**Soil Carbon**

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Institutional Affiliation

Soil Carbon

Mitigation is the act of preventing or reducing the effects of climate change. Mitigation aims at reducing the emission of greenhouse gases warming the planet. Relief achieves its process of avoiding climate change by stabilizing the levels of the greenhouse gases to a level that is sufficient and capable of allowing the ecosystems to adapt to the impending climate change naturally (Edenhofer, 2015). As a result of the reduction in the emission of greenhouse gases, the production of food is not threatened as well as the economic development can grow sustainably. Some of the mitigation strategies include retrofitting the roofs to make them more efficient in energy production and the adoption of the use of renewable energy sources (Edenhofer, 2015). Encouraging cities to develop transport systems that are sustainable to reduce excessive gas emissions into the atmosphere as well as promote the use of forests and lands sustainably is another strategy. Mitigation remains to be the commonly used approach in the management of climate change and its impacts globally. The paper focuses on carbon offsets as a mitigation measure in reducing climate change.

**Basic Description**

Mitigation through offsetting amounts of carbon emitted into the atmosphere to zero levels is one of the approaches used in reducing climate change. A large percentage of climate change is from global warming. Global warming is a result of increased fuel combustion, as well as the use of fuel that is not environment-friendly. Since the revolution in industries, the global emission of carbon is increasing gradually. Radiation of carbon through social practices such as deforestation and a change in soil cultivation is a contributing factor. Soil carbon is one of the effective methods of reducing carbon quantities in the atmosphere. Mitigation approach uses soil carbon sequestration as one of the primary strategies in reducing atmospheric carbon.

**Soil Carbon Sequestration.**

Soil carbon sequestration refers to the procedure of moving carbon dioxide, which is in the atmosphere, and storing it securely so that it cannot be reemitted back into the atmosphere. Smith, 2016). The adoption of practices that will help restore effective land use procedures and recommended management practices is one strategy to reduce atmospheric carbon effectively. As a result, a lot of positive impacts are experienced. The probable global amount of carbon sequestration is at 0.9+0.3 kg/ha/year (Change, 2014). As a result, the value will help in offsetting carbon in the atmosphere by a quarter to a third. Soil sequestration is one of the most environmentally friendly approaches, as well as cost-effective. However, soil sequestration further depends on the texture of the soil, soil profile, and characteristics for its effectiveness. Soil carbon sequestration helps to add biomass in the ground, encourages minimal disturbance of soil as well as helps in improving the structure of the land.

Plants are capable of absorbing carbon from the atmosphere and use it for photosynthesis. Carbon trapped by plants remains trapped in the soil even after the death and decomposition of the plants. One of the strategies to help in ensuring the carbon remains stuck into the land is through engaging in minimal tillage as well as leaving some crop residues in the fields (Smith, 2016). Soil Carbon Sequestration can capture and store carbon for more than 100 years before becoming saturated. Soil carbon sequestration, therefore, plays a significant role globally in addressing climate change. The reduction in climate change is because if the massive amounts of carbon that soil can capture as well as the period soil uses in storing the carbon.

Ecosystems in which soil carbon sequestration can be well attained include lands used for grazing, desserts, and crop fields (Smith, 2016). Forest soils are included under afforestation and desertified lands. The capabilities of carbon sequestration of grasslands are usually not put into consideration because it is covered under other ecosystems. Moreover, there are a lot of uncertainties concerning soil sequestration of grasslands.

**Scientific/Technological Questions**

Mitigation raises several questions in the reduction of climate change. One of the vital questions includes worrying trends in the effects of global warming. As a result, global warming the discussion of whether the mitigation actions put in place in managing these effects are be affordable through decarbonization (Change, 2014). Decarbonization can be described as the continuous process of determining the amount of carbon that is used to produce a given amount of energy. After the determination of the amount of energy, experts try to reduce the amount of carbon in the atmosphere. For instance, soil sequestration will help in capturing carbon more efficiently and cost-effectively. Additionally, soil sequestration will be able to improve on the health of the soil and result in an increased yielding of crops.

Decarbonization is dependent on a future technological breakthrough. Technological advances are believed to able to play a significant role in carbon dioxide removal. However, studies further show that the technology is only capable of removing carbon dioxide up to some level. Additionally, the cost and speed of implementing technology raise some uncertainties. The right technologies come up with the growth of an economy a growth. As a result of economic growth, decarbonization can be well achieved.

**Effectiveness and Potential Side Effects**.

Mitigation is an effective strategy in the reduction of climate change. Mitigation aims at helping developing countries to make different transformations in ensuring that there is a low emission of carbon dioxide in the air. Mitigation effectively promotes the changes by pushing for innovations and making technological advances. As a result of the technology applied, a means of reducing and stabilizing the amounts of carbon dioxide is created. The mitigation approach is useful because of its inclusion in the national planning and development agenda (Edenhofer, 2015). Mitigation has been achieved through the analysis of frameworks and policies used. Soil carbon sequestration is an effective strategy in mitigation. The effectiveness of the procedure is because of its capabilities of storing a large amount of carbon dioxide for an extended period.

Mitigating climate change through soil carbon sequestration has been found to have positive impacts. Some of the positive effects include conservation of soil properties as well as water sources and improved crop yields (Smith, 2016). However, mitigation has some potential side effects. One of the possible side effects of soil carbon sequestration results from soil erosion and deposition. Some of the carbon trapped in the soil can be removed through erosional activities. As a result, some coal can be deposited into depression sites, and some deposited into landscapes while some of the soil is deposited into aquatic ecosystems. As a result of much carbon released into an ecosystem and water, it may result in the deaths of different animals living in the water.

