Bioenergy Crops versus Food Crops

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ABSTRACT

Demand for food and bioenergy is increasing globally day by day. The area demand for cultivation of bio-based materials would amount to several million hectares world wide. This can not be neglected when one thinks of land needed to produce food for burgeoning population. This conflicting situation and other attendant issues related to soil sustainability and deforestation have been debated in recent years at several plate forums globally. This paper examines impact of bioenergy on food security, food sovereignty, and bioenergy in relation to food prices, poverty and hunger to find out a possible answer to the vexed question- could bioenergy be a total disaster for poor and starving people or could it generate livelihood and sustainable development to have better access to food.

Key words: Bioenergy, food prices, poverty, hunger

1. INTRODUCTION

1.1. Impact of Bioenergy on Food Security and Food Sovereignty

The issue of biofuel quotas is a bone of contention with some environmental and humanitarian groups, which say over-zealous biofuel production could cause massive deforestation and lead to food shortages. The United Nations Special Rapporteur on the Right to Food Jean Ziegler 2007 warns: “the conversion of arable land for plants used for green fuel had led to an explosion of agricultural prices which was punishing poor countries forced to import their food at a greater cost. Using land for biofuels would result in “massacres”, “It's a total disaster for those who are starving.” This is one of various statements on the possible negative effects of large scale fuel generation from biomass on food availability, food prices and food security. Recently Brazilian President Lula de Silva declared, “I am offended when people point their fingers at clean biofuels - those fingers that are besmirched with coal and fossil fuels.”

Some facts: only 2% of arable land worldwide is used for bioenergy development, while 30% of arable land, crucial for growing food crops, lies fallow. Those numbers alone demonstrate that land used to grow biofuel raw materials is not the main cause for global hunger. What it does tell us is the fact that third-world farmers do not have the financial resources to pay for seed, and thus cannot utilize these available acres for food production.

Globally, 15 million hectares are planted in coffee and tea, crops not known to alleviate hunger.

The UN Food and Agriculture Organisation (FAO) and International Food Policy Research Institute (IFPRI) have both published damning reports in recent months in which biofuels are portrayed as the main culprit for the 2007 and 2008 crop price hikes. Both organisations argue that governments should (urgently) review their biofuel policy because of the devastating effect biofuels production is having on food prices and increased world hunger. These reports were published at a time when prices for maize and wheat were at levels lower to what they were at the beginning of 2007. Around 12 months ago prices went as high as nearly €250/tonne for wheat and maize. The prices for cereals have now reached such a level that the European Commission is restarting its policy of intervention. Biofuels have been made a scapegoat for rising commodity prices but price hikes are common in agricultural markets due to a combination of relatively inelastic demand and volatile supply. Historical data shows that real (inflation-adjusted) world wheat prices were 15% higher in 1995 and 1996 than the 2007 price spike. Moreover, EU production of bioethanol from wheat only began in earnest in 2003. Therefore, there must be a number of factors affecting commodity prices, some of which are cyclical and some of which are structural in nature. On the one hand, among structural factors are the growing demand from emerging economies, the historically low levels of investment in agriculture and agricultural research which have slowed down productivity, the rising biofuels production and higher oil prices. In particular, the Sustainable Development Commission suggests that an increase in oil price from $50 (€38) to $100 a barrel could cause a 13% increase in production costs in commodity prices for crops and 3-5% for livestock products. Cyclical factors also affect commodity prices, such as adverse weather conditions resulting in bad harvests in key production areas of the world, limited international commodity trade due to the imposition of export restrictions in various countries and, it seems now above all, speculative investment in agricultural commodity markets. In summary, growing demand and sluggish productivity growth led to the change from a surplus to a shortage era and set the stage for commodity price increases. When weather and crop disease shocks hit commodity markets in 2006 and 2007, stocks of many agricultural commodities were already low, thus exacerbating the price impacts. The policy actions of some countries to isolate their domestic markets through export restraints made the situation even worse, particularly for rice. Rising biofuel production has had a very modest impact on commodity prices.

In Germany, the Association for Bioenergy has set an achievable formula for the year 2020: 10 percent bioenergy in the electric power sector, 10 percent in the heating sectors, and 12 percent for automotive fuel emissions. Those goals and many others for the future are achievable without conflicting with crops for human consumption. A Swiss Study 2007 showed that if the available biomass is transformed into energy in an efficient and environmentally friendly manner, while at the same time consumption is

reduced and energy efficiency in-creased, these alternative energy carriers can together with other forms of renewable energy play a role in our future energy supply that should not be neglected.

