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THE ROLE OF MEAT AS A COMPONENT OF A SUSTAINABLE FOOD SYSTEM

INTRODUCTION – There is no unanimously accepted definition on “sustainable food system”, although this expression is used frequently in discussions concerning nutrition, diet, health, community economic development, agriculture and industry. The food system encompasses all processes and infrastructure involved in feeding a population: growing, harvesting, processing, packaging, transporting, marketing, consumption, and disposal of food and food-related items. It also includes the inputs needed and outputs generated at each of these steps. A food system operates within and is influenced by social, political, economic and environmental contexts. It also requires human resources that provide labour, research and education.

In a world facing context of a increasing resource scarcities, the red meat’s chain performance inside the EU food system is often criticised. Media channels, such as radio, television and social media networks are frequently contributing to the spreading of partial and frequently flawed figures related to the role of meat as a component of a sustainable food system. Furthermore, insufficient resonance is attributed to the positive externalities associated with the contemporary EU livestock-meat production/consumption system. The reality faced by the red meat sector in an increasingly ‘media bombarded’ society, are increasing attacks, critics and doubts casted, on many levels, including but not limited to the environment. Moreover, the atmosphere of increasing misinformation is driving society to perceive meat with negative connotations, calling into question its role in the food system.

One of the greatest challenges whilst dealing with communication flows towards the society is the rebalancing of information released by bodies such as the FAO. The FAO have in the past released data concerning world-wide greenhouse emissions based on estimations and modelling system results that are not valid for Europe and its performance. Nevertheless, these results continue to be misquoted at EU regulatory level. For this reason, the UECBV-CLITRAVI joint meat sector taskforce is cooperating with the FAO on climate change issues. This aims to contribute to a better estimation of the EU livestock environmental performance carried out by the FAO scientists. A public-private partnership coordinated by the FAO Animal Production and Health Division (AGA) has been launched in July 2012. The goal is to support work that is

scientific and systematic in the achievement of broadly accepted and compatible Life Cycle Assessment (LCA) methodologies; this should allow monitoring of environmental issues related to the performance of the livestock-meat sector. The EU red meat sector, as well as other world area counterparts, joined forces under the heading of the IMS - International Meat Secretariat - which is active in the development of this FAO multi-stakeholder¹ partnership on benchmarking and monitoring the environmental performance of livestock food chains. The key goal of the private sector is knowledge sharing, for instance with regards to the technical advancements and operational conditions; this also allows the modern meat industry to reduce emissions related to nitrate, phosphorous, ammonia and the use of artificial fertilizer.

This paper aims to convey key points that should be taken into consideration in the Commission reflection on the subject of a systemic approach in defining what sustainable food systems are. The meat sector would like to underline the importance of the following issues:

- ✚ The nutritional value of meat, its function in a sustainable diet, and the implications of reductions in meat consumption in the health status of a society where sub-clinical micronutrient deficiencies are increasingly prevalent;
- ✚ The multidimensional role of livestock in a sustainable agri-food system;
- ✚ The noteworthy progress made by the meat industry in an effort for continuous improvement;
- ✚ The relevance of reinforcing the role of red meat in a sustainable and resource-efficient food system where global knowledge sharing has a societal key role.

THE NUTRITIONAL VALUE OF MEAT, ITS FUNCTION IN A SUSTAINABLE DIET, AND THE IMPLICATIONS OF REDUCTIONS IN MEAT CONSUMPTION IN THE HEALTH STATUS OF A SOCIETY WHERE SUB-CLINICAL MICRONUTRIENT DEFICIENCIES ARE INCREASINGLY PREVALENT

The first concept that will be explored while dealing with sustainable food systems is the concept of a sustainable diet.

Red meat is an important component of a healthy, sustainable diet. The FAO (2010) defined "sustainable diets" as "*those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy*".¹

The lean component of red meat is:

- An excellent source of high biological value protein
- Contains the eight essential amino acids required from the diet

¹ The private sector includes the International Feed Industry Federation (IFIF), the International Dairy Federation (IDF), the International Meat Secretariat (IMS), the International Federation for Animal Health (IFAH), the International Federation of Agricultural Producers (IFAP) and the International Poultry Council (IPC).

