

ECONOMICS AND INCENTIVES

A COMMITTEE REPORT OF THE ROUND TABLE
ON SUSTAINABLE DEVELOPMENT

The **Minnesota Round Table on Sustainable Development** is a diverse group of 30 business, environmental and community leaders appointed by Governor Arne H. Carlson to consider how Minnesotans can safeguard their long-term environmental, economic and social well-being. Their mission is to serve as a catalyst for sustainable development, to foster public and private partnerships and reach out to Minnesotans across the state, and to stimulate interest in and communicate the importance of achieving sustainable development. The Round Table is part of the **Minnesota Sustainable Development Initiative**, launched in 1993 by Governor Carlson, the Environmental Quality Board and the commissioner of Trade and Economic Development, and coordinated by the Environmental Quality Board staff at Minnesota Planning.

Economics and Incentives was prepared by the Economics and Incentives Committee of the Minnesota Round Table on Sustainable Development with help from John Wells, director of the Round Table, Satu Zoller, committee consultant, Tim Nolan, Minnesota Office of Environmental Assistance, and John Neville of the SEA Group. Opinions expressed in this document are those of the committee. Other reports in the *Investing in Minnesota's Future* series include the main body of the Round Table's work, *An Agenda for Sustaining Our Quality of Life*, and *Sustainable Communities and Land Use*, reports of the Sustainable Communities and Land Use Committees.

On request, *Investing in Minnesota's Future: Economics and Incentives* will be made available in alternate format, such as Braille, large print or audio tape. For TTY, contact Minnesota Relay Service at 800-627-3529 and ask for Minnesota Planning.

For more information about the Governor's Round Table on Sustainable Development or other sustainable development activities in Minnesota, please contact the Minnesota Sustainable Development Initiative at:

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Investing in Minnesota's Future

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Summary

This report presents the findings of the Economics and Incentives Committee of the Minnesota Round Table on Sustainable Development. The chief findings are:

- Helping businesses adopt sustainable practices and challenging them to help society take strides toward sustainable development should be among Minnesota's chief economic goals.
- Long-term economic prosperity depends upon the acceptance of these responsibilities by businesses, governments and, ultimately, consumers.

The Round Table created this committee to understand the barriers that discourage businesses from adopting sustainable development practices and to suggest how public policy and business leaders might encourage sustainable economic activity in Minnesota. The committee worked from October 1996 through December 1997. Its members included leaders from business, environmental organizations and higher education. A list of committee members appears on page 2. A list of members of the full Round Table is found on page 20.

Sustainable development improves overall economic and social well-being while maintaining and restoring the natural environment. Decisions at each stage of a product's life cycle can affect the sustainability of business activities. Only by taking an integrated approach to resource conservation and efficiency at every stage can an activity be considered sustainable.

Sustainable practices may put businesses at a disadvantage in the short run because of the unintended effects of subsidies and regulatory policy. Added costs, limited financial and human resources of smaller companies and uncertain consumer demand for sustainable products and services may pose additional barriers. Thus, education, information, incentives and flexible approaches to regulation are all important in fostering adoption of sustainable practices.

The committee identified elements of a sustainable development framework within which sustainable business activities should be encouraged. Some of the committee's recommendations call for significant changes in our economic system and our way of thinking. Gradual steps may be necessary in other cases to move toward a sustainable Minnesota. The recommendations are:

Measure and report progress; share lessons learned. Minnesota business, trade associations and government should create systems for measuring and reporting progress toward sustainable development. These systems should quantify the efficiency, cost and impact of energy and resource use and waste disposal.

Provide education and recognition. Sustainable practices will not become widespread without a concerted effort to educate and assist the public, businesses and governments. Minnesota educational institutions should join business, trade associations and government in carrying out these efforts.

Employ sustainable management practices in government. The state should more fully incorporate sustainable practices into its own operations, particularly its purchasing and procurement policies. The state should lead by example through its support of companies that have adopted sustainable practices.

Provide technical and financial assistance. Minnesota business, trade associations, educational institutions and government should coordinate technical and financial assistance to encourage businesses, particularly those with limited resources, to adopt sustainable practices.

Continue to reform the regulatory framework to encourage sustainable business activity in Minnesota. Current regulations focus on command and control rather than outcomes, and rely mainly on end-of-the-pipe solutions rather than innovation in the design and production of products and processes. A regulatory system that focuses on outcomes, provides incentives for continuous improvement and allows companies the flexibility to develop innovative solutions would better promote sustainable development.

Rethink the public incentives used to encourage business in Minnesota. The tax code should be employed to encourage sustainable business activity. A special commission should be established to examine the merits of various options such as tax shifts, tax credits, tax subsidies and tax expenditures.

