

Kyoto Protocol and protection of International Environment

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Abstract

Extent and the rate of climate change was very anxiety which public notions state the necessity of periodic international conferences and covenants formation. Greenhouse gases performed a role as greenhouse glass and increase the world temperature. Kyoto Protocol has 28 articles and 2 appendixes. In this protocol, at first the terms and total aspects are described. Then the goals, obligations, principles and protocol pillars and also the fiscal source exchange and technological transferring are discussed.

KeyWords: Agriculture, Climate change, Kyoto, Protocol

1-Introduction

Extent and the rate of climate change was very anxiety which public notions state the necessity of periodic international conferences and covenants formation. In 1988, United Nations Environment program (UNEP) and world meteorological Organization (WMO), formed an organization of "Intergovernmental Panel on climate change" (IPCC). These organizations by more than 2000 experts, research on the effects of sextet greenhouse gases in climate change (Hashemi, and kroni 2011)

Kyoto Protocol has 28 articles and 2 appendixes. In this protocol, at first the terms and total aspects are described. Then the goals, obligations, principles and protocol pillars and also the fiscal source exchange and technological transferring are discussed. The Kyoto protocol obligates the industrial countries to decrease common greenhouse emissions by at least %5 of 1990 emissions in the period of 2008 to 2012(The Kyoto Protocol to the convention on Climate Change, 1997).

According to IPCC reporting in 2007 between 1960 to 2005, the world temperature has increased by 0.79 (IPCC, Climate Change, 2007)

2-CO₂

CO₂ is the most important greenhouse gases. Greenhouse gases performed a role as greenhouse glass and increase the world temperature. These gases perform as greenhouse Glass and transfer the sun short wave length inside but trap the reflected wave length which intends to move outside.

This action is the main factor in warming of world and therefore climate change. The greatest efforts have done on decrease of human role in climate change.

3-Kyoto Protocol

Kyoto Protocol ('Protocol'), is an international agreement that was accepted as an annex to United Nations Framework Convention on Climate Change ('UNFCCC') accepted at Earth Summit which was held in Rio de Janerio (Brazil) in 1992. The main purpose of the Protocol is to make sure the greenhouse gas 1 concentrations in the atmosphere are stabilized at levels that would not create hazardous effects to the climate. The Protocol has stipulated several binding targets for industrialized countries in order to reduce greenhouse gas emissions 2. While UNFCCC foresees 'encouraging implementations', the Protocol stipulates 'mandatory sanctions' for reducing emissions. There is only one country which expressly announces that it does not intend to ratify the Protocol even though it is a member of UNFCCC: USA.

Additionally, the following 11 countries have not made any announcement or commitment for being a party to the Protocol:

- Afghanistan - Andorra - Brunei
- Chad - Iraq - Palestine
- Sahrawi Arab Democratic Rep. - San Marino – Somali
- Taiwan – Vatican

4-Agriculture and CO₂

Although still a controversial issue, the main contributors to the global climate change both in terms of substances (greenhouse gases - GHG's) and emitters have been clearly identified. Agriculture is accused to contribute with up to 20% to the total emission of GHG's with methane playing the major role amongst them (Cole, 1996).

Many factors effect on CO₂ emission increasing. The main source of CO₂ emission is from the industry sector but in this study we state the agricultural operations on CO₂ emission increasing. These elements are:

1- The growing rate of population provide this need that some agricultural land and forests convent to urban areas. This land use change from forestry and agricultural to urban lead to the challenge of plant covers deletion. The result of this is decreasing of CO₂ absorption by plant covers.

2- The result of intense tillage is the more soil rummage. This action has three adverse effect:

- A) More soil erosion
- B) More CO₂ emission
- C) More fuel usage

All Three elements mentioned above have the direct and indirect influence of CO₂ emission. For this reason the decrease of soil tillage is preferred. Estimates based on the assumptions that 30% and 40% of the arable land in Europe (EU-15) could be cultivated using no-tillage (NT) and reduced tillage (RT), respectively, and NT would increase SOC in 0.77 t ha⁻¹ a⁻¹ and RT in 0.5 t ha⁻¹ a⁻¹, a total yearly CO₂ sequestration of 130 Mt could be achieved Compared to this amount, the saving of around 5.3 Mt CO₂ a⁻¹ through less fuel consumption due to the reduction of tillage operations is rather small. Together, this emission reduction would account for almost 40% of the 346 Mt CO₂ a⁻¹, which the EU-15 member states agreed to reduce until 2012 (Tebrügge, 2001).

Similar figures are provided for the USA, reporting a potential carbon sequestration of 0.45 to 1.0 t ha⁻¹ a⁻¹ summing up to an average annual agricultural soil sink of 180 Mt C a⁻¹. Thus, soils sinks could offset about 30% of the CO₂ emission reduction target of the USA (Lal et al., 1988).

