



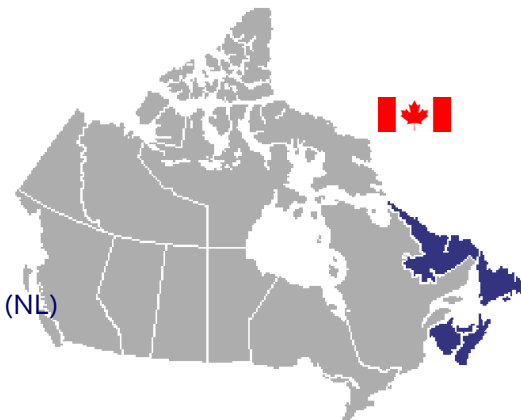
**Economic Information Observatory**  
a regional cooperation project between  
**Atlantic Canada** and **Saint-Pierre and Miquelon, France**

## The Circular Economy



Atlantic Canada (p. 1-5)

Saint-Pierre and Miquelon, France (p. 6-9)

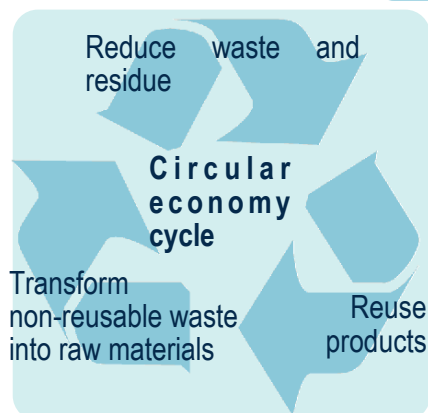


## The Circular Economy

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Emerging two decades ago in an effort to slow the gradual depletion of natural resources, increased pollution and product overconsumption, the **circular economy** targets the reuse of materials to **rebuild, remake** and **reintegrate** into a **new use cycle** the portion of materials deemed “non-virgin” or having already gone through a use cycle. The circular economy approach is part of the broader **sustainable development** movement. This global concept may be defined as the incorporation of the **green economy**, the **use, performance** or **functionality economy** and **industrial ecology**. The circular economy is, strictly speaking, no longer an emerging concept in that it has been operational in regions around the world for a number of years. Little known or developed in North America, this economic model based on the **reintegration of “waste”** into a cycle with a view to **mitigating the environmental impact of human activity** also helps to **stimulate innovation**. Its implementation generates significant spin-off benefits in terms of **productivity, efficiency** and **profitability** and creates a broad range of **business opportunities**.



<b>Ecodesign</b>	Integration of environmental considerations into product or service design to promote sustainable development.
<b>Use economy</b> (performance economy; functionality economy)	Selling the use of a good rather than selling the good itself.
<b>Industrial ecology</b>	Pragmatic approach whereby one company's waste becomes the raw materials of another company, ideally located nearby.
<b>Green economy</b>	Enhancing human well-being and social equity while also reducing environmental and resource shortage risks.
<b>Eco-innovation</b>	Any innovation resulting in decreased environmental impact, whether by coincidence or intent.
<b>Collaborative economy</b> (or sharing economy)	Pooling of property, resources, services, expertise, etc. with a focus on use rather than ownership.

▲ 20%  
► 50%

The proportion of products we consume (in paper, glass, plastic or metal) that was manufactured using recycled materials currently stands at only 20%, while some experts estimate that it could easily reach 50%.

X6

For an equivalent volume of waste, six jobs can be created through the recycling of materials, whereas only one job is created through use of landfilling.

\$1 million  
and 1,000  
jobs

In Nova Scotia, nearly 100 companies and 1,000 employees and volunteers are involved in circular economy activities (repair, recovery, dismantlement, reuse, refurbishment, restoration or recycling) with this economy generating close to \$1 million in revenue.

33 ► 94

In 2009, the various programs and guidelines governing the circular economy in Canada applied to 33 categories of products; in 2014, the number of categories had increased to 94.

