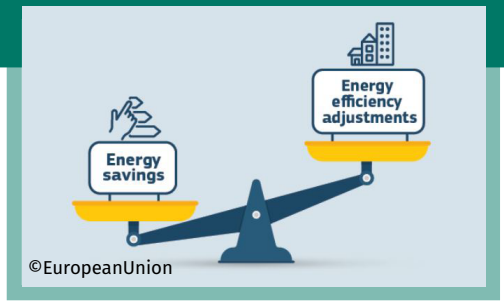
Technical Sheet for Solution Implementation

Optimizing Energy Use in Equine Farms



Thematic Area: Environmental Sustainability.

Priority: Management of resources and adaptation of practices to climate changes.

Need: Energy Management:
Photovoltaic energy: How to obtain information and advice on photovoltaic energy?
Renewable energies: What solutions for the use and production of non-fossil energies in equine farms (for example biogas, solar energy, etc.).
Improving the energy efficiency of farms, how to reduce waste?
Information on financing and/or investments for renewable energies.
Renewable energies: what use and production systems are possible on equine farms.

Solution EU Number: CC-10.

Content of the Solution: Optimizing energy use on equine farms through monitoring, analysis and the integration of efficiency measures and renewable energy sources; to improve cost efficiency and reduce environmental impact.

Reasons for Implementing this Solution

Rising energy costs and the need for sustainable resource management make it essential to monitor and quantify energy consumption before reductions can be effectively implemented. For equine farms, this approach addresses both economic competitiveness and environmental responsibility.

Description of Solution Strategies

An effective strategy for reducing energy consumption in equine facilities begins with a comprehensive understanding of how and where energy is being used. The central idea is to establish transparency in consumption, so that informed decisions can be made about where reductions are possible and which investments are worthwhile.

The approach involves three key dimensions:

1. **Monitoring and Measurement**
   Energy consumption must first be quantified in a structured way. This means moving beyond a single aggregated electricity bill towards a more detailed picture of how different activities and equipment contribute to total usage. This monitoring creates the basis for identifying inefficiencies and developing realistic reduction targets.

2. **Analysis and Prioritization**
   Once data is available, it can be analyzed to reveal which activities have the greatest impact on total consumption and costs. This enables managers to prioritize actions that offer the highest savings potential—whether by optimizing day-to-day practices, upgrading equipment, or investing in renewable energy sources.

3. **Integration into Management Practice**
   Energy efficiency should not be treated as a one-off project, but rather as an ongoing part of farm management. Embedding energy monitoring into regular operations ensures that improvements are maintained, staff remain engaged, and adjustments can be made as conditions change (e.g. fluctuating energy prices or new technologies).

By focusing on measurement, analysis, and continuous integration into daily practices, equine farms can move towards both greater cost efficiency and improved environmental sustainability.

Implementation Steps

1. **Knowing your consumption**
   - Install at least one general energy meter; ideally, use sub-meters for each sector to enable detailed monitoring.
   - Collect and analyze invoices from the energy supplier to trace consumption (kWh) over time.

2. **Carrying out an energy audit**
   - Perform a structured energy audit to identify the main energy-consuming activities and equipment.
   - Use audit results to design a concrete action plan and determine whether corrective measures, equipment upgrades, or renewable energy integration are required.

3. **Choosing renewable energy sources**
   - Diversify energy supply for heating and hot water by integrating renewable options (e.g., solar, wood pellets, wind, geothermal).
   - Evaluate long-term cost savings and environmental benefits against initial investment.