Challenge the business community to discuss its role in driving sustainable development. The commitment of business to making its activities sustainable, and to helping others do so as well, is vital. An important step would be for business to establish a round table and to support other forums that encourage businesses to take responsibility for helping create a sustainable society.

Hallmarks of Sustainable Business Practice

The Economics and Incentives Committee examined the Minnesota business climate, the incentives that encourage or discourage sustainable activity and the changes needed to further promote sustainable development. The Round Table's sustainable development principles, found on page 5, provided the foundation for these suggested changes.

Defining sustainable business and distinguishing it from nonsustainable business is not easy. In fact, since businesses come and go for a number of reasons, it is more appropriate to think in terms of sustainable activity. The following list provides some guidelines. While most of these criteria relate to environmental performance, it is important to remember that sustainable development has three fundamental aspects: economic prosperity, environmental protection and social equity.

Principles

OF SUSTAINABLE DEVELOPMENT FOR MINNESOTA

The Minnesota Round Table on Sustainable Development offers five principles as guideposts along the path of sustainable development. They are:

1 Global interdependence. Economic prosperity, ecosystem health, liberty and justice are linked, and our long-term well-being depends on maintaining all four. Local decisions must be informed by their regional and global context.

2 Stewardship. Stewardship requires the recognition that we are all caretakers of the environment and economy for the benefit of present and future generations. We must balance the impacts of today's decisions with the needs of future generations.

3 Conservation. Minnesotans must maintain essential ecological processes, biological diversity and life-support systems of the environment; harvest renewable resources on a sustainable basis; and make wise and efficient use of our renewable and non-renewable resources.

4 Indicators. Minnesotans need to have and use clear goals and measurable indicators based on reliable information to guide public policies and private actions toward long-term economic prosperity, community vitality, cultural diversity and healthy ecosystems.

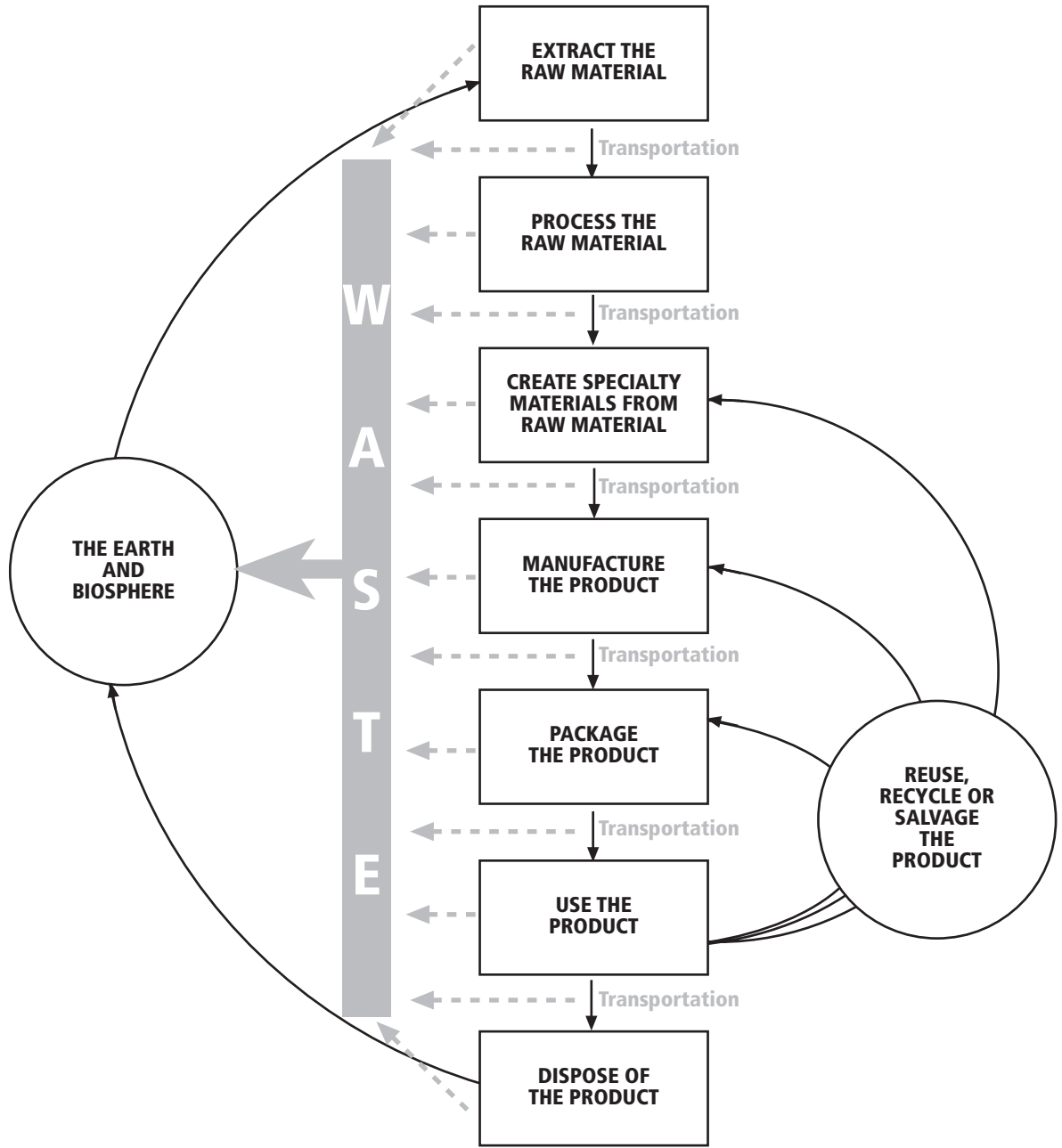
5 Shared responsibility. All Minnesotans accept responsibility for sustaining the environment and economy, with each being accountable for his or her decisions and actions, in a spirit of partnership and open cooperation. No entity has the right to shift the costs of its behavior to other individuals, communities, states, nations or future generations. Full-cost accounting is essential for assuring shared responsibility.