- An important source of the minerals: haem iron, zinc, magnesium, phosphorus and selenium
- A good source of haem-iron, which is more readily absorbed than plant sources of non-haem iron. Furthermore, unlike non-haem iron, the absorption of haem iron is not inhibited components such as calcium, phytates and phenolic compounds (SACN 2009)
- Contains a range of B vitamins: thiamine (B₁), riboflavin (B₂), niacin (B₃), folate, B₆ and B₁₂
- Some micronutrients e.g. Zinc and Vitamin B12 are only present in animal-derived food, and cannot be replaced by plant-based sources. Additionally, the highest amount of dietary Selenium is found in meat-based products.
- An important source of fat-soluble vitamins: Vitamin E, Vitamin D and Vitamin A
- Contains polyunsaturated fatty acids (PUFAs), and similar proportions of monounsaturated fatty acids (MUFAs) and saturated fatty acids (SFAs)
- Contains a small amount of essential fatty acids linoleic acid (n-6) and α-linolenic acid (n-3). Meat is a significant contributor to long chain n-3 fatty acids for those who consume little or no oily fish
- Relatively low in sodium

All of the above nutrients are essential for good health throughout life.² It is imperative that lean red meat is consumed as part of a healthy balanced diet, in accordance with the national dietary recommendations. Advances in food processing technologies, breeding programmes, modification of animal feeds and modern butchery techniques, have all contributed to significant reductions in the fat content of meat across Europe. For example, the fat content of red meat in the UK has been reduced by over 30% for pork, 15% for beef and 10% for lamb. Furthermore, it is often the case that modification in the fat content of meat arises via preparation methods and cooking techniques.³

Red Meat Consumption in Europe

The World Cancer Research Fund (WCRF)⁴ recommends that the consumption of meat should not exceed 500g of red meat per week. In addition, the dietary recommendations in developed countries for meat and meat alternatives average at 142g/day.⁵ The evidence indicates that the intake of red and processed meat across different European countries differs significantly, with levels of intake ranging from 31-79g/day for women, and 55-136g/day for men.⁶ This illustrates that meat consumption in Europe generally falls within the recommended levels; men have the tendency to exceed the recommendations. On the contrary, the data indicates that red meat consumption in women is often significantly below the recommendations.

Micronutrient Deficiencies

Although a healthy balanced diet is available for the general European population, a few predefined groups are at a higher risk of micronutrient deficiencies. These population subgroups include adolescents, women of child-bearing age, vegans, pregnant women and the elderly.⁷

Thus, a reduction in the intake of meat can potentially result in micronutrient deficiencies in the population, if not managed appropriately.

Iron: The World Health Organisation (WHO)⁸ states that iron deficiency is the most common and widespread disorder in the world. Furthermore, iron deficiency remains a public health concern in industrialized countries⁸⁻⁹ in certain subpopulations, such as women of childbearing age due to menstrual losses.^{8,9,10} The Healthy Lifestyle in Europe by Nutrition in Adolescence study (HELENA) results demonstrate that iron depletion appears to be a rising problem in adolescent girls in Europe, present in 21% of adolescent girls.¹¹

Zinc: Suboptimal dietary zinc intake is increasingly recognised as an important public health issue. Although severe zinc deficiency is uncommon in European populations, marginal deficiency is much more prevalent. Children are particularly vulnerable to suboptimal zinc status during periods of rapid growth that signify that zinc needs may not be met.¹²

Vitamin B₁₂ Meat and animal-derived foods are the only foods that naturally provide vitamin B₁₂. As such, some individuals who exclude such foods from their diets are at higher risk of inadequate intakes. Dietary intakes of vitamin B₁₂ are consistently reported as being lower in vegetarian diets and are particularly low in vegan diets.¹³ Furthermore, vitamin B₁₂ deficiency is highly prevalent in the elderly, highlighted by the SENECA study, and manifests itself as pernicious anaemia.¹⁴ Moreover, low blood levels of several B vitamins, including vitamin B₁₂, folate and vitamin B₆ have been associated with elevated blood levels of homocysteine, which is a risk factor for cardiovascular disease and stroke.¹⁵

