

Report Seminar

Resource-use efficiency:

Implications for the Sustainability and Competitiveness of the European Livestock Sector

7 November 2012, Brussels



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1. Livestock in Europe and the need to become more resource-use efficient.

The importance of livestock production

A sustainable and competitive livestock sector is of great importance to Europe; today and in the future. Animal products provide a major source of protein and are essential for a healthy and balanced diet. Due to population growth and increasing prosperity, demand for animal products is predicted to double over the next decades. Providing European citizens with safe and sufficient food, produced in an efficient and sustainable way, is a priority for the livestock sector, and for Europe.

Europe has always been a world class producer of animal products; our knowledge and expertise are being valued around the world. With an annual turnover of €130 billion, and accounting for 5,2% of EU employment in 2007, the livestock sector forms an important part of Europe's economy. However, to remain competitive and contribute to a sustainable future in Europe, we need to develop new solutions and address the challenges we are facing together.

Promoting sustainable and competitive livestock sector

The Animal Task Force has taken up this challenges by promoting a sustainable and competitive livestock sector in Europe. We do this by exchanging knowledge and organising dialogue and cooperation between stakeholders in the European livestock domain. It is our aim to find solutions for further development. Solutions that are resource-use efficient, diminish or eliminate environmental pressure, are adaptable to climate change, are beneficial for animal health and welfare, contribute to the bioeconomy and that meet the needs of European citizens, both today and for the future.

The yearly Animal Task Force seminar is organised to be a forum in which key stakeholders discuss a central theme that is of major importance for the sustainable development of the sector. Ideas, actions and connections established in this meeting form key points in the actions taken in the coming year.

Resource-use efficiency

This year's seminar addressed the theme 'resource-use efficiency'. Resource-use efficiency is a major challenge to the sustainable development of the livestock sector in Europe, and the world. The size and complexity of this challenge requires multiple actions by multiple stakeholders.

The Global Agenda of Action (GAA) for sustainable livestock sector development, a FAO-hosted initiative, deals with resource-use efficiency in a global platform. That are three initial focus areas:

- 1) Closing the efficiency gap
- 2) Restoring value of grasslands
- 3) Zero discharge

Based on the GAA, this seminar aimed to find the implications of these topics for the sustainability and competitiveness for the European livestock sector. Politicians, industry representatives, knowledge providers and policy-makers discussed the question of resource-

use efficiency in the livestock sector. Please read further for more background information about the GAA in the presentation of Henning Steinfeld.

The seminar was organised in close cooperation with Copa-Cogeca and the Global Agenda of Action.

This report is an account of the discussions that took place during the seminar. We hope this inspires you to work together with others on finding new solutions for a more resource-use efficient Europe and especially a more resource efficient and sustainable livestock sector.

How does Europe's livestock sector remain competitive in a context of growing resource scarcity and a need to address climate change? What are the opportunities and challenges to improve the European livestock sector resource-use efficiency? What would a European Agenda of Action for a sustainable livestock sector look like?

2. Seminar report

On November 7 2012, the Animal Task Force seminar brought together 75 stakeholders in the livestock sector to discuss challenges and opportunities for a more resource-use efficient livestock sector in Europe.

The programme started with a general account of the Global Agenda of Action, a FAO hosted initiative which discusses resource-use efficiency on a global scale. This was followed by three discussion rounds on the three focus areas of the GAA:

- 1) Closing the efficiency gap
- 2) Restoring value of grasslands
- 3) Zero discharge

The discussion rounds started with a general introduction of an expert, followed by working groups which discussed the implications for sustainability and competitiveness in Europe. During the working groups, challenges and actions have been identified.

Below you find a report of the contributions and discussions in the seminar. The presentations of the seminar are available on the Animal Task Force website: www.animaltaskforce.eu.

Programme

- 10.30 Welcome
- 10.45 Global Agenda of Action – by Henning Steinfeld, FAO
- 11.15 Discussion theme 1: Closing the efficiency gap
Introduction by Ruud Tijssens, Agrifirm
- 12.30 Lunch
- 13.30 Discussion theme 2: Restoring value of grasslands
Introduction by Alain Peeters, RHEA
- 15.00 Discussion theme 3: Zero discharge
Introduction by Nigel Penlington, BPEX
- 16.15 Plenary discussion:
Towards an Agenda of Action
- 17.00 Closing & Drinks

Welcome by Paul Vriesekoop, Chair of the Animal Task Force

Paul Vriesekoop starts with thanking all participants for joining this seminar in Brussels. The Animal Task Force aims to promote sustainable and competitive livestock production in Europe. Resource-use efficiency is one of the topics the ATF is working on. The Global Agenda of Action addresses this issue on a global scale. The ATF is happy that so many stakeholders joined today to work on an European Agenda of Action for resource-use efficiency in Europe's livestock sector.

