



Cost benefit analysis of new feeding techniques for monogastric livestock production systems

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ABSTRACT

The study attempts to provide insights into the economic impact of adopting new feeding strategies developed in the Feed-a-Gene project.

A cost allocation model for both pig fattening and broiler production has been used for this purpose.

The analysis is based on the most recent Farm Accountancy Data Network database (2013-2015).

Results show positive impact on farm net income depending on the improvement in technical performance across alternative management systems and feeding strategies.

MATERIALS & METHODS

The benefits of alternatives feeding systems for both pig & broiler production are examined through a cost benefit analysis (CBA).

Baseline scenarios are defined to examine the impact of the innovations on Farm Net Income (FNI).

Table 1. Technical impact of feeding innovations

Feedstuffs strategies	Pig		Broiler	
	Feed intake %	Output Gain %	Feed intake %	Output Gain %
Alternative feed ingredients (WP1)				
Green protein	2.94	3.36	-7.02	-14.79
Local rapeseed/Soybean	-0.65	4.84	1.48	1.62
Management systems for precision feeding (WP4)				
Ad libitum feeding	-5.06	1.15		
Restricted feeding	2.17	-1.24		
Use of traits in animal selection (WP5)				
Conventional diet	-14.01	-0.99		
Alternative diet	-20.75	-5.63	-1.6	0.8

The empirical analysis has been extrapolated to the micro-economic dataset obtained from FADN to estimate the economic impact of these technologies.

Sample farms specialised in pig (70%) & broiler production (50%) selected from five EU countries (Germany, Spain, France, Poland, and Denmark) for the period 2013-2015.

CONCLUSIONS

Empirical findings suggest:

- Positive impact for local rapeseed with physical fractionation of meal
- Green protein only after implementing the improved method for protein precipitation.
- A slight improvement with respect to Ad libitum feeding
- Positive margin to improve the technical performance of pig production through the selection innovation on alternative diets.
- A slight improvement in farm financial results with respect to local soybean meals with and without seed dehulling for broiler production.
- More complementary studies based on ex-post cost benefit evaluation are needed to ensure that the most efficient feeding solutions are identified.

OBJECTIVES

Assess the economic impacts of alternative feeds and feeding systems on pig and broiler production at the farm level:

Innovative feedstuffs (WP1)

Green protein from green biomass
Local rapeseed with physical fractionation of meal (without enzyme)

Precision feeding systems (WP4)

