Emission of Green House Gases (GHG) has been identified as the primary cause of global warming and subsequent climate change experienced in recent decades. It poses a serious threat, such that the real impacts in terms of an increase in average temperatures, increased flooding, and rise in sea levels have already been felt in different parts of the world. Human activities are the main producers of green house gases into the atmosphere. These gases include: methane, carbon dioxide, Ozone, methane, non methane hydrocarbons, nitrogen oxides, and carbon monoxide, among others. These gases are attributed to the heat trapping in the atmosphere, leading to an increase in overall average temperatures. The Intergovernmental Panel on Climate Change (IPCC), a body which is charged with the role of assessing the scientific and socio-economic impacts of climate change, predicts that the average temperature of the earth will increase by 0.2 to 0.5 degrees Celsius in every coming decade, due to the higher concentration of carbon dioxide in the atmosphere. Such an increase is predicted to cause major climatic changes, wherein weather patterns will be disrupted, and to affect the living condition and economic activities all over the world.

In relation to human activities some of the main sources of greenhouse gases are:

- Burning of fossil fuels with an aim of producing energy for domestic and industrial consumption
- Cutting down of vegetation (deforestation), especially in the tropics, where most of the African nations lie. This leads to an increase in the amount of carbon dioxide in the atmosphere, has and interferes with the natural sinking of this greenhouse gas
- Agricultural activities through use of fertilizers and chemicals, paddy rice cultivation, livestock keeping, and other major changes in land use
- Industrial activities where chemical processes lead to the release of greenhouse gases, such as cement manufacturing, and the use of halons in the course of manufacturing.
- At the domestic level: use of chlorofluorocarbons (CFCs) in the process of refrigeration
- Waste management where methane is released into the atmosphere

Given that human activities contribute greatly to the emission of greenhouse gases into the atmosphere there is a need to check this trend and reduce the amount of emissions in order to avoid the devastating effects brought about by global warming. The United Nations Framework Convention on Climate Change mandates the countries which are signatories to the treaty to keep an inventory of the amount of greenhouse gases emissions in their jurisdictions and aim at integrating issues of climate change in their development planning. This is one step to ensure that governments take charge in the control of greenhouse gas emissions, as well as initiate development projects which are environmentally sensitive, thereby leading to a reduction in the amount of greenhouse gases emitted into the atmosphere.

Agenda 21 (in the spirit of sustainable development) requires that governments across the
world establish an environmental impact assessment process where all the projects which are likely to have an impact on the environment are assessed, and measures are outlined to mitigate the negative ones. Environmental Impact Assessment is meant to be a national instrument, wherein all the proposed activities which are likely to have significantly adverse impacts on the environment are carefully evaluated and a thorough study is conducted. Most of the projects undertaken in different parts of the world have significant adverse impacts on the environment. These are in the form of the emission of pollutants, and the removal of vegetation to create space (which also leads to the displacement of people and animals.) An activity which has adverse effects on the environment eventually reduces the quality of life; therefore it does not meet the principles of sustainable development. These principles advocate for the kind of development which ensures that the needs of the current population are met, while at the same time guaranteeing for future generations the ability to meet theirs too.

The World Bank is in the course of financing projects in different parts of the world (especially in the developing countries) which require that a thorough environmental impact assessment be carried out to establish whether the project will have adverse environmental impacts, and stipulates the measures which the project proponents will take to see that the identified impacts have been reduced or mitigated. This has been done with the realization that most of the projects which are funded by this international financial institutional contribute to the emission of greenhouse gases. To help the project proponents carry out an efficient assessment process, the institution has prepared a manual which clearly outlines the steps which should be followed and the requirements which should be fulfilled. The handbook is meant to guide the World Bank staff and those seeking funding from the institutions as far as various projects are concerned. The manual provides a reference for estimating the net impact of greenhouse gases emissions (or sinks) which are a direct result of the implementation of projects supported by the institution.

As a complement to the World Bank environmental assessment guidelines, the manual helps in the analysis of the project and the impacts it has on the environment. This goes a long way in ensuring that emission of green house gases is reduced or controlled to manageable levels. It is worth noting that, without economic development, human beings would be doomed to poverty and misery, but at the same time this development needs to be controlled to ensure that it does not compromise the same life it ought to safeguard and uplift. This means that development should be approached in a sustainable manner, wherein resources are utilized in such a way that guarantees our future as well as the future of those who will come after us. Through adoption of the World Bank green house gas assessment guidelines, governments as well as project proponents can go a long way in ensuring that they reduce the emission of these gases into the environment.