“Over the long run, a successful society is supported by both a healthy economy and a healthy environment, which, in turn, are supported by the health of the community. Each element is one critical leg that supports a three-legged stool. All three legs of the stool must be strong. Remove any of the three legs and the stool will soon collapse.”

Source: A Citizen's Guide to Achieving a Healthy Community, Economy and Environment, Center for Compatible Economic Development, The Nature Conservancy, Leesburg, Virginia, 1996. (Used with permission.)

Life cycle of a product



Note: Transportation between process steps also creates waste.

Sustainable business activity:

- Obtains raw materials from renewable sources or recycled materials
- Uses manufacturing processes that minimize harmful environmental effects or emissions
- Offers products and services that minimize environmental harm, reduce reliance on persistent toxic substances, promote reuse and recycling of materials, maximize energy efficiency and use renewable resources
- Promotes equal opportunity and equitable solutions to social problems, and involves people in decisions that affect them

In practice, these criteria are difficult to incorporate. Few businesses are likely to excel in each area. Some businesses, by nature of their products and services, are more aligned with these signposts. Many of them are involved in such markets as environmental control and cleanup, pollution prevention, energy efficiency and renewable energy. While the growth of such businesses may be a significant part of the transformation to a more sustainable society, it is also important that all businesses move in this direction.

Actions taken at each stage of a product's life cycle can affect the sustainability of business activities. Only an integrated approach to resource conservation and efficiency and community effects leads to sustainable business activity. Each stage of production creates a certain amount of waste, and so does the transportation that occurs between stages.

Every tangible product originates and ends in the earth and its biosphere. In the traditional manufacturing model, resources move in a straight line that begins with raw material and ends with waste disposal. However, the increasing prevalence of reuse and recycling show the rise of a more circular model.

Ideally, the price of a product reflects its full cost throughout its life. High-quality products are designed and manufactured in the safest, most ecologically and economically efficient manner possible. They use minimal packaging that is designed for recycling or reuse and are distributed with the least possible waste and energy consumption. After use, they are either returned to industrial use as feedstock or returned safely to the natural environment.

Recommendations

The goal is to help businesses adopt sustainable practices and to challenge them as they do so to help society as a whole take strides toward sustainable development. All branches and levels of government, as well as business and nonprofit organizations, have a role. Here, as elsewhere in these challenges, agriculture and forestry, as well as manufacturing, services and nonprofit groups, are important sectors of the business community warranting attention.

Not all of these recommendations can be achieved quickly or easily. Some call for significant changes in the way our system functions and in our way of thinking. Some require gradual steps to move Minnesota toward a sustainable future.

Recommendation 1

Measure and report progress; share lessons learned.

Minnesota business, trade associations and government should create systems for measuring and reporting progress toward sustainable development. These systems should quantify the efficiency, cost and impact of energy and resource use and waste disposal. They should:

- Create clear goals and measurable indicators based on reliable information to guide public policies and private actions toward sustainable development.
- Establish the baseline detailing where Minnesota is today in its progress toward sustainable development. This baseline should include such indicators as waste generated and energy used per capita and per unit of output. Businesses should also consider the economic advantage of doing this for their own operations.
- Develop an integrated report card that provides the public with clear, understandable information on the progress of the state toward sustainable development. The report card should provide information on companies, communities and other institutions.
- Expand and integrate a statewide system of measures designed to help people understand the value of renewable and nonrenewable natural resources as natural capital. Such a system would also help ensure that these resources are conserved for the benefit of future generations.

