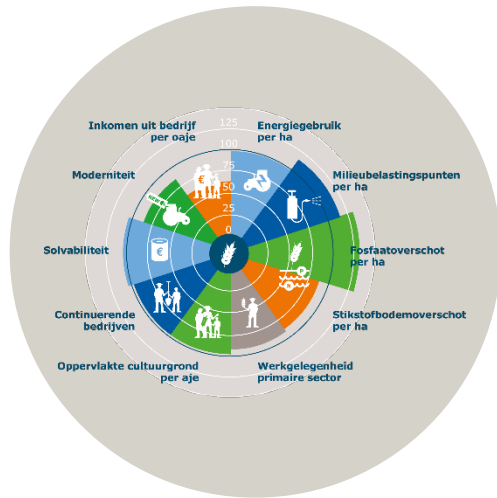


# Measurement of the Sustainability Performance in the Province of South Holland

27<sup>th</sup> PACIOLI workshop Prague, Czech Republic, 6<sup>th</sup> – 9<sup>th</sup> October 2019

Harold van der Meulen, Wageningen Economic Research



# Introduction

- The **province of South Holland** strives for sustainable, strong and future-proof land-based agriculture.
- In 2016, the Provincial Council decided to develop a impact indicator to measure the sustainability of land-based agriculture.
- In 2017, Wageningen Economic Research implemented this monitoring system, resulting in the Barometer for Sustainable Agriculture in South Holland for **dairy** and **arable farms**.
- In Spring 2019 we provided an update.

# Province of South Holland



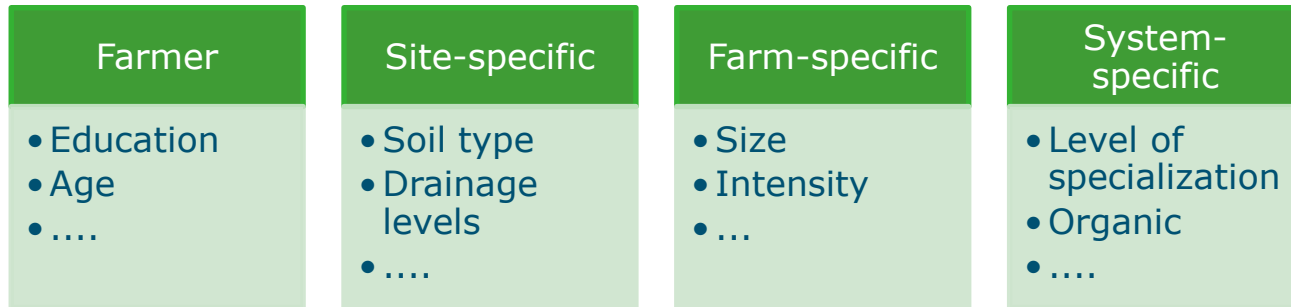
- 3.6 million inhabitants
- 3,000 km<sup>2</sup>
- Rotterdam, the Hague, het Westland
- Agriculture: greenhouse horticulture (84% standard earning capacity), dairy farms (9%) and arable farms (4%)
- Arable farming: 628 farms, 50 ha average size
- Dairy farming: 1,141 farms, 86 cows average size

# FADN farms frequently used for sustainability performance measurement

- Sample data are used in studies with different scopes and objectives:
  - Sectoral studies
  - National studies
  - Regional studies
- Different methods are applied to aggregate farms results to a group average:
  - What is a fair benchmark?
  - What is the best method?
  - How to be consistent?

