
The future of Dutch and EU agriculture in a global context

Willem-Jan van Zeist, Andrzej Tabeau en Hans van Meijl
Wageningen Economic Research

Summary

Key issue

This study gathered views of the potential future development of the Dutch agri-food sectors in the long term (up to and including 2050) and investigated what this could mean for the course of action of the Ministry of Agriculture, Nature and Food Quality. What are the possible consequences of several driving forces – as far as they are known today – that will determine the future of Dutch agriculture and horticulture? The starting point was a reference scenario: how will agriculture develop if policies do not change? Several variants were then considered. The variation is related to the degree of greening (implementation of the Paris Agreement/Green Deal) and whether this greening takes place unilaterally in the EU or also globally. Another variable is the extent to which trade is further liberalised.

In the greening scenarios, it is assumed that the pressure on the environment will be reduced by taxing greenhouse gas emissions, shifting to a more plant-based diet, reducing food waste, and providing more land for nature. The taxation of greenhouse gases will be implemented through a carbon dioxide equivalent tax (CO₂ eq. tax) that approximates various expenditures that must be made to reduce emissions.

The variations in the degree of further trade liberalisation are extremely important for the Dutch agricultural sector since it is very export-oriented, yet also dependent on imports. There is uncertainty here as to whether international trade will be stimulated by further reductions in import tariffs, or whether it will be limited by variants of European trade policy with import tariffs that compensate for an internal CO₂ eq. tax or because consumer preferences will shift towards local products. Such a shift could have various causes, such as a preference for sustainable products, the COVID-19 pandemic that makes imports from far away vulnerable, and other geopolitical developments that lead to further regionalisation.

These two uncertainties lead to the four scenarios (see Figure S.1). All the scenarios will be compared with a reference scenario in which there is no greening with respect to current policy. The MAGNET global general economic equilibrium model will be used for the implementation and quantification of the scenarios.

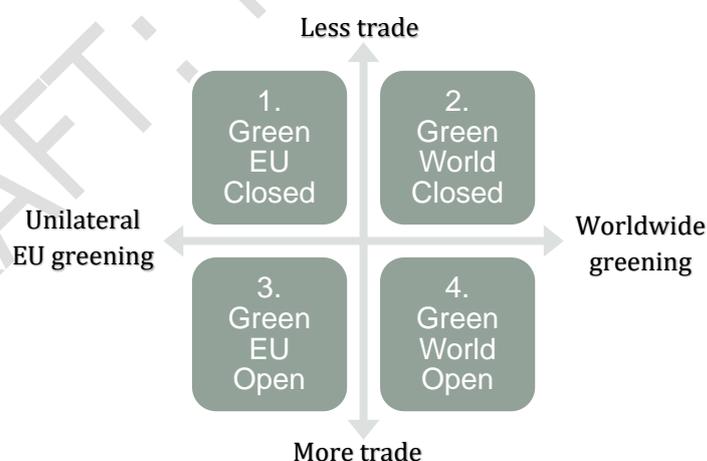


Figure S.1 Scenario table

This study specifically examines the effects (both in terms of greening and trade policy) that these factors could have on production volumes, greenhouse gas emissions, added value, employment, production prices and the international trade position in the various scenarios. This long-term scenario study (2050) focuses on agriculture that produces for the European and world markets. It is assumed that the nitrogen problem will be addressed in the mid-term in accordance with spatial zoning based on the principle of 'the right agriculture on the right land' (see the report Niet alles kan overal (Not everything can be done everywhere) by the ministry's Advisory Committee on the Nitrogen Problem (Remkes et al., 2020)). With regard to developing agricultural land use and the production level of livestock sectors, the study is in line with the Scenariostudie perspectief voor ontwikkelrichtingen Nederlandse landbouw in 2050 (Scenario Study: Perspective for Development Directions for Dutch Agriculture in 2050; Lesschen et al., 2020).

