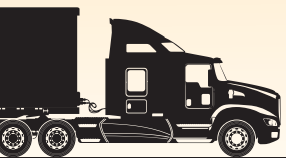




## Partnering for Real Results



SUSTAINABLE DEVELOPMENT  
TECHNOLOGY CANADA™



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An executive summary of this document is available online at [www.sdtc.ca](http://www.sdtc.ca)

Hard copies may be obtained upon request.



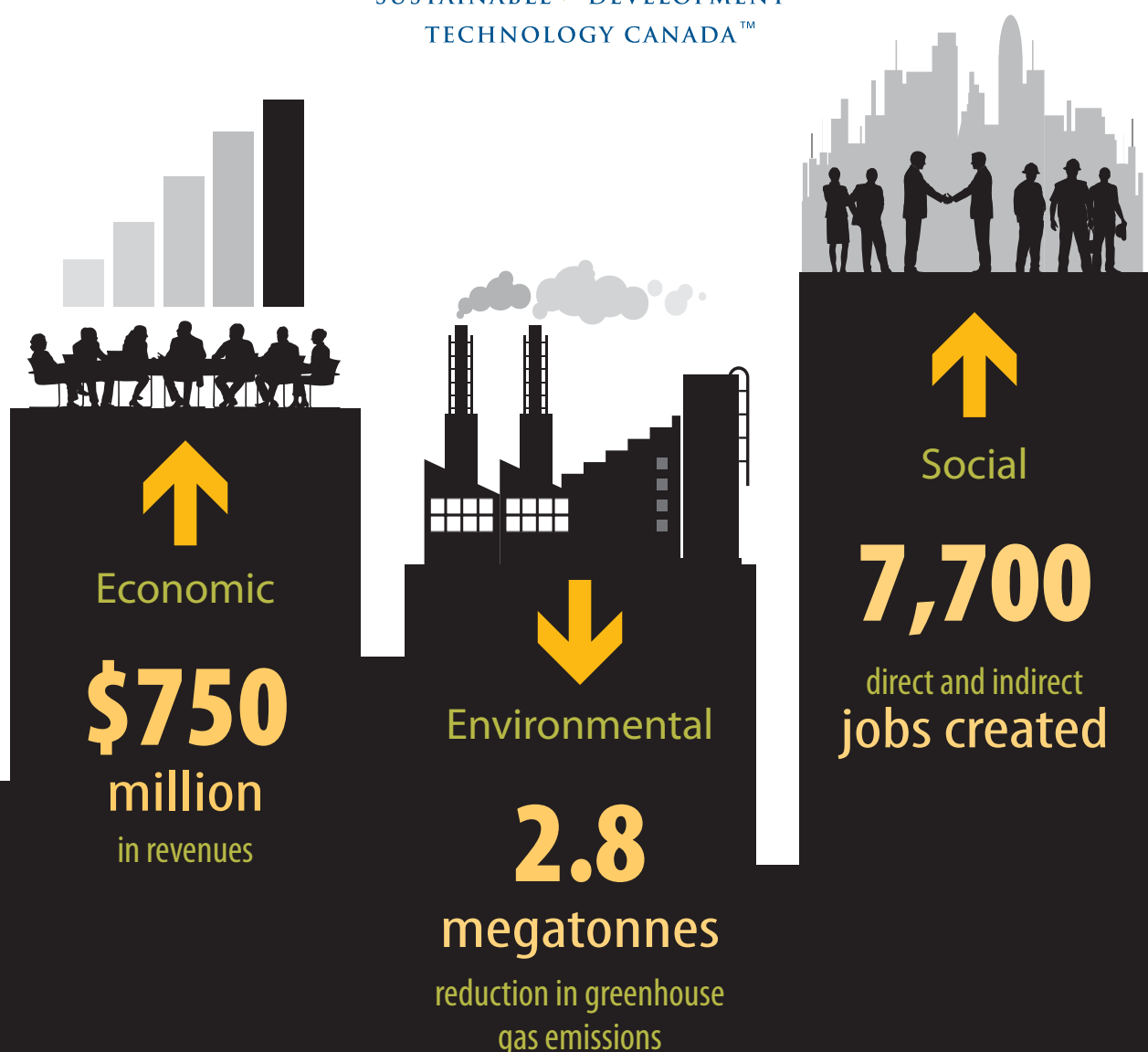
# Realizing the Promise of Sustainability

Sustainable Development Technology Canada (SDTC) was established by the Government of Canada to strengthen Canada's capacity to develop and demonstrate sustainable development technologies—its mission is to be the primary catalyst for building a sustainable development technology infrastructure in Canada

From an initial investment in 2002 of just under \$5 million, SDTC has matured into an effective investment mechanism with \$707 million in SDTC funds and over \$1.9 billion in leveraged funds in a portfolio of 276 projects across Canada. These projects represent a total project value of \$2.6 billion, with the private sector contributing 82 percent of the \$1.9 billion in leveraged funding.



SUSTAINABLE DEVELOPMENT  
TECHNOLOGY CANADA™





" Our Government's investments in Sustainable Development Technology Canada support the progression of Canadian advanced research and technology. We are creating high-quality Canadian jobs and demonstrating our commitment to economic prosperity and a cleaner environment."

**Greg Rickford**

Canada's Minister of Natural Resources and  
Minister for the Federal Economic Development  
Initiative for Northern Ontario



" As the industry association for natural gas utilities across Canada, we are excited about the opportunity to partner with SDTC and the Government of Canada. Natural gas is a very affordable clean energy choice for Canadian consumers. The investments through this fund will help build even more opportunities to make that choice."

**Timothy M. Egan**

President and CEO,  
Canadian Gas Association



" Cleantech ensures the economic viability and environmental responsibility of Canada's major sectors, including natural resources and manufacturing. This creates jobs, revenues and export possibilities for Canadian companies. These funds are key to supporting cleantech innovations and launching them onto the world stage, where Canada can participate in a burgeoning cleantech market that is valued at more than \$1 trillion today."

