above, 100% for most food categories. In the Netherlands almost all categories are (seriously) above 100%, except for plant-based oils, fruit and grains ([Annexe 57](#)), indicating that food security is no issue for the Netherlands. In Flanders, beyond eggs (95%), only fruit self-sufficiency sits below 100%, at 40%.⁶²

In short, food markets tend to be more resilient than suggested and the Netherlands is not over-dependent on countries beyond direct European neighbours for its agriculture imports and exports.

Box 6 – Food security

In this Discussion Note we argue that food security is a challenge, not a crisis. Trends we see include:

- No shortages in European food production except for protein crops (see 2.4 and [Annexe 44](#))
 - EU Nitrogen and Phosphorus Production Exceeds Consumption (see 2.4.1)
- Resilience of trade flows (see 2.4)
 - See the recuperation of trade in 2022 and the fall in food prices after Russia invasion of Ukraine (see 2.4)
- Expected global demographic development is manageable (if not declining) (see 2.4)
 - Many still adhere to a prediction of peak global population over 10 billion by 2080 (see 2.4)
- Reduction in the global risk of hunger due to climate change (see 2.4)
- Food poverty is not so much related with food production but with food affordability (see 2.4.2)
- In addition, innovation and increase in scale is continuing (see [Annexes 22-28](#))

However, uncertainty factors include:

- Climate change threats in specific agricultural regions in the EU but – in relation to food security – particularly in other parts of the world (see 2.4)
- Climate change and food scarcity leads to social and geopolitical tensions (see 2.4)
- Unpredictable trade flow disruptions can cause unexpected – dangerous or productive – developments (see 2.4)

⁶² ["Agriculture report 2024,"](#) Departement Landbouw & Visserij, 2024.

- EU dependency on soya bean (see [Annexe 44](#)), while new initiatives exist in the CAP to promote the production of protein crops and lower the EU's dependence on imports from overseas and while distribution of production across the EU can be modified
- EU dependency for potash, phosphates and other selected inputs (for fertilisers production) (see [Annexes 47-49](#))
- Food poverty may be on the rise due to price increases (see 2.4.2)
- Increasing differences globally between rich and poor countries

In terms of food security: the future is open. Food security in the long run may not necessarily be a problem. However, we cannot predict the combined effects of uncertain demographic trends, climate change, geopolitical developments and the resilience of international trade. It is up to the political level to determine how to deal with risks to food security.

3.5 Instruments

3.5.1 EU law, its quality and its implementation

The EU is largely based on law. Nothing happens without footing in the Treaty and with dedicated secondary law. Member states are trusted to loyally cooperate with agreed EU rules and objectives and to implement them accordingly. Yet, a first dilemma of EU law is a tendency towards upward harmonisation. Initially, as underlined by the success of Delors '1992' programme, EU law concerned especially with minimum harmonisation as a basis for the famous level playing field. This allowed more flexibility for member states. However, gradually, the trends in the EU moved towards maximum harmonisation of the level playing field.⁶³ The drive towards upward harmonisation partly results from the legislative process where compromises are struck that are gradually increased as policies are regularly evaluated and adapted ('calibration' – the fact that the devil is in the detail). Moreover, we see policy layering: new policies tend to be stacked upon old existing ones, creating policy mixes whose combined impact is difficult to predict, where goals might not be coherent and instruments defined might not be consistent. [Annexe 2](#) shows the layering of policies and requirements that affect the agricultural sector where it concerns sustainability. Similarly, the upward pressure also comes from the fact that instrumentation is not just a rational process but also a political and social process.⁶⁴ Countries and actors all have their preferences and the resulting compromises might not fit the realities of the sector that has to implement the EU policies. As a corollary, the EU tends to suffer from a difference between political intentions and feasibilities.

A second challenge relates to the lack of drawing lessons from other major EU policies, such as the euro and supervision of rule of law (see Box 3), about the difficulties in and politics of implementation and enforcement.⁶⁵ The implication is that economic transition processes such as greening and the related required profound societal adjustments cannot be imposed by law but depend on the gradual recreation of national institutions and on the emergence of societal ownership.

⁶³ Stephen Weatherill, "Maximum versus minimum harmonisation: Choosing between unity and diversity in the search for the soul of the internal market," in: Niamh Nic Shuibhne and Laurence W. Gormley (red.), *From single market to economic union: Essays in memory of John A. Usher*, Oxford: Oxford University Press, 2012, 175-199.

Stephen Weatherill, "The several internal markets," *Yearbook of European Law*, Volume 36, 2017, 125–178.

⁶⁴ Hussein Kassim and Patrick Le Galès (eds), "Governing the EU: Policy Instruments in a Multi-Level Polity," *West European Politics* 33:1, Palgrave, 2010, 1-21.

⁶⁵ Frédéric Mérand, *The political Commissioner*, Oxford University Press, 2021.

The EU has long recognised the problems of increasing detail, juridification of political ambitions, and the related implementation difficulties. The Commission has produced Better Regulation guidelines to support and rationalise the selection of the appropriate instruments.⁶⁶ It contains guidelines for selecting instruments in which the Commission emphasises to opt where possible for light instruments (e.g. ‘open coordination’ – soft law - instead of legislation), to allow maximum room for choices and incentives, and to keep administrative burdens low. The guidelines also warn that hard legal rules imposes a demand for high levels of information and its corresponding monitoring systems, which needs to strike the balance between the principles of comprehensiveness, proportionality, minimal overlap, timeliness and accessibility. One clear example of this high demand of information could be the CRSD (Corporate Sustainability Reporting Directive) aimed at monitoring companies’ achievements in terms of green standards. In formulating policies, including objectives and instrumentation, the Commission also performs an international ‘competitiveness test’. It is highly likely that the competitiveness test of for example the Farm to Fork strategy will reveal major implications for member states, their international competitiveness and administrative burden. However, in answer to questions from EP, the Commission clarified that an impact assessment was not included in the Farm to Fork strategy as it was a Communication.⁶⁷

To move away from juridification in for example EMU, ‘open coordination’ (social peer pressure between member states) was introduced to stimulate ownership in member states for the management of the necessary transitions, and for informing the wider public. It seems that after the reappearance of the farmer movements on the political scenes in 2023 the relevance of these lessons from other areas are now sinking in. As a consequence, more attention is required for instrumentation – other than top-down laws – that allow for gradual shifts in the behaviour of producers and consumers.

3.5.2 The use of the price mechanism

As appeared in discussions with experts and stakeholders as well as in background documents, the use of cost-pricing is a sensitive political discussion. The annexes (see for example [Annexe 37](#)) also show that true cost-pricing is less developed compared to other economic sectors. In principle, the price mechanism (costs and returns) is an important economic coordination instrument. Producers and consumers constantly have to adapt their products, production and behaviour. Economic forces also help to determine where production is feasible and where alternative use of resources leads to higher returns. The price mechanism is one of the forces that allow the outcome of transition processes to be ‘open’. Thousands of producers and consumers interact in so many ways that developments are hard to predict.

By the same token, if governments interfere with these economic forces it can steer towards socially desired developments. It can facilitate innovations (by subsidies and regulation), and it can define how to deal with external effects. Failing to price external effects results in inflexibilities that are harder to turn around at a later stage. Arguably, the increase in meat consumption and production has been facilitated not by pricing external effects. Increases in price differences between animal and plant proteins will not necessarily create social inequality but it will trigger adjustments in consumption. It is the gradual relative adjustments in pricing that offer possibilities for smooth adaptations in consumption and production.

⁶⁶ European Commission, “[Better regulation: guidelines and toolbox](#),” European Commission, accessed 14 February 2024.

⁶⁷ Commissioner Kyriakides, “[Answer given by Ms Kyriakides on behalf of the European Commission](#),” European Commission, 7 April 2021; For an independent impact assessment of F2F, see: [Beckman](#)).

Pricing as an instrument can have different forms. 'True' pricing is hard to define. However, as is also the case in EMU with 'setting the interest rate at the right level', it is not so much the exact level of prices or interest rates, but the direction of market signals that counts. Stimulating adaptive price-setting can also take the form of imposing (tradeable) permits. Permits have the same effect by creating scarcity that will result in higher prices⁶⁸, attract producers who work more efficiently or who adapt outputs, stimulate new consumption patterns, and affect trade patterns. As we see in [Annexe 40](#), phosphorus emissions fall back to lower levels compared to nitrogen.⁶⁹ One part of the explanation lies in the use of permits.

The Fertile Delta has responded well to market pressures. Land scarcity in the densely populated Delta forced innovations and intensification. One of the key questions for the Fertile Delta is what the effects of true pricing will be on the viability of the sector. Yet, steps towards true pricing have been avoided in the EU. As [Annexe 37](#) shows, greenhouse emissions dropped in The Netherlands but not in agriculture. This suggests that agriculture is running somewhat behind the curve in terms of policy trend and that a reconsideration of the toolbox might be called for. In addition to reconsidering the use of permits including monitoring and independent enforcement, questions to address relate to the exclusion of agriculture CO₂ emissions in the European Trading System (ETS) and property tax.⁷⁰ Similarly, tax on sale of arable land and VAT on diesel for agricultural machinery have proven to be highly sensitive.

Discussions with stakeholders showed that the use of price and cost incentives sometimes tend to be equated with cold rationalisation. Alternatively, not introducing elements of true pricing might lead to more profound adjustments at a later stage. The extent to which this perception of the impact of true pricing is warranted and what conclusions can be drawn from experience from transformation processes in other sectors, needs further study.

⁶⁸ Bernard ter Haar, "[Normeren en beprijzen van stikstofemissies](#)," The Hague: ABDTOPConsult, 2021.

⁶⁹ CBS, PBL, RIVM & WUR, "[Nutriëntenoverschotten in de landbouw, 1970-2021 \(indicator 0096, versie 22, 20 maart 2023\)](#)," CLO, 20 March 2023.

⁷⁰ Jasper Lukkezen, "[Laat boeren meebetalen aan de lokale voorzieningen](#)," FD, 11 February 2024.
Hans Vijlbrief, "[Bouwstenen voor een beter belastingstelsel Tweede Kamer](#)," Rijksoverheid, 18 May 2020.

4. Conclusions: moving forward

The agricultural sector in the Fertile Delta has excelled under the influence of supportive geographical conditions as well as competitive disadvantages such as limited space that sparked investments in knowledge and productivity. Adaptation and change have been at the core of the Fertile Delta and the trends discussed show that new ways of working have always been found to overcome hurdles. Efforts now need to be rebalanced not so much to move towards desired future end-states of agriculture but to move away from current frictions as the Fertile Delta has always done successfully. It is important not to overestimate the abilities of governments in reshaping the future, yet governments have to set limits and rules for economic transactions. The current frictions are now to a large extent related to the state of the nature and environment. In part the negative effects of agricultural and other industrial external effects more generally have been underestimated and measures introduced have matured too slowly so that decisive action is now required. Yet, this still demands careful European as well as national ownership. Top-down imposition of legal targets aimed at a distance future are bound to run into trouble not only by overestimating governmental steering capacities, societal support and the abilities to predict the future.

Within the limits of this project⁷¹, the conclusions of this study of key trends are:

- Starting with policies: the trend in the EU has been to move towards high ambitions in the future. Instead, it is more important and more feasible to steer away from current friction areas. If we move away from frictions we can assume that the future will be different from what governments or expects can imagine it to be (compare EMU and the introduction of the euro). Presenting dots on the horizon is hardly useful given the complexities involved. As history shows: the future is open. Moreover, European ambitions are important but national ownership for tailor-made solutions are key. The central role for member states does not preclude an important monitoring and enforcement roles at both the national and EU levels.⁷²
- One trend in agriculture concerns the continuation of productivity growth and upscaling (increasing in size). This is also reflected in the increase in income of farmers (although the income differences spike too). To some extent, we also see a diversification into circular agriculture and a broadening of social services. The implication is that agriculture will remain a vibrant economic sector in the Fertile Delta.
- In terms of sustainable agriculture, the trend towards upscaling is not unwelcome. Larger farms often have a higher potential to become more sustainable, amongst others because they have more financial means to invest in more sustainable technologies and practices and because investments and fixed costs associated with them can be spread over a larger production volume. Even though this potential is not always realised, scientific literature does not suggest that scale enlargement as such is a negative trend for sustainability. Larger farms are also better able to provide decent incomes for farmers (and the notion of 'farmer' as family business sector might be bound to change).
- We find a mixed record in moving towards sustainable production (e.g. more in phosphorous, less in nitrogen; more in Flanders and less in the Netherlands). Pollution per unit of production has largely decreased. Key bottlenecks that demand priority include

⁷¹ More research would allow for further elaboration in addressing points mentioned in this report.

⁷² See for the combination of first line national enforcement and second line EU enforcement: Adriaan Schout, "EU Subsidiarity as an Antidote to Centralisation and Inefficiency," Martens Centre, Brussels: 2022.

water quality and excessive inputs of nitrogen via fertilisers and fodder, and animal welfare. However, due to the sheer size of certain sectors (with some sectors such as poultry and dairy in Flanders where aggregate production has substantially increased), improvements in overall sustainability of the sector as a whole has only improved marginally for some aspects, stagnated for others (e.g. climate) and worsened for issues such as water quality in some places. Hence, much more than the size of individual farms, it is the size of the sector as a whole that is relevant for its overall sustainability and its ability to adapt its production methods.

- In terms of reconciling food security and sustainability, important trade-offs arise between climate and regional sustainability (e.g. climate as a global issue versus more local issues such as nature and water).
- In terms of geopolitical relations, food security is a challenge but not a crisis on the short term. Disturbances in trade flows, and hence in prices, remain highly likely. There is also considerable space to expand agricultural productivity in the EU. De-scaling the size of the agriculture sector will make the EU more vulnerable to geopolitical disturbances and will not serve the global environmental impact (especially with respect to climate) of global food production given the relatively sustainable production methods in the Fertile Delta and elsewhere in the EU. This does not deny the spatial impact referred to above.
- In terms of instruments: continuous adaptations towards more sustainable farming methods remains of key importance. Hence, governments, and the sector itself, have to remain vigilant in adapting steering instruments when trends tend to become unsustainable. In this respect, it is relevant to broaden the use of instruments that strengthen market signals (such – as tradeable – permits, pricing of emissions, levies, tax deduction of research and development, and innovation), and to accurately monitor the effectiveness of existing and foreseen green regulations (such as CSRD – aimed at evaluating companies' total production performance in terms of environmental impact and social wellbeing).

The EU's agricultural policy is bound to change. First of all, the budget for CAP is likely to be reduced over time, accession will alter supply conditions and migration might be slowed down. Secondly, as happened earlier in for example EMU, fixed legislation will become more flexible and tailor-made. Few economic sectors have dots on the horizon or clarity about the future. It is the continuous adaptations and the continuous search to move away from current frictions that create opportunities that, combined, lead to trends that are hard to predict in advance. These conclusions suggest that recent EU policies related to agriculture have been too much future-oriented, too much about EU objectives instead of on national commitments, too much about law and legalisation and insufficiently about monitoring and rebalancing process. It is more important to steer away from frictions using all relevant instruments. This does also demand careful independent monitoring and enforcement at the national and EU levels. The trends discussed in this report could be the start of collective exercises with neighbouring countries to address common frictions, to find new landing zones for (EU) policies, and to learn from each other's progress and failures.

5. Annexes

Annexe 1: Minimum and expected standards and framework conditions

Tabel 5.1 Minimale en verwachte normen en randvoorwaarden.

Doel	Minimale randvoorwaarden Nederland 2030	Verwachte noodzakelijke toekomstige aanscherping
Klimaat	49% CO ₂ eq-reductie t.o.v. 1990 (Klimaatwet).	55% CO ₂ eq-reductie t.o.v. 1990 (2030, de Green Deal).
Stikstof	50% areaal onder kritische depositie waarde en 26% minder emissie (Stikstofwet).	50% minder emissie (adviescollege Stikstof, 2030); plaatselijk sterkere reductie.
Bodem	Duurzaam beheer van het gehele landbouwareaal (Nationaal Bodemprogramma).	50% vermindering pesticiden gebruik; 20% vermindering meststofgebruik; vergroten areaal biologische landbouw naar 25% (2030, 'van-boer-tot-bord'-strategie).
Waterkwaliteit	Goede chemische en ecologische waterkwaliteit (2027, Kaderrichtlijn Water). Minder dan 50 mg nitraat per liter water (Nitraatrichtlijn).	Met de huidige maatregelen wordt verwacht dat slechts 35-65% van de regionale wateren in 2027 voldoet aan de Kaderrichtlijn Water.*
Waterkwantiteit en klimaatadaptatie		Klimaatadaptatie (droogte/wateroverlast), verzilting, bodemdaling.
Biodiversiteit	17 procentpunt verwachte verbetering voor in stand houden van soorten (2030, condities doelbereik Vogel- en Habitatrichtlijn).**	37 procentpunt additionele verbeteropgave voor in stand houden van soorten (2050, condities doelbereik Vogel- en Habitatrichtlijn).***
Dierenwelzijn	-	Verwachte herziening wetgeving dierenwelzijn op EU-niveau, inclusief diervoer en slacht ('van-boer-tot-bord'-strategie).
Diergezondheid	-	Gezonde dieren zijn de norm; minimale kans op uitbraak van dierziekten, 50% reductie antibiotica voor landbouwdieren (2030, 'van-boer-tot-bord'-strategie).
Volksgesondheid	50% sectorale reductie van fijnstof t.o.v. 2019 (sectorplan Pluimveehouderij, programma Vitale Varkenshouderij).	50% reductie antibiotica voor landbouwdieren (2030, 'van-boer-tot-bord'-strategie), nieuwe reductiedoelstelling fijnstof voor relevante andere sectoren.