**Stakeholders**

The mitigation approach in climate change can impact both positively and negatively to different groups of individuals. Mitigation attempts to decrease the effects of climate change, such as by the use of renewable sources of energy. Part of the individuals in rural areas depend on wood and charcoal as their source of energy and is known to produce a lot of carbon dioxide. Most of the individuals in the least developed countries still use charcoal as their primary source of energy. As a result of mitigation, these individuals will be forced to look for alternative sources of renewable energy. The reduction will impact negatively because renewable energy may be costly on them. The groups likely to be affected by this mitigation measure include individuals who earn less of the minimum wage required.

Mitigation measures will impact positively on different individuals because the effects of greenhouse warming won’t be experienced. Some of the stakeholders taking part in mitigation include the United Nations Environment Program (UNEP) and the Food and agricultural organization (FAO). All these stakeholders' work towards reducing carbon dioxide emissions as well as promote sustainable agricultural production (Smith, 2016).

**Political Barriers and Regulation Roles**

Mitigation has some barriers hindering it from being effectively being executed. One of them being political barriers. The absence of the best leaders to help in making decisions or support the approach through releasing funds approaches not be effectively executed (Smith, 2016). Most of the organizations usually have got a limited amount of resources, and hence they tend to concentrate more on immediate issues. The absence of technical and resources needed in mitigating climate change results in the slow response when a disaster strikes. The lack of relevant and practical information may result in not getting clear interpretations of climate change and hence delayed action.

The absence of a legal regulatory and institutional framework is a hindrance to action. The risks of legal liability and uncertainties not being well-understood results in no clear regulations being put in place. Some legal actions indicate that some councils will be protected if they demonstrate the use of their knowledge in addressing specific emerging issues in an organization. One of the legislation in place used in mitigation is a law passed to try and reduce the emission of carbon dioxide by 83 percent.

**Business Plan on Soil Carbon Offsets**

**Business Description**

Thebusiness set up is intended to decrease the amounts of carbon dioxide in the air through the use of soil carbon sequestration. Soil carbon offsetting business plan comes at a time when issues of climate change as a result of global warming are on the rise. The main aim of the business is aimed at ensuring levels of carbon dioxide in the atmosphere are at zero degrees. The company will employ various individuals to help in accounting for all the finances and activities undertaken in the organization.

**Operation of the Business**

The business will be effectively researching areas that have been adversely affected. One of the fields has been identified; measures will be put in place to try and mitigate the changes. For instance, the business will try reducing the amount of carbon in areas adversely affected. Soil carbon offsetting will be achieved by the encouragement of afforestation and planting of cover crops. As a result, a lot of coal will be trapped in the soil.

**Source of Funding**

The primary source of funding for the business is from a non-governmental organization, grants as well as partners. The company has a lot of draft proposals that are distributed to different stakeholders for funding. Once the business has expanded, the firm aims at making investments in the energy sector. One of the critical investments is to be one of the leading producers of renewable energy sources. The business will also invest more in sensitizing and educating individuals on the importance of using renewable energy in their uses.

**Financial Estimates**

For the business to be fully operational and running, an estimate of 5 million is required. The money will be used in purchasing a fully established location where the company will execute its functions. Part of the funds will also be used in researching the types of soils. Furthermore, part of the money will be used in furnishing the offices as well as buying different electronics and tools needed for working.

**Staff Expertise Required.**

Addressing climate change is a critical issue and requires experts for the perfect execution of duties. Expertise to conduct tasks in a different department is necessary. First, knowledge to help in interpreting any changes in climate are required. Once the information has been gathered and interpreted, effective action measures will be taken. Experts in collecting and analyzing soil samples are also be needed to assist in analysis procedures.

**Growth over the Next 10 and 20 Years**

In twenty years, the business aims at having opened several of its branches in different parts of the world. The anticipated growth in business is through the energy sector investment. The first milestone which the company aims at achieving is the use of different marketing strategies to market itself as well as sensitize individual to adopt the use of renewable energy sources. As a result of the business, more carbon will be trapped in the soil through the use of different technologies such as the use of cover crops as well as limited tillage of land techniques. The trapping of carbon in soil using different methods is a milestone that to be achieved in five years.

**Main Competitors.**

Various business is already in existence and conduct similar activities. These businesses are trying to mitigate climate change by reducing the amount of carbon released in the atmosphere. For instance, Siemens is an organization that is already advocating for the use of renewable sources of energy. Siemens also carries its operations in a manner through which minimal carbon dioxide is released into the atmosphere (Edenhofer, 2015). Siemens is one of the leading companies which produces a large percentage of renewable energy as well as electronics with a small amount of carbon emission into the atmosphere.

**Conclusion**

In conclusion, climate change continues to be a threat to humankind. However, mitigation tries to reducing climate change by coming up with ways of combating the emission of carbon dioxide in the air. Mitigations aim at mitigating climate change through the encouragement of the use of a renewable source of energy as well as the sustainable usefulness of lands and forests. Soil carbon is one of the most effective strategies for offsetting the amounts of carbon from the atmosphere. Soil carbon sequestration traps the atmospheric carbon and stores it for as long as 100 years. Soil carbon is an efficient approach because it is cost-effective and environment-friendly. Different stakeholders are already taking part in mitigation, including UNEP and FAO. Various barriers hinder the mitigation approach from being effectively executed. Lack of good leaders to help in decision making as well as putting in place effective legislative policies are a hindrance to action.

References

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