Cement Association of Canada

2007-2009

Strategic Plan for Sustainable Development

DRAFT

October 5, 2006

Table of Contents

Background

In 1999, three international cement companies came together under the auspices of the World Business Council for Sustainable Development (WBCSD) to understand more about society's expectations of the industry, increasing constraints on air emissions, and the greater need for communicating about the industry's impacts in a clear and transparent manner.[1] This effort evolved into the Cement Sustainability Initiative (CSI) and now involves 16 companies that represent about one third of world cement production outside China. WBCSD published the initiative's conclusions and plan in the *Agenda for Action*. The Agenda focuses on six main areas:

- climate protection;
- emissions reduction;
- local impacts on land and communities;
- employee health and safety;
- fuels and raw materials use; and,
- internal business processes.

The *Agenda for Action* stimulated numerous industry wide projects to support progress in the above areas through the development, dissemination and implementation of:

- guidelines;
- best practices; and,
- reporting and monitoring systems.

A Canadian Strategic Plan (2004)

In Canada, the Cement Association of Canada (CAC) first developed the *Strategic Plan for Sustainable Development, 2004* through a consultative process involving both cement and concrete industry representatives. The Plan, consistent with the strategies set out in the CSI's *Agenda for Action* established a mission, vision, goals, strategies and initial tactics that focused Canadian industry implementation, participation in joint projects, communications and outreach. These initiatives involved, along with the cement industry members, the concrete product allied associations, end customers and governments.

Through the efforts of members, allies and CAC staff, much progress has been made in the focus areas of the *Agenda for Action* including:[2]

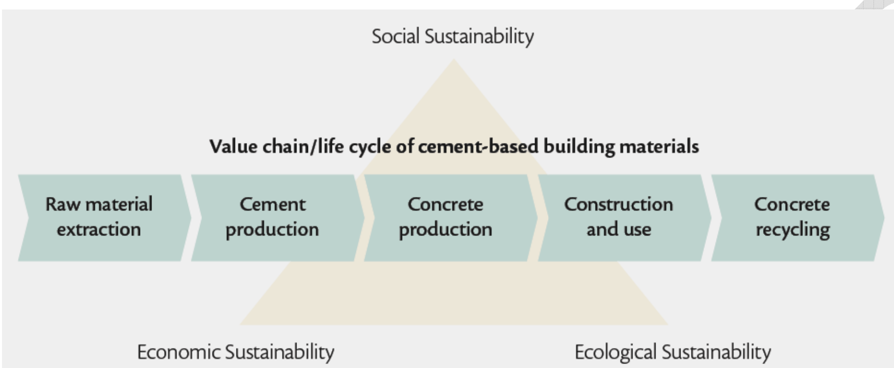
- Reducing CO2 emissions (per tonne of product) through material substitutions and energy efficiency, as well as fuel switching and use of alternative fuels;
- Reducing employee incidence and severity rates since 2000 and making Canadian cement plants amongst the safest to work at;
- Employing almost 5000 people in the Canadian Portland grey cement manufacturers and making charitable donations of more than $1.2 million; and
- Developing innovative, environmentally friendly cement and concrete based applications such as solidification/stabilization of contaminated soils, insulated concrete forms, high performance concrete, concrete pavements, etc.;
- Developed the first biennial Canadian Cement Industry Sustainability Report for 2006; and,

[1] The Cement Sustainability Initiative, Progress Report, WBCSD, June 2005.
[2] See Canadian Cement Industry 2006 Sustainability Report for more details.

- Incorporating Sustainability into the performance objectives of CAC National Office staff.

Through these achievements and other endeavours[3], the Canadian cement industry has come to recognize that Sustainable Development is intimately linked with the cement-concrete-customer value chain (Figure 1). Furthermore, organizations such as CAC, have since acknowledged that to implement initiatives, projects, and coordinate engagements along the value chain requires coordination amongst industry technical, marketing and industry/government affairs (**Figure 2**).

Figure 1 Sustainability cuts across the entire value chain of cement-based materials.