* Planbureau voor de Leefomgeving (2020) *Kwaliteit oppervlaktewater Europese kaderrichtlijn water*.

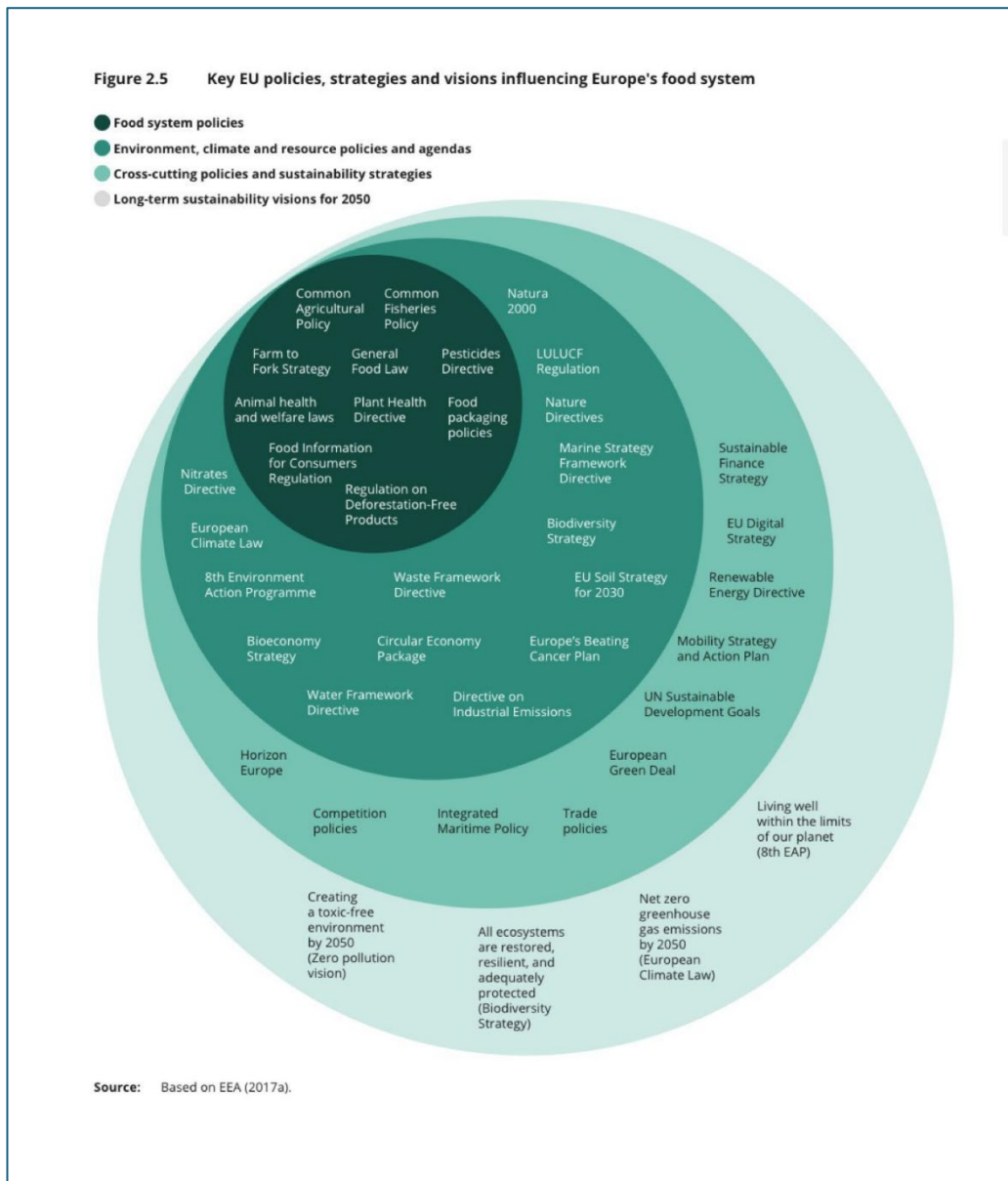
** Planbureau voor de Leefomgeving (2020) *Tussenrapportage Natuurverkenning 2050*, en Tweede Kamer (2019-2020) 35 334 *Hooflijnen van het gezamenlijke programma Natuur*, nr. 131.

*** De resterende verbeteropgave van 37 procentpunt komt bovenop de al geraamde 17 procentpunt verbetering die in 2030 kan worden bereikt bij voortzetting van huidig beleid, op basis van 100% VHR-doelbereik. Zie: Planbureau voor de Leefomgeving (2020) *Tussenrapportage Natuurverkenning 2050*, en Tweede Kamer (2019-2020) 26 407 *Brief van de minister van Landbouw, Natuur en Voedselkwaliteit*, nr. 130.

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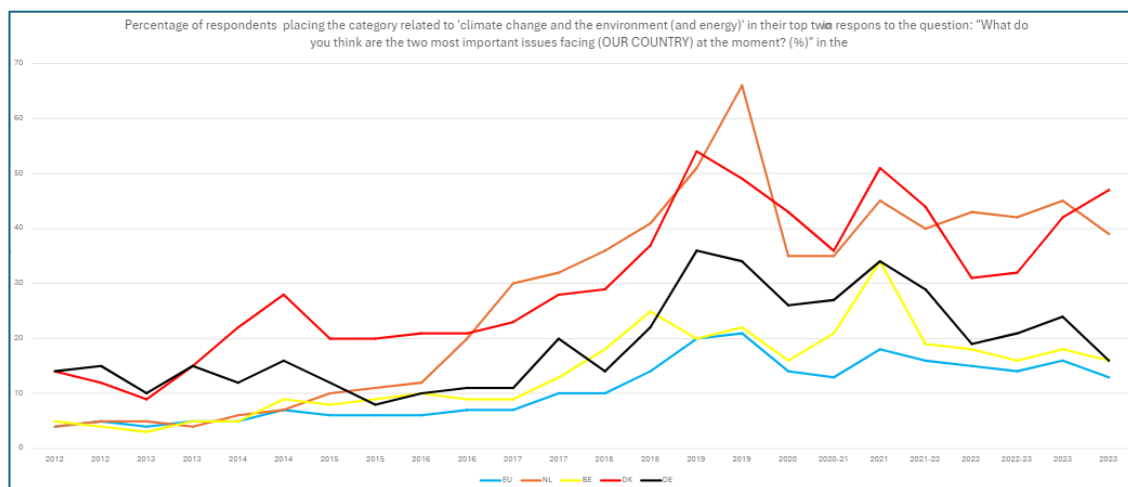
⁷³ Sociaal Economische Raad, "Naar duurzame toekomstperspectieven voor de landbouw," Verkenning 21/06, Mei 2021, 21.

Annexe 2: Key EU policies, strategies and visions influencing Europe's food system



⁷⁴ EEA, "Transforming Europe's food system – Assessing the EU policy mix," EEA Report 14, 2022.

Annexe 3: Public Support: Climate change and the environment in the top 2 of most important issues to [our country] 2012-2023



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Annexe 4: Views on globalisation issues, population 18+, 2008-2021/2 (%) (NL)

Tabel 1.4 Opvattingen over globaliseringskwesties, bevolking van 18+, 2008-2021/2 (in procenten)^{a,b}

		2008-2013	2014-2019	20/1	20/2 (MR)	20/2 (LISS)	20/4	21/2
Nederland zou een prettiger land zijn als er minder immigranten zouden wonen.	oneens	33	32	32	35	36	35	35
	eens	39	39	42	36	34	33	31
De aanwezigheid van verschillende culturen is winst voor onze samenleving.	oneens	26	26	25	22	23	23	21
	eens	42	43	47	48	47	45	46
Het Nederlandse lidmaatschap van de EU is een goede zaak.	oneens	19	21	22	15	15	18	14
	eens	45	46	52	55	52	46	54
Mensen zoals ik ondervinden vooral nadelen van het verdwijnen van de grenzen en het meer open worden van onze economie.	oneens	42	41	45	51	49	47	47
	eens	19	22	19	13	14	13	10
Nederland moet meer dan nu bijdragen aan de oplossing van internationale klimaatproblemen.	oneens	31	26	34	29	26	24	20
	eens	29	38	37	35	37	42	50

a De percentages eens en oneens tellen samen met neutraal / ik weet het niet op tot 100%. De stellingen zijn niet altijd in alle kwartalen voorgelegd. In de laatste kolom zijn percentages vetgedrukt als die dit kwartaal significant ($p < 0,01$) afwijken van de voorgaande meting.

b Deze stellingen zijn in juli 2020 niet aan het LISS-panel voorgelegd.

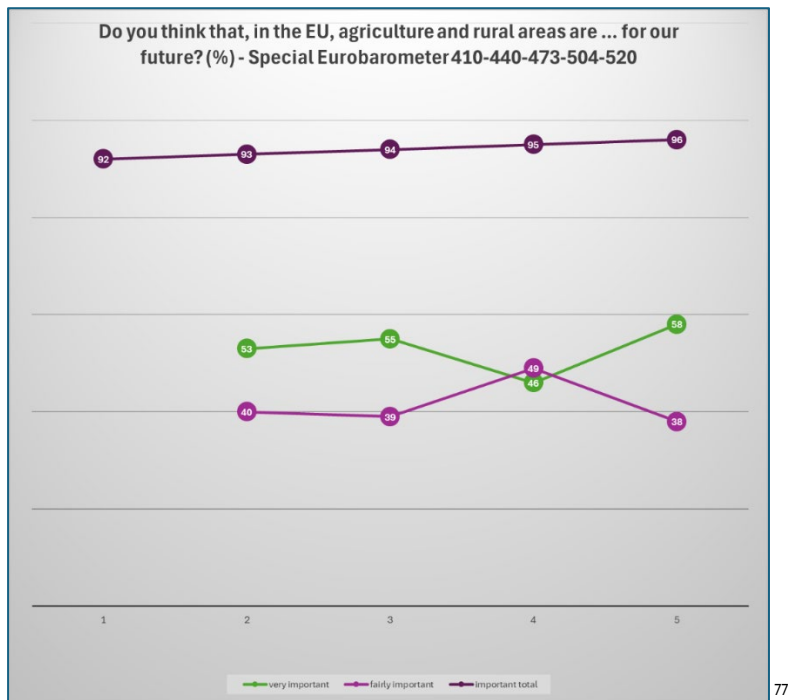
Bron: COB 2008/1-2021/2

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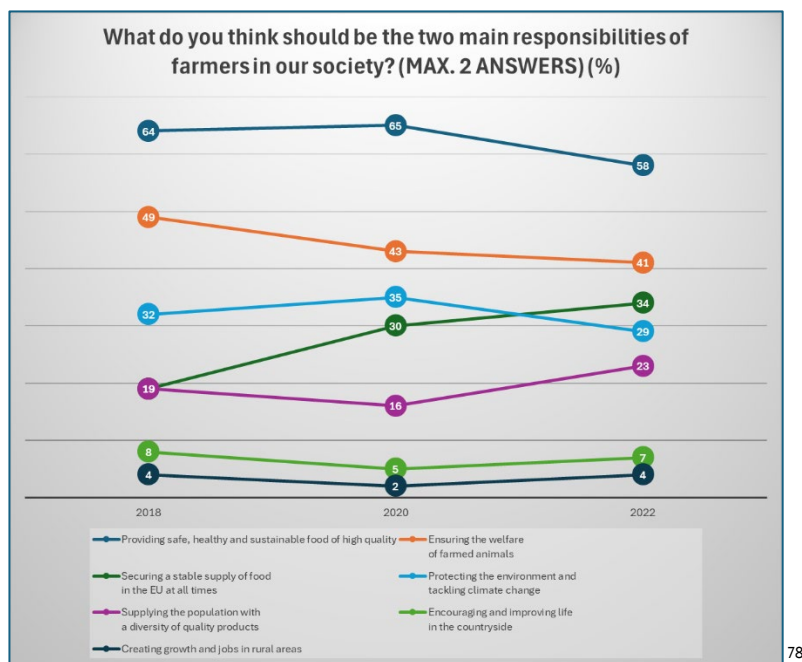
⁷⁵ Own draft, based on Eurobarometer Standard surveys 77-100 (Spring 2012 - Autumn 2023), Country Factsheets Belgium, Denmark, Germany, Netherlands.

⁷⁶ Emily Miltenburg, Josje den Ridder, Fieke Wagemans and Joep Schaper, "Burgerperspectieven 2021 | Kwartaal 2," SCP, 30 June 2021, 35.

Annexe 5: Perceived importance of agriculture and rural areas for 'our' future (NL)



Annexe 6: Perceived key responsibilities of farmers in 'our' society (NL)



⁷⁷ Eurobarometer, "Eurobarometer Special Surveys 473-504-520."

⁷⁸ Eurobarometer, "Eurobarometer Special Surveys 473-504-520."

Annexe 7: Priorities for the European Parliament, population aged 15+, 2017 (in %) (NL)

Tabel 4.7

Prioriteiten voor het Europees Parlement, bevolking van 15+, 2017 (in procenten)^a

	EU		Nederland	
	perceptie	wens	perceptie	wens
klimaatverandering en bescherming van het milieu	5	9	6	16
werkgelegenheid en sociale zaken	6	13	5	13
onderwijs, scholing, cultuur en media	4	11	3	13
volksgezondheid	5	13	2	11
defensie en veiligheid	10	8	8	10
economische groei	10	11	12	9
wetenschappelijk onderzoek	4	7	3	6
energiezaken	5	5	3	5
ontwikkeling en humanitaire hulp aan landen buiten de EU	5	3	5	4
immigratiezaken	9	5	7	4
regionale investeringen	6	5	8	3
landbouw en plattelandsontwikkeling	9	6	14	3
hulp aan EU-buurlanden, inclusief kandidaat-lidstaten	7	2	11	2
vervoer	2	2	2	1
bestuurs- en personeelskosten, gebouwen	12	1	12	0
totaal	100	100	100	100

a Perceptie: 'Aan welk van de volgende zaken geeft de Europese Unie volgens u het grootste deel van haar budget uit? Als eerste, tweede, nog andere?'; wens: 'Aan welk van de volgende zaken zou de Europese Unie volgens u als eerste haar budget moeten uitgeven, als tweede, nog andere?' Vermeld zijn keuzes voor een post als percentage van het totaal aantal genoemde posten per kolom. De posten zijn geordend naar afnemende wenselijkheid in Nederland.

Bron: EB 89.1 (2018)

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Annexe 8: Agricultural and horticultural holdings by business type, 2000-2022 (NL)

Tabel 2.3 Land- en tuinbouwbedrijven naar bedrijfstype, 2000-2022

	Aantal bedrijven					Vershil (%)
	2000	2010	2020	2021	2022	2021-2022
Glastuinbouw- en champignonbedrijven	8.804	4.573	2.790	2.792	2.794	0,1
Opengrondstuinbouwbedrijven	10.489	7.450	5.638	5.715	5.698	-0,3
Akkerbouwbedrijven	14.799	11.962	11.174	11.189	12.921	15,5
Melkveebedrijven	23.280	17.519	14.542	14.119	13.597	-3,7
Overige graasdierbedrijven	20.208	19.073	10.117	10.254	8.238	-19,7
Intensieve veehouderijbedrijven	12.058	7.911	5.438	5.045	4.880	-3,3
Gecombineerde bedrijven	7.751	3.836	2.996	2.993	2.847	-4,9
Land- en tuinbouwbedrijven, totaal	97.389	72.324	52.695	52.107	50.975	-2,2

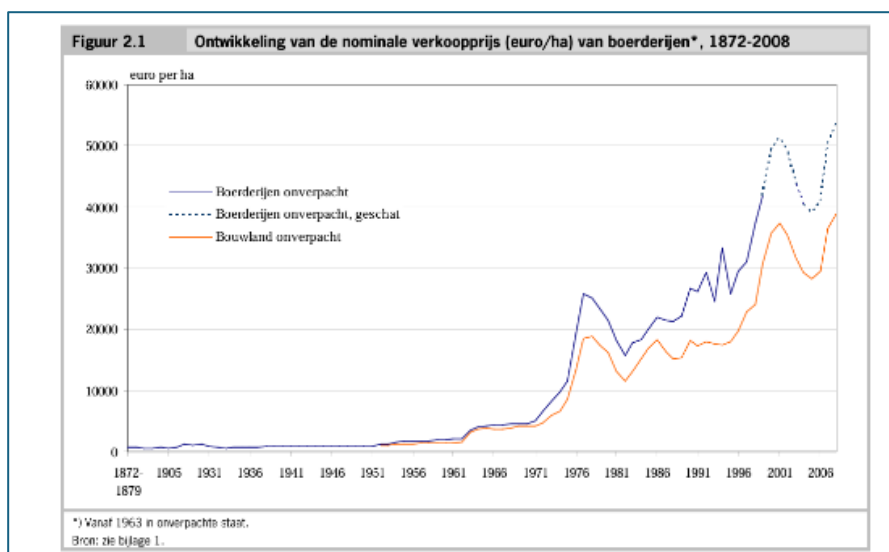
Bron: CBS, bewerking Wageningen Economic Research.

