SDTC 2014 Corporate Plan

Taking Canadian Cleantech **to the World**

SUSTAINABLE DEVELOPMENT TECHNOLOGY CANADA™

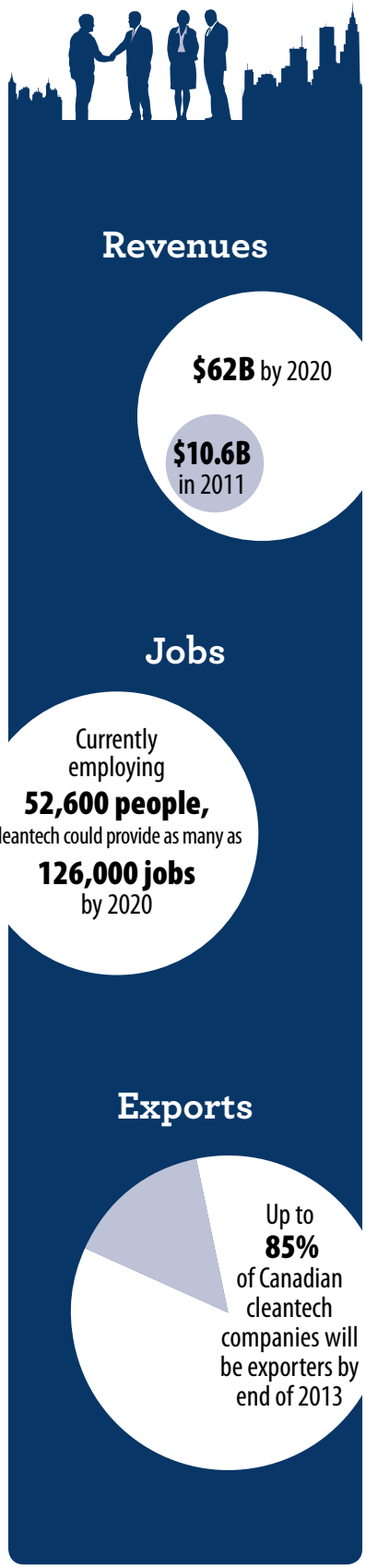
Table of Contents

The SDTC Corporate Plan has been created for the Government of Canada and was published in October 2013. Figures in this document are current as of June 30, 2013, unless otherwise stated.

The SDTC Corporate Plan—Executive Summary is available online at **www.sdtc.ca**.
Hard copies of the SDTC Corporate Plan may be obtained on request.

A Platform to Evolve

Sustainable Development Technology Canada (SDTC) was established by the Government of Canada to serve as the primary catalyst in building a sustainable development technology infrastructure in Canada. From an initial investment of just under $5 million in 2002, SDTC's portfolio has grown to 246 projects across Canada with a total leveraged project value of $2.2 billion. The private sector represents 81% of leveraged funding.

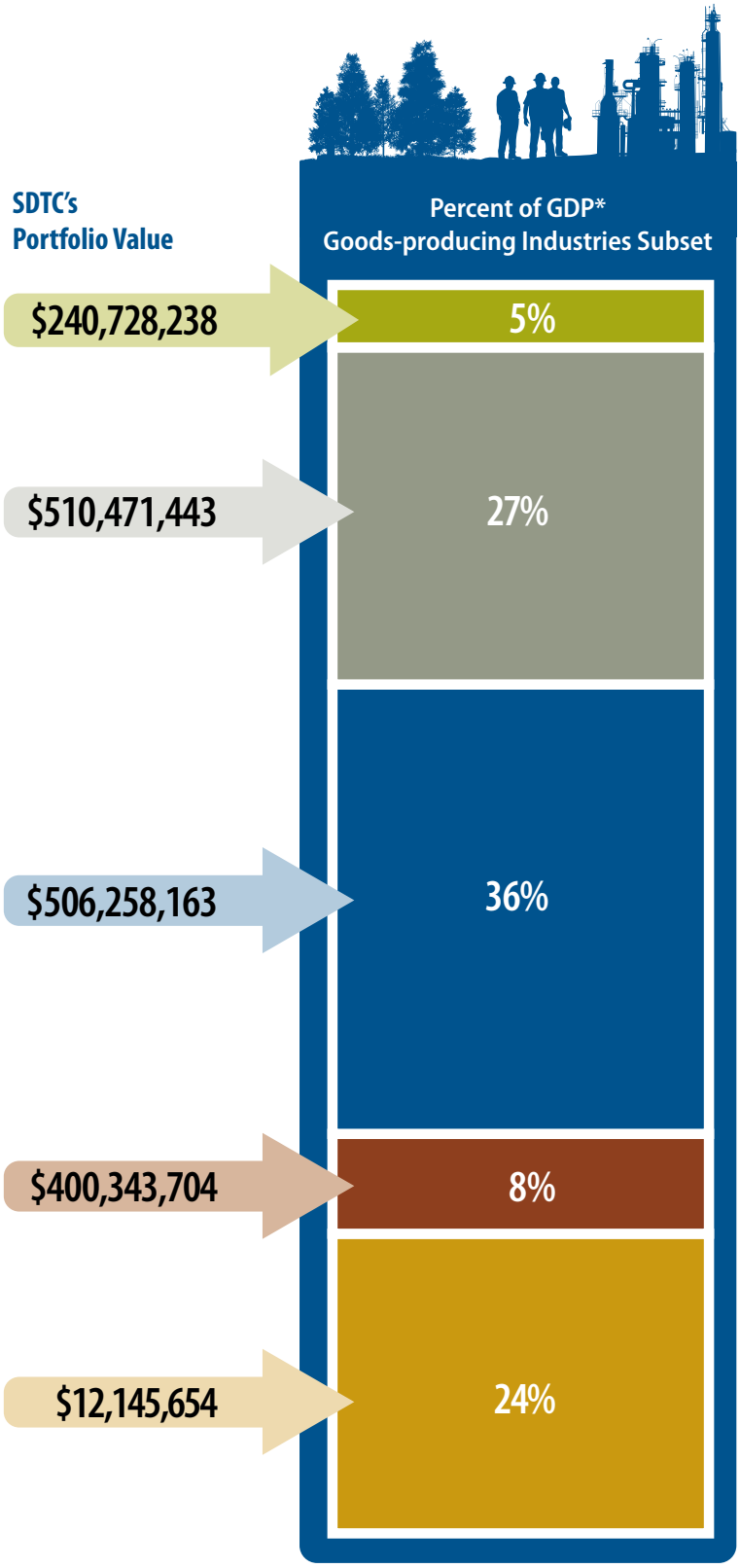


SUSTAINABLE DEVELOPMENT TECHNOLOGY CANADA™

Partnering for real results.

Funded by the Government of Canada | Canada

SDTC Commercializes Technologies Across Canada's Major Economic Sectors



SDTC projects provide technology solutions for major economic sectors in Canada by helping commercialize technology solutions, thereby delivering economic, environmental and health benefits to Canadians in every province of the country. The following sections will discuss the variety of ways in which SDTC provides value to Canada.

Agriculture & Forestry

SDTC Snapshot: Agrisoma has produced a biojet fuel in partnership with Honeywell from a non-food, industrial oilseed grown in Saskatchewan.

Mining, Oil and Gas

SDTC Snapshot: Titanium's oil sands technology reduces water use by approximately 25% and recovers heavy minerals, valued at over $400 million per year.

Manufacturing

SDTC Snapshot: Tenova Goodfellow's monitoring systems are in use in steel mills in Canada, the U.S. and Italy, reducing production times and total energy use.

Utilities

SDTC Snapshot: Tantalus Systems Corp.'s smart grid technologies are giving consumers a real-time measure of their power consumption and allowing utilities to manage operations more efficiently, leading to power reductions of up to 20%.

Construction Industries

SDTC Snapshot: New condo towers in the Toronto area are being built with dPoint's technology, bringing a 65% increase in heating and cooling efficiency.

SDTC-supported technologies also contribute to the competitiveness of services-producing industries—the other major subset of Canada's GDP. SDTC's portfolio value in these industries is $536 million, primarily in transportation and waste management.

Portfolio values as of June 30, 2013.
* Goods-producing industries subset of 2012 GDP. Source: CANSIM table 379-0027.

The Value of SDTC

The Government of Canada established Sustainable Development Technology Canada (SDTC) to serve as the primary catalyst in building a sustainable development technology infrastructure in Canada. From an initial investment of just under $5 million in 2002, SDTC's portfolio has grown to 246 projects with a total leveraged value of $2.2 billion.

By supporting the development and demonstration of clean technologies that address issues of climate change, clean air, and soil and water quality, SDTC delivers a number of significant economic and environmental benefits to Canadians.

Helping Canada seize the global cleantech opportunity

At a time when many sectors of the economy are shrinking or stagnant, the cleantech sector continues to show strong year-over-year growth. Globally, the cleantech opportunity is valued at more than $1 trillion—and that number is expected to triple by 2020. The rapid growth of emerging economies in India, China and elsewhere will lead to continued infrastructure investments, further fuelling the demand for innovative clean energy solutions.

Canada currently has one percent of the global share of the cleantech market. As the country's traditional share of global markets is about two percent, there is room for growth. The cleantech sector is well positioned to realize that growth given its strong export orientation: half of Canada's cleantech revenues come from export markets.

A 2010 analysis determined that SDTC's portfolio of solutions has the potential to address 72 percent of the global market space for sustainable technologies at costs meeting or significantly lower than competing alternatives—meaning SDTC-supported companies are poised to make a significant contribution to Canada's export revenues.

With SDTC portfolio companies maturing, they are better able to tackle export markets. SDTC and EDC have a strategic relationship that sees the partnership assess risk and then support portfolio companies with a menu of risk mitigation instruments to improve access to markets and sales.

SDTC's portfolio companies have excelled at attracting investment from international markets and corporate investors. As of Q2 2013, 55 percent of all follow-on financing raised by SDTC companies came from investors outside Canada, while the amount sourced from international investors has increased by more than 2.5 times over the last four years—growing twice as fast as capital invested from Canadian investors.

As well, SDTC is often requested to attest to the Canadian cleantech capacity at key conferences that attract an international audience, and plays a key role in the Government of Canada's international activities. One recent example was participation in a recent trade mission to India, with approximately a third of the resulting deals secured by SDTC companies.

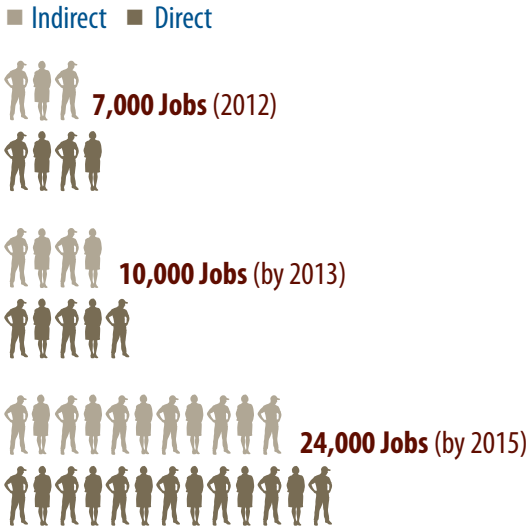
Strengthening Canada's economy

Through SDTC's investment in emerging technologies, the Government of Canada is building a stronger, more competitive and diverse economy.

Canada's cleantech sector generates annual revenues of approximately $10 billion and employs more than 50,000 people, numbers that continue to grow every year. More importantly, these are highly skilled, high-quality jobs that offer median wages 13 percent higher than the average.[1] Further, job multipliers for the cleantech industry exceed 8.7 direct and indirect jobs per initial $1 million demand. Clean technologies have also enabled Canada to attract new domestic and international investment, helping to overcome job losses and revitalize sectors such as the manufacturing industry.

1. Brookings Institute. (2011). Sizing the Clean Economy: A National and Regional Green Jobs Assessment. Retrieved from http://www.brookings.edu/~/media/research/files/reports/2011/7/13%20clean%20economy/0713_clean_economy.pdf.

SDTC Investment Portfolio Job Creation



In recognition of the economic impact SDTC has on communities and companies of all sizes across the country, the Government of Canada announced a new allocation of $325 million in *Economic Action Plan 2013* to enable SDTC to continue its work.

Growing businesses by bringing innovations to market

Small- and medium-sized enterprises (SMEs)—that is, businesses with fewer than 500 employees—drive job creation in Canada. They employ 60 percent of the country's workforce, account for 45 percent of Canada's GDP and are responsible for 75 percent of net job growth.[2]

Because they are relatively mobile and operate in highly competitive markets, SMEs are a strong source of innovation in Canada, making substantial business expenditures in research and development (BERD).[3] However, SMEs often lack the resources and expertise to bring their innovations to market, and it is not until cleantech innovations are commercialized that the majority of their economic and environmental benefits can be realized. That's where SDTC comes in: by providing funding for development and demonstration projects (often when private investors are unwilling to do so because of the level of risk involved), SDTC helps SMEs successfully bridge the commercialization gap. As at December 2012, SDTC has processed funding requests in excess of $5.8 billion from more than 2,400 applications, committing funding to 246 projects.

SDTC's support for SMEs goes beyond funding. To help them commercialize their technologies, SDTC works with its portfolio companies to develop value propositions and prepare business plans. In the project delivery phase, SDTC links companies with consortia partners who provide project funding. As the projects progress, SDTC leverages its network of business relationships to connect technologies to investors, customers and channel partners across Canada and around the world through programs such as the Follow-on Financing and Technology Adoption initiatives.

Of the 87 completed projects as of June 2013, 47 have been shepherded to market entry—either to the point of commercialization or fully into market. (Another 31 projects are in the advanced stages of commercialization.) Despite the fact that SDTC operates at an early stage in the innovation process—which means it takes on higher levels of risk than the majority of the venture industry—this success rate is well above the venture capital standard of 20 percent.

Through SDTC's support, revenue growth by its portfolio companies is expected to grow from $271 million in 2011 to more than $5.2 billion by 2015—and the compound annual growth for SDTC companies is almost twice that of non-SDTC cleantech companies.[4] In short, SDTC companies outperform the market.

2. Public Works and Government Services Canada. (2010). The Importance of SMEs. Retrieved from http://www.tpsgc-pwgsc.gc.ca/app-acq/pme-sme/importance-eng.html.

3. The average R&D investment per cleantech SME was $1.1 million in 2011, up from $818,000 in 2010. These figures compare favourably with the average R&D investment of $1.5 million for publicly and privately held cleantech companies of all sizes.

4. All forecasted data based on recently reported actual and forecasted sales revenue for the SDTC-funded technologies from 22 "In the Market" (registering sales of SDTC-funded technology) projects . This data is undiscounted. It should be noted that it is forward looking and is consequently inherently uncertain.

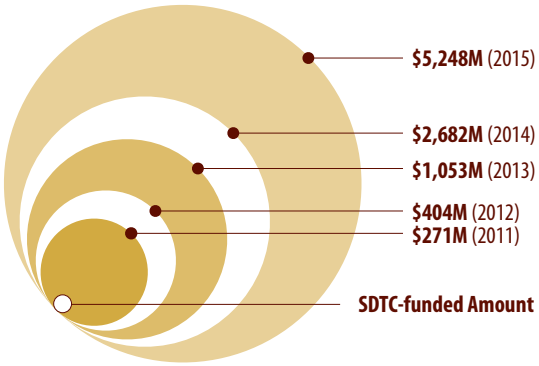
Keeping Canada's natural resources sector innovative and competitive

In 2011, Canada's natural resources sector—including forestry, mining, and oil and gas—generated 15 percent of the country's gross domestic product (GDP) and directly employed some 791,000 people.[5] This sector is increasingly integrating clean technology into its business practices, with resource efficiency—whether water, electricity, waste, land or raw materials—becoming essential to saving money and improving productivity.

SDTC's natural resources portfolio includes $519 million of investments in 199 projects worth a combined value of $2 billion—investments that are ensuring Canada's natural resources sector remains innovative, competitive and environmentally sensitive.

SDTC participated in the 2012 NRCan study, Opportunities for Canadian Energy Technologies in Global Markets, which demonstrated that 86 percent of its portfolio investments have been made in energy-related priority areas (e.g., biofuels, green chemistry, unconventional oil, unconventional gas, enhanced hydrocarbon recovery, carbon capture and sequestration, solar energy, hydro and hydrokinetics, wind energy, smart grid, energy storage, lighting, etc.), and the remaining 14 percent fall into SDTC's soil and water portfolio. Ninety-five percent of all follow-on financing activities have occurred within the identified priority areas.

SDTC Portfolio Companies Projected Revenue Growth



- **Clean energy:** By cleaning up tailing ponds and reducing greenhouse gas and particulate emissions, SDTC technologies are helping address key issues associated with fossil fuel extraction, production and distribution. Approximately 86 percent of SDTC's portfolio touches on clean energy production, generation, transportation or utilization, with investments made in areas such as biofuels, green chemistry, carbon capture and sequestration, enhanced hydrocarbon recovery, solar and wind energy, hydrokinetics, smart grids and energy storage. Thirteen percent of SDTC funds are allocated to technologies that support the extraction and production of cleaner fossil fuels, including processes that reduce water and energy consumption in the oil sands.

  Because SDTC-funded companies work with go-to-market consortia that include technology end-users, many of the major players in the oil and gas industry are directly involved with SDTC-supported technologies. In addition, SDTC partners with organizations such as the Canadian Association of Petroleum Producers (CAPP), the Oil Sands Leadership Initiative (OSLI), Climate Change Emissions Management Corporation (CCEMC), Canada's Oil Sands Innovation Alliance (COSIA), Petroleum Technology Research Centre (PTRC), the Petroleum Technology Alliance of Canada (PTAC) and Alberta Innovates to help its portfolio companies access new markets for their technologies.

5. Natural Resources Canada. (2011). Important Facts on Canada's Resources. Retrieved from http://www.nrcan.gc.ca/stat/index-eng.php.

- **Forestry:** The federal government, through SDTC, has invested $34 million into 12 projects related to forestry practices, with a total leveraged value of $115 million. With SDTC's help, Canadian companies are developing new technologies to seize upon the waste-to-energy and waste-to-value opportunities in the forestry sector. These innovations will allow forestry operations to generate their own clean heat and power from the waste they produce, and enable new revenue streams by converting waste into in-demand products such as chemicals, solvents and consumer goods.

  SDTC was an early contributor to the Forest Products Association of Canada's BioPathways study and has championed the development of biorefineries since 2004. SDTC also partners with organizations such as the Canadian Renewable Fuels Association, BioteCanada, the Canada Wood Council and the Forest Products Association of Canada to further the commercial uptake of SDTC-supported technologies.

- **Mining:** The mining sector contributed $36 billion and 320,000 jobs to the Canadian economy in 2011[6]—and plans to invest a further $140 billion in new projects over the next decade, making it one of the key engines of Canada's economic growth.[7] SDTC has invested in demonstration projects for technologies that will improve the efficiency of extraction processes while protecting workers' lives and reducing the environmental impact of mining operations.

Informing and enabling industry regulation

Two-thirds of the projects funded by SDTC are intended to help companies meet their regulatory compliance obligations: for example, reducing greenhouse gas and particulate emissions, meeting clean water standards, addressing waste management requirements, and remediating oil and gas sites.

The environmental performance facilitated by SDTC technologies also allows governments to set new policies and standards. Through the SD Business Case™ (a proprietary decisionmaking tool developed by SDTC) and stakeholder consultations that bring together technology developers, industry, policymakers and government agencies, SDTC is informing the development of appropriate policy and investment priorities.

Positioning Canada as a leader in next-gen biofuels

The NextGen Biofuels Fund™ (NGBF) supports the establishment of large-scale demonstration facilities for the production of renewable fuels such as cellulose ethanol and biodiesel. Through the NGBF, SDTC is helping develop advanced technologies that will turn forestry, wood and agricultural waste into new revenue streams, diversifying revenues and reducing income volatility resulting from fluctuating commodity prices.

The NGBF has attracted interest from around the world. There are $1 billion worth of commercial biofuels projects competing for the available funding, with an additional $1 billion worth of potential projects at an earlier stage of development that have indicated their interest in applying once they have matured further. Over the last year, three projects have progressed through the NGBF Project Assurance Process, with final investment decisions targeted for 2014.

Through its SD Tech Fund, SDTC has strengthened the Canadian project pool for the NGBF by supporting pre-commercial demonstrations of next-generation biofuels technologies—that is, potential candidates for NGBF funding once they complete their demonstrations and are ready to initiate commercial scale-up. Because traditional financing sources typically avoid first-of-kind demonstrations at any scale, SDTC bridges the financial and market gaps by providing a complete array of demonstration funding, from pilot to commercial.

6. Mining.com. (2012). Mining in Canada contributed $36 billion to GDP, 30,000 jobs, new report finds. Retrieved from http://www.mining.com/2012/02/03/mining-in-canada-contributed-36-billion-to-gdp-300000-jobs-new-report-finds.