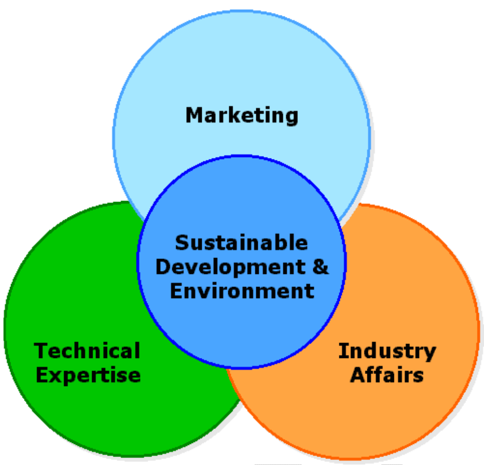


Figure 2. CAC's Sustainable Development efforts are actualized on several levels.

In 2005/06, CAC's SD Vision Committee reviewed progress against the original *Strategic Plan for Sustainable Development (2004)* in an effort to develop more targeted strategies and tactics based on the successes to date, a competitor analysis and new thinking within the industry and value chain. The plan was subsequently updated (this document) to reflect the results of this review.

[3] For example: coordination of Sustainability activities with the Portland Cement Association in the United States; promoting concrete's advantages to allies, builders, planners, policy makers, municipalities, engineers and architects; monitoring of green building activities and rating systems through the Canada Green Building Council; and, collaboration with allies to deliver the *Sustainable Construction Roadshows* in 2004 and 2005.

Elements of the 2007-2009 Strategic Plan

The Strategic Plan for Sustainable Development, 2007-2009 (this document), contains four main elements:

1. **Situation Analysis.** This describes current trends within the industry, its markets and activities of competitors. A Strength, Weakness, Opportunity, Threat analysis (SWOT) table developed from a competitor analysis[4] provides a high level overview of the industry's products, operations, and association activities in relation to the wood, steel and plastics sectors.
2. **Opportunities and Challenges.** This provides a summary of the findings and presents a general direction for the Strategic Plan.
3. **CAC Mission.** This element describes a revised strategic direction (from 2004) of Sustainable Development Activities coordinated by CAC and based on the Situation Analysis. A Sustainable Development Vision and specific Goals are outlined to achieve this Vision.
4. **Strategic Plan.** Provides a high level overview of the key Strategies for 2007-2009

Note: This document is supported by the *Operational Plan for Sustainable Development (2007-2009)* [Michael to provide accurate title/reference] by outlining specific tactics, timelines, budgets and communication activities that support the Strategic Plan.

[4] *An Analysis of Sustainable Development Activities of Competitor Industries* CAC, February 2006.

Situation Analysis

Emerging Trends

Today, a number of sustainability trends and issues are affecting the Canadian cement-concrete industry and its stakeholders along the value chain. First, there is continuing emphasis/pressure/interest from governments, other stakeholders and investors on issues that relate to the *Agenda for Action*, namely:

- **Continued pressure from federal and provincial governments and other stakeholders to reduce GHG and other air emissions**
- **Increase the energy efficiency of cement operations;**
- **Continued pressure for industry reporting and communications; and,**
- **Continued pressure to protect the natural environment and worker health and safety.**

The industry and CAC has many active initiatives to respond, manage and continuously improve industry performance in these areas such as producing the first Canadian Cement Industry Sustainability Report in 2006, conducting research on alternative fuels and energy efficiency and engaging various levels of government.

Second, there are some emerging macro-level trends and issues in Canada that may be influencing the industry's markets or operations, for example:

1. **Increasing efforts to improve urban and regional air quality and ensure clean air.** Canadians, governments and the medical profession are increasingly concerned about the affects of air pollution on human health, productivity and regional economies. Particular concern is being focused on smog and air pollution created by Sulphur Dioxide, Nitrous Oxide, Particulate Matter, and Carbon Monoxide.
2. **Improving the energy efficiency of the built environment**. The increasing cost of fossil fuels is placing pressure on builders, developers, cities, municipalities and industry to improve the design of buildings, infrastructure, homes, facilities and related components/systems.
3. **Increasing attention to creating more liveable, healthy, competitive and sustainable cities, regions and communities.** Cities and their stakeholders have come together to spark a renewed investment in Canadian cities/urban areas, urban transit/transportation systems and increasing their quality of life, competitiveness and environmental sustainability.
4. **Reducing impacts on urban and rural land and water supplies.** The inter-connection between the urban and rural environment (and economies) has heightened efforts by governments, industry and citizens to reduce dependence on landfills, increase remediation and redevelopment of brownfields and safely manage the water supply, storm water, water quality and wastewater.
5. **Customers are looking for more innovative, sustainable solutions.** Engineers, planners, designers, architects, governments, construction companies, developers and investors are becoming knowledgeable about the environmental impacts of materials, life cycle analysis, life cycle costs, LEED™, and Eco-Logo certification.

Here as well, the industry has been making progress through a marketing effort that leverages the concept of sustainable communities and developing collateral materials on concrete pavements that emphasize fuel efficiency, emissions reduction and life cycle cost reduction. The emerging nature of these issues, however, makes it unclear if they offer opportunities or challenges to the cement and concrete industry in Canada.

Industry Analysis

A SWOT analysis was used to gather additional information and analysis in order to prioritize potential future response to the trends described above. The strengths, weaknesses, opportunities and threats analysis (Table 1) summarizes the current situation for cement and concrete and its competitors relating to Sustainable Development.[5] The rows of the SWOT table cover two key dimensions of the industries: the product attributes/characteristics; and, the activities related to production/manufacture, operations, industry leadership and industry associations.

Table 1 Partial SWOT analysis of Sustainable Development related attributes and activities of the industry and its competitors. [6]

		Cement & Concrete	Wood	Steel	Plastics
Strengths	Products	• Durability, strength, hardness • Form flexibility • Integral colour and finish • Some applications can reduce energy consumption (e.g. via thermal mass, concrete highways) • Non-combustible/fire resistant • Use of supplementary cementious materials	• Tensile strength • Renewable resource • Recognized product certifications (e.g. FSC) • Life Cycle Analysis oriented product marketing	• Tensile strength, hardness • Form flexibility • Product/production innovation • Non-combustible/fire resistant • Recognized product certifications (e.g. Eco-Logo for 'The New Steel') • Market value for end-of-life steel	• Product/production innovation • Form flexibility • Integral colour and finish • Flexibility/value of applications • Customization of composites
	Production/ Operations, Industry, Associations	• Reducing CO_2 emission intensity from cement production • Vertical integration of industry • Internationally recognized sustainability initiative (CSI-WBCSD) • Industry wide reporting • Local presence in markets • Use of alternative fuels in production of cement	• Energy efficient production processes • Forests certified to internationally recognized mgmt. standards	• Recycling strategy and infrastructure • Internationally recognized initiative to reduce CO_2 emissions • Highly mechanized production/mfg processes	• Energy efficient production processes • Internationally recognized env. management systems • Highly mechanized production/mfg processes • Governments fund recycling infrastructure

[5] Based on *An Analysis of Sustainable Development Activities of Competitor Industries* CAC, February 2006. Detailed SWOT tables are provided in Appendix 1.
[6] Adapted from *An Analysis of Sustainable Development Activities of Competitor Industries*, CAC, February 2006.

		Cement & Concrete	Wood	Steel	Plastics
Weakness	**Products**	• Low market value at end-of-life • Market/stakeholder confusion around cement vs. concrete	• Rot, mould • Temperature and moisture expansion and contraction • Combustible • Low market value at end-of-life	• Needs protective finishes (for durability)	• Needs stabilizers and fillers (for durability) • Use of toxics in fillers, plasticizers, stabilizers • Combustible • Low market value at end-of-life
	Production/ Operations, Industry, Associations	• Recycling strategy and infrastructure (lacking) • Energy and CO_2 intensive production processes (cement) • Labour intensive construction practices • Leaders in SD are not direct customers (engineers, architects, planners, developers, municipalities)	• Recycling strategy and infrastructure (lacking) • Wood quality decreasing (finite resources of old growth forest) • Labour intensive construction practices • Leaders in SD are not direct customers (engineers, architects, planners, developers, municipalities)	• Energy and CO_2 intensive production processes • Continued environmental fines and infractions • Financial future – environmental performance is low priority	• Recycling strategy and infrastructure (lacking, varies by region)
Opportunities	**Products**	• Product certification (e.g. Eco-Logo, SMART, green concrete) • Higher market value for end-of-life • Innovation in forming, finishing and colouring of concrete • Total/life cycle cost-effectiveness of concrete products • Ability to meet current and new performance based building codes and material standards	•	•	• Developing bio-based plastics