Brazil has 340 million hectares of arable land, of which only a fifth is under plough. This calculation excludes the Amazon forests and other environmentally sensitive areas (Brazil's total land mass is 850 million hectares). Thanks to sugarcane's very high productivity, using approximately 3.4 million hectares, or only 1% of its arable land, Brazil now produces enough ethanol to power approximately 50% of its passenger vehicles. That's a remarkable achievement! Indeed, competitive ethanol prices are helping to keep petrol prices in check, as the latter struggles to preserve its market share.

The International Research Centre for Renewable Energy (IFEED) is carrying out a research study on biomass biofuel production, land availability and food security in Developed and Developing Countries and their impact on climate, economic and social constrains. The study considers short- term, mid- term and long-term issues of biomass productivity, conversion and vehicle technologies.

Biomass supply implies a complex analysis of the local natural and agro environmental conditions. Perspectives of increasing and improving of biomass productivity, via plant breeding, gene- and biotechnologies and optimising management practices of conventional and new crops as well as new species including algae and micro organisms, improving of conversion technologies and engine efficiencies are considerable. The primary results indicate that in long-term time scale the generation of up to 10% of the agricultural cultivated areas (in Brazil the current land under sugar cane cultivation for sugar and ethanol production amounts to only 2%) would have positive effects on income of the farmers, also in Developing countries, poverty alleviation, on the mitigation of Green House gases (GHG) and the environment as well as on food security.

Food production is closely correlated to energy availability and energy supply. The lack of energy in farming systems in rural areas in Developing Countries is one of the key factors of low productivity, poverty and food shortage (Figure 1).

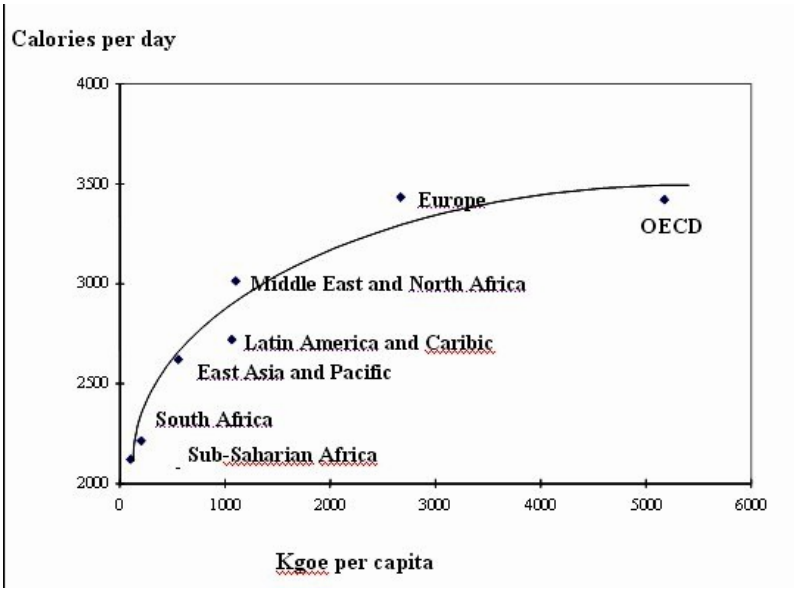

FIGURE.1 Correlation between energy input and availability of food as calorie supply

2. BIOENERGY AND FOOD PRICES

The sharp decline of grain prices from recent peaks commodity prices is further indication that bioenergy plantations are not the real reason for the food commodity price increase in the beginning of the year 2008. Oilseed prices also have fallen sharply (Figure 2). Palm oil prices averaged less than $480 a ton in November, down from $1,250 a ton in March 2008. Similar declines took place in most edible oils (soybean oil dropped from $1,475 a ton to $835, and coconut oil from $1,470 a ton to $705 over the period). The weakening of edible oil prices reflects not only slowing economic growth but also improved supplies, World Bank 2009.

Over the past 30 years, agricultural productivity has improved much faster than demand; as a result, agricultural output has increased rapidly even as the share of agricultural workers in total employment has steadily declined and prices fallen (World Bank 2009). Oil prices are having a direct impact on food prices oil price per barrel versus food price (Figure 3).