Elderly people are generally considered at risk of developing vitamin and trace element deficiencies, especially vitamins A, D, folate, selenium, iron and vitamin B₁₂, which can all be found in meat. Furthermore, the elderly are commonly affected by sarcopenia; this is characterised by the gradual loss of skeletal mass. Some of the consequences of age-related sarcopenia include weakness and eventually, reduced mobility. Evidence suggests that protein, found abundantly in meat, is strongly stimulatory for muscle protein synthesis, which may aid in mediating gains in muscle mass and strength.^{16-18, 22}

Selenium Meat, poultry and fish make the biggest contribution of selenium, although the concentrations are dependent on the diet of the livestock and the soil in which the animal feed was grown. Selenium status is relatively low in Europe, and even lower in eastern Europe. There is mounting evidence that Selenium deficiency can have adverse consequences for disease susceptibility and the maintenance of optimal health such as impaired immune function, cardiovascular disease, poor thyroid function, cancer and reproductive issues.¹⁹⁻²⁰

In conclusion, we would like to implore that the European Commission reflects very carefully about the wording they decide upon concerning recommendations for meat consumption. Although some of the European population may not be adhering to the recommendations by eating excessive quantities of meat, this paper demonstrates that this clearly does apply to the entire population. By advocating reductions in red meat consumption, Europe is running the risk of exacerbating subclinical micronutrient deficiencies.

THE MULTIDIMENSIONAL ROLE OF LIVESTOCK IN A SUSTAINABLE AGRI-FOOD SYSTEM

All value-added dairy and meat products are derived from livestock. Livestock is bred in various farming systems throughout Europe, depending on regional conditions (soil composition, climatic condition, etc.). When looking at a sustainable food system, it is necessary to consider the global landscape, the place of livestock within the agriculture, landscape and territories.

Efficiency of livestock in the use of natural resources is a phase of continuous improvement, whereby good practices, and technology innovation must be supported and applied by all actors e.g. farmers and all relevant stakeholders, in order to increase the performance of the meat chain. However, livestock farming should not be excluded from the sustainability concept as so often is the case, and meat consumption should not be classified as an indicator of poor resource efficiency. Such an oversimplification of the reality is scientifically unacceptable. This can also help to induce anti-meat entities to manipulate information in order to fuel campaigns against the EU animal production and consumption.

The role of livestock in a sustainable agriculture system should always be borne in mind:

- Livestock contributes to the agronomy and the maintenance of soils' organic matter content by the use of manure as a fertiliser;
- Feed destined for livestock contains numerous byproducts of crops (straws, press cake, spent grains ...). A considerable part of the feed ingredients (especially protein and energy) consist of byproducts of for the food industry;
- Strong European sanitary regulations and reduction of livestock mortality by prevention and controlled use of medicines for animal health;
- Improvements in the EU livestock farming industry:
 - Livestock nutrition & feed efficiency: meeting the needs of modern breeds and reducing the environmental pollution; This is achieved by maximising home grown forages and sources of dietary protein
 - Livestock reproduction: selecting genetic traits within breeding stock that improve sustainable livestock farming; This is achieved by improving female fertility and reproductive efficiency
 - Livestock management: Developing husbandry systems to protect and improve rural environments
- Ruminants (cattle, sheep and goats) contribute to the environmental services (water quality, prevention of erosion, carbon sequestration...) by maintaining 20% of the European surface² into as grasslands (by comparison arable land represents 24%);
- Livestock contributes to the economic and social vitality of rural areas, ensuring a resource efficient use of the land. In the majority of the cases, livestock occupy large areas of land where the existence of other forms of agriculture would not be realistically viable; this could include, but not limited to, food production, biofuels or other uses.

² EUROSTAT (October 2010). [Land Use/Cover Area frame Survey Results on EU land cover and use published for the first time.](#)

THE NOTEWORTHY PROGRESS MADE BY THE MEAT INDUSTRY IN AN EFFORT FOR CONTINUOUS IMPROVEMENT

In order to establish an accurate overview, correct background in the reflections on present and future initiatives related to sustainability, an in-depth understanding of current issues, processes and infrastructure in the meat chain are essential.