**Jane E. Pagel**

Acting President and CEO,  
Sustainable Development Technology Canada

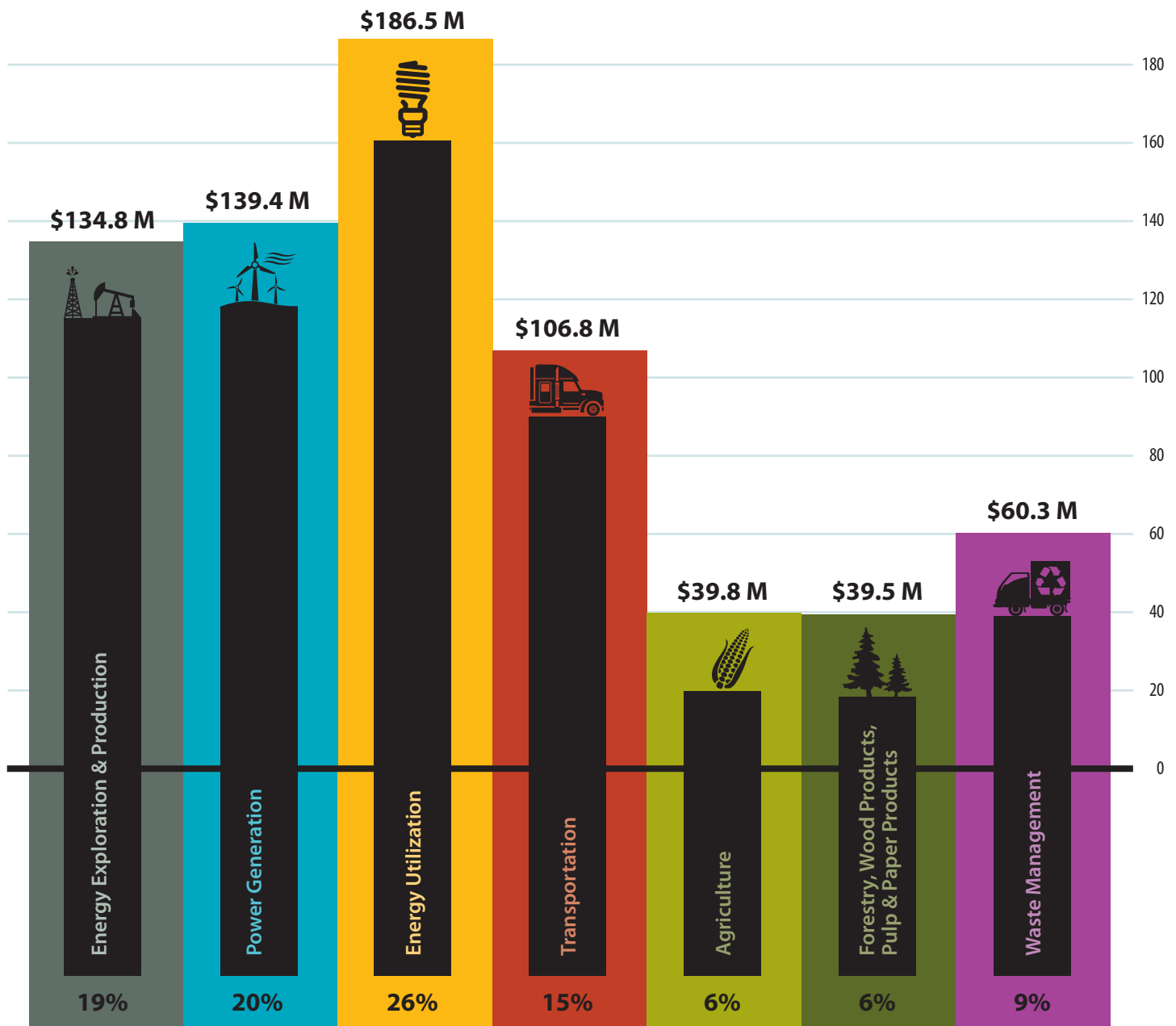
# A powerful contributor to Canadian prosperity

When Sustainable Development Technology Canada (SDTC) was formed in 2001, clean technology was still in its infancy. More than a decade later it is a rapidly growing component of the Canadian economy, with many new players entering the space each year.

SDTC supports the development of clean technology across every major sector in Canada, helping companies commercialize their solutions so they can deliver a range of economic, environmental and social benefits to Canadians from coast to coast. To achieve this mandate, SDTC engages with a wide spectrum of stakeholders involved in the emerging cleantech sector, including catalytic funders (primarily government), academia, innovators, follow-on funders, market receptors and civil society.

Through the publication of an annual report, yearly corporate plan and regular announcements of key activities, SDTC openly communicates to the public and its stakeholders the various ways in which it provides value to Canadians.

Figure 1: SDTC portfolio growth by sector





## Strengthening our economy

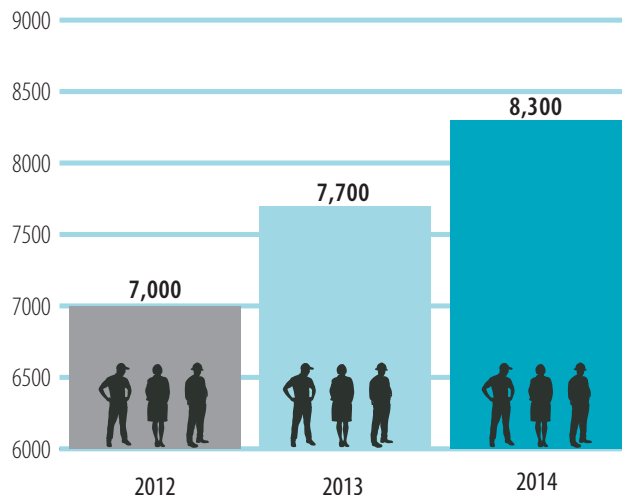
By supporting the development and demonstration of clean technologies that address issues of climate change, clean air, waste, and soil and water quality—and by leveraging private sector funds to do so—SDTC is delivering real economic and environmental benefits to Canadians in a very cost-effective way.

In 2013, cleantech companies in SDTC's portfolio raised \$232 million in follow-on financing from the private sector by way of venture capital, public markets and asset/debt financing, bringing the total amount of follow-on financing to \$2.6 billion since 2007. SDTC portfolio companies have also attracted significant international investment—approximately 55 percent of follow-on financing comes from foreign sources—through their demonstration of the innovative corporate culture associated with Canada's cleantech sector.