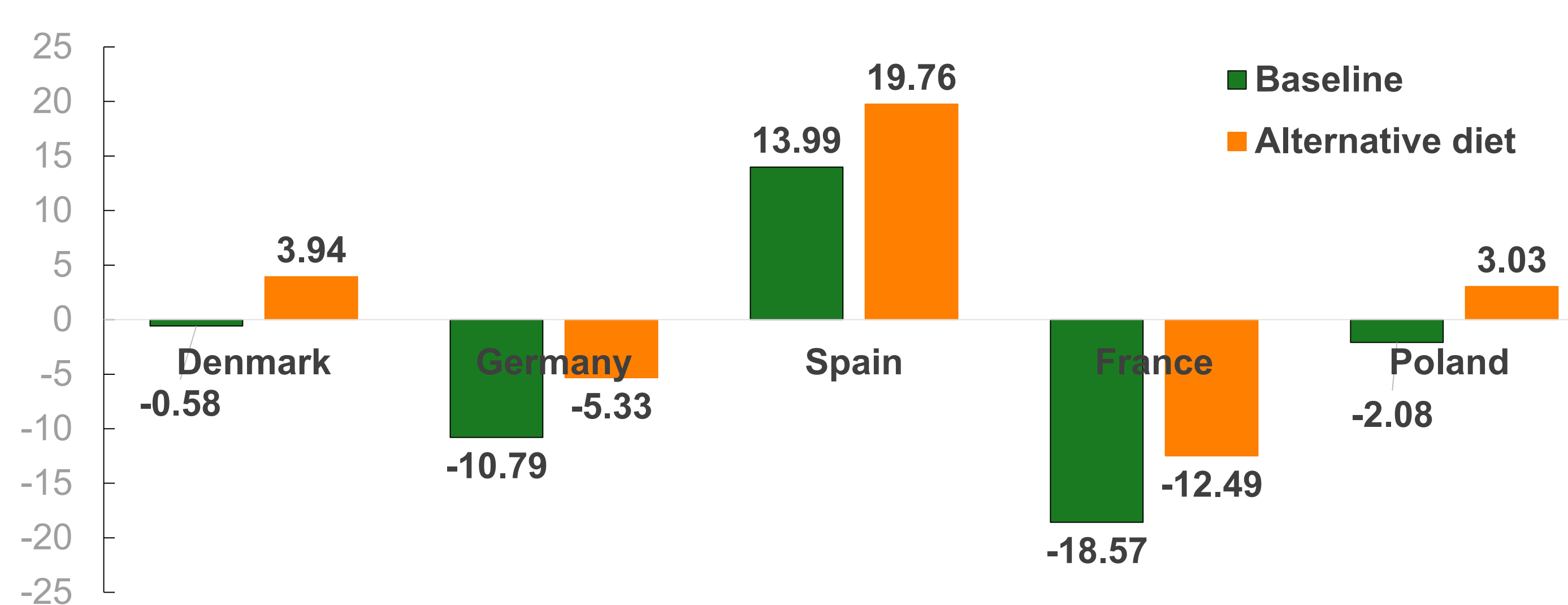
Ad libitum/ Restricted feeding strategy

Breeding solutions (WP5)

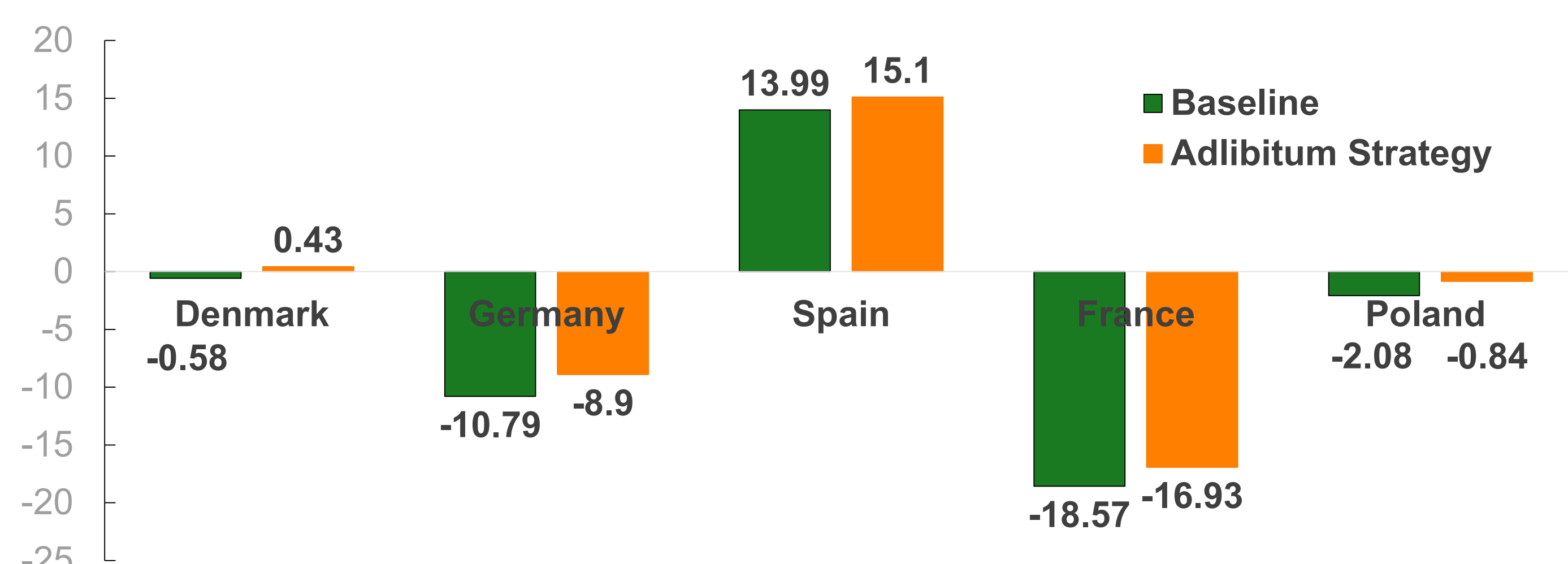
Conventional diet
Alternative diet with a higher crude fibre content