7. Ibid.

Maximizing public funding impact by mobilizing private capital

Through its excellence in governance and adherence to best practices in project financing, SDTC has proven to be a trustworthy and responsible steward of public funds. SDTC has undergone extensive audits and evaluations, all of which consistently reaffirm that Canadians are getting optimal value for the investments made in SDTC.

For example, an independent evaluation conducted in 2009 found that SDTC delivered an unprecedented nine times return on investment through economic and social benefits.[8] A follow-up analysis conducted in 2011, which examined 78 companies into which SDTC invested a combined $124 million, determined the net value of the projects' benefits was greater than $3.2 billion—26 times the original investment. Results like these led the Review of Federal Support to Research and Development to recommend in its October 2011 report, *Innovation Canada: A Call to Action*, that SDTC's model be applied more broadly within the government.[9]

SDTC optimizes the value of its public funding by leveraging private sector investment in two critical ways:

- First, by engaging the private sector to form go-to-market consortia, SDTC is able to obtain additional support at a level of one federal dollar for every three non-federal dollars. Of the $2.2 billion in total eligible project value as of June 2013, the federal government contributed $598 million (27 percent) while $1.6 billion was leveraged from project consortia members (81 percent of which came from the private sector). This approach has two strategic advantages: it reduces the risk to public money by ensuring project relevance to customers and the marketplace; and it increases the probability of commercialization by bringing in private sector investors at a very early stage.
- Second, SDTC forms unique relationships with the private-sector investment industry in Canada and internationally. Through SDTC-initiated introductions to downstream investors, 52 of the more mature SDTC projects (i.e., those readying for market) have attracted $2.5 billion in follow-on financing . Therefore, the government's $158 million (representing SDTC's project contribution) has been leveraged almost 15 times—an unprecedented level across the federal government. As the portfolio matures and more projects achieve completion, this leveraged amount will increase significantly.

"SDTC mitigates barriers to innovation by identifying leading private sector technologies, pairing these with utilities willing to help shape pilot applications, providing a funding mechanism that maximizes taxpayer benefits and ensuring that key findings are disseminated through partners such as the Canadian Electricity Association."

Jim Burpee,
President and CEO,
Canadian Electricity Association

"SDTC is playing a fundamental role in building up Canada's capacity for developing groundbreaking technologies. SDTC's model for seeking out and evaluating clean technologies, and then leveraging its extensive industry network to accelerate their commercialization, is well recognized and valued in the industry."

Elyse Allan,
President and CEO, GE Canada

"Canada's world-leading clean technologies, many of which have been commercialized with the support of SDTC, are attracting foreign industrial investment to Canada. Daimler's decision to locate its manufacturing facility in Canada over other international jurisdictions represents a tremendous vote of confidence in the quality, depth and diversity of Canada's cleantech sector."

Prof. Dr. Herbert Kohler,
Vice President of Group Research & Advanced Engineering (e-Drive & Future Mobility) and
Chief Environmental Officer,
Daimler AG

8. Robinson Research. (2009). Evaluation of the SD Tech Fund of Sustainable Development Technology Canada: Second interim report – Detailed report, p. 11.

9. Review of Federal Support to Research & Development. (2011). Innovation Canada: A call to action. Retrieved from http://rd-review.ca/eic/site/033.nsf/vwapj/R-D_InnovationCanada_Final-eng.pdf, p. 110.

As a result of SDTC's private sector savvy and connectivity, the SDTC portfolio represents the largest cleantech portfolio of its kind in the world. SDTC and its partners invest 1.5 times the amount of all other cleantech venture capital investment in Canada—solidifying its position as the 'market maker' for Canadian cleantech.

Enhancing Canada's global reputation

The Government of Canada's investment in SDTC demonstrates its commitment to innovation, efficiency and the environment. This was highlighted by the inclusion of SDTC as a case study in a 2011 report by the Organisation for Economic Co-operation and Development (OECD), Studies on Environmental Innovation: Better Policies to Support Eco-Innovation. This report held SDTC up as a role model for enabling public-private partnerships to promote eco-innovation—lending further international recognition of Canada's leadership in developing and sustaining clean technologies.[10]

As a result of the OECD report, several countries around the world are now engaging SDTC as they look to improve their own innovation ecosystems. For example, after completing a comprehensive international examination of its innovation instruments as it looked to transform its economy, the United Arab Emirates (UAE) selected SDTC from among dozens of peer programs to partner with on this important initiative.

SDTC is often requested to attest to the Canadian cleantech capacity at key international conferences and events. It has also played a key role in many of the federal government's international activities, including participation in a recent trade mission to India and collaborating on a government-led Canada-UAE joint business council.

10. OECD. (2011). Studies on environmental innovation: Better policies to support eco-innovation. Retrieved from http://www.oecd.org/document/34/0,3746,en_2649_34333_47305250_1_1_1_1,00.html, p. 299.

Our Vision: A Platform to Evolve

Recapitalization in 2013 has given SDTC a stable, long-term platform to evolve: to explore new kinds of initiatives, including the creation of sector-focused, industry co-sponsored funds; and to implement mechanisms for doing more with less. SDTC will seize the opportunity to open up export opportunities for Canada and support clean technologies with the potential to create higher paying jobs for Canadians.

SDTC is Developing Canada's Cleantech Ecosystem

SDTC will continue to bring together the players required to realize the country's cleantech potential, and cultivating innovation and building capacity through initiatives such as its Virtual Incubator.[11] SDTC's investments will continue to be directed where they can yield the strongest economic and environmental outcomes for Canada, and to support government priorities such as solutions for the Arctic and in the areas of food production, energy and the environment.

Many SDTC portfolio companies need global partners with large-scale engineering skills to be able to fast-track to market. Over time, SDTC has invested effort in influencing big multinationals to work with SDTC to make this happen. While there has been broad engagement with multinationals in every sector, a heightened attention has come from the aerospace, defence and security (ADS) sector. As defence markets decline globally and existing customers demand greater focus on energy and energy security, the ADS prime contractors have collectively stated goals to rapidly pursue revenue opportunities in clean technology markets.

Based on the advice of two key reports—*Innovation Canada: A Call to Action* and *Beyond the Horizon: Canada's Interests and Future in Aerospace*—SDTC will explore the creation of an ADS Cleantech Institute. The Institute would allow ADS prime contractors to leverage their core strengths while at the same time building key industrial capabilities in Canada. Beyond providing a new alternative for ADS prime contractors to strengthen their benefits to Canada, an ADS Cleantech Institute would have the added benefit of channelling millions of dollars in defence spending toward clean technology projects and the strengthening of Canada's cleantech sector.

SDTC aims to become the partner of choice in the domestic and international cleantech field. To achieve its mission and the overarching goal of creating jobs and profits at home, SDTC must insert its portfolio companies into global value chains. In addition to its strategic partnerships with appropriate multinationals, SDTC is working to partner with Canadian and international innovation players to consolidate skills in domestic jurisdictions and create a platform to larger markets.

SDTC signed an MOU in September 2012 with the United Arab Emirates to help that country transition to an innovation economy where its well-educated citizens will have greater opportunities to apply their skills and contribute. Through that MOU, SDTC will also secure a market for Canadian clean technologies. To date, four Canadian companies have become active in the UAE market.

SDTC Has Built Capacity to Do More with Less

SDTC has explored business models that allow it to further leverage the funding it receives from the federal government, maximizing the returns on that investment and, potentially, recouping some portion of it. One such model is the use of Grants with Warrants, which would provide SDTC with the right to buy a share of a company's common stock at a specified price within a defined period of time, and subsequently sell the shares for a capital gain that would offset the initial public investment.

As the Government's agenda is partially founded on removing the deficit, SDTC aims to deliver more results using less Government money. It has sought funding from industries relevant to Canada's natural resource and energy sectors, to further leverage SDTC's impressive 15x return on public funding results.

11. SDTC provides pre-application coaching to applicants across the country, thereby strengthening the quality of incoming applications and improving the efficiency of the process for both applicants and SDTC.

SDTC Will Continue to Take an Innovative Approach

SDTC aims to build institutions and mechanisms with longer-term, larger-scale capacity for promoting cleantech development, demonstration and commercialization. Ultimately, such institutions and mechanisms will be the cornerstones of a richer, fuller cleantech ecosystem capable of self-sustainingly delivering clean technologies to market.

The recapitalization in *Economic Action Plan 2013* signals the federal government's confidence in SDTC's way of doing business, and gives the organization a 'green light' to continue its important work to help make Canadian cleantech bigger, stronger and globally recognized, and to achieve more results per dollar of federal funding. This corporate plan lays out the steps and actions SDTC intends to take toward realizing its vision in 2014.

1 About the Funds

Sustainable Development Technology Canada (hereafter referred to as SDTC and/or the Foundation) was established by the Government of Canada with the mission to "act as the primary catalyst in building a sustainable development technology infrastructure in Canada."

After a technology leaves the research stage but before it is ready for commercialization, it often encounters a financing gap. Securing funding at this stage is difficult due to financial and market risks created by the unproven nature of the technology. SDTC helps bridge the gap in two ways: first, by providing funding for projects, which helps prove the value of technologies in a 'real-world' demonstration; second, by working with these early stage companies to build their value proposition and strengthen their business.

SDTC provides this funding from one of two funds totalling $1.3 billion. The first is the $915 million SD Tech Fund™, which supports the development and pre-commercial demonstration of clean technology solutions.[12] Established in 2001, the fund supports technologies that address climate change and clean air, water and soil issues. The second fund, established in 2007, is the NextGen Biofuels Fund™ (NGBF), which supports the establishment of first-of-kind large demonstration-scale facilities for the production of next-generation renewable fuels and co-products in Canada. The NGBF is presently capitalized with $375 million.

The Foundation's mandate, governance, operations, performance requirements and accountability are defined in funding agreements that have been executed by the Foundation and the Ministers of Natural Resources Canada (NRCan) and Environment Canada. Under the terms of the funding agreements, the Foundation is required to "provide a corporate plan as well as a summary of the corporate plan annually to the Minister." The *SDTC 2014 Corporate Plan*, of which this report is a summary, fulfills this obligation.

2 Performance Expectations

The Foundation ensures accountability through an extensive performance and evaluation framework known as an evaluation logic model, of which there is one for each fund. This model measures the Foundation's progress toward its primary goals—the overarching mission and three supporting goals listed below—by identifying operational activities and assessing their results. The three supporting goals are as follows:

a) Develop and demonstrate new sustainable development technologies related to climate change and clean air, water and land in order to progress toward sustainable development.

b) Foster and encourage innovative collaboration and partnering amongst diverse persons in the private sector and in academic and not-for-profit organizations to channel and strengthen Canadian capacity to develop and demonstrate sustainable development technologies with respect to climate change and clean air, water and land.

c) Ensure timely diffusion of new sustainable development technologies in relevant market sectors throughout Canada.

12. Note that this represents the principle amount contributed by the federal government. Interest accrued on the fund brings the total funds under management to approximately $935 million.

Compliance, Audit and Evaluation

To ensure transparency and accountability, SDTC is required to undergo a number of evaluation and auditing activities specified in its funding agreements. To date, SDTC has participated in 13 audits and evaluations related to the SD Tech Fund and NGBF, as well as two audits conducted in 2009 and 2010 by the Commissioner of the Environment on Sustainable Development (CESD) on the *Kyoto Implementation Act*. SDTC has received positive reviews from the multiple audits.

A value-for-money (performance audit) undertaken by KPMG on behalf of Natural Resources Canada was completed in July 2011. The audit report attests to the efficiency and effectiveness of SDTC's processes and reports favourably on the reasonableness of SDTC's operating expenses.

SDTC recently participated in the 2012 NRCan study, Opportunities for Canadian Energy Technologies in Global Markets, which demonstrated that 86 percent of SDTC's portfolio investments have been made in energy-related priority areas (e.g., biofuels, green chemistry, unconventional oil, unconventional gas, enhanced hydrocarbon recovery, carbon capture and sequestration, solar energy, hydro and hydrokinetics, wind energy, smart grid, energy storage, lighting, etc.), while the remaining 14 percent falls into SDTC's soil and water portfolio. Additionally, 95 percent of all follow-on financing activities have occurred within the identified priority areas.

The third-party study also highlighted the value SDTC brings to entrepreneurs, including the non-dilutive nature of the funding; the credibility and visibility the funding provided to the market and investors; the level and rigour of the evaluation process; and the level of support SDTC staff provided throughout the process.

3 Actions and Results – SD Tech Fund

Per its evaluation logic model, actions undertaken by the SD Tech Fund can be broken down into nine work scopes or areas of activity, each of which supports one or more of the primary goals of the Foundation. The following sections assess the actions undertaken by the Foundation between July 1, 2012 and June 30, 2013 (the reporting period) in each area of activity.

3.1 Protect SDTC's investment

To achieve its mandate and make prudent use of public funds, SDTC must ensure it invests in the right technologies with the right management under the right terms and conditions. Key highlights this year include:

1. Process and schedule

Results

- Two funding rounds totalling $41 million in allocations.
- 246 projects approved to date for a total of $598 million of SDTC project funding.
- 15 workshops and five webinars delivered to build Canadian applicant capacity.
- Five Virtual Incubator Industry partnering sessions.
- A regular review of projects facing difficulties, with ongoing remedial action affecting $29 million of allocations. These funds were made available for other projects.

Planned Actions

- Funds provided to SDTC as part of *Economic Action Plan 2013* will allow SDTC to conduct two full rounds in the July 2013 to June 2014 timeframe.[13]
- SDTC will continue to build its Virtual Incubator to engage entrepreneurs earlier in the funding cycle and provide focused guidance.

13. Subject to successful execution of a Funding Agreement with the federal government.

2. **Project selection criteria**

Results

- Added 11 new expert reviewers in emerging technology areas.
- Delivered six expert development webinars (two for new reviewers and four regular sessions in connection with the SOI and detailed proposal process) to enhance quality and consistency of external expert reviews.
- Enhanced existing investment risk-management framework to complement and guide due diligence focus areas.

Planned Actions

- Build further capacity in-team by tapping into external advice and collecting market intelligence by leveraging relationships with key investors and corporate partners.
- Enhancement to SDTC's expert roster database for streamlined management and reviewer assignments.
- Implementation of a balanced management capacity scorecard to mitigate management-capacity-related risks and direct applicant coaching as required.
- Implementation of the High Impact Project Index methodology, which helps identify applicants with the most potential for environmental and economic results.

3. **Integrating funding with the financial sector**

Results

- SDTC has continued to significantly leverage private sector financing—with 81 percent of non-SDTC project funding coming from the private sector.
- SDTC-funded companies have attracted 59 percent of the $120 million in venture capital funding invested in the cleantech sector in 2012.

Planned Actions

- Through SDTC's Market Transaction Team (described below), the Foundation will deepen and leverage its relationships with angel investment groups and early stage venture capital investors to facilitate seed investments into new SDTC portfolio companies. This will further reduce contracting time and accelerate the path to market by giving them the capital they need to build their business while de-risking the technology through the SDTC project.

3.2 Project funding

Results

As of June 30, 2013, SDTC has funded 246 projects for a cumulative total of $2.21 billion in total project value. SDTC has met all of its Funding Agreement allocation requirements for climate change and clean air, water and soil, with 89 percent of the portfolio having two or more environmental benefits. SDTC has also met its requirement to provide $50 million in funding to the hydrogen economy and $50 million to cleaner fossil fuels.

Planned Actions

With the funds announced as part of *Economic Action Plan 2013*, SDTC has the ability to conduct two full funding rounds in the July 2013 to June 2014 timeframe.

3.3 Create go-to-market consortia

Results

As of June 30, 2013, SDTC's portfolio comprised approximately 900 consortia partners.

SDTC has also entered into various Memoranda of Understanding (MOUs) with provincial governments. Since 2003, provincial collaborations have resulted in $132 million in funding into 69 SDTC projects.

More recently, SDTC has begun similar MOUs with select Canadian companies, which has already resulted in $37 million in transactions to date.

Planned Actions

Through SDTC's Market Transaction Team, the Foundation will continue to leverage its relationships with global corporate partners to facilitate earlier stage participation in SDTC portfolio companies through mechanisms such as Joint Development Agreements. Furthermore, the Virtual Incubator will be more fully developed into a platform to connect technology needs of leading multinationals and strategic corporate partners to emerging technologies in SDTC's dealflow pipeline. These actions are expected to reduce contracting time and project execution risk.

3.4 Attract private sector capital to SDTC portfolio technologies via Follow-on Financing initiative

Results

SDTC continues to grow its Follow-on Financing initiative, with 56 SDTC companies having raised an additional $2.5 billion from the private sector. This is entirely in addition to 'in-project' funding. In the past 12 months, ending June 30, 2013, follow-on financing levels dropped to $218 million in the face of difficult global capital market conditions. This was a decrease from high levels seen since 2009 but close to the eight-year annual average of $292 million. Further, the international attractiveness of SDTC-funded companies has resulted in 55 percent of this follow-on financing coming from sources outside of Canada.

SDTC continued to be actively involved in venture capital, public market and debt finance events with tailored approaches to each asset class. SDTC conducts its Follow-on Financing activities through a team of professionals across the country known as the Market Transaction Team. The Market Transaction Team executes all of SDTC's market entry transaction assistance initiatives, which include follow-on financing, technology adoption and global export market access as described in the following sections.

Planned Actions

The Market Transaction Team will increase its focus on strategic clean technology markets such as in California, where it will continue its partnership with the C100 and its flagship event '48 Hours in the Valley.'

SDTC will create more targeted events for investors to connect with SDTC portfolio companies such as through our invite-only SDTC Venture Summits, which have been enthusiastically embraced by the venture community.

SDTC will continue its partnership with the TMX Group to build profile and broader investment interest for cleantech in the capital markets, particularly through the annual SDTC TSX Cleantech Investor Day, which brings together more than 100 leading capital market players, such as institutional investors, equity research analysts, investment bankers and venture capitalists.

SDTC will work to get more debt investors off the sidelines and encourage investment in later stage SDTC portfolio companies where the risk profile and maturing commercial needs make debt a better fit and helps lower their cost of capital. Where appropriate, SDTC will provide technical guidance and market expertise to debt investors to expedite underwriting and facilitate more transactions.

3.5 Enabling market entry and commercial transactions via technology adoption

Results

Creating Go-to-Market consortia has always been a core element of SDTC's mandate throughout the project lifecycle, from the Statement of Interest (SOI) phase through to project contracting. SDTC extended this approach to corporate partnering through the formalized Technology Adoption initiative in 2011 to ensure timely diffusion of SDTC's portfolio into the market.

Since its launch, SDTC's Technology Adoption initiative has engaged more than 50 multinational enterprises (MNE) that have subsequently entered into commercial discussions with SDTC portfolio companies.

SDTC's Market Transaction Team—which executes the Technology Adoption initiative—prioritizes and focuses business development efforts on large corporations that have one or more of the following attributes: (a) an open innovation program; (b) a corporate venture arm; (c) aggressive sector leadership. SDTC builds highly trusted relationships with its network of corporate partners who share their technology priority areas. SDTC also makes highly targeted introductions between its portfolio companies, facilitated through the team's growing network of venture capitalists, investment bankers and government partners (e.g., Department of Foreign Affairs, Trade and Development and Export Development Canada).

Over the past two years, the Market Transaction Team has developed a substantial network of corporate and financial contacts that is global in reach. In September 2012, SDTC hosted an invitation-only Cleantech Innovation and Venture Summit (CIVS) in Calgary. The two-day event brought together more than 20 CEOs of SDTC-supported companies, 90 cleantech venture capitalists and technology scouts, and venture arms from some of the world's largest and most strategic global corporations. The event has resulted directly in a $10 million strategic investment into a portfolio company from a large energy corporation, as well as a debt investment in another SDTC portfolio company.

Planned Actions

SDTC will continue to develop and deepen relationships with the most strategic set of global corporate partners that have the demonstrated capacity and interest in working closely with SDTC across our investment lifecycle to get an early peak at cleantech deal flow, participate as consortium members in SDTC-supported projects as well as provide growth capital and execute commercial agreements with later-stage SDTC-supported companies. As described earlier under the Create Go-to-Market Consortia section, the SDTC Market Transaction Team will seek to facilitate earlier stage deals between these corporate partners and our portfolio companies (such as Joint Development Agreements and strategic equity investments) to firmly anchor SDTC portfolio companies into global value chains and facilitate larger commercial agreements over time.

3.6 Access to global export markets and partnership with Export Development Canada

Canada's clean technology industry is export oriented, with 80 percent of cleantech small- to medium-sized enterprises (SMEs) in Canada exporting, compared to just nine percent of SMEs in other sectors. Some of the fastest-growing markets are in developing markets.

Results

In October 2012, Export Development Canada (EDC) and SDTC announced a collaborative agreement to bridge the gap between proven technology and commercial bankability, and to accelerate the entry of SDTC portfolio companies into some of the most strategic global cleantech markets.

