

KlimaCampus Kolloquium

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Balancing the needs for climate change mitigation and food security

14.11.2013, 15:15 Uhr; ZMAW Raum 22/23, Bundesstraße 53

Abstract

Feeding 9–10 billion people by 2050 and preventing dangerous climate change are two of the greatest challenges facing humanity. Both challenges must be met while reducing the impact of land management on ecosystem services that deliver vital goods and services, and support human health and well-being. Few studies to date have considered the interactions between these challenges. The supply- and demand-side climate mitigation potential available in the Agriculture, Forestry and Other Land Use (AFOLU) sector and options for delivering food security are briefly reviewed. Some of the synergies and trade-offs afforded by mitigation practices are outlined, before an assessment of the mitigation potential possible in the AFOLU sector under possible future scenarios is presented, in which demand-side measures co-deliver to aid food security. We conclude that while supply-side mitigation measures, such as changes in land management, might either enhance or negatively impact food security, demand-side mitigation measures, such as reduced waste or demand for livestock products, should benefit both food security and greenhouse gas (GHG) mitigation. Demand-side measures offer a greater potential (1.5–15.6 Gt CO₂-eq. yr⁻¹) in meeting both challenges than do supply-side measures (1.5–4.3 Gt CO₂-eq. yr⁻¹ at carbon prices between 20 and 100 US\$ tCO₂-eq. yr⁻¹), but given the enormity of challenges, all options need to be considered. Supply-side measures should be implemented immediately, focussing on those that allow the production of more agricultural product per unit of input. For demand-side measures, given the difficulties in their implementation and lag in their effectiveness, policy should be introduced quickly, and should aim to co-deliver to other policy

agendas, such as improving environmental quality or improving dietary health. These problems facing humanity in the 21st Century are extremely challenging, and policy that addresses multiple objectives is required now more than ever.