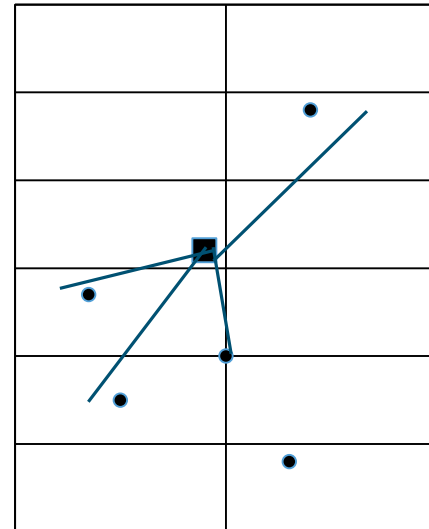


# (Sustainability) is influenced by various parameters



# For regional studies a custom weighting scheme is applied (Statistical Matching)

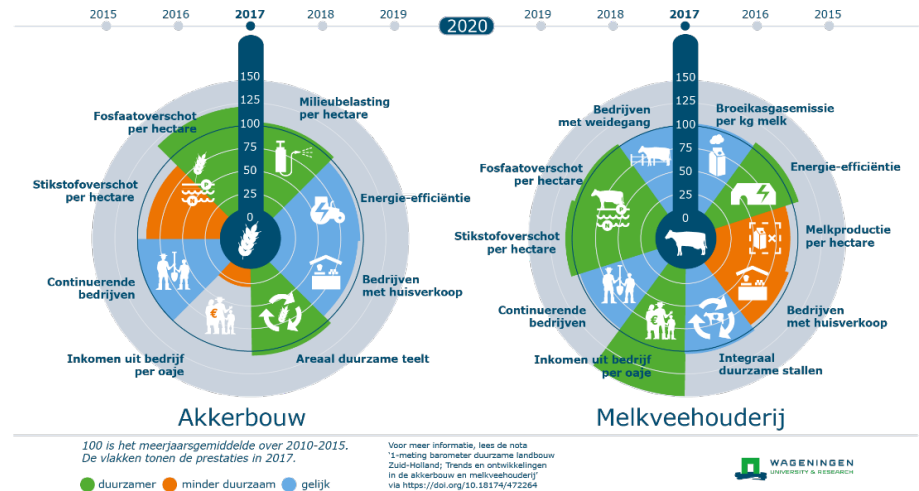
- Sample farms: All randomly selected farms. Selection based on size and type of farming.
- Search for group of best matching sample farms for each population farm (Euclidian distances):
  - Farm type (exact match)
  - Farm size (SO)
  - X en Y coordinate
  - Soil type (share of peat, sand and clay)
  - Intensity: SO/ha
  - Share of grassland
  - Share of arable land
- One model run → multiple studies



