Oxygen regulator element to reduce the climate changes: the oxygen users must pay those who produce it

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Abstract The climate warming reduction needs an approach based on a regulator element which links the ecological and economical goals. The ecosystem services have become less effective because the production of water and CO₂ are faster than recycling it in biomass. The produced water with CO₂, during the oxidation of organic carbon thanks to the chemical reduction of oxygen, is often neglected and not mentioned by the scientific community. The water volume that results from the burning of fossil fuels increases annually with CO₂ emissions and is higher than thousands of billions of tons. This water increase affects water vapour levels and induces the risk of great floods and sea level rising. We suggest an ecolonomical (ecology and economy) integrative concept based on the use of oxygen, as a regulator, which links the burning of fuels that generate water and fossil CO₂ to photosynthesis that regenerates oxygen and biomass essential for our life. The ecolonomical quantitative rule claims that the oxygen users such as transportation services, manufacturers and power plants must pay those who produce it such as forest, agriculture and urban vegetation. The application of this rule should induce the restoring

of natural ecosystems and agricultural practices thanks to the link between the urban services and the rural services.

Keywords Climate change · Fossil carbon · Burning · Carbon dioxide · Oxygen · Vapour water

1 Introduction

Urbanization has intensified the industrial and economic issues that have affected rural activities, natural resources, environment and biodiversity. Global demand for primary energy will increase by 55% between 2005 and 2030. Hydrocarbons remain by far the primary source of energy. They represent 2/3 of global energy consumption and demand for oil should grow up by 37% by 2030 (IEA 2006; GIEC 2007). Demand for coal is expected to grow further by 2030, while its share is expected to represent 28% of the global energy consumption. The use of fossil fuels, capitalizing 75% of greenhouse gas emissions, has caused global recent upheavals in climate and fuelled conversations on the warming caused by carbon dioxide (GIEC 2007). The technological development based on the high consumption of energy derived mainly from the burning of carbon fuels caused the unbalance of the carbon cycle. The unbalance between the organic carbon, carbon dioxide, oxygen and water is a great challenge to ensure

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Fig. 2 Estimated and predicted water productions from fossil fuel burning without (—) and with (---) application of the oxygen managerial system, according to the CO₂ emissions (Janzen 2004; Nakicenovic et al. 2000) without (—) and with (---) application of the oxygen managerial system

energy used. This water increase affects water vapour levels and induces the risk of great floods (Milly et al. 2002). Indeed, the effect of water vapor is strong enough to double the climate warming caused by increased levels of carbon dioxide in the atmosphere (Dessler et al. 2008). Water vapour affects also the water transport in plants and then their growth rate and production, as mentioned recently by Lendzion and Leuschner (2008).

3 Oxygen managerial system

The unbalance between the organic carbon, oxygen, fossil carbon dioxide and water will widen as energy consumption triples by 2055. This may be considered as a great challenge to ensure sustainable development. The energy needs for mankind are enormous and in a huge continuous progress. In fact, it contributes massively to the climate change in the absence of new measures taken for global energy consumption limitation. The international energy agency (IEA) reported the possible pathway for reducing global CO₂ emission in many economical sectors and manufactures (IEA 2008). The climate warming reduction needs an approach based on a regulator element, which links the ecological and economical goals. The ecosystem services are increasingly affected by the pollution resulting from the fossil energy burning and other economical

Fig. 3 The unbalance between the ecosystem services and the technology services and its impacts on the CO₂ and water accumulation

activities. Changes in biodiversity are currently the fastest in the history of mankind.

The species extinction rates are currently 100–1,000 times than the pre-human rate (Pimm et al. 1995). Currently, food is based on only thirty plant and animal species that have the highest productivity. The increased productivity of food does not go hand in hand with the growing population, which is expected to stabilize at 12 billions at the end of the actual century. The ecosystems have become less effective because the production of water and CO₂ are faster than their recycling in biomass (Fig. 3). The ecosystem services are affected differently in countries depending on the level of technological development. The needs of the citizens of the planet in terms of floor space (ecosystem services) can reach 8 ha/person in developed countries. Ecosystems are relatively protected in many countries by intensive systems of management and treatment of wastes. However, the current pollution control systems are not always in favour of restoring the carbon cycle because their high energy consumption and organic carbon mineralization. The ecosystem management and use of energy needed to human activity require a new ecopolicy based on the integrative concept to reduce the climate change. Current economical development systems involve two opposing systems:

Table 1 Integration of technology in the nature

Criteria	Ecosystems	Technology	Ecotechnology
Unity	Cell	Process	Integrated bioprocess
Goal	Sustainable	Productivity	Sustainable productivity
Activity	Biodiversity: parallel and serial smooth activity	Specialization: intensive serial activity	Alternation between smooth and intensive activity
State system	Open: stationary state	Closed: transitory state	Connected closed system: open system
Management	Cooperative and conservative	Competitive and innovative	Sustainable innovation and cooperation
Landscape	Continuous	Fragmentation	Integration of technology in the nature: Compartment evolution
Energy	Photosynthesis: hydrogen and carbon sequestration	Burning: CO ₂ and water production	Green energy and clean energy sources
Pollution	Recycling	Production	Coupling production and recycling
Human density	Low	High	Rural exodus reverse
Location	Rural	Urban	Coupling rural and urban services

ecology services and technology services which do not have the same goals and are based on different management approaches (Table 1). A consensus between the majority of scientists reveals that climate change comes mainly from large anthropogenic emissions of greenhouse gases (GIEC 2007; Janzen 2004), and water vapour (Dessler et al. 2008).

There are ways to reduce the annual emission of CO₂ and water vapour in the atmosphere while keeping up with increasing energy needs. The first solution would be to replace the maximum fossil fuels by biofuels (ethanol and biogas) which are made of sequestered carbon issued from the photosynthesis. This has the advantage of eliminating the CO₂ from the atmosphere and recycling it into biofuels. The second route would be to reduce CO₂ emissions by using clean energy sources such as solar, wind and nuclear sources (IEA 2008). The third way is based on improving the phenomena of CO₂ storage in biomass improving photosynthesis and reducing the activities of mineralization of organic carbon in ecosystems and promoting the natural carbon capture and storage. The approach that integrates the three ways is the most promising because it produces biofuels, will help restoring the altered carbon cycle and improve the ecosystem services as food production and wastes recycling. However, the mechanisms that allow the connection between sound climate change and maintained development policies for sustainable growth require an innovative and integrative thought. The measures taken to attenuate the

climate change impacts on the planet based on the CO₂ emissions reduction seems a partial solution for ecosystems restoring because the economical actors are not directly involved.

An ecolonomical (integrating ecology and economy) approach is needed to help restoring the ecosystem services and promoting green economic development. We suggest an integrative concept based on the use of oxygen as a regulator which links the burning of fuels that generate water and CO₂ with the photosynthesis process that regenerates oxygen and biomass essential for our life (Fig. 3). The ecolonomical quantitative rule claims that the oxygen users such as transportation services, manufacturers and power plants must pay those who produce it such as forest, agriculture and urban vegetation. The application of this rule will contribute in the reduction of the CO₂ emissions and water accumulation (Fig. 2), in spite of the growth of the global energy consumption by the burning of the fuels according the Special Report on Emission Scenarios (Nakicenovic et al. 2000).

The proposed oxygen managerial system should induce the restoring of natural ecosystems and agricultural practices because it allows the coupling of the technology and ecosystems and links between the urban services and the rural services (Table 1). The urban–rural conflicts became a real challenge because of the unbalance between both areas, which need to be addressed urgently in some regions in Africa and Asia to a change in development policies.

In fact, the econometric analysis suggested that climatic change has acted to change urbanization in sub-Saharan Africa because the intensified decolonization of agricultural areas, but not elsewhere in the developing world (Barrios et al. 2006). The risk perception and perceived adaptive capacity of urban and rural persons are largely neglected in previous climate change (Grothmann and Patt 2005). The multidisciplinary integrative of knowledge and sustainable uses of natural sciences and technologies, economics, and social sciences are required for an effective ecosystem management (UNEP-CBD 1998).

4 Conclusion

The water volume, that results from the burning of fossil fuels increases annually with CO₂ emissions and is higher than thousands of billions of tons, is often neglected and not mentioned by the scientific community. This water increase affects water vapour levels and induces the risk of great flooding and sea level rising. The climate warming reduction needs an approach based on a regulator element which links the ecological and economical goals.

We suggest an economical quantitative rule which claims that the oxygen users such as transportation services, manufacturers and power plants must pay those who produce it such as forest, agriculture and urban vegetation.

The application of this rule should induce the restoring of natural ecosystems and agricultural practices thanks to the link between the urban services and the rural services.

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