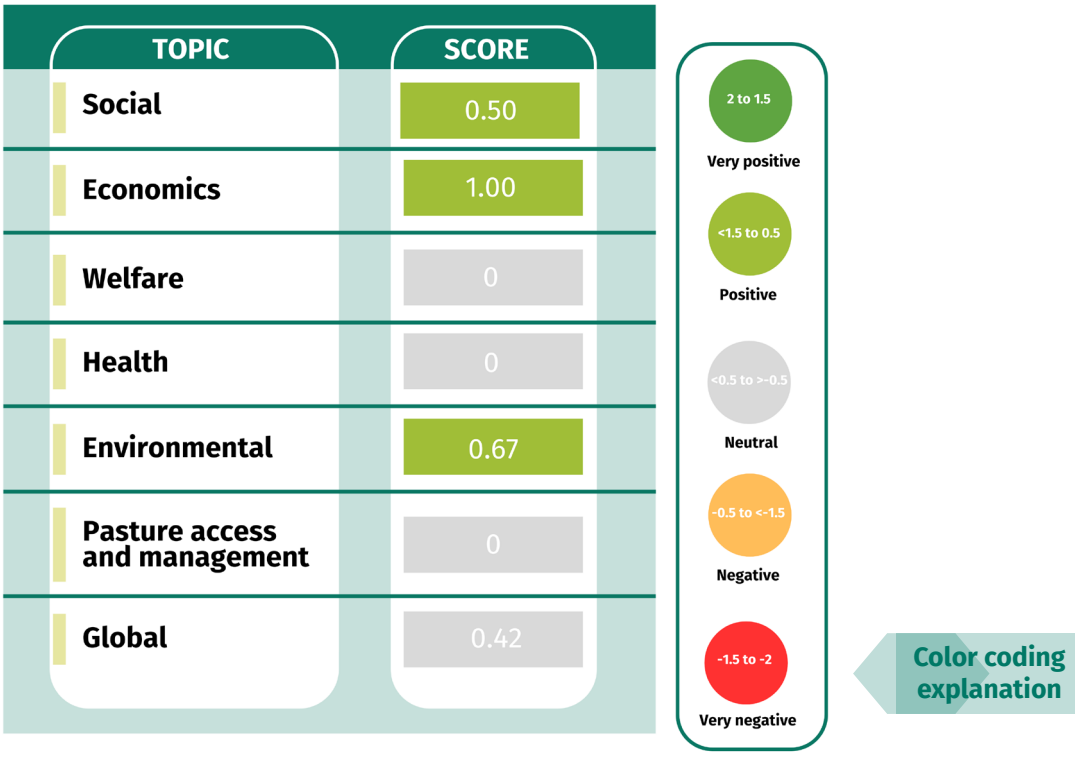
4. **Making the most of wood**
   - Prioritize the use of locally available wood to reduce transport and related emissions.
   - Use efficient heating systems (e.g., closed fireplaces with inserts) instead of inefficient open fireplaces.

5. **Reducing electrical consumption**
   - Install timers, thermostats, presence detectors, and energy-saving bulbs.
   - Optimize heating and water heater temperatures.
   - Establish routines to switch off lights and electrical devices when not in use.
   - Promote awareness among staff that «the best energy is the energy you don’t use».

Optimizing Energy Use in Equine Farms

6. **Segmenting networks**
   - Design lighting and electrical circuits so that only specific areas (e.g., one row of stalls) can be activated at a time.
   - Avoid unnecessary full-barn lighting or powering of unused sectors.

How Will this Solution Impact the Performance of your Farm ?



Socioeconomics: This solution will support the social performance of the farm because efforts to reduce electricity use demonstrate responsibility and awareness of environmental issues. Even if electricity consumption in horse farming is relatively low, visible action in this area can still strengthen the farm's image as forward-looking and socially responsible, contributing to broader public trust.

This solution will support the economic performance of the farm because reducing energy use or investing in renewable alternatives like photovoltaics can lower costs in the medium and long term. However, since electricity consumption in equine farming is generally modest, the direct economic impact remains limited, with the main gains linked to efficiency, renewable adoption, and long-term capital value.

Technical Sheet for Solution Implementation

Optimizing Energy Use in Equine Farms

Health & Welfare: This solution has no direct impact on the farm's health performance, as it does not contribute to reducing the use of medication or alleviating pain in equines.