1.8 million  
jobs and  
129,000  
waste management  
specialists

There are 1.8 million environmental workers in Canada, including 602,500 employees requiring skills and knowledge in the area of environmental management. Of these, more than 129,000 are professionals specializing in waste management.

Although it is difficult to calculate the exact quantity of household materials subject to reuse, refurbishment, transformation or recycling, it is possible to track any decreases achieved in terms of the amount of waste generated through curbside collection, which serves as a sound indicator of Canadians' participation in the various strategies implemented by their local, provincial and federal governments to lead the public away from the production/consumption economic model and consequently reduce pressure on the environment. Much work clearly lies ahead in this area regardless: according to a 2013 Conference Board study, Canadians produce nearly 1 tonne of solid waste per capita every year.

# Provinces Seeking to Reduce the Environmental Footprint

## Canadian Council of Ministers of the Environment (CCME)

### Canada-wide Action Plan for Extended Producer Responsibility

<https://www.ccme.ca/>

In 2009, the Canadian Council of Ministers of the Environment rolled out an action plan containing joint recommendations deemed essential for expanding producers' obligations in relation to their products throughout the product life cycle and extending to the post-consumer stage. To address environmental considerations, these recommendations may need to be supported by additional measures, such as **eco-labelling**, restrictions on **toxic substances**, **recycled content** standards and regulations, **green procurement** policies, **environmental performance/voluntary agreements** and a variety of other potential standards, bans, guidelines and educational tools.

## Prince Edward Island

### Island Waste Management Corporation (IWMC)

Multi-material recycling organization

<https://www.iwmc.pe.ca/index.php>

Founded in 1999, this provincial Crown corporation is responsible for providing and administering **solid waste management** services. The IWMC has been meeting its goal to divert 65% of waste from landfills.

## New Brunswick

### Action plan

Extended Producer Responsibility (EPR) programs

In March 2017, New Brunswick announced an **electronic waste recycling** program. This involves working with brand manufacturers to find ways to recycle electronic hardware and devices that would otherwise end up in dumps across the province. The organization Recycle NB is overseeing this new program, which is being managed and administered by the Electronic Products Recycling Association. This industry-led association promotes the return of recycled content into the supply chain of manufacturing facilities, thereby reducing requirements for natural resources in relation to the production of new goods.

**Objective:** to divert 3,500 tonnes of electronic equipment annually that would otherwise end up in provincial dumps. The Association aimed to have more than 50 collection points in place by 2017.

### Recycle NB

Multi-material recycling organization

<https://www.recyclenb.com/>

This provincial organization manages **waste reduction programs** for designated materials and provides environmental stewardship for New Brunswick.

ATLANTIC CANADA



## Nova Scotia

### Benefits of diversion

Environmental protection is one of the main benefits of **waste diversion**. Limiting the use of landfills also reduces their impact, including in terms of greenhouse gas emissions. At the same time, local communities benefit from waste diversion through the creation of "**green**" jobs, the emergence of which is attributable in part to the innovation shown with regard to collecting and giving new life to what would otherwise be waste.

**In Nova Scotia, an estimated 380,000 tonnes of waste are diverted from landfills every year, including:**

- 130,000 tonnes of organic matter
- 100,000 tonnes of CR&D waste
- 100,000 tonnes of paper
- 20,000 tonnes of waste recovered from residential bins
- 22,000 tonnes of "designated" waste
- 8,000 tonnes of textile materials

### Divert NS

Multi-material recycling organization

<http://divertns.ca/>

Established in 1996, this non-profit, non-governmental organization manages a series of **waste diversion programs** in addition to providing support to companies manufacturing new products using materials otherwise destined for landfills. This Nova Scotia-based entity also offers research grants to students. <http://divertns.ca/funding>

### Reducing greenhouse gas emissions in Nova Scotia

Thanks to the organic waste diversion system, recycling programs and the development of a circular economy established by the Nova Scotia government, a 30% decrease has been observed in greenhouse gas emissions from landfill waste over the past 15 years.