Recommendation 2

Provide education and recognition.

Minnesota educational institutions should join business, trade associations and government in educating and assisting the public, businesses and governments in achieving sustainable development.

Educational institutions should be encouraged to:

- Integrate sustainable development concepts into curricula of kindergarten through 12th-grade, university and technical schools so students will be prepared to make better choices as citizens and consumers.

- Create and establish outcome-based goals for student literacy in sustainable development, and routinely measure, monitor and report their progress in achieving this literacy.

Businesses, trade associations and government should be encouraged to:

- Incorporate sustainable development concepts into training for businesses.
- Stimulate interest in and awareness of sustainable development opportunities within the business community by expanding current recognition programs to include sustainable development.
- Inform consumers about the life-cycle environmental impacts of the products they purchase. Information should include product content, proper handling and correct disposal. Encourage businesses to become active participants in labeling efforts to accomplish this goal.

Recommendation 3

Employ sustainable management practices in government.

Minnesota government should become a catalyst for sustainable business activity, creating opportunities for sustainable businesses by providing assistance and adopting its own sustainable practices.

- Adopt best practices, giving preference to suppliers and approaches that support sustainable development.
- Adopt investment and procurement practices and policies that encourage continuous improvement in adopting pollution prevention and other sustainable development practices.
- Establish guidelines for the sustainable design, construction, operation and maintenance of publicly financed buildings.
- Integrate state economic development and environmental protection programs, focusing and coordinating loan and grant programs to encourage sustainable investments.
- Report periodically on government's progress in adopting and implementing sustainable development policies and programs.

Recommendation 4

Provide technical and financial assistance.

Minnesota business, trade associations, educational institutions and government should provide coordinated technical assistance on sustainable practices. This assistance should be combined with financial incentives. As appropriate, these efforts should focus on businesses with limited resources.

- Create a sustainable business capital fund that uses sustainable development criteria.
- Build partnerships between communities and businesses. Each needs the information, tools and technical expertise that can only be provided by the other.
- Involve citizens and neighborhoods in developing better relationships with businesses and communities. Support cooperative undertakings with financial and technical assistance.
- Provide financial and technical assistance to help corporations integrate sustainable practices and processes that enhance energy efficiency and resource productivity.
- Provide access to the information and tools necessary to investigate and employ pollution

- prevention, design for the environment, environmental cost accounting, product stewardship and eco-efficiency concepts. Partner with schools and nonprofits to make this happen.
- Make information available on the profitability of healthy workplace practices and work with citizens and community leaders to meet community and environmental needs.
 - Compile and communicate information on successful sustainable business activities, including case studies, best practices, lessons learned and implementation strategies.
 - Further develop coordinated assistance through collaborative programs between government and business-association service providers. Provide outreach and referral services to help businesses access these programs.
 - Urge business suppliers to adopt sustainable business practices themselves and to encourage the adoption of these practices by the companies they serve.
 - Develop state-of-the-art methods for assessing full life-cycle costs and environmental effects of activities and products.

Recommendation 5

Continue to reform the regulatory framework to encourage sustainable business activity in Minnesota.

An effective, fair and efficient regulatory system is an important requirement for moving toward sustainable development. Minnesota has been a national leader in pursuing regulatory reform, and we urge continued state efforts to adopt a model regulatory system. This system should maintain basic protections for human health and the environment and should encourage performance beyond minimum requirements.

- Establish regulatory standards based on environmental and public health outcomes and good science — not on end-of-pipe technical solutions. Introduce harm- and risk-based approaches that are responsive to differences in ecoregions and the latest advances in scientific knowledge.
- Encourage pollution prevention, life-cycle analysis, design for the environment, total product responsibility and take-back, and other systemwide approaches.
- Break down the separate focus of regulatory laws, rules and enforcement on air, land and water so that environmental impacts can be understood holistically.
- Move toward permit fees that are based on the detrimental effects caused by pollution.
- Employ total cost-benefit analysis as a tool in decision making.
- Allow community- or areawide emission standards based on environmental quality and health goals, provided local impacts can be addressed or avoided.
- Allow stakeholders a greater opportunity to provide input into the decision-making process, and provide clear, understandable information about the state of the environment and the effect, or potential effect, of business activity on both the environment and human health.
- Seek agreements among affected parties to encourage and allow innovation and experimentation in developing and addressing regulations.

Recommendation 6

Rethink the public incentives used to encourage business in Minnesota.