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⁷⁹ SCP, "Wat willen Nederlanders van de Europese Unie?," SCP, 17 May 2019.

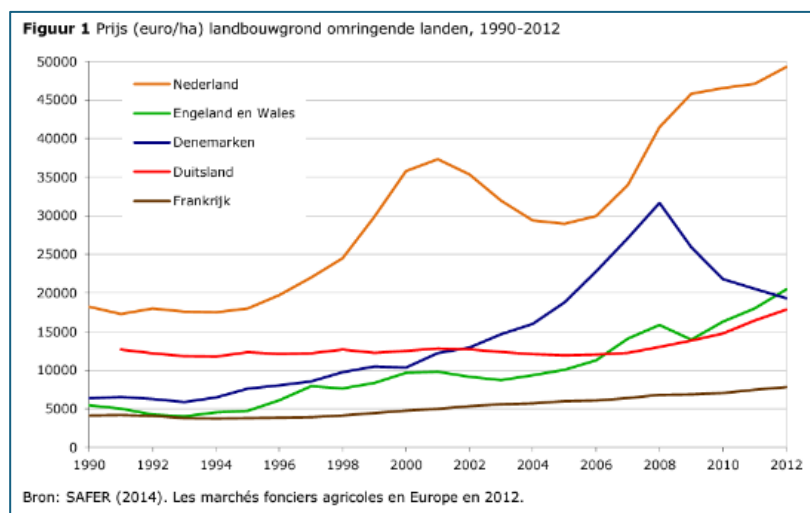
⁸⁰ P. Berkhout (red.), H. van der Meulen and P. Ramaekers, "Staat van Landbouw, Natuur en Voedsel. Editie 2023," Wageningen Economic Research, November 2023, 45.

Annexe 9: Evolution of nominal sale price (euro/ha) of farms, 1872-2008 (NL)



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Annexe 10: Price (euro/ha) agricultural land surrounding countries, 1990-2012 (NL)



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⁸¹ Jan Luijt and Martien Voskuilen, "Langetermijnontwikkeling van de agrarische grondprijs," LEI Wageningen UR, March 2008, 8.

⁸² Huib Silvis and Martien Voskuilen, "Internationale agrarische grondprijzen," LEI Wageningen UR, June 2014, 1.

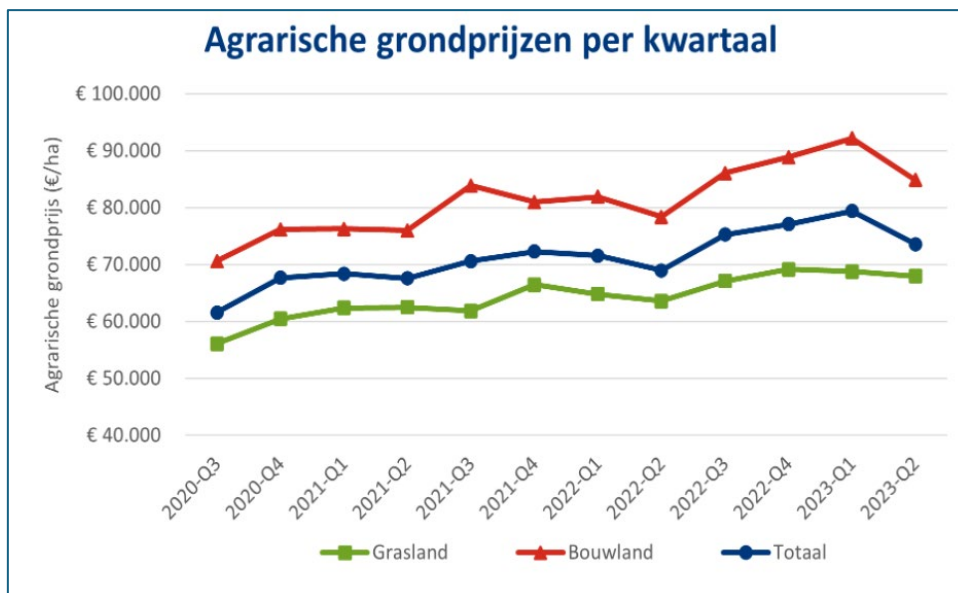
Annexe 11: Price per hectare of land, 2012-2022 (NL)

Prijns per hectare grond			
	Totaal	Grasland	Bouwland
Jaar 2012	€ 47.500	€ 43.600	€ 51.000
Jaar 2013	€ 49.400	€ 45.400	€ 53.800
Jaar 2014	€ 52.000	€ 48.100	€ 56.800
Jaar 2015	€ 55.200	€ 50.600	€ 60.600
Jaar 2016	€ 57.900	€ 52.800	€ 65.700
Jaar 2017	€ 59.400	€ 55.500	€ 65.500
Jaar 2018	€ 60.900	€ 56.000	€ 69.000
Jaar 2019	€ 62.200	€ 56.500	€ 71.400
Jaar 2020	€ 63.600	€ 58.400	€ 71.800
Jaar 2021	€ 67.100	€ 62.000	€ 74.400
Jaar 2022	€ 73.400	€ 66.300	€ 84.700

Bron: NVM en Kadaster (t/m jaar 2014), Kadaster (vanaf jaar 2015)

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Annexe 12: Agricultural land prices by quarter, 2020 Q3 - 2023 Q2 (NL)

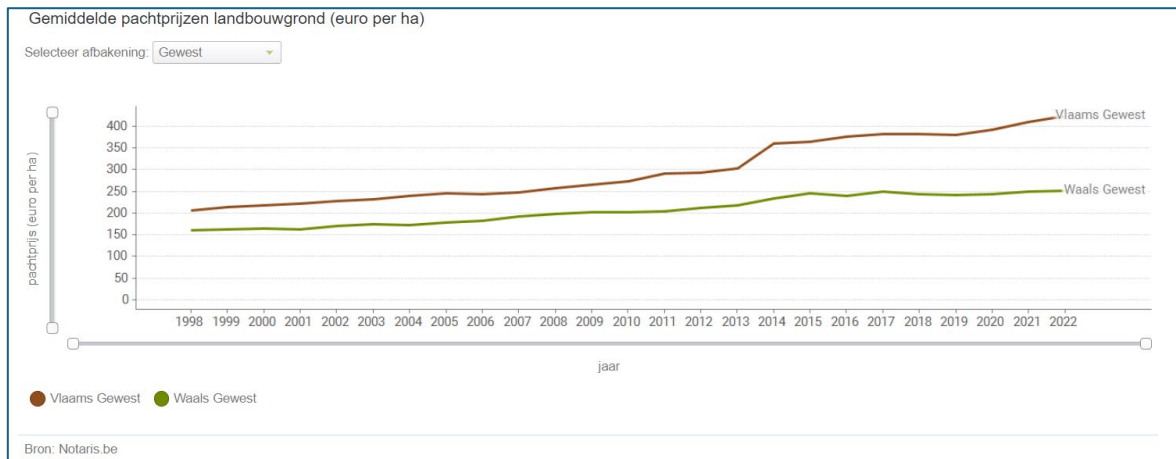


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⁸³ NVM, "Agrarische grondprijzen," NVM.nl, accessed on 9 January 2024.

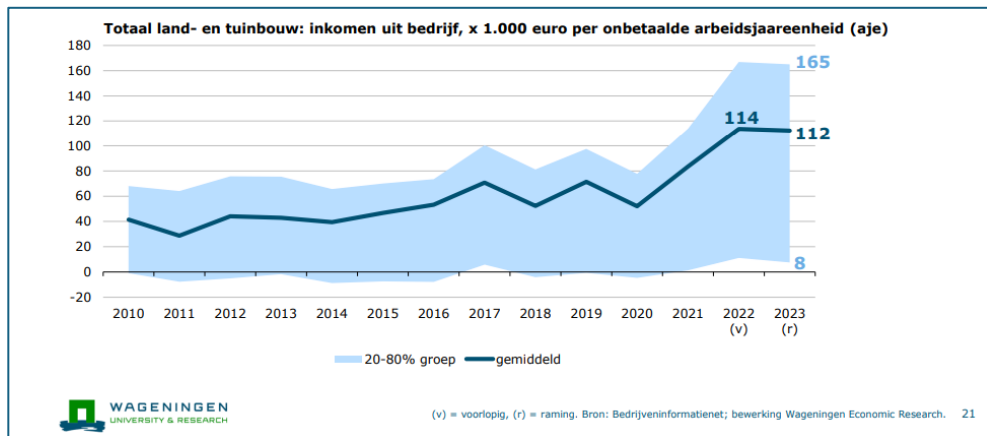
⁸⁴ Kadaster, "Kwartaalbericht agrarische grondmarkt 2023-2," Kadaster.nl, 26 July 2023.

Annexe 13: Average lease price agricultural land (euro per ha) (FL)



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Annexe 14: Total agriculture and horticulture: farm income, x €1,000 per unpaid annual work unit (NL)

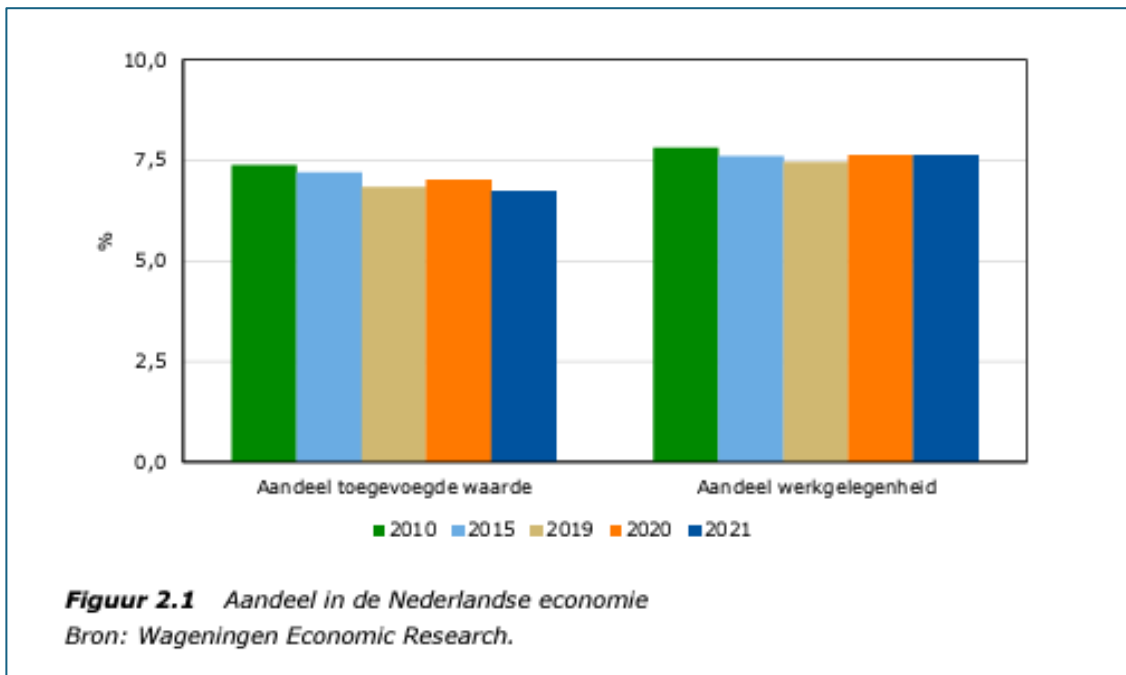


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⁸⁵ Notaris.be, "Grondprijzen," Agentschap Landbouw & Zeevisserij, 2023.

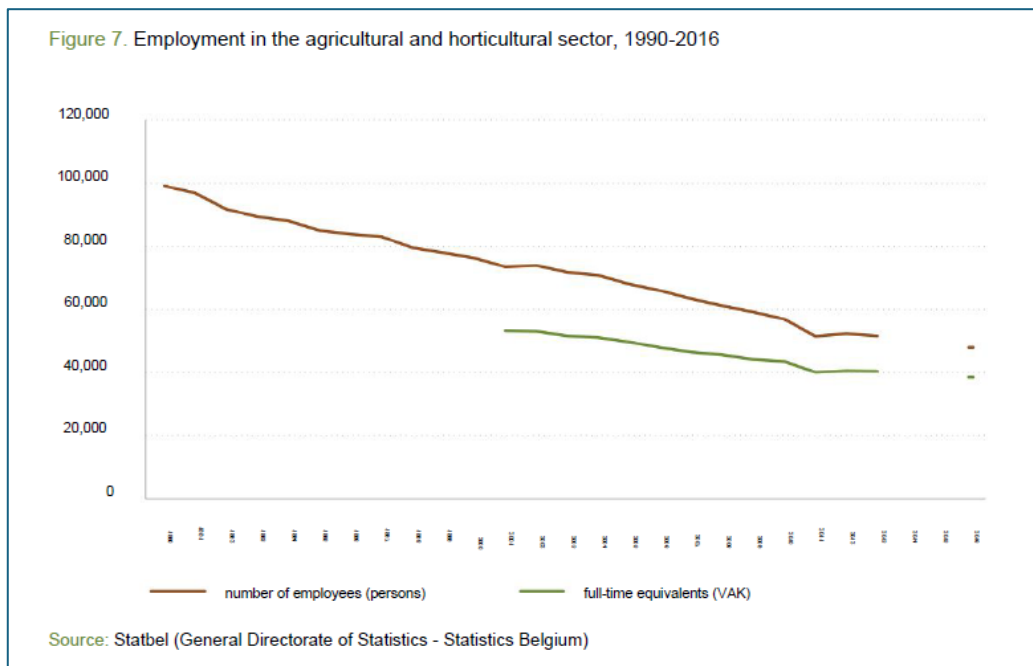
⁸⁶ WUR, "Inkomensraming 2023: grote inkomensverschillen in de land- en tuinbouw," WUR.nl, 18 December 2023, 21.

Annexe 15: Share of 'agri-complex' in Dutch economy



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Annexe 16: Employment in the agricultural and horticultural sector, 1990-2016 (FL)

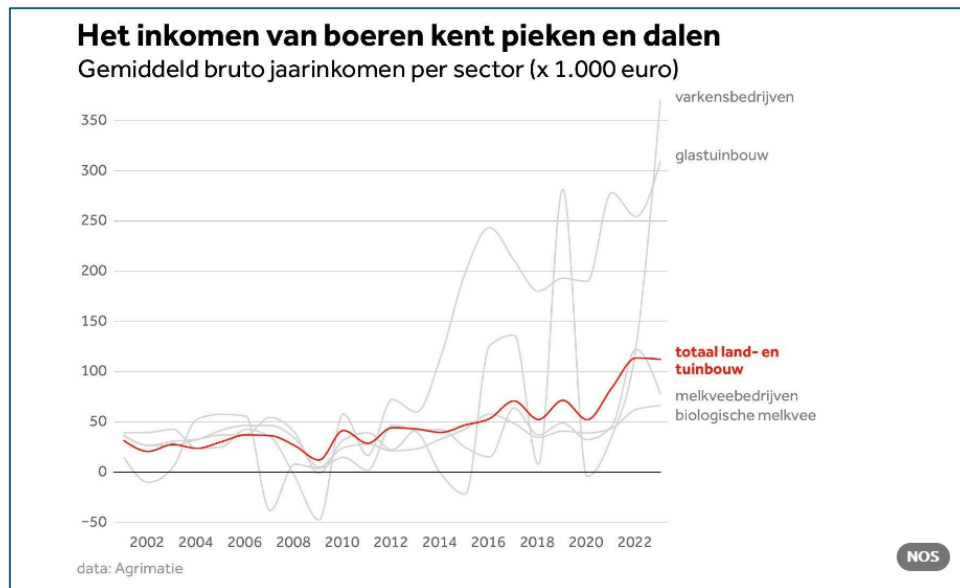


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⁸⁷ P. Berkhout (red.), H. van der Meulen and P. Ramaekers, "Staat van Landbouw, Natuur en Voedsel. Editie 2023," Wageningen Economic Research, November 2023, 20.