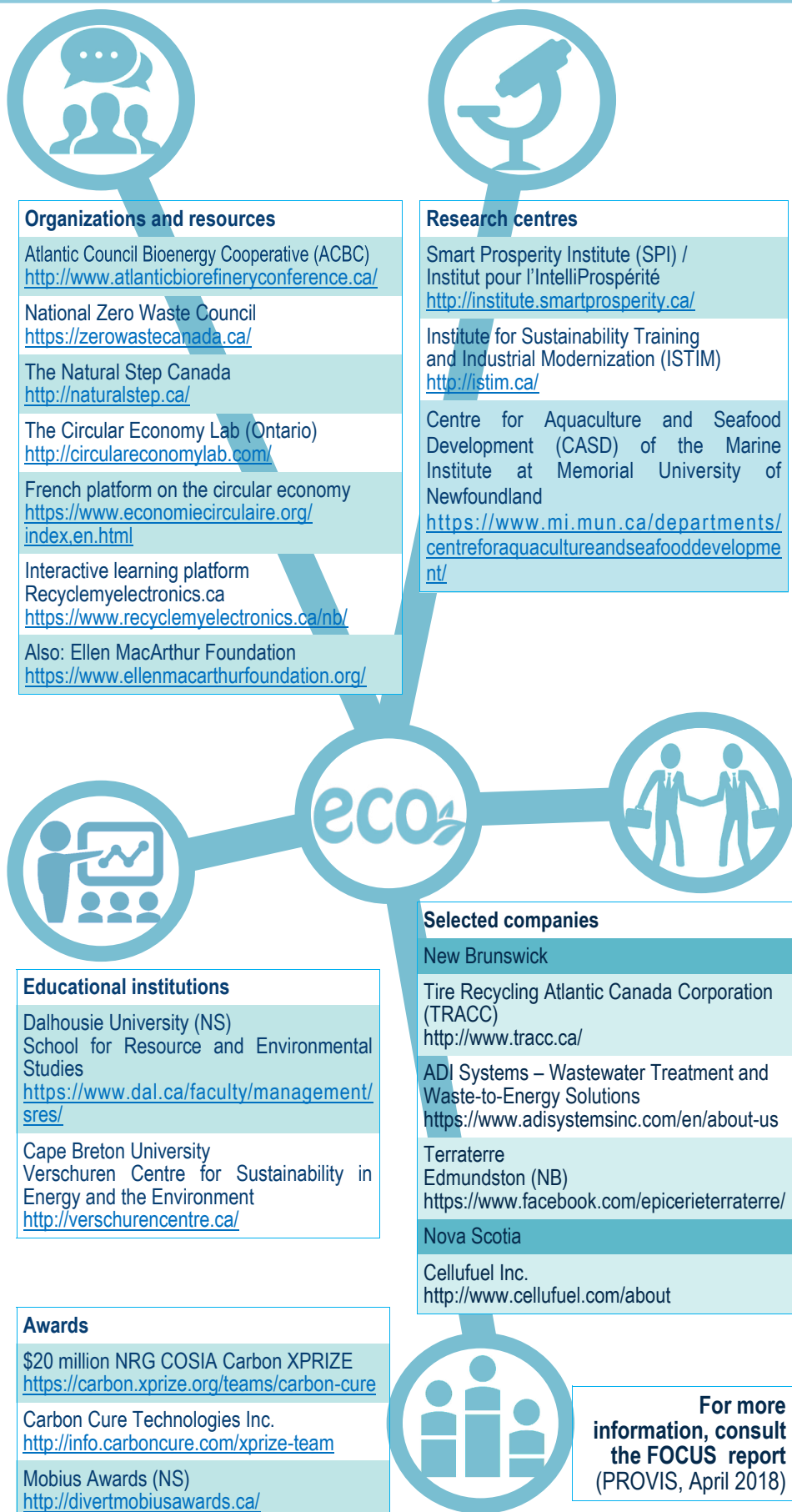
## Newfoundland and Labrador

Multi-Materials Stewardship Board

<http://mmsb.nl.ca/>

The **Multi-Materials Stewardship Board** was established in 1996. In addition to administering waste diversion programs, it promotes **sustainable management**. The MMSB is a Crown entity under the Department of Municipal Affairs and Environment.

