

# European dairy farms are efficient, but are they resilient?

*Are EU dairy farms resilient to climatic or economic shocks?*

## Problem

Whilst animal production has become increasingly efficient, how resilient is it? In order to achieve an optimal trade-off between resilience and efficiency, tailored solutions are needed, and therefore the impacts of the local production environment on production and efficiency need to be identified.

## Solution

An analysis of the European dairy sector was undertaken using the FADN economic data and combining this with AGRI4CAST climatic data to allow for regional differences to reflect different farm production environments. For example, the average milk yield per cow ranges from less than 6000 kg (North Atlantic region – UK, Ireland, Belgium, the Netherlands, western portion of France, western Scandinavia and northern Germany) up to more than 8000 kg (Boreal region - most of Sweden and Finland, all of Estonia, Latvia and Lithuania and much of the Baltic Sea).

The cost structure is also very variable, reflecting different input levels, and feed sources. In the forage-based regions purchased feed costs are lower and forage costs higher, whereas in the Mediterranean region (southern parts of France, Portugal and Italy, southern and southwestern Spain, whole of Greece, Malta, Cyprus) bought feed costs are much greater.

Individual farms in each region were analysed for their production efficiency (comparing outputs versus inputs) and their resilience (loss in performance and subsequent recovery after e.g. a price or climate shock).

## Outcome

It is clear from this first data analysis that, whilst the European dairy sector has a high efficiency rate of around 90%, its resilience to economic shocks is low. The reasons for these outcomes can be discovered in the underlying regional, climatic and farming systems' structures.

Climatic shocks caused a more variable reaction, and were regionally specific, with cooler and wetter regions such as North West Atlantic (UK, Ireland, Denmark, Belgium, the Netherlands and northwest of France) experiencing increased heat and even drought in the spring. The farm systems of the Mediterranean seemed most resilient to increased heat and drought, probably because they are historically adapted to such climates. By contrast, the Western Atlantic region (West and southwestern France, north-western Spain and Portugal) showed a negative effect on efficiency from drought in particular, indicating poor resilience. These differences show, how important the interaction between regional systems' conditions and increasing climatic impacts is.

## Key results

- European dairy production is efficient but has strong regional and farm system related differences.
- The margin per cow is strongly correlated with the price of milk, creating a strong resilience challenge.
- Mediterranean region reacted less, thus showing increased robustness against price shocks.

## Author(s)

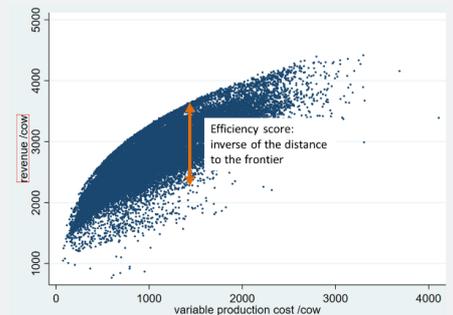
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## Keywords

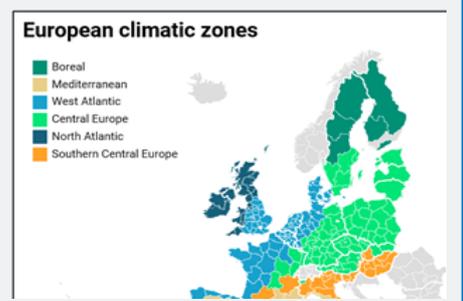
#Resilient and efficient dairy production  
#Long term resilience  
Local production environment  
Farm economic data  
#Farm Accountancy Data Network

## Illustrations

*Figure 1: Measuring dairy economic efficiency*



*Figure 2: Defined European climate zones*



## Practical recommendations

- European dairy production is efficient but needs to improve resilience through;
  - diversified income sources
  - reduced costs of production and
  - reliance on home grown feed.
- Based on the results of this study, it is recommended to differentiate the dairy policies taking into account the regional differences caused by climate and production systems. It is clear that the fluctuation of milk prices are the main challenges for a sustainable dairy sector in Europe, thus requiring the regulation of milk prices through different instruments in order to increase the resilience and sustainability of dairy production. These instruments could target the reduction of production costs and increase reliance on home grown feed to reduce external input price vulnerability.
- Farm structure plays a major role in the risk mitigation of price shocks, ensuring the farm income. Mediterranean region is known for its mixed farms which tried to decrease and balance the impact of economic shocks per production system per farm. Therefore, it is recommended that the new CAP takes into account different risk mitigation methods to support the diversification of income sources.
- Genetic differences play an important role in the resilience and productivity of farms. Use of dual purpose or crossbreeding with resilient breeds could also increase the resilience of farms in regions expressing poor resilience and efficiency due to climatic shocks or vulnerability to milk price variability.

*“GENomic management Tools to Optimize Resilience and Efficiency - GenTORE”* is an H2020 project which aims to develop innovative genome-enabled selection and management tools to empower farmers to optimize cattle resilience and efficiency in different and changing environments.

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