

## AGRICULTURE VS ENVIRONMENT

# ARE WE ON A COLLISION COURSE?

Not if we can modify our behaviour to enable agricultural growth to reinforce rather than compete with environmental protection, writes **PROF DATUK DR MAD NASIR SHAMSUDIN**

**S**USTAINABLE agricultural development continues to be emphasised to ensure the needs of the present generation are met without compromising the needs of the future generations. Economic, social and environmental aspects are increasingly integrated into the development process.

Thus environmental consideration is now integrated into agricultural policy in order to ensure a sustainable economic and social development. The primary interest in sustainable agriculture is to implement farming practices that integrate into their work three elements: economic profitability, a healthy agro-ecosystem, and equitable local communities.

Unsustainable practices, it is argued, often focus solely on farm profits, at the expense of ecosystems, farming communities, and other externalities.

Agricultural activities and environmental interests, however, sometimes clash, as governments, industries, environmentalists and consumers push their competing agendas. There is no doubt that agricultural development has a direct impact on natural resources and the environment.

However, the physical and economic links between agricultural development and the environment are complex. There is no conclusive evidence to show that agricultural development, in itself, harms the environment. Rather, agricultural development often magnifies the environmental effects, particularly on natural resources.

The relevant questions from the above scenario are: (i) since

both agricultural development and environmental quality are the basic elements for sustainable development, are they on parallel tracks or on a collision course? (ii) what are the linkages between the environmental and agricultural policies?; and (iii) what approach is feasible to have a balance between agricultural development, hence economic growth, and environmental quality?

Environmental protection is a basic element of sustainable agricultural development. The environment supplies natural resources for agricultural production activities and is shaped by these activities. Agricultural practices, however, can have negative impact on soil, water, air quality and biodiversity.

Agricultural policies have an impact on the environment as well.

Examples include the agricultural support programmes, such as import tariffs and quotas. These policies influence production patterns, farming practices and input uses, mainly by changing the relative costs and returns of using resources in agriculture, or by imposing direct restrictions on output and input uses.

Although the objective of the policy is to optimise the returns from farm incomes and to ensure a stable food supply at reasonable prices, the policy unintentionally affects the quality of the environment.

Environmental policies, on the other hand, influence the compositions of agricultural production. As the cost structure of a regulated industry or activity rises relative to that of other less-regulated industries or activities,



*Agricultural growth and environmental protection need not be competing goals.*

productive resources will shift towards the less-regulated sectors.

Resources may be encouraged to move out of agriculture, should environmental controls in agriculture become more restrictive than in other industries. These output composition effects also influence the relative mix of agricultural output and trade.

For example, production and export of less fertiliser-intensive crops might be encouraged should a fertiliser tax be implemented.

The composition effect may also influence the relationship between primary production and processing of agricultural products.

Often, policies in the form of regulations (such as standards, bans, and restrictions on input uses) and incentive-based mechanisms (such as taxes, subsidies, and marketable permits) are implemented as corrective measures.

While these policies may meet their environmental goals, they may also affect production, trade, investment, technological change, and consumption. Such effects may be particularly important to agricultural producers and food processors.

The preceding discussions highlight conflicts between the two sets of policy, agricultural development and the environment. So, if they are conflicting, could we have sustainable agricultural development?

A major conflict arises for the diametrically opposed signals that agricultural and environmental policies send to farmers. Although environmental regulations often raise production costs and reduce competitiveness in the short term, it is found that the long-term effects are less certain since agricultural producers have to adjust and innovate.

Studies indicate that the regulations altered input values and imposed costs on producers, thereby inducing a change in in-

put use and the subsequent choice of alternative technologies. Thus changes in relative factor prices stimulate innovative activities.

Research institutions will innovate to remedy the constraint imposed by the policy-induced factor scarcity. Hence environmental regulation can act as a signalling mechanism that stimulates research into environment-conserving technologies, which allow more goods to be produced with less damage to the environment.

Although there seems to be conflicts between agricultural development and environmental protection, there is a convergence between the two. Higher investment in agricultural research to generate a range of adaptable technologies, particularly for small farmers, is thus a compelling public policy priority, along with the development of supporting institutions.

Market solutions could be a means of giving proper signals to farmers in making choices about sustainable resource management. Border prices could be used to remove biases against sustainable farming practices.

Decentralisation and community participation in resource conservation would be crucial in encouraging and fostering sustainable agriculture. This also calls for an industrial ecology approach that integrates the agricultural sector development with environmental ecology.

The key is to modify behaviour so that agricultural growth and environmental protection can become reinforcing rather than competing goals. Although the needed changes will take time to orchestrate, several initiatives being developed in nations around the world are moving public and private efforts in this direction.

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