

The Netherlands: A Model of Success in Agriculture?

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1: Background

Background

- The Netherlands, often referred to as the “Breadbasket of Europe,” stands as a testament to the remarkable achievements of human ingenuity and innovation in agriculture.
- Despite its small size and challenging geographic conditions, the Netherlands has managed to transform itself into a highly successful agricultural economy.
- Much of the country is below sea level, prone to flooding, and characterized by nutrient-poor soil. However, the Netherlands has turned these constraints into opportunities through innovative land reclamation and water management techniques.
- The Dutch have created an intricate system of dikes, canals, and polders to reclaim land from the sea and manage water levels.
- This constant pursuit of innovative solutions has not only expanded agricultural land but also ensured that the quality of soil remains fertile and productive.

2: Reasons Behind Dutch Success in Agriculture

Reasons Behind Dutch Success in Agriculture

Effective practices

- Dutch farmers utilize cutting-edge tools such as Geographic Information Systems (GIS), drones, and sensors to monitor soil health, optimize irrigation, and manage crop diseases. This integration of technology allows for precise and efficient resource allocation, minimizing waste and maximizing yields.
- The Netherlands is a leader in greenhouse cultivation practices, which allow for year-round production of high-quality vegetables, flowers, and ornamental plants. Dutch greenhouses utilize advanced climate control systems, energy-efficient lighting, and hydroponic techniques to create ideal growing conditions. his mastery of horticulture has enabled the Netherlands to become a major exporter of flowers and fresh produce, contributing significantly to its agricultural revenues.
- A critical factor behind Dutch agricultural prowess is its commitment to research, innovation, and knowledge exchange. The country boasts world-renowned agricultural universities and research institutes that focus on developing new crop varieties, sustainable farming practices, and innovative technologies.

Reasons Behind Dutch Success in Agriculture - 2

Effective practices – 2

- The Netherlands' efficient transportation infrastructure, including well-connected ports and highways, enables the rapid movement of goods to international markets. With a strong emphasis on quality, safety, and compliance with international standards, Dutch agricultural products have earned a reputation for excellence, making them sought after worldwide.

Challenges on the horizon

- Agricultural success of the Netherlands is not solely measured by its high yields and economic gains, it also places eco-friendly practices such as integrated pest management, organic farming, and agroforestry to mitigate the adverse effects of agriculture on the environment.
- Unfortunately, a long process of agricultural intensification in the Netherlands has witnessed rising nitrogen emissions from the industry, contributing to the depletion of its natural reserves, and rapidly approaching a crisis level.

3: Policy Reform

Policy Reform

Nitrogen mitigation strategy

- Recognizing the excessive nitrogen emissions that has persisted over many years and its detrimental impact on the quality of soil, water, and climate change obligations, the Dutch government is devising measures to reduce nitrogen emissions and restoring natural ecosystems.
- Under the government's action plan (*Programma Aanpak Stikstof* or *PAS*), construction projects and other economic activities were allowed to release nitrogen into nature reserves, contingent upon future reductions in deposition levels and concurrent restoration measures.
- However, the effectiveness of *PAS* was called into question when the Council of State struck down the policy in 2019. This decision had dire consequences, effectively freezing all building permit applications, preventing farmers from expanding their farms, tech companies from building data centers, and halting construction of new highways and homes.

Policy Reform - 2

Urgent measures

- Urgent measures are suddenly needed from the government to ensure compliance with EU regulations on climate change and the control of peak nitrogen emissions of nitrogen in the Netherlands.
- Various options, such as farm closures, “buy-out” initiatives, or relocating farms to regions with fewer nitrogen-sensitive areas, are currently under consideration.
- The political landscape is charged with tension, given the Netherlands boast the highest livestock density in the EU. The government intends to reduce this density by 30%, a move that some observers argue would still leave it comparable to Flanders in Belgium, which also facing a nitrogen crisis.
- In response to the challenges and growing threats to their traditional business model, Dutch farmers are now actively engaging in politics.
- The Farmer-Citizen Movement (*BoerBurgerBeweging*), deeply entrenched in the agricultural sector, emerged victorious in the recent provincial elections. Despite this opposition, the Dutch government remains optimistic about decoupling economic growth from environmental impacts.

4: Stylized Facts

Stylized Facts

Change in land area (2000-2020)

- While farm counts and farmland area declined, irrigated agricultural land increased by 127 percent. Agricultural and horticulture, open land acreage also expanded during the period, 2000-2020.