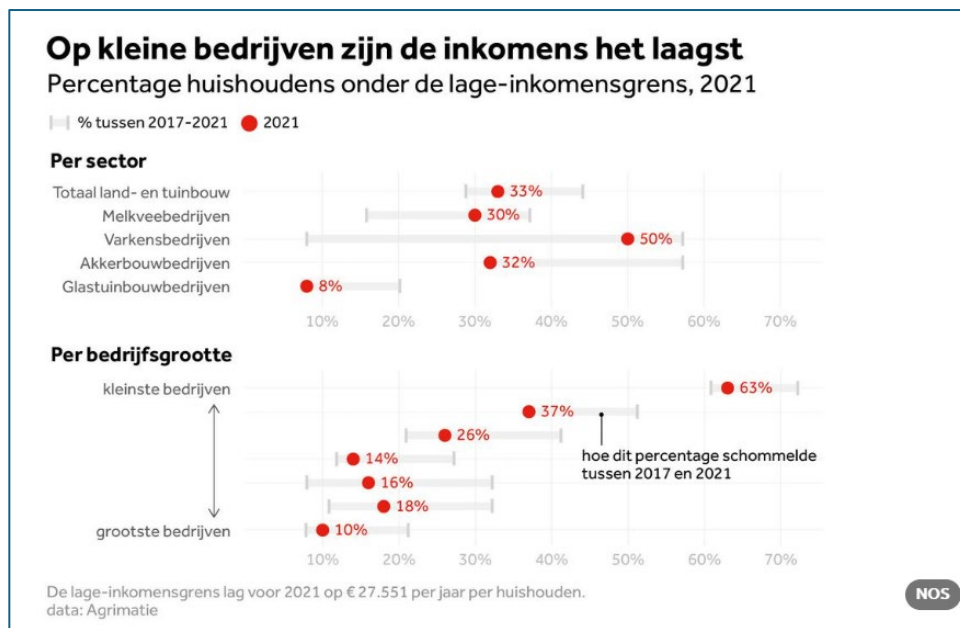
⁸⁸ "Landbouwrapport 2020," Department Landbouw & Visserij, 2020, 23.

Annexe 17: Average gross annual income per farm sector (x 1,000 euros) (NL)



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Annexe 18: Percentage of farm households below low-income threshold, 2021 (NL)

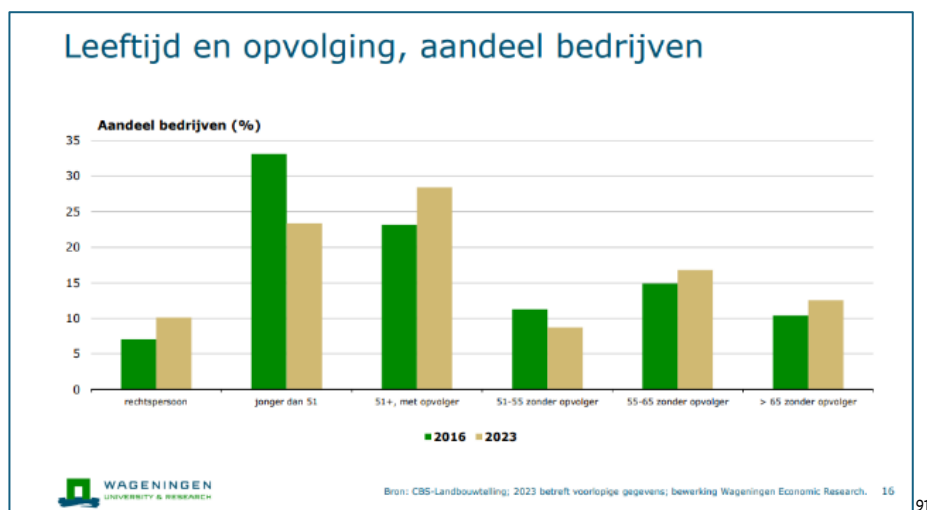


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⁸⁹ NOS, "De boer bestaat niet, grote inkomensverschillen tussen bedrijven en sectoren," NOS.nl, 11 February 2024.

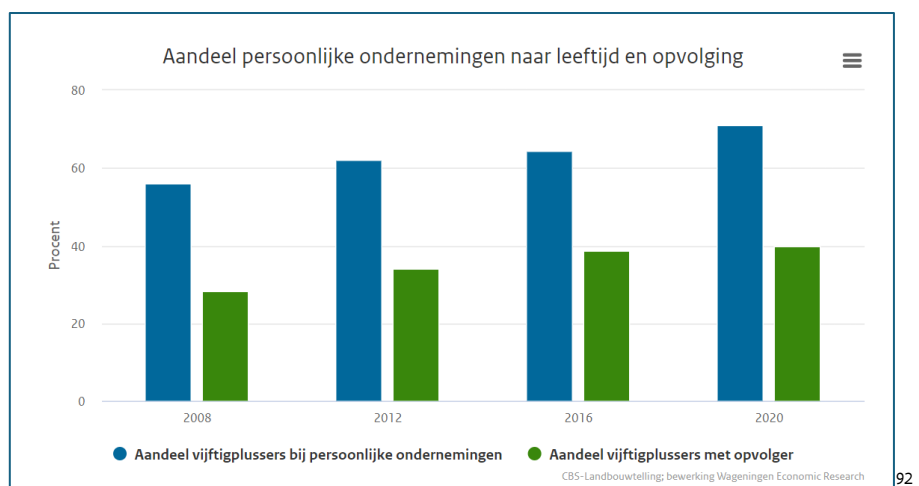
⁹⁰ NOS, "De boer bestaat niet, grote inkomensverschillen tussen bedrijven en sectoren," NOS.nl, 11 February 2024.

Annexe 19: Age and succession, share of businesses (NL)



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Annexe 20: Share of personal enterprises by age and succession (NL)

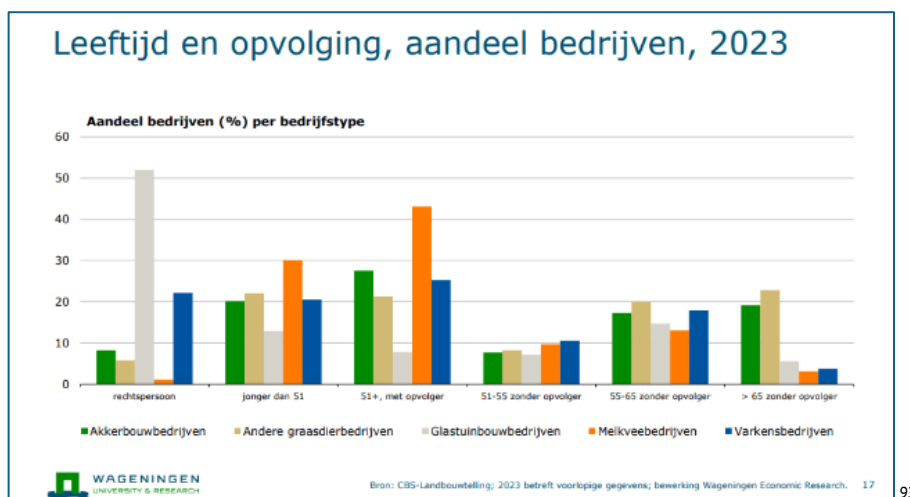


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⁹¹ "Leefstijd en opvolging, aandeel bedrijven," CBS Landbouwteiling/WUR, 2023.

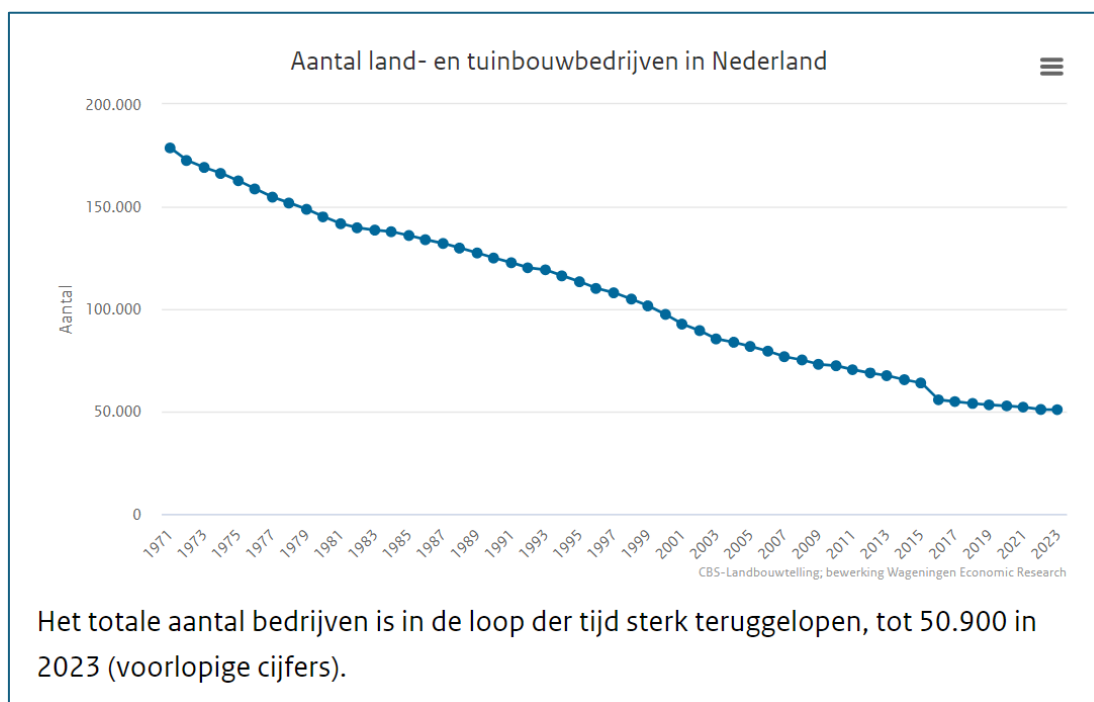
⁹² CBS-Landbouwteiling, "Opvolgingspercentage land- en tuinbouw," Staat van Landbouw, Natuur en Voedsel. Accessed 11 January 2024.

Annexe 21: Age and succession, share of farms, 2023 (NL)



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Annexe 22: Number of agricultural and horticultural enterprises in the Netherlands

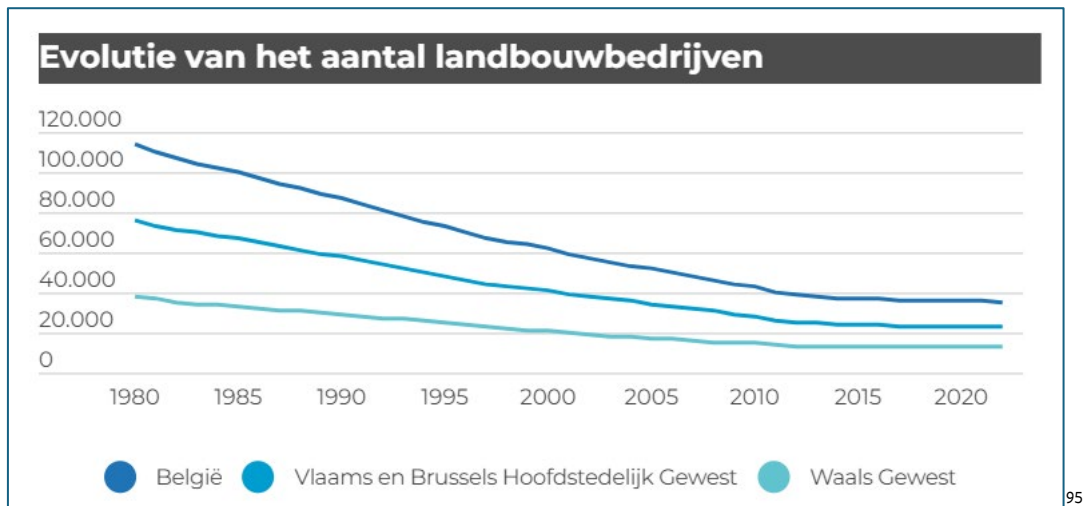


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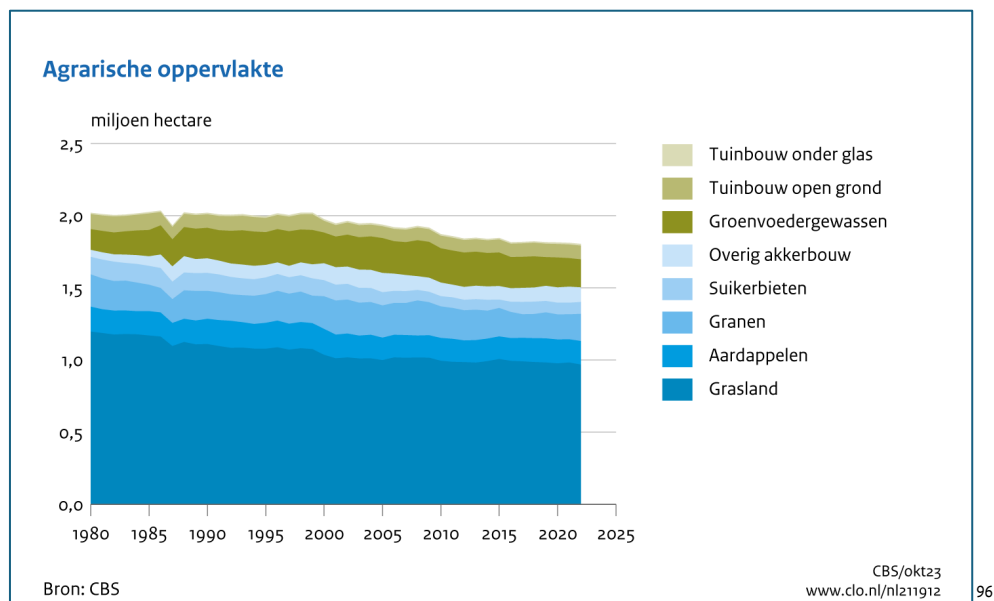
⁹³ CBS Landbouwtelling / WUR

⁹⁴ CBS-Landbouwtelling, "Aantal land- en tuinbouwbedrijven - Totaal," Staat van Landbouw, Natuur en Voedsel. Accessed 11 January 2024.

Annexe 23: Evolution of the number of agricultural businesses (FL)



Annexe 24: Agricultural area (NL)



⁹⁵ Statbel, "Kerncijfers Landbouw 2023," StatBel.fgov.be, 2023, 5.

⁹⁶ Compendium voor de Leefomgeving, "Land- en tuinbouw: ruimtelijke spreiding, grondgebruik en aantal bedrijven, 1980-2022," 25 October 2023.

Annexe 25: Agricultural land use, 2000–2022 (NL)

Tabel 2.4 Agrarisch grondgebruik, 2000-2022 a)

	Areaal (1.000 ha)					Vershil (%)
	2000	2010	2020	2021	2022	2021-2022
Grasland en voedergrassen	1.249,5	1.232,9	1.184,4	1.180,8	1.163,6	-1,5
w.v. grasland	1.036,7	995,3	977,5	983,6	969,6	-1,4
snijmais	205,3	230,8	195,8	186,1	183,3	-1,5
Akkerbouw	634,4	542,1	526,8	525,8	534,7	1,7
w.v. granen	225,7	218,8	173,6	173,4	188,2	8,6
aardappelen	180,2	158,3	165,6	160,3	163,1	1,7
suikerbieten	110,9	70,6	81,5	80,7	81,7	1,3
overig	117,6	94,5	106,2	111,4	101,7	-8,7
Tuinbouw open grond	81,1	87,1	93,1	94,8	95,4	0,6
w.v. groenten	22,4	24,5	26,0	27,0	26,4	-1,9
fruit	20,6	19,5	19,9	19,8	19,7	-0,2
bloembollen	22,5	23,3	27,0	27,3	28,0	2,9
boomkwekerij	12,6	16,9	16,7	17,0	17,2	1,2
Tuinbouw onder glas	10,5	10,3	10,1	10,6	10,6	0,9
w.v. groenten	4,2	5,0	5,6	5,8	5,8	-1,0
sierteelt	5,9	4,8	3,9	4,1	4,2	3,7
Cultuurgrond, totaal	1.975,5	1.872,3	1.814,5	1.811,9	1.804,4	-0,4

a) Peildatum 15 mei.
Bron: CBS-landbouw telling.

