

Rethinking outputs



OUTPUTS

Whether you produce food, feed, fibre, bioplastic or other agricultural goods, your products are likely the key outputs of your business. Like other businesses, you likely also produce waste in the form of emissions, excess heat, waste water, liquid or solid waste, or byproducts. By searching for alternative uses for these outputs, you may discover new revenue sources and find value in what has traditionally been considered waste.

Finding value in greener products

Your products may offer opportunities to become more environmentally friendly. Perhaps green chemistry can help you produce food products with fewer additives or chemicals. You may be able to create products using fibres that use fewer inputs, like water, and minimize impact.

Agriculture is no longer confined primarily to food, feed and fibre. Advances in biotechnology are spurring the development of three types of plant-made pharmaceuticals: antibodies, vaccines and other therapeutic and analytical proteins.¹⁶ The bioeconomy is creating innovations in biomaterials, biochemicals and bioenergy. Products like bioplastics, biofoams and rubbers

Did you know?

In 2009, more than \$9.6 million was invested by Agriculture and Agri-Food Canada in the Natural Fibres for the Green Economy Network to develop value-added markets for flax and hemp fibres as well as technologies to convert fibre and residue into new industrial products and chemicals.¹⁷

for industrial applications and biochemicals represent new opportunities for Canadian agriculture.

Can you find alternative uses for your existing products? Will products you grow, or byproducts of your operation, gain new value as inputs for bioplastics or other growing industries? Are you aware of innovations that may complement your main lines of business?

Adding value through services

Global agribusinesses are finding opportunities to offer services, not just products, to meet emerging needs in the green economy. Some European countries pay producers to provide ecological services like carbon sequestration. In 2003, payments for ecological services accounted for 14 per cent of farm income in Switzerland and four per cent of farm income in France.¹⁸ Payment for services is one of various options. Are there services you can develop to minimize environmental impact and become more diversified? Perhaps you can develop water treatment capacity or generate carbon offsets to sell on new markets. The future for new agricultural products and services is rich with opportunity for innovation.

Finding value in packaging

Agribusinesses are also developing or using environmentally friendly packaging, particularly plastics. Traditional plastic is made from petroleum, a non-renewable fossil fuel. Bioplastics are derived from renewable biomass sources, such as vegetable oil, corn starch or pea starch. The market for bioplastics continues to grow and is expected to expand from an international capacity of 150,000 tonnes in 2006 to two million tonnes in 2011.¹⁹ What will this expansion mean for those of you who grow biomass sources like peas and corn? Will markets be affected like they were for corn with the rise of ethanol production?



Did you know?

Since April 2007, the Mountain View Regional Waste Management Commission in Alberta has paid farmers \$100 per 100 kilograms of silage bags, plastic twine, net wrap, bottles and other plastic farm products.

Did you know?

Less than two per cent of the total waste stream globally is actually recycled – primarily paper, glass, plastic, aluminum and steel.²⁰

Packaging is a high-cost expense for many businesses. Consumers have come to expect packaging that is esthetically pleasing, durable, clean, clearly labelled and safe. Changes to your packaging may require an initial investment in time, money and infrastructure, but can increase your profitability by changing or reducing materials or decreasing shipping weight. In considering greener packaging options, it is important to factor in infrastructure costs, consumer preferences, shipping considerations and other variables that may affect your projected return on investment.

You may find ways to save money by using less packaging or lighter packaging, or by recycling or

reusing packing materials. Would biodegradable packaging meet the demands of your current target market? Could you increase your market share by attracting environmentally conscious consumers who choose greener packaging?