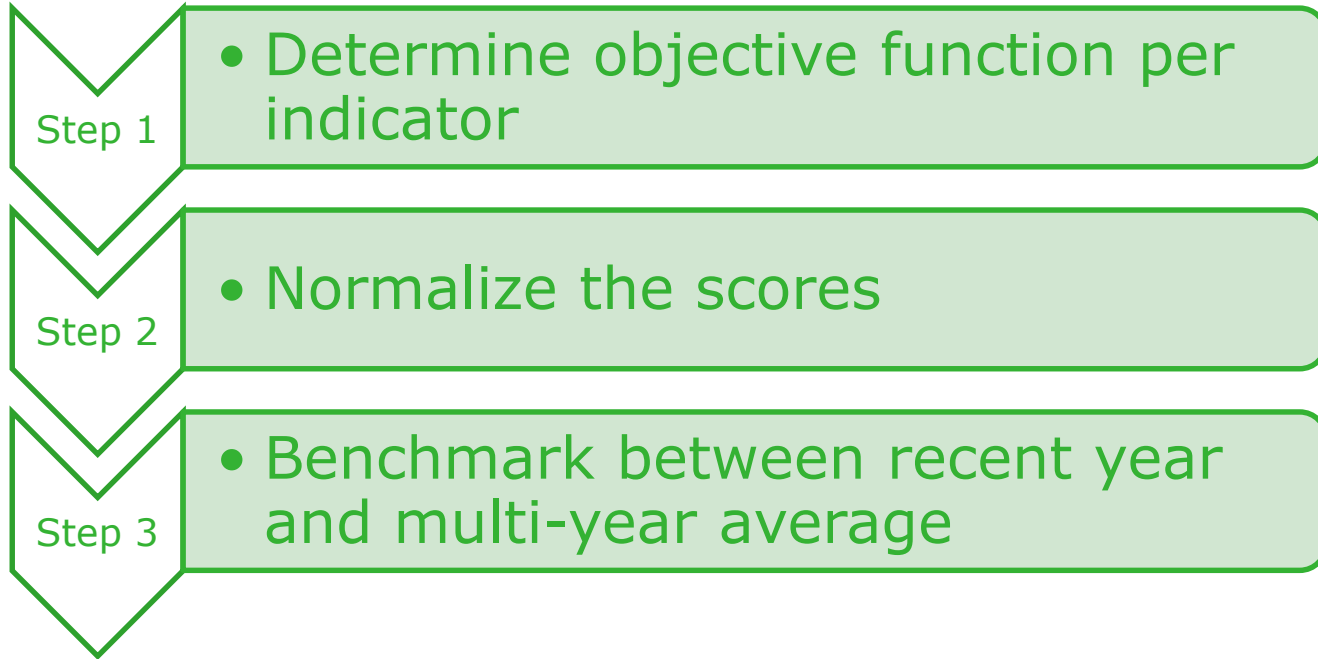
# Results – Delivered products

- Report with analysis on a large number of indicators on structure, people, planet and profit for arable and dairy farms
  - Time series (2000/2003/2007 – 2017/2018)
- A composite impact indicator
- Infographic