Given this support, it's not surprising that Canada's cleantech sector continues to be a strong area of growth for the national economy—and through SDTC's investments in emerging technologies, the Government of Canada is building an even stronger, more competitive and diverse economy. In 2014, an estimated 8,300 direct and indirect jobs will be created through SDTC-funded projects—an assortment of highly skilled, high-quality jobs that offer median wages 13 percent higher than average.<sup>1</sup>

Recognizing SDTC's economic impact on Canadian communities and companies 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.

Figure 2: **Number of jobs created by SDTC portfolio companies<sup>2</sup>**



## Growing businesses by bringing innovations to market

Small- and medium-sized enterprises (SMEs)—that is, businesses with fewer than 500 employees—employ 60 percent of Canada's workforce, account for 45 percent of Canada's GDP and are responsible for 75 percent of net job growth.<sup>3</sup> Ninety percent of SDTC's portfolio companies are SMEs.

Because they are relatively mobile and operate in highly competitive markets, SMEs are a strong source of innovation in Canada, making substantial expenditures in research and development.<sup>4</sup> However, SMEs often lack the resources and expertise to bring their innovations to market—and it is not until cleantech innovations are commercialized that 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), it is helping SMEs successfully bridge the commercialization gap.

The funding of cleantech SMEs is just the beginning of SDTC's holistic support strategy. 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

1. Brookings Institute. (2011). Sizing the clean economy: A national and regional green jobs assessment.

2. SDTC portfolio job estimates based on companies' actual reported jobs created plus anticipated future hires.

3. 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>.

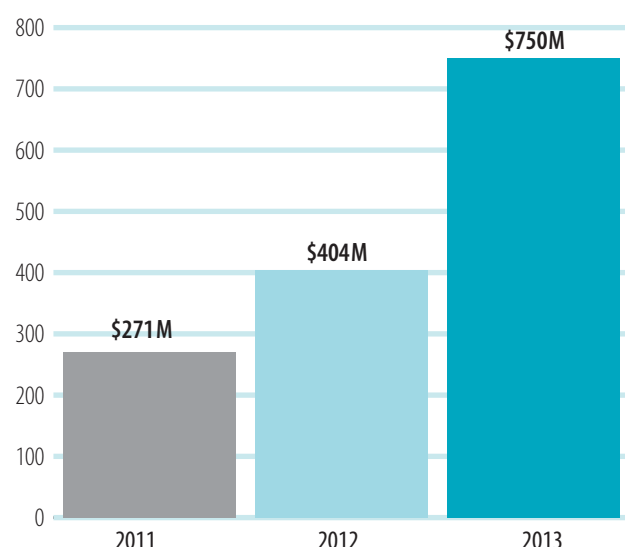
4. The average R&D investment per cleantech SME was \$1.1 million in 2011, up from \$818,000 in 2010. These figures compare favourably with the average R&D investment of \$1.5 million for publicly and privately held cleantech companies of all sizes.

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 Partnership initiatives.

Through this support, SDTC portfolio projects are now maturing into competitive businesses. Fifty-two companies are ready for market entry, either at the point of commercialization or fully in the market; another 171 projects are steadily progressing toward commercialization.

Revenue growth by SDTC portfolio companies has grown from \$271 million in 2011 to \$750 million at the end of 2013—a trend that is expected to continue in the years to come, with the compound annual growth rate for SDTC companies consistently outperforming non-SDTC cleantech companies.<sup>5</sup>

**Figure 3: Revenue growth of SDTC portfolio companies<sup>6</sup>**



Recognizing SDTC as a key delivery mechanism for the de-risking of technology and the creation of environmental benefits, Natural Resources Canada (NRCan) and Environment Canada have both established important formal relationships with SDTC. Strong working relationships have also been built with Export Development Canada (EDC), Industry Canada and the Department of Foreign Affairs, Trade and Development, largely due to SDTC's role in helping Canadian SMEs participate in the global value chain. As an example, SDTC and EDC have undertaken a global market prioritization exercise to identify the international markets of greatest strategic importance to SDTC's export-ready portfolio companies. In addition, SDTC's investments in projects for the agriculture and transportation sectors often closely align with the mandates of Agriculture Canada and Transport Canada.

## Seizing the global cleantech opportunity

In a constantly shifting and dynamic global economy, the cleantech sector continues to show steady year-over-year export growth. In fact, Canadian cleantech companies achieve half of their revenues from export markets—and this is projected to climb to 70 percent in 2015. Of these export revenues, 44 percent are from non-U.S. markets, with 51 percent of Canadian cleantech companies reporting doing business in non-U.S. markets.<sup>7</sup>

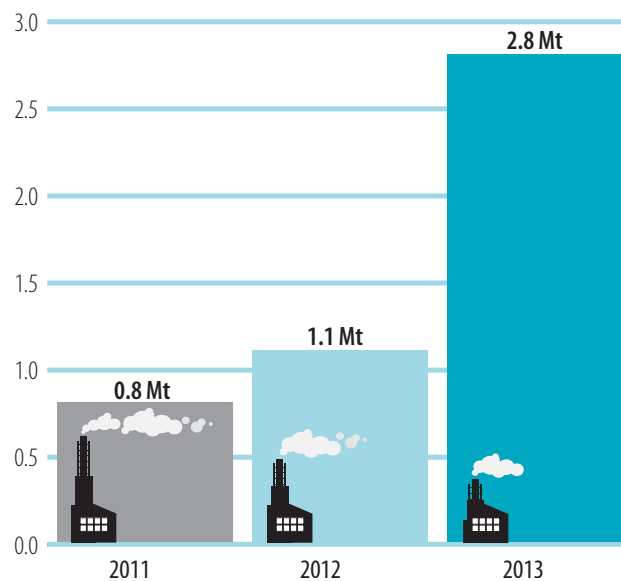
5. According to Analytica Advisors's The 2013 Canadian Clean Technology Industry Report, revenues for the Canadian clean technology industry increased 23 percent on a compound annual growth rate for the 2009 to 2011 period.

6. SDTC portfolio projects completed and in the market using discounted revenue estimates.

7. Analytica Advisors. (2012). The 2013 Canadian Clean Technology Industry Report.

Given its strong export orientation, Canada's cleantech sector is well positioned to realize its potential in the global marketplace. While half of Canada's cleantech revenues currently come from export markets, this could be expanded even further by partnering with regions critical to Canada's export objectives. In particular, new trade agreements with Europe and South America align well with the cleantech export opportunities for Canada.