Welcome by Pekka Pesonen, Secretary General of Copa-Cogeca

Mr. Pesonen welcomes the participants to the Copa-Cogeca building. Copa & Cogeca represent 38,000 cooperatives in all 27 EU countries. Three issues are of major importance for the agricultural sector in Europe:

- 1) sustainability issues
- 2) innovation, on EU level but also on national level.
- 3) the food chain and how we proceed with added value to consumers. We have to understand how it works, and how it affects our competitiveness.

Mr. Pesonen mentions he is quite concerned with the latest development in the EU with respect to discussion regarding funding for research both in the EC as well as in the member countries. Agriculture is the most competitive sector of Europe in the global market. Innovation is needed to stay ahead, to realise green growth, and to make better use of our resources in a more efficient manner. We need to get more from less. Otherwise we will not be able to feed the world, with the increase of consumers and buying power on the market place. Animal products is and will stay an essential part of human diets. Mr. Pesonen hopes that the seminar results in good recommendations on how to work on this in the future.

Global Agenda of Action by Henning Steinfeld, FAO

“The Global Resource Crisis and Livestock”

Henning Steinfeld is Chief, Livestock Information, Sector Analysis and Policy Branch at the FAO. Please find his presentation [here](#).

The world is facing a global resource crisis: climate change; land scarcity, water scarcity; nitrogen and phosphorus cycles; energy; biodiversity loss.

The livestock sector is highly intertwined with these resource, e.g:

- ~ 26 % of all land is grazed.
- ~ 35 % of all crop land is for feed.
- ~ 20 % of total water use.
- ~ 15 % of greenhouse gas emissions.
- Largest source of N₂O.
- Driver of deforestation (grazing, soy)
- and land degradation.
- Major source of water pollution.

“Europe is a leader in technologies, and also on environmental efficiency. Europe can contribute to a more resource-use efficient livestock sector by sharing its knowledge and technologies with the world”

The question is how can livestock help to address the global resource crisis; what are the options for the future?

- Reduce/shift consumption? Reduce overconsumption in certain countries/groups only; dietary convergence; shift to low impact products.
- Alternatives and substitutes? Such as fish; synthetic meat; fake meat which tastes like, looks like, but is made of plants.

The GAA mainly focuses on how to improve production. Technical solutions exist to improve resource efficiency (output per unit of land, water, nutrients, energy); to sustainably manage grazing land (potential C sequestration in natural grasslands); to substantially reduce nutrient and energy losses from livestock waste

If technical solutions exist, then why aren't they applied? First of all, prices and incentives are wrong. Subsidies are often misdirected, favouring high input use, and secondly, externalities are not considered. Other complications are the diversity of situations; remoteness; many livestock keepers are poor – worldwide 750 million people rely on livestock for their livelihood.

Resource scarcity is the ‘game changer’: it has become an economic reality – coping with scarcity and economic necessity. Feed prices have increased tremendously over the past 10 years (see figure 1). In addition: climate change affects agriculture like no other sector. Livestock has the greatest potential to respond.

For a sustainable livestock sector, better policies are needed, and better science.

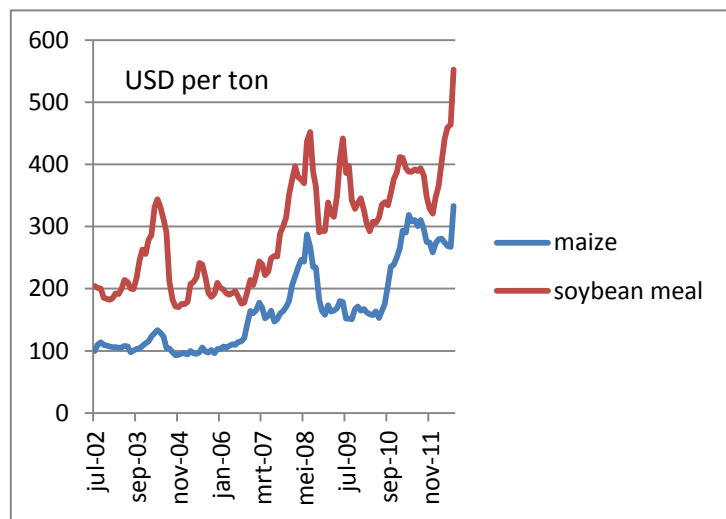


Figure 1: Feed prices over the last 10 years

The Global Agenda of Action focuses on livestock sector's resource use. The GAA has three focus areas:

- **Closing the efficiency gap** – raising the performance of large numbers of producers
- **Restoring the value of grasslands** – transform grasslands for environmental service provision
- **Towards zero discharge** – recycle and recover energy and nutrients from animal waste

FAO is now working on action programmes for these focus areas.

Q&A's:

What is the specific role of Europe in this global initiative?

Europe is a leader in technologies, and also on environmental efficiency. There is no other region that has such a high production and well developed environmental regulation as Europe. Europe can contribute on how to manage societal, environmental and economic aspects in the livestock sector and share knowledge and technologies with the world.