Developing countries can learn from Canada, where air pollution as well as the risks which are associated with it are measured using the Air Quality Health Index. This tool has been instrumental in the reduction of the exposure to air pollution through the adjustment of the increased levels of pollution in the air. Although it does not entirely lead to a reduction of greenhouse gases, this tool is effective in the ultimate control of the pollution levels. It requires the cooperation and commitment of all the stakeholders at all government levels. Community sensitization is instrumental in educating the public on the need to reduce the emission of greenhouse gases as well as adoption of an ecological footprint which gels with the principle of sustainable development.

In limiting the emissions of the greenhouse gases as a measure to ensure and promote sustainable development, governments around the world need to adopt mechanisms which
ensure more efficient consumption of energy, as well as promote the use of environmentally
safe and cost effective energy systems and the general use of renewable energy.
Transportation policies and programs which lead to the limitation, reduction and control of
greenhouse gases ought to be developed in every country- though more so in the
industrialized nations- as one of the mechanisms of meeting the standards set by the Kyoto
protocol.

Industrial development should be handled in such a way that the efficient consumption of
resources is ensured. Industries should adopt technologies which reduce pollution to the
environment, and therefore also reduce the emission of greenhouse gases into the
environment. Investment in pollution abatement technologies might increase the production
cost for these industries, but in the long run, the benefits which will be derived will go a
long way in ensuring a safe and clean environment for all. In the course of planning and
implementing of projects, policies and programs, governments should ensure that the actual
as well as potential atmospheric, socio economic and ecological changes are fully
considered.

The parties which are responsible for emitting greenhouse gases, (in the principle of “the
polluter pays”) need to pay for the damage which has been done to the environment. There
is a need to enact legislation which ensures that users of environment polluting gadgets are
made to pay for the damage which they cause to the environment. This policy has received
strong support in different places, such as EU countries, where it is taken as an
environmental policy which is meant to deter (and eventually reduce) the emission of
greenhouse gases. In the United States there is a Gas Guzzler tax and a polluter fine,
wherein the law requires those who participate in emission and production of pollutant pay
for the cleanup. In Sweden “the polluter pays.” This program shifts the responsibility of
managing waste from the taxpayers to those who are responsible for producing it. This has
worked in the improvement of waste management through increasing the possibility of
recycling and reuse of waste products.

Reducing greenhouse gases emission is the responsibility of all: the people on the ground,
the government, and those who are involved in the design and implementation of the
projects. Given that human activities contribute greatly to the production of these gases,
efforts should be taken to ensure that these activities are controlled to ensure minimal
emissions. This will go a long way in ensuring control and eventual reduction of these gases.
Learning from others and adopting measures which have been tested will ensure successful
implementation of policies which will promote sustainable development.

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Greenhouse Gas Emissions from Livestock Production
Anthony Munyua, Kenya
Original Post: Jan. 29, 2012

A recent report by the Food and Agriculture Organization revealed that livestock production is one of the major causes of environmental problems in the world.

These problems are:

- Global warming
- Land degradation
- Air pollution
- Water pollution
- Loss of biodiversity

While using a method which takes into consideration the entire chain, the study estimated that livestock production is responsible for 18 percent of all the greenhouse gas production. This level of emission is the highest, surpassing the transport sector which has always been thought to be the highest polluter of the environment and in the emission of the greenhouse gases.

The FAO report asserts that the livestock sector is the single largest anthropogenic land user. It is estimated that grazing land occupies 26 per cent of the earth’s terrestrial surface. The rest is shared between agriculture and the areas which are forest cover. One of the shocking things is that the forest cover has been thinning out, making the situation desperate, as will be shown later in this article.

There is now a shortage of grasslands, and practically the only solution to this problem is the creation of more grazing lands through the clearing of vegetation and cutting down of trees to pave way for fodder cultivation. This is mainly taking place in Latin America and Africa where the previously forested areas are being converted into grazing lands or sources of pasture for the livestock. More than 70 percent of the grazing land, especially in dry areas, has been rendered useless due to degradation, which is attributed to overgrazing, overstocking, erosion and compaction, which are largely due to livestock production.