		Cement & Concrete	Wood	Steel	Plastics
Threats	Production/ Operations, Industry, Associations	• New government policy on clean air • Urban densification, smart growth and planning reform • Environmental standards/best practices for quarry commissioning and de-commissioning	•	•	•
	Products	• Off-shore products • Competitor mis-information about cement vs. concrete impacts and benefits	•	•	•
	Production/ Operations, Industry, Associations	• Quarry sites / permits / remediation near urban markets • New government policy	• Increasing land claims by First Nations affect access to resource base	• Rising cost of energy • Labour, health and safety practices of Asian based steel recycling/wrecking operations • Takeovers/acquisitions	• Security of oil supply • Fluctuating oil prices

Opportunities and Challenges

The results of the SWOT analysis when compared with the sustainability trends and issues mentioned above, highlights several key opportunities and challenges for the Canadian cement-concrete industry:

- **Opportunities exist to strengthen and further leverage the energy efficiency, emissions reduction, climate protection and clean air activities of the cement and concrete industry.** The vertical, cohesive integration of the industry, the internationally recognized CSI initiative, the established biennial Canadian Cement Industry Sustainability Report and research/expertise in energy efficiency are key strengths in this area.
- **Opportunities exist to position cement and concrete as preferred, sustainable materials.** Cement and concrete's physical properties, life cycle benefits, flexibility (form, colour, finish), thermal mass, fire resistance, use of supplementary cementious materials (e.g. SMART concrete) and alternative fuels are significant strengths over competitors. Furthermore, cement and concrete's life cycle impacts together with the vertical integration of the industry present possibilities to position cement and concrete as preferred materials for green buildings, sustainable construction and sustainable communities.
- **Opportunities exist to take advantage / influence changes to building codes, urban planning reform and other standards.** The vertical integration of the industry and local presence in urban markets could be leveraged to affect urban densification, smart growth, infrastructure renewal/reinvestment and planning reforms. The local presence and corporate responsibility demonstrated by the industry are also key levers to promote its environmental protection and quarry decommissioning activities while also facilitating access to new quarries/permits.
- **Challenges exist in the industry's end-of-life and recycling strategy.** The low market value and limited reuse opportunities of concrete at its end of life will need to be addressed as urban and rural areas strengthen restrictions on landfills and waste handling costs increase.
- **Continued confusion exists between cement and concrete.** Customers and stakeholders continue to be confused about the differences between cement and concrete and between process vs. fossil fuel emissions in the production of cement. This has led to biases against cement and concrete by end customers and stakeholders and negative comparisons with other building materials.

These opportunities and challenges inform the updated strategic direction of the industry and CAC with respect to Sustainable Development. The key findings above indicate an opportunity for the industry and CAC to build on the successes since 2004, leverage strength of existing relationships, and reaffirm existing initiatives and to take advantage of new opportunities in existing and emerging markets.

Based on this analysis and summary, the following Mission, Vision and Goals and Strategies have been updated from the original *Strategic Plan for Sustainable Development (2004).*

CAC Mission

An organization of cement companies committed to a sustainable industry and improving and expanding the use of cement and concrete in Canada.[7]

Vision

A progressive, responsible, sustainable industry providing innovative solutions for construction and the built environment.

Sustainable Development Goals

We seek to advance the contributions that cement and concrete make to vibrant, healthy sustainable communities, the environment and a competitive economy.[8] The following goals support this:

Goal 1: Foster industry operational excellence.

Support the cement and concrete industry's efforts to consume less energy, use fewer natural resources and reduce air emissions per unit of product (i.e. our ecological footprint and social responsibility.

Goal 2: Provide sustainable and innovative solutions to markets.