## Barometer duurzame landbouw Zuid-Holland 2015-2020



# Material & Method (Benchmark impact indicator)

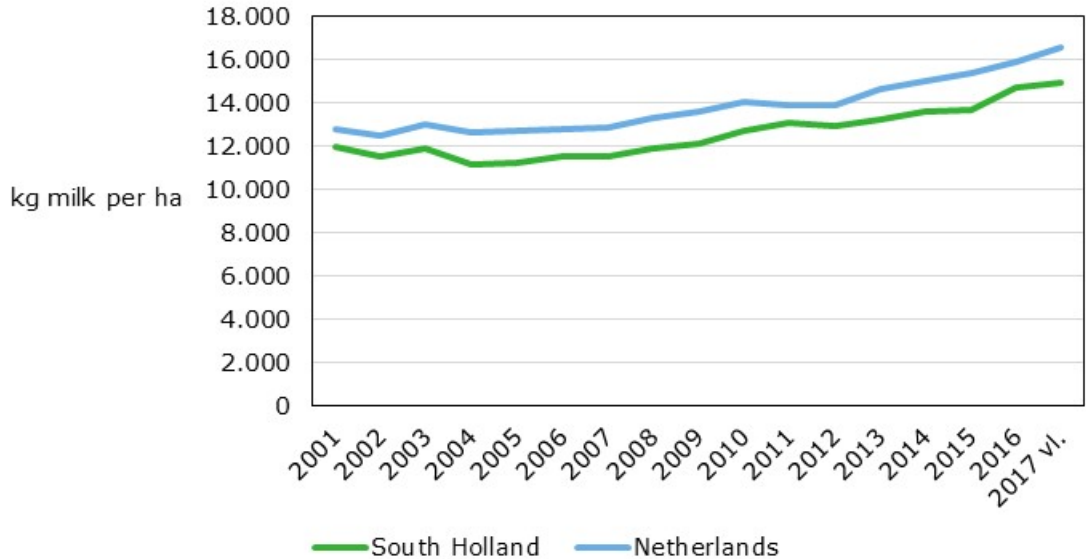




# Described indicators

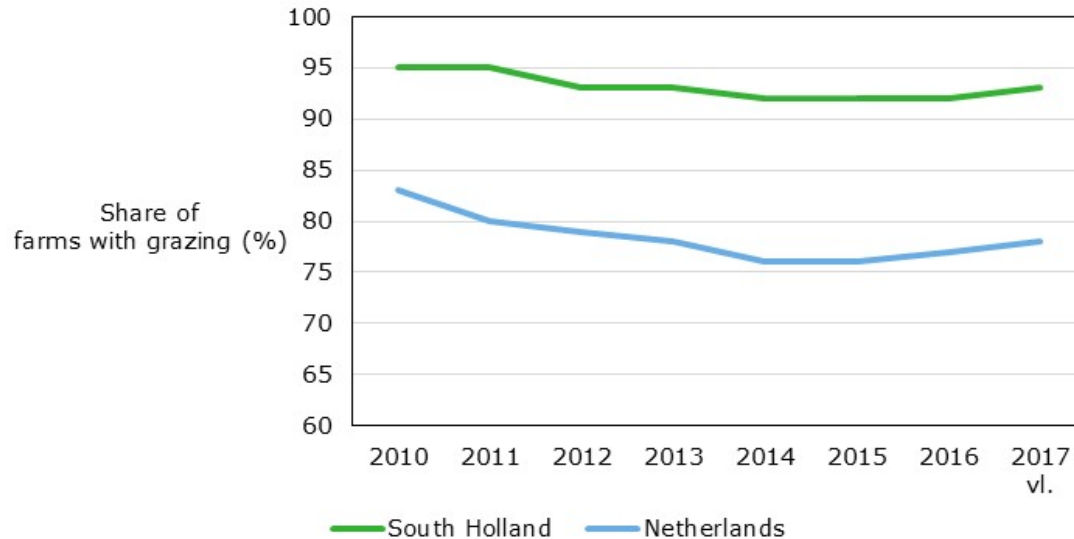
Farm structure	People	Planet	Profit
<ul style="list-style-type: none"><li>•Size</li><li>•Level of specialization</li><li>•Standard Earning Capacity</li><li>•Productivity per ha, cow</li><li>•Organic farming</li></ul>	<ul style="list-style-type: none"><li>•Labour input</li><li>•Succession, continuing farms</li><li>•Animal welfare (grazing, sustainable stables)</li></ul>	<ul style="list-style-type: none"><li>•Climate (greenhouse gas emissions) and energy use</li><li>•Manure (nitrogen en phosphate surplus)</li><li>•Crop protection (use and impact points)</li><li>•Water use</li><li>•Biodiversity</li></ul>	<ul style="list-style-type: none"><li>•Farm income</li><li>•Direct sales</li><li>•Solvency</li><li>•Modernity</li></ul>

# Farm structure milk production per hectare



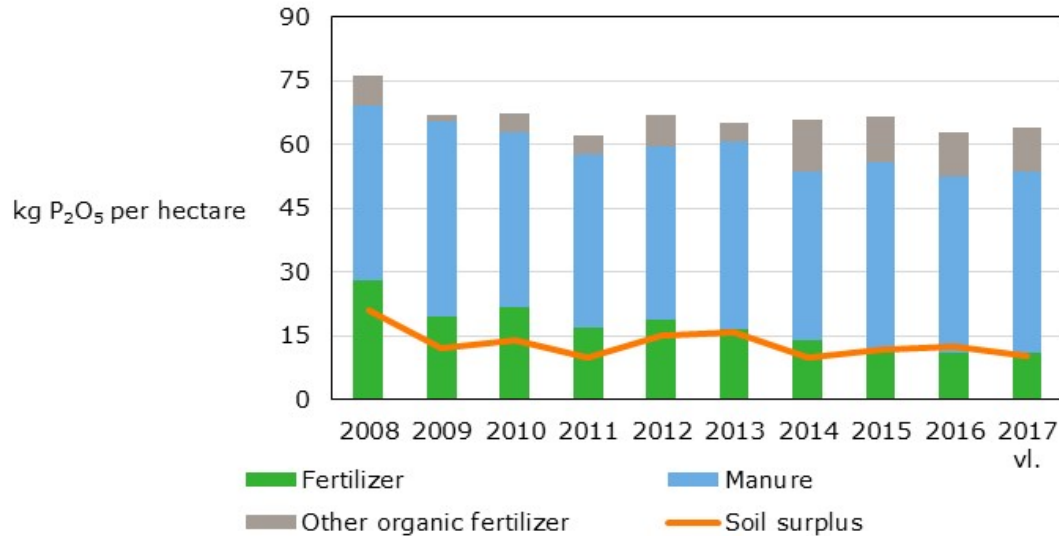
- Strong increase in milk production per ha last years (15.000 kg per ha in 2017).
- Dairy farms in South Holland are more extensive than the average in the Netherlands