The tax code should be used to encourage sustainable business activity. The current system tends to tax things society wants to promote, such as income, investment and property, rather than things it wants to reduce, such as pollution and over-consumption of resources.

- Establish a special commission to examine the merits and liabilities of a controlled and focused revenue-neutral shift in taxes — from income, property, capital investment and payroll taxes, for example, to taxes on pollution and waste.
- Direct the commission to determine how the tax system could be modified to provide incentives to encourage socially responsible sustainable practices in business, agriculture and forestry. These might include changes in land development, investment in new technology or equipment, changes in practice or operations, changes in materials input and changes in research and development.
- Direct the commission to examine the potential for selective use of tax credits to encourage use of sustainable development technology and practice. Similar credits could also be given for research into sustainable product development or management.
- Direct the commission to consider which subsidies and tax expenditures could be reduced or eliminated to pay for new tax credits, or whether taxes or fees on pollution or waste should be increased to fund new credits.

Recommendation 7

Challenge the business community to discuss its role in driving sustainable development.

Business commitment is key. Business must take the initiative to make its activities sustainable and to help others do so as well. Communities should also be urged to work with businesses so that Minnesota can move more quickly toward sustainable development.

- Ask business to establish a round table and to support other forums that encourage business responsibility for helping create a sustainable society.
- Encourage the World Business Council to establish a North American office in Minnesota. Coordinate the activities of that office with the Minnesota Business Round Table, the Minnesota Business Partnership and the Minnesota Chamber of Commerce.

Examples of Sustainable Practices

DESIGN FOR THE ENVIRONMENT

means considering environmental safety and health issues of the entire product life cycle during product design.

Design for the environment moves pollution prevention “upstream” to the development stage of products. It minimizes or eliminates any anticipated waste and resource consumption during production, use and disposal of the product.

The following examples show the nature and breadth of sustainable business practices. The examples illustrate that sound environmental measures may be directly linked to substantial economic and community benefits.

Andersen Corporation, a window and door manufacturer, has an environmental policy that commits the company to:

- Eliminate pollution at the source
- Conserve natural resources through reduction, reclamation, reuse and recycling of materials
- Develop long-lasting products that have a minimal effect on the environment
- Assure that its facilities, processes and products meet or exceed all applicable governmental standards and regulations relating to the environment

Recycling programs at Andersen resulted in a 90 percent reduction of solid waste deposited in landfills by the company between 1988 and 1995. Sawdust-collection systems achieve over 99 percent recovery efficiency, providing a valuable resource that has been used for years to supply plant energy. Recycled materials from plant operations totaled 2,348 tons in 1995, for a savings of nearly \$370,000 in materials and landfill costs.

Recycling waste products has also led to innovation at Andersen Corporation. In 1991, Andersen and Aspen Research developed a lumber substitute called Fibrex. It is made primarily of reclaimed plastics and wood fiber. The product is a structurally sound and economically viable biofiber for use in windows and doors.

These and other programs meet Andersen’s objective to “engage in responsible stewardship of the environment.” They have also resulted in reduced costs and greater profits for the company.

Rahr Malting Company of Shakopee received one of the nation’s first pollutant “trading” permits in 1997, allowing the company to expand while creating equal or better protection for the Minnesota River. To ensure that the river’s natural capacity for handling waste is not exceeded, the Minnesota Pollution Control Agency and the Center for Environmental Advocacy worked with Rahr on an innovative permit that combines the most restrictive emission limits on the river with flexibility in how Rahr meets those limits. In short, Rahr is reducing soil erosion and agricultural runoff elsewhere on sensitive lands to offset its new discharges to the Minnesota River.

Honeywell, the Honeywell Foundation, the Allina Foundation and the Minneapolis Foundation are taking action to battle crime and better the Phillips neighborhood by leveling two square blocks of run down buildings and replacing them with affordable, owner-occupied homes and townhouses. The \$12.7 million project illustrates that being a good corporate citizen and neighbor is considered an important part of doing good business.

Fabcon, Inc., based in Savage, uses large volumes of water to make concrete structures. When an increase in business meant increasing water usage from 42,500 gallons to 65,952 gallons daily, Fabcon decided to investigate water reclamation.

The company now uses a system that filters solids out of the water and then treats the water with sulfuric acid to neutralize it. The water is then pumped back into the plant, ready to be reused. The system reuses 38 million gallons a year, and saves Fabcon \$9,000 per month on water. In addition, the solids filtered from the water are pressed into cakes that are recycled with Fabcon's crushed concrete.

Reusing water also reduces the need to treat pollutants at the sewage treatment plant and conserves ground water, easing the demand on Savage's water utility, which serves a rapidly growing community.