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Annexe 26: Destination of the utilised agricultural area (FL)

Table Destination of the utilised agricultural area, 2012 and 2018-2022

	2012	2018	2019	2020	2021	2022
fodder	345,847	352,809	351,445	351,317	353,633	343,793
pastures	228,426	223,144	224,541	221,389	223,176	215,901
maize	114,558	125,159	122,281	125,231	125,142	122,543
arable farming	221,472	207,957	212,598	208,799	204,637	215,800
cereals	151,486	127,299	127,163	123,652	123,624	134,446
potatoes	35,752	48,577	53,364	51,895	48,275	49,500
sugar beets	20,703	19,846	18,537	18,555	18,489	17,725
horticulture	49,211	55,737	54,795	55,692	57,645	50,987
vegetables	26,327	31,719	31,099	32,260	33,990	27,449
fruit	16,751	17,837	17,632	17,414	17,336	17,352
other horticulture	6,133	6,182	6,065	6,018	6,319	6,186
other uses	1,652	2,462	2,864	8,918	8,720	9,225
utilised agricultural area	618,183	618,965	621,702	624,727	624,634	619,806

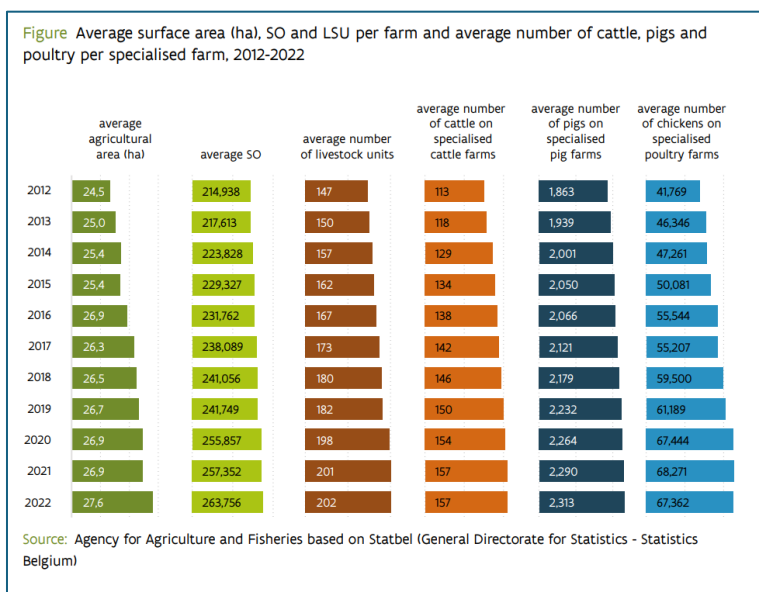
Source: Agency for Agriculture and Fisheries based on Statbel (General Directorate for Statistics - Statistics Belgium)

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⁹⁷ P. Berkhout (red.), H. van der Meulen and P. Ramaekers, "Staat van Landbouw, Natuur en Voedsel. Editie 2023," Wageningen Economic Research, November 2023, 48.

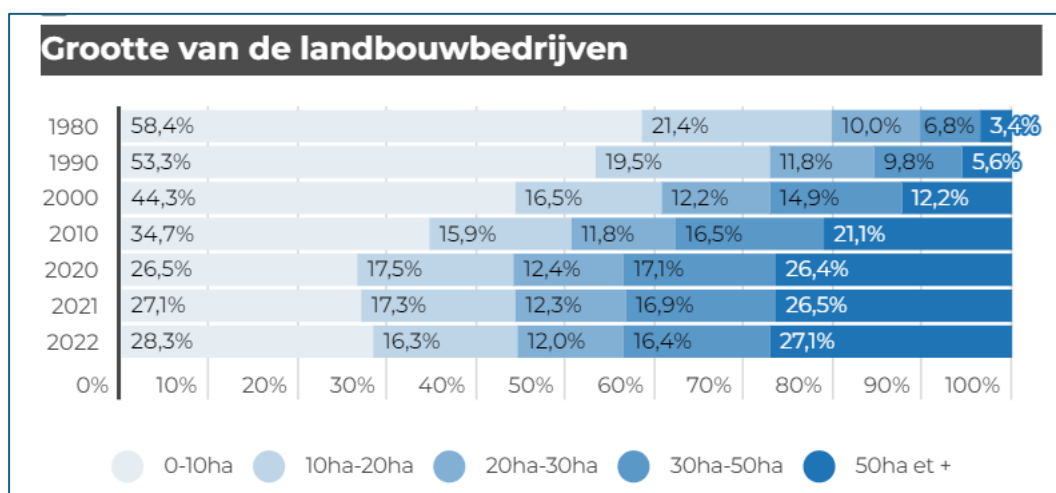
⁹⁸ Agriculture report 2024, Departement Landbouw & Visserij, 2024, 53.

Annexe 27: Average surface area per farm and average number of livestock per specialised farm, 2012-2022 (FL)



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Annexe 28: Size of agricultural businesses (FL)



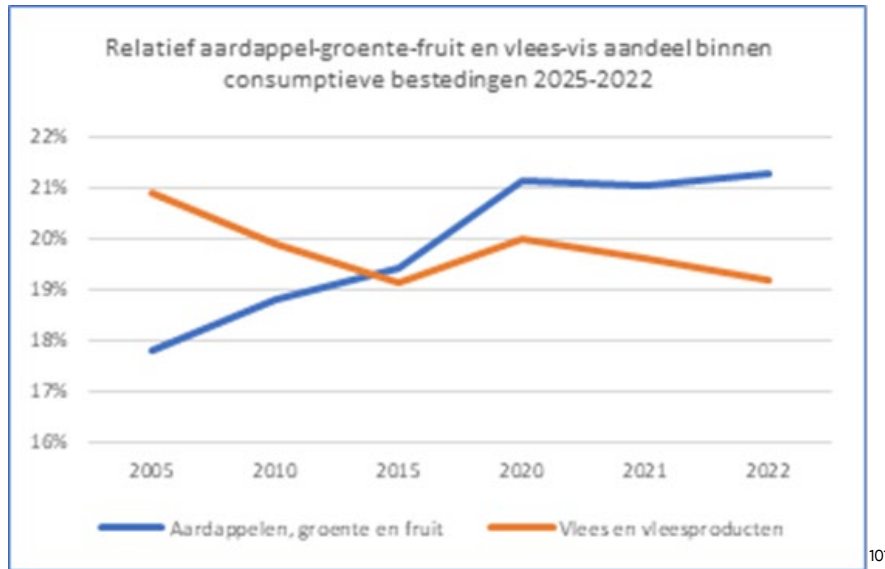
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⁹⁹ "Agriculture report 2024," Department Landbouw & Visserij, 2024, 56.

¹⁰⁰ Statbel, "Kerncijfers Landbouw 2023," StatBel.fgov.be, 2023, 5.

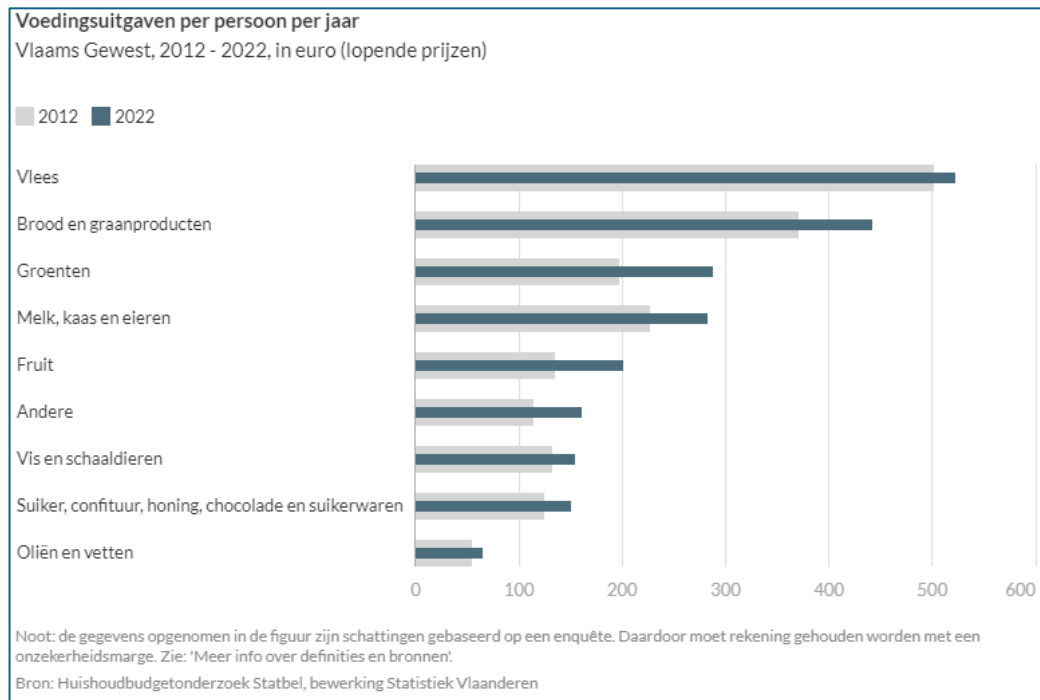
¹⁰⁰ "Agriculture report 2024," Department Landbouw & Visserij, 2024, 7

Annexe 29: Relative potato-fruit and meat-fish share within consumption expenditure, 2005-2022 (NL)



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Annexe 30: Food expenditure per person per year per good (in euro,) (FL)

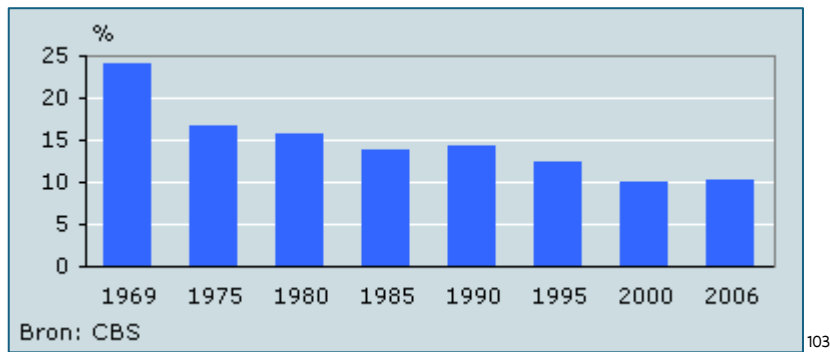


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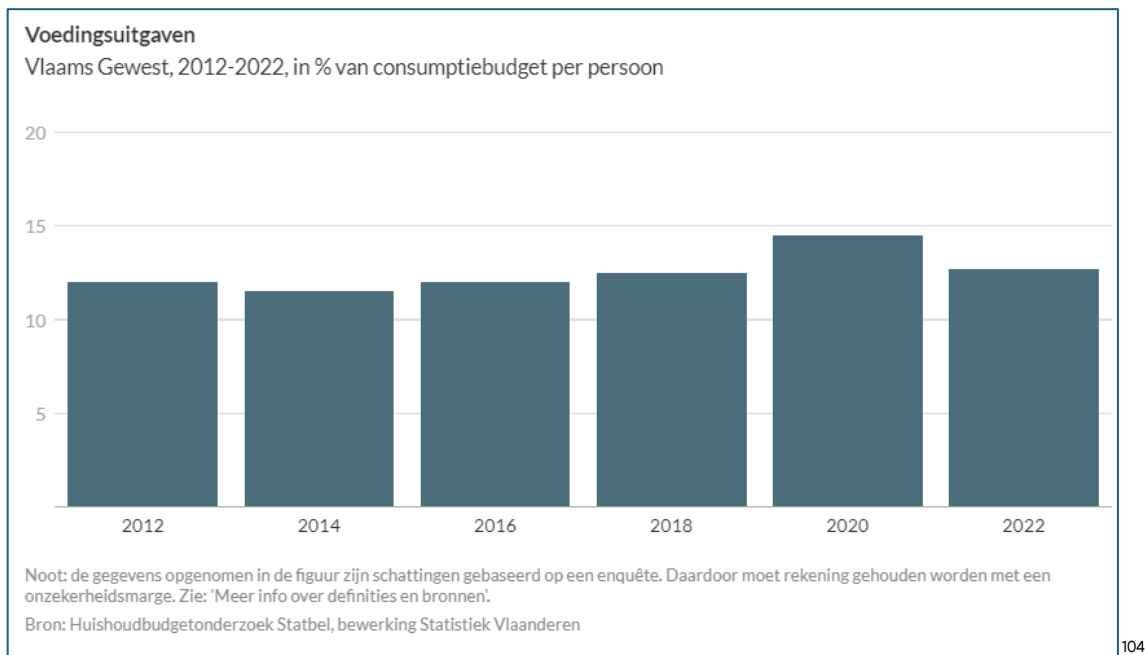
¹⁰¹ Own draft, based on CBS data gathered from: Agrimatie, "Uitgaven aan voedsel," Agrimatie.nl, 11 December 2023.

¹⁰² Statistiek Vlaanderen, "Consumptie van voedingswaren," Statistiek Vlaanderen, 10 October 2023.

Annexe 31: Share of nutrition within total expenditure (NL)



Annexe 32: Food expenditure (in % of consumer expenditure per person) (FL)



¹⁰³ CBS, "Aandeel voeding in huishoudbudget steeds kleiner," CBS.nl, 15 October, 2008.

¹⁰⁴ Statistiek Vlaanderen, "Consumptie van voedingswaren," Statistiek Vlaanderen, 10 October 2023.

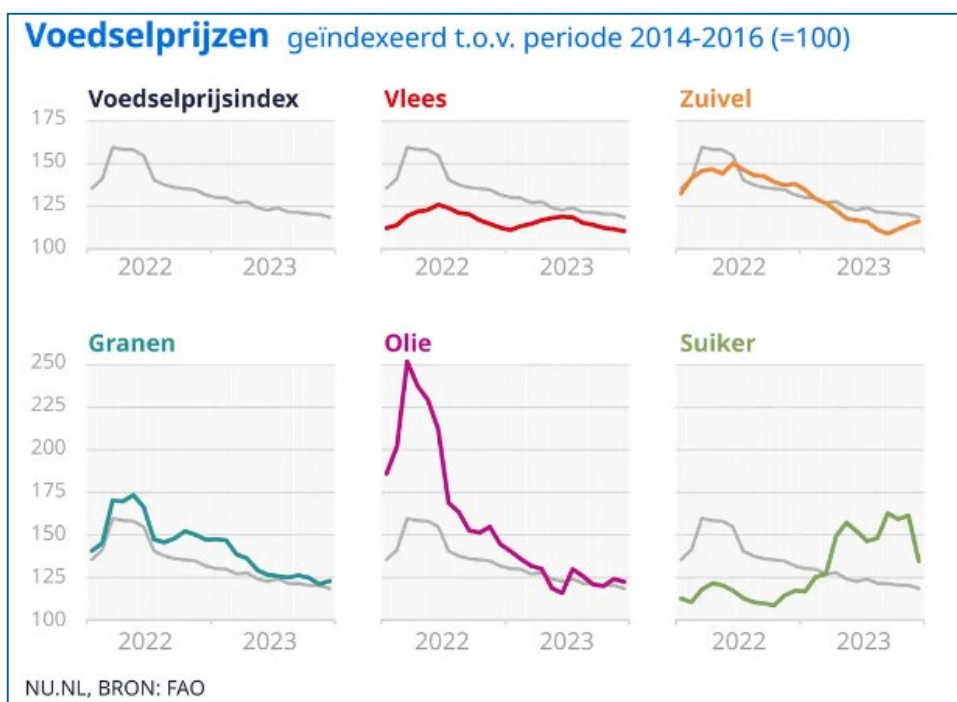
Annexe 33: Household consumption expenditure (bn. euros), 2017–2021 (NL)

Consumptieve bestedingen van huishoudens ^a (mld. euro) ^b , 2017–2021					
	2017	2018	2019	2020	2021 ^d
Totaal consumptieve bestedingen aan goederen en diensten	327	342	354	335	360
Voedingsmiddelen en dranken ^c	37	38	40	44	45
Aandeel (%) voedingsmiddelen en dranken	11,3	11,1	11,3	13,1	12,4

^a Betreft de consumptieve bestedingen door huishoudens inclusief instellingen zonder winstoogmerk ten behoeve van huishoudens.
^b Tegen werkelijke prijzen.
^c Betreft bestedingen van consumenten via de handel of direct. Uitgaven in horeca en catering worden niet meegenomen. Deze vallen onder uitgaven aan diensten.
^d Voorlopige cijfers.
Bron: CBS Consumptieve bestedingen; verbruiksfunctie, nationale rekeningen. Berekening: Wageningen Economic Research.