# The Circular Economy Is Also...



## Upcoming events – National

### Earth Day

Sunday, April 22, 2018, Eastern Passage, NS  
 The federal minister of the Environment and Climate Change, Catherine McKenna, invited Canadians to share their ideas for addressing problems associated with the environmental impact of plastic waste.

### Atlantic BIOCON 2018

May 23 – 24, 2018, Fredericton, NB  
<http://www.atlanticbiorefineryconference.ca/>  
 Two days of discussion on sustainability and the circular economy, responsible resource management practices, technological innovation, and research and development. Biorefining is emerging as a key activity likely to generate benefits in the new economy. With its forest resources, farmland and coastal zones, Atlantic Canada stands out for its numerous companies and research entities dedicated to innovation in the biosciences. This event is organized by BioNB.

### Rubber Recycling Symposium 2018

[https://www.tracanada.ca/events\\_2/rubber\\_recycling\\_symposium\\_2018.html](https://www.tracanada.ca/events_2/rubber_recycling_symposium_2018.html)  
 November 7 – 8, 2018, Niagara Falls, ON  
 A meeting of international leaders in the rubber industry to explore innovative approaches to the sustainable production and reintegration of rubber products in the context of the circular economy.

### Recent events:

#### Circular Economy Summit (June 2016)

Divert NS – with Nova Scotia Environment  
<http://divertns.ca/impact/summits>  
 Some 80 participants in this day-long event in June 2016 had the opportunity to learn about the business models of a number of Nova Scotia companies, research carried out by governments and universities, and the advantages of the sharing economy, all topics of interest to municipalities, governments, educational institutions, businesses and recycling organizations as well as non-profit organizations.

#### Waste Reduction Week in Canada

<http://www.wrwc.ca/>  
 In 2017, this week was celebrated on October 16 – 22. The goal of this cross-Canada event is to raise public awareness about sustainable and responsible consumption while also encouraging people to make environmentally friendly choices. Waste diversion from landfills remains an issue that affects everyone since it relates closely to the conservation of natural resources.



# Reuse of Residual Materials

Source: Government of New Brunswick

[http://www2.gnb.ca/content/gnb/en/departments/elg/environment/content/land\\_waste/content/recycling/recycle.html](http://www2.gnb.ca/content/gnb/en/departments/elg/environment/content/land_waste/content/recycling/recycle.html)

Steel	Steel used to make “tin” food cans can be recycled and used to make additional cans as well as bicycles, machine parts and even vehicles.
Aluminum	Aluminum can be melted down and reused many times over. In Canada, 89% of beverage cans are made from aluminum.
Construction & demolition waste	Construction and demolition waste offer considerable potential for recycling and resale, even where reuse is not an option.
Organic waste	Organic waste, which accounts for one-third of all household waste, can be composted.
Other	Collection programs and campaigns exist for products such as car batteries, button batteries and paint.
Used oil	Oil can be processed and “cleaned” for use again, whether as fuel or for some another purpose.
Plastics	(depends on their chemical composition; plastics are classified by type as Code 1 to Code 7:)