EDC and SDTC have complementary approaches that make bringing a technology to market more streamlined and efficient. EDC's programs help incite commercial financing similar to the way SDTC's process de-risks technology development and levers incremental private-sector investment.

Since the agreement was signed, EDC has deployed its range of products that includes bonding, guarantees and financing in commercial projects and transactions that involve seven later-stage STDC companies. SDTC shares with EDC its assessment of technology risks and the capacity of portfolio companies to perform in international markets.

SDTC also works closely with the Department of Foreign Affairs, Trade and Development (DFATD) to support the government's international trade initiatives.

Planned Actions

SDTC and EDC will continue to develop collaborative approaches to supporting the Canadian cleantech sector as well as a more programmatic way of filling finance and advisory gaps that exist for young cleantech firms in emerging markets. For example, SDTC and EDC plan to undertake targeted matchmaking between SDTC portfolio firms and EDC's large network of international corporate clients. They will also work together to identify initial markets where there is a critical mass of foreign project potential and strong IP protection, and where a sufficient number of SDTC companies have capabilities appropriate to the needs of the market.

Additionally, SDTC will work with EDC to market Canadian strengths and capabilities in the cleantech sector to multilateral institutions such as the International Finance Corporation (IFC) and the Inter-American Development Bank (IDB), and to identify opportunities specifically of interest to these multilateral institutions and their priority markets.

3.7 Broker non-portfolio projects

While not all projects meet SDTC's eligibility criteria, they do have a role to play in developing a sustainable technology infrastructure in Canada. SDTC has and will continue to support the entire cleantech sector by identifying hand-off points for non-portfolio companies (to upstream programs such as IRAP, for example), coaching entrepreneurs and providing candid advice where needed.

3.8 Identify solutions to adoption barriers

Results

In the past two years, SDTC participated heavily in the two major Federal Reviews on Innovation: the Review of Federal Support to Research & Development, and the Aerospace Review. Both of the reports issued following these reviews support the use of SDTC as a policy solution to overcome existing commercialization barriers for innovation in Canada. SDTC's input into these major reviews is supported by its portfolio companies and the multinational enterprises that are adopters of these technologies. SDTC has begun catalyzing the integration of several of its companies and technologies as a means to address the need for stronger entities with greater market focus, a need that was identified in both reports.

Planned Actions

SDTC will continue to build integrated and packaged solutions from the best-in-breed portfolio companies, and to identify market gaps and recommend policy solutions through follow-on work of the review panels.

3.9 Workshops and outreach

Results

SDTC remained active in key cleantech-related events, speaking at 20 events between July 2012 and June 2013. SDTC also held 80 meetings with ministers, deputy ministers and other senior government officials to increase their awareness of the importance of the cleantech sector to Canada

Planned Actions

SDTC will continue to engage a broad stakeholder base throughout 2013/2014 to continue the development of a sustainable technology infrastructure in Canada.

3.10 Communications

Results

SDTC remains focused on recognizing Canada's support of the Foundation, which is demonstrated by the nine events with federal ministers and 27 MP visits conducted between July 2012 and June 2013. Further, SDTC appeared in more than 4,000 publications including newspapers, magazines, websites and blogs. These articles appeared across 30 countries, with the majority appearing in Canada, the United States and Europe.

Planned Actions

SDTC will strategically evaluate prospects to reach target audiences and deliver targeted communications using media, functions and events.

3.11 Business case for sustainable development

Results

Between July 2012 and June 2013, SDTC was engaged by two aerospace, defence and security (ADS) industry partners to begin building a comprehensive transition plan for the ADS sector into clean energy. The business case reinforced the need for integrated solutions and identified mechanisms that leverage ADS sector strengths to enhance Canadian SME capacity. It also identified the need for a focused ADS Cleantech Fund that would see matching contributions from the sector.

Planned Actions

SDTC will continue to engage with the ADS sector on this important transition, identifying anchor members for a focused funding initiative. SDTC will also engage other sectors such as the natural gas sector (through the Canadian Gas Association), the electricity sector (through Canadian Electricity Association), and the mining sector (through the Mining Association of Canada) to determine sector priorities.

4 Actions and Results – NextGen Biofuels Fund

Founded in September 2007, the NextGen Biofuels Fund (NGBF) supports the establishment of first-of-kind large demonstration-scale facilities for the production of next-generation renewable fuels and co-products in Canada.

4.1 2012/2013 results

Four Applications for Funding (AFFs) were received between July 2012 and June 2013. The NGBF completed due diligence and approved project development funding for one AFF and additional project development funding for an existing project. SDTC also entered into three Preliminary Contribution Agreements (PCAs) over this period. Negotiations for a fourth PCA agreement were aborted following project cancellation in March 2013. The NGBF continues to receive a steady flow of Indications of Interest (IOI) submissions, with seven received in the reporting period.

The first interim evaluation of the NGBF was completed and finalized over the past year. The evaluation is one of several that the fund is required to undergo to ensure operation of the fund is transparent, as detailed in the NGBF funding agreement. Over the course of the year, quarterly meetings with key departments (NRCan, Environment Canada and Agriculture Canada) were also conducted, and the NGBF participated in several leading industry conferences in Canada and the United States.

4.2 2013/2014 planned actions

In 2013/2014, the NGBF will focus on progressing approved projects to final investment decisions. Two funding decisions for front-end project development funding will also be sought for projects currently under due diligence. The fund will target the progression of existing active IOIs to AFF submissions and development through the Project Assurance Process (PAP). To meet the NGBF disbursement deadline of March 2017 prescribed in the NGBF Funding Agreement, these active IOIs must be converted to applications for funding in the near term and then proceed through the NGBF PAP toward final investment decisions.

Slower-than-expected deployment of the next-generation biofuels industry has affected NGBF disbursement. Due to recent changes in energy markets, the industry climate is less favourable to biofuels deployment than it was previously. Responding to this, SDTC initiated an NGBF strategy update in Q3 2013. The evaluation will assess the current state of the biofuels and biochemical industries in Canada and alignment of the fund with industry development needs.

5 Financial Plan

5.1 Grants

SDTC continues to fulfill its mandate by distributing funds effectively and efficiently. As of June 30, 2013, the SD Tech Fund's investment portfolio had an overall market value of $167 million, while the NGBF was at $58 million. These portfolio balances are comprised primarily of project funding that has been allocated but not yet disbursed, as well as some accrued interest. It should be noted that NGBF funds are obtained from the Government of Canada based on cash flow requirements, per the NGBF Funding Agreement.

During the first quarter of 2013, Natural Resources Canada notified SDTC that $125 million of unused NGBF funds would be returned to the Consolidated Revenue Fund. It is important to note that the NGBF funding available is now $375 million.

The NGBF Funding Agreement with Canada provides for a conditional grant of funds. The schedule for this appropriation includes an initial statutory contribution, with the balance of funds subject to annual appropriations spreading from government fiscal years 2008/2009 to 2014/2015. It is specified that the Minister will allow the funds to be disbursed on-demand according to the annual cash flow requirements identified by SDTC. The Funding Agreement also contains provisions for re-profiling funds forward, subject to the approval of the Minister of Finance. As a result of a slower than anticipated disbursement of the NGBF, unused funds were not carried forward or re-profiled for use in 2013. Additional funds could also be returned in 2014 if unused.

5.2 Budget

A new Funding Agreement for the SD Tech Fund is presently under discussion with the federal government. For the NGBF, the planned operating expenditure budget for 2014 is $3.9 million and the preliminary expenditure budget for 2015 is $4.0 million. The human resources required to fulfill the NGBF Funding Agreement obligations are available to do so cost effectively, because these resources are directed toward the management and operations of the SD Tech Fund for the majority of the time. This reflects that the NGBF is predicated on the existence of the SD Tech Fund and is allocated a portion of SD Tech Fund overhead based on staff usage.

5.3 Allocation and disbursements

In 2012, SDTC disbursed $68 million of allocated funds—the second highest amount of any year. Annual project disbursement payments are projected to be $60 to $65 million in 2013 and between $65 and $75 million for 2014 and 2015.

The disbursement timing is driven by the applicant's ability to meet planned schedules. As of June 30, 2013, the publically stated SD Tech Fund allocation was $598 million. NGBF-approved projects are projected to require $300 million before the end of March 2017, which is the end of the disbursement period as per the NGBF Funding Agreement.

6 Risks and Mitigation

As part of its corporate risk management strategy, SDTC regularly identifies, assesses and monitors existing and emerging business and organizational risks. For each of these risks, SDTC develops and implements a mitigation strategy as needed. Current issues that may pose risks to the SD Tech Fund in the upcoming 12 months (and which are discussed at length in the body of the report) include:

- International competitiveness risk;
- Canadian business productivity risk;
- Results and economic risks to Canada (which has been reduced substantially);
- Regulatory and policy risk (which has also been reduced substantially);
- Evaluation risk; and
- Governance risk.

Current issues that may pose risks to the NextGen Biofuels Fund include:

- Technology and scale-up risk;
- Federal biofuel policy tisk;
- Economic climate risk;
- Regulatory harmonization risk;
- Natural gas risk; and
- Financing risk.

The Foundation will continue to work with stakeholders—including technology developers, industry, financial organizations and governments—to identify these risks and to develop and implement mitigation strategies

A Platform to Evolve

In *Economic Action Plan 2013*, the Government of Canada committed $325 million to SDTC for ongoing investment in Canadian clean technologies. That eight-year recapitalization gives SDTC a stable, long-term platform to evolve and the ongoing means and flexibility to deliver to market Canadian cleantech solutions that will stimulate the economy, generate exports and create high-paying jobs.

SDTC's explicit intent is to contribute significantly, with its partners, to the doubling of Canada's share of the burgeoning global cleantech market. Doing so will produce roughly $62 billion in revenues and employment for 126,000 Canadians by 2020[14]. At a net societal return of 9:1, cleantech delivers some of the greatest benefits per dollar invested by the government.

14. Analytica Advisors.

SDTC Helps Canada Seize Global Opportunities

The recapitalization announced in spring 2013 positions SDTC to increase the value it brings. Going forward, SDTC will explore new kinds of initiatives including the creation of sector-focused funds co-sponsored by industry, and will implement mechanisms for doing more with less, for example by including equity elements and considering accepting donations as a tool for reducing dependence on federal funding. These evolutionary steps will increase SDTC's capacity to help Canada claim its share of the $3 trillion global cleantech market.

That share could be significant. A 2010 analysis of SDTC-supported technologies showed Canada has a significant international market advantage.[15] The solutions in SDTC's portfolio today address 72 percent of the global market for sustainable technologies, at or below the cost of competing alternatives. As a result, SDTC-funded companies have the potential to make a significant contribution to Canada's export revenues.

Exporting Canadian cleantech

Canada's cleantech companies are extremely export-oriented: nearly half their revenues come from exports. Increasingly, Canadian cleantech companies are diversifying their exports, with 55 percent of exports coming from non-U.S. markets.

SDTC portfolio companies have excelled at attracting investment from large pools of capital in international markets, and from corporate investors who regard SDTC-funded technologies as strategically important. As of July 2013, 55 percent of all follow-on financing secured by SDTC companies came from investors outside Canada. Financing from corporate and strategic investors has increased as well, accounting for just under 50 percent of all follow-on financing during this period. These results have been achieved through SDTC's Technology Adoption and Follow-on Financing programs.

SDTC contributes to the Cleantech Strategy of the Department of Foreign Affairs, Trade and Development, and has a strategic partnership with EDC, together providing tools that help Canadian companies attract investment and generate revenues from international sources.

Creating more, higher quality jobs

In addition to opening up export opportunities for Canada, investing in clean technology has the potential to create more and higher paying jobs than other policy options. According to the United Nations Environment Programme Sustainable Energy Finance initiative, cleantech creates up to four times as many jobs per dollar as tax cuts.[16]

In 2011, there were more than 52,600 cleantech jobs in Canada.[17] These are highly skilled, high-quality jobs with median wages 13 percent above the national average.[18] Importantly, clean technology has the potential to bring such higher paying jobs to sectors that have otherwise seen declines in recent years, such as manufacturing.

Job multipliers (the number of spin-off jobs created to support the original job) for the cleantech industry exceed 8.7 direct and indirect jobs per initial $1 million demand. This is higher than in traditional and well-established industries in Canada, as can be seen in Figure 1.

While the job-creation potential of cleantech as an industry is impressive, SDTC-supported firms do even better. From 2008 to 2010, SDTC-funded companies enjoyed employment growth of 10 percent compared to seven percent for non-SDTC cleantech companies.[17]

---

15. Based on foundational global cost curve work by SDTC and McKinsey and Company, which combined SDTC's proprietary database of technology benefits, market uptake statistics and competitive analysis with McKinsey and Company's data.

16. SEF Alliance (2009) "Why Clean Energy Public Investment Makes Economic Sense: the Evidence Base " http://www.sdtc.ca/uploads/documents/en/UNEP%20SEF%20Alliance%20Report.pdf, p 12.

17. Analytica Advisors. Cleantech is a very broad, heterogeneous grouping of technologies that includes energy and water technologies that increase efficiency and performance in important markets—such as oil and gas, mining, forestry, agriculture, power generation and waste management—and for industrial/commercial/domestic end uses. Further, as these technologies deliver environmental as well as economic benefits, they play an important role in the health of all Canadians.

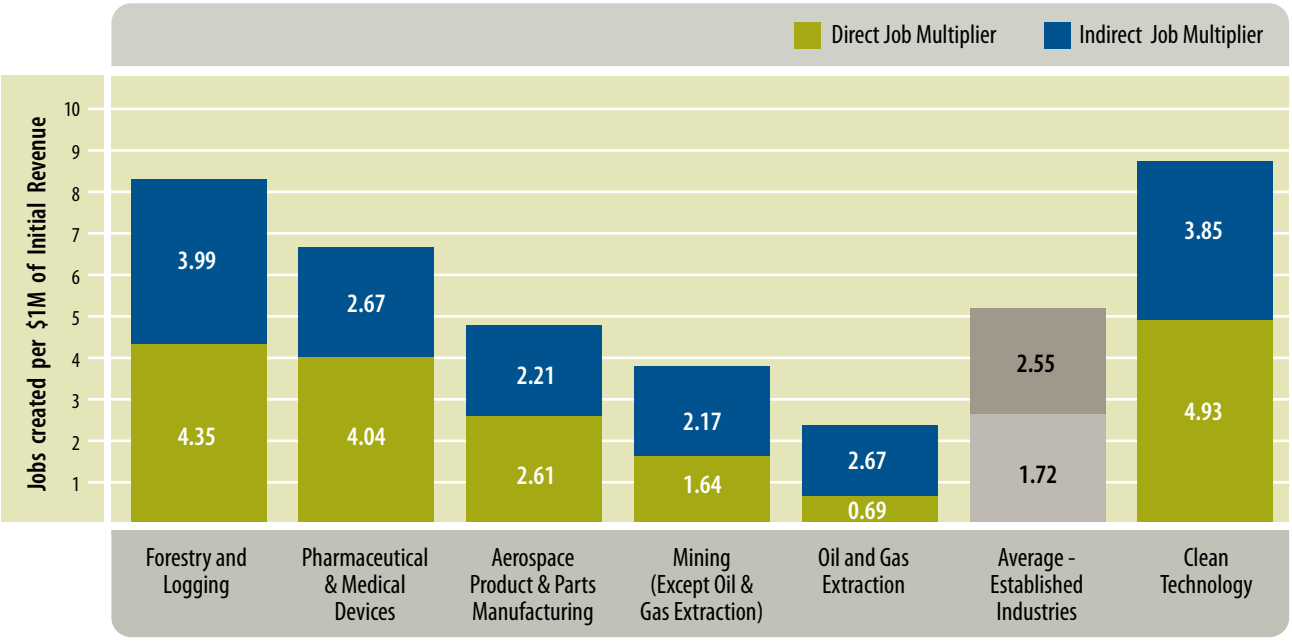
18. Brookings Institute. (2011). *Sizing the Clean Economy: A National and Regional Green Jobs Assessment.* Retrieved from http://www.brookings.edu/~/media/research/files/reports/2011/7/13%20clean%20economy/0713_clean_economy.pdf.

SDTC is Building a Healthy Cleantech Ecosystem

SDTC has worked actively since its creation in 2002 to develop Canada's cleantech ecosystem, bringing together all the players required to realize the country's cleantech potential. It continues to require every project to involve representatives from the entire supply chain: researchers, product developers, manufacturers, distributors, retailers and end customers. SDTC will continue to cultivate innovation and build capacity through initiatives such as its Virtual Incubator.

Figure 1:

Direct and Indirect Job Multipliers for Established Industries and Clean Technology



The cleantech ecosystem creates chains of opportunity for technology developers to drive innovations to market, and helps build their capacity to promote Canadian clean technologies, identify the economic and environmental strengths of sustainable development projects, and define the investment potential of clean technologies for venture capital financiers.

As SDTC evolves, it will strengthen and enrich the country's cleantech ecosystem by introducing new mechanisms that allow the sector to sustain itself and deliver increasingly valuable results.

SDTC is Focused on Results

Cleantech isn't about paper studies. It is about the real-world application of technologies that deliver measurable economic and environmental impacts as well as strong returns on investment.

SDTC concentrates on supporting the commercialization of Canadian clean technologies that have significant potential for market success. Its aim is to reap the maximum possible returns on public funds invested. While SDTC pulls innovation from a broad, diverse range of technologies and markets—for applications in both urban and rural settings—it selects projects that address needs identified by businesses paying economic rent in Canada.

For example, the largest proportion of SDTC's portfolio, $451 million, is dedicated to projects for the manufacturing sector, which is the biggest single contributor to Canadian GDP of all goods-producing industries. SDTC develops business cases using the proprietary SD Business Case™ model it created to assess opportunities in key sectors and pinpoint where investments will yield the strongest outcomes.

At the same time, SDTC investments support government priorities for energy, the environment and the economy, from solutions for Canada's Arctic to technologies that support food production and distribution. Today, 85 percent of SDTC's currently allocated funds have been directed to energy-related projects.

SDTC is Evolving to Address Areas of Potential in Aerospace, Defence and Security

Many SDTC portfolio companies need global partners with large-scale engineering skills to get to market faster. SDTC has invested effort in influencing big multinationals to work with it to make this happen. While there has been broad engagement of multinationals in every sector, heightened attention has come from aerospace, defence and security (ADS), which is shifting much of its focus onto clean energy.

Two recent, high-profile Canadian reports have issued recommendations to strengthen Canada's position in this sector: *Innovation Canada: A Call to Action,* and *Beyond the Horizon: Canada's Interests and Future in Aerospace*.

The advice of these two reports coincides with SDTC's already self-identified role in the ADS arena, part of which will involve exploring the creation of an ADS Cleantech Institute. This Institute would allow ADS prime contractors to leverage their core strengths and build key industrial capabilities in Canada.

Beyond providing a new alternative for ADS prime contractors to strengthen their benefits to Canada, an ADS Cleantech Institute would channel millions of dollars in defence spending toward clean technology projects and the strengthening of Canada's cleantech sector.

Partnering for Real Results

SDTC aims to become the partner of choice in the domestic and international cleantech fields. This includes providing expertise, derived from lessons learned and honed through years of experience, in key areas such as defining technology frameworks, picking the highest-potential companies to deliver economic and environmental results, de-risking technology barriers for portfolio companies, building clean technologies as businesses, engaging investors, and getting companies into the market.

To achieve its mission and the overarching goal of creating jobs and profits at home, SDTC must insert its portfolio companies into global value chains. In addition to partnering strategically with appropriate multinationals, SDTC is working to partner with Canadian and international innovation players to consolidate skills in domestic jurisdictions and create platforms to larger markets.

One example of an international partnership with benefits for Canada is SDTC's MOU with the United Arab Emirates, signed in September 2012. The focus of the agreement is to help the UAE transition to an innovation economy where its well-educated citizens will have greater opportunities to apply their skills and contribute. At the same time, it will provide the opportunity for SDTC to secure a market for Canadian clean technologies. To date, four Canadian companies have become active in the UAE.

SDTC Has Built the Capacity to Do More with Less

SDTC has explored business models that allow it to further leverage the funding it receives from the federal government, maximizing the returns on that investment and, potentially, recouping some portion of it.

One such model is the use of Grants with Warrants, which is essentially an equity option on funded companies. A warrant would provide SDTC with the right (but not the obligation) to buy a share of a company's common stock at a specified price within a defined period of time. This purchase would be made only if the share price rose above a predetermined level, in which case SDTC could subsequently sell the shares for a capital gain that would offset the initial public investment.

This approach was a core component of SDTC's Budget request in 2012. Given that the government's agenda is founded partially on removing the country's deficit, funding for departments and agencies is clearly limited. SDTC's philosophy is to deliver more results using less government money.

To this end, SDTC has sought funding from industries linked to Canada's natural resource and energy sectors. These monies would be managed alongside government funds using exactly the same processes, leveraging even further SDTC's impressive return on public funding. A close working relationship with industry will improve market uptake of SDTC-funded technologies, further strengthening results. Work on these funds, as described in SDTC's 2013 recapitalization requests, has and will continue—demonstrating a rapid response to the government's approach in these fragile economic times.