Growth in markets has been recorded in developing nations. This opportunity has been utilized by entrepreneurs and farmers who are increasing the number of livestock to meet the growing demand. This only spells doom for the forest and other vegetation. These have been cleared in an attempt to create more space for livestock production. Studies have shown that the forested areas are capable of storing at least 200 tonnes of carbon per hectare. Reduction of the forested areas through converting them into grazing lands is reducing the amount of carbon being absorbed through natural means, and therefore increasing its concentration in the atmosphere. In Latin America a large section of the Amazon forest has been cleared for cultivation and human settlement. Livestock keeping is one of the economic activities which the people living around these areas rely on for survival. The forest has been vital in absorbing the large amount of carbon produced by industries and motor vehicles, which have been increasing at a higher rate in this part of the world. Through clearance of these important systems of carbon sequestration we can only expect the worst to happen, as the effects of global warming hit us through adverse weather condition and food shortages. This will eventually make life unbearable, since the food prices will soar and the quality of life deteriorate.
According to the FAO report, livestock production accounts for more than 8 percent of global water consumption. This consumption is attributed to irrigation of feed crops in countries such as the United States and other large livestock producers in the world. The water is also used in feeding, the manufacturing of animal feeds, and mixing of chemicals, among other uses. Water scarcity is already a big problem in many countries in the world. It has led to conflict, especially among the pastoralist communities in Africa who fight over the control of animal watering points. Since the demand for animal products is on an upward trend in line with the population increase, one can only expect more conflicts in the future, since the demand for water to feed these animals will also increase.

Apart from the heavy water consumption associated with livestock production, pollution has been noted as another threat posed by this economic activity. The sector has been identified as a major source of water pollution. The pollutants come from animal waste, fertilizers used in the cultivation of feed crops, pesticides, chemicals which are used in treatment of hides and other animal products, and antibiotics used to treat different conditions which affect the animals. Although on a global scale there is limited or no data on the contribution of different countries as far as use of products which eventually lead to water pollution in relation to livestock production is concerned, in the United States this economic activity accounts for the largest consumption of pesticides, fertilizers and antibiotics. All these chemicals eventually find their way to water sources, leading to contamination. Although this has nothing to do with the emission of greenhouse gases, it eventually leads to a shortage of safe drinking water, which threatens the livelihood of many people around the world.

The demand for livestock products. This has eventually led to a rise in the number of animals being reared to meet the demand. The sheer quantity of livestock raised to satisfy increased human consumption is a great threat to biodiversity. It is estimated that livestock alone accounts for 20 per cent of total terrestrial animals. The land which has been created to house these animals as well as provide pastures was once a forest which housed wildlife. This clearly indicates that along with contributing to the emission of greenhouse gases, livestock production has also resulted in increased pressure on land and displacement of other creatures.

Other aspects related to livestock production that are known to contribute to the emission of greenhouse gases include the cooling of livestock products where fluorocarbons are used. They have a higher global warming potential than carbon dioxide.

In developing countries cooking is done using wood fuel and kerosene. Cooking meat and other livestock products may take a longer period. This means that combustion of these fuels will lead to emissions of carbon and other greenhouse gases for longer periods. On the other hand, wood fuel is a product of forests. This means that trees are cut to provide different households with fuel used for cooking. Therefore, this activity leads to an increase in the amount of carbon in the atmosphere in two ways: One through emissions and another through the cutting down of trees, which reduces the capacity of carbon absorption.

Disposal of waste derived from livestock which comes in form of dung, fat, bones and other products lead to high emission of greenhouse gases. Production, distribution and disposal of livestock products involve transportation where trucks, planes and other fuels consuming engines are used. This leads to further emission of greenhouse gases. Diseases and conditions such as cancer, diabetes, hypertension and stroke require carbon intensive medical treatment. Their causes are partly related to consumption of livestock products.

As long as the human population keeps on increasing, the demand for livestock products will also keep on rising. This means that the greenhouse gas emissions related to livestock
production will keep on increasing day after day. There is a need for urgent action to check the population growth. This will reduce the amount of livestock products required to feed the population. A reduction in daily consumption of animal products has also been suggested as a means through which livestock numbers can be reduced and hence their contribution to emissions would be as well. A radical solution has been suggested in some quarters, where people have been urged to switch to non-animal food products as a way of reducing the emissions related to livestock production. This may be a herculean task to achieve, but it can go a long way in reducing the concentration of greenhouse gases in the atmosphere. The urgency in which the reduction of emissions is required not only calls for immediate policy formulation, but a change of attitude among people, wherein they embrace behavior and practices which lead to the reduction of emissions of greenhouse gases. At the government level policy changes will be needed to sustain the reductions mechanisms.

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