Message

Primary agriculture will be preserved in the Netherlands, with a good starting position for the processing industry

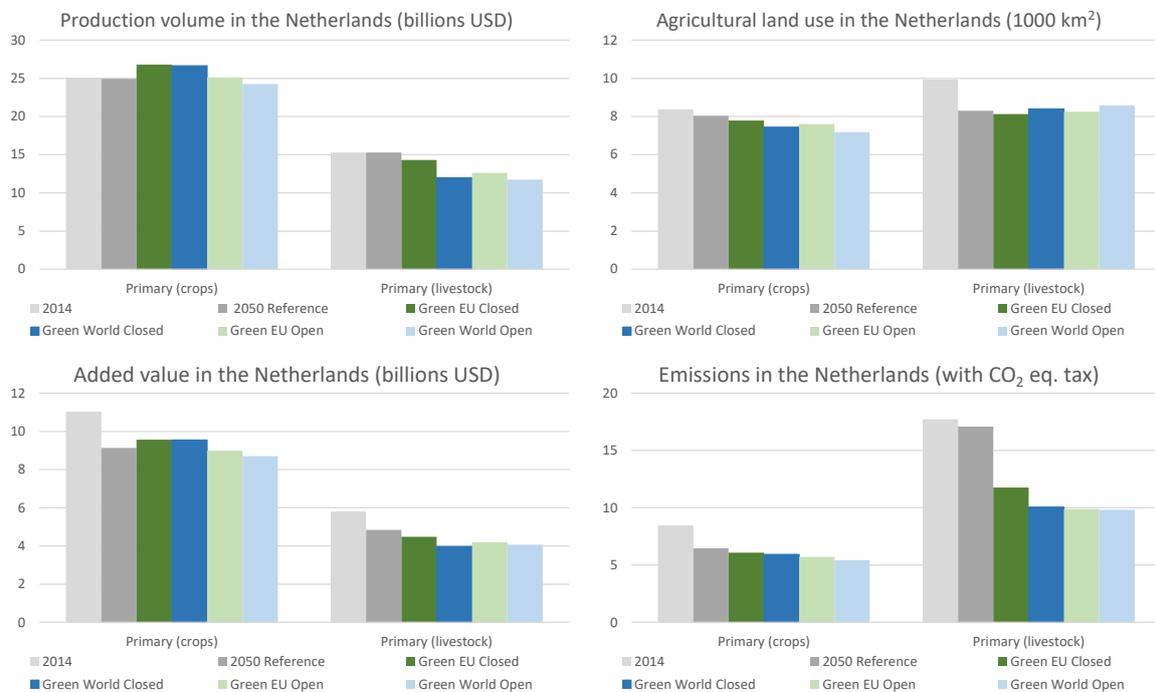
In the greening scenarios, at least 97% of current primary crop production and 77% of primary livestock production will be maintained, and production of processed products will grow by at least 10%. At least 86% of agricultural land use is maintained in all scenarios and the decline is mainly explained by cultivation and additional land taken out of production in connection with biodiversity policy.

Substantial decrease in emissions, especially in livestock sectors

In all four scenarios, the greening measures lead to a sharp reduction in emissions. Emissions related to Dutch livestock production will decline by 34% if the EU unilaterally goes green and a CO₂ eq. tax is imposed to offset import tariffs; that decline could be as large as 45% if the entire world goes green and borders are open. In particular, the CO₂ eq. tax and dietary changes will reduce emissions. With regard to crop production, greenhouse gas emissions will decrease by 28–35% compared to a decrease of 24% in the reference scenario. Most of this is already achieved in the reference scenario by technological progress, among other things.

Production development in the Netherlands: declining livestock production due to climate measures and dietary changes, decline remains limited by compensatory border measures, crop production grows (closed world) or is maintained (open world).

Livestock production decreases in all four scenarios (by 6–23%). This is mainly due to the taxation of greenhouse gas emissions and a reduction in meat consumption caused by dietary changes. Crop production increases in the closed scenarios due to dietary changes and a preference for local production, but it is stable in the liberalisation scenarios. Global food waste reduction decreases the demand for crop products. The food processing industry grows slightly compared to 2014 and most greening measures have a limited negative impact on production volume and added value.



Decrease in land use for agriculture in line with existing trend; possible expansion of grasslands
 Agricultural land use continues to decline due to policies to promote nature, but it remains largely in production and is not set aside in any of the scenarios. Land is not taken out of production, but the lower demand for agricultural products leads to falling land prices. Arable land is used more intensively while grasslands are expanded.