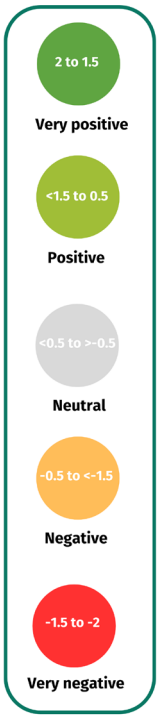
Likewise, it has no effect on the farm's welfare performance, since it is not associated with improved housing or feeding conditions that would support a positive emotional state in the animals.

Environmental Sustainability: This solution will support the environmental performance of the farm because saving energy will strongly impact on climate change mitigation.

This solution will not have an effect on the land access or management performance of the farm because most of the energy saving will happen elsewhere. However, if solar power plants or windfarms should placed on agricultural land, it reduces the arable land or grassland area of the farm.

How Will this Solution Impact the Resilience of your Farm?

TOPIC	SCORE
Social	0
Economics	0.08
Welfare	0
Health	0
Environmental	0
Pasture access and management	0
Global	0.01



Optimizing Energy Use in Equine Farms

Socioeconomics: This solution will not impact social performance of the farm facing external challenges assessed because its effects are mostly technical rather than social.

This solution will not impact economic performance of the farm facing external challenges assessed because electricity use in equine farming is generally modest. Despite a slight positive effect through savings when energy prices rise and improved efficiency from better energy management, the overall financial contribution to resilience remains limited.

Health & Welfare: This solution has a neutral effect on the health performance of the farm when facing external challenges, particularly in reducing mortality and the need for curative medication.

Additionally, the solution is unlikely to have an impact on welfare performance as it does not affect the emotional well-being of horses with appropriate and species-appropriate housing conditions if the farm is faced with external challenges.

Environmental Sustainability: This solution will not impact environmental performance of the farm facing external challenges assessed because environmental benefits are gained when the solution has taken in use, in these challenges they don't have added value.

This solution will not impact land access or management performance of the farm facing external challenges assessed because it has only small impact on grassland management.

Optimizing Energy Use in Equine Farms

How Can this Solution Help your Farm Cope with Specific External Challenges to Become More Resilient?

CHALLENGES	SCORE
Inflation	0.08
Pandemic	0
High welfare standard	0
High infectious diseases	0
Extreme weather event	0
Loss/limited access to grassland	0

Inflation & Social Crises: This solution will not impact the global performance of the farm facing inflation because electricity use in equine farming is modest. Despite a slight positive effect through potential savings when energy prices rise and improved efficiency from better energy management, its contribution to overall resilience remains limited.

This solution will not impact the global performance of the farm facing pandemics because it has no direct influence on social resilience or operational continuity. Its effects are mainly technical, with no significant impact on cohesion, welfare, or the farm's ability to cope with such disruptions.

Welfare & Diseases: This solution has a neutral effect on the farm's global performance when facing infectious disease challenges. It has no contribution in reducing pain, mortality rates, or disease incidence.

When adapting to compulsory high welfare standards, the solution has no direct impact on the farm's global performance.

Optimizing Energy Use in Equine Farms

Climate Change & Access to Land: Environmental challenge does not impact the global performance of the farm facing extreme weather events because the solution does not have direct effects. However, using renewable energy for thermal comfort for equines (like heating water in low temperatures or use of fans in higher temperatures) would have a small positive impact.

Land access/management challenge: this solution will not impact the global performance of the farm facing loss or limited access to agricultural land because its effects are not evident.

Cost-Benefit Analysis

Costs

Socioeconomics:

- Possible High initial investment for renewable energy systems (e.g., solar panels, wind turbines).
- Purchase costs for meters and sub-meters.
- Possible expenses for external energy audits.
- Replacement costs for outdated equipment with more energy-efficient alternatives.

Health & Welfare:

- No significant direct welfare costs identified.

Environmental Sustainability:

- No evident direct environmental costs identified from this solution.

Benefits

- Lower energy bills through more efficient consumption.
- Improved public image of the farm, showing commitment to sustainability.
- Increased competitiveness by reinvesting saved money into farm development.
- Reduced dependence on fossil fuels, supporting long-term economic stability.

- No significant direct welfare costs identified.