**Figure 4: Greenhouse gas emission reductions enabled by SDTC's investment portfolio**



to *Support Eco-Innovation*. This report held SDTC up as a model of best practice for enabling public-private partnerships to promote eco-innovation.<sup>8</sup>

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 selected SDTC from among dozens of peer programs to partner with on this important initiative.

## Maximizing the value of public funding

SDTC operates primarily during the early stages of the innovation process, taking on higher levels of risk than the majority of the venture industry. As such, an innovative and effective assessment process is critical to ensuring SDTC selects projects with the best chance of delivering significant economic and environmental benefits for Canada.

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

To support portfolio companies looking to expand into the global market, SDTC and EDC have established a strategic relationship to provide a menu of risk assessment and mitigation instruments to improve access to global markets and realize sales targets.

SDTC's portfolio companies have also excelled at attracting investment from international markets and corporate investors. At the time this report was published, 55 percent of follow-on financing raised by SDTC portfolio 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.

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*

8. 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](http://www.oecd.org/document/34/0,3746,en_2649_34333_47305250_1_1_1_1,00.html).



For example, an independent evaluation conducted in 2009 found that SDTC delivered an unprecedented nine times return on investment through economic and social benefits.<sup>9</sup> A follow-up analysis conducted in 2011, which examined 78 companies into which SDTC invested a combined \$124 million, determined the present discounted value of the projects' benefits was greater than \$3.2 billion—26 times the original investment.

SDTC optimizes the value of its public funding by leveraging private sector investment. 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 \$2.6 billion in total eligible project value as of June 2014, the federal government (through SDTC) contributed \$707 million (27 percent) while \$1.9 billion (73 percent) was leveraged from project consortia members and other levels of government. 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.

As SDTC embarks on a new funding agreement (with the guiding philosophy of doing more with less), increased focus is being placed on efficiency of operation. In 2012, SDTC responded to the *Deficit Reduction Action Plan* with a 13 percent reduction in its lifecycle budget.

## **Partnering with industry to meet sector-specific needs**

Through its Market Innovation Fund (formerly known as the Technology Commercialization Partnership), SDTC is establishing sector-specific joint funding initiatives where industry plays a major role in supporting technology development and demonstration—providing greater alignment with sector technology needs and leading to increased investment in priority areas.

The SD Natural Gas Fund™ is the first co-funding mechanism of the Market Innovation Fund. Created with a \$15-million contribution over three years from the Canadian Gas Association that is matched by \$15 million from the federal government's contribution to the SD Tech Fund™, the SD Natural Gas Fund™ will identify and support the development and demonstration of new downstream<sup>10</sup> natural gas technologies that have the potential to generate cleaner energy, create new jobs and stimulate economic growth in Canada.

SDTC's consortium-focused funding model establishes technology users as one of its primary stakeholders. The degree to which market receptors—end users, customers and market channel partners—adopt SDTC-funded technologies is one of the primary indicators of its success. The relevancy and cost-effectiveness of the technology are key factors that determine the uptake rate; factors such as applicant capacity, follow-on financing and regulatory barriers are also important but are dealt with as distinct risks. Early alignment of technology projects with major Canadian industry stakeholders will best position them for market entry and substantive results for Canadians.

Professionals participating in 'go to market' consortia provide market insights to SDTC that inform decisions about future investments in cleantech projects. This market intelligence complements the assessments conducted on projects' technical potential and business plans to ensure sound, strategic investment decisions are made.

## **Informing policy and enabling effective regulation**

Projects funded by SDTC often help companies and their customers meet voluntary or regulatory environmental performance obligations. This includes programs addressing areas such as greenhouse gas emissions, particulate emissions, water quality standards, waste minimization and management, and the remediation of contaminated sites.

The environmental performance improvements facilitated by SDTC portfolio company technologies also allow governments to revise policies and standards. Through the SD Business Case™ (a proprietary decision making 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

9. Robinson Research. (2009). Evaluation of the SD Tech Fund™ of Sustainable Development Technology Canada: Second interim report.

10. Downstream refers to end-use natural gas technologies, including those used in the residential and commercial (e.g., space conditioning), industrial (e.g., steam generation), power generation (e.g., remote fuel switching), transportation (e.g., engine and vehicle technologies) and renewal gas (e.g., gas processing) sectors..

investment priorities. For example, the detailed, sector-specific insights derived from the SDTC Business Case™ for Transportation led to direct investments that will improve the efficiency of heavy freight trucks. By capturing and converting waste exhaust heat, solar energy and kinetic braking energy into energy for heating, cooling and electrical power, the hybrid auxiliary power unit being developed by SDTC-funded EnerMotion has the potential to deliver enormous cost savings to the freight transportation industry.

SDTC is also an active participant in a number of government and multi-stakeholder sustainability and policy initiatives. For example, SDTC's unique perspective was a key element of the NRCan-McKinsey study on Canadian cleantech priorities as well as subsequent NRCan-led national workshops. Based on discussions with government officials, there appears to be an ongoing appetite to have SDTC bring forward policy insights arising from the experiences of its portfolio companies.

## **Positioning Canada as a leader in next-gen biofuels**

The NextGen Biofuels Fund™ (NGBF) has supported the establishment of large-scale demonstration facilities for the production of renewable fuels such as cellulose ethanol and biodiesel.

The NGBF has attracted interest from around the world, with \$1 billion worth of commercial biofuels projects competing for the available funding. Over the last year, two projects have progressed through the NGBF Project Assurance Process, with final investment decisions expected in late 2014. Because traditional financing sources typically avoid first-of-kind demonstrations at any scale, SDTC has bridged the financial and market gaps by providing a complete array of demonstration funding, from pilot to commercialization.

Clean technology solutions stimulate the economy, create high-paying jobs and drive Canada's progress toward meeting its environmental targets.

Sustainable Development Technology Canada (SDTC) was established by the Government of Canada to strengthen Canada's capacity to develop and demonstrate sustainable development technologies—its mission is to be the primary catalyst for building a sustainable development technology infrastructure in Canada: the institutions and mechanisms with long-term, large-scale capacity for cleantech development, demonstration and commercialization. Through the creation of this infrastructure, SDTC aims to help Canada fully realize the economic, environmental and social benefits that come with strategic investments in clean technologies.