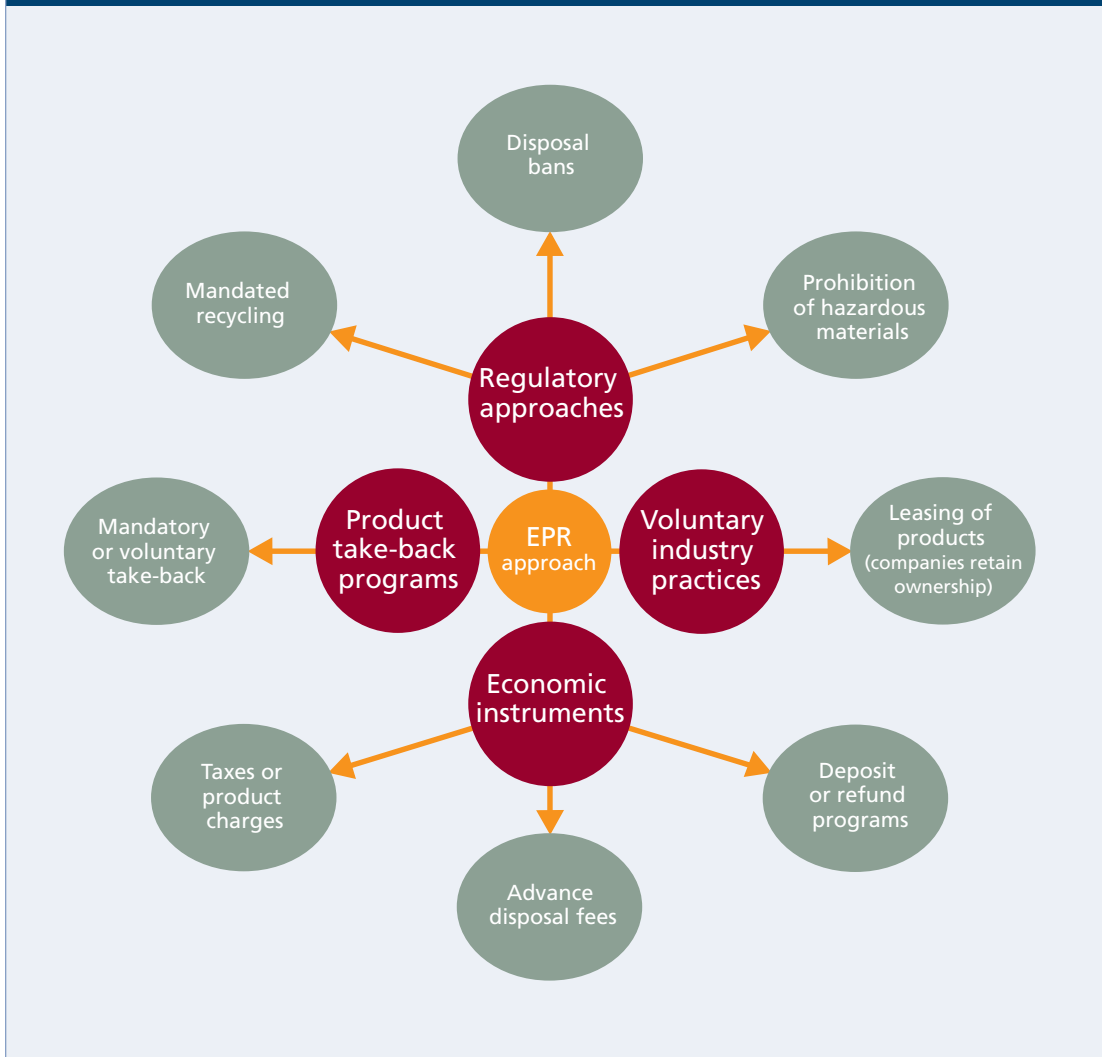
Extended producer responsibility

In most countries, producers are responsible for disposing waste from the production or manufacturing process, while consumers are responsible for disposing products and their packaging. Extended producer responsibility (EPR) is a product stewardship environmental

Did you know?

The Guelph Food Technology Centre in Ontario offers learning programs on sustainable packaging design. Participants learn about definitions of sustainable packaging, life cycle analysis and functionality of sustainable packaging, and conduct case studies to find the best fit for their needs.