# Animal welfare - grazing



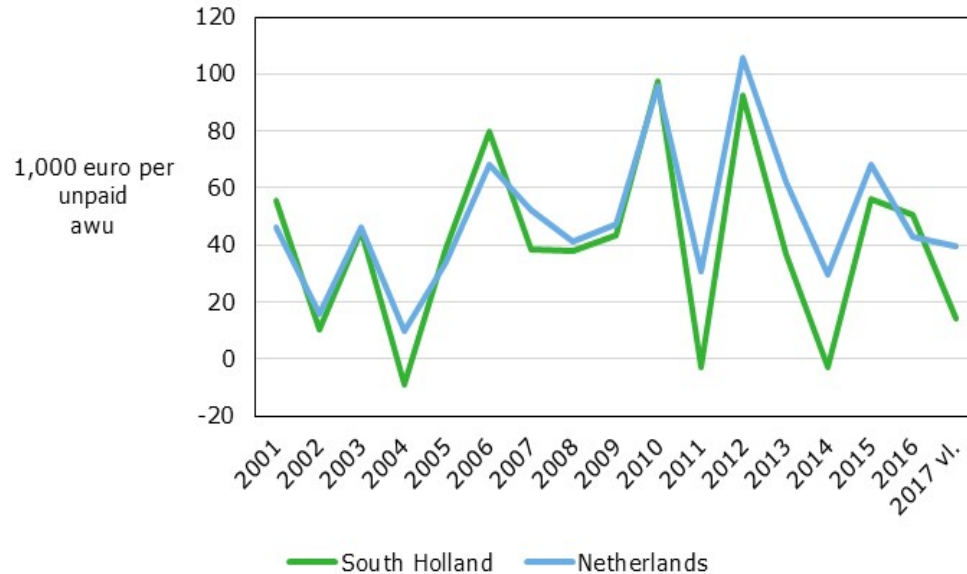
- Dairy farms in South Holland are on average smaller than in the rest of the Netherlands.
- These circumstances make it favorable to use grazing.
- 2017, 93% of dairy farms applied a form of grazing of dairy cows, compared with 78% in the Netherlands

# Fertilization & Phosphate surplus per ha arable farms in South Holland



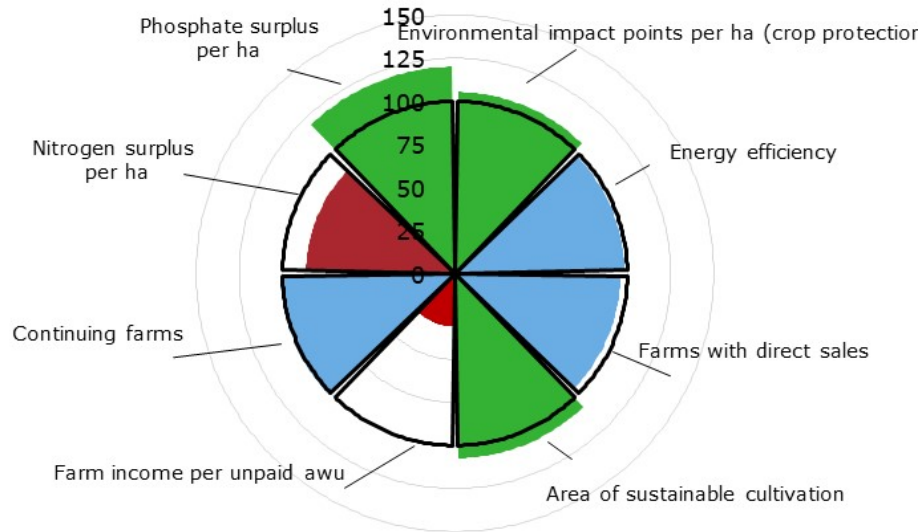
- The phosphate soil surplus has been stable since 2014 at around 10 kg per hectare
- Reduction in fertilizer use
- 2017 soil surplus equal to national sector level