How is animal welfare involved in the GAA?

FAO has been working with animal welfare NGOs to make sure animal welfare objectives are embedded in FAO work. FAO has adopted the 'do-no-harm' principle and are developing a number of safeguards when it comes to animal welfare for our international activities. They are developed together with animal welfare ngo's and discussed internationally. They will be adopted by the GAA at the Nairobi meeting.

Discussion theme 1: Closing the efficiency gap

“Closing the efficiency gap – a contribution from European Feed Industry” - general introduction to the theme by Ruud Tijssens, Agrifirm & EUFETEC.

Ruud Tijssens is Director Corporate Affairs, Strategic R&D and CSR at Agrifirm, one of the largest cooperatives in the Netherland and Europe. Please find this presentation [here](#).

The main challenges for the world are feeding 9 billion people, with land scarcity, increasing GHG emissions and limited resources.

The feed industry can contribute to these challenges by a higher resource-efficiency. One of the issues involved in these challenges is getting the right nutrient for the animal at the right place at the right time. Feed value is about what the animal is able to do with the feed when the animal's needs changes every day. If we are able to understand what the animal needs on a daily basis, it is possible to get a reduction of nitrogen use of 25-29%. This can result in major resource efficiency gains.

Looking to a European Feed Research Agenda, this implies new research needed on:

- Optimising resource efficiency by using nutrients efficiency: by focusing on better predictive modelling, sensor technology and the use of nutrigenomics. This will lead to less phosphate, less CO₂, less proteins and raw materials.
- Healthy animals for healthy consumers: increased health or resistance of animals will lead to less energy for internal maintenance, which will lead to more energy for growth and a higher efficiency. In the end this will results in less phosphate, less CO₂, less proteins and raw materials.
- Social responsible livestock farming: outdoor farming and increased welfare can go together with higher resource efficiency, when we learn more about sensor technology; prediction of nutrient utilization; grassland management.

Discussions in the working groups

The four working groups have identified challenges and opportunities for closing the efficiency gap and formulated gaps and actions to be taken. The themes discussed are both 'hardware', 'software' and 'orgware' related. A summary of the central themes in the discussion:

Systemic approach

Resource-use efficiency is not a matter of livestock alone. A systemic approach is needed to close the efficiency gap. We do not have to focus on livestock only, but should take into account the whole production chain. The whole system should be optimised and the losses in the whole system should be addressed.

Systemic approaches should be implemented with different specifications of countries (what you do in Norway differs from Korea, and also environmental and social conditions differ).

- *We need an uniform pan-European framework for evaluating issues related to CH₄, biodiversity, N, sustainability to compromise between economic efficiency and environment protection. Need to understand the trade-offs between efficiency on a /hectare, /nutrient input and /water input basis.
This should be a project theme in H2020.*
- *We need to elaborate and implement uniform feed evaluation / animal requirements systems / diets optimizations & feeding strategies across Europe.*

Residues

Livestock production in the EU is using too much resources in animal livestock. Residues from various industries should be valorised, for CH₄ (energy) production or animal feeding. E.g. manure needs to be seen as a double resource (energy from biogas etc. and then still

contains nutrients) and not as a problem. A core issue is to adapt the feeding strategies to the competition with food for humans (including biofuel).

Protein deficit

There is the challenge of future protein and mineral shortages in the EU. We should reduce the dependency on protein imports for livestock feeding by:

- *Tuning inputs (feed industry work on raw materials, models, feed evaluation, real-time monitoring).*
- *Breeding for production at lower inputs (livestock better adapted to feed not useable for human food proteins) and in general higher output per unit input.*
- *Developing / better understanding alternative feeds.*

Health & welfare

Animal health and welfare has a direct link to animal productivity and efficiency in the chain as such, but also can affect human health in the end. There are costs/other reductions in efficiency associated with new management designed to reduce issues that must be evaluated in the broader picture (e.g. allowing to reduce disease in aquaculture; reducing stocking density to reduce parasite issues).

- *We need new measures of health management on the farm*
- *Breeding for more healthy and robust animals that do not require special care or veterinary treatments.*

Economics / Price volatility

Livestock systems must be profitable. Opportunities are to:

- *Valorise the grassland potential for ruminant feeding to better cope with the feed prices volatility.*
- *Assess and implement payments on ecosystem services (ex. landscape, preventing fires, etc.).*
- *Create new ways to value issues of concern to society (landscape, environment, welfare)*

New technologies

There are many social and ethical barriers in Europe for the use of new technologies and the attitude towards the introduction of new technologies, especially compared to countries in Asia or South America. This includes issues around access to banned technologies – GMOs, hormones, antibiotics, cloning, etc.

Knowledge transfer

Series of inter-related issues around the communication and uptake of existing technologies. There is the need to:

- *Increase the efficiency of the knowledge transfer (valorising existing/public research results, by adapting the knowledge transfer chains to various production systems in Europe).*
- *Think about partnerships with developing countries in order to provide them knowledge & technologies*

Collaboration

To achieve this all, greater cooperation between the different actors in the livestock sector is necessary.