Onan Corporation, A Fridley-based generator manufacturer, targeted its metal finishing operations (cleaning, pretreatment and painting) as a top priority for reducing waste. In the early 1990s, employee teams identified and evaluated metal finishing alternatives, in partnership with local regulators and suppliers of material and equipment.

By May 1993, the company stopped using vapor degreasing, reducing its annual ozone emissions by 100 tons and its cooling water discharge by 5 million gallons. In October 1994, Onan installed a painting and pretreatment system called E-Coat that performs very well at almost half the cost of the conventional paint it replaces. This water-based process, which incorporates conservation technology, reduced annual volatile organic chemical emissions by 55 percent and lowered wastewater discharges by 83 percent. The process also eliminated 70 tons of hazardous paint waste per year.

Automated Building Components, a Chanhassen-based supplier of millwork products and services, began in 1994 to shift from solvent-based wood coatings to water-based finishes. The company eliminated hazardous waste discharges and reduced volatile organic chemical emissions by 90 percent, with an annual savings of \$60,000.

The Community Environmental Technical Assistance Program, launched by Citizens for a Better Environment in 1995, helps people work with local businesses by providing technical expertise. The program has assisted citizen initiatives on watershed restoration, pollution prevention, brownfield cleanup and neighborhood beautification.

The River-Friendly Farm Program recognizes farmers who meet 10 farm management criteria. The program publicizes and promotes farming practices that benefit Minnesota's rivers while maintaining farm productivity. It also increases public awareness of farmers' efforts to clean up the state's rivers. Sponsored by the Minnesota Alliance for Crop Residue Management and other public and private organizations, the program has recognized 170 farmers since 1995.

More than 550,000 acres of Aitkin County forest, managed jointly by the Aitkin County Land Department and the Minnesota Department of Natural Resources, meet international standards for sustainability. SmartWood, a New York-based company, bases its independent certification process on long-term forest management, maintenance of ecosystem integrity and provision of socioeconomic benefits.

LIFE-CYCLE ANALYSIS
assesses the full environmental impact of a product or service. It builds an inventory of inputs and outputs, evaluates each of these and identifies the most significant environmental impacts. The analysis considers the entire life cycle of a product or service.

PRODUCT LABELING
is a powerful tool for influencing buying decisions for the benefit of the environment. In a 1995 poll by the National Consumer's League, 80 percent of consumers reported that they think about environmental considerations when shopping for groceries and household products. Product labels that accurately convey a product's environmental impact provide vital information to the buyer.

Dufour's Cleaners in Northfield has remained competitive and kept insurance costs in check, in part by improving its environmental performance. The company uses plain water and mild soap whenever possible and uses efficient, computer-operated equipment to filter and redistill hazardous solvents used in dry cleaning.

Erickson's Diversified Corporation, an employee-owned company, operates 17 grocery stores and pharmacies in Minnesota and Wisconsin. In addition to reducing energy use, pollution and waste at its stores, Erickson's built its new headquarters in Hudson, Wisconsin, using sustainable building design and materials.

Phenix Biocomposites, Inc., based in Mankato, combines low grades of waste paper with soybeans to make composite materials for furniture, flooring, millwork, custom fixtures, displays and wall systems. The manufacturing process minimizes toxins and waste, keeps waste paper and plastic out of landfills, provides an alternative to use of virgin hardwoods and creates another market for Minnesota's renewable agricultural products.

Recyclights, Inc., recycles fluorescent lamps and other mercury-containing products, reclaiming phosphor powder, glass and aluminum in addition to mercury. The company has recycled more than 17 million fluorescent lamps, recovering 42,000 pounds of mercury annually. Recyclights also recycles its own cardboard and other transport packaging.

Cities Management, Inc., is among the first property management firms in the country to adopt sustainable, cost-effective practices including pollution prevention, environmentally benign products, reusable and recyclable products, energy and water efficiency, nontoxic pest control and lawn care, and the recycling of materials including glass, aluminum and building materials.

Colonial Craft, Inc., is one of the first manufacturers of hardwood products drawn from temperate forests certified as sustainably managed. Certification means foresters are managing for a sustainable yield, maintaining the diversity and integrity of the ecosystem and producing socioeconomic benefits. The company sees certification as a way to guarantee the perpetuation of healthy forests and the prosperity of the company and its employees.

Hogs Your Way: Alternative Production Systems for Minnesota Farmers is a publication available through the Minnesota Institute for Sustainable Agriculture. It provides information on alternatives for hog production, including how hog farmers have profited by using Swedish deep straw farrowing systems, pasture farrowing systems and hoop house finishing systems.