Code 1	Fibre, tote bags, clothing, food and beverage containers, carpet, strapping, fleece wear, luggage.
Code 2	Liquid laundry detergent, shampoo, conditioner and motor oil bottles; pipes, buckets, crates, flower pots, garden edging, recycling bins, benches, dog houses, plastic lumber, floor tiles, picnic tables, fencing.
Code 3	Packaging, loose-leaf binders, decking, panelling, gutters, mud flaps, floor tiles and mats, resilient flooring, cassette trays, electrical boxes, cables, traffic cones, garden hoses, mobile home skirting.
Code 4	Shipping envelopes, garbage cans and liners, floor tiles, furniture, compost bins, panelling, landscape timber, lumber.
Code 5	Car battery cases, signal lights, battery cables, brooms, brushes, ice scrapers, oil funnels, bicycle racks, rakes, bins, pallets, trays.
Code 6	Thermometers, light switch plates, thermal insulation, egg cartons, vents, desk trays, rulers, licence plate frames, foam packing, foam plates, cups, utensils.
Code 7	Bottles, plastic lumber applications.

Paper	Recycled newsprint, egg cartons, kitty litter, construction materials such as wallboard and cellulose insulation.
Used tires	Scrap tires are ground into “crumb rubber” and used in manufacturing floor mats, patio blocks and other new rubber products.
Beverage containers	Beverage containers are managed using a dedicated deposit and refund system to encourage their reuse and recycling.
Glass	In addition to melting down glass bottles to make new ones, glass can be crushed and then used to cover other garbage or build roads at landfill sites.

## Expert Voice

### *Should we embrace a circular economy?*

We have seen the shocking statistics about the quantity of wastes that human generate each year. Plastics have become the poster child of our waste problem. Plastics Oceans estimates that 8 billion tons of plastic waste enter the ocean from land-based sources annually. The UN Food and Agriculture Organization estimates that 30 – 40% of the food harvested each year is wasted. In Canada that amounts to \$31 billion a year. According to the Ontario Association of Food Banks. And greenhouse gas emissions have been consuming the time and interest of governments and non-government organizations for the past 3 decades. An article in Nature Climate Change calculates that 38 billion tons of CO<sub>2</sub> were emitted into the atmosphere in 2014, an amount which is still increasing.

All of these wastes are resources but we have seen fit to divide resources into products and wastes. And in most societies we have discarded wastes by dumping, burying or burning them. In recent years, we have begun to recover and recycle some of them. Paper and cardboard are two good examples but food waste is composted, and plastics and some metals are also recycled. However, wastes are still essentially wastes.

Twenty-five years ago, a group of researchers at Dalhousie University initiated a research project titled “the industrial park as ecosystem”. That research led to an international interest in eco-industrial parks. These parks could be viewed as miniature circular economies, in which efforts are made to recover, reuse and recycle wastes of all kinds. Some of the strategies which were identified by the research team included the potential for district heating in which the waste hot water from a thermal generating station could be used to heat buildings in the park; symbiotic relationships in which the waste of one business could be utilised by a neighbouring business and building design and construction which would allow for disassembly at a later date permitting reuse of materials. Other strategies included pallet recovery, repair and reuse and as well as shared transportation logistics.

Since that time, the concept of the circular economy has gained international profile. While the concept was originally promoted in the 1970s, it has gained prominence through the efforts of the Ellen MacArthur Foundation and the World Economic Forum. The idea is to redefine products and services to design waste out of production, manufacturing and use, while minimising negative impacts. The concept is based on that way natural systems function. The essence is to get people, businesses and governments thinking of closed loops and cycles in which resources, materials and products are utilised over and over again, in whole or in part. The circular economy encompasses all those businesses and functions that begin with ‘RE’ such as recover, repair, resale, reuse, remanufacture, reclaim and recycle. When one begins to look into it, one discovers that the circular economy is already substantial although not recognized as such.

We are beginning to see many examples locally and internationally. For example Phillips, a manufacturer of electric light is considering offering lighting as a service. Interface leases carpet tile then recovers and recycles it. Netflix, Airbnb and VRBO are also part of the circular economy.

