Study Of Greenhouse Gas Emissions From Livestock

The Intergovernmental Panel on Climate Change is an intergovernmental (IPCC) body of the United Nations which is aimed at providing the world with an objective, scientific view of climate change, its natural, political and economic impacts and risks, and possible response options (Caro 203). The panel reports on direct emissions by sectors through monitoring human activities responsible for causing a climatic change. According to its research, livestock emissions account for 2.3 gigatons of carbon dioxide equivalent, or 5% of the total (Caro 203). They consist of methane, nitrous oxide and carbon dioxide from multiple sources. It used a global life cycle approach to estimate all the direct and indirect emissions from livestock (cattle, buffaloes, goats, sheep, pigs and poultry) at 7.1 gigatons of carbon dioxide equivalent per year (Bell 7918). In addition to rumen digestion and manure, the commission added that the life cycle emissions also include those from producing feeds and forages and those from processing and transporting the meat, milk and eggs. This flawed comparison and negative press about livestock may influence development plans and investments and further increase their food insecurity (Browne 50).

Livestock industries have played a very crucial role in the development of the Australian economy. Livestock production is an important component of the agricultural economy starting from production to include a variety of uses such as skins, fibre, fertilizers, fuel and to add on that capital accumulation. According to Peter J. Batt article Australia's five strong pillar economy agriculture, Agriculture remains a major employer in Australia (Bell 7919). While it contributes just 2.3% of the GDP, its diminishing importance is not the result of any reduction in output but rather to the growth in manufacturing and service based sectors of the economy. It is the biggest employer in rural and regional communities as it has provided employment to more than 1.6 million Australians. According to the Australian Bureau of Agricultural and Resource Economics and Science (ABARES), 135,000 farmers in Australia today produce enough food to feed 80 million people (Gollnow 39). They also provide 93% of the domestic food supply, and still manage to support an export market valued at more than A41 billion per annum which is over 13% of the export revenue. ABARES figures show that major commodities are grains and oil seeds (29.8%), meat(24.0%), the industrial crops(sugar, cotton and wine)(13.5%), wool(7.0%), dairy(6.6%) and horticulture (4.5%) (Engelbrecht, Wahidul and Waqar 80).

However, livestock production has a huge impact on the environment. The impacts of climate change have one of the widestranging sets of impacts to the red meat industry, with various issues and their potential impacts affecting each member of the value chain. Changing weather patterns and more frequent extreme weather events are also having a major influence on red meat production rates in Australia. Climate change poses both an immediate and long term risk to the Australia red meat industry, with the potential for its impact on the industry to continue to grow. Livestock production contributes to land and water degradation, biodiversity loss, acid rain, coral reef degeneration and deforestation. It also contributes 18% of human produced greenhouse gas emissions worldwide (Dhillon and George 79). Meat production is one of the leading causes of greenhouse gas emissions and other particulate pollution in the atmosphere. This are effects of air pollution on human respiratory health. Livestock production is likely to be affected diversely by climate change, competition for land and water, and food security at a time when it is most needed. Global climate change is primarily caused by greenhouse gas

emissions that result in warming of the atmosphere (Hendrie 289). Climate change alone pose multiple risks to health and well being through increased risk of extreme weather events such as floods, droughts and heat waves and have been described as greatest threats to human health. It is said that if we consider reducing consumption of animal products, we are to meet global green house gas emissions reduction targets which are necessary to mitigate the worst effects of climate change. Meat production is also highly inefficient e.g to produce 1 Kilo of beef requires 25Kilograms of grain to feed the animal and approximately 15,000 litres of water. Also about 30%of earth's surface land is currently used for livestock farming (Bell 7918). This represents an inefficient use of resources since food, water and land are scarce resources in many parts of the world. Also enteric methane emissions represent 30% of global methane emissions (O'Brien 1469). Because methane is a short lived climate pollutant, reducing emissions of enteric methane can help mitigate climate change, within our lifetimes.

As the industry faces a changed or changing environment, farmers and producers will likely be required to adapt their business models and practices to adjust to this changes. Where this transition cannot be successfully accomplished, a risk exists that these producers will be forced to reduce supply or exit the industry. In approaching the above risks, the industry must both acknowledge the changing climate that Australia is facing, and increase industry awareness of how to effectively respond. From this plans and mitigants can be implemented to better ensure a sustainable future for the industry. According to an article by Food and Agriculture Organization of the United Nations, low carbon livestock production is possible but action must be much more decisive, as the livestock sector is growing rapidly (Engelbrecht, Wahidul and Waqar 82). Fuelled by human population growth, higher incomes and urbanization, demand for meat, milk and eggs in low and middle income countries is rising. The Food and Agriculture Organization proposes the following three ways to substantially reduce emissions from livestock production: Productivity improvements that reduce emissions intensities, Carbon sequestration through improved pasture management and better livestock integration in the circular bio economy (Engelbrecht, Wahidul and Waqar 82).

Productivity improvements that reduce emissions intensities is done by helping farmers to increase the productivity of livestock in a mean to improve rural livelihoods and food security hence improved living standards (Engelbrecht, Wahidul and Waqar 83). It also supports better resilience to climate change. Improving feed quality can be achieved through improved grassland management, improved pasture species, forage mix, feed processing and strategic use of supplements preferably locally available ones. Also improving reproductive efficiency and extending the productive life of the animal will improve lifetime performance per animal and reduce greenhouse gas emission intensities (Dhillon and George 79).

Carbon sequestration through improved pasture management includes adjusting grazing pressure by balancing spatial and temporal presence of livestock, fertilization and nutrient management, introduction of species which include: legumes and plant inoculation, improved mobility of animals in pastoral and agro pastoral systems, and the integration of trees and pastures (Dhillon and George 81).

While a linear economy uses external inputs to produce outputs and waste, a circular economy minimizes the leaks of energy and materials from the system by recirculating them in production. This can be achieved by increasing the share of byproducts or waste that humans cannot eat in the livestock feed ration or by recycling and recovering nutrients and energy from animal waste eg biogas. Improved natural resource use efficiency also helps farmers being

more resilient to climate change. Regulatory frameworks are also needed in order to improve integration, in particular related to public health (Engelbrecht, Wahidul and Waqar 80). They need to consider the sanitary and technical requirements for including, for example insects or waste from households or the food service industry into livestock feed rations. Other limiting factors include disregard of externalities, and existing subsidies on inputs, adaptation of technical solutions to location specific constraints and lack of access to knowledge and technologies (Caro 204).

The process of unlocking the potential low carbon livestock requires concerted action by all stakeholders to invest in the sector, support and undertake the required research, address the institutional weakness, provide incentives for efficient and regenerative management and accelerate the uptake of advanced practices. Solutions exist but must be tailored to local conditions and take into account the vast diversity of livestock systems and the people who are affected. To conclude this, I think Australia has an obligation to restrict or rather to regulate consumption of meat| and dairy products. A reduction in consumption of meats and dairy products is essential to avoid further negative environmental impacts. Reducing meat consumption will create tangible benefits almost immediately through reduction of greenhouse gas emissions and decreased pressure on land and water use. This trajectory would smash critical environmental limits beyond which humanity will struggle to live. Macro Springmann at the University of Oxford said we are really risking the sustainability of the whole system that if we are interested in people being able to farm and eat, then we better not do that. “Feeding a world population of 10 billion is possible, but only if we change the way we produce food” (Herrero 452). The world needs both consumers that are aware of their food choices and producers and companies that engage in low carbon development. In that process, livestock can indeed make a large contribution to climate change mitigation, food security and sustainable development in general.