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Annexe 34: Food prices, indexed vs 2014–2016 period (=100)

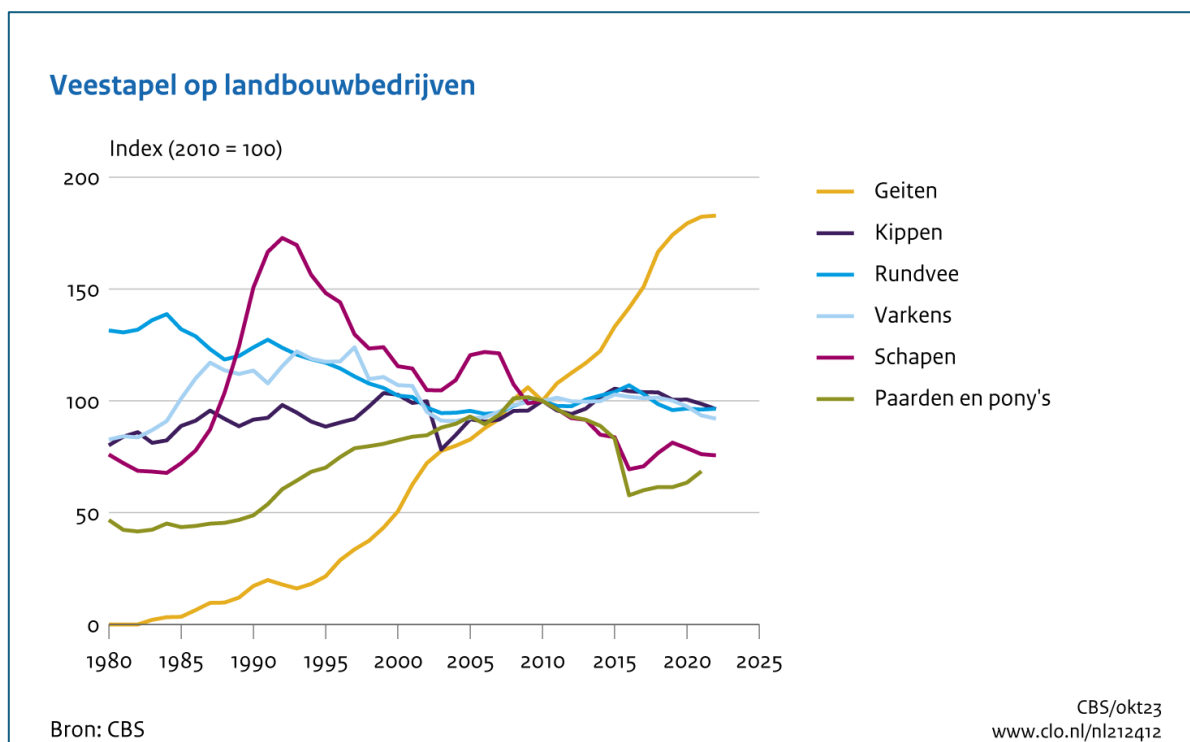


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¹⁰⁵ WUR, "Uitgaven aan voedsel," Agrimatie – informatie over de agrosector, 28 November, 2022.

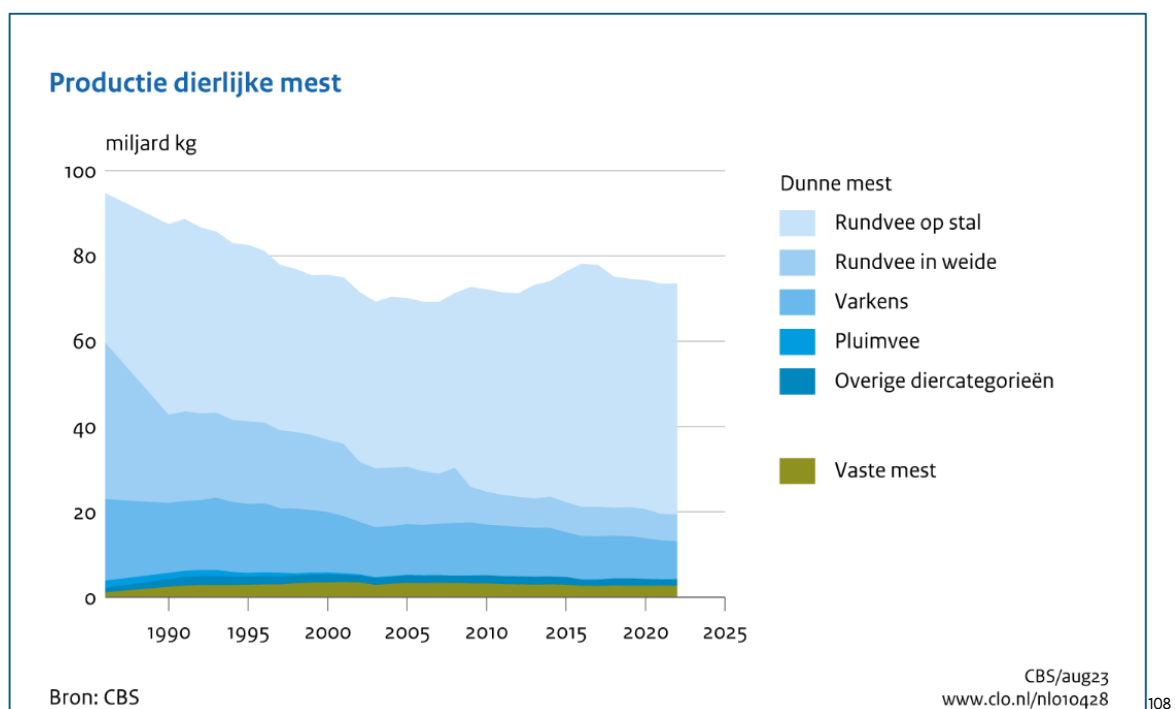
¹⁰⁶ José Boon, "Wereldwijde voedselprijzen blijven zakken tot laagste punt in drie jaar tijd," NU.nl, 2 Februari 2024.

Annexe 35: Livestock on farms (NL)



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Annexe 36: Production of animal manure (NL)

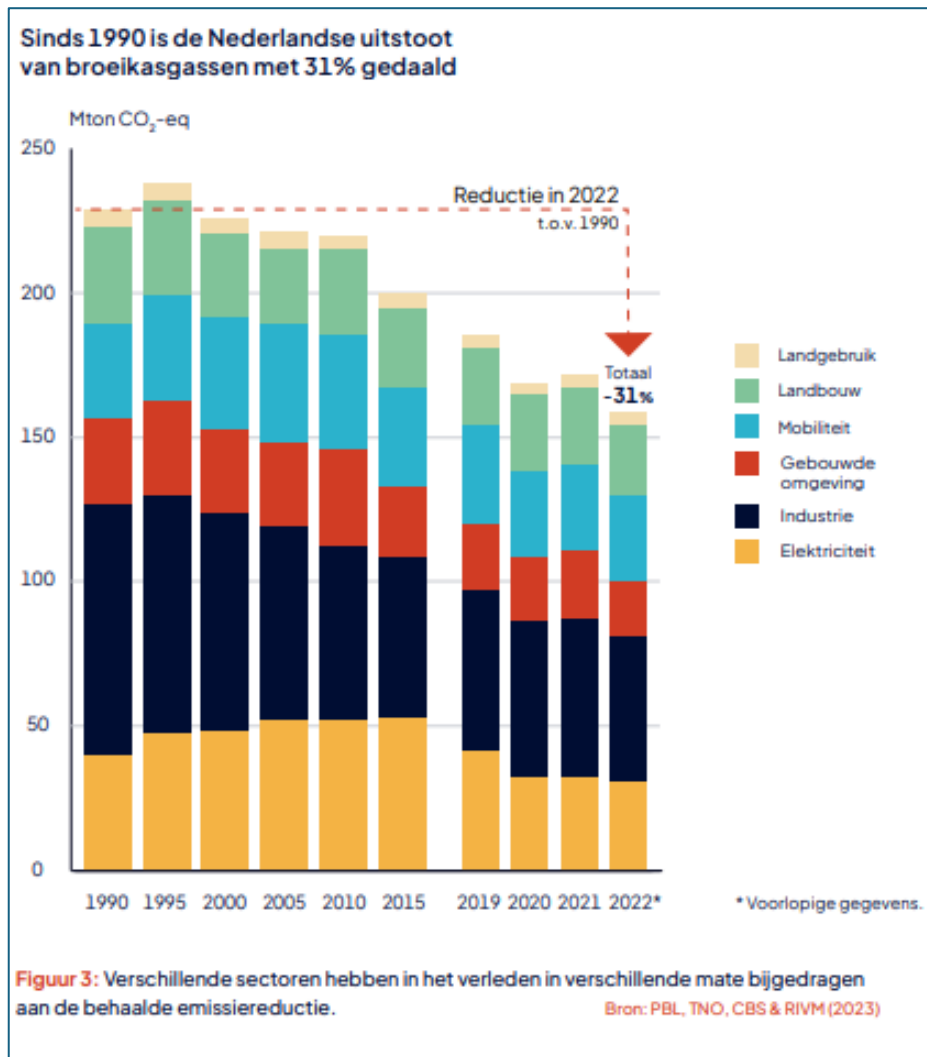


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¹⁰⁷ CBS, PBL, RIVM & WUR, "Ontwikkeling veestapel op landbouwbedrijven, 1980-2022 (indicator 2124, versie 12, 24 oktober 2023)," CLO, 23 October 2023.

¹⁰⁸ CBS, PBL, RIVM & WUR, "Mestproductie door de veestapel, 1986-2022 (indicator 0104, versie 28, 15 augustus 2023)," CLO, 15 August 2023.

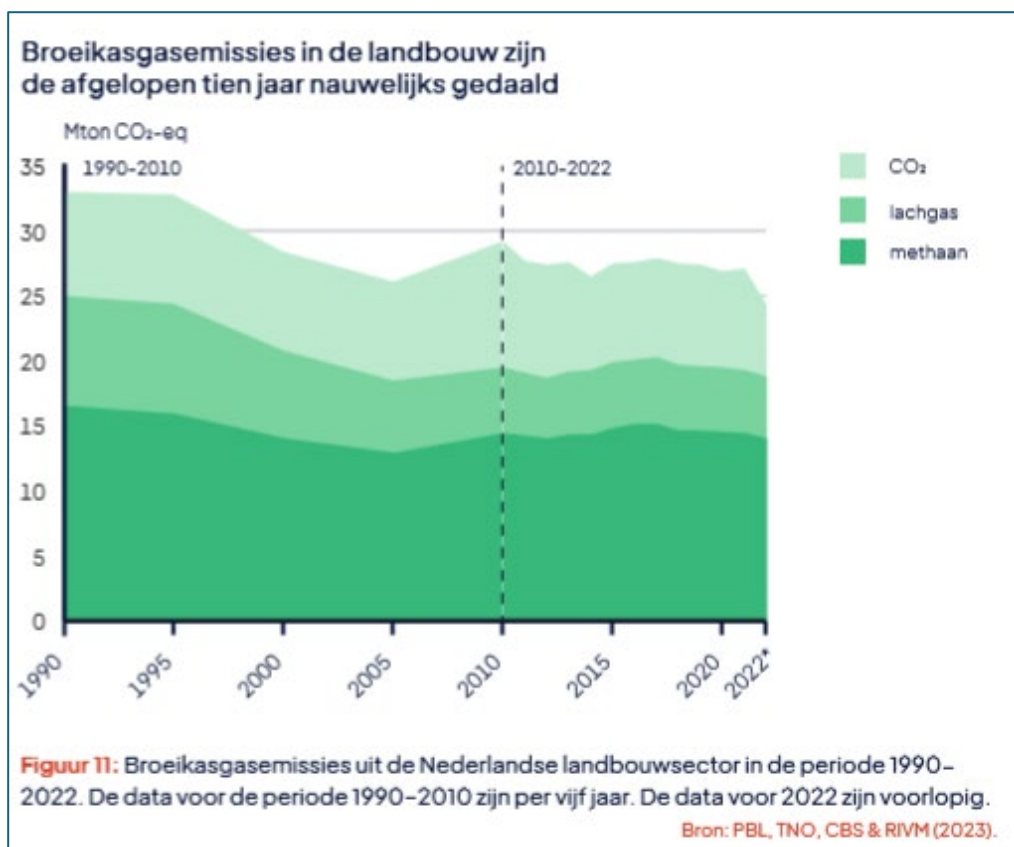
Annexe 37: Greenhouse gas emissions: CO₂ (1990-2022) (NL)



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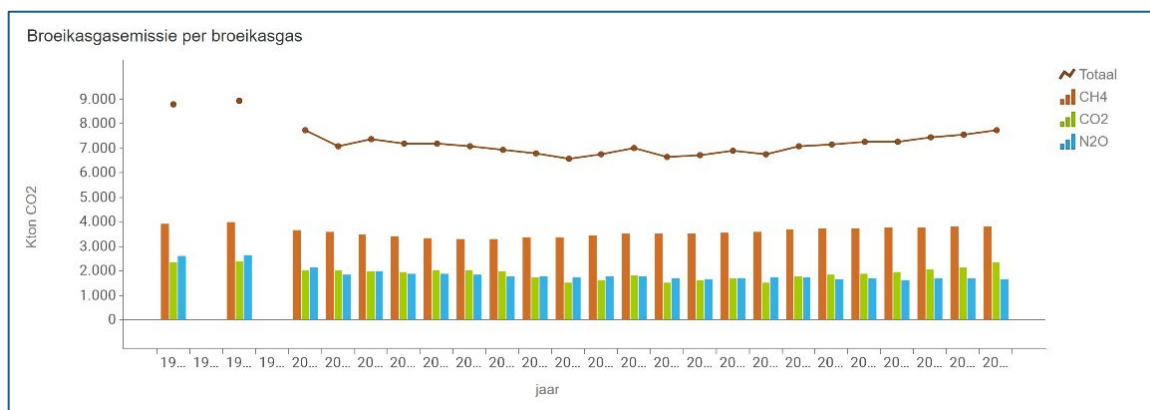
¹⁰⁹ Wetenschappelijke Klimaatraad, "Met iedereen de transities in," December 2023, 20.

Annexe 38: Greenhouse gas emissions from agriculture in the Netherlands, 1990–2022.



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Annexe 39: Greenhouse gas emissions per greenhouse gas (FL)

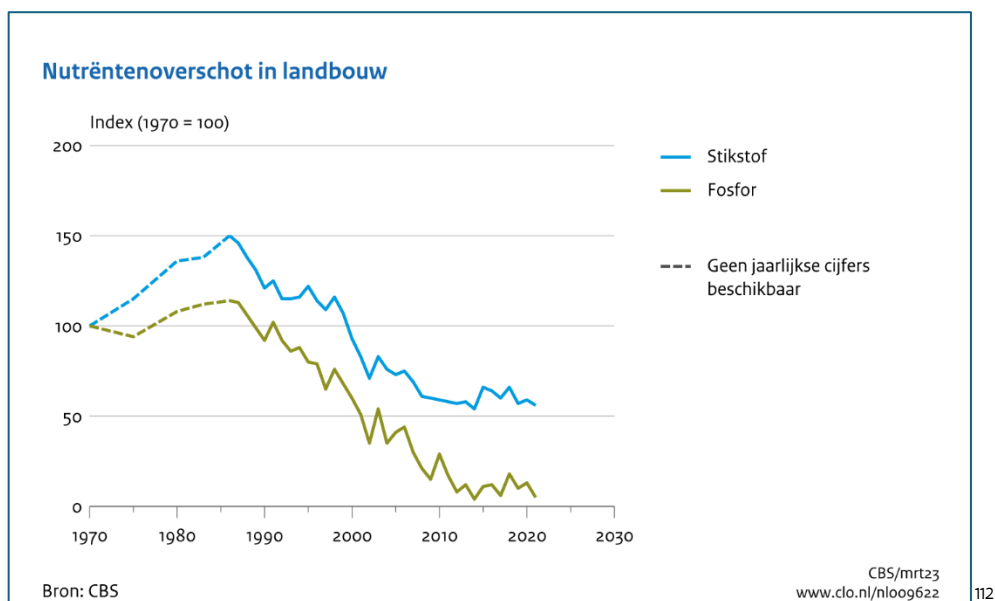


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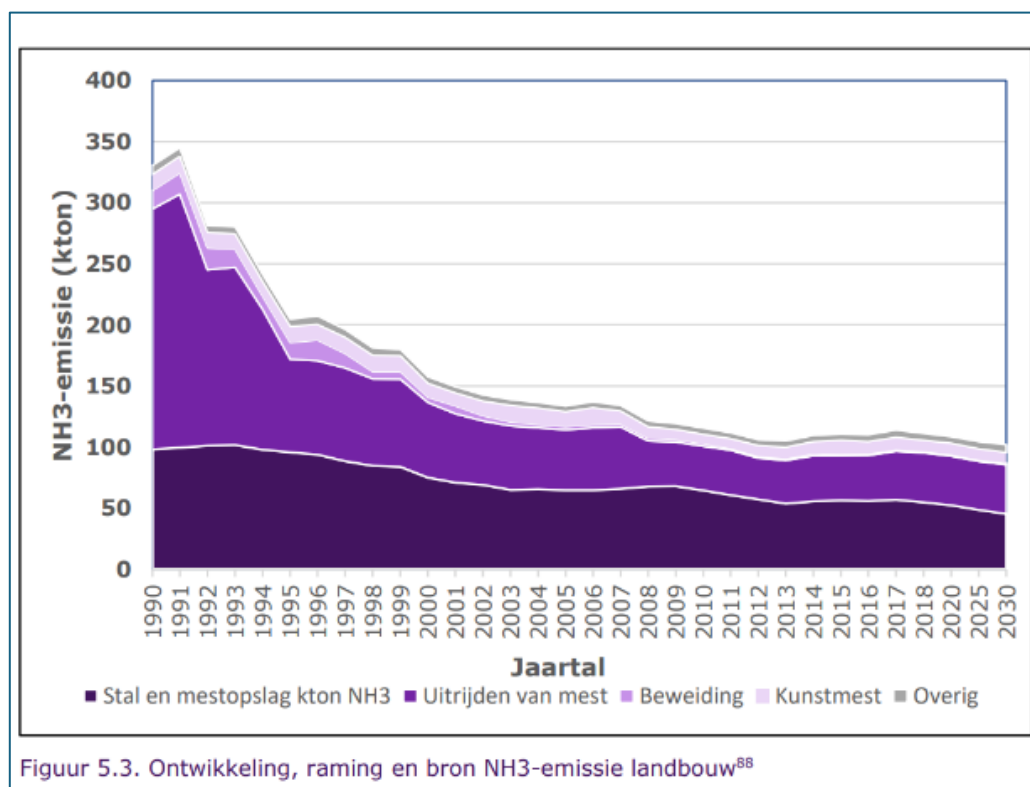
¹¹⁰ Wetenschappelijke Klimaatraad, “Met iedereen de transities in,” December 2023, 46.