Figure 6: Opportunities for extended producer responsibility



Source: adapted from Environment Canada

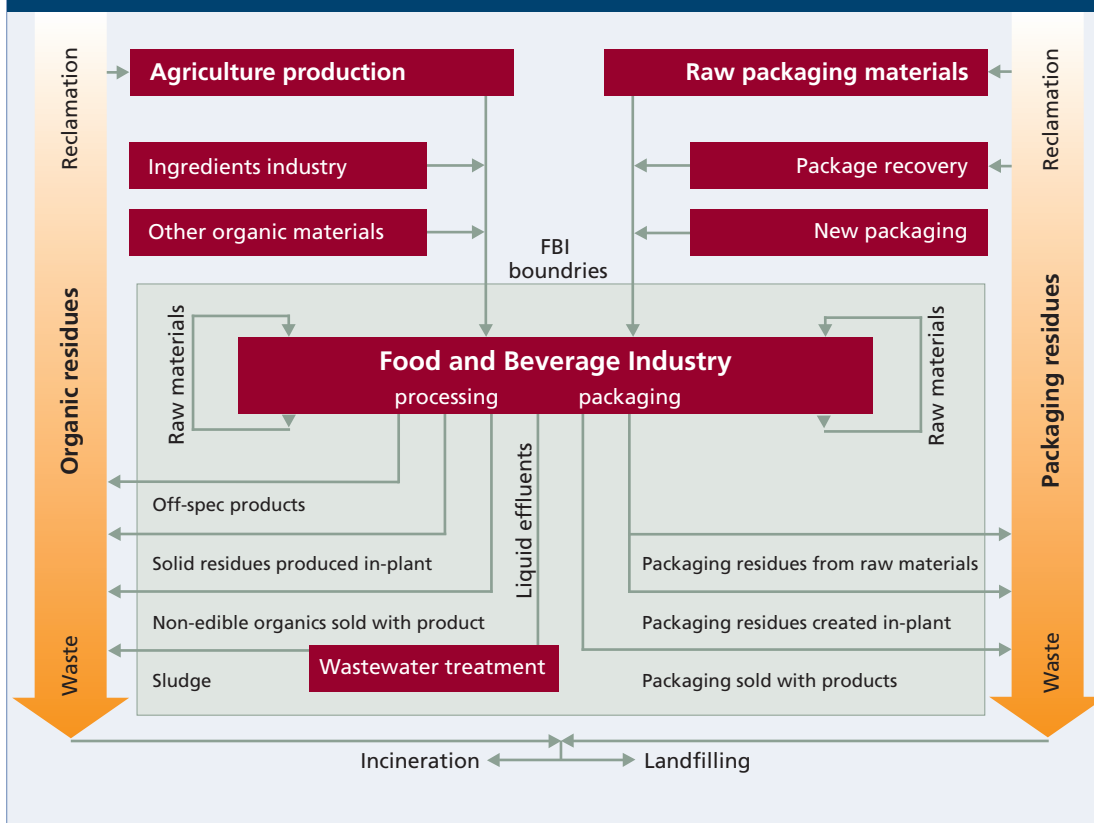
policy that originated in Germany and is being used around the world to change how we deal with packaging and other waste. EPR makes producers responsible for products into the post-consumer stage.

In June 2007, the Canadian Council of Ministers of the Environment (CCME) endorsed Canada-wide principles for EPR. The CCME's EPR Task Group considers packaging a first priority.²¹ In Canada, two eco-efficiency indicators are being developed:

Did you know?

Save-On-Foods in western Canada offers recycling centres next door to some of its grocery outlets. This EPR initiative encourages consumers to return containers and packaging through product rebate incentives. The recycling centres are also convenient for consumers and an efficient collection process for the retailer.

Figure 7: Flow of organic and food packaging residual materials in the food and beverage industry



Source: Agriculture and Agri-Food Canada

organic residue intensity and required packaging intensity. As shown in figure 7, these measures will set future standards for how Canadian agribusinesses work within the principles of EPR.²² What can you find out today to prepare for changes in packaging standards tomorrow?

Clear labelling

Many consumers value transparency and authenticity. Your packaging can provide them with clear, accurate information about your environmental efforts. However, many consumers are skeptical of green product claims. Lack of diligence or misrepresenting products as

environmentally friendly without sufficient evidence could put your business at risk of greenwashing. What can you do to help consumers make sense of green claims on your products? Are your claims verifiable or measurable?

Did you know?

The International Organization for Standards provides information on environmental labelling through its ISO 14000 standards. For more information, go to www.iso.org.

Did you know?

In summer 2009, Walmart unveiled an environmental labelling program for the products it carries. Suppliers will now have to calculate and disclose the full environmental costs of making their products so that Walmart can feed this information into its rating system for price tags.

Finding value in emissions

Global concern over emissions is growing. Agribusinesses contribute to emissions, including carbon dioxide from burning fossil fuels, nitrous oxide from fertilizer application and methane emissions from livestock. Agriculture also offers many opportunities to store carbon dioxide and develop solutions to turn emission-heavy waste into valuable outputs like energy and fertilizer.