Metric	2020	2000	Change
Farm Counts (Number)	52,315	97,389	-46%
Farmland Area (Acres)	4,483,599	4,881,570	-8%
Irrigated Agricultural Land Area (% Total)	16.3%	7.2%	127%
Land Area (Acres)			
Agricultural & Horticulture - Open	230,123	200,305	15%
Ag & Horticulture - Under Glass	24,903	25,998	-4%
Agricultural Labor Force (Number)	175,015	280,584	-38%

Source: CBS, Statistics Netherlands

Stylized Facts - 2

Change in livestock counts (2000-2020)

- Reflecting the sharp decline in livestock acreage, the counts of dairy cattle, beef cattle, hog, and poultry were lower during the period, 2000-2020.

Livestock Counts (Number)	2020	2000	Change
Dairy Cattle	2,528,000	2,535,739	0%
Beef Cattle	1,238,000	1,059,844	17%
Hog	11,860,000	12,820,000	-7%
Poultry	95,153,000	94,892,000	0%
Sheep	890,000	1,074,119	-17%
Goat	633,000	158,903	298%

Source: CBS, Statistics Netherlands

Stylized Facts - 3

Milk supply and dairy production 2000-2020

- The volume of milk supply increase by 30 percent between 2000 and 2020. Production of milk powder expanded by 49 percent while cheese production increased by 42 percent.

Product (1,000 pounds)	2020	2000	Change
Milk supply (volume)	30,835,348	23,663,509	30%
Dairy production (butter)	294,548	278,223	6%
Cheese	2,144,509	1,507,078	42%
Dairy production (milk powder)	546,999	365,967	49%
Dairy production (concentrated milk)	868,294	602,964	44%

Source: CBS, Statistics Netherlands

Stylized Facts - 4

Netherlands' Top 10 Agricultural Exports, 2022

- Leading agricultural export products by value in 2022 were dairy, eggs, horticulture, and meat products.

Top 10 export products

- Dairy and eggs: \$12.5 billion (14% of total exports)
- Horticulture: \$12.1 billion (13.6%)
- Meat \$11.6 billion (13.0%)
- Natural fats and oils: \$8.5 billion (9.5%)
- Beverages: \$8.5 billion (9.5%)
- Vegetables: \$8.2 billion (9.2%)
- Fruits: \$7.35 billion (8.3%)
- Cereals, flour and milk preparations: \$6.9 billion (7.8%)
- Food residues and animal fodder: \$6.8 billion (7.7%)
- Processed and preserved fruits and vegetables: \$6.5 billion (7.3%)

Stylized Facts - 5

The Netherlands is the world's second-biggest agricultural exporter of food, behind the United States.



5: Assessment

Assessment

Overview

- Renowned for its iconic windmills, the Netherlands has successfully transformed its limited land into a global agricultural powerhouse.
- A critical factor contributing to this success is meticulous land management. Employing an intricate system of dikes and polders, the Dutch have not only reclaimed land from the sea but also expanded their arable territory.
- Stylized facts revealed a significant 46 percent decline in farm counts from 2000 to 2020. However, the reduction in farmland area was less drastic, with an eight (8) percent decrease. The agricultural labor force also witnessed a sharp decline of 38 percent. Remarkably, the proportion of irrigated land area more than doubled during this period.
- Overall, the volume of milk supply increased by 30 percent between 2000 and 2020. Production of milk powder expanded by 49 percent while cheese production saw a significant 42 percent increase.
- As of 2022, the leading Dutch agricultural export products by value include dairy, eggs, horticulture, and meat products.

Assessment - 2

Policy reform

- The Dutch government aspires to decouple economic growth from environmental impacts, but existing environmental indicators, including biodiversity decline, climate change, greenhouse emissions, reveal limited success.
- In alignment with EU ecology policies, efforts are underway to reduce nitrogen emissions and to restore water and soil systems in nature areas. This involves decreasing levels of ammonia and nitrogen oxides concentrations in the air, water, and soil.
- To achieve these goals, the Netherlands faces the challenge of persuading farmers to scale down their operations and reduce livestock numbers. Traditionalist among Dutch farmers, who value the principles of “free markets,” express natural resistance to government intervention.
- In response, the country may need to reach deeper into research, innovation, and technology to effectively mitigate its significant nitrogen-based emissions, particularly in the agriculture sector.

Assessment - 3

Conclusion

- Strategic land management, technological innovation, and a collaborative approach to sustainable farming has been instrumental in the Netherlands' agricultural success. The Dutch model serves as an inspiring example of how a nation can overcome geographical constraints through innovation and dedication to agricultural excellence.
- Despite these achievements, the Netherlands faces significant challenges in agriculture, requiring a delicate balance between maintaining production growth and preserving a sustainable, natural environment.
- The ongoing debate surrounding nitrogen emission reduction reflects differing opinions on crisis resolution and the pace of intervention. The political landscape becomes more complex when aligning with EU laws on climate change.
- Ultimately, the success of the Netherlands may hinge on the government's ability to navigate and find compromises on stringent regulations related to agriculture and food, as well as determining the optimal pace for necessary reforms.



Mahalo!

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