- *We need new tools and key performance indicators (KPIs) by integrating science and industry.*
- *We need new cooperation structures in the field and better valorisation of NGOs willingness to collaborate.*

Discussion theme 2: Restoring value of grasslands

“Restoring Value to Grasslands” - general introduction to the theme by Alain Peeters, RHEA & Jean Louis Peyraud, INRA

Alain Peeters works for the RHEA. Jean-Louis Peyraud works for the INRA Scientific direction of Agriculture & is coordinator of the FP7 project – MULTISWARD. Please find the presentation [here](#).

Since the 1960s there is a serious decrease in grassland area in Europe. On average this is a decline of 200 thousands ha a year.

The value of grasslands seems to be underestimated: The soil organic content (SOC) is higher under grassland than under cropland (e.g. in France 70 t SOC/ha at grasslands against 40 t SOC/ha under cropland). Grasslands offer many opportunities for carbon sequestration or emission reduction compared to arable land:

- Conversion of arable land to grassland leads to an estimated increase of Soil Organic Content of 1.44 t C/ha/yr.
- Existing grasslands still build up SOC at a rate of 0.52 t/ha/yr.
- Arable lands lose SOC at a rate of -0.84 ton C/ha/yr.

Other positive values of grasslands:

- (semi-natural) grasslands contribute positively to the biodiversity.
- Grassland reduces the risk of soil erosion.
- Grassland contributes to reduce the use of pesticides to control insects.
- Grassland-based systems consume less non-renewable energy.
- Grassland contributes positively to the quality of animal products.
- Grassland and legumes based systems increase protein self-sufficiency EU imported the equivalent of 19 million ha of 'virtual land'.
- Land necessary for producing a given tonnage of commodity on the basis of regional yields) of soybean in 2007/2008. This area is equivalent to about the size of the Utilized Agricultural Area of Germany.
- Dairy systems based on grazing are competitive.

A SWOT analyses of grass vs maize shows:

<p>Strength</p> <ul style="list-style-type: none"> - Low production costs - Positive/very positive effect on biodiversity - Soil and water protection (N, pesticides, permanent soil cover, C storage) - Consumption of fossil energy - Protein self sufficiency - Pillar of organic farming (+ PDO products) - Healthier and more tasty meat and dairy products 	<p>Weakness</p> <ul style="list-style-type: none"> - Management (grazing, weather conditions at harvest) - Relatively low productivity - Forage quality / high animal demand - Relative high cost for silage making - Risk of nitrate losses under Intensively managed temporary grassland
<p>Opportunities</p> <ul style="list-style-type: none"> - Greening component of the CAP reform - Social demand and political willingness / environment - Increase price of fossil energy - Meat and dairy products world market 	<p>Threats</p> <ul style="list-style-type: none"> - Reduction of agricultural support - Reduction of the rural development policy - Agro-fuel vs grassland - High price of cereals - Consumption of beef and sheep - Accuracy of C accounting methodology

Discussions in the working groups

The four working groups have identified challenges and opportunities for restoring the value of grasslands and formulated gaps and actions to be taken. The themes discussed are both 'hardware', 'software' and 'orgware' related. Central themes in the discussion:

Improve production

Grasslands are not used to their full potential. We need to know how to produce the most out of grass as a basic diet (supplemented or not with concentrates) and whether we make the best use of the available grasslands.

To restore the value of grasslands we have to:

- *Invest in exploring technologies to improve farming in grazing systems: e.g. improve plant production per hectare which will also improve meat production per hectare. The effects should be benchmarked.*
- *Investigate manure management. Intensive use of grass in grazing systems requires different manure management and efficient systems are needed to optimise this.*

Phenotype of grass

There is enormous variation in the amount of grassland use, the different kind of grasslands in different regions, and also in how it is used in EU countries (e.g. in southern EU there is not much potential for further development of grazing, o.a. due to climate change)

We should keep the variety and explore the differences and possibilities of phenotypes of grass by:

- *Develop knowledge for different varieties of grass/legume and how it is adapted in the local system.*
- *Designing new grass/ legume types for better digestibility of animals, including developing selection schemes for grasses that are better suited to meet the needs of grazing animals.*
- *Improve grassland utilization efficiency in ruminants populations.*
- *Improve integration of plant and animal research to improve grassland use efficiency in a livestock-land integrated approach.*

Risk management for grazing systems

We need to reduce the risk in managing animals in grassland, if animals go outside. There is a knowledge gap regarding:

- Improving the management system by risk management.
- Integration of grassland with arable land – agro ecology.