To achieve this mission, SDTC brings together the players who can help realize Canada's cleantech potential, starting with an established funding approach that requires every project to include representatives from throughout the supply chain: researchers, product developers, manufacturers, distributors, retailers and customers. It also seeks to be the partner of choice for Canadian cleantech entrepreneurs, providing guidance and expertise in key areas such as defining technology frameworks, de-risking technology barriers, building more efficient cleantech business models, engaging investors from the private sector, forming strategic partnerships with multinationals and creating platforms to global markets.

Striving for continual improvement, SDTC will continue to expand its existing programs and implement new initiatives to attract even more funding and stronger partnerships. As the global cleantech market grows further, SDTC's goal will be to deliver ever-greater benefits and value for every dollar of federal funding.

## 1. About SDTC's funds

Between initial research and commercialization of any new technology are the development and demonstration stages. For the entrepreneurs behind Canada's clean technologies, securing funding at these critical stages can be difficult due to the financial and market risks associated with the unproven nature of the technology. SDTC helps bridge this funding gap in two ways: by providing funding to help cleantech innovators carry out real-world demonstrations proving the value of their technologies; and by working with these early stage companies to build their value proposition and strengthen their business.

SDTC provides this funding from two separate funds totalling \$1.2 billion. The first and largest is the \$915 million **SD Tech Fund™**, which supports the development and pre-commercial demonstration of clean technology innovations. It also supports technologies that address issues pertaining to climate change and clean air, water and soil. The second is the \$275 million **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.

SDTC's newest fund is the **SD Natural Gas Fund™**, which supports the development and demonstration of downstream natural gas technologies. This fund will bring together \$15 million in contributions from the Canadian Gas Association's Energy Technology Innovation Canada initiative with a matching contribution from the SD Tech Fund.

## 2. Performance expectations

SDTC ensures accountability through an extensive performance and evaluation framework known as an evaluation logic model, of which there is one for each fund. By identifying operational activities and assessing their results, this model ensures progress is made toward SDTC's primary and supporting goals:

- Fund the development and demonstration of new sustainable development technologies related to climate change, clean air, clean water and clean soil to make progress toward sustainable development;
- Foster and encourage innovative collaboration and partnering among 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; and

- Ensure funded recipients' timely diffusion of new sustainable development technologies in relevant market sectors throughout Canada.

## 2.1 Compliance, audit, evaluation and public accountability

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 on the *Kyoto Implementation Act*. SDTC has received positive reviews from the multiple audits.

A value-for-money audit undertaken by KPMG on behalf of Natural Resources Canada was completed in July 2011. The audit's findings attested to the efficiency and effectiveness of SDTC's processes and reported favourably on the reasonableness of SDTC's operating expenses.

## 3. Actions and results – SD Tech Fund™

### 3.1 Protect SDTC's investment

To achieve its mandate and make prudent use of public money, SDTC must ensure it invests in the right technologies with the right management under the right terms and conditions. This is realized through the following management practices: process and schedule; project selection criteria; and integrating funding with the financial sector.

#### Process and schedule

##### Results

SDTC completed two rounds of funding in 2013/2014, allocating \$97 million for new projects and modifications to existing projects. To date, 276 projects have been approved for funding, representing a cumulative total of \$707 million of government funding. SDTC workshops and webinars reached more than 1,000 stakeholders and 30 regional partners over the past year, further improving the quality and viability of applications received.

##### Planned actions

SDTC is currently capitalized under *Economic Action Plan 2013* to maintain its current momentum and conduct the next rounds of funding. SDTC will also continue to leverage its Virtual Incubator™ program to engage entrepreneurs earlier in the funding cycle and provide more focused guidance.

#### Project selection criteria

##### Results

SDTC currently has 166 expert reviewers on its roster to undertake the important job of proposal review. SDTC staff members deliver two training sessions each year for new reviewers, plus four sessions annually for each of the Statement of Interest (SOI) and detailed proposal phases. SDTC also continues to build upon and leverage its risk management framework to effectively track projects through the due diligence phase.

##### Planned actions

SDTC will stay current with the needs of industry to ensure its roster of experts is knowledgeable and able to evaluate the increasing breadth of technologies being brought forward. A balanced scorecard for management capacity risk will be integrated into the risk management framework, while the High Impact Project Index methodology will be used to identify projects with the highest potential for economic and environmental impact.

## **Integrating funding with the financial sector**

### **Results**

SDTC continues to leverage private sector financing, with 82 percent of the \$1.9 billion in leveraged funding coming from the private sector including the allocation of venture capital investment, which now totals \$733 million.

### **Planned actions**

SDTC will continue to engage private sector financial organizations and individuals, provincial and federal government programs, and strategic investors to provide project funding for applicant consortia.

## **3.2 Project funding**

### **Results**

As of June 30, 2014, SDTC has provided funding to 276 projects across Canada. Including both SDTC and third-party investments, these projects represent a total leveraged value of \$2.6 billion. SDTC has met all of its allocation requirements for projects related to climate change and clean air, water and soil, with 89 percent of its portfolio having two or more environmental benefits. SDTC has also met its requirement to allocate at least \$50 million in funding to the hydrogen economy and \$50 million to cleaner fossil fuels, providing \$55 million and \$83 million in funding, respectively.

### **Planned actions**

Through the funding announced in *Economic Action Plan 2013*, SDTC will be able to conduct a funding round in the second half of 2014 and again during the first half of 2015. Areas of investment will focus on technology areas where Canada has a competitive advantage, including: unconventional oil and gas, distributed power generation, industry and community energy efficiency, as well as targeted longer-term technology opportunities.

## **3.3 Attract capital to SDTC portfolio technologies**

### **Results**

The 276 companies into which SDTC has invested \$707 million have raised \$2.6 billion in follow-on financing from the private sector. Fifty-six percent of this has come from outside of Canada, with 73 percent of foreign financing coming from the United States. Venture capital investment continues to play an important role in SDTC's follow-on financing activities. In addition to interacting with virtually every venture capital investor in Canada with an interest in clean technology, SDTC has extended its reach to include working relationships with many of the most active American and international cleantech venture capital investors.