The OECD member states are spending US$1 billion every day for supporting their farmers, resulting in exporting of cheap food commodities into Developing Countries which inhibits the development of their agriculture, decreasing the income of poor farmers and accelerate depopulation of the rural areas.

Currently nearly 4 Mio ha in the EU can be used for food production due to the “Overproduction Set a Side Policy”. The food surplus in the EU countries could not reach the poor people in third world and contribute in solving their hunger problems.

FIGURE 2 Food Price Indices (FAO 2008)

UN-Energy paper focused on "The Energy Challenge for Achieving the Millennium Development Goals", has pointed out that available energy services fail to meet the needs of the world's poor, with 2.4 billion people relying on traditional biomass for their energy needs and 1.6 billion not having any access to electricity. The basic commitments to poor people cannot be met without a far more focused approach to energy services.

World hunger is not caused by the lack of food, but by poverty and the lack of adequate income. Eliminating high tariffs on biofuels, combating agricultural subsidies and creating a global biofuels market will certainly help to create new opportunities of developing countries, contributing to create new jobs and to combat rural poverty. Bioelectricity obtained from cogeneration can help to provide electricity to remote rural areas and to further promote economic development.

Food prices have been skyrocketing worldwide due to high oil prices, changing diets, urbanization, expanding populations, flawed trade policies, extreme weather and speculation. Anyhow, adequate rules should be developed to make sure that only environmentally-friendly biofuels are counted towards the overall target. In this context, the ability of modern bioenergy to provide energy services for the poor, implications for agro-industrial development, job creation, health and gender, food and energy security, trade, foreign exchange balances, climate change and impacts on biodiversity and natural resource management should be always verified and considered. It should be clear stated that deforestation or shifting large areas for growing of energy crops is not only unnecessary but also can not be tolerated.

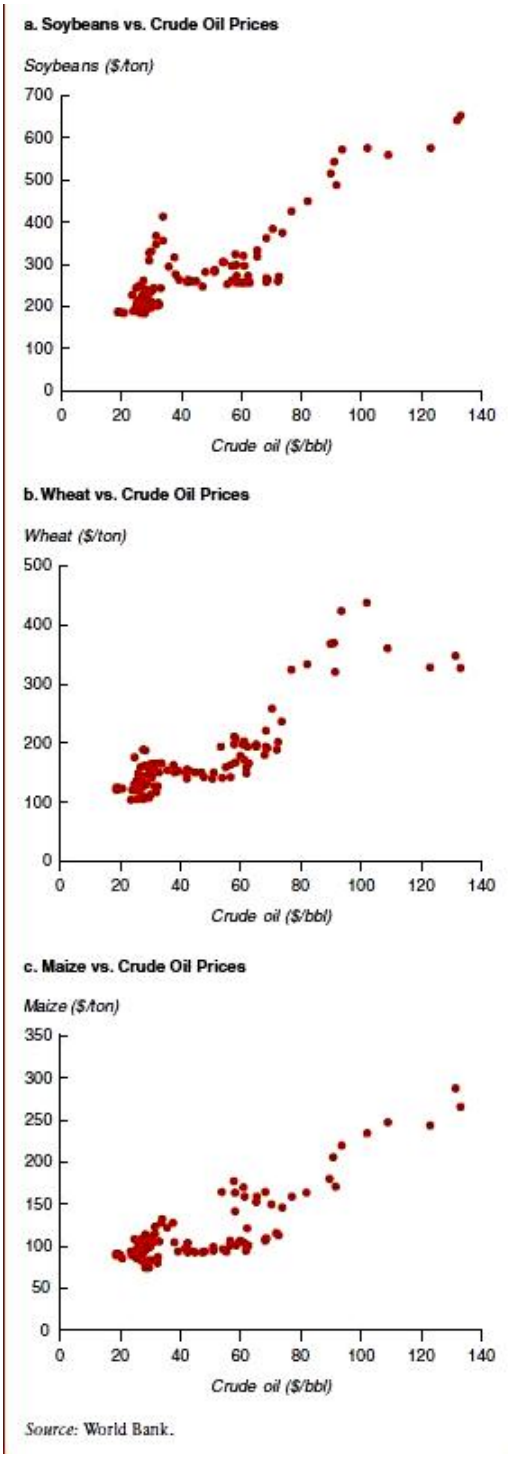

FIGURE 3 Correlation between oil and food prices (World Bank 2009).

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