Other values of grasslands

To restore the value of grasslands other possibilities to increase grasslands' value should be looked at:

- Ecosystem services:
 - Grasslands can be used to maintain the landscape.
 - *It should be investigated how to translate this to economic possibilities for farmers*
 - Feed vs. fuel. Use grass as biogas in areas where there is less grazing.
- Carbon sequestration:
 - *A system is needed to value the carbon sequestration capacity of grasslands.*
 - *The carbon content capacity of grassland needs to be evaluated and optimised. There is a lack of data on o.a. how often can we cut the grass in order to optimise the use of carbon.*
 - *Importance of grassland should be made known through education.*

Consumer level / marketing

At consumer level, grazing needs to be recognized. Consumers should be made clear that the product is produced in a grazing system and be informed about the related benefits for human health (grass results in different fatty acids)

- *Stress / promote health benefits of grass raised animal products.*
- *Promote the commercial use of grasslands as a means for maintenance of current landscapes.*

Discussion theme 3: Zero discharge

"Zero Discharge: towards full recovery of nutrient and energy from animal manure - general introduction to the theme by Nigel Penlington, BPEX

Nigel Penlington is Environmental Programme Manager at BPEX. Please find his presentation [here](#).

Finite resources and an increased demand for nitrogen, phosphate, water, land, etc., force us to think about solutions to recycle and recover energy and nutrients from animal waste. How can we do this?

To minimise losses, it is important to use an integrated approach, considering the full system, for existing systems as well as new systems.

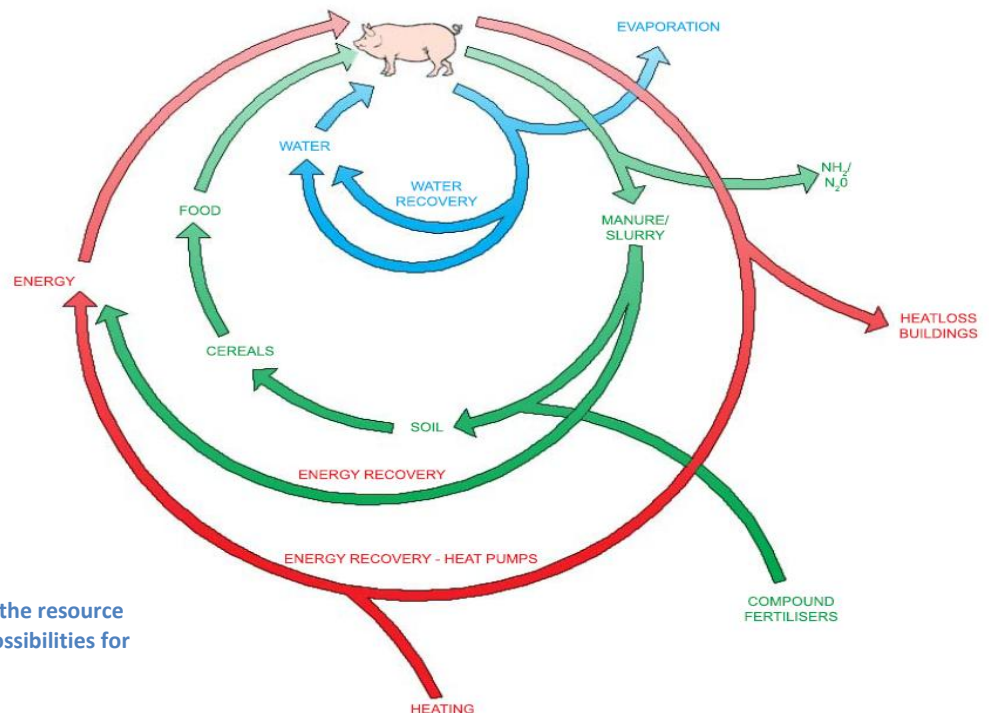


Figure 2: The figure shows the resource streams of a pig and the possibilities for nutrient recovery.

Important aspects in an integrated approach to minimise losses are:

- Location
 - Marketable yield; Recovery of heat, water, manures, generated energy.
- Animal Health
 - Growth rate; Resource use; Product quality & rejections; Death = waste
- Feed inputs
 - Precision feeding and real time monitoring: Technology for precise mixing of diets is not only available to the large compound millers, it can be found on farm as well. This has been made possible by the use of electronic measurement and computer control. This particular system can include multiple ingredients to a feed mix, the level of accuracy being within 1% for each ingredient.
- Housing
 - Low emission housing; Combine with low protein diets (faeces/urine, frequent manure removal, manure cooling); Welfare – loose vs. Restrained.
 - But also think about: Ventilation rate; air movement paths; heat exchangers (110kg pig = 150W!); exhaust air cleaning (ammonia & dust)
 - Opportunities to offset: Solar heat and power; Ground source heat; Water harvesting