### **Planned actions**

SDTC will continue to target public market investors, investment bankers, research analysts, debt investors, project financiers and institutional pension funds. SDTC plans to co-host a one-day event with several venture capital investors and investment banks to share market insights and increase the visibility of SDTC portfolio companies.

## **3.4 Create go-to-market consortia**

### **Results**

The SDTC portfolio of companies includes approximately 1,050 consortia partners that are directly involved in the projects funded by the Foundation.

### **Planned actions**

SDTC will continue to integrate 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 users.

## 3.5 Broker non-portfolio projects

### Results

While not all projects meet SDTC's eligibility criteria, they may still have a role to play in developing a sustainable technology infrastructure in Canada. SDTC supports the entire cleantech sector by coaching entrepreneurs to help them structure their projects more efficiently and by redirecting them to funding sources more suitable for their circumstances and characteristics.

### Planned actions

SDTC will continue to redirect entrepreneurs to funding sources such as Industry Canada's Industrial Research Assistance Program, the Program of Energy Research and Development, the National Sciences and Engineering Research Council and the National Research Council.

## 3.6 Identify solutions to adoption barriers

### Results

Stemming from its participation in the three major federal reviews on innovation—*Review of Federal Support to Research & Development*, *Beyond the Horizon: Canada's Interests and Future in Aerospace and Canada First: Leveraging Defence Procurement Through Key Industrial Capabilities*—SDTC is fostering the integration of best-in-breed companies from across Canada to provide robust, internationally competitive solutions in response to key market opportunities. The first integrated package, the Autonomous Community Solutions initiative, is currently being demonstrated.

### Planned actions

SDTC will continue to build integrated solutions with its best-in-breed portfolio companies, with initial packages being explored in the areas of mining, renewable fuels and food security.

## 3.7 Workshops and outreach

### Results

SDTC hosted workshops and participated in a number of cleantech-related conferences, with management and staff accepting invitations to speak at events such as the Toronto Global Forum and the GLOBE Conference in Vancouver.

### Planned actions

SDTC will continue to engage with a broad stakeholder base, including potential applicants, investors, government representatives and other parties, to further the development of Canada's sustainable technology infrastructure.

## 3.8 Communications

### Results

SDTC held several events over the past year with federal ministers and other senior members of provincial and federal governments to raise awareness of sustainable development technologies. In February 2014, the Government of Canada, SDTC and the Canadian Gas Association together announced the intention to create the SD Natural Gas Fund™ to support the development and demonstration of new downstream natural gas technologies. In June 2014, the Honourable Greg Rickford, Minister of Natural Resources and Minister for the Federal Development Initiative for Northern Ontario, and Jim Balsillie, Chair of SDTC, together announced nearly \$10 million in new investments for five Ontario projects under the SD Tech Fund™.

### Planned actions

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



### **3.9 Business case for sustainable development**

#### **Results**

SDTC utilizes its SD Business Case™ methodology to review the needs of Canadian economic sectors. An SD Business Case™ for downstream natural gas was initiated in 2013/2014, identifying technologies and investment priorities in the areas of residential, commercial, industrial, power generation, transportation and renewable natural gas. SDTC continues to implement the recommendations of its SD Business Cases™ for the aerospace, defence and security (ADS) sectors, which have led to the creation of the ADS Cleantech Program as a way to address recent changes in Canada's defence procurement strategy.

#### **Planned actions**

SDTC will continue to engage with the ADS and natural gas sectors to deliver made-in-Canada solutions addressing key industry priorities. It will also engage other sectors such as the energy pipeline sector (through the Canadian Energy Pipeline Association), the electricity sector (through the Canadian Electricity Association) and the mining sector (through the Mining Association of Canada) to determine their priorities and identify specific SD Business Cases™ that should be undertaken in future years.

### **3.10 Accelerate portfolio company growth**

#### **Results**

SDTC's goal is to have at least 20 portfolio companies achieve a minimum revenue threshold of \$100 million each by 2020. In support of this goal, the MTT acts as SDTC's dedicated vehicle to facilitate investment, market access and revenue growth for the highest impact portfolio companies. Leveraging SDTC's presence in major cities across Canada, the MTT provides in-market coaching to portfolio companies while also broadening SDTC's relationships with local and international investors, corporate partners and cleantech adopters. SDTC added two new Regional Directors in early 2014 in Toronto and Calgary, further improving its reach and influence in the capital markets and oil and gas sectors, respectively.

#### **Planned actions**

The MTT will develop account management plans for top portfolio companies, which will more explicitly define the kind of support SDTC can provide to accelerate their revenue growth. The MTT also plans to leverage other capacity building programs led by partner organizations to supplement SDTC's limited resources and ensure maximum impact.

### **3.11 Access to global export markets and partnerships**

#### **Results**

In October 2012, Export Development Canada (EDC) and SDTC announced a collaborative agreement to accelerate the entry of SDTC portfolio companies into strategic global cleantech markets. Since then, EDC has deployed its range of products—including bonding, guarantees and financing—into more than a dozen later-stage SDTC companies. Recent EDC-led initiatives include \$20 million in commercial project financing for BioAmber's biochemical production facility in Sarnia, Ontario; and the issuance of a large surety bond that enabled Vancouver's Nexterra to secure a £47.8 million waste-to-energy project in the United Kingdom. In addition, EDC and SDTC co-hosted a workshop in March 2014 to educate companies about growth capitalization during the early stages of development, and conducted a joint global market prioritization exercise to identify the international markets of greatest strategic importance to export-ready portfolio companies.

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

#### **Planned actions**

With China identified as one of the most lucrative markets but also as one of the most challenging to enter, SDTC will work with EDC and the International Finance Corporation to bring a number of portfolio companies to Hong Kong and mainland China to meet with state-owned enterprises, investors and

government officials. In this way, SDTC can promote this market opportunity to its top companies while linking them to DFATD and EDC, which can provide them with the market access and financing they need to fuel their commercial growth.

## 3.12 Enable market entry and commercial transactions

### Results

Creating go-to-market consortia has always been a core element of SDTC's mandate at every stage of the project lifecycle. Focused on building a pipeline of corporate investment and commercial opportunities for SDTC portfolio companies, the Technology Adoption Partnership initiative has engaged more than 100 multinational enterprises since its launch in 2011, with more than 50 subsequently entering into discussions with SDTC portfolio companies.