SDTC Will Continue to Take an Innovative Approach

SDTC aims to build institutions and mechanisms with longer-term, larger-scale capacity for promoting cleantech development, demonstration and commercialization. Ultimately, such institutions and mechanisms will be the cornerstones of a richer, fuller cleantech ecosystem capable of self-sustainingly delivering clean technologies to market.

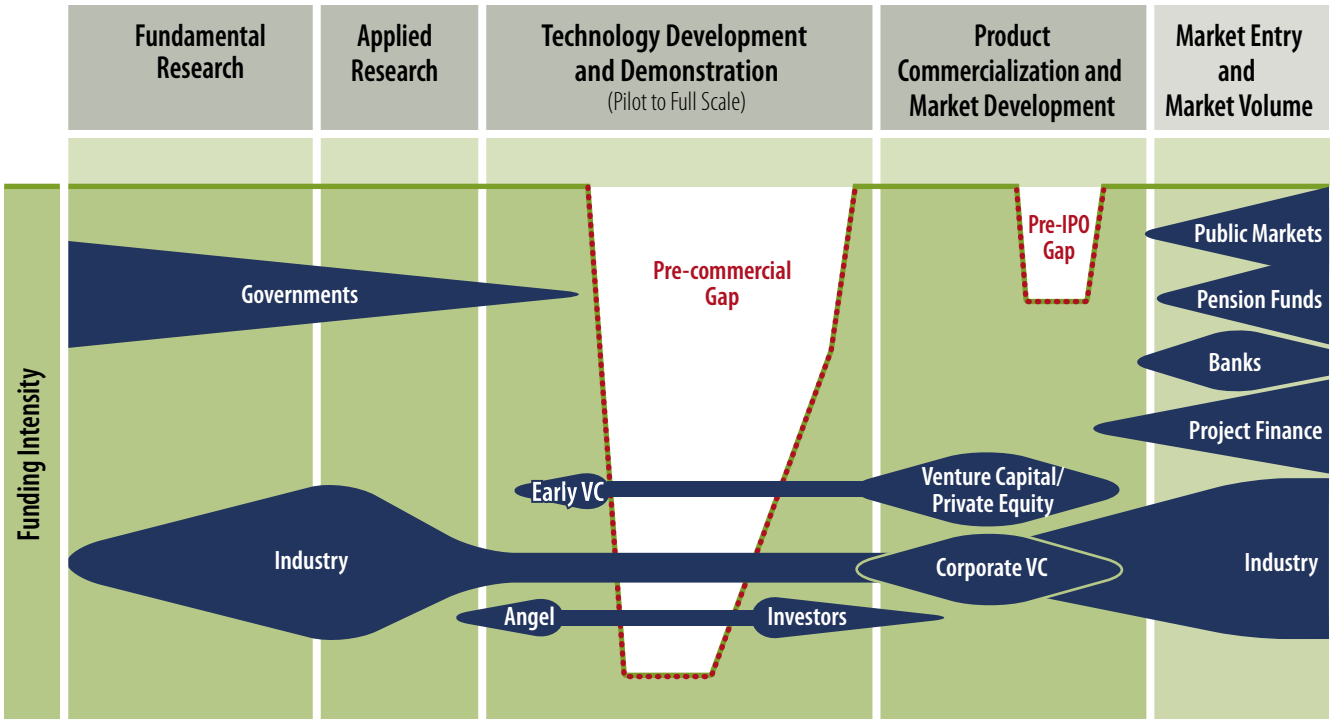
The recapitalization in *Economic Action Plan 2013* signals the federal government's confidence in SDTC's way of doing business, and gives the organization a 'green light' to continue its important work to help make Canadian cleantech bigger, stronger and globally recognized, and to achieve more results per dollar of federal funding. This corporate plan lays out the steps and actions SDTC intends to take toward realizing its vision in 2014

1 SDTC Overview – Mission and Objectives

Sustainable Development Technology Canada (hereafter referred to as SDTC and/or the Foundation) was established by Bill C-4 of the First Session of the 37th Parliament of Canada and was incorporated as a non-profit corporation on March 8, 2001. Its mission is to "act as the primary catalyst in building a sustainable development technology infrastructure in Canada."[19]

Every new invention moves through a set of distinct stages; between the research and commercialization stages are the development and demonstration stages, which are often characterized by a financing gap (see Figure 2). For developers of clean technologies—that is, products and processes that contribute to cleaner air, water and soil; mitigate climate change; and improve the productivity and global competitive of Canadian industry—it can be difficult to secure funding at these stages because of the financial and market risks that arise due to the unproven nature of the technology. This gap is a significant barrier to market entry for many Canadian developers of sustainable development technologies.

Figure 2:
The Pre-commercial Funding Gap

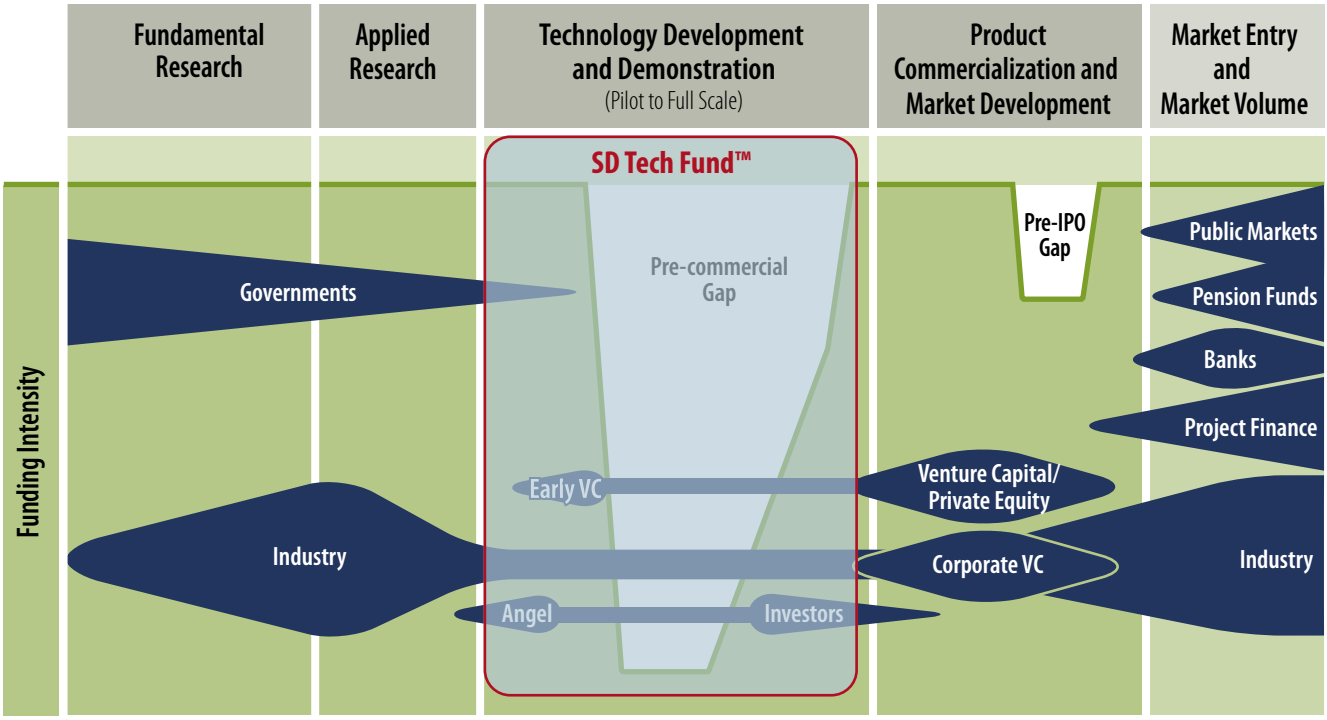


As a consequence of the lack of maturity of new technologies and the risk-aversion of the financial sector, there is a structural break in the innovation chain. This occurs in the stage prior to commercialization and market development funding. SDTC classifies this as the "Pre-commercial Gap". There is a smaller gap in the chain that occurs prior to standard bank financing. SDTC classifies this as the "Pre-IPO Gap".

SDTC bridges that funding gap by helping innovators carry out critical 'real-world' demonstrations of their clean technologies, which are essential to attracting follow-on financing and achieving market entry. SDTC accomplishes this by providing funding for commercial demonstration projects from two separate funds totalling $1.09 billion. These funds are complementary and address sequential gaps in the innovation chain.

19. In the context of this discussion, "sustainable development" refers to development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainability is based on three mutually reinforcing considerations: environmental protection, economic development and social development.

Figure 3:
SDTC's Role in Bridging the Pre-commercial Funding Gap



SD Tech Fund™ supports the development and pre-commercial demonstration of clean technology solutions: products and processes that contribute to clean air, clean water, clean soil and that address climate change while improving the productivity and the global competitiveness of Canadian industry.

First is the SD Tech Fund™, which supports the development and pre-commercial demonstration of clean technology solutions. Under SDTC's present Funding Agreement (Funding Agreement Four), the SD Tech Fund is to direct $440 million to support technologies that address climate change and clean air issues.[20] The remaining $150 million is intended to support technologies that address issues pertaining to clean water and soil.

The second fund is the $375-million NextGen Biofuels Fund™ (NGBF), which supports the establishment of first-of-kind large-scale demonstration facilities for the production of next-generation renewable fuels and co-products. These projects have very high capital expenditure (CAPEX) requirements and are therefore at greater risk of facing financial uncertainty, making it particularly difficult to secure financing in the development and demonstration phases (see Figure 4).

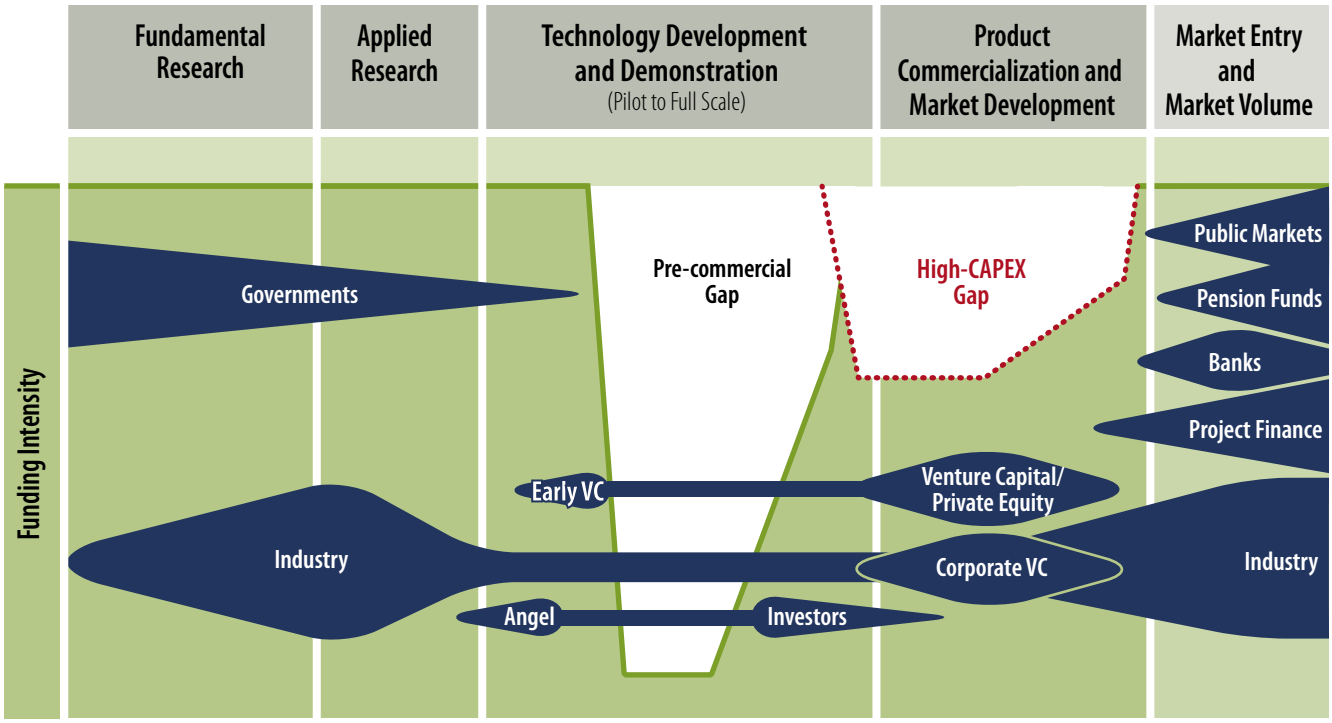
The NGBF helps large-scale demonstration projects overcome the high-CAPEX funding gap (see Figure 5). The fund will also help increase the impact that the production and use of renewable fuels has on sustainable development, and will help Canada sustainably meet potential future expansions of its renewable fuels standard.[21] Another purpose of the NGBF is to encourage the retention and growth of technology expertise and innovation capacity for the production of next-generation renewable fuels in Canada.

Although it is funded by the Government of Canada, SDTC has an independent governance structure and is accountable to Parliament for the grants it receives through Natural Resources Canada (NRCan). The Foundation's mandate, governance, operations, performance requirements, accountability and relationship to the Government of Canada are defined in the funding agreements that have been executed by the Foundation and the Ministers of both NRCan and Environment Canada. *Because the vast majority of SDTC's lead companies are small-to-medium enterprises (SMEs), the Foundation's work has considerable relevance to innovation and business; as a result, it is also influenced by Industry Canada's policy initiatives.*

20. It should be noted that In June 2010, SDTC received Treasury Board approval to increase allocations to clean climate/clean air technologies from the original amount of $350 million to $400 million and to reduce clean water/clean soil technology allocations from $200 million to $150 million. This re-allocation was made at the request of SDTC in response to significant market demand for the SDTC funds to address climate change and clean air technologies.

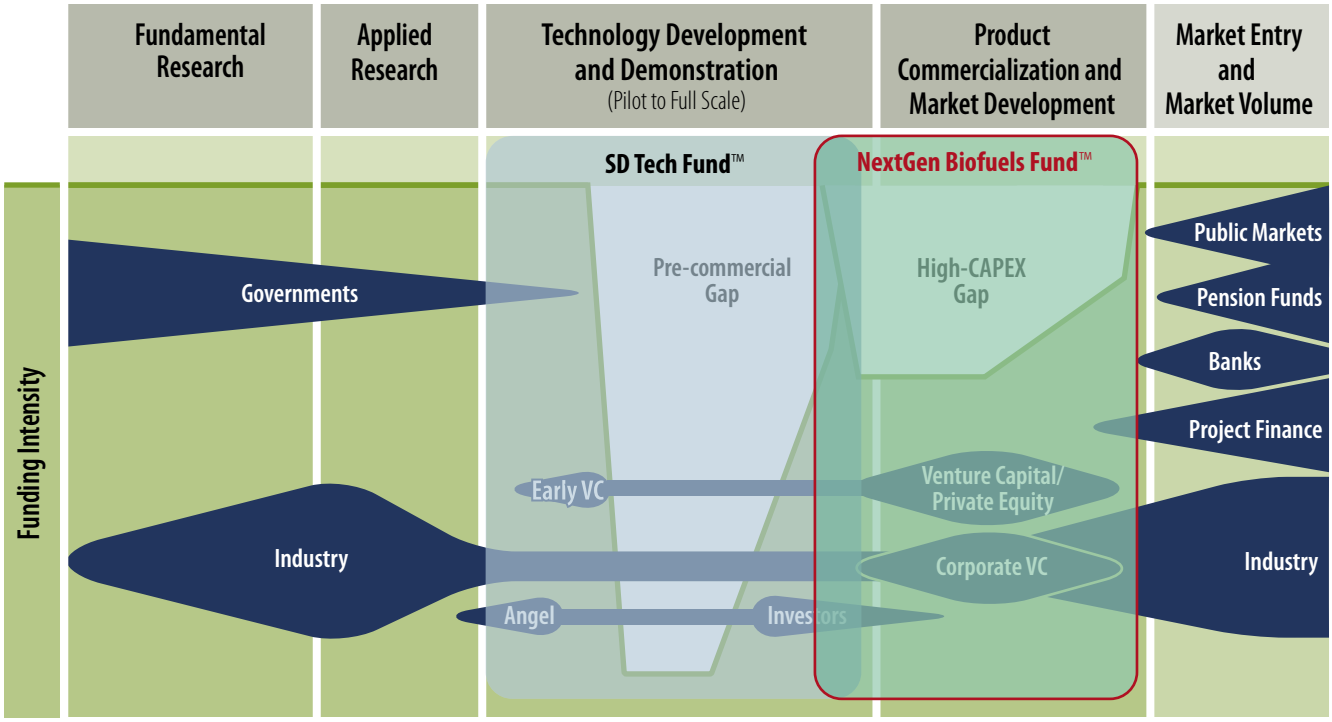
21. The Renewable Fuels Regulations, published on September 1, 2010 in the Canada Gazette, Part II, require an average renewable fuel content of five percent in gasoline starting December 15, 2010. The Regulations also require fuel producers and importers of diesel fuel and heating distillate oil to have an average annual renewable fuel content equal to at least two percent of the volume that they produce and import.

Figure 4:
The High-CAPEX Funding Gap



These occur in the sectors of energy exploration and production, power generation, energy utilization, transportation, agriculture and forestry, mining, and waste management. Historically, SD technologies were considered to be more capital-intensive with longer development cycles than other technologies.

Figure 5:
SDTC's Role in Bridging the High-CAPEX Funding Gap



NextGen Biofuels Fund™ supports the establishment of first-of-kind commercial-scale demonstration facilities for the production of next-generation renewable fuels and co-products from non-food feedstocks.

1.2 Mission statement and supporting goals

The mission of the Foundation is to "act as the primary catalyst in building a sustainable development technology infrastructure in Canada." Underlying this objective is the intent for the Foundation to become the nationally recognized centre of a network of stakeholders and partners who work in the area of sustainable technology development. Inherent in this is SDTC's role in the demonstration and diffusion of Canadian innovations. The Foundation's purpose is to both fund projects and build a critical mass of capability in this area of innovation, thereby contributing to the creation of a cleantech infrastructure.

The intent behind the mission statement is to build a critical mass of sustainable development technology organizations. These organizations include entrepreneurs and innovators from all sectors who create new sustainable development technologies and are working to transform the marketplace to increase the number of adopters and users of these technologies. Through these efforts, Canada will become more environmentally sustainable and gain economic strength, achieving benefits that flow to back to the general public.

The Foundation's overarching goals consist of the mission statement described above as well as the three elements cited as in Article 2 of the current Funding Agreement:

- **Goal A:** Develop and demonstrate new sustainable development technologies related to climate change, clean air, clean water and clean soil in order to make progress toward sustainable development.
- **Goal B:** Foster and encourage innovative collaboration and partnering amongst diverse persons in the private sector and in academic and not-for-profit organizations to channel and strengthen the Canadian capacity to develop and demonstrate sustainable development technologies with respect to climate change, clean air, clean water and clean soil.
- **Goal C:** Ensure timely diffusion by funded recipients of new sustainable development technologies in relevant market sectors throughout Canada.

1.3 SDTC's corporate plan

Under the terms of the Funding Agreement, the Foundation is required to "provide a corporate plan as well as a summary of the corporate plan annually to the Minister."[22] This report is intended to fulfill this obligation and includes a number of items outlined in the Funding Agreement, including:

a) Short- and medium-term outcomes according to the Foundation's mandate;

b) References to the Foundation's previous year's corporate plan, including results of initiatives introduced in that plan;

c) Details of the Foundation and its management, including forecasted expenditures and revenues;

d) Planned activities for the upcoming year and their anticipated results; and

e) Risk assessments and mitigation strategies.

SDTC's approach in the development and execution of this report reflects its intention to be transparent in its actions and performance, accountable to the government and the public, and responsible for maintaining uncompromising corporate governance. These values are ingrained in the organizational culture of the Foundation and reflect its commitment to ensuring the effective and efficient use of public funding.

22. See Funding Agreement Three Pertaining to the Sustainable Development Technology Fund, Section 10.06.

2 Performance Expectations

This report reflects SDTC's commitment to the effective, efficient use of public funding through demonstrable transparency, accountability and good governance. The Foundation measures its performance against these core values through the implementation of internally driven evaluation mechanisms as well as through audits and evaluations.

2.1 Success criteria and measurements: Evaluation logic model

Funding agreements require that the Foundation be accountable to the Government of Canada. This is ensured through performance and evaluation frameworks known as 'evaluation logic models' that measure the Foundation's progress toward its primary goals by tracking the outputs and outcomes of its activities.

The evaluation logic model for the SD Tech Fund (Figure 6) is organized into nine elements or work scopes, each intended to contribute to the fulfillment of one or more of SDTC's primary goals. Each work scope is then broken down according to the actions taken within it and assessed according to the results of those actions.