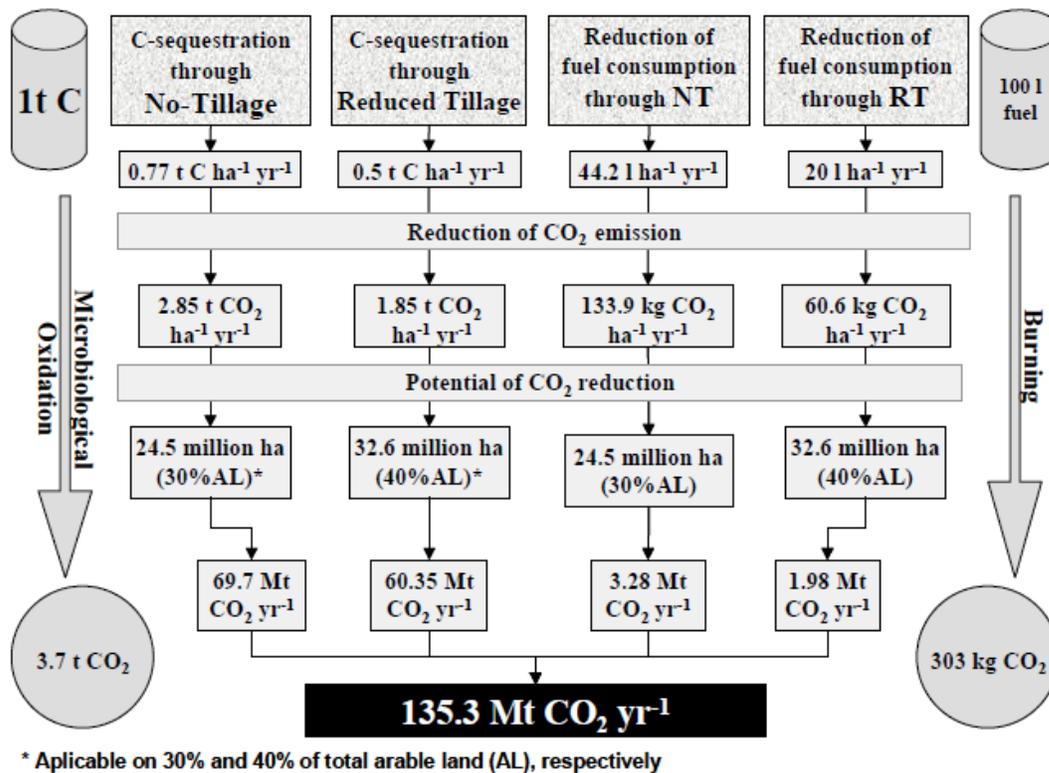


Figure 2. Estimation of the potential reduction CO₂ emissions through the application of reduced and no-tillage in Europe (EU-15)

When soils are cultivated, about 20 – 30 % of the soil C is released to the atmosphere within the first 20 years in temperate regions, and 50 – 75% in the tropics due to cultivation, erosion and other degradation processes (Lal, 2000).

The IPCC (2000) guidelines suggest a climate mitigation efficiency of 10 – 15 % for conversion from conventional to zero tillage, and this can be realized over a period of at least 20 years (IPCC, 2000). Other estimates show that average global C sequestration rates for reconverting agricultural land to forests and grassland (permanent cover) are about 300 kg C ha⁻¹yr⁻¹ for the first 20 years, and about 400 kg C ha⁻¹yr⁻¹ thereafter for the next 80 years (Lal, 2000). West and Post (2002) estimated that converting from conventional to zero tillage and improving crop rotations and soil fertility management can result in C sequestration from about 250 - 750 kg C ha⁻¹yr⁻¹ for a minimum of 25 – 30 years.

3- Firing of residue crops and forests have the adverse impacts on soil and also the increasing of CO₂ emission.

We recommend that for combating by insects and other insects use the organic methods or at the last way use insecticides and other chemical products.

According estimations and measurements over decade's soil organic matter (SOM) decreased considerably due to agricultural land use (Reicosky, 2001).

4- In sustainable agriculture it is recommended that the use of chemical products such as fertilizers and insecticides ... are decreased. The excessive use of these products increases the GHG

emission. Directly on the other hand for manufacturing these products in industry sector the more fuel combustion is occurred and the more CO₂ emission is occurred.

5- Conclusions

According to IPCC reporting in 2007 between 1960 to 2005, the world temperature has increased by 0.79 (IPCC, Climate Change, 2007)

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Many factors influence on GHG emissions in agriculture sector such as: intensive tillage, products and crop cover forest deletion for urban land change purpose and ... therefore it is appropriate the farmers partnership in information services be increased and the proper information about conservation tillage or no tillage operations, substitute of manures where appropriate, no firing of crop residue and forests ... be accessible. For proper performance of these operations some governmental supports must be applied. For example subsidies be allocate to CO₂ emission reduction or for preventing of some damaging operation some regulation must be set out and applied.

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