A Holistic Lens on Rice Value Chain Pathways in Senegal;

Application of "The Economics of Ecosystems and Biodiversity for Agriculture and Food" Framework

Executive Summary

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Executive Summary

Rice is a critically important staple food crop in Senegal and is the most consumed cereal (Colen et al., 2013). In 2009, the average consumption of rice was 71.5 kilogram per person per year, which results in a total consumption of 984,000 tons of rice per year (Maclean et al., 2013). Senegal is one of the largest consumers of rice in West-Africa (Maclean et al., 2013). However, a considerable portion of rice comes from imports, estimated at around 80% in 2005 to provide the needed quantities for domestic consumption. This makes Senegal the second largest rice importer in Sub Saharan Africa (SSA) (Brüntrup et al. 2006), and also makes Senegal one of the largest net importers of food in the world (Stads and Sene 2011).

TEEBAgriFood has developed a framework supporting the evaluation of different agri-food systems across the food value chain, from production through consumption. In contrast to the commonly used metrics such as levels of productivity, the TEEBAgriFood Evaluation Framework supports a broad scope of evaluation, across human, social, economic and environmental dimensions. The use of the framework is advocated to recognize the key elements that should be evaluated in any given assessment, and to ensure transparency by highlighting the aspects that should not be overlooked.

The Millennium Institute has been carrying out work with the government of Senegal to develop a systems dynamics-based model to support national development planning around the Sustainable Development Goals, structured to analyse medium-long term development issues at the national level; and integrating the economic, social, and environmental aspects of development into a single framework. It is quite a large model with over 3600 state variables and several thousand feedback loops, covering more than 55 sectors.

To carry out the present analysis, information has been collected about the current status of as many of the stocks and outcomes presented in the TEEBAgriFood framework, across the rice value chain. Stakeholders from four different groups – a woman farmer, two researchers, a civil society representative, and people who have been interacting in an agriculture/governance think tank - were then asked to reflect on the predominant issues for each of the aspects considered. From their articulation of prevailing issues, possible policy interventions have been formulated, and the outcomes of such interventions, as opposed to “Business as Usual” (BAU) evaluated using the T21-iSDG model.

The simulation results address 16 indicators across the four capitals and across the rice value chain in Senegal. By way of example, the results indicate that in 2050, the cereal import dependency ratio is 21% lower in the agroecology (AE) scenario compared to the BAU scenario. Applying the share of rice to cereal production in tons, it is calculated that if only rice production is changed (implementing the AE principles only for rice) cereal import quantity reduces by 9% (compared to BAU scenario).