Locally, CarShare is another example; rather than buying an automobile which might only be used a few times per week, people can rent a car when it is needed. Rental companies of all kinds are part of the circular economy. Value Village and Frenchy's in Nova Scotia are included in the circular economy. Auto dismantlers and recyclers exist across the region. These businesses create local jobs and keep money and resources recirculating within the province and the region. We need policies that encourage more of them to be created and we should develop economic incentives which encourage them. They benefit us economically, environmentally and socially.

**Raymond Côté**

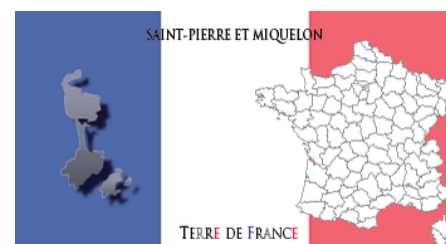
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<https://www.dal.ca/faculty/management/sres/faculty-staff/our-faculty/ray-cote.html>

**Additional information:** Québec Employers Council, <<https://www.cpq.qc.ca/>>; Divert NS, <<http://divertns.ca/>>; Économie circulaire, <<https://www.economiecirculaire.org/>>; Ellen MacArthur Foundation, <<https://www.ellenmacarthurfoundation.org/>>; Globe and Mail, <<https://www.theglobeandmail.com/>>; Innovation, Science and Economic Development Canada <<https://www.ic.gc.ca/>>; Institut de l'environnement, du développement durable et de l'économie circulaire, <<http://instituteddec.org/>>; National Zero Waste Council, <<http://www.nzwc.ca/>>; Recycle NB, <<https://www.recyclenb.com/>>; Smart Prosperity Institute, <<http://institut.intelliprosperite.ca/>>; Statistics Canada, <<http://www.statcan.gc.ca/>>; Université de Montréal, <<https://www.pum.umontreal.ca/>>.



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## Concepts



The circular economy aims to establish a **new economic model** for regional development, rejecting the standard linear model (*take-make-use-dispose*).

It is "circular" because the product is carefully considered throughout its lifecycle, from design (more ecofriendly) to use (*prioritized over ownership*) and recycling (reintroduction into the production chain).

The circular economy creates a **loop, preventing waste**. It seeks to produce goods and services whilst cutting consumption, raw material waste and non-renewable energy sources.

### "Circular economy diagram": three areas of action and seven related pillars



Source: ADEME

- **business and enterprise:** sustainable extraction/exploitation and procurement, eco-design, industrial and regional ecology, economy of functionality;
- **consumer demand and behaviour:** responsible consumption (purchase, collaborative consumption, use), extending the product lifespan (reuse, repair, recycle);
- **waste management:** recycling (materials and organics).

All these areas of action form a cycle, with each phase leading to the next.

In France, the circular economy concept was officially launched in the Energy Transition for Green Growth Act of 18 August 2015. The act introduces important advances in terms of sustainable production (**plastic bag ban, penalties for planned obsolescence**, etc.) and consumption (**action against food waste**, etc.). It also presents ambitious waste prevention and management targets.

Download the Circular Economic Roadmap: [https://www.ecologique-solidaire.gouv.fr/sites/default/files/2018.04.23\\_frec-vf.pdf](https://www.ecologique-solidaire.gouv.fr/sites/default/files/2018.04.23_frec-vf.pdf)

# Exemples



In the current climate of economic, technological and environmental changes, the circular economy is **a source of competitiveness and resilience** for businesses. Circular solutions, which have already been widely implemented by economic players, make it possible to transform the challenges posed by scarce resources into **opportunities creating socioeconomic and environmental value**.