Foster the development of concrete products, solutions and systems to meet our long-term vision of positioning cement and concrete as the preferred materials for sustainable construction and a sustainable built environment.

Goal 3: Monitor, interpret and influence key sustainability initiatives.

Proactively monitor, evaluate & affect sustainable development initiatives that influence the built environment (e.g. green building, codes) our industry and our target markets and develop industry understanding of their impacts (both positive and negative), risks, and opportunities.

[7] Developed summer 2006, pending Board of Director approval.

[8] From Mission, Vision, Values and Core Purpose Statements, approved by the NPC in April 2004 and by CAC's Board of Directors in May 2004.

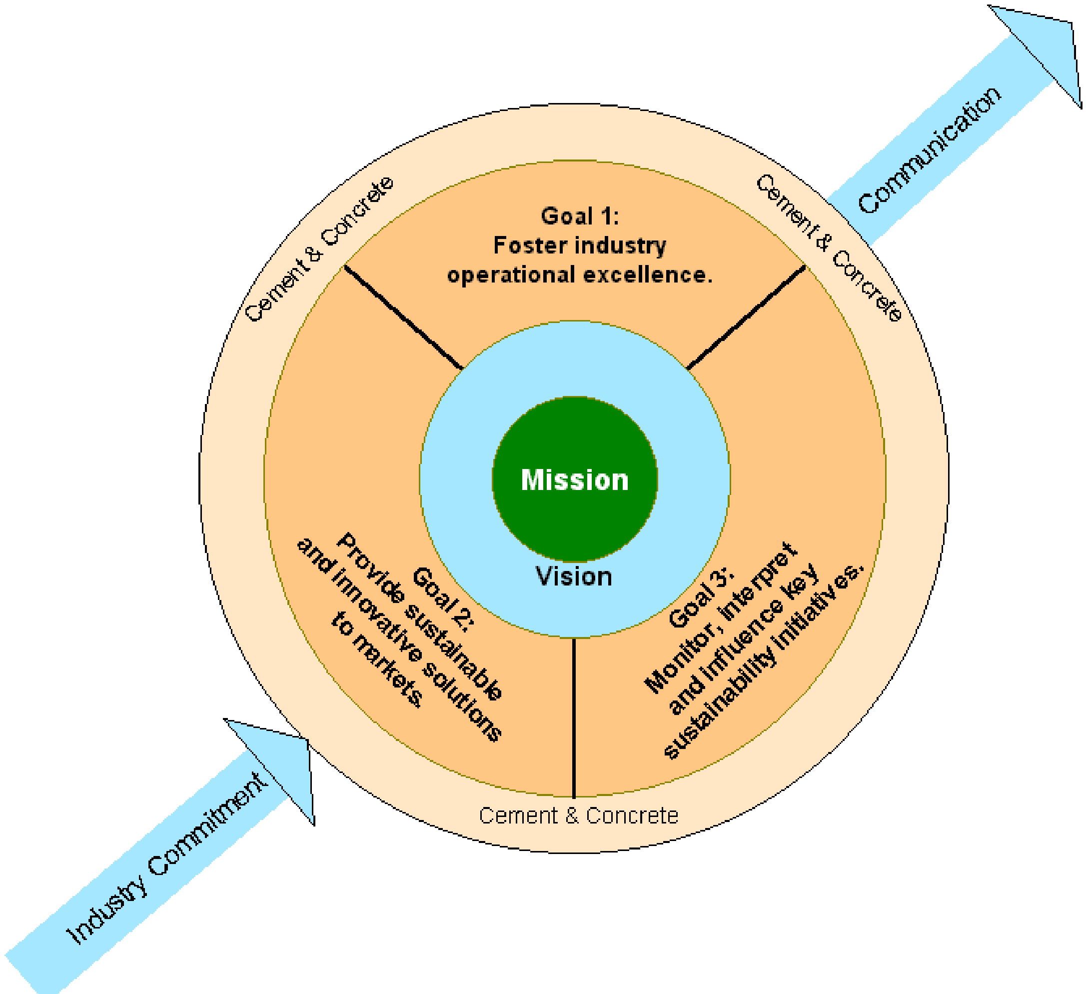


Figure 3. The core elements of the industry's approach to Sustainable Development revolves around its Mission, Vision, Goals and requires commitment and communication from both cement and concrete industries.