The Green Institute, founded in 1993 in one of the state's most ethnically diverse communities, encourages new economic opportunity in the Phillips neighborhood of Minneapolis, while reducing the region's environmental impact. The institute has launched two businesses, the ReUse Center and Demolition Services, to salvage construction and solid waste materials for resale and reuse. The institute is currently developing the Phillips Eco-Enterprise Center, a three-acre, 64,000-square-foot eco-industrial development for housing and environmentally sustainable businesses.

CAMAS Minnesota, Inc. is helping to restore to prairie a 38-acre gravel pit last mined in the 1950s. The company is working with the Minnesota Department of Resources, Clay County Board and The Nature Conservancy on this project at Buffalo River State Park in Clay County.

Additional goals are to develop cost-effective methods for large-scale reclamation of abandoned gravel pits, document the process for future use by others and teach park visitors about gravel mining, reclamation and prairie restoration.

The Southern Minnesota Beet Sugar Cooperative built a processing plant just east of Renville in the mid-1970s. The plant produces an average of 10,000 gallons per minute of 120-degree water. The heat in that water was formerly wasted, dissipating from large cooling ponds. Today, the **City of Renville** purchases that excess heat at less than half the cost of other heat sources. In turn, a local aquaculture company, **MinAqua Fisheries**, purchases hot water heat from the city.

The Role of State Government

Minnesota government can foster sustainable business practices in three important ways: financial incentives, regulation and tax policy.

FINANCIAL INCENTIVES

Government programs provide financial incentives through taxes and subsidies. Subsidies could be eliminated or reduced for goods whose production wastes energy or resources. Conversely, subsidies for environmentally sound and energy-saving goods and services could be increased.

As a customer for goods and services, state government provides incentives to its suppliers. In some cases, government has a unique demand for high-priced and advanced equipment. For example, it has been a major buyer of wastewater treatment systems and a significant purchaser of cleanup and monitoring equipment for hazardous waste sites, underground storage tanks and landfills.

State programs provide significant financial and technical assistance to Minnesota businesses, creating incentives to grow, to invest in new technology and to expand the market for their products. This assistance comes from a variety of sources including the Minnesota Department of Trade and Economic Development, Minnesota Technology Inc. and Minnesota Project Outreach. Business categories eligible for assistance include technologically innovative industries, value-added manufacturing, agricultural processing, information industries, tourism and small and medium-size firms.

The purpose of these programs is to stimulate private investment and create job opportunities in Minnesota, including low-income areas of the Twin Cities and rural areas. These programs could adopt sustainable development goals and provide information, financing and assistance to help firms meet these goals.

For example, the Vermont Sustainable Business Fund, established by the Vermont General Assembly, supports business investment in environmental technology, environmental equipment and services, energy efficiency, renewable energy, pollution cleanup, solid waste and recycling technology, sustainable agriculture and more. In addition, businesses that strive to minimize their environmental impact and waste — including large manufacturing firms — are eligible for support through this fund.

The Vermont Sustainable Business Fund provides its funding through existing programs, including revolving loans, peer lending, technical assistance and marketing assistance. The fund also provides capital to businesses too large or too small to obtain funds from other state programs. Vermont also coordinates its economic development and environmental protection policies.

The Louisiana Scorecard is another example of state incentives for sustainable business. The scorecard linked public incentives to the economic, environmental and community performance of businesses. Firms qualified for tax incentives by meeting economic and environmental criteria, such as an emissions-to-jobs ratio and the firm's environmental compliance record. A company's score, ranging from 0 to 100, determined what percentage of government aid it would receive. The scorecard was linked to tax exemptions on local property taxes, new equipment and other capital expenditures.

Louisiana's example showed that a scorecard can address a wide range of social, economic and environmental goals while preserving flexibility for businesses to adopt measures that fit their circumstances.

REGULATION

Regulation is the second means government can use to influence the development of sustainable business. It can have profound effects, both positive and negative.

On the positive side, landmark environmental laws, such as the Clean Air Act and Clean Water Act, along with regulations on toxic and hazardous waste, have improved the country's environmental quality enormously since the early 1970s. In addition, many businesses have actually improved their resource efficiency and competitiveness by meeting regulatory standards. Environmental and energy-saving businesses have much to gain from regulation.

On the other hand, registration costs for an environmentally benign chemical can be just as expensive and time-consuming as they are for a damaging one. Because businesses of all sizes are subject to the same registration costs, this aspect of regulation can discourage small businesses from entering certain markets.