## French examples:

- **Use of sewage sludge to produce clean fuel**

The industrial demonstrator BioGNVal, which is based in Valenton, produces renewable energy via an innovative process reusing the sewage sludge from wastewater. The sludge is methanized and the resulting biogas purified to obtain biomethane, which is then liquefied (reducing its volume by 600). In this form, it can be transported and used as fuel for HGVs. It does not emit fine particles and reduces noise pollution by 50% and CO2 emissions by 90% compared to diesel. For more information: <http://www.engie.fr/actualites/projet-biognaval-valenton/>

- **Creation of pigments from food waste**

Les Couleurs d'Hadoinie: Manufacturing and marketing waste-based paint. Cœur de Couleur uses expired or unsold food to create natural pigments, combining action against food waste and the development of high-added value products. There are numerous potential uses for these pigments (cosmetics, paints, inks, etc.). The company has already patented and marketed a creative hobby paint brand (Les Couleurs d'Hadoinie) and tested over 800 potential materials for its pigments. For more information: <http://www.lescouleursdhadoinie.com/>

- **Support blocks in miscanthus concrete, a biosourced material aimed at Sustainable Construction**

The miscanthus is a plant originally from Asia. With over 4,000 hectares grown in France, it is widely used as biofuel. But miscanthus could see its future driven by construction. The company [Ciments Calcia](#) and Alkern, a specialist in manufacturing concrete blocks, had the idea of replacing the traditional aggregates used in concrete with ground miscanthus. A concrete support block that is 60% miscanthus has been developed. As miscanthus adapts well to polluted, disused or neglected land, it does not compete with food growing. It also gives a large harvest of 10 tonnes per hectare per year without the need for fertilizers or irrigation. For more information: <https://www.ciments-calcia.fr/fr>

For more information on the diary of events on the circular economy and environment: <https://www.actu-environnement.com/ae/agenda/recherche-agenda.php4>

**Environnement et Technique** is one of the leading French-language trade press magazines on environmental management and technology: <https://www.environnement-et-technique.com/>



# Circular economy and enterprise

ACTIF is a platform facilitating inter-business exchanges at national level. Using interactive mapping, the **ACTIF platform quantifies and geolocates the resources of businesses** and organizations. It makes it possible to **create pooled synergies** (job sharing and group purchasing) or substitution synergies (outputs from one being inputs for the other).

Collaboration with other businesses makes it possible to generate **economic and environmental gains** in four areas:

**Logistics & Equipment:** Pooled transport, offices, spaces & facilities shared between businesses, pooled services (group purchasing, collective waste management, etc.).

**Materials:** Reuse of production waste, waste reduction, waste recovery and development of new activities.

**Energy-Water:** Optimization of energy consumption, heat recovery, reuse of water.

**Human resources:** Business synergies, complementary expertise, job sharing, employee loans.

For more information: <http://www.actif.cci.fr/>

**ActiF**

The CCI (Chamber of Commerce and Industry) network oversees the conduct of business **"waste" assessments**. On St-Pierre and Miquelon, the service is provided by the CACIMA.

With effective internal management of your company's waste, you reduce all the costs associated with its production or elimination. The assessments will help you identify initial areas for savings.



**Aims:** The service makes it possible to identify and analyze waste sorting, storage and management practices within a company site and launch reduction and recovery initiatives reflecting the facilities available in your area.



**Cost:** **Covered** by the CACIMA and ADEME.



**Contact:** To request a waste assessment for your company, or for more information, **please contact Logan Roulet**, Health, Safety and Environment Consultant.