Similar to the SD Tech Fund, the NGBF has an evaluation logic model (see Figure 7) that serves as an operational framework and planning tool to describe the steps taken to achieve SDTC's goals. The activities depicted within the evaluation logic model are organized into seven elements or work scopes, each of which is associated with one or more of the NGBF's goals.

The logic models illustrate how each activity contributes to the fulfillment of the overarching mission and three supporting goals, and depict the links between the activities and their corresponding long- and short-term outcomes. As time progresses, these outcomes are measured to determine SDTC's success in achieving its purpose and mission. The evaluation logic models are also used at the operational level to help define the roles, responsibilities, and annual goals and objectives for SDTC management and staff. Outputs follow activities in the evaluation logic model.

2.2 Compliance, audit, evaluation and public accountability

To ensure transparency and accountability, SDTC is required by its Funding Agreement to undergo a number of auditing and evaluation activities. Additionally, the government periodically undertakes other non-specified evaluations as part of specific or general assessments. SDTC has received positive reviews from the multiple audits and evaluations of the Foundation, SD Tech Fund and NGBF, and as a participant in government-wide evaluations:

SDTC:

2005: Compliance audit (initiated by NRCan)

2006: Performance audit by the Commissioner of the Environment and Sustainable Development (CESD), a division of the Office of the Auditor General (OAG)

2006: OAG audit: *Role of Federally Appointed Board Members – Sustainable Development Technology Canada*

2010: KPMG value-for-money (performance) audit (initiated by NRCan, completed in 2011)

2012: NRCan study: *Opportunities for Canadian Energy Technologies in Global Markets*

2012: NRCan review of SDTC results as part of the 2013 Budget submission

Figure 6:
SD Tech Fund Evaluation Logic Model

Mission Statement

Goal A

SDTC will act as the primary catalyst in building a sustainable development infrastructure in Canada

Purpose of the Fund

Goal B

Develop and demonstrate new sustainable development technologies (SDTs) related to climate change, clean air, clean water and clean land, in order to make progress towards sustainable development.

Work Scope:

1 2 3 9

Goal C

Foster and encourage innovative collaboration and partnering amongst diverse persons in the private sector and in academic and not-for-profit organizations to channel and strengthen the Canadian capacity to develop and demonstrate SDTs with respect to climate change, clean air, clean water and clean land.

Work Scope:

3 4 5 7 8

Goal D

Ensure timely diffusion by funded recipients of new SDTs in relevant market sectors throughout Canada.

Work Scope:

1 3 4 5 6 7 8 9

Work Scope

1 Protect SDTC's Investment

Provide due diligence screening and excellence in contract definition and project management. Integrate funding activities with the financial sector and, where appropriate, complement other programs.

2 Project Funding

Invest in creative collaborative partnerships (representing multiple players in the innovation chain) that enable timely development and demonstration of technology solutions for climate change, clean air, clean water and clean land.

3 Attracting Capital to Clean Tech

Attract additional financing into the clean technologysector and increase the receptivity of the investment community for sustainable development.

4 Create Go-to-Market Consortia

Build and encourage innovative collaboration and partnering among private, academic and non-profit sectors.

5 Broker Non-portfolio Projects

Broker relationships that accelerate the dissemination of SDTs towards the marketplace.

6 Identify Solutions for Barriers to Adoption

Report and communicate to stakeholders and partners, including identification and advocacy around market barriers, energy policy, capital availability, product codes, and standards and regulation.

7 Outreach

Increase capacity within economic sectors for accessing project funding and improving their managementcapability.

8 Communications

Educate, raise awareness and promote benefits of SDTs.

9 Business Case for SD

Build the business case for SDTs and derive a national strategy for sustainable development (SD).

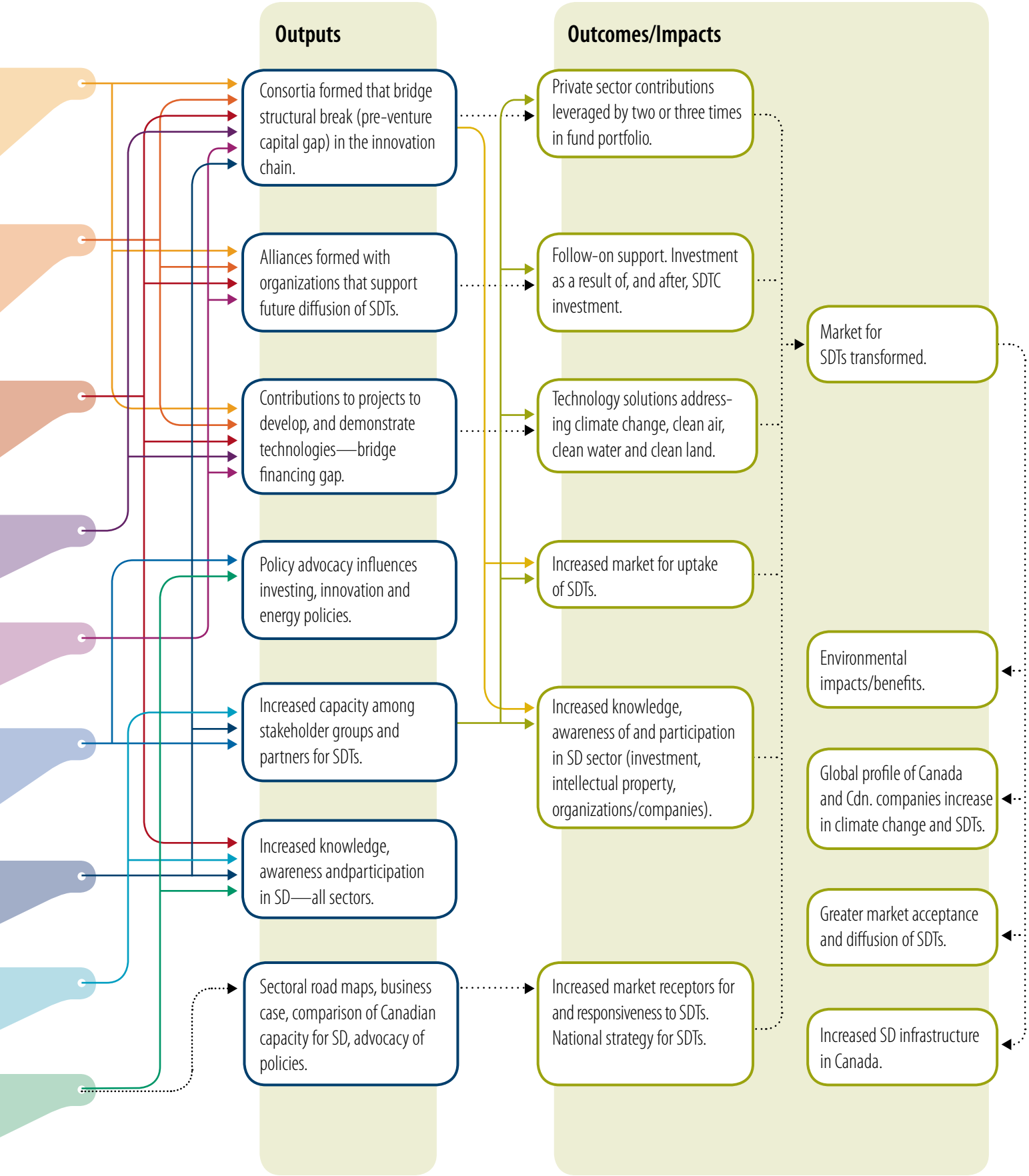

Outputs
Outcomes/Impacts
Consortia formed that bridge structural break (pre-venture capital gap) in the innovation chain.
Alliances formed with organizations that support future diffusion of SDTs.
Contributions to projects to develop, and demonstrate technologies—bridge financing gap.
Policy advocacy influences investing, innovation and energy policies.
Increased capacity among stakeholder groups and partners for SDTs.
Increased knowledge, awareness andparticipation in SD—all sectors.
Sectoral road maps, business case, comparison of Canadian capacity for SD, advocacy of policies.
Private sector contributions leveraged by two or three times in fund portfolio.
Follow-on support. Investment as a result of, and after, SDTC investment.
Technology solutions addressing climate change, clean air, clean water and clean land.
Increased market for uptake of SDTs.
Increased knowledge, awareness of and participation in SD sector (investment, intellectual property, organizations/companies).
Increased market receptors for and responsiveness to SDTs. National strategy for SDTs.
Market for SDTs transformed.
Environmental impacts/benefits.
Global profile of Canada and Cdn. companies increase in climate change and SDTs.
Greater market acceptance and diffusion of SDTs.
Increased SD infrastructure in Canada.

Figure 7:
NextGen Biofuels Evaluation Logic Model

Mission Statement

SDTC Mission

SDTC will act as the primary catalyst in building a sustainable development infrastructure in Canada

Purpose of the Fund

NGBF Purpose (c)

Encourage retention and growth of technology expertise and innovation capacity for the production of next-generation renewable fuels in Canada.

Work Scope: 1 2 3 4

NGBF Purpose (a)

Facilitate the establishment of first-of-kind large demonstration-scale facilities for the production of next-generation fuels and co-products.

Work Scope: 2 3 4 5 6 7

NGBF Purpose (b)

Improve the sustainable development impacts arising from the production and use of renewable fuels in Canada

Work Scope: 3 4 5 6 7

Activities/Work Scope

1 Outreach

Identify and recruit candidate technologies from international outreach and SD Tech Fund.

2 Develop SDTC Knowledge Base

Collect and conduct biofuels industry studies, identify and maintain roster of experts.

3 Select Qualifying Projects

Guide and advise proponent. Proponent develops Application for Funding (AFF). Conduct due diligence review of AFF, including eligibility criteria and technology readiness.

4 Participate in Project Assurance Process for Pre-construction Phases

Monitor, advise, assist planning. NGBF expert reviewers conduct due diligence review of stage report for funding decision, provide recommendations to Project Review Committee and Board for decisions.

5 Contribute to Structuring the Project Financing

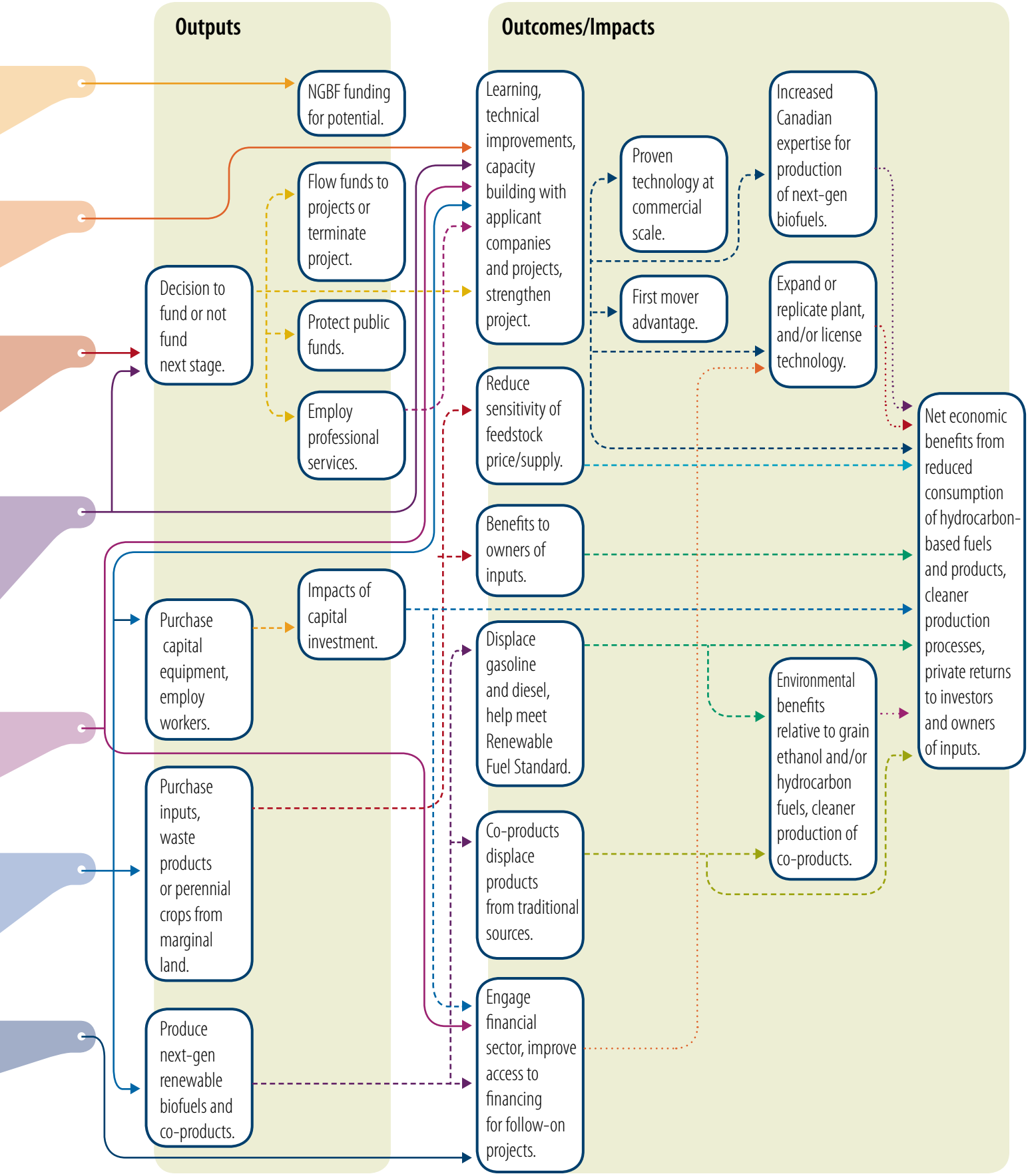
Advise and assist structure of financing.

6 Participate as an Active Investor in Construction, Commissioning and Plant Operations

Monitor, advise assist, identify barriers, contribute to solutions.

7 Repay/Close-Out

Plant repays NGBF investment and/or operates for 10 years.


Outputs
Outcomes/Impacts
NGBF funding for potential.
Flow funds to projects or terminate project.
Decision to fund or not fund next stage.
Protect public funds.
Employ professional services.
Purchase capital equipment, employ workers.
Impacts of capital investment.
Purchase inputs, waste products or perennial crops from marginal land.
Produce next-gen renewable biofuels and co-products.
Learning, technical improvements, capacity building with applicant companies and projects, strengthen project.
Reduce sensitivity of feedstock price/supply.
Benefits to owners of inputs.
Displace gasoline and diesel, help meet Renewable Fuel Standard.
Co-products displace products from traditional sources.
Engage financial sector, improve access to financing for follow-on projects.
Proven technology at commercial scale.
First mover advantage.
Increased Canadian expertise for production of next-gen biofuels.
Expand or replicate plant, and/or license technology.
Environmental benefits relative to grain ethanol and/or hydrocarbon fuels, cleaner production of co-products.
Net economic benefits from reduced consumption of hydrocarbon-based fuels and products, cleaner production processes, private returns to investors and owners of inputs.

SD Tech Fund:

2006: First interim evaluation (mandated by the Funding Agreement)

2009: Second interim evaluation (mandated by the Funding Agreement)

2009: Cost-benefit analysis (part of the second interim evaluation)

NextGen Biofuels Fund:

2012: First interim evaluation (mandated by the Funding Agreement)

Government-wide evaluations:

2006: *Examination of Federal Energy and Environmental Science and Technology Investments*

2007: *Evaluation of Foundations as Instruments of Public Policy* (prepared by the Treasury Board Secretariat)

2011: *Review of Federal Support to Research & Development* (the Jenkins Panel)

2012: *Beyond the Horizon: Canada's Interests and Future in Aerospace* (the Aerospace Review)

The Funding Agreement under which the NGBF was established has provisions for compliance audits, performance audits and interim evaluations, the next being due in 2017 and 2022. The NGBF contributed to the CESD's audit of the *Kyoto Implementation Act* in 2009 and to its audit again in 2010.

In accordance with its requirements, the Foundation submits an annual report, an annual report supplement and a corporate plan to Parliament via the Minister of Natural Resources.

2.3 Comparison of the relative breakdown of operating expenses of SDTC and other foundations

In 2007, the Treasury Board of Canada Secretariat (TBS) evaluated the role of foundations as public policy instruments. This evaluation showed the relative breakdown of operating expenses for a range of foundations, including the average share of total operating expenses across five categories as well as the range observed.

As demonstrated in Table 1 below, when compared with the average operating expenses for a selection of Canadian foundations, 50 percent of SDTC's operating expenses are directly related to program management and operations—numbers that are comparable to other foundations. Its general management and overhead costs are significantly below the average observed across other foundations (34 percent relative to the average of 41 percent). The KPMG value-for-money audit and resulting report also uses this TBS evaluation as a point of reference and arrived at the same conclusions.

Table 1.

Comparison of the relative breakdown of operating expenses of SDTC and other foundations

Cost Categories[1]	SDTC[2]	TBS Evaluation of Foundations[3]	
	5 Year Actual Average	Average Share of Total Operating Expenses	Range
Program Management and Operations	51%	46%	15–55%
General Management and Overhead	34%	41%	27–70%
Governance Activities	7%	5%	2–9%
Investment Management Fees	6%	6%	1–12%
Amortization of Capital Assets	2%	2%	1–4%

Note 1: Operating expense categories are those represented in the Treasury Board Secretariat's 2007 Evaluation of Foundations. (http://www.tbs-sct.gc.ca/report/orp/2007/ef-fe/ef-fe-eng.asp).

Note 2: This data shows the five-year average for SDTC's actual operating costs from 2006 to 2010, re-categorized to align with the TBS Evaluation of Foundations categories.

Note 3: This information represents the simple average of each foundation's cost mix over the most recent five years of financial data, as specified in the TBS Evaluation of Foundations.

3 SDTC Actions and Results: SD Tech Fund

The SD Tech Fund supports the development and pre-commercial demonstration of clean technology solutions, products and processes that help mitigate climate change and contribute to cleaner air, water and soil.

The following sections correspond to the work scopes outlined in the SD Tech Fund evaluation logic model. They also discuss the activities SDTC undertook between July 1, 2012, and June 30, 2013 (i.e., the reporting period) for each work scope of the SD Tech Fund evaluation logic model as well as the short-, medium-, and long-term outcomes of those activities. These sections also discuss actions that SDTC anticipates will be undertaken from July 1, 2013, through June 30, 2014.

3.1 Protect SDTC's investment

SDTC aims to provide due diligence screening in the project application and acceptance process, and excellence in contract definition and project management. This area also aims to integrate funding activities with the financial sector and, where appropriate, complement other programs to facilitate co-funding and follow-on funding opportunities for SDTC applicants. A third objective is to facilitate co-funding and follow-on funding opportunities by leveraging SDTC's due diligence expertise to accelerate investment by others.

To achieve its mandate and make prudent use of public money, SDTC must ensure that it invests in the right technologies with the right management and under the right terms and conditions. This is generally conducted through several processes or mechanisms, namely:

1. Process and schedule;
2. Project selection criteria; and,
3. Integrating funding with the financial sector.

3.1.1 Process and schedule

Between July 1, 2012, and June 30, 2013, SDTC completed two funding rounds and approved funding for 15 projects. During this period, SDTC allocated $41 million of project funding. From 2002 through June 30, 2013, SDTC placed 22 rounds of funding calls. Twenty-four rounds will have been processed to the Board-approval stage by the end of June 2014. To date, 246 projects have been approved for funding by SDTC, representing a cumulative total of $598 million of SDTC funding.

Over the past year, SDTC has continued to expend significant time, effort and resources on outreach initiatives aimed at increasing awareness of the SD Tech Fund investment priorities, application process and screening criteria. This has resulted in continually stronger applications in each round.

Applicant outreach activities in 2012/13 included speaking at targeted events for entrepreneurs; focused advertising online and in print publications; leveraging marketing channels from regional partnerships with innovation centres; and using industry associations and online newsletters to syndicate SDTC's biannual call for Statements of Interest (SOIs) to a broad audience. SDTC has made a concentrated effort to target applicants in Canada's eastern and northern regions. During this period, SDTC delivered 15 workshops and seven webinars, attracting more than 700 stakeholders and engaging 30 regional partners. This activity led to 224 SOIs being submitted to SDTC.

Outreach efforts were supplemented by an increase in the level of pre-application screening to limit applications only to those who most closely fit the mandate, have technologies that fall into SDTC priority investment areas or offer disruptive clean technologies. For example, SDTC conducted 'deal-pitch' sessions hosted by its innovation centre partners to provide their deal flow to SDTC.

In many cases, an applicant's technology has strong potential but the application has some shortcomings, such as a lack of clarity and/or completeness, an incomplete and/or inappropriate consortium, or the path to securing project funding is not in place. In such cases, SDTC works with the applicant to address those issues and invites the applicant to the SDTC Virtual Incubator—a year-round capacity building program that prepares targeted entrepreneurs for the SOI.

