

REFERENCE	Canada Fuel Cells
Title:	Canadian Fuel Cell Commercialization Roadmap
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Date accessed:	July 2006
Web Format:	pdf and html
IEA topics covered	V.2 Fuel Cells
Geographical focus:	Canada
Brief Abstract:	Canada is one of the leading developers of fuel cell technology, and this roadmap was the first significant roadmap produced in the sector. The UK fuel cell roadmap, and indeed the formation of Fuel Cell UK, was strongly based on the Canadian experience. The roadmap focuses on commercialisation rather than technical issues, with the aim of maintaining Canada at the forefront of the race to commercialise fuel cell technology.

OUTPUTS	
Short Report?	No
Major report?	Yes
Visualisations?	Yes
Information held on dedicated software?	No
- which package?	

ARCHITECTURE	
Timescales used:	No
Trends and drivers?	Yes
- list	<ul style="list-style-type: none"> • Energy costs • Large consumer demand • Environmental pressures to change energy consumption behaviour • Advanced regulatory environments • Consumer awareness and willingness to be early adopters • Willingness to pay a premium for energy reliability and security <p>Market macro drivers and micro drivers are also identified. Macro drivers are primarily tied to government policies, legislation and incentives. Pollution reduction, greenhouse gas amelioration, the need for energy security, and the need to reduce healthcare costs. Micro drivers are related to the needs of the market and the ability of the fuel cell industry</p>

	to meet these needs. In the demonstration phase, product quality, performance and the need to be seen as a first purchaser can be significant drivers. As products move through each market stage other micro drivers such as proven product quality, cost competitiveness (compared to incumbent technologies) and mass production capabilities come into play.
Enablers?	
- list	
Performance measures/targets?	
- list areas	
Mapping of RD&D activities?	Yes
Critical assessment of capabilities?	Yes

PROCESS	
Methods used:	
- Desk study?	
- Consultation	Yes
- Interviews?	Yes
- Facilitated workshop(s)	No
- Working groups/task force	Yes
- Integrated Process	Yes
Stakeholders engaged:	
- University based researchers	Yes
- Other public sector researchers	Yes
- Business – technology	Yes
- Business – other	
- Government - energy	Yes
- Government – SET	
- Government - other	Yes
- NGOs	
No of people engaged:	47 organisations, around 80 people
Budget (if known):	Not known
Commitment to re-visit?	Not mentioned

ACTIONS IDENTIFIED	
List of actions?	Yes
Actions listed according to timescale?	Not precisely
Actions prioritised?	Yes
Sequencing/dependencies identified?	No
Responsibility for actions identified?	Yes
Types of actions identified:	
- Basic research?	Yes

- list areas	<ul style="list-style-type: none"> • Increase collaborative research and development on materials, component costs and product standardization • Integrate production plans/processes for major cost components to ensure cost curve reduction
- Applied research?	Yes
- list areas	<ul style="list-style-type: none"> • Identify product performance and cost barriers, and develop strategies to overcome them
- Development & demonstration	Yes
- list areas	<ul style="list-style-type: none"> • Develop demonstration projects that showcase fuel cell technology, validate product reliability and output, 'ruggedize' the product and provide data necessary for commercialization • Develop public information programs to educate policy makers, service providers, consumers and students • Establish early purchase programs to encourage product procurement and benchmarking to allow public demonstration of the technology and to provide critical early revenues for the industry • Undertake demonstration projects to support cost and performance value propositions in operating environments and to create an ongoing database of proven fuel cell performance
- Other types of action?	Yes
- list other types	<ul style="list-style-type: none"> • Establish a supply chain forum to develop a process for sharing technical information among fuel cell developers, suppliers and the research community. This will stimulate innovation and further investment in component design, obtain industry agreement on appropriate benchmarks and performance standards, identify gaps in supply chain and develop strategies for enhanced domestic capabilities, and develop component cost reduction programs • Develop financial incentives for fuel cell products and services in order to reduce the risk profile of needed investments in manufacturing capability • Identify and pursue development partners, including exploring the feasibility of strengthening geographic clusters to attract further development, provide tax incentives for research and development, and dedicate matching funds for investments • Develop a human resource strategy to ensure a sufficient supply of skilled resources for the fuel cell sector; develop policies and criteria for training requirements; and undertake a national occupational analysis to

	<p>identify where skills gaps may emerge as the industry grows</p> <ul style="list-style-type: none">• Require that a training component be incorporated into fuel cell demonstration projects and early purchases involving government• Develop curriculum material targeted at post-secondary students, teachers, academic and technical institutions• Develop fueling infrastructures that demonstrate fueling solutions• Ensure Canada takes a lead role in setting codes and standards for fuel, fuel cells and fueling systems
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