To help it prioritize on the most strategic corporate partners, SDTC's Market Transaction Team (MTT) developed a Corporate Partnering Scorecard to rate companies on attributes such as having an open innovation program and a corporate venture arm, as well as the degree to which they are strategically relevant to SDTC portfolio companies.

### Planned actions

The MTT will utilize the new Corporate Partnering Scorecard to identify three to five of the highest priority corporate partners with whom SDTC will seek to build deeper relationships, complementing the current partnership agreements signed with Veolia, Enbridge, Hatch and General Electric. The MTT will also organize an SDTC-hosted transportation summit in late 2014, bringing together SDTC portfolio companies whose technologies are applicable to users in the transportation sector along with potential global corporate partners and investors with strategic interests in these technologies.

## 4. Actions and results – NextGen Biofuels Fund™

### 4.1 Transition to project construction

Since the NGBF's outset, financial support has been directed toward front-end development positioned earlier in a project's lifecycle. However, as a small number of projects (and the industry) has matured, the NGBF is now transitioning toward later-stage project development approaching construction and completion of current funding requests.

As of June 30, 2014, the NGBF has received 14 applications for funding (AFFs). The final funding decisions for construction for two mature projects are anticipated in 2014. One of these projects has progressed through the NGBF Project Assurance Process (PAP) and has been approved for prior Phase 2 and Phase 3 funding. The second project has independently financed requisite front-end development and will seek funding only for plant construction pending successful completion of due diligence.

In 2013/2014, one large project was cancelled and consequently withdrawn from the NGBF project deal flow. This is consistent with an environment that has been less than favourable for biofuel project deployment due to limited access to project financing and competition from low-cost natural gas and other petroleum-based fuel alternatives.

### 4.2 Planned actions

The main NGBF objectives for 2014/2015 are as follows:

- Secure funding decisions pertaining to anticipated new applications at advanced stages toward final investment decisions;
- Secure final funding decisions for construction for projects that can start plant deployment by March 2015;

- Advance the transition of the NGBF toward a focus on near-term construction of plants; and
- Leverage the existing infrastructure of the first wave of next-generation biofuel plants in Canada, which represent a wide range of technology pathways and feedstocks from the forestry, agricultural and waste management industries.

## 5. Financial plans

### 5.1 Operating budget

The planned 2015 operating expenditure budget for the SD Tech Fund™ is approximately \$11.3 million, while the preliminary budget for 2016 is \$11.1 million. Operating expenditure budget includes under spend carry forward from previous years. For the NGBF, the planned operating expenditure budget for 2015 is approximately \$1.1 million, while the preliminary budget for 2016 is also \$1.1 million.

### 5.2 Allocation and disbursement

Annual project disbursement payments from the SD Tech Fund™ are projected to be \$55 million in 2014, and between \$50–65 million in each of 2015 and 2016. For the period of January 1 to July 31, 2014, SDTC's project disbursements totalled \$24 million, bringing total disbursements to \$464 million.

Based on the AFFs on hand as of June 30, 2014, three NGBF projects have received conditional allocation for disbursement before the end of March 2017, which is the end of the disbursement period as per the NGBF's funding agreement.

### 5.3 Investment portfolio

As of June 30, 2014, the SD Tech Fund™'s investment portfolio had an overall market value of \$111 million, while the NGBF's portfolio was valued at \$59 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's 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. 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 have been reduced substantially);
- Regulatory and policy risks (which have also been reduced substantially);
- Governance risk; and
- Evaluation risk.

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

- Construction timelines;
- Slowed industry momentum;
- Federal biofuel policy risk; and
- International demand.

SDTC 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.







# Vision for the Future: A mature cleantech ecosystem

Cleantech solutions stimulate the economy, create high-paying jobs and drive Canada's progress toward meeting its environmental targets.

SDTC aims to strengthen Canada's cleantech sector by building institutions and mechanisms with long-term, large-scale capacity for clean technology development, demonstration and commercialization. Ultimately, such institutions and mechanisms will be the cornerstones of a rich, mature cleantech ecosystem across the country.

Striving for continual improvement (and building on prior successes), SDTC continues to expand existing programs and implement new initiatives to attract more funding and stronger partnerships. As the global cleantech market grows further, SDTC's goal will be to deliver ever-greater benefits and value for every dollar of federal funding.

This corporate plan lays out the steps and actions SDTC intends to take to realize its vision in 2015.

## **Spurring collective innovation**

SDTC brings together the players who can contribute to Canada's cleantech future, starting with an established funding approach that requires every project to include representatives from throughout the supply chain: researchers, product developers, manufacturers, distributors, retailers and customers.

Going forward, SDTC will continue to forge and leverage partnerships and collaborations through strategic programs such as the Virtual Incubator™, Market Innovation Funds, sector-focused SD Business Case™ reports and other activities designed to help SDTC achieve more with less.

## **SDTC Virtual Incubator™**

Taking innovative technologies and solutions all the way from research to commercialization requires support: the kind SDTC provides in its efforts to build a mature cleantech infrastructure for Canada.

The SDTC Virtual Incubator™ is part of that infrastructure. Through in-person and virtual sessions, the Virtual Incubator™ offers guidance to technology developers that intend to commercialize clean technologies via Canadian supply chains. It introduces entrepreneurs to potential industry partners and demonstration hosts, and helps them strengthen their business and project plans through exposure to funding sources and potential partners, including leading researchers and academics.

The current and future value of the Virtual Incubator™ is in bringing early stage applications to a level of quality that will allow them to succeed in the commercial cleantech marketplace. SDTC expects that entrepreneurs accessing the program will overcome obstacles and realize the potential of their technologies more frequently, and that the use and effectiveness of the Virtual Incubator™ will continue to grow as more applicants take advantage of it. This will contribute to the sector's ability to sustain itself and deliver new technology solutions with increasing value for Canadians.

## **SD Business Cases™ and Market Innovation Fund**

The growing family of SD Business Cases™ builds Canadian capacity to promote homegrown clean technologies by identifying economic drivers for projects and defining, for venture capital financiers, the investment potential of clean technologies.

SDTC's Market Innovation Fund aligns cleantech development with the sustainable technology needs of Canadian industrial sectors through sector-specific joint funding from SDTC and industry players. These funds help increase investment in areas that are priorities for industry and the public alike, and leverage public dollars with targeted industry contributions.