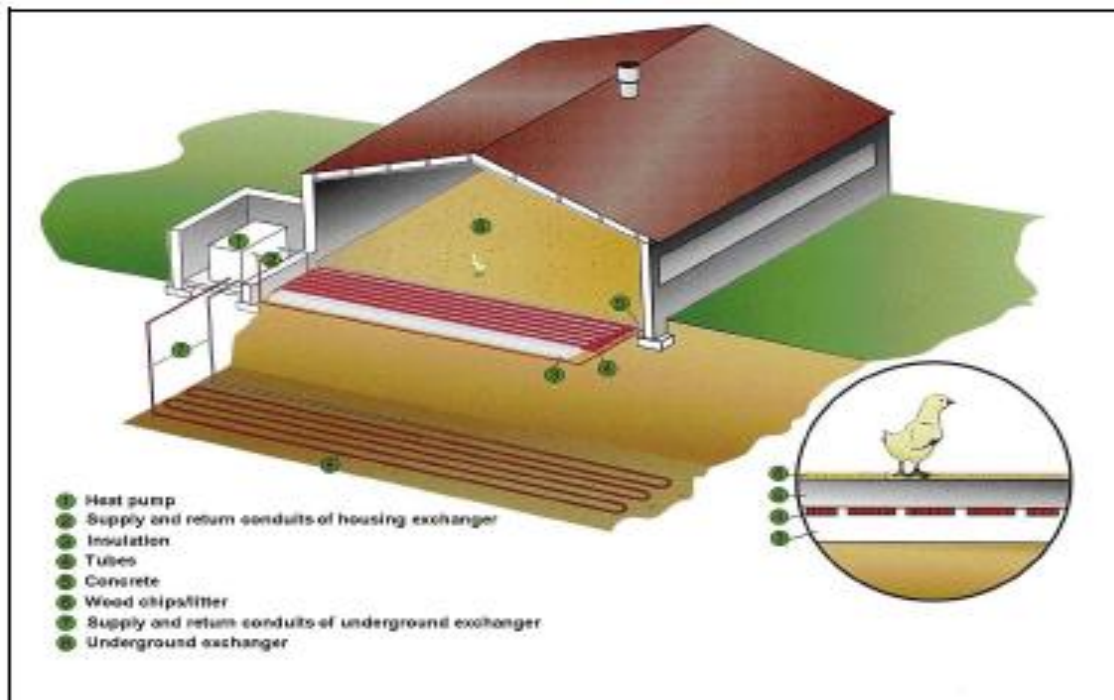


Figure 3: Heat recovery in a broiler house

- Manure storage
 - Appropriate storage; Separation; Covering; Diffuse aeration/conditioning; Use of additives; Holding capacity matched to application timing
- Manure processing
 - Anaerobic digestion (heat, power, improved N availability, reduced seed and pathogen burdens); Ammonium extraction; Phosphate rebalancing and stripping; Heat from manure stores; Gasification.
- Manure utilisation
 - Analysis (laboratory and on farm test kits); Planning as part of fertilisation regime (professional advisers and decision support tools (MANNER NPK); Homogenous or fractions; Application techniques.
- Product utilisation
 - Extract full value (meat cuts; offals; oils & fats; hides, skins, feathers, etc.; processed animal protein (PAP).

While doing this, we have to take into account the world trade flows of pig meat, and the fact that they are not always produced to same standards, welfare, ethics, substances, labour costs. To provide sustainable food, products and services, we have to balance consumer aspirations, animal welfare and environmental protection whilst trying to earn an honest income. We also have to recognise that there will be conflicts and consumer aspirations may not be consistent with reducing emissions (e.g. straw based housing systems which are popular in the UK are not the lowest carbon form of production. But the sandy soils in the East benefit from applied manures which improve water holding capacity and provide structure).

Drivers to change are legislation, lean manufacturing, process analysis, adopting technology and improving skills, and returns to stimulate investment.

Discussions in the working groups

Four working groups have identified challenges and opportunities for realising zero discharge and formulated gaps and actions to be taken. The themes discussed are both 'hardware', 'software' and 'orgware' related. A summary of the central themes in the discussion:

Systemic approach

To realise zero discharge or minimised discharge in the livestock sector we need to look at the livestock sector as a whole system, including housing emissions, energy use, feed supply and production, ecosystem services, etc. The optimisation paradigm should be discussed from a holistic approach. It is not only about closing loops, but also about higher efficiency in the whole system.

- *We need to adopt the LCA method to assess the impact of current and new practices on the total system.*
- *We need multi-stakeholder approaches.*

Technological

We need technologies

- *To optimise the obtaining of various products out of manure (~ diversification), i.e. use of enzymes (& other) for better uptake of minerals from manure.*
- *To improve profitability of nutrients and/or energy extraction.*

Many technological developments are already in the market, but costly. It is not only a matter of costs, but also of the opportunity to use new technologies. Developments introduced by users should be considered.

