Barriers to adaptation and mitigation to climate change in livestock farms of Europe, Africa and South America

A GENERIC QUESTIONNAIRE

1. General data on the farmer and his environment
2. Farmer’s perception of climate change (CC) and local adaptation and mitigation
3. Likelihood of introducing mitigation and adaptation options

Adaptation options: use of crop varieties with different growing season; diversity plant species at field and farm scale; cooling of animals; use more robust/local breeds; change animal species
Mitigation options: spread over time mineral fertilizer applications; increase the proportion of legumes in the crop land area; use more productive breeds; increase cereals in the feed ration; add nitrate or lipids in the diet of ruminants; apply nitrification inhibitors onto croplands and/or grassland; cover slurry stores; use on-farm anaerobic digester; increase crop-livestock interactions; fire control

LARGE-SCALE INVESTIGATION

- 196 farms have been surveyed throughout 15 different areas
- We selected farms that were representative of the dominant systems found in each area
- Industrial systems, mixed beef and dairy systems and grassland-based systems have been investigated in Europe and South America
- In Africa, Grassland-based systems have been investigated

![Distribution of the study areas.](image)

FARMERS ARE VERY RECEPTIVE TO CC

Across all study areas, more than 80% of the farmers believe in CC and more than 60% observe a CC-effect on their on-farm yields (especially in Africa). However, less than 50% of the farmers believe in a contribution of agriculture to CC.

![Farmers' perceptions of CC](image)

CONTRASTING IMPORTANCE OF BARRIERS BETWEEN CONTINENTS

- Europe has the highest barrier index. South America has the lower barrier index.
- Economic barriers are predominant in hampering both adaptation and mitigation options.
- Biophysical barriers occur especially for adaptation options. They are predominant in Europe and Africa, and absent in South America.

![Index of importance of the barrier](image)

EXTRACTION INDICATOR

Typical examples of barriers per type:
- **Economic barriers**: too costly and/or not profitable; commercial legislation constraints (standards, legislation, labels)
- **Social barriers**: lack of skills; labour not available; lack of interest
- **Biophysical barriers**: soil and/or climate not adapted
- **Technical barriers**: negative effect on agronomic and zootechnic performances; farm system organization incompatible

![Calculation of the Index of importance of the barrier](image)

**Typical examples of barriers per type**

<table>
<thead>
<tr>
<th>Economic barriers</th>
<th>Social barriers</th>
<th>Biophysical barriers</th>
<th>Technical barriers</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too costly and/or not profitable; commercial legislation constraints (standards, legislation, labels)</td>
<td>Lack of skills; labour not available; lack of interest</td>
<td>Soil and/or climate not adapted</td>
<td>Negative effect on agronomic and zootechnic performances; farm system organization incompatible</td>
<td></td>
</tr>
</tbody>
</table>