Some solutions have already been found, like modifying feed rations to create less methane in cattle. What emissions does your operation produce? What steps are you taking today to prepare for tightened regulations tomorrow?

Carbon markets

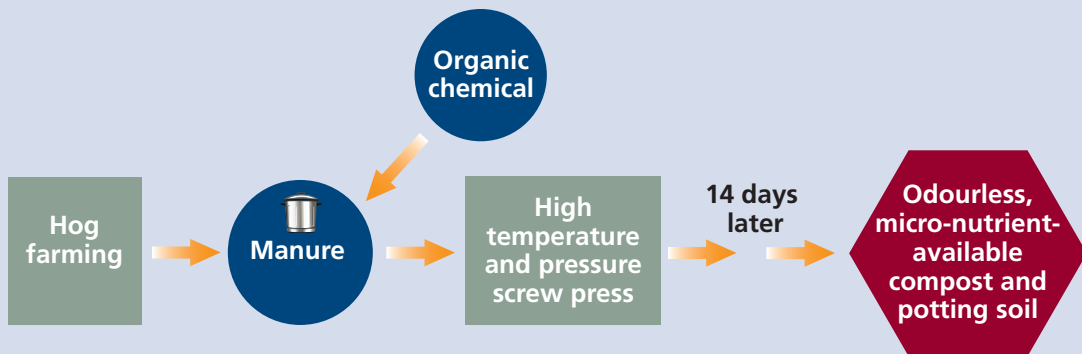
Emissions markets are becoming increasingly common around the world. The European Climate Exchange has been operating a carbon market since 2005. Alberta has implemented its own carbon offset market for provincial residents and companies. Some companies have become aggregators, pooling and contracting carbon offsets from farmers and selling the carbon offsets to large emitters in Alberta.

North American businesses can purchase and sell carbon offsets through the Chicago Climate Exchange on a voluntary basis. Publicly traded
(Continued on page 30)

Making it work – BHF Waste Management

Manitoba’s BHF Waste Management is helping hog farmers manage their waste disposal issues as regulations continue to tighten. Farmers add a compound to the liquid manure before transporting it to BHF to remove odours and speed decomposition. The manure is then mixed with wood waste or straw and processed

through a thermal screw press at temperatures in excess of 100 C and at 50 barometric pressure. This product is mixed with peat moss into a high-end organic potting soil. The whole process – from the farm to retail-ready products – takes less than two weeks. “The results we’ve been getting from independent trials have been beyond our expectations,” says CEO Dean Stanzel. “The yields have been fantastic and that has been our greatest surprise.”



Emissions from ammonium nitrate production in a fertilizer plant



Figure 8: 2004 and 2006 waste disposal by province (tonnes)



1	B.C.	
	2004	2006
R	919k	956k
NR	1.8m	1.9m

2	Alta.	
	2004	2006
R	943k	973k
NR	2.1m	2.8m

3	Sask.	
	2004	2006
R	279k	296k
NR	515k	537k

4	Man.	
	2004	2006
R	450k	455k
NR	477k	568k

5	Ont.	
	2004	2006
R	3.4m	3.7m
NR	6.3m	6.7m

6	Que.	
	2004	2006
R	2.2m	2.1m
NR	4.2m	4.6m

7	N.L.	
	2004	2006
R	228k	227k
NR	172k	180k

8	N.B.	
	2004	2006
R	208k	216k
NR	234k	233k

9	N.S.	
	2004	2006
R	179k	169k
NR	221k	232k

R - residential
NR - non-residential
k - thousands
m - millions

Source: Statistics Canada (P.E.I. information not provided)

Some agribusinesses are finding value in residential and non-residential waste by turning it into energy. What opportunities do you see in your province or region?



Making it work – Transform Compost Systems

John Paul, owner of Transform Compost Systems in Abbotsford, British Columbia, understands the science of soil. His PhD in soil science and experience working with Agriculture and Agri-Food Canada have provided him with the expertise to form profitable partnerships with other agribusinesses to capture the value of waste. By understanding what compost or manure is needed for each crop, Paul can provide tailored solutions that

divert waste from landfills and turn it into valuable crop inputs. According to Paul, “Waste has value. It’s time to turn the negative effects of organic materials in landfills – odour, pollution, ammonia emissions and greenhouse gases – into positive value.” The partnership between poultry farmers, mushroom growers and Paul’s lawn fertilizer business allows waste to be used multiple times for multiple savings.