Knowledge gaps

To minimise discharge in the livestock sector we need more knowledge on:

- *Nutrition efficiency (losses and feed balance) and the appropriate assessing of the value of manure, especially in ruminants. It is important to understand how that is working and how can we ensure closing the loop in grazing systems (in pig systems this is easier).*
- *Biogas and waste fermentation. Manure is an important resource, but there are other farm wastes that can be used (e.g. potatoes). What kind of wastes are there? Knowledge needed on the optimal combination of manure and other wastes to be able to close cycles.*

Animal health

Global health aspects are important to minimise discharge. Mismanagement of health can result in enormous losses.

Legislation & policy

One of the most important drivers for zero charge is legislation. This is related to precautionary principle¹: the legislator follows this principle, but this may not be useful for the problems we are facing.

We also need consistency of policies on energy (e.g. subsidies) and sustainability.

¹ The precautionary principle enables rapid response in the face of a possible danger to human, animal or plant health, or to protect the environment. In particular, where scientific data do not permit a complete evaluation of the risk, recourse to this principle may, for example, be used to stop distribution or order withdrawal from the market of products likely to be hazardous. Article 191 of the Treaty on the Functioning of the European Union (EU).

Knowledge transfer

There are interesting systems in Europe and in other parts of the world that others can learn from, e.g. from water recycling and re-use in Spain.

- *Improved knowledge transfer and exchange is needed.*
- *We need to make an inventory of / constituting of working groups on manure & related issues.*
- *We need to better raise awareness of farmers on the manure-related issues to see manure as an asset rather as a problem, and providing info to farmers (inventory of info, elaboration of a portal for info).*

Plenary discussion: Towards an Agenda of Action

Wrap-up by Christian Patermann, former Director-General at DG-RTD.

After three rounds of in-depth discussion on different topics, what does this tell us about a more resource-use efficient livestock sector in Europe? What could be a relevant European Agenda of Action for the livestock sector?

Systemic approach

One of the themes that came back in each of the discussion groups was the need for a *systemic approach* to address issues in the livestock sector appropriately. Livestock production is a system with different parts of and within its proper value chain. When working on sustainability issues, one should address as well the total value chain in a systemic approach. But what does this mean in practise? Here we need more work to be done. Some reflections arising from the discussions:

Reaping the harvest from our discussions, integration across the value chain does not work if we keep working along the three different lines we discussed today. The FAO and also the EU should integrate the results of the three issues in the 3 working parties in the end.

While doing so, regional aspects must be taken into account. Our world is fragmented, regionally and geographically, and we have cultural, social and economic specialities. These differences should be respected and taken in account in a systemic approach along the totality of the various value chains. Thus beware of black and white solutions.

“Such a meeting would not have been possible five years ago. To discuss the issue of resource-use efficiency with all different stakeholders of the livestock sector. That is the first big success of today”

New technologies

There is the necessity to increase sustainable yields, and to decrease the environmental pressure at the same time including losses. There was common understanding in all working groups that we lack sound methodologies to assess impacts on sustainability. What can be labelled as efficient or sustainable? We require new methodologies of measuring and assessing, like special LCAs, commonly agreed and validated datasets as basis for it, and common criteria to define what is efficient and to assess new opportunities.

Animal and human health

There was a strong emphasis on animal and human health to be integrated in being assessed. Such an integration is an important factor in achieving true efficiency.

Research and education

We should also focus on the importance of 'soft skills'. If we want to look at the livestock sector in a systemic way, we need researchers, scientists and industrial employees, that are well educated and trained and able to work in a multidisciplinary environment. Thus teaching, training and transferring activities in livestock will need new curricula and also need to be practised in an integrated way, which is easy to be demanded, but difficult to achieve. Here, the European Commission could give orientation.

Europe and the world

The Global Agenda of Action for a sustainable livestock sector is of great importance to Europe. It shows that livestock is at the centre of a landscape of food, feed, fuel and nutrients. Europe has an important role to play in this landscape. We produce a lot of new knowledge, are able to develop advanced technologies and to demonstrate good practices in a modern way. Europe should be conscious and be prepared to transfer these assets to the world. We should all actively take part in this process, jointly with the FAO.

Closing by Henning Steinfeld, FAO.

Working on sustainability issues can be difficult. Over the years, sustainability has become a popular word, used by many people, in very different ways, and even often mixed up. It is not only about the environment, it is also about economic profitability, equity, welfare and societal acceptance, food safety. And there will be tradeoffs between those.

Bringing it down to the core notion of what sustainability is, we should be framing this issue by operationalising it. Sustainability should be looked at as a process that will change over time. It therefore does not make sense to come up with a description of technologies. We should instead work on a continuous process of improving our sustainability performance, with the aim to create 'win-win' on all aspects of sustainability.

Resource-use efficiency is a way of operationalising sustainability.

Where does this leave Europe? Europe should be in the lead. The EU has the best technologies and best performance. That is something to be proud of and to make use of. The notion that Europe should give up on livestock is absolutely wrong. That would only imply less efficient production elsewhere and consequently a lower sustainability performance. It is the challenge for Europe in the future to focus on transferring our knowledge, and working on a even higher efficiency and sustainability in the livestock sector.