¹¹¹ Agentschap Landbouw & Zeevisserij, “Emissie van broeikasgassen,” Landbouwcijfers.vlaanderen.be, 2023.

Annexe 40: Nutrient surplus in agriculture (NL)



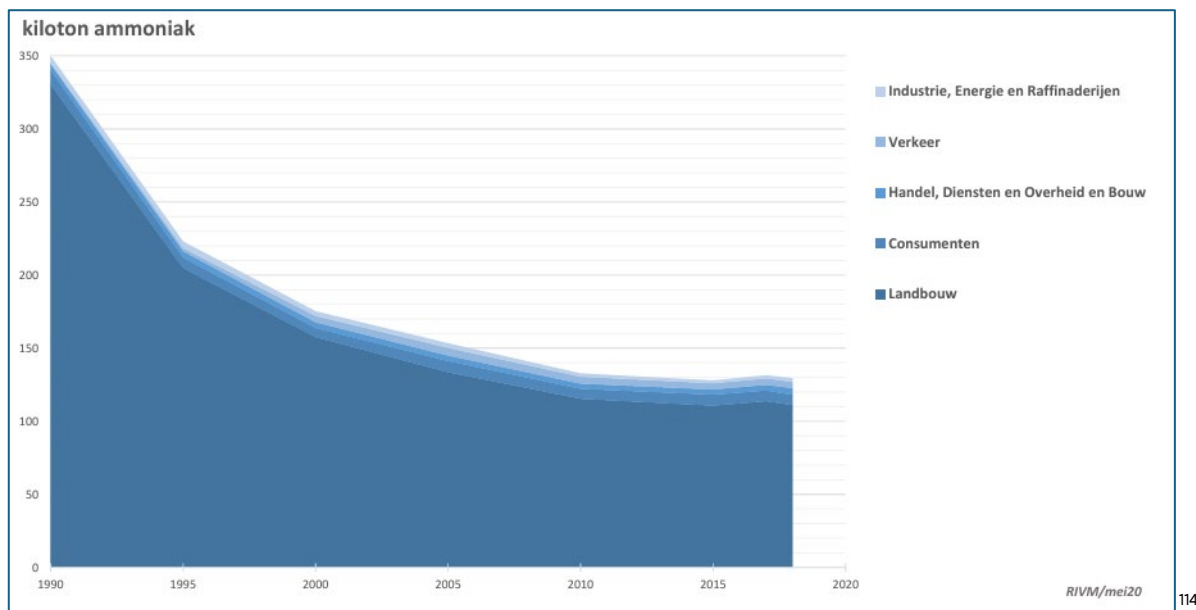
Annexe 41: Development, estimate and source NH3 emissions agriculture (NL)



¹¹² CBS, PBL, RIVM & WUR, "Nutriëntenoverschotten in de landbouw, 1970-2021 (indicator 0096, versie 22, 20 maart 2023)," CLO, 20 March 2023.

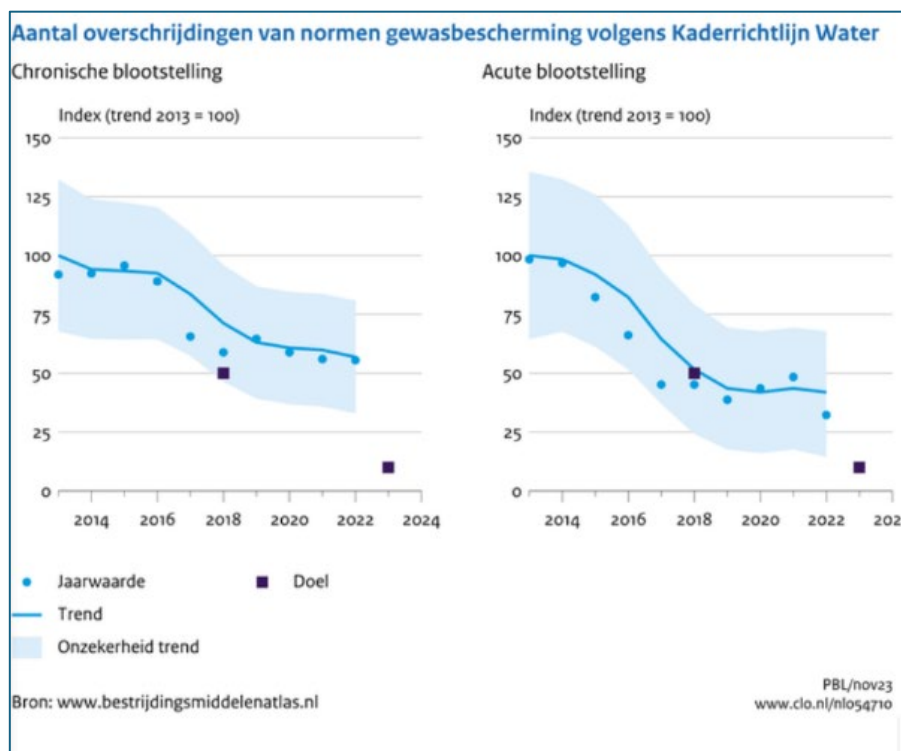
¹¹³ Bernard ter Haar, "Normeren en beprijzen van stikstofemissies," ABDTOPConsult, March 2021, 76.

Annexe 42: Ammonia emissions from agriculture (NL)



¹¹⁴ Adviescollege Stikstofproblematiek, "Niet alles kan overal. Eindadvies over structurele aanpak." Amersfoort, 9 June 2020, 37.

Annexe 43: Number of violations of crop protection standards according to the Water Framework Directive (NL)



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Annexe 44: EU self-sufficiency in protein crops for animal feed (EU)

Table 5: EU self-sufficiency in protein crops for animal feed

Product	Protein content (%)	Feed use 2020/2021 (million tonnes)	Feed use with EU origin (million tonnes)	EU self-sufficiency (%)
Soybean meal	45.5 %	27.1	0.9	3 %
Rapeseed meal	33 %	12	8.3	69 %
Common wheat	11 %	38.2	36.2	95 %
Barley	10 %	35.6	35.6	100 %
Maize	8 %	63.5	50.4	79 %
Fodder legumes	7.2 %	84	84	100 %
Silage maize	2.9 %	244	244	100 %
Grass	2.6 %	629	629	100 %

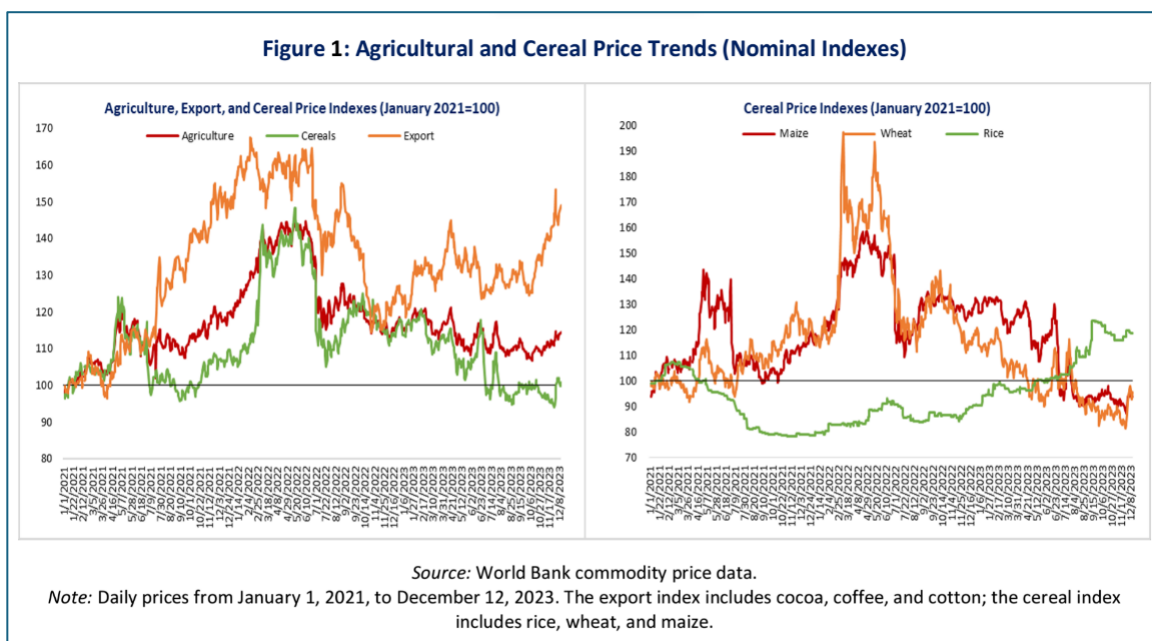
Source: EPRS (2023b) / European Commission, [EU feed protein balance sheet](#)

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¹¹⁵ Compendium voor de Leefomgeving, "Gewasbeschermingsmiddelen in oppervlaktewater 2013-2022," 15 December 2023.

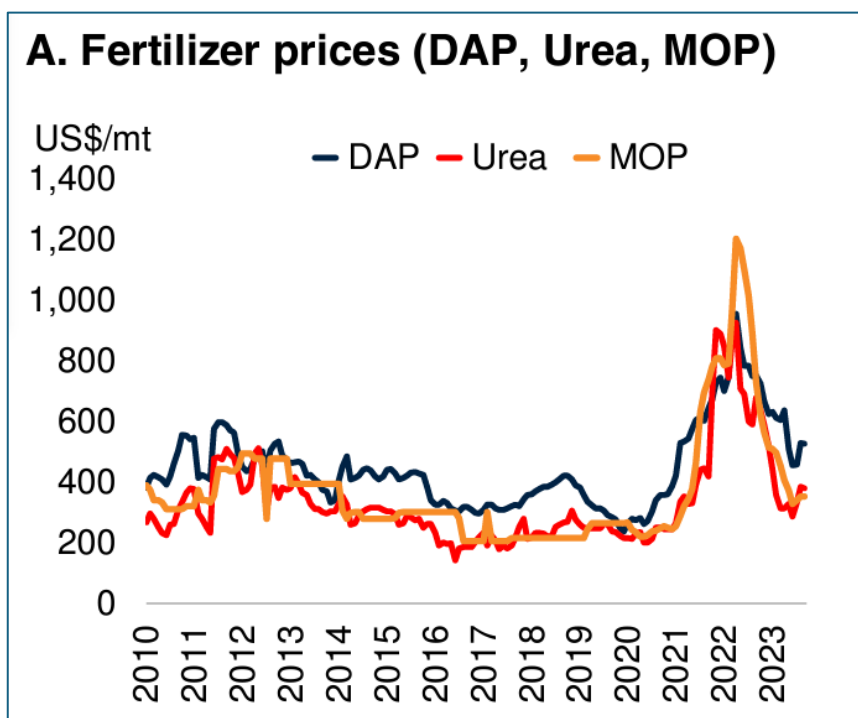
¹¹⁶ Alberico Loi et al., "Research for AGRI Committee – The dependency of the EU's food system on inputs and their sources," European Parliament, Policy Department for Structural and Cohesion Policies, Brussels: March 2024, 23.

Annexe 45: Agricultural and Cereal Price Trends (Nominal Indexes)



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Annexe 46: Fertiliser Price Indexes

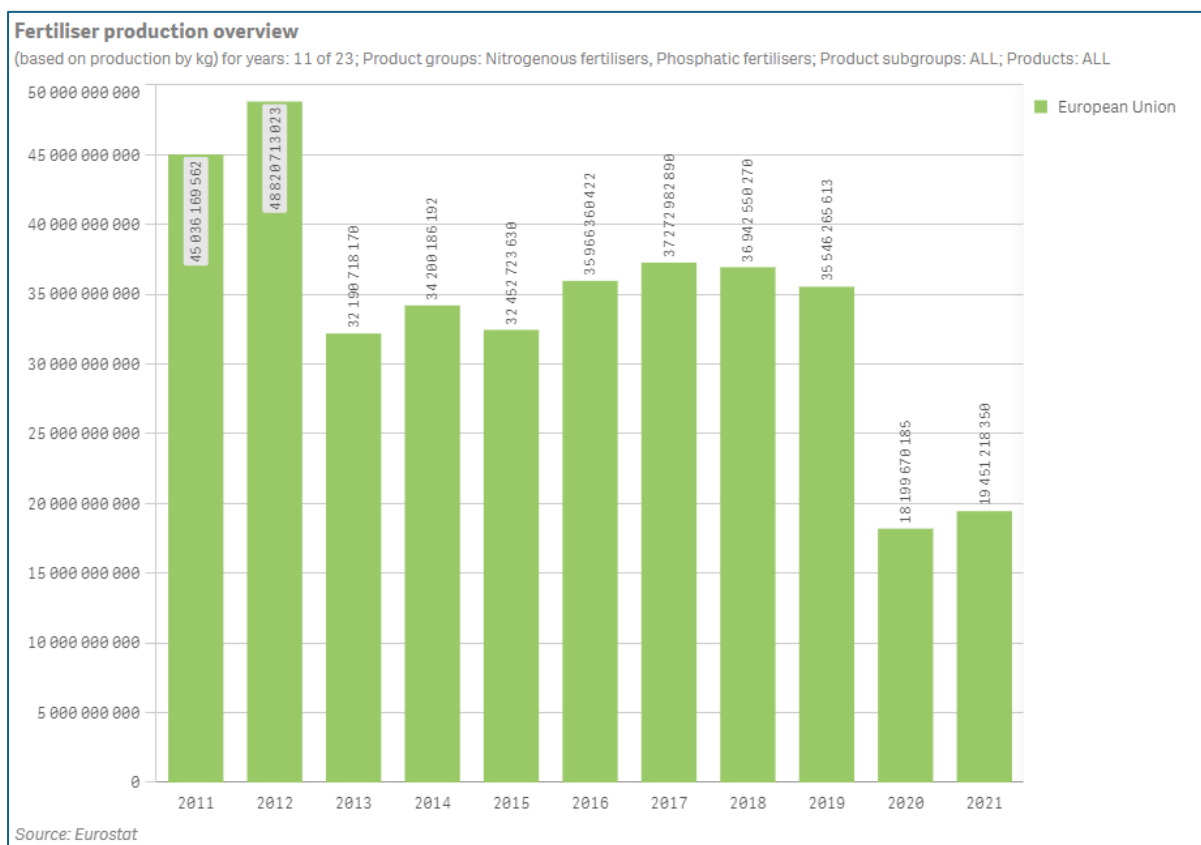


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¹¹⁷ The World Bank, "Food Security Update | World Bank Response to Rising Food Insecurity," Washington, 14 December 2023, 2.

¹¹⁸ World Bank, "Commodity Markets Outlook, October 2023: Under the Shadow of Geopolitical Risks," Washington, 2023, 33.