Some Minnesota laws, regulations and administrative policies may unintentionally encourage activities that are environmentally unsustainable, and may discourage more sustainable practices. A study of regulation sponsored by the Minnesota Sustainable Development Initiative found that the Minnesota environmental regulatory system tends to discourage sustainable business approaches in several ways, including the following:

- **The current system emphasizes end-of-pipe controls** — techniques applied just before a pollutant is discharged to the environment. Most environmental protection laws and

regulations, especially those governing air emissions and waterway discharges, set standards based on the efficiency of pollution-control devices currently available for a particular production process. Although alternative solutions can be used, compliance with the regulation is far more certain if a plant manager installs the best available control devices. This does not encourage innovation in pollution prevention, such as reducing the use of toxic materials or internally recycling such materials.

End-of-pipe controls tend to lock a facility into its current way of doing things because the controls work only with that production process and because control technology often requires heavy investment of capital and human resources. This poses a barrier to introducing pollution-prevention technology and processes.

■ **Local input is often insufficient** — The best solutions to most environmental problems at manufacturing plants are tailored to the specific facility, its immediate environment and the surrounding community. The current regulatory system gives insufficient authority to state and local governments and allows plant managers little flexibility to find innovative solutions while meeting national environmental standards.

In general, public participation in regulatory decisions is limited to a 30-day comment period after a permit has already been drafted. This does not allow local people enough input to ensure that permit restrictions reflect local concerns.

■ **Paperwork can stifle innovation** — In some cases, regulatory paperwork can consume business and government staff time with little benefit to the environment or public health. Plant engineers, environmental managers and government officials may not have time to explore innovative solutions to environmental problems.

TAXES

Taxes are another method through which government can foster sustainable business practices. A revenue-neutral shift is one option for integrating fiscal and environmental policy. An example would be to reduce taxes on labor and capital, and replace that revenue with levies on pollution and waste. Total revenue would be unchanged, as would the distribution of the tax burden across income groups. The current tax system may send the wrong signals by discouraging work, enterprise and capital formation or by encouraging sprawling development, pollution and waste.

Tax credits, subsidies and reduced taxes can promote sustainable business practices of many kinds, including:

- Agriculture and forestry practices
- Land stewardship and watershed protection
- New technology and equipment
- Pollution prevention
- Development of renewable energy sources
- Energy conservation
- Recycling
- Closed-loop manufacturing

- Choosing sustainable technology and products
- Development of eco-industrial parks
- Redevelopment of brownfields (contaminated sites)
- Research and development
- Worker education
- Family-friendly work environment
- Community support and development

Many states use tax incentives to make polluters pay for cleanup, to promote “clean” technology, to encourage businesses to go beyond the minimum environmental requirements or to channel economic development toward sustainability. For example, 12 states offer tax incentives for solar or wind power; nine states use tax measures to support the purchase of alternative-fuel vehicles.

Oregon has a tax incentive for energy-conserving investments. Created in 1980, the 35-percent Business Energy Tax Credit applies toward up to \$100,000 in commercial investment and \$2 million in industrial investment for the construction of facilities that save energy, produce energy from renewable sources or provide other environmental benefits. The credit is spread over five years — 10 percent in each of the first two years, and five percent in years three through five.

One of the most common environmental tax incentives is a state tax on pollution-producing businesses, with revenue earmarked for a cleanup fund or another type of environmental trust fund. Through such taxes, types of businesses that may harm the environment pay the costs of restoration. Twenty-three states have such taxes — 14 for leaking underground storage tanks, seven for broader cleanup or response funds and seven for conservation or preservation of wilderness.

An example of such a tax incentive in Minnesota is the solid waste tax. In 1989, Minnesota extended the 6.5 percent sales tax to garbage services. This raised \$24.3 million in 1990. This money has financed recycling and waste reduction programs, provided loans and grants to recycling businesses and closed down polluting landfills. Minnesota also collects a 2-cent-per-pound tax on toxic chemicals listed in the EPA’s Toxic Release Inventory.

Another Minnesota example is the contaminated property tax, which encourages property owners to return polluted land to a clean and productive condition. Previously, low property taxes on contaminated, unusable land created an unintended incentive to leave the property in that condition. Now the tax provides an incentive to clean up property as quickly as possible. The tax is based on the loss of value caused by contamination. Depending on whether a cleanup plan has been approved and the stage of cleanup, the tax is levied at 100 percent, 50 percent, 25 percent or 12.5 percent of the property’s tax class rate.

One tax proposal that has been discussed in Minnesota and elsewhere is a carbon tax — a tax on the carbon content of fossil fuels such as petroleum and coal. The burning of these fuels is the source of most U.S. carbon emissions, a factor in global climate change. The primary effect of a carbon tax would be to increase energy prices. It would tax the potential pollution in a fuel, encouraging both energy conservation and the use of cleaner fuels or renewable substitutes such as water or wind power. A carbon tax would have a broad base, allowing the rate to be quite low. The committee realized this would be a significant change to the tax structure, but found that the basic concept merits further exploration.

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