3. Background information: organising organisations

The seminar Resource-use efficiency: implication for the sustainability and competitiveness of the European Livestock sector is organised by the Animal Task Force in close cooperation with the Global Agenda of Action and with support of Copa-Cogeca. Below you find more information about the organisations.

The Animal Task Force

The Animal Task Force (ATF) promotes a sustainable and competitive livestock sector in Europe. We are a leading body of expertise, representing key stakeholders from industry and research from across Europe.

Our goals are to stress the importance of sustainable livestock production for Europe's future; to provide our vision on investments to be made within the sector; to stimulate innovation by enhancing cooperation and knowledge exchange; and to set the agenda for research and innovation in the animal domain.

Members of the ATF:

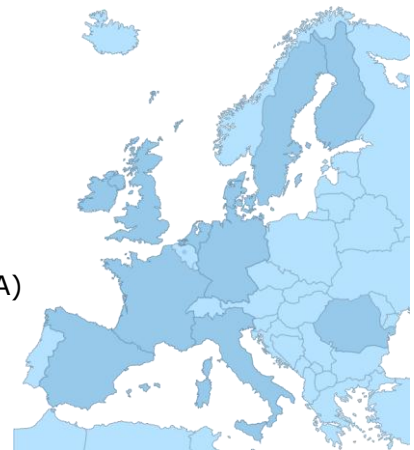
The Animal Task Force is comprised of a group of industry representative organisations and knowledge providers from all over Europe. Together our members represent eleven different EU member states and several sectors in the animal production chain.

Industry representative organisations are:

- European feed industry (EUFETEC)
- European animal health industry (ETP-GAH)
- European farm animal breeding industry (FABRE-TP)
- European aquaculture industry (EATIP)

Knowledge providers are:

- Aarhus University – Denmark
- Institut National de la Recherche Agronomique (INRA) –France
- Instituto Nacional de Investigación y Tecnología Agraria (INIA) – Spain
- MTT Agrifood Research – Finland
- National R&D Institute for Animal Biology and Nutrition (IBNA) – Romania
- SRUC Scotland's Rural College – United Kingdom
- Swedish University of Agricultural Sciences – Sweden
- Teagasc – Ireland
- University of Bonn - Germany
- University of Milan – Italy
- Wageningen UR Livestock Research – The Netherlands



For more information, please visit our website: www.animaltaskforce.eu.

The Global Agenda of Action

The Global Agenda of Action is a FAO hosted initiative that focuses on the improvement of resource-use efficiency in the livestock sector to support livelihoods, long-term food security and economic growth while safeguarding other environmental and public health outcomes. The Global Agenda of Action is being built through a preparatory process which focuses on consensus building among key stakeholders in the livestock sector for a subsequent operational phase.

The theory of change underpinning the Agenda is that natural resource-use efficiency and thus sustainable development of the livestock sector can be achieved by an increase in the use of *human made resources* and a concomitant reduction in the use of natural resources per unit of desired output.

Stakeholders have agreed that the Agenda should initially focus on three areas:

- 1) Closing the efficiency gap:** Application of existing technology and institutional frameworks to generate large resource use efficiency, economic and social gains;
- 2) Restoring value to grasslands:** Harnessing grass/rangeland's potential to contribute to environmental services and sustainable livelihoods; and
- 3) Towards zero discharge:** Reducing nutrient overload and greenhouse gas emissions through cost effective recycling and recovery of nutrients and energy contained in animal manure.

Whilst the relative emphasis and the approaches for each focus area will vary among geographic regions, each presents specific 'game changing' opportunities for large environmental, social and economic gains.

The Agenda will initially mainly fulfill two types of 'service' functions:

- 1) Network and inform:** to stimulate multistakeholder interaction and collaboration; to enhance the access to and choice of information; and to link demand for knowledge and services to its supply and/or supplier; and
- 2) Analyse and guide:** to develop harmonized metrics and methodologies; to provide strategic sector guidance; and to inform intergovernmental and other partnership processes.

For more information please visit the GAA website at: www.livestockdialogue.org.

Copa-Cogeca

Copa-Cogeca unites the voice of European farmers and agri-cooperatives in the European Union. Copa-Cogeca consist out of the Committee of Professional Agricultural Organisations (COPA), who originated 1958, and the General Confederation of Agricultural Cooperatives (COGECA), created in 1959. COPA and COGECA merged on 1 december 1962, representing today the interests of 96 farmer organisations from European countries and of some 40,000 farmers' cooperatives employing around 660,000 people and with a global annual turnover in excess of three hundred billion euros throughout the enlarged Europe.

Their objectives are:

- to examine any matters related to the development of the Common Agricultural Policy
- to represent the interests of the agricultural sector as a whole
- to seek solutions which are of common interest, and
- to maintain and develop relations with the Community authorities and with any other representative organisations or social partners established at European level.

For more information please visit the Copa-Cogeca website at: www.copa-cogeca.eu.

4. Participants

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