To ensure that funds continue to be made available only to the most viable projects, SDTC periodically assesses portfolio risk and adjusts its contributions accordingly. To this end, in 2012/13 the Foundation conducted a comprehensive review of projects that were unable to proceed as the lead applicant and its consortium had planned. This resulted in the identification of portfolio projects that were unable to proceed to contracting, required termination due to non-performance or lack of funding, were de-scoped through a project modification, or reached the end of their funding period without using all allocated funds. This freed $29 million for re-allocation to additional projects; however, these funds have since been fully allocated through the two funding rounds between July 2012 and June 2013. Therefore, all funds available under Funding Agreement Four have been allocated to projects.

Planned actions – 2013/14

SDTC is currently capitalized under *Economic Action Plan 2013* to maintain its current momentum of deal flow and conduct the next funding round in the second half of 2013.

SDTC has identified an opportunity to increase SOI quality through earlier and more rigorous pre-screening as well as enhanced guidance for entrepreneurs with high-potential innovation.

In addition, SDTC's SD Tech Fund Virtual Incubator continues to expand. The program utilizes a rigorous pre-screening function to identify disruptive innovations that are aligned with SDTC's investment riorities, and to off-ramp technologies that do not meet the mandate earlier in the process. The program is simultaneously evolving events and programs to build the capacity of the entrepreneur and develop our relationships with industry stakeholders.

The program will also engage entrepreneurs with innovative technologies into the SD Tech Fund Virtual Incubator earlier to provide focused guidance for a compelling SOI submission.

3.1.2 Project selection criteria

Project selection is a competitive process based on technology performance, market/business potential and environmental benefit. SDTC's internal evaluations are supplemented by sector experts who are trained in the Foundation's processes to apply high-quality standards and deliver objective evaluations. SDTC has continued to attract a high calibre of expert reviewers who undertake the important job of proposal review and identify with the mandate of SDTC.

SDTC currently has 176 active expert reviewers on its roster, with 11 of these added in the past 12 months in the areas of battery technologies, building energy systems, mining, marine engineering, renewable power and forestry. SDTC staff deliver two training sessions per year for new reviewers, and four briefing sessions per year for each of the SOI and detailed proposal phases.

In 2012/13, SDTC continued to build upon and leverage an investment risk management framework that tracks projects through the due diligence phase. The framework identifies critical technology, IP, management capacity and market risks that could affect a project's likelihood of delivering results, and provides a structured approach to working with applicants to address these gaps while also mitigating SDTC's investment risk.

SDTC routinely conducts and participates in outreach activities such as workshops and conferences to build and consolidate the knowledge of sustainable development technologies in Canada. SDTC continues to evaluate and improve its processes based on stakeholder input, market drivers and efficiency needs.

Planned actions – 2013/14

The Foundation will implement systems to evolve how it assigns expert reviewers to projects, and how it tracks the ways those reviewers score projects, to increase the effectiveness of its pool of experts. The Foundation will continue to stay current with the needs of industry and ensure that its roster of experts is knowledgeable and able to evaluate the increasing breadth of technologies brought forward to SDTC.

The risk management framework will be extended to integrate a balanced scorecard for management capacity risk given the correlation shown between management strength and successful commercialization. The High Impact Project Index will be extended and leveraged throughout the project selection process as a tool to identify projects with the highest potential for economic and environmental benefits.

3.1.3 Integrate funding with the financial sector

SDTC aims to integrate funding activities with the financial sector and, where appropriate, complement other programs to facilitate co-funding and follow-on funding opportunities for SDTC applicants.

Under the terms of Funding Agreement Four, SDTC may contribute up to 33 percent of project funding (on average) across its portfolio of funded projects and up to 50 percent of funding for any one project. This reduces the Foundation's risk and encourages faster uptake of project technologies into the marketplace by engaging the financial community earlier in the commercialization process.

SDTC continues to achieve measurable success with respect to leveraged funding. It has successfully encouraged private industry to invest and share in the financing of more than 246 projects funded to date. Of the $2.2 billion of portfolio project funding invested to date, SDTC has allocated $598 million (27 percent) while other funders have invested $1.6 billion (73 percent). SDTC has maintained its contribution at less than 30 percent since inception.

Of particular note is that 81 percent of the leveraged funding comes from the private sector, demonstrating that industry considers these technologies good investment opportunities. This is further supported by the allocation of venture capital in Canada. Venture capital investment in the energy and environment sector in Canada from July 1, 2012, to June 30, 2013, was $164 million. During that period, approximately 56 percent of these dollars ($92 million) was invested in companies that had previously been allocated funding from SDTC.

Planned actions – 2013/14

SDTC will continue to create awareness and understanding of the potential benefits to the private sector of investing in clean technology projects. The Foundation will also continue to engage private sector financial organizations and individuals, provincial and federal government programs, and strategic investors to provide project funding for applicant consortia. This will be accomplished in part through the outreach and communications that are discussed in subsequent sections of this report.

3.2 Project funding

Objective: To invest in creative collaborative partnerships, representing multiple players in the innovation chain that enable the timely development and demonstration of technology solutions for clean air, water and soil.

As of June 30, 2013, SDTC has funded 246 projects representing a cumulative value of $2.2 billion. The Funding Agreement specifies that the Foundation must allocate $440 million to support projects that meet the SD Tech Fund objectives associated with climate change and clean air. Of these projects, 80 percent are to be focused on climate change and 20 percent on clean air. SDTC has achieved these targets.

During the period, 89 percent of all SDTC projects have a climate change benefit and 76 percent have a clean air benefit. Furthermore, SDTC encourages projects with multiple environmental benefits. Currently, 89 percent of SDTC projects generate two or more environmental benefits.

In 2005, SDTC's mandate was expanded to include a $150 million allocation for technologies that primarily address issues related to clean water and clean soil. To date, SDTC's work with industry has led to 63 clean water/clean soil projects receiving funding approval, representing $124 million in allocation. Of these, four projects totalling $10 million were approved for allocation between July 1, 2012, and June 30, 2013. Currently, 44 percent of SD Tech Fund projects have clean water and/or clean soil benefits.

In addition to these targets, SDTC is required to allocate at least $50 million to projects focused on the development and demonstration of technologies related to clean fossil fuels, and $50 million for projects related to hydrogen. As of June 30, 2013, SDTC is on track to exceed each of these targets, allocating $78 million for clean fossils fuels and $54 million for hydrogen.

Planned actions – 2013/14

SDTC's new funding, announced in *Economic Action Plan 2013*, will enable it to conduct a funding round in the second half of 2013 and again during the first half of 2014.

3.3 Create go-to-market consortia

Objective: To build and encourage innovative collaboration and partnership among the private, academic and non-profit sectors.

SDTC assists applicants both during and after their demonstration projects as they prepare to enter the market. During the project phase, SDTC helps applicants strengthen their value propositions by identifying additional consortium partners—particularly technology end users—as well as stakeholders from industry, the financial

community, academia, not-for-profit organizations, and federal or provincial governments. In addition to their financial contributions, these partners add a variety of critical skills, experience and expertise to projects, helping to leverage the Foundation's efforts.

The SDTC portfolio of companies comprises approximately 900 consortia partners who are directly involved in the projects currently funded by SDTC. This is an increase from the previous reporting year, during which approximately 850 organizations were directly involved in SDTC-funded projects. SDTC will continue to integrate the creation of go-to-market consortia into all of its primary activities. In addition, the Foundation will continue to provide value-added services to build and strengthen consortia and to increase the likelihood of successful market entry.

Further synergies are achieved by discussing and aligning with provincial counterparts on individual technology projects that have been co-funded by SDTC and the respective provincial organization. Since 2003, SDTC's collaboration with provincial funding organizations has led to 69 SDTC-funded projects receiving $154 million in additional funding (which constitutes part of the $1.6 billion in leveraged funding). MOUs with corporations—a more recent undertaking—have already led to $37 million in investment into SDTC companies to date.

Planned actions – 2013/14

SDTC will continue the creation of go-to-market consortia in all of its primary activities by providing value-added services that connect individual portfolio firms to new market channels and end users, increasing the likelihood of successful market entry.

3.4 Attract private sector capital to SDTC portfolio technologies via Follow-on Financing

Objective: To attract additional financing to the clean technology sector and increase the investment community's receptiveness to sustainable development.

To increase the receptivity of the investment community to clean technologies and to support technology developers in taking their products to commercialization, SDTC engages the finance community on economic opportunities within the cleantech sector in a number of ways: for example, by preparing and presenting cleantech-related information to the investment community, developing case studies, analyzing investment trends, customizing briefing sessions for the financial sector and speaking at conferences directed at the investor audience.

In 2009, SDTC launched the Follow-on Financing Program to secure financing for SDTC portfolio companies and assist with commercialization following completion of the SDTC project. SDTC-supported technologies close to completing the demonstration phase and moving into commercialization have received substantial follow-on financing from the private sector. This represents a double-leveraging of public funds, the first of which comes from project consortia partners and the second of which is provided by follow-on funders.

As of June 30, 2013, 56 companies—into which SDTC has invested $183 million—have raised $2.5 billion in follow-on financing. Fifty-five percent of this has come from outside of Canada, with 74 percent of that portion coming from the United States. In 2012/13, follow-on financing levels dropped to $218 million in the face of difficult global capital market conditions, a decrease from the historically higher levels seen since 2009 but close to the eight-year annual average of $292 million.

SDTC conducted a number of outreach activities intended to identify and engage a wide range of investors spanning different asset classes (such as venture capital, public market and debt finance) and geography. This included representation at a number of workshops and conferences organized by and/or participated in by SDTC.

These outreach activities included:

- TSX-SDTC Investor Days (Toronto);
- Banff Venture Forum;
- Canada Financing Forum (Vancouver);
- Cleantech Oil & Gas Innovation Summit (Calgary);
- Agri-Investment Forum (Toronto);
- San Francisco Cleantech Forum; and
- C100 48 Hours in the Valley (Palo Alto, California).

Planned actions – 2013/14

SDTC will continue to cultivate the pipeline of follow-on financing deals built over the last two years, and will implement more specialized and sophisticated techniques to build its capacity to facilitate follow-on financing.

SDTC will further tailor its approach to specific investment asset classes. The Foundation will bring a select group of SDTC portfolio companies to California for an SDTC-only cleantech track of the C100 48 Hours in the Valley event. SDTC will also integrate and emphasize the Foundation's market entry transaction assistance capabilities. This will include placing greater emphasis on the oil and gas sector and market-facing initiatives. This will include adding a new regional office in Calgary, bringing on additional personnel dedicated to the Market Transaction Team and integrating all market-facing initiatives (e.g., Follow-on Financing, Technology Adoption, and export market access and financing such as the SDTC partnership with Export Development Canada) to better meet the needs of the growing number of SDTC graduating companies.

3.5 Enabling market entry and commercial transactions via Technology Adoption

Creating go-to-market consortia has always been a core element of SDTC's mandate through the project lifecycle: from the SOI phase to project contracting. In 2011, SDTC extended its approach to corporate partnering through a formalized program called the Technology Adoption Partnership initiative, which aims to ensure timely diffusion of SDTC's portfolio into the market.

Since its launch, the Technology Adoption Partnership initiative has engaged more than 50 multinational enterprises that have subsequently entered into commercial discussions with SDTC portfolio companies.

SDTC's Market Transaction Team, which executes the Technology Adoption Partnership initiative, prioritizes and focuses business development efforts on large corporations that have one or more of the following attributes:

- An open innovation program: The enterprise recognizes the value third-party innovators can bring to driving efficiencies, improving productivity and/or driving revenue from new products, and has developed a culture and formal processes to engage and acquire (whether through licensing, co-development or purchasing) technologies that originate outside of internal research and development units.
- A corporate venture arm: The enterprise recognizes that an investment in third-party innovators can facilitate the integration of the technology into the large corporation's supply chain. Most of these investments are considered strategic, with the technologies directly affecting the large corporation's core business.
- An aggressive sector leader: The enterprise has a record of introducing innovation and is therefore likely to be seeking new ideas and technologies to commercialize for competitive advantage.

The Market Transaction Team connects with large corporations with the above innovation markers through a variety of outreach activities, including hosting 'open innovation' events (such as SDTC's Cleantech Innovation and Venture Summit, which was held in Calgary in September 2012), attending international forums and invitation-only partner events, and meeting with open innovation executives to understand their technology needs.

The Market Transaction Team builds highly trusted relationships with its network of corporate partners and makes strategically targeted introductions between SDTC portfolio companies, a task that is facilitated by the Team's growing network of venture capitalists, investment bankers and government partners (e.g., Department of Foreign Affairs, Trade and Development; Export Development Canada). SDTC's value proposition to the large corporations is facilitated access and insight into industry-relevant, field-proven (i.e., 'de-risked') technology deal flow across a wide variety of industrial sectors. Further, the depth and breadth of SDTC's portfolio, now valued at approximately $2.1 billion, is unprecedented in the industry—and the SDTC cleantech brand is now being recognized by global firms as representing the best in emerging Canadian clean technology.

Over the past two years, the Market Transaction Team has developed a substantial network of corporate and financial contacts that is global in reach. In September 2012, SDTC hosted an invitation-only Cleantech Innovation and Venture Summit in Calgary. The two-day event brought together more than 20 CEOs of SDTC-supported companies, 90 cleantech venture capitalists, technology scouts and venture arms from some of the largest and most strategic global corporations. The event resulted directly in a $10 million strategic investment into a portfolio company from a large energy corporation as well as a debt investment in another company.

3.6 Access to global export markets and partnership with Export Development Canada

Objective: To improve portfolio companies' access to the global market through key domestic and international partnerships.

The clean technology industry in Canada is export-oriented, with 80 percent of cleantech SMEs in Canada participating in exporting compared to just nine percent of SMEs in other sectors. Some of the fastest-growing markets are in developing markets.

In October 2012, Export Development Canada (EDC) and SDTC announced a collaborative agreement to bridge the gap between proven technology and commercial bankability and to accelerate the entry of SDTC portfolio companies into some of the most strategic global cleantech markets.

EDC and SDTC have complementary approaches that make bringing a technology to market more streamlined and efficient. EDC's programs help incite commercial financing similar to the way SDTC's process de-risks technology development and levers incremental private-sector investment.

Since the agreement was signed, EDC has deployed its range of products—including bonding, guarantees and financing—in commercial projects and transactions involving seven later-stage STDC companies. SDTC shares with EDC its assessment of technology risks and the capacity of portfolio companies to perform in international markets.

EDC will also look for opportunities within its network of foreign buyers and top global corporations, and leverage its many partnerships with multilateral organizations (e.g., other export credit agencies, development banks) whose activities and programs present opportunities for the technology solutions developed by SDTC portfolio companies.

SDTC also works closely with the Department of Foreign Affairs, Trade and Development on many levels to help support the government's international trade initiatives. For example, SDTC worked with the Canadian High Commission in Delhi to support the Prime Minister's trade mission to India. Several SDTC-supported companies were in attendance and accounted for a third of the trade deals announced. Companies such as Vancouver's Westport Innovations will be working to improve air quality and access to electricity in rural India.

SDTC has also worked very closely with the Consulate General of New York and Silicon Valley in the development of the Canadian Technology Accelerator for CleanTech. SDTC is proud to be a founding member of this important platform that will bring Canadian innovations into the U.S. and global export markets.

Planned actions – 2013/14

SDTC will continue to leverage its relationship with EDC to help its portfolio companies access global markets. SDTC will also contribute its expertise to EDC to strengthen the overall cleantech sector for Canada.

3.7 Broker non-portfolio projects

Objective: Broker relationships that accelerate the dissemination of sustainable development technologies toward the marketplace.

In some cases, technologies that apply for funding from the Foundation do not meet the funding criteria. These technologies, however, may still have a role to play in the development of a sustainable technology infrastructure in Canada. In cases where a project has a beneficial impact but does not directly fit SDTC's funding criteria, SDTC will broker relationships that will accelerate the dissemination of that project and its associated technology to the marketplace.

As part of its mandate, SDTC helps all applicants identify and highlight key areas of their proposed technology's value proposition. This coaching helps the applicants structure their projects in the most effective and efficient manner possible, increasing the possibility that their technologies will be taken forward successfully. SDTC routinely redirects entrepreneurs who do not fit the SDTC funding criteria to funding sources appropriate to the project's circumstances and characteristics. As the portfolio has grown and relationships have developed, this has become a regular occurrence.

It is difficult to track and quantify the results of SDTC introducing non-portfolio projects to private-sector companies. While SDTC will continue this practice, it does not have the staff or resources to monitor or report on non-portfolio opportunities that have been enabled.

Planned actions – 2013/14

SDTC will continue to routinely redirect entrepreneurs who do not fit the SDTC funding criteria to funding sources appropriate to their project's circumstances and characteristics, including Industry Canada's Industrial Research Assistance Program (IRAP), the Program of Energy Research and Development (PERD), National Sciences and Engineering Research Council (NSERC) and the National Research Council (NRC).

3.8 Identify solutions to adoption barriers

Objective: Report and communicate to stakeholders and partners on matters related to identification and advocacy of market barriers, energy policy, capital availability, product codes, and standards and regulations.

The diffusion and demonstration of innovative technologies face a number of barriers: economic, technological and regulatory, amongst others. SDTC works with numerous stakeholders to identify these barriers—as well as barriers to adoption of certain sustainable technologies—and ways to overcome them.

In the past two years, SDTC has participated heavily in the two major federal reviews on innovation: the Review of Federal Support to Research & Development and the Aerospace Review. Both of these reports support the use of SDTC as a policy solution to overcome existing commercialization barriers for innovation in Canada. SDTC is supported by its portfolio companies and by multinational enterprises (who are adopters of these technologies) in its input into these two major reviews. SDTC has begun catalyzing the integration of several of its companies and technologies as a means to address the need for stronger entities with greater market focus identified in both reports.

Planned actions – 2013/14

As technology areas are assessed by SDTC, barriers to market entry for clean technologies will be identified and communicated nationally through a number of channels, including the Foundation's website, various workshops, and direct discussions with key stakeholders and government decisionmakers. A longer-term goal is to provide insights and knowledge support to policymakers on regulatory changes that will increase the market penetration of sustainable development technologies.

SDTC will continue working with strategic multinational enterprises, industry associations and other stakeholders through the Technology Adoption Partnership program to identify and overcome barriers to the adoption of clean technologies in order to access new international markets.

SDTC will continue to build integrated and packaged solutions from the best-in-breed portfolio companies, and will also continue to identify market gaps and recommend policy solutions through the follow-on work of the review panels.

3.9 Workshops and outreach

Objective: Increase capacity within the targeted economic sectors for accessing project funding and improving their management capacity.

The Foundation conducts a number of workshops and other outreach initiatives intended to build the capacity of technology developers to communicate the value of their initiatives and obtain support from the public and private sectors. In 2012/13, SDTC hosted workshops and participated in a number of cleantech-related conferences, with management and staff accepting invitations to speak at 20 events throughout the year, including significant global events such as the Cleantech Day at the London Olympics and the India Renewable Energy Expo.

The Foundation held monthly meetings with a number of government agencies to discuss cleantech developments in Canada. In addition, SDTC held approximately 80 meetings with ministers, deputy ministers and other senior government officials to increase awareness of Canadian cleantech and the results of SDTC initiatives. SDTC participated in several broad national policy-related initiatives, including the ongoing development of the Canadian Museum of Science and Technology's 'Let's Talk Energy' exhibit.

Planned actions – 2013/14

SDTC will continue capacity building and outreach through workshops and webinars, including funding application workshops, cleantech-related conferences and other opportunities.

These will be aimed at a wide variety of stakeholders, including potential applicants, investors, government representatives and other interested parties.

3.10 Communications

Objective: Educate, raise awareness and promote the benefits of sustainable development technologies.

The Foundation undertakes a number of communications initiatives to disseminate related information, provide education and raise awareness of sustainable development technologies in Canada. Over the past year, SDTC led nine events with federal ministers and other senior members of provincial and federal governments. The Foundation appeared before the newly formed Parliamentary Cleantech Caucus to provide Members of Parliament (MP) with an overview of cleantech in Canada.

In the summer of 2010, in response to interest expressed by several members of Parliament, SDTC initiated a program focused on increasing parliamentary awareness of SDTC portfolio companies. To date, 27 MP visits have been conducted at SDTC portfolio companies. The effort has been invaluable in demonstrating to participating MPs the real success of cleantech in Canada and the role that the Government of Canada, through SDTC, is playing in driving the cleantech sector.

As required under the Funding Agreement, the Foundation released the SDTC 2012 Annual Report, the 2012 SDTC Annual Report Supplement and the SDTC 2013 Corporate Plan, all of which were produced and tabled in the House of Commons and Senate. These reports were subsequently circulated among various levels of government, industry and the not-for-profit sector.

Between July 1, 2012, and June 30, 2013, articles mentioning SDTC appeared in more than 4,000 publications, including newspapers, magazines, websites and blogs. These articles were spread across 30 different countries, with the majority appearing in Canada, the United States and Europe.