The preliminary point for the reflection should be related to:

- The accomplished environmental results along the red meat production chain (see below);
- The existing EU environmental standards and general legislative framework under which red meat production complies with, and which represents a pre-requirement of any production process. The EU has developed a range of instruments to promote sustainable consumption and production, i.e. national statutory requirements derived from EU Directives concerning habitats, nitrates and pesticides included as the reference level for usual good farming practices; instruments include Integrated Pollution Prevention and Control (IPPC) and the new framework for taxation of energy products and electricity. The EU operators believe that continuing to improve the efficiency of their businesses is essential to their current and future activities. It should be borne in mind that operators in the meat chain are making huge efforts to comply with the Industrial Emissions (Integrated Pollution Prevention and Control) Directive (2010/75/EU) including the use of "Best Available Techniques (BAT)". These so-called BATs are the most effective techniques to achieve a high level of environmental protection along the meat chain.
- Several initiatives that have been launched at the EU level, such as the joint UECEBV-CLITRAVI taskforce, led by meat industry experts and other organisations, to publicise the efforts carried out to continuously improve the sustainability and performances of the EU meat chain. The EU taskforce, supported by experts from different Member States, is working to:
 - ✓ Create public awareness across Europe of initiatives led by the meat industry and to receive acknowledgement on the degree of the sustainability progress of the meat production system;
 - ✓ Encourage and support the implementation of beneficial scientific findings and technologies that are good for business and the environment;
 - ✓ Demonstrate the progress Europe is making to meet the expectations of a growing worldwide demand for sustainably produced animal products.

Achievements of the modern meat industry are related to:

- ✓ Good management practices;
- ✓ Modern farm buildings (e.g. floor design...), to allow a better monitoring of animals housed in optimally designed production houses; this results in early warning systems and control systems that improve the management of (individual) animal needs at any time. This results in improved health and welfare, enhanced productivity and lower GHG emissions;



- ✓ Innovations (ammoniac - and odour - air cleaning mechanisms attached to the staples, cooling of manure in the staples);
- ✓ Sound manure management (e.g. covered slurry tanks with high and optimal capacity of storage, proper distribution of the manure on fields, high level of utilization of nitrogen in slurry and application of limited amount of nitrogen/hectare, frequently below the EU-threshold – which is 170 kg nitrogen/hectare);
- ✓ Optimisation of transport movements;
- ✓ Use of recyclable industrial packaging;
- ✓ Optimization of energy use at production sites;
- ✓ Awareness-raising initiatives process among staff on water consumption of hot and cold water;
- ✓ Increased re-use of by-products from sewage treatment plants for generation of green energy in bio-gas installations.

STIMULATING AND REINFORCING THE ROLE OF RED MEAT IN A SUSTAINABLE AND RESOURCE-EFFICIENT FOOD SYSTEM

The question of consumption and production of food should be viewed in a global context. According to various estimates, the global population will reach about 8 Billion in 2025 and exceed 9 Billion in 2050 (UN statistics²¹). Furthermore, in the last 30 years we have witnessed global economic growth and increase in living standards in several parts of the world (for instance in Asia and South America). This has led to a significant increase of global meat consumption (155mil. tons "1992" to 236 mil. tons "2011"). It is our belief that the global demand for meat will continue to grow.

For various reasons, it is obvious that Europe should play a key role in the global meat supply chain. The European production systems are modern; the standards for animal health and welfare are well developed – the same goes for food safety standards. Furthermore, the environmental performance of the European production is considerable and the products are produced according to a comprehensive environmental regime. EU measures aimed at increasing the resilience of the EU farming systems, improving livestock management, meat and meat processing businesses and promoting eco-innovation for present and future production should be key factors driving a much-needed positive long-term policy response.

ABOUT THE TASKFORCE: The joint UECBV-CLITRAVI meat sector Taskforce on climate change issues was officially launched in November 2009 with the aim to allow a debate among experts, to facilitate a fruitful dialogue within the European meat sector and to be a discussion partner of the different stakeholders. Since then, the group -composed of about 10 experts from the meat/livestock chain - has met as a minimum of twice a year with an eye to address every concern related to the sustainability in the meat chain. The group strives to base itself on scientific evidence, maintaining a case-by-case approach.

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