

Toyota and Honda had already “sold 60,000 between

development, including a commitment to cut greenhouse gas emissions (Canada, 2005). Nonetheless, the commitments are housed under environmental policy and so take a narrow focus.

Some hope for a more focused approach to promoting alternative energy sources came in 2003 when the federal government released its *Canadian Fuel Cell Commercialization Roadmap*. Unfortunately, because the *Roadmap* is largely absent from broader policy debates it seems to have had little concrete effect. For example, in Ontario, the recent decision to pursue an *Ontario Fuel Cell Innovation Program* fails to incorporate many of the *Roadmap*'s recommendations. There needs to be a real commitment to working together federally and provincially to implement energy policy. We need to commit to goals and timelines that create an environment where business and government invest together with measurable results. We must promote consumer understanding of the social and economic challenges of **not** moving forward with determination and enthusiasm.

Canada must also join in a broader regional, if not global, movement towards a Hydrogen Economy. We need a platform for sharing ideas and fostering an international Hydrogen Economy that promotes sustainable development and trade. Our participation in the International Partnership for the Hydrogen Economy, an initiative of the United States, provides such an opportunity. It is disappointing that this partnership has demonstrated little political impact. Compared to the policies in place and actively pursued in the United States and Europe, Canada can be called a laggard in terms of its alternative energy strategy. Canada lacks a coherent strategy directed at implementing the Hydrogen Economy, whereas both the United States and the European Union have defined strategies. The European Union has even developed a blueprint to make the Hydrogen Economy a reality by 2020. We risk being left behind in an area where we have traditionally had a decided advantage.

Canada's federal structure also means that work could and should be done at the provincial level. If we take Ontario as a case study, we find, as at the federal level, a programmatic approach rather than a coherent strategy towards the development of a Hydrogen Economy. There is a broad commitment to cut greenhouse gas emissions and to achieve sustainable development, however, policies such as the \$3 million annual commitment of the *Ontario Fuel Cell Innovation Program* designed to promote commercialization of the technology, are program-based (Ontario, 2005). This program-centred approach does not match with the overall strategy that is needed in order to achieve the vast social, political and economic change necessitated by a Hydrogen Economy.

Governments have identified that the promotion of alternative energy sources is a necessary component of national development. But why has broader change not been made possible? We need a ***national strategy*** that incorporates local, regional and provincial governments. We must develop the necessary policy, legal and institutional infrastructure required to ensure that the necessary economies-of-scale are achieved so that costs can be driven down. Consumer interest and demand can further encourage developments towards the realization of the Hydrogen Economy. Change can only be achieved if demand pulls it through the system. And demand will only promote change once it is economically feasible.

Harnessing Demand and Pulling Change: The Need for a Network

We must ask ourselves: if the program-based approach is not nurturing success, what needs to be done to define a coherent national strategy that encompasses the economic, social, cultural, environmental and political aspects of the Hydrogen Economy? What are the political hurdles that lie in the way of the Hydrogen Economy?

Successful economic sectors include participants that help define the political and policy agenda through clearly articulated needs and demands. Economic clusters nurture innovative businesses by facilitating joint-investment. These clusters are driven by strategic rivalries and alliances in the business environment, the prevailing demand conditions, the available input resources, and related supporting industries (Martin and Porter, 2001). A thriving economic cluster requires a well-developed policy network. Successful industrial policies that aim to nurture the Hydrogen Economy need a network to link the resources of state and societal actors by mobilizing and coordinating their bureaucratic structures (Atkinson and Coleman, 1989).

Refocusing Government Institutions and Policies

Institutionally, governments need to adopt a more horizontal management approach. All departments and ministries must work together to develop a strategy that addresses the needs of the Hydrogen Economy, from rebalancing federal-provincial relationships to the social welfare implications of shifts in the economic status of individuals and families as they adopt new technology. Industry may require assistance, both as oil producers reorganize to extract hydrogen from carriers and as other businesses begin to develop products that service the fledgling economy. Businesses are often surprised to find financial rewards tied to practices that adhere to sound environmental policy. It is crucial that government work together with industry to better understand how “social and economic processes interact in order to answer when and why firms commit to sustainable development” (Bansal, 2005:214-215).

Politically, the horizontal management of a shift to the Hydrogen Economy is complex and requires bold commitment and leadership. Politicians and the electorate need to understand the complex nature of the new technology and the problems faced by society if we do not move quickly to integrate it into our daily lives. Misconceptions and misinformation must be dealt with promptly, through public education initiatives, so that the full costs and benefits of a move to the Hydrogen Economy can be thoughtfully debated.

Some analysts argue that the move to a Hydrogen Economy is a marathon (Adamson 2004). A long-term strategy requires long-term commitment and long-term political will. To take a rational choice perspective, governments are elected every four years, and so politicians have a limited time frame in which to make meaningful change and to contribute to social, economic and political developments (Downs, 1957). From a political perspective, then, the Hydrogen Economy as it is currently described in the literature (Rifkin 2002; Brown, 2000) is really a policy solution searching for a policy problem (Kingdon, 1995). Change is expected to

be evolutionary, as Rifkin observes: “According to the Energy Information Administration of the United States Department of Energy, global peak production for cheap crude oil is nearly 35 years away, plenty of time to make the transition to alternative energy strategies” (Rifkin, 2002:14). But, if we have learned anything from the experiences of the Industrial Revolution, I would argue that such dramatic economic, soci

(Ontario, 2005). We need to encourage projects like the *Ontario Fuel Cell Innovation Program* throughout the country and work to ensure that they provide a voice for all interested parties in order to achieve effective and coordinated results.

Significantly, citizens are still not wholeheartedly demanding a coherent strategy for sustainable development. Citizen opinions and demands remain issue-oriented and driven by negative preferences. As a result, political reaction to citizen demands remains motivated by negative external factors such as the desire to get rid of smog or decrease gas prices. Changing and harnessing citizens' ideas about sustainable development and the Hydrogen Economy will come from the little things, like a new product that makes life easier. Nurturing public

renewable energy policy. This will help ensure that Canada is the best place in the world to live, work and raise future generations.

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