Remuneration for production factors lags behind the rest of the economy

Falling demand will reduce added value and the prices producers receive for their products. Land prices are a good indicator of the competitiveness and economic condition of the agricultural sectors. The land price is stable compared to the reference scenario if the EU greens unilaterally and a CO₂ eq. tax offsets import tariffs, but the land price drops by 41% in the Green World Open scenario. In the other two scenarios, the decrease is 24% and 28%. The remunerations for all production factors decline slightly if the EU greens alone and protects markets, but they decline much more (15%) if the entire world greens with open markets. In the other two scenarios, the decrease is 10%. The decline particularly applies to agricultural land prices and to labour and capital remunerations for farmers who prefer to continue working in agriculture.

Added value: decrease in primary sectors, increase in the scale of the food processing industry

In the reference scenario, added value declines by 13% for the primary sectors and increases by 16% for the food processing industry. The decline in the primary sectors is due to real prices for primary agricultural products continuing to fall while production barely rises. In the greening scenarios, the decrease in added value in the primary sectors is between 83% and 68% of the current value. The added value in the food processing industry grows by 12–24% and its relative size increases from 55% to 65%. In the Green EU scenarios, the CO₂ eq. tax has a large negative impact (9–10%) on added value in the livestock sectors, while this impact is limited in the Green World scenarios. The largest negative impact on added value in livestock sectors is caused by dietary changes (-13% to -18%). The Green EU Closed scenario is slightly less negative than the other three scenarios for the Dutch livestock sectors because of the compensatory import tariffs. Added value in the crop sectors is higher in the closed scenarios than in the reference scenario because, on top of the dietary change, a stronger preference for locally produced food and compensatory tariffs have a positive effect.

Limited effects of greening on GDP

The GDP effects of greening in the agricultural sectors are limited. The impact is 0.5% to almost 1% negative in the closed scenarios and the Green EU Open scenario compared to the baseline in 2050. The Green World Open scenario even has a small positive effect on GDP, caused by the positive effects

of trade liberalisation and reduction of food waste outweighing the negative effect of the CO₂ eq. tax. The effect of the CO₂ eq. tax is negative in the range of 2–3% in scenarios where the EU greens unilaterally and around 1% if the CO₂ eq. tax is introduced simultaneously all over the world. Reducing food waste has a positive 0.75% effect on GDP in all scenarios. Trade liberalisation contributes about 0.5% to GDP. A change in preference for domestic products contributes positively to GDP if it takes place only in the EU, but it has a negative effect if it also takes place in other countries.

Guidance for policy

The greening of policies mainly affects the size of the livestock sectors. The crop sector remains at approximately the same level or grows slightly, depending on the scenario. The food processing industry increases in relative importance and flourishes in the different scenarios. If the EU greens unilaterally, compensatory trade tariffs may limit the negative impact of CO₂ equivalent prices on the agri-food sector. A timely move towards sustainability could provide a competitive advantage in the long run, by avoiding higher costs in the future if externalities are potentially taxed more. In all cases, the scenario variants have no significant impact on the degree of food self-sufficiency in the Netherlands and the EU.

The scenarios make it clear that some form of trade-off may arise. In general, if the EU unilaterally greens and protects markets, the reduction in emissions will be the lowest and agriculture in the Netherlands will remain the most viable, while the decline in GDP will be limited. In contrast, the scenario in which the entire world becomes greener and borders are open leads to the greatest reductions in emissions but the greatest declines in Dutch agriculture. Sustainability, free trade, reduction of food losses and dietary changes lead to a favourable GDP effect in this scenario.

Ultimately, global greening will be needed to meet the global climate targets because unilateral greening will have an extremely limited effect on emissions. For the Netherlands, open borders may then be desirable because that could also lead to an increase in GDP, but this scenario would be less favourable for the Dutch agri-food sector.

Acknowledgements

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¹ Zeist, W.J. van, A. Tabeau en H. van Meijl, 2021. *De toekomst van de land- en tuinbouw in Nederland, binnen de Europese en mondiale context*. Wageningen, Wageningen Economic Research, Rapport 2021-135. 76 blz.; 48 fig.; 17 tab.; 11 ref.