Strategic Plan and Supporting Strategies

The following Table 2 provides a high level overview of the key Strategies for 2007-2009 and their link to the industry's overall Sustainability Goals. Details of each strategy are provided in the Operational Plan for Sustainable Development (2007-2009).

Table 2 Overview of the Strategies within the 2007-2009 Strategic Plan for Sustainable Development.

	Strategies	Status*
Goal 1: Foster industry operational excellence.	1 Cement: Reduce industry GHG and other air emissions per unit of product 2 Cement: Increase energy efficiency of industry operations 3 Cement: Continue biennial Sustainability Reporting 4 Cement: Assist in establishing Eco-Logo certification for cement 5 Concrete: Assist in developing industry wide quarry environmental management standard/certification 6 Concrete: Assist with developing and implementing recycling position/policy for all products	
Goal 2: Provide sustainable and innovative solutions to markets.	1 Concrete: Position concrete as the "material of choice" in all markets and particularly for: a) Sustainable communities b) Sustainable construction c) The built environment 2 Concrete: Stimulate innovation in concrete forming, finishing techniques, textures and integral colouring 3 Concrete: Foster total/life cycle cost material selection and decision-making 4 Concrete: Foster awareness that existing solutions comply with codes and standards and stimulate the compliance of new product innovations and solutions	
Goal 3: Monitor, interpret and influence key sustainability initiatives.	1 Cement: Ongoing engagement in WBCSD Cement Sustainability Initiative, PCA activities and dissemination of their progress 2 Cement: Identify and influence public policy, regulations, legislation, guidelines in the areas of: a) Clean air and GHG reductions b) Energy efficiency c) Alternative fuels 3 Concrete: Identify and influence public policy, regulations, legislation in the areas of: a) Urban planning, smart growth, urban densification b) Sustainable communities, sustainable construction and the built environment c) Environmental and wildlife protection (related to quarries) 4 Concrete: Identify and influence development of technical standards, building codes and best practices specifically to integrate: a) Performance based approaches b) Total/life cycle cost approaches c) Balanced financial and environmental decision,-making d) standards, specifications and best practices requiring amendment to meet long-term vision 5 Cement & Concrete: Monitor, evaluate and disseminate SD trends affecting cement, concrete industry and its products (radar function) 6 CAC Internal: Build SD knowledge capacity	

[Previous Strategy Table developed prior to SWOT]

	Strategies	**Status***
Goal 1: Foster industry operational excellence.	1. Cement: Issue identification & information sharing 2. Concrete: Assist with issue identification & information sharing 3. Concrete: Assist with baseline of allied operational performance and ongoing measurement 4. Concrete: Assist with developing and implementing recycling position/policy for all products 5. Concrete: Assist in defining "green concrete"	Updated New for 2006 Updated Updated New for 2006
Goal 2: Provide sustainable and innovative solutions to markets.	6. Cement & Concrete: Integrate the benefits of SEE impacts in promoting product innovations and innovative solutions to markets 7. Concrete: Leverage SD through Partners, Alliances, Regions and Projects 8. Cement & Concrete: Research and Development to support introduction of existing and new concrete product solutions 9. Concrete: Demonstrate innovation by partnering with allies and their customers	Updated New for 2006 Updated New for 2006
Goal 3: Monitor, interpret and influence key sustainability initiatives.	10. Cement: Ongoing Communication to Industry 11. Concrete: Communicate SD stories 12. Concrete: Collaborate with allies on SD 13. CAC Internal: Build SD knowledge capacity 14. Cement & Concrete: Monitor and evaluate SD trends affecting cement, concrete and concrete products (radar function) 15. Cement & Concrete: Build relationships and perceptions of key stakeholders 16. Cement & Concrete: Identify and influence public policy, regulations, legislation, guidelines as well as technical standards, specifications and best practices requiring amendment to meet long-term vision	Updated Updated Updated New for 2006 Updated Updated Updated