RESULTS

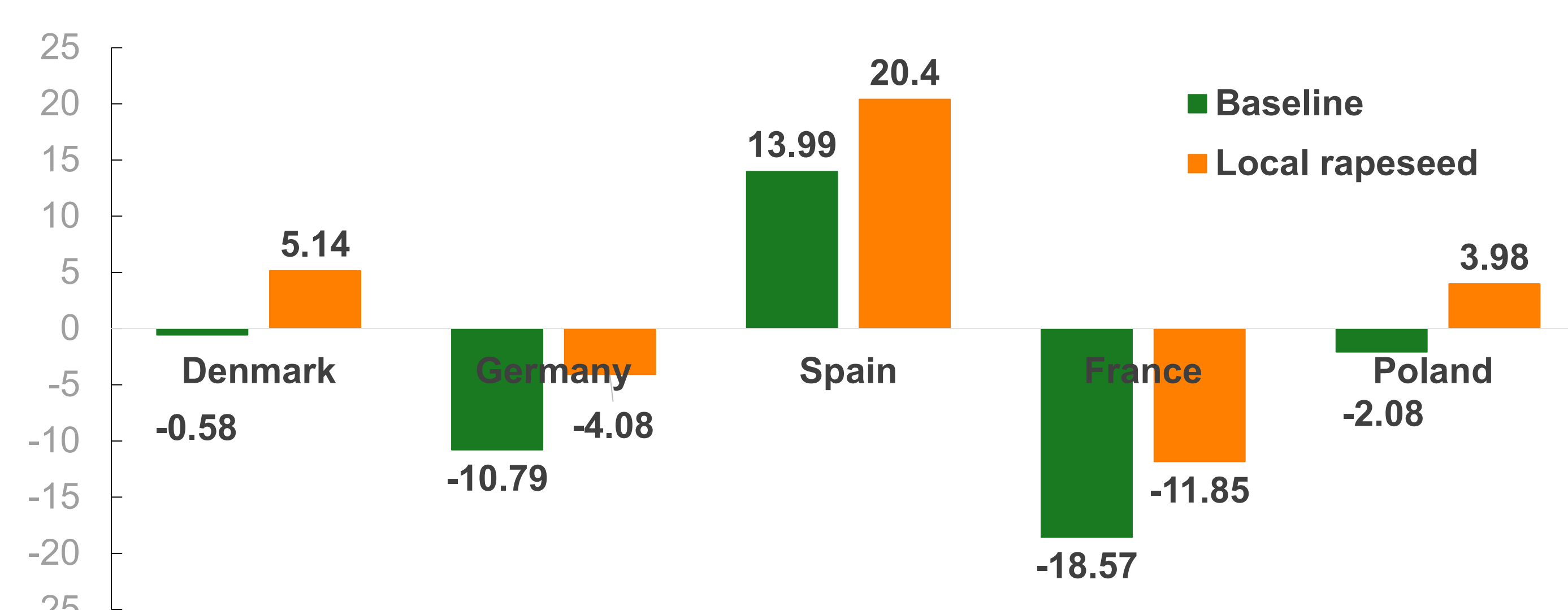
Impact of Alternative diet



Impact of Ad libitum Strategy



Impact of Impact of Local rapeseed



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Feed-a-Gene

Feed-a-Gene is a European H2020 project involving 23 partners which aims to adapt feeds, animals and feeding techniques to improve the efficiency and sustainability of pig, poultry and rabbit production systems. It is coordinated by INRAE (France), started in March 2015 and will last 5 years. The project aims to reduce the environmental impact of monogastric livestock production by improving and diversifying animal diets and feed technologies and by integrating new selection criteria for these animals. The Feed-a-gene project further aims to develop new management systems for precision feeding and precision farming and to evaluate the overall sustainability of the different management solutions proposed in the project.



The Feed-a-Gene Project has received funding from the European Union's H2020 Programme under grant agreement no 633531.