Planned actions – 2013/14

Using media, functions and events, SDTC will strategically evaluate prospects to reach target audiences.

Opportunities to be pursued include:

- Funding announcements that provide the Ministers of Natural Resources Canada and Environment Canada (as well as other elected representatives) an opportunity to profile the Government of Canada's contributions with respect to key policy areas;
- Continued development of SDTC portfolio company success stories;
- Media relations campaigns that will generate national or regional media coverage for SDTC portfolio projects;
- Participation in conferences and other events; and
- Increased use of social media to raise awareness of SDTC and the benefits of adopting clean technologies.

Other primary communications tools that will be employed include the SDTC website, brochures, ministerial briefings, press kits and the Foundation's annual report/annual report supplement.

3.11 Business case for sustainable development

Objective: Build the business case for sustainable development technologies and drive a national strategy for sustainable development.

SDTC periodically reviews the needs of Canadian economic sectors and utilizes its SD Business Case methodology to assist in determining priorities.

Between July 2012 and June 2013, SDTC was engaged by two aerospace, defence and security (ADS) industry partners to begin building a comprehensive transition plan for the ADS sector into clean energy. The business case reinforced the need for integrated solutions and identified mechanisms that leverage ADS sector strengths to enhance Canadian SME capacity. It also identified the need for a focused ADS cleantech fund that would see matching contributions from the ADS sector. Further, SDTC has identified the natural gas and mining sectors as key industries in transition—that is, sectors that are facing growing cost and regulatory pressures and require new approaches and technologies to remain competitive. For example, as new mines are opened in increasingly remote regions, the challenge of supplying energy and infrastructure while also mitigating the environmental impact on delicate ecosystems will present additional challenges for mine developers and operators. SDTC is working with Canadian mining associations and leaders within the sector to develop an SD Business Case targeting investment priorities.

Planned actions – 2013/14

SDTC will continue to engage with the ADS sector on this important transition, identifying anchor members for a focused funding initiative. SDTC also plans to engage the natural gas sector (through the Canadian Gas Association) to co-develop an SD Business Case built on both parties' existing work.

SDTC will continue to engage key stakeholders from the mining sector (mining companies and associations along with their suppliers and subcontractors), government regulatory agencies and academic institutions to develop an SD Business Case that would provide a vision for the industry and provide specific investment and technology adoption priorities to address the growing challenges facing the sector. As this initiative aims to seek cost-sharing and therefore has a sequenced contributor approach, the timelines will be extended compared to previous SD Business Cases.

SDTC will work with industry associations and major corporations to establish technology commercialization partnerships that will seek to provide greater alignment on sector technology needs and facilitate increased investment in priority areas. They will also provide greater leverage of public dollars through targeted industry funds. As such, SDTC will be required to work closely with these partnerships to identify specific SD Business Cases that would be undertaken in future years.

4 NextGen Biofuels Fund

The NextGen Biofuels Fund (NGBF), created in September 2007, is aimed at supporting the establishment of first-of-kind large-scale demonstration facilities for the production of next-generation renewable fuels and co-products. The NGBF is intended to encourage the development of technology expertise and innovation capacity for the production of next-generation renewable fuels in Canada. It will help improve sustainable development impacts that arise from the production and use of renewable fuels in Canada and internationally and will help Canada sustainably meet potential future expansions of its renewable fuels standard (RFS).[23]

In addition to supporting the RFS, the NGBF is aligned on a number of other federal and provincial initiatives such as forestry and agricultural programs, clean energy initiatives and climate change efforts. Further, next-generation biofuels offer potential benefits to numerous sectors. For instance, the use of woody biomass for biofuels may create new opportunities for the forestry sector, while conversion of agricultural waste to next-generation renewable fuels can create new revenue streams for the agriculture sector. Next-generation biofuels derived from biomass include cellulosic ethanol, Fischer-Tropsch liquids such as drop-in diesel and jet fuel, algae-based synthetic fuels, and pyrolysis oil and its drop-in fuels derivatives. In addition, most next-generation biofuels projects include co-products such as bio-energy and biochemicals, stimulating the development of a wide-ranging bio-economy in Canada.

The NGBF is positioned downstream in the innovation chain from the SD Tech Fund. While designed to complement the SD Tech Fund, the NGBF is different in several important ways. For instance, whereas the SD Tech Fund provides funding to pre-commercial demonstration projects and has a scheduled call for the funding process, the NGBF is a project0financing vehicle for first-of-kind, commercial-scale demonstration facilities that has a continuous intake of applications for funding (AFFs), a gated funding-approval process and repayment terms based on free cash flow over a period of ten years dating after project commissioning. The first call for applications was made in 2007 and subsequent calls were made yearly thereafter.

The NGBF investment plan is driven by the following requirements in the NGBF Funding Agreement with the Government of Canada:

- Demonstrate techno-economic feasibility of first-of-kind large demonstration-scale facilities;
- Reduce financial costs of producing renewable fuels;
- Expand renewable fuels production and improve sustainable development impacts;
- Encourage retention and growth of technology expertise and innovation capacity; and
- Achieve environmental, social and economic benefits.

The NGBF investment plan is also driven by complementary NGBF requirements such as:

- Considering Canadian diversity and early stage of industry, aim at pathway, fuel and feedstock diversification;
- Seeking top world performance, bring foreign technology leaders to Canada for direct investment; and
- Recognizing capital intensity of industry, secure strong partners, learn through front-end project development and allocate capital in order to support a range of opportunities.

23. International Energy Agency. (2011). Technology roadmap: Biofuels for transport. Retrieved from http://www.iea.org/papers/2011/biofuels_roadmap.pdf.

In order to implement its investment plan, the NGBF conducted a systematic industry analysis leading to the tracking of approximately 200 next-generation biofuel companies worldwide that are developing next-generation biofuels technologies for commercial deployment. The 200-company database has been filtered against the following criteria to obtain a shortlist of less than 50 preferred NGBF target companies:

- Next-generation renewable fuel by NGBF definition;
- Non-agricultural food feedstock with preference to waste feedstock;
- Novel pathway at pre-commercial demonstration stage;
- Novel pathway with better greenhouse gas emissions performance than fossil fuels and first-generation biofuels; and
- Applicable in Canada.

The companies included in the NGBF shortlist have been classified by technology pathways defined and benchmarked according to key performance metrics established by the National Renewable Energy Laboratory of the U.S. Department of Energy and according to the NGBF 2009 Business Case.

As of June 30, 2013, the NGBF has received 11 AFFs: five are still active and part of the aforementioned NGBF investment priority shortlist while six have been withdrawn. Of the five active AFFs, three have been approved for front-end development funding according to the NGBF Project Assurance Process (PAP) with one project approved for funding just prior to financial investment decision before construction. Two AFFs are currently under due diligence. Seven Indications of Interest (IOIs) from companies that are still working to meet eligibility conditions have been received and four new AFFs are expected in the short term. The AFFs cover a wide array of feedstock and process pathways for the production of next-generation renewable fuels across Canada, and applicants include leading technology companies from the next-generation biofuels industry as well as strategic partners from the energy and forestry sectors. These originate in Canada and the United States. During the first quarter of 2013, three large projects were cancelled and consequently withdrawn from the NGBF project deal flow. This is consistent with an environment that is less than favourable to biofuel project deployment due to recent changes in the energy sector characterized by lower-cost petroleum-derived alternatives. As a result, existing funding requests pertaining to the AFFs received to date do not exceed NGBF fund availability as indicated in the prior 2012/13 period. Assuming that all AFFs on hand proceed to final investment decision and are funded at the level of the estimated eligible contribution, the NGBF allocation would reach an amount that is relatively close to the revised fund availability, which is now at $375 million. Additional funding requests for project AFFs received after June 2013 and for anticipated submissions may change the current fund availability outlook.

4.1 Next-generation renewable fuels industry: Update and challenges

SDTC has recognized that the production pathways for next-generation renewable fuels and co-products are not yet technologically viable or economically competitive at large demonstration scale. Further, current difficulties faced by renewable fuels technology developers in accessing sufficient private sector capital for demonstrations at large scale have inhibited the implementation of such projects.

The following key points summarize the current state of the next-generation renewable fuels industry:

- North America will require 300 biorefineries over the next decade due to the next-generation biofuels policies established in 2007, most of which are aimed at establishing U.S. energy independence. While the policies remain intact and some small commercial projects are being rolled out, several factors are unfavourably affecting industry deployment. These include important technology and viability challenges; major changes to the energy markets, including newly discovered shale oil and gas reserves perceived as resolving U.S. energy independence issues; declining long-term gasoline demand in North America; reaching the blend wall with first-generation ethanol in the U.S.; and U.S.-obligated parties strongly opposing the RFS2 in light of the unavailability of next-generation biofuels supply.
- The first wave of next-generation biofuel plants is currently under construction in the U.S., Europe and Canada with several projects reaching completion over the 2012/13 period. Small-scale commercial projects by Ineos Bio, Kior and Chemtex are undergoing commissioning while Enerkem, Abengoa, POET and Dupont continue construction. As industry leaders progress toward commercialization following pre-commercial demonstrations, strategic partners pick the winners—and some industry rationalization is already occurring. In the meantime, the NGBF identifies at least nine commercial projects under development in Canada that have either applied for or indicated interest in NGBF funding.
- Smaller projects with advantages such as low-cost feedstock, high-valued co-product or biochemical production, co-location synergies, lower CAPEX requirements and a lower resultant financing demand may increase potential for deployment in Canada and globally.
- In Canada, the RFS requires additional ethanol capacity amounting to one billion liters per year before 2034. Availability of residue-based biomass amounts to 85 million tons per year in Canada, which is equivalent to approximately 20 times the projected Canadian ethanol capacity increment by 2034.
- Policy uncertainty is also observed as governments reassess the cost and benefits of biofuels policies. While there is enough waste biomass in Canada to supply 120 world-class biorefineries, the non-harmonization of Canada-U.S. biofuels policies is unfavourably affecting the development of Canadian projects. Better harmonization of Canadian and U.S. policies would benefit industry developments in Canada. It is worth mentioning, however, that North American renewable fuels programs are considered at the forefront of the global scene.
- The International Energy Agency's *Technology Roadmap: Biofuels for Transport*, released in April 2011, forecasts that renewable fuels will represent 27 percent of global transportation fuels consumption by 2050, have a total production value of approximately $12 trillion and reduce CO_2 emissions by 2,100 megatonnes per year.
- While some IPO events and opportunities are noted, first-of-kind risk and tight credit markets require that the next-generation renewable fuels and biochemicals industry relies on strategic investors and government financing for initial commercial rollout.
- Renewable fuels sustainability is a controversial issue and the analysis framework to ensure sustainability is still being defined. Sustainable commercial projects are identified for the production of both the first- and second-generation of biofuels and biochemicals.
- SDTC has observed increased NGBF deal flow activity from 2010 to 2013.

4.2 Canadian opportunity for next-generation renewable fuels

The emergence of next-generation biofuels will be enhanced by the Canadian RFS regulation and will, in turn, facilitate compliance with that regulation. The RFS, which is the basis for the Canadian opportunity for renewable fuels, has the following objectives:

- Encourage greater production of biofuels through market creation;
- Require five percent renewable content in gasoline beginning in 2010 and two percent renewable content in diesel fuels in Canada commencing in 2011;
- Reduce greenhouse gas emissions resulting from fuel use;
- Create sources of clean energy;
- Accelerate the commercialization of new biofuels technologies; and
- Provide new market opportunities for forestry companies, agricultural producers and rural communities.

Because Canada is a net energy exporter, energy independence is not the main driver for renewable fuels; however, an objective of the federal government is to make Canada a clean energy superpower. Next-generation biofuels have an important role to play in this, not just in direct application in transportation fuels, but also by reducing the lifecycle greenhouse gas emissions associated with the extraction and refinement of hydro-carbon resources, particularly oil sands bitumen. This has important consequences for the capacity of the Canadian oil and gas industry to access key markets, particularly the United States.

Next-generation biofuels and co-products have the potential to revitalize and diversify the important forestry, agricultural and natural resources sectors. An estimated 85 million tonnes per year of waste biomass (46 percent of which is forestry based) are available in Canada. This quantity of feedstock could potentially produce about 20 billion liters of gasoline-equivalent fuels—almost an order of magnitude higher than current RFS program requirements. This creates a real opportunity for new revenue sources for the forestry and agriculture sectors.

Canada is currently a net ethanol importer. Consequently, there is an opportunity for incremental Canadian production to meet domestic demand. A strong domestic market would create strong demand for domestically produced feedstocks such as forestry and agricultural waste. Further, the energy independence policy articulated in the U.S. RFS2 is the foundation of the world's largest regulated demand for next-generation renewable fuels.[24] As a major export partner of the United States, Canada is well positioned to benefit from this opportunity.

4.3 NGBF outreach

To raise awareness of the NGBF and issues of importance to the emerging next-generation biofuels industry, SDTC conducts ongoing outreach initiatives. These include directly contacting targeted companies, presenting at specialized industry conferences, organizing and participating in industry workshops, issuing calls for funding applications, and contributing to industry-related publications. These outreach activities are intended to increase NGBF visibility in North American and Western European markets.

24. U.S. Environmental Protection Agency. (2011). Renewable Fuel Standard. Retrieved from http://www.epa.gov/otaq/fuels/renewablefuels/index.htm.

4.4 NGBF activities and results 2012/13

In line with the NGBF objective to conduct systematic outreach activities, SDTC attended several industry conferences between July 1, 2012, and June 30, 2013. The NGBF also participated in a number of speaking engagements in 2013, including the Advanced Biofuels Leadership Conference, the World Congress on Industrial Biotechnology, the National Ag Biomass Conference, the CBIN conference sponsored by NRCan, and the Sault Ste. Marie Bio-Innovation Conference. These events allow for direct contact with industry leaders and maintenance of the NGBF knowledge base. Meetings were held with provincial government and industry representatives across Canada to promote the NGBF and identify project opportunities.

Over the same period, the NGBF received seven IOIs and four new AFFs. Due diligence was completed on three projects prior to securing approval from the NGBF Project Finance Committee, the Project Review Committee and the SDTC Board of Directors for funding of project front-end development according to the NGBF PAP. Three Preliminary Contribution Agreements (PCA) were also signed during this period. As of June 30, 2013, two new projects were scheduled for committee review and subsequent board approval, with one project potentially progressing to the financial investment decision. Three remaining applications were withdrawn during the period. The current NGBF deal flow covers most next-generation renewable fuels processes and includes a variety of feedstock. The sites for contemplated projects are located across Canada.

The NGBF Interim Evaluation was completed as per the Funding Agreement requirements. A study on the current status of the NGBF business environment was completed in preparation for conversations with the main NGBF stakeholders.

Over the past year, NGBF conducted quarterly meetings with representatives of NRCan, Environment Canada and Agriculture Canada in relation to the NGBF Funding Agreement and the coordination of Canadian biomass/biofuels programs. The NGBF also closely coordinated with the SDTC Tech Fund to identify candidates who could benefit from NGBF funding.

4.5 NGBF planned actions 2013/14

The main NGBF objectives for the period from July 1, 2013, through June 30, 2014, can be summarized as follows:

- Progress existing projects currently at the advanced development stage toward final investment decision;
- Coordinate completion of the independent study assessing the Canadian biofuels and biochemical industry status and conduct required follow-up actions in collaboration with government stakeholders;
- Secure two funding decisions pertaining to the front-end project development of existing AFFs;
- Progress existing IOIs to AFF submissions, approvals and development through the NGBF PAP; and
- Conduct outreach activities at key conferences and through direct contacts with leading companies and key government and industry stakeholders.

5 Financial Plan

5.1 Financial plan – SD Tech Fund

This financial plan, as approved by the SDTC Board of Directors, assumes that SDTC will continue to select companies for funding approval in 2013 and 2014, and will have the capacity to work with a large contingent of companies with planned projects.

SDTC has been awarded $325 million over eight years in the *Economic Action Plan 2013*. Details regarding the disbursement of monies are still unclear at this time. However, this additional funding will allow SDTC to continue to fulfill its mandate through 2020.

In 2012 and 2013, SDTC operated within a reduced operating expense envelope due to the 13 percent overall lifecycle operating expense reduction from 2011 to ensure its approach is fully aligned with the Government of Canada's important deficit reduction initiative.

5.1.1 Financial assumptions

The following assumptions have been made in establishing SDTC's operating budget and disbursement plans.

The plan continues to be predicated on a declining balance fund; however, it now takes into consideration the extension of the SD Tech Fund through 2020 (based on *Economic Action Plan 2013*). The SDTC financial plan reflects the extension of the fund end date to December 31, 2020, as defined in Funding Agreement Four, revisions to other relevant Funding Agreement dates, and the new eight-year, $325 million allocation.

Consistent with previous corporate plans with respect to the additional $40 million allocated to SDTC in Canada's 2011 Federal Budget, SDTC management and the Board of Directors has committed to investing $610 million over the life of the fund. This amount includes interest income derived from funds that have been invested prior to being drawn upon for disbursements to already-approved projects. Under Funding Agreement Four, the SD Tech Fund has been fully allocated following the funding round approved by the Board in June 2013, and has a planned disbursement forecast of $65–75 million in 2014, which is projected to include funds from those granted to the SD Tech Fund in *Economic Action Plan 2013*.

With the announcement of an additional $325 million allocated to SDTC in Canada's 2013 federal budget, SDTC management and the Board of Directors are in the process of working with the government to determine the new final investment total over the life of the fund.

The current plan anticipates that the workload, driven by the number of applications and complexity of technology opportunities, will continue to grow over the next few years. Operating budgets are now expected to peak in 2014 or 2015. This period of increased activity is the result of continued screening of new applications while managing a peak in the number of projects undergoing contracting and execution.

There are still a significant number of companies graduating from the SDTC portfolio, which entails a considerable amount of work in helping portfolio companies obtain follow-on financing, create partnerships and seek out potential technology adopters. These efforts are critical to enabling market entry by SDTC portfolio companies that have realized economic and environmental returns.

SDTC will continue to leverage its present funding contributions by two to three times. The plan is to allocate funding twice annually to new projects.

The grant investment portfolio will be managed to meet the liquidity obligations of the project disbursements and operating costs.

Expenditures include the maintenance, support and required enhancements to the Foundation's information technology, online application and reporting systems. Information systems will continue to be enhanced to address CRM needs and for more efficient information flows to applicants and stakeholders. As more portfolio companies require assistance with follow-on financing and technology adoption activities, it is important to be able to track data for each company and provide a platform to share information in an efficient and secure manner. Also, data is housed more effectively in the proprietary SDTC customer relationship management (CRM) database, which has been used to assist government departments with various initiatives.

Expenditures include work to enhance a results reporting methodology relating to both environmental benefits quantification and market transformation.

SDTC's lifecycle budget is calculated based on the requirement that all annual and otherwise scheduled deliverables required under Funding Agreement Four need to be prepared and delivered throughout the lifetime of the fund. This includes the corporate plan, annual report, annual report supplement, annual meeting, members meetings, post-contract reports and evaluations, and corporate performance and value-for-money audits, as well as requirements brought about by the *Federal Accountability Act*.

SDTC will execute a new Funding Agreement with the federal government consistent with the assumptions and forecasts stated herein.

5.1.2 Project allocation and disbursements 2013 and 2014

Securities termination dates will continue to be matched as closely as possible to project funding requirements. Based on the additional allocation received in Canada's 2013 Federal Budget, plus the interest income expected to be generated over the life of the fund, SDTC is able to allocate an additional $60 million to new projects in 2013.

Annual project disbursement payments are projected to be $65 million in 2013, and between $65 and $75 million in 2014 and 2015. For the period of January 1 to August 31, 2013, SDTC's project disbursements totalled $36 million, bringing total disbursements to $417 million. By the end of 2013, total disbursements are projected to be between $441 million and $446 million.

5.1.3 Operating Expense Budget and 2015 Preliminary Expense Budget

A new Funding Agreement for the SD Tech Fund is presently under discussion with the federal government. The new Funding Agreement will define the operating budget.

5.1.4 Investment portfolio status

SDTC continues to closely manage its $167 million (as of June 30, 2013) investment portfolio placed with RBC Dominion Securities and TD Asset Management. The initial investment strategy remains current; that is, to match the cash flow resulting from interest income and investment maturities as closely as possible to the anticipated future financial requirements of the Foundation.

As of June 30, 2013, the RBC investment account had a market value of $86 million and the TD account had a market value of $81 million. The investment portfolios are invested in accordance with the provisions of Funding Agreement Four.