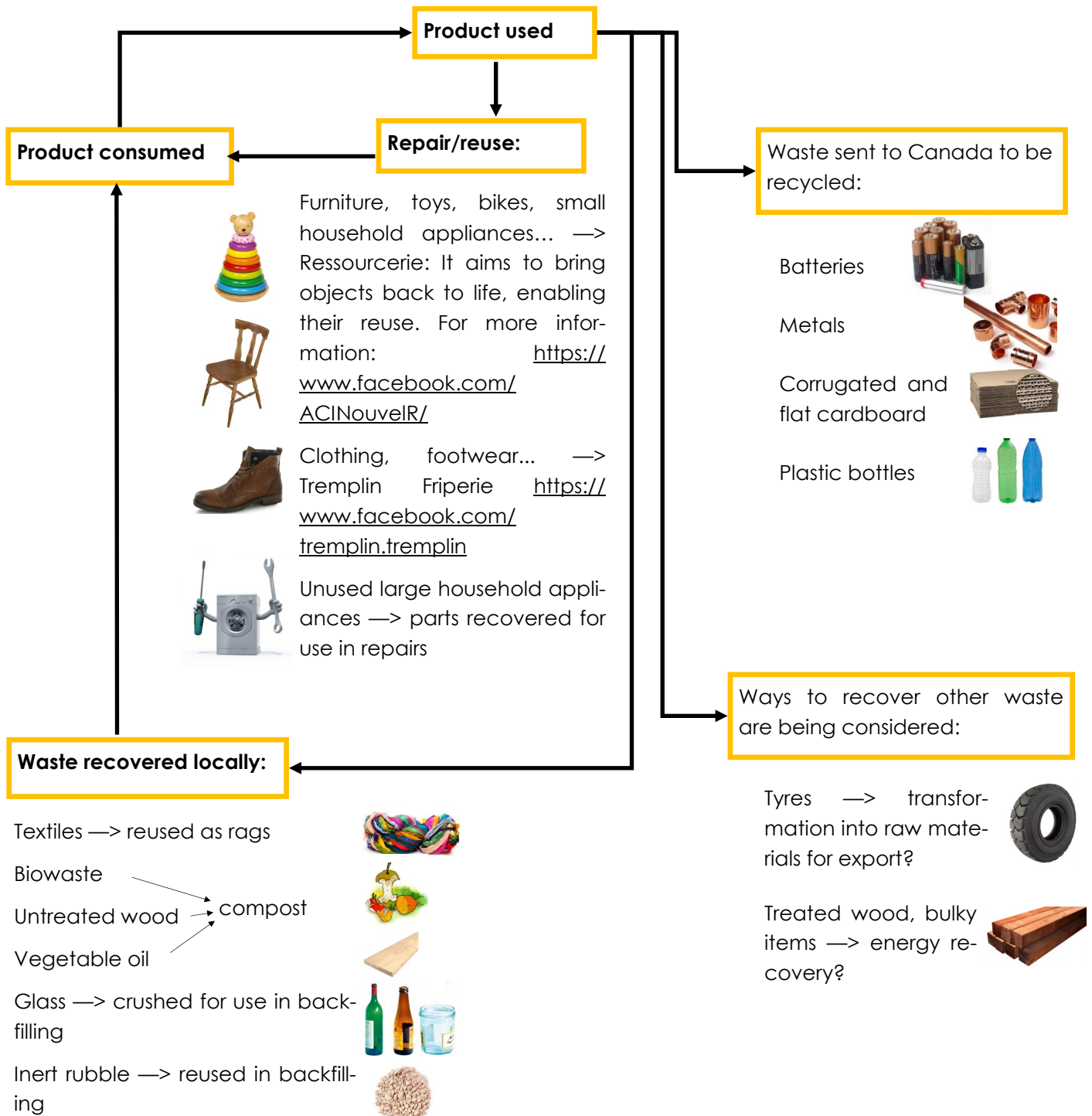
Email: [logan.roulet@cacima.fr](mailto:logan.roulet@cacima.fr)

# Waste treatment on SPM



Each type of waste has its own recovery and recycling process. The circular economy loop can only be closed if goods at the end of their lifespan are properly collected, sorted, reused or recycled to be reincorporated into new goods.

The diagram below shows the waste recovery process on St-Pierre, by type of waste collected.



# INTELL-ECHO



Are you seeking business opportunities in this sector?  
CACIMA and PROVIS can facilitate your business prospection process and help with establishing new partnerships  
(targeted information and network contacts)

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