Annexe 47: Fertiliser production overview (EU)



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Annexe 48: Mineral fertiliser consumption in agriculture (EU)

Figure 1: Mineral fertiliser consumption in agriculture, EU, 2011-2021
(in million tonnes)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Growth 2020-2021
	million tonnes											
Nitrogen	9.7	9.5	9.8	10.1	10.4	10.3	10.5	10.4	9.9	10.0	9.8	-2.0
Phosphorus	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.1	-3.8
Total consumption	10.8	10.6	10.9	11.2	11.4	11.4	11.7	11.5	11.0	11.1	10.9	-2.2

Note: 2020 EU estimate, including 2019 data for Cyprus and Malta. 2021 EU estimate, including 2019 data for Cyprus and Malta, as well as 2020 data for Greece and Poland.
Source: Eurostat (online data code: aei_fm_usefert)

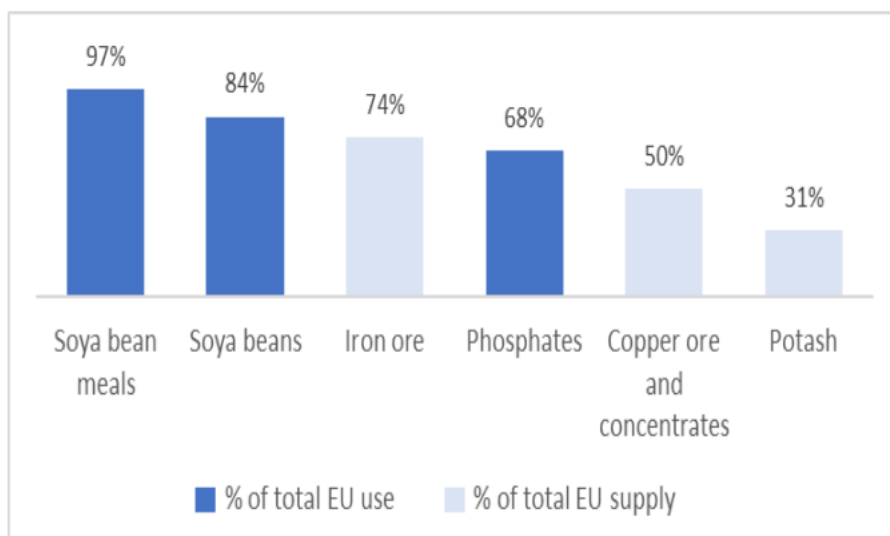
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¹¹⁹ European Commission, "Fertiliser production," Agridata, 2023.

¹²⁰ Eurostat, "Agri-environmental indicator – mineral fertilizer consumption," 2021.

Annexe 49: Import dependency ratios for selected inputs (EU)

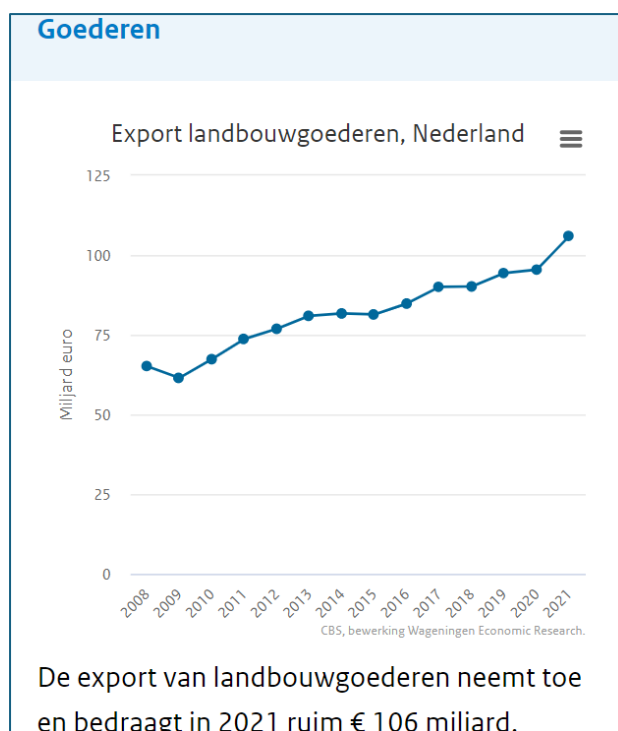
Figure 1: Import dependency ratios for selected inputs



Source: elaboration on data and publications from the European Commission (see Table 4 for the complete detail)

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Annexe 50: Agricultural goods exports, Netherlands

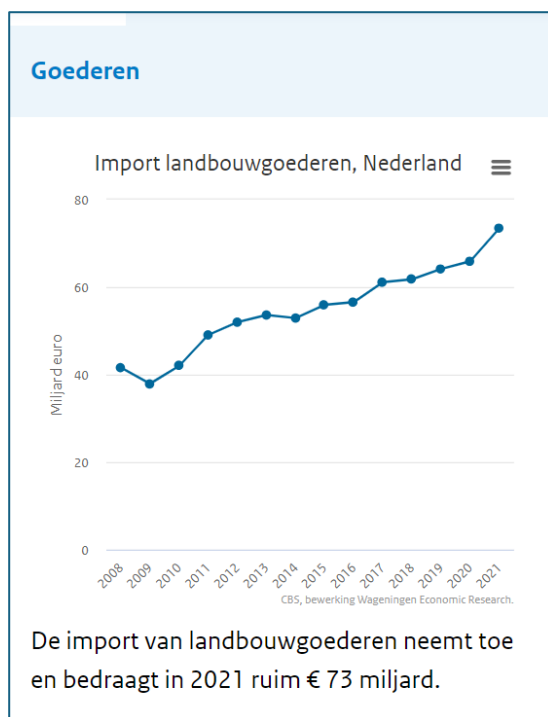


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¹²¹ Alberico Loi et al., "Research for AGRI Committee – The dependency of the EU's food system on inputs and their sources," European Parliament, Policy Department for Structural and Cohesion Policies, Brussels: March 2024.

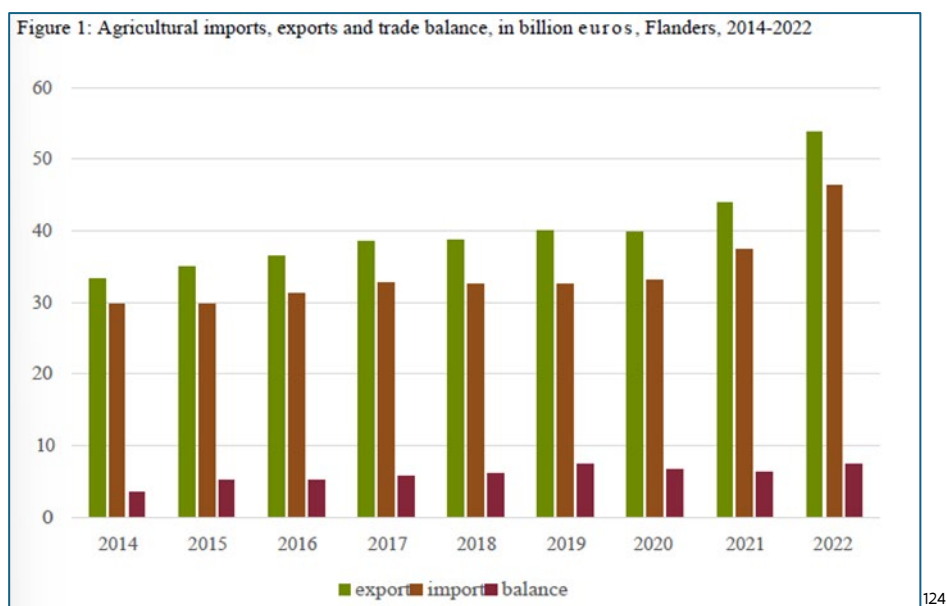
¹²² Staat van Landbouw Natuur en Voedsel, "Export van landbouwgoederen," Ministerie van LNV, 30 November 2022.

Annexe 51: Imports of agricultural goods, Netherlands



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Annexe 52: Agricultural imports, exports and trade balance, in billion euros (FL)

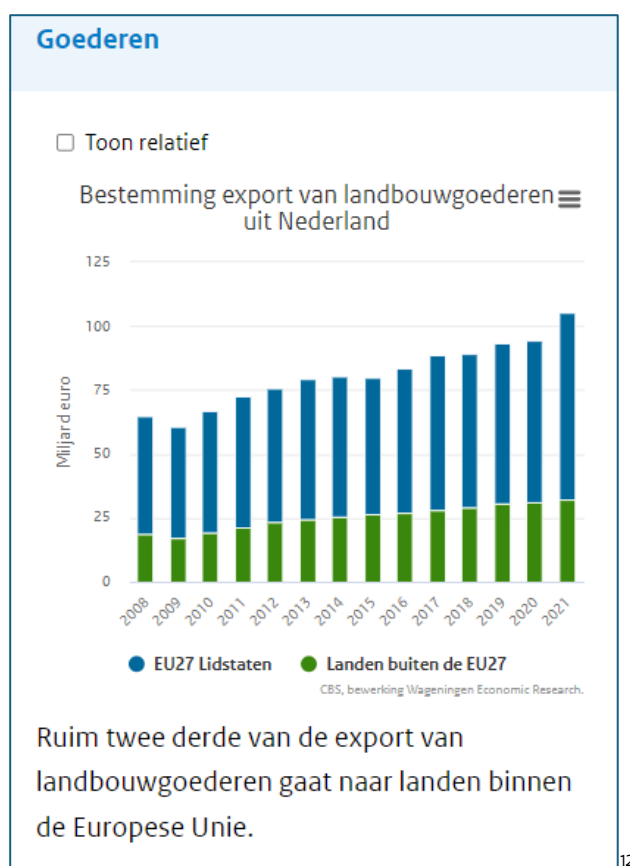


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¹²³ Staat van Landbouw Natuur en Voedsel, "[Import van landbouwgoederen](#)," Ministerie van LNV, 30 November 2022.

¹²⁴ "[De Vlaamse Agrohandel in 2022](#)," Department Landbouw & Visserij, 2022, 22.

Annexe 53: Destination exports of agricultural goods from the Netherlands



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Annexe 54: Earnings from agricultural exports, main destinations (NL)

Tabel 3.1 Verdiensten aan de export van landbouwgoederen, belangrijkste bestemmingen

	2021	2015	Toename 2021 t.o.v. 2015
	mln. euro	mln. euro	%
Duitsland	9.932	8.411	18%
België	4.536	3.425	32%
Verenigd Koninkrijk	3.729	3.742	0%
Frankrijk	3.395	3.012	13%
Italië	1.598	1.428	12%
China	1.564	748	109%
Spanje	1.264	947	33%
VS	1.261	1.130	12%
Polen	1.232	769	60%
Denemarken	905	666	36%

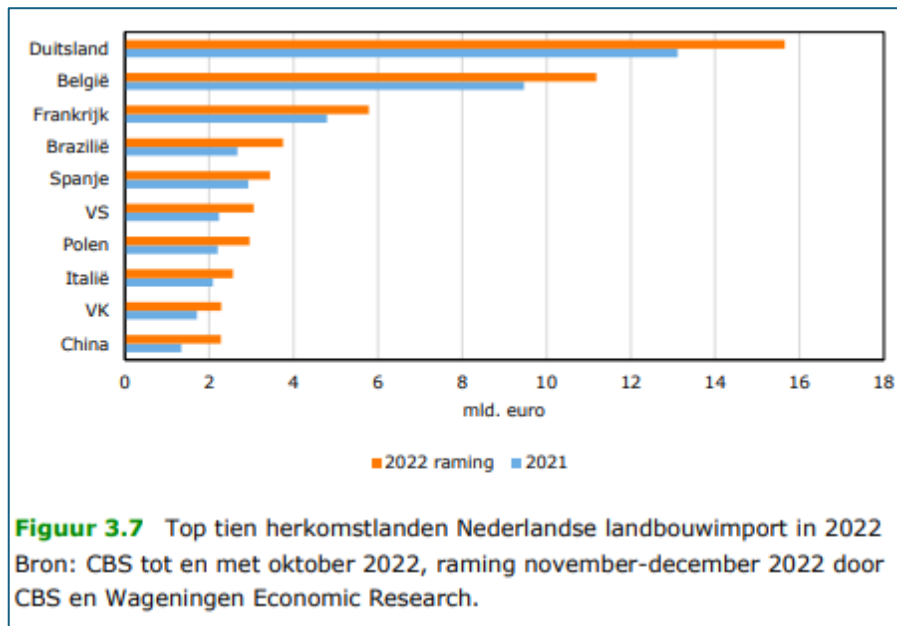
Bron: CBS (waardeketenonderzoek).

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¹²⁵ Staat van Landbouw Natuur en Voedsel, "Export van landbouwgoederen," Ministerie van LNV, 30 November 2022.

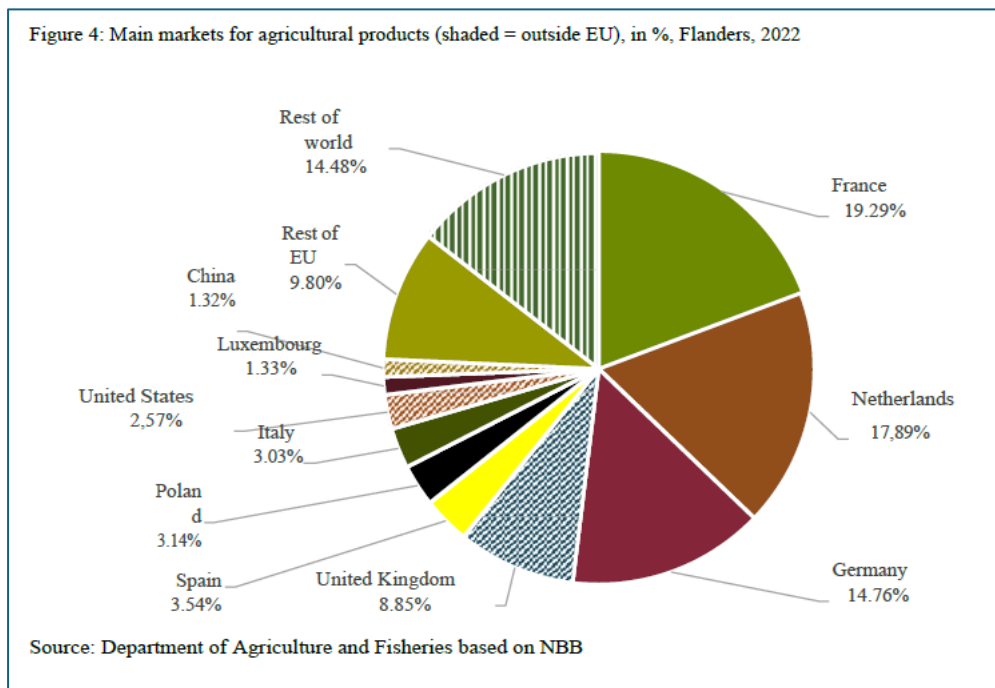
¹²⁶ Gerben Jukema, Pascal Ramaekers en Petra Berkhout (red.), "De Nederlandse agrarische sector in internationaal verband – editie 2023," WUR & CBS, 2023, 29.

Annexe 55: Top ten countries of origin of Dutch agricultural imports in 2022



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Annexe 56: Main markets for agricultural products (FL)

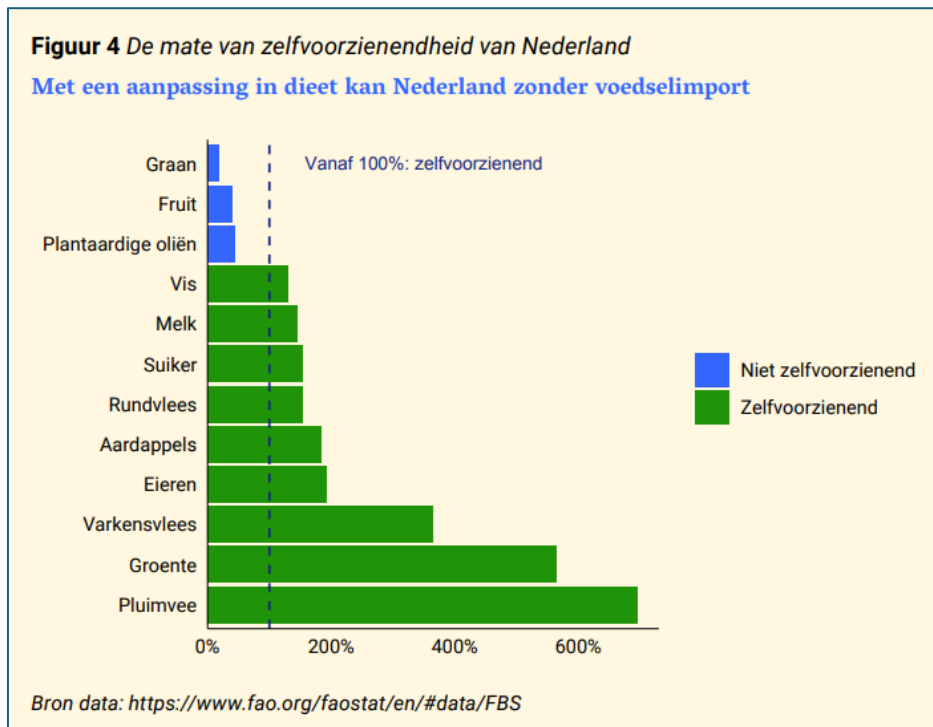


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¹²⁷ Gerben Jukema, Pascal Ramaekers en Petra Berkhout (red.), "De Nederlandse agrarische sector in internationaal verband – editie 2023," WUR & CBS, 2023, 28.

¹²⁸ Tom Van Bogaert and Jonathan Platteau, "De Vlaamse Agrohandel in 2022," Departement Landbouw en Visserij, Brussel, 2023, 22.

Annexe 57: The degree of self-sufficiency of the Netherlands



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¹²⁹ Algemene Rekenkamer, "Focus op strategische voorraden," Algemene Rekenkamer, 29 September 2022.

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