www.transformcompost.com

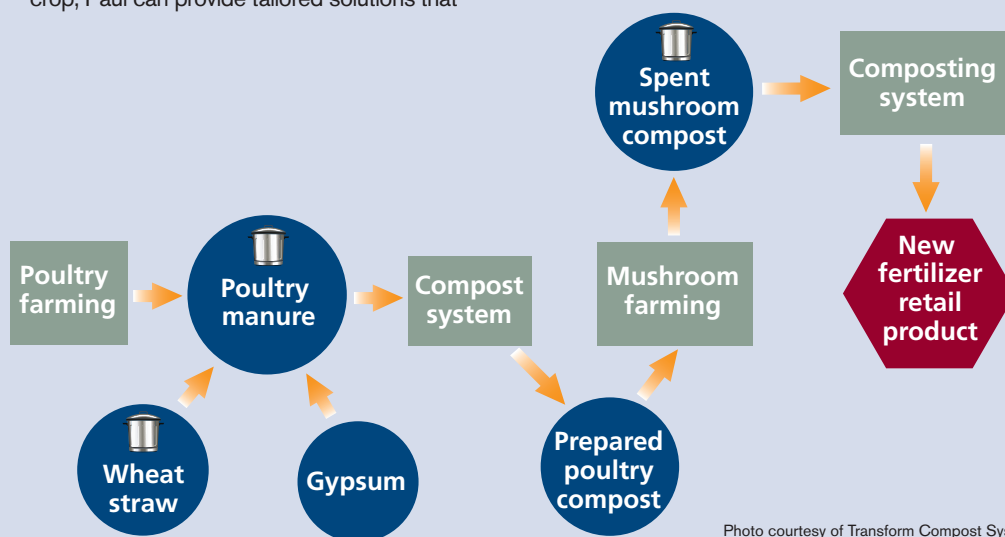


Photo courtesy of Transform Compost Systems

companies can voluntarily submit their greenhouse gas emission levels to the Carbon Disclosure Project, which houses the largest database of corporate climate change information in the world. Emissions-trading infrastructure is still its infancy. As harmonization of existing systems occurs, what can you do to position your business effectively?



Emissions as commodity

Are you ready to view greenhouse gases as valuable commodities instead of unwanted or harmful waste products? Experts are currently looking for ways to sequester carbon to dispose it safely. With innovative technology, will carbon dioxide become a valued commodity? Dow Chemical Co., in partnership with Florida-based Algenol Biofuels Inc., is investigating how to use salt water, sunlight and algae to turn carbon dioxide into ethanol. They are growing algae in clear photobioreactors to capture the ethanol the algae secrete. The process can produce 6,000 gallons of ethanol per acre of land, compared to only 400 gallons per acre for corn-based ethanol.²³

Finding value in waste products

Most agribusinesses have solid or liquid waste outputs. With pressures on landfills and concerns about environmental impacts, waste disposal costs are increasing. Some businesses are turning solid and liquid waste into energy through anaerobic digestion, which uses micro-organisms to convert feedstock to biogas. Others are recycling chemical byproducts so they can be reused. For some, co-location with another industry means the waste from one business becomes another business's feedstock. Roughly 40 per cent of food produced in

North America ends up as waste. New technology can turn food waste into biohydrogen, an alternative energy source. New composting technologies are accelerating the turnaround time or improving the quality of end products.

Agribusinesses with green business models are seeking zero waste or energy-neutral operations. Others are looking for quick ways to save money on waste disposal. Whatever level of green you choose, rethinking waste can save or make you money. Is there a new way for you to look at waste?

Final thoughts

To find value in the green economy, you may need to make big or small changes. Maybe you can find savings through conservation or by reusing materials. You may choose to become more socially responsible. You may uncover opportunities to work within sustainable, environmentally friendly value chains or rebrand your products. Perhaps you'll work with a consultant to review your environmental footprint and identify cost savings. You may decide to redesign your business model or processes for long-term efficiency.

Investing time and resources in environmental initiatives may provide an immediate return on investment or may result in positive returns years from now. Working with specialists in environmental design, risk management and other areas can help you make the best choices to balance the needs of people and the planet with your need to run a sustainable, profitable business.

With foresight and strategic planning, agribusinesses are becoming more profitable through green thinking and actions. What innovations will you consider to harness the opportunities of the green economy?