# Farm income arable farms



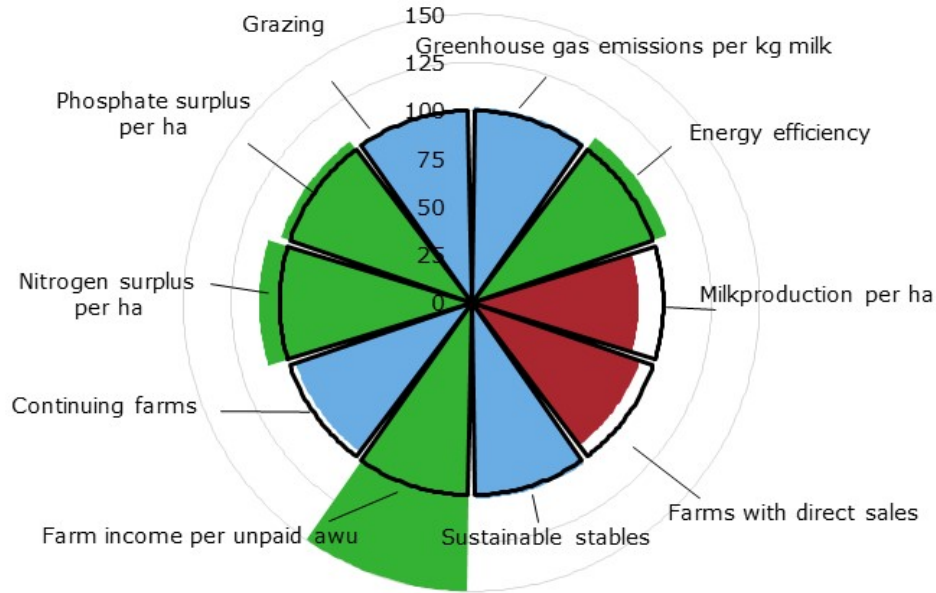
- The development of the income per unpaid awu in South Holland is quite parallel with the development in the total arable sector in the Netherlands
- 2004, 2011, 2014, 2017 significantly lower incomes due to lower financial income from ware potatoes, by far the most important crop on these farms

# Impact indicator arable farms South Holland



- Normalized relative sustainability performance
- 2017 (planes) compared to the multi-year average 2010-2015 (black circle = 100)
- A score of 150 means that farms perform 50% more sustainably in 2017 than the multi-year average
- Better performance on phosphate surplus, crop protection, sustainable cultivation
- Lower performance on farm income, nitrogen surplus

# Impact indicator dairy farms South Holland



- Better performance on phosphate and nitrogen surplus, farm income, energy efficiency
- Lower performance on milk production, farms with direct sales

# Reflection

- Choice of indicators presented in the impact indicator.
- Equal importance of each indicator.
- Important to take the underlying analyzes and developments into account.
- Assessing outcomes in relation to provincial policy. There are instruments within the CAP - Rural Development Program 2014-2020 (Pillar II). Subsidies available to support investments aimed at sustainability and young farmers.



# Regional studies (FADN data) more examples

- Sustainability performance in the 3 'Northern' provinces – report
- Website:
  - North Holland:  
<https://www.agrimatie.nl/Default.aspx?subpubID=2518>
  - Limburg:  
<https://www.agrimatie.nl/Default.aspx?subpubID=7281>
- Infographics North Holland per agricultural sector:  
<http://edepot.wur.nl/496261>

# Thank you for your attention: Questions?

See also:

<https://library.wur.nl/WebQuery/wurpubs/fulltext/472264>

(report in Dutch)

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