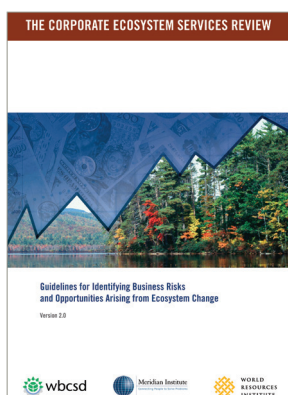




THE CORPORATE ECOSYSTEM SERVICES REVIEW CASE STUDY: SYNGENTA

SUZANNE OZMENT



The Corporate Ecosystem Services Review (ESR) is a proven method to help managers identify business risks and opportunities arising from their dependence and impacts on ecosystem services. This case study describes one company's experience and results in applying the ESR.

This case study is an accompaniment to The Corporate Ecosystem Services Review Version 2.0 (2012). Available online at <http://www.wri.org/ecosystems/esr>

Syngenta, one of the world's leading companies in the agriculture sector, conducted a Corporate Ecosystem Services Review (ESR) in a growing market for the company, small farms in south India.

The ESR helped the company identify risks its customers face due to ecosystem degradation and, in turn, find opportunities for Syngenta to offer new products and services that mitigate these risks.

STEP 1: SELECT THE SCOPE

Syngenta convened a group of managers from its sustainability, research, and marketing departments, along with WRI staff, to conduct the ESR. To keep the geographic scope of the ESR manageable, the company focused on the southern states of Andhra Pradesh, Karnataka, Kerala, Maharashtra, and Tamil Nadu.

STEP 2: PRIORITIZING ECOSYSTEM SERVICES

To identify priority ecosystem services, the ESR team gathered input from its own Indian agronomists and regional agricultural scientists from universities and non-governmental organizations. The team used these interviews, secondary research, and corporate data to fill out the ESR's dependence and impact assessment tool. The ESR team selected six priority ecosystem services:

- **Freshwater provisioning.** Rain-fed and irrigated farms depend on this service. Farmers also impact freshwater quality through agrochemical runoff.
- **Water regulation.** Farmers depend on the ability of wetlands and forests to recharge aquifers for year-round access to water, and to mitigate harmful floods during monsoon season.
- **Erosion regulation.** Farmers depend on vegetation to retain topsoil. Poor agricultural practices have caused some localized negative effects, but other practices such as minimum tillage are contributing to improved erosion control.

- *Pest regulation.* Farmers rely on native organisms to help control crop pests in integrated pest management systems. Monoculture, fragmentation of natural habitat, and inappropriate use of agrochemicals on farms degrade nature's ability to help regulate pests.
- *Pollination.* Many crops require pollination services. As a result of habitat changes and ecosystem degradation, agriculture can have negative impacts on pollination.
- *Nutrient cycling.* Crops depend on nature's processing and supply of nutrients. Poor farming practices sometimes inhibit this service, requiring more man-made nutrient inputs.

STEP 3: ANALYZE TRENDS IN PRIORITY ECOSYSTEM SERVICES

The ESR team evaluated the condition and trends in the priority ecosystem services, as well as the direct drivers of these trends, such as land use change and overconsumption of natural resources.

Because national data for ecosystem services is sometimes difficult to access, the ESR team used proxy indicators and anecdotal evidence to identify conditions and trends in some ecosystem services, especially regulating services. Syngenta's ESR team relied on interviews with Indian agriculture experts to analyze trends in the ecosystem service of pollination. The process revealed that a decline in pollinator populations was a severe problem in India – in one South Indian state, up to 90% of pollinators vanished in the 1990s, and the impacts of that loss are still lingering. Local experts linked this decline in pollinator populations to feral pollinator habitat destruction and land conversion. Despite the lack of widespread quantitative data, this information helped the company develop a strategy to promote pollinator management and ensure the viability of the company's customers.

STEP 4: RISKS AND OPPORTUNITIES

The ESR identified a number of risks arising from regional ecosystem degradation. Risks included:

- Reduced availability and quality of freshwater for irrigation
- Loss of topsoil due to clearance of native vegetation, failure to implement erosion control measures, and other poor farming practices

- Potential loss in yields of some fruits, vegetables, and spices due to a decline in the number of pollinators
- Lower yields due to a decline in the ability of natural predators to contain pest outbreaks
- Reduced soil fertility due to poor farm management practices.

These risks impact farmers in the affected region. The company can respond by adapting its products and services to help farmers meet the ecosystem service challenges. Syngenta has systematized these considerations into product development by incorporating ecosystem services into routine eco-efficiency analysis. The company is developing seeds and crop protection products that use less water, have better built-in resistance to disease and pests, and are more tolerant of dry or salty soils.

STEP 5: DEVELOP STRATEGIES

The ESR turns risks into opportunities by identifying a number of strategies to help farmers either reduce impacts on ecosystems or adapt to ecosystem change. Although the ESR focused on India, pollination services stand out as a challenge in general. With the number of pollinators in drastic global decline, Syngenta and partners piloted new agronomic solutions to increase pollinator biodiversity. The biodiversity program "Operation Pollinator" was launched to boost the number of pollinating insects on commercial farms. The program restores on-farm wild bee habitat by providing farmers with native seed mixes and information on the business benefits of pollinator habitat restoration.

By conducting a corporate ecosystem valuation study on wild pollinators on U.S. farms, Syngenta found that on-farm pollinator habitat can increase profits by at least \$40 per acre for blueberry crops by improving yield, enhancing fruit quality, and eliminating costs associated with renting managed bee colonies. Syngenta may also bolster their extension services to offer farmers best management practices that restore ecosystem services.

FOR MORE INFORMATION

Hanson, C., J. Ranganathan, C. Iceland, and J. Finisdore. 2012. The Corporate Ecosystem Services Review: Guidelines for Identifying Business Risks and Opportunities Arising from Ecosystem Change. Version 2.0. Washington, DC: World Resources Institute. <www.wri.org/ecosystems/esr>

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CONTACT

Suzanne Ozment

Research Analyst
sozment@wri.org
(202) 729-7835

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