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Editorial

Humanity Needs More Resources to Sustain Life on the Planet

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Global population has unprecedentedly increased from 0.6 billion in 1700 to 12 folds (7.2 billion) in 2015 and 18 folds (10.9 billion) is projected by 2100, against 1 earth planet. This escalated population has increased global food demand leading to overexploitation of land and water resources and resultantly per capita cropland area of 0.4ha (1970) has decreased to half (0.2 ha) by 2010 due to severe land degradation (erosion, salinity, contamination etc). During the year 1961, the nature used to have 2.55 billion global hectares (gha) resources surplus, and in 1970 our demand on nature and its capacity to produce and absorb waste was equal (Ecological Footprint=Biocapacity). The business as usual has led us to have a deficit of 8.35 billion gha (ecological footprint = 20.62 billion gha *vs* biocapacity 12.23 billion gha) as of 2013, resulting into the consumption of 1.7 earth planet and by 2050 we will need more than 2 planets and we have only 1, and there is no virtual planet to import unless we discover a new planet like Earth with similar or better resources.

Ever increasing soil salinization in irrigated agriculture and climate change poses further risks for food production and undermine food security. Based on many studies covering a wide range of regions and cereal crops (mostly wheat, maize, rice and soy), IPCC (2014) [1] has found that negative impacts of climate change on crop yields have been more common than positive impacts. The economic cost of agriculture mitigation (AM) potential varies with price, e.g. restoration of cultivated organic soils have high potential at higher carbon price (100 US$/ton CO_2 equivalent/year) whereas cropland management has high potential at lower price (20 US$/ton CO_2 equivalent/year). Relative to other regions Asia has the largest mitigation potential, with the largest mitigation in both forestry and agriculture sectors. Without agriculture mitigation and with business as usual it reflects that meeting the food demand of ever escalating population will be a dream.

The climate change impact will increase carbon dioxide emission, prolonged drought, increased-aridity, salinization, temperatures (0.75 degree Celsius rise in temperature between 1850 and 2005). Business as usual will rise 4°C by 2100, increase evapotranspiration and plant water demand, altered rainfall amounts, frequency and intensity; ice melting and sea level rise (past century witnessed 17 cm rise), depletion of renewable water resources and increased water scarcity, extending growing seasons in many crop regions, decline in agriculture productivity and ecosystem degradation. While some countries in the temperate zone may reap some benefits from CC, many countries in the tropical and subtropical zones appear more vulnerable to the potential impact of global warming.

Adaptation and mitigation are complementary strategies for reducing and managing the risks of climate change. Mitigation is a human intervention to reduce the anthropogenic impacts on climate system; it includes all strategies aiming at reducing GHG sources and emissions and enhancing. To cope the climate change impact and to achieve food security following are suggested.

Major Climate Change Impact	Agricultural Adaptation and Mitigation
• The increased carbon dioxide • Prolonged drought and increased aridity • Increased temperatures • Altered rainfall amounts, frequency and intensity • Increased evapotranspiration and plant water demand • Increased soil and water salinization • Ice melting and sea level rise • Depletion of renewable water resources and increased water scarcity • Extending growing seasons in many crop regions • Decline in agriculture productivity • Ecosystem degradation • Others	• Reduced tillage (low or no tillage) • Increase cropping intensity • Use cover crops and mulching • Organic farming • Ban of high water demand crops • Irrigation, salinity/sodicity management • Grazing and livestock management • Fire management • Integrated nutrient management • Carbon sequestration • Change in farming practices • Conservation Agriculture • Conserving Genetic Resources • Diversified livestock production system • Increased protected areas • Others

Bibliography

1. IPCC. "Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change". [Core Writing Team, Pachauri RK and Meyer LA (eds.)]. IPCC, Geneva, Switzerland (2014): 151.

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