Socio-Economics
ABNE Policy Brief No. 1

Socio-Economic Perspectives on Biosafety Capacity Strengthening in Africa

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This policy brief presents the challenges in the inclusion of socio-economic considerations in biosafety decision-making.

Socio-economic Considerations in Biosafety

Article 26 of the Cartagena Protocol on Biosafety allows for the inclusion of socio-economic considerations in biosafety approval processes and decision making. This inclusion is however fraught with many challenges: 1. lack of a clear understanding of the ***meaning*** of socio-economic considerations in biosafety because the Protocol does not define what these considerations are; 2. regulators' ***lack of information*** on the socio-economic impacts of biotechnology; and 3. lack of clarity on the ***process*** of incorporating socio-economic considerations in actual decision-making. Consequently, it is unclear when socio-economic considerations are required, what information should be used for the analysis, how that analysis should be done, and by whom. In addition, a strict interpretation of the text in the Cartagena Protocol suggests an implementation scope that is limited to impacts of living modified organisms (LMOs) on biodiversity, especially on indigenous and local communities. Nevertheless, the language in some national legislation suggests a broad and undefined inclusion of all socio-economic considerations of LMOs. The Protocol also states that the inclusion of socioeconomic considerations must be consistent with other international obligations.

Socio-economic Benefits and Concerns

Area under GM crops and the number of countries and farmers planting GM crops globally have been monitored since commercialization in 1996. An annual growth of 9 million hectares (ha) was observed for the 14-year period of commercial cultivation. By 2009, 14 million farmers in 25 countries had planted 134 million ha of GM crops. The global market value of GM crops in 2009 was US$10.5 billion with the accumulated global benefit estimated at US$51.9 billion. The global net economic benefit to GM crop farmers in 2008 was US$ 9.2 billion of which US$4.7 billion went to farmers in developing countries and US$4.5 billion to farmers in industrial countries. Since 1996, 57 countries have granted regulatory approvals for GM crops for import for food and feed use and for release into the environment. The leading countries and economic blocks that have given these approvals include Japan, USA, Canada, South Korea, Mexico, Australia, the Philippines, the European Union, New Zealand and China.

At present, only 3 African countries (South Africa, Burkina Faso and Egypt) commercially cultivate GM crops. In 2009, South Africa cultivated Bt maize, Roundup Ready soybean and Bt cotton on an estimated 2.1 million ha, a 17% increase over the previous year. In 2009**,** Burkina Faso planted approximately 115,000 ha of Bt cotton while Egypt planted almost 1,000 ha of Bt maize, both representing increases over the previous year's hectarages.

The rapid adoption of GM crops outside of Africa has been attributed to a number of factors, including farm profitability, decreased crop loss, increased income stability, ease of operation, savings on labor and pesticide use, time savings, and less exposure to toxic chemicals. Yet despite this rapid growth, the industry has been beset by a wide-ranging and often emotionally charged debate on issues pertaining to the environment, human health, economics, ethics and politics. The socio-economic concerns include dependence of farmers on large corporations for seed; unaffordable planting materials; possible unsuitability of GM crops for small-scale farm operations and for resource poor farmers (interestingly 90% of GM crop farmers are small-scale and resource-poor farmers in developing countries); unethical patenting of life; possible limited access and increased price of seeds due to technology fees; lack of food distribution infrastructure rather than simply producing more; products needed in developing countries not being developed due to market or profit considerations; and

developing countries having to eat food others had rejected. It must however be noted that these concerns are not peculiar to GM crops but rather are challenges inherent in the agricultural sector. Discussions on and in-depth analysis of the benefits and perceived risks associated with GM crops are required but have been hindered by lack of information, lack of access to impact assessment analyses and in some cases misperceptions. The goal of public policy is to maximize the welfare of all its citizens and biosafety regulation can help achieve that by providing certainty, stability and disciplinary rigour to the social framework required for risk assessment, management and communication.

Framework for Socio-economic Impact Assessment (SIA)

Socioeconomic considerations are crucial in safeguarding the interests of indigenous and local communities in technology adoption. For biosafety approval processes, assessment of such considerations will require a mechanism for identifying positive and negative socio-economic impacts. Doing this requires a framework that is accessible, transparent, reproducible, predictable, and science-based to ensure that SIA will not become an obstacle to the safe development and transfer of products to end users. Impact assessment data needed to guide stakeholders in decision-making include data on agronomic performance, molecular, food and feed safety, environmental safety, and socio-economic impact. The socio-economic impact data could have the social impact component including acceptability, vulnerability, access, gender equity, loss of traditional knowledge, appropriateness, culture, ethics, and religion while the economic impact component covers cost-benefit analysis, cost of application, cost of compliance with biosafety regulations, cost of new planting material and impact on trade.

The major phases in a GM product development that potentially represent regulatory decision points in a functional biosafety system are the laboratory, greenhouse, confined field trial, commercialization and post-commercialization stages. The central issue is to determine the stage at which to include socio-economic considerations since socioeconomic assessments could be ex-ante i.e. before the fact/event or ex-post i.e. after the fact/event. For biosafety approval processes, socioeconomic assessments tend to be ex-ante and therein lies a limitation regarding methods for assessment. Equally important is whether to have socioeconomic considerations inbuilt into the biosafety decision-making process or have a process that separates risk and socio-economic impact assessments but utilizes SIA before a decision is made. An associated issue is the need to clearly define data needs and establish acceptable data sources and methods of validation. Currently no blueprint exists on how these issues should be addressed but then it is important for the national regulatory systems to note these challenges and fashion out a workable process that is agreed upon by biosafety stakeholders.

Conclusions and Recommendations

For any human endeavour, the adoption of a technological innovation implies a certain amount of risk and managing this risk is an important component of decision-making. Assessment of the socio-economic impact of a new technology is an invaluable input in regulatory decision-making. Thus national biosafety regulatory systems in considering socioeconomic issues should address definitional issues and spell out the decision-making rules and regulations upfront and these must be consistent with international obligations. Also needed is a clear indication of when and how “socioeconomic considerations” will be analyzed and factored into the decision-making process. Designing a clear, adequate, fair, transparent, efficient and workable national biosafety system requires a significant amount of work and resources. Information exchange on best practices could be useful as a starting point. Ultimately, a regulatory decision has to be made, and the scientific assessment will have to be balanced against the cost/benefit analysis in risk management.