Asset Allocation Ratings Breakdown – July 2013
Sum of Market Value (1,000,000s)

Rating	Government	Other	Totals
AAA	$ 68	$ -	**$ 68**
AA	13	21	**34**
A	3	25	**28**
Money Market Securities	37	-	**37**
Total	**$ 121**	**$ 46**	**$ 167**

% Breakdown

Rating	Current %	Maximum	Available %
Government AAA	40.7%	No Limit	No Limit
Government AA	7.7%	No Limit	No Limit
Government A	1.5%	No Limit	No Limit
Other AAA	0%	80%	80%
Other AA	12.6%	70%	49.5%
Other A	15.1%	20%	11.6%
Money Market Securities	22.4%	No Limit	No Limit
Totals	**100.0%**		

5.2 Financial plan – NextGen Biofuels Fund

5.2.1 Financial assumptions

The NGBF—as determined by the Government of Canada—is a $375-million declining balance fund with an element of repayability that is anticipated to occur between the latter stages of the disbursement period (which ends in 2017) and the end of the fund's life in 2027.

Based on the AFFs on hand as of June 30, 2013, three projects have received conditional allocation for disbursement before the end of March 2017, which is the end of the disbursement period as per the Funding Agreement. Since those projects are still at an early stage of their development and are subject to uncertainty regarding their implementation, it is expected that any project aborted during the NGBF PAP would be replaced by a new project from the NGBF deal flow.

When comparing the funding agreements for the SD Tech Fund and the NGBF, areas of commonality can be seen: for example, annual report obligations, audit and financial statement requirements, and media announcements. However, the NGBF's primary activity of funding first-of-kind demonstration facilities is significantly different than that of the SD Tech Fund and therefore requires additional and distinct work to be undertaken. As such, the budget and financial statements are presented and tracked as individual funds. The NGBF has its own expenditures with different assumptions to be tracked and updated accordingly.

5.2.2 Operating Expense Budget and 2015 Preliminary Expense Budget

Operating Expenses (1,000s)	2014 Budget	2015 Preliminary Budget
Governance	$ 261	$ 268
Mandatory Reporting	350	361
Project Screening and Evaluations	1,292	1,292
Project Contracting and Monitoring	1,000	1,030
Infrastructure Development and Outreach	159	163
Financial Audit	20	21
General Administration	225	231
Outsourced Services	200	206
Other	0	0
Technical and Financial Audit Costs	400	412
Total Operating Expenses	**$ 3,907**	**$ 3,984**

5.2.3 Investment portfolio status

SDTC continues to closely manage the current $58.6-million (as of June 30, 2013) investment portfolio, which is placed with RBC Dominion Securities and TD Asset Management. The initial investment strategy remains current; that is, to match the cash flow resulting from interest income and investment maturities as closely as possible to the anticipated future financial requirements of the NGBF.

As of June 30, 2013, the RBC investment account had a market value of $26 million and the TD account had a market value of $32.6 million. The investment portfolios are invested in accordance with the provisions of Funding Agreement Four.

NGBF Asset Allocation Ratings Breakdown — June 30, 2013
Sum of Market Value (1,000,000s)

Rating	Government	Other	Totals
AAA	$ -	$ -	$ -
AA	-	$ 0.6	$ 0.6
A	-	-	-
Money Market Securities	33.0	-	33.0
High Interest Savings Accounts	0.0	25.0	25.0
Total	**$ 33.0**	**$ 25.6**	**$ 58.6**

% Breakdown

Rating	Current %	Maximum	Available %
Other A	0%	20%	20.0%
Other AA	1%	70%	26.6%
Other AAA	0%	80%	80.0%
Government AA	0%	No Limit	No Limit
Government AAA	0%	No Limit	No Limit
Money Market Securities	55.6%	No Limit	No Limit
High Interest Savings Accounts	43.4%	No Limit	No Limit
Totals	**100.0%**		

6 Risks and Mitigation

As part of its corporate risk management strategy, SDTC regularly identifies, assesses and monitors existing and emerging business and organizational risks. This section highlights key emerging risks and identifies the mitigation measures SDTC is putting in place to address them.

6.1 SD Tech Fund

Current issues that may pose risks to the SD Tech Fund include:

- International competitiveness risk;
- Canadian business productivity risk;
- Results and economic risks to Canada (which has been reduced substantially);
- Regulatory and policy risk (which has also been reduced substantially);
- Evaluation risk; and
- Governance risk.

6.1.1 International competitiveness risk

The issue: The United States, China, South Korea and Europe are all investing heavily in clean technologies. Because clean technologies deliver efficiency, cost savings and higher performance—all key elements to maintaining market leadership—Canada risks losing its competitive edge. International resources are based on trust and long-term relationships that SDTC has earned and will not be rapidly replaced.

Mitigation: A key aspect of SDTC's recapitalization request was to pursue additional mechanisms to enable Canada's cleantech companies to access global markets. This includes contributions by multinational partners in SDTC's SD Tech Fund, and the further development of domestic and international commercialization Memoranda of Understanding (MoU) such as those signed with Export Development Canada and the United Arab Emirates.

These mechanisms provide access to market instruments and channels that Canadian cleantech companies would not have otherwise. Additionally, SDTC works closely with the Department of Foreign Affairs, Trade and Development to address global markets and to provide guidance and the provision of portfolio companies for trade missions.

6.1.2 Canadian business productivity risk

The issue: Canadian companies are at a disadvantage relative to their closest international competitors when it comes to their position in the global value chain. Canadian innovators tend to remain at the lower tiers of the supply chain in most industries, and very few emerge at the profitable, high-job-multiplier top tiers.

Mitigation: SDTC has identified a strategic initiative to package and integrate several of its leading portfolio companies together to enable them to collectively attract greater attention from domestic and international finance and corporate partners. By fostering the horizontal and vertical integration of best-in-breed companies, SDTC is helping Canada seize a greater share of global market opportunities.

6.1.3 Results and economic risks to Canada

The issue: Prior to the announcements made in *Economic Action Plan 2013,* SDTC was poised to embark on a wind-down plan for the SD Tech Fund, which would have eliminated the momentum gained by leading Canadian cleantech companies and reduced Canada's economic potential. With recapitalization announced in *Economic Action Plan 2013*, SDTC and the government can build on momentum and realize even greater results. SDTC's budget request contained several enhancements and mechanisms to help SDTC achieve greater results with relatively lower amounts of federal funding. While a new Funding Agreement must be negotiated, this risk is significantly reduced.

6.1.4 Regulatory and policy risk

The issue: In their early, pre-commercial phases, clean technologies often require regulation or other policy support to provide incentives or mandates that will encourage the market to adopt the technology. The current government has been issuing strong regulations primarily through Environment Canada, especially in the areas of SDTC focus such as transportation. This has highlighted the synergy between SDTC's results and the intent of the government's policy. As such, this risk is significantly reduced.

6.1.5 Evaluation risk

The issue: SDTC is a federally funded foundation that operates under a complex framework of legislative, contractual and policy requirements. SDTC is responsible for disbursing $1.09 billion in grants to support sustainable development technologies. Managing public money means that SDTC will be closely scrutinized through various accountability mechanisms. More specifically, it is required to operate in compliance with its Act, funding agreements, the *Federal Accountability Act*, all other referenced acts and regulations, and relevant federal government policy and direction.

SDTC has an extensive evaluation logic model with key performance indicators and results that deliver value to business and industry. This evidence has been collected, reviewed and presented during numerous audits and evaluations for which SDTC has consistently exceeded the benchmark.

While it is understood that agendas will evolve over time, SDTC is in the business of accepting and managing risk so as to commercialize innovation and transform the market. The underlying value is to diversify and strengthen the Canadian economy and drive greater export revenue while improving the environmental performance of Canadian industry. By definition, this is a strategy that shows greater return over the longer term. Importantly, SDTC has already delivered significant results earlier than anticipated. These results, delivered and validated from third-party sources, have undeniably added value to Canada, a result that audits and evaluations have reinforced.

It is important, therefore, to define and stick with the performance criteria established for the Foundation. Many of the various audits have added little benefit while requiring a significant amount of the Foundation's time and resources. From a cost-benefit point of view, they have incurred direct and opportunity costs. SDTC is transparent and accountable: characteristics that are easy to track and determine as SDTC is an entity discrete from the government. SDTC supports the need for evaluations—just not as many as are currently conducted.

In addition to the evaluations specified in the Funding Agreement for the SD Tech Fund, an NRCan value-for-money audit was conducted in 2010/11 and again showed SDTC to meet or exceed all requirements. SDTC is also the only arms-length foundation upon which the Office of the Auditor General has completed an audit; again, SDTC performed well. SDTC was also one of a handful of non-Industry Canada programs incorporated in the Review of Federal Support to Research & Development (the Jenkins Report), where SDTC was noted as an exemplary organization for commercializing innovation.

Mitigation: SDTC has an independent, four-gate selection and funding process that ensures projects are selected on merit (and informed by the private sector through SDTC's Investment Committee), approved by the Board, and that disbursements follow the required approval levels, with additional financial oversight provided by the Audit and Grant Investment Committee.

SDTC has assessed the requirements of the Funding Agreement and applicable legislation and has processes in place to monitor its adherence through regular management and Board briefings and meetings. It has qualified staff in place to manage key processes, and also has in place formal management systems and processes, corrective action and continual improvement processes. SDTC is working proactively with the government to ensure public interest is protected while recognizing the cost-benefit tradeoff in approach, depth and frequency of the audits and evaluations.

6.1.6 Governance risk

The issue: To maintain the momentum created by the Foundation and to empower SDTC to obtain even greater returns for public funds, its governance and funding frameworks need to change. This includes the ability to co-invest with the private sector and take equity (in the form of warrants) attached to grants as a means of providing some repayment.

Mitigation: SDTC has formulated a comprehensive plan for a new fund with a new model that builds on SDTC's existing and proven governance structure while introducing new elements to improve effectiveness. The plan was included as part of SDTC's 2013 recapitalization request.

6.2 NextGen Biofuels Fund

Current issues that may pose risks to the NGBF include:

- Technology and scale-up risk;
- Federal biofuel policy risk;
- Economic climate risk;
- Regulatory harmonization risk;
- Natural gas risk; and
- Financing risk.

6.2.1 Technology and scale-up risks

The issue: Technology and scale-up risks may impact the deployment of next-generation biofuels, preventing Canada from obtaining the related sustainability, social and economic benefits.

Mitigation: The NGBF develops Canadian projects for the production of next-generation biofuels and co-products after selecting the most promising technologies through a thorough benchmarking process once the technologies have been sufficiently demonstrated at the pre-commercial stage. The NGBF invests into a diversified pool of technology pathways with the best available partners and follows a rigorous project assurance process. The NGBF also regularly conducts strategy updates to assure that it is well aligned with industry requirements and deployment objectives.

6.2.2 Federal biofuel policy risk

The issue: Industry deployment delays and financial constraints experienced by governments may unfavourably affect biofuels support policies before the industry has reached targeted performance.

Mitigation: Government programs for supporting capital investments such as the NGBF are in place while programs for direct operating incentives have now ended. SDTC, Natural Resources Canada and Environment Canada have conducted a joint study on the opportunities for Canada in connection with advanced biofuels and biochemicals.

6.2.3 Economic climate risk

The issue: The challenging economic climate unfavourably affects the next-gen biofuels industry deployment.

Mitigation: The NGBF provides strategic project developers with financial comfort to help them absorb unfavourable economic cycles occurring during their long-term deployment plans. The NGBF funds a significant share of both the front-end project development and construction costs. Lower CAPEX projects with low-cost feedstock and site synergies are likely to be deployed earlier than greenfield projects.

6.2.4 Regulatory harmonization risk

The issue: Unresolved issues pertaining to harmonization of Canada-U.S. biofuels policies may prevent the expected implementations in Canada or cause distortion in policy administration.

Mitigation: The NGBF is collaborating with governments and biofuels companies to identify and address critical policy harmonization/compatibility issues such as the definition of biomass for eligibility to the RFS. Recent developments indicate that the U.S. seems to be moving toward harmonization on the biomass eligibility issue.

6.2.5 Fossil fuels risk

The issue: Newly discovered low-cost fossil energy reserves in North America are diverting the focus from next-generation biofuels. This could slow the development of long-term solutions required for sustainable energy supply.

Mitigation: The industry driver for biofuels in North America is the U.S. *Energy Independence and Security Act,* which represents a huge economic opportunity for Canada as well as an opportunity to gain important sustainability benefits. Despite the availability of low-cost natural gas and new oil reserves, U.S. liquid fuels imports will still be at 37 percent of its requirements in 2040, therefore requiring the availability of alternative fuels such as next-generation biofuels.

The NGBF mission is to launch first-of-kind large-scale next-generation biofuels plants in the current decade in order to trigger the development of commercial supply for next-generation biofuels in the 2020s and 2030s. Better alignment of the NGBF with industry requirements as a result of joint strategy studies may facilitate investment in industry areas that are ready for commercialization

6.2.6 Financing risk

The issue: Because the NGBF is intended to provide high CAPEX financing for large-scale demonstration projects, applicants' technologies must be sufficiently advanced so as to be ready for such an implementation. Globally, there are hundreds of companies involved in the development processes for new biofuels and co-products. Many of these companies have promising technology but are still at the pilot plant stage or in the process of developing a demonstration plant. Only a few have successfully built and operated a sufficiently sized demonstration plant, putting them in a position to move up to the construction of a full-scale plant.

These companies need more capital before they are in a position to qualify for NGBF funds. However, recent paradigm shifts in the energy markets led some strategic equity players to leave the advanced biofuels space. While the NGBF was founded to offset the lack of available debt financing, insufficient equity financing creates an additional risk.

Mitigation: The NGBF team continues to actively search for firms with proven technologies, and to provide outreach and other support to secure equity financing from strategic players. SDTC will continue to use the SD Tech Fund to advance technologies toward demonstration plants that can be scaled up to first-of-kind demonstration facilities.

NGBF works with large equity firms and strategic investors such as first-generation biofuels companies and forest-based enterprises to increase awareness of, and comfort with, this important catalytic fund for the agriculture and forestry sectors.

SDTC works closely with businesses and their industry associations to ensure relevance and policy considerations are aligned with NGBF. SDTC will continue this dialogue in order to raise awareness amongst policymakers of the need for policies that are conducive to the development and deployment of Canadian next-generation biofuels technologies in the competitive global market.

SDTC developed a strategy to select the strongest developers that have the greatest chance of success. The fact that U.S. and European developers are considering Canada and applying to the NGBF attests to the performance of the NGBF and the Government of Canada in this arena.

7 Governance and Team

7.1 Legal business description

The Foundation for Sustainable Development Technology Canada (SDTC) was established by an Act of Parliament and received Royal Assent in June 2001. SDTC is registered as a not-for-profit, non-share capital corporation governed by a 15-member Board of Directors and is subject to selected provisions of the *Canada Business Corporations Act*. A Member Council composed of individuals representing the interests of the public, private and academic sectors serves as a proxy for shareholders. The Foundation is not an agent of Her Majesty. However, SDTC is accountable to Parliament through the Minister of Natural Resources Canada. Environment Canada and Industry Canada are the other key departments involved in the work of the Foundation. SDTC's head office is in Ottawa, Ontario, Canada.

7.2 Funding agreements

"Original Agreement" refers to the agreement executed March 26, 2001, for the purpose of establishing the fund, setting forth the terms and conditions under which the Foundation agreed to administer, manage, invest and disburse the initial grant of $100 million.

"Funding Agreement Two" refers to the agreement signed by the parties on March 31, 2004, which provided the additional grant of $250 million allocated in Canada's 2003 Federal Budget and received in April 2004. Funding Agreement Two defined the obligations for the entire $350-million grant (since increased to $400 million).

"Funding Agreement Three" refers to the agreement signed by the parties on March 31, 2005. This Funding Agreement, which addressed the additional investment of $200 million received in April 2005 (since decreased to $150 million), defines the obligations for the entire $550 million and expands SDTC's mandate to include technologies that address issues related to clean soil and clean water.

"Funding Agreement Four" refers to the agreement signed by the parties on August 9, 2012.
This Funding Agreement addresses an additional investment of $40 million and defines the obligations for the entire $590 million funding in the SD Tech Fund. It also altered some key parameters for project funding to enable greater results, such as expanding the timelines for projects from five to seven years.

"Next Generation Biofuel Funding Agreement" refers to SDTC's fourth capitalization and was signed on September 4, 2007. The agreement addresses $500 million allocated in Canada's 2007 Federal Budget to be managed by SDTC for investment with the private sector in establishing large-scale facilities for the production of next-generation renewable fuels.

7.3 Directors

Sustainable Development Technology Canada is governed by a Board of Directors reflecting the broad interests of Canada's public, private and academic sectors. It is composed of 15 members, seven of whom are appointed by the Government of Canada. The remaining eight are appointed by members. There are five Board committees: the Corporate Governance Committee (CGC), the Human Resources Committee (HRC), the Project Review Committee – SD Tech Fund (PRC-S), the Project Review Committee – NextGen Biofuels Fund (PRC-N), and the Audit and Grant Investment Committee (AC). Committee appointments are as indicated below. Both the Chairman and the President and CEO serve on the Board committees as ex-officio, non-voting members.

SDTC directors as of June 30, 2013:

Name	Title	Board Committee
Jim Balsillie	Co-founder and former co-CEO of Research in Motion (BlackBerry); founder and chair of the Centre for International Governance Innovation; Chairman of SDTC	Ex-officio on all Board committees
Ken Ogilvie	Environmental Policy Consultant and Vice-Chair, Quality Urban Energy Systems of Tomorrow; Vice-Chair, SDTC	CGC
David Pollock	Coordinator of Finance and Administration, Citizens for Public Justice; Second Vice-Chair, SDTC; past Executive Director, Pembina Institute	CGC*, PRC-S
John Bradlow	Partner, Penfund	A&GI, HRC
Michael J. Brown	Chairman of the Board, Chrysalix Energy Management Inc.	PRC-S
Charles S. Coffey, O.C.	President, Kingsboro Equestrian	HRC*, A&GI
K. Ross Creelman	Managing Director, Marwood Ltd.	HRC, CGC
Daniel Gagnier	Chairman, International Institute for Sustainable Development	PRC-N*
Sarah Kavanagh	Corporate Director and Commissioner, Ontario Securities Commission	A&GI
Ronald Koudys	President, Ron Koudys Landscape Architects	PRC-N
Jason Lee	COO, Ooka Island Inc.	PRC-S, PRC-N
Gary Lunn	Former Minister of Natural Resources	CGC
Dr. Jane E. Pagel	President & CEO, Ontario Clean Water Agency	PRC-S*
Juergen Puetter	President, Aeolis Wind Power Corporation, President, Blue Fuel Energy Corp Former Chairman, SDTC	
Dr. Jacques Simoneau	President & CEO, Univalor	A&GI*, PRC-N

*Committee Chair

7.4 Members

The members of the Foundation consist of 15 industry leaders, all of whom are appointed/reappointed by the other members in accordance with the Act. Their function is to provide an informed and representative perspective of sustainability and contribution toward the achievement of SDTC's mission and goals.

SDTC members of SDTC as of June 30, 2013:

Name	Title
Carl Brothers, P.Eng.	President, Frontier Power Systems Inc.
James R. Burpee	President and CEO, Canadian Electricity Association
Elizabeth Dowdeswell	President and CEO, Canadian Council of Academies
Johanne Gélinas	Partner, Raymond Chabot Grant Thronton's Strategy and Performance Consulting Group
Dr. Peter Hackett, FCIC, FRCS	Executive Professor, School of Business, University of Alberta
D. Christine Hollstedt, RPF	Principal, Inspiring Leadership
James Knight	President and CEO, Association of Canadian Community Colleges
Dr. Louis LaPierre	Professor Emeritus, Université de Moncton
David Runnalls	Senior Fellow, Sustainable Prosperity and Distinguished Fellow, Centre for International Governance Innovation Development
Andrew T. B. Stuart	Chairman, Sustainability Shift Inc.
Katherine Trumper	Management and Communications Consultant, Katherine Trumper Consulting
Dr. Joseph D. Wright	Independent Consultant

7.5 Officers

SDTC officers as of June 30, 2013:

Name	Title
Jim Balsillie.	Chairman of the Board
Dr. Vicky J. Sharpe	President and CEO
Derek Luke	EVP & COO
Richard J. Whittaker	Vice President, Investments and Chief Technology Officer
Ken Ogilvie	Vice-Chair of the Board (First)
David Pollock	Vice-Chair of the Board (Second)

SUSTAINABLE DEVELOPMENT TECHNOLOGY CANADA™

Partnering for real results.

info@sdtc.ca

www.sdtc.ca

Ottawa

45 O'Connor Street, Suite 1850
Ottawa, Ontario K1P 1A4
Tel: 613.234.6313
Fax: 613.234.0303

Toronto

First Canadian Place
100 King St. W, 56th Fl.
Toronto, ON M5X 1C9
Tel: (416) 644-8726
Fax: (416) 304-3959

Vancouver

World Trade Centre
Suite 404 - 999 Canada Place
Vancouver, BC V6C 3E2
Tel : (604) 844-2857
Fax : (604) 761-0849

Montreal

1, Place Ville Marie, Suite 2001
Montreal, QC H3B 2C4
Tel: (514) 448-4885
Fax: (514) 448-4881