- No evident direct environmental costs identified from this solution.

Technical Sheet for Solution Implementation

Optimizing Energy Use in Equine Farms

Cost-Benefit Analysis

Costs

Cooperation between farms:

- Energy monitoring and quantification still need to be carried out individually for each farm, limiting full cost-sharing potential.
- Cooperation feasibility may vary depending on country-specific attitudes and regulations.

Benefits

- Possibility for nearby farms to share renewable energy equipment, thereby reducing individual investment costs.
- Strengthening of local collaboration and exchange of best practices.

Additional Resources

Websites and further information

- French language
  - EquuRES: La gestion de l'énergie dans les structures équines https://www.label-equures.com/bonnes-pratiques/energie-structures-equines
  - EquuRES: Les économies d'énergie : privilégier des ampoules basse consommation https://www.label-equures.com/bonnes-pratiques/les-economies-denergie-privilegier-des-ampoules-basse-consommation
  - Total Energies: Secteur agricole : comment réaliser des économies d'énergie? https://services.totalenergies.fr/professionnels/conseils/transition-energetique/secteur-agricole-comment-realiser-economies-energie
  - Économiser l´énergie à la ferme https://www.civam.org/wp-content/uploads/2019/07/Civam_PqComment_EconomieEnergie.pdf

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Optimizing Energy Use in Equine Farms

Annex

Ideas to Ideas to Animate a Workshop about the Solution

- Ask an **energy consultant, utility provider, or company specialized in renewable energy / farm technology** to sponsor the workshop
- Find a **model equine farm** where energy monitoring and reduction strategies are already in place.
- Complete **practical monitoring tasks** (e.g., reading sub-meters, analyzing consumption data) and let participants take part in these exercises so they become familiar with the process.

Proposed structure for the workshop on Energy Monitoring and Reduction in equine farms

1. Introduction to Energy Monitoring and Reduction
- What is energy monitoring and why is it important for equine farms?
- Key features and components: general meters, sub-meters, monitoring software.
- Types of monitoring systems available on the market.

2. Benefits of Energy Monitoring and Reduction in Equine Farms
- Cost savings: lowering electricity and heating bills.
- Environmental benefits: reducing the farm's carbon footprint.
- Increased competitiveness: reinvesting savings into farm development.
- Improved farm image: demonstrating commitment to sustainability.

3. Practical Applications on Equine Farms
- Monitoring electricity use of lighting, heating, ventilation, and machinery.
- Using data to identify inefficiencies and prioritize action.
- Examples of day-to-day energy-saving practices (timers, thermostats, zoning).

4. How to Choose the Most Suitable Approach
- Assessing the farm's needs and main energy-consuming activities.
- Considering structural requirements (barn layout, existing equipment).
- Features of monitoring systems: ease of use, data accessibility, compatibility.
- Price comparisons and service options (buy vs. lease).

5. Hands-On Demonstration
- Live demo of installing or reading a sub-meter.
- Participants test data logging software or monitoring apps.
- Demonstration of simple energy-saving measures (e.g., adjusting heating controls).

6. Maintenance and Troubleshooting
- Routine checks of meters and monitoring equipment.
- Data validation and troubleshooting common errors.
- Updating or recalibrating equipment when needed.

7. Case Studies and Real-World Examples
- Presentation of equine farms that have successfully reduced consumption.
- Discussion of implemented strategies (e.g., renewable energy integration).
- Lessons learned and advice from farm operators.

8. Cost Analysis and Return on Investment (ROI)
- Initial costs: meters, audits, renewable energy systems.
- Calculating potential savings based on farm size and activity levels.
- Long-term benefits: reduced dependency on fossil fuels, stable energy costs.

9. Q&A Session
- Open discussion about participants' specific farm contexts.
- Addressing uncertainties about technology, costs, and implementation.

10. Wrap-Up & Resources
- Summary of the workshop's key takeaways.
- Providing contacts of energy consultants, equipment suppliers, and online resources.
- Information on potential funding opportunities, subsidies, or discounts via sponsors.