The first mechanism of the Market Innovation Fund is the SD Natural Gas Fund™, which is a collaboration between SDTC and Energy Technology Innovation Canada (a venture of the Canadian Gas Association). With matching contributions of \$15 million from both SDTC and the Canadian Gas Association, the total fund value is now \$30 million.

SDTC is accelerating its work with industry associations and major corporations through these funds and will continue to engage other sectors going forward, including the energy pipeline and unconventional gas sectors. An SD Business Case™ with a new Market Innovation Fund contributor will be developed to determine future areas of investment focus.

## **Generating value for the aerospace, defence and security sectors**

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) sectors, which are shifting much of their focus to clean energy.

Acknowledging the recent changes made to Canada's defence procurement strategy (namely, the importance of enhancing value to Canada through large-scale procurements), SDTC is working to help Canada's small-and medium-sized enterprises (as well as international prime contractors) in the ADS space identify, evaluate and commercialize technologies that will generate superior value for all parties involved.

## **Contributing to trade and export revenue**

Canada's cleantech companies are export-oriented. More than half their revenues come from exports, and today those exports reach a growing diversity of markets: 44 percent are destined for countries other than the United States.

Given SDTC's explicit intent to contribute significantly to the doubling of Canada's share of the global cleantech market, SDTC-funded companies have the potential to make an even greater contribution to Canada's export revenues.

SDTC portfolio companies have excelled at attracting investment from large pools of capital in international markets as well as from corporate investors that regard SDTC-funded technologies as strategically important. As of July 2014, 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 over 50 percent of all follow-on financing. These results have been supported through SDTC's Technology Adoption Partnership and Follow-on Financing programs.

## **Global market partnerships**

In October 2012, Export Development Canada (EDC) and SDTC announced a collaborative agreement to achieve two goals: bridging the gap between proven technologies and commercial bankability; and accelerating SDTC portfolio companies' access to some of the most strategic cleantech markets in the world.

EDC and SDTC have complementary approaches that make bringing a technology to market more streamlined and efficient. EDC's programs help companies attract commercial financing similar to the ways SDTC's process de-risks technology development and levers incremental private-sector investment. In the past year, SDTC and EDC have also undertaken a global market prioritization exercise to identify the international markets of greatest strategic importance to SDTC's export-ready portfolio companies.

SDTC also aims to align with the Department of Foreign Affairs, Trade and Development (DFATD) to support the federal government's international trade initiatives. SDTC participates on DFATD's Sustainable Technology Advisory Board, which was created to steer and focus the Trade Commissioner Service to support Canada's clean technology industry more effectively.

SDTC continues to work with the Consulate General of Canada in both New York and Silicon Valley to identify and select the most appropriate cleantech companies that would benefit from the Canadian Technology Accelerator for Cleantech. SDTC is a founding member of this important platform that will bring Canadian innovations into the U.S. and global export markets.



## Greater productivity, higher profitability

Cleantech is the nexus of innovation and commercialization, where the real-world application of technologies delivers measurable economic and environmental benefits.

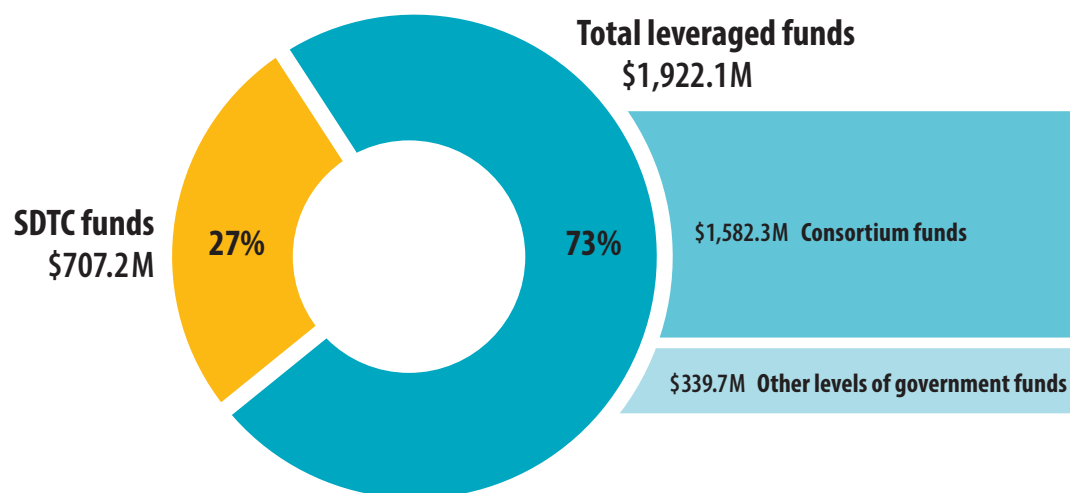
SDTC aims to be the partner of choice in the domestic and international cleantech fields. This includes providing expertise (derived from lessons learned and honed through years of experience) in key areas such as defining technology frameworks, picking the highest-potential companies to deliver economic 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 inserts its portfolio companies into global value chains. In addition to partnering strategically with appropriate multinationals, SDTC works to partner with Canadian and international innovation players to consolidate skills in domestic jurisdictions and create platforms to larger markets.

As noted previously, SDTC aims to accomplish these goals with the greatest possible leveraging of public investment. To date, for every dollar the Government of Canada has invested in clean technologies through SDTC, other partners have invested \$2.7. This near-tripling of public funds available to eligible projects has, since SDTC's inception, leveraged the government's investment of \$707 million into a project portfolio of more than \$2.6 billion, in which third-party project partners have invested close to \$1.9 billion.

In addition, SDTC portfolio companies have also received substantial follow-on financing from the private sector—a total of \$2.6 billion across 76 projects. This funding comes from all asset classes, not just venture capital, and has effectively multiplied SDTC's contributions well beyond the 2.7 times leveraging of public funds that is internationally recognized as best-in-class.

Figure 5: **SDTC portfolio breakdown of funds**



## 1. 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 37<sup>th</sup> Parliament of Canada. 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.”<sup>11</sup>

Although funded primarily 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). Its 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-sized enterprises (SMEs), its work has considerable relevance to innovation and business; as a result, the Foundation is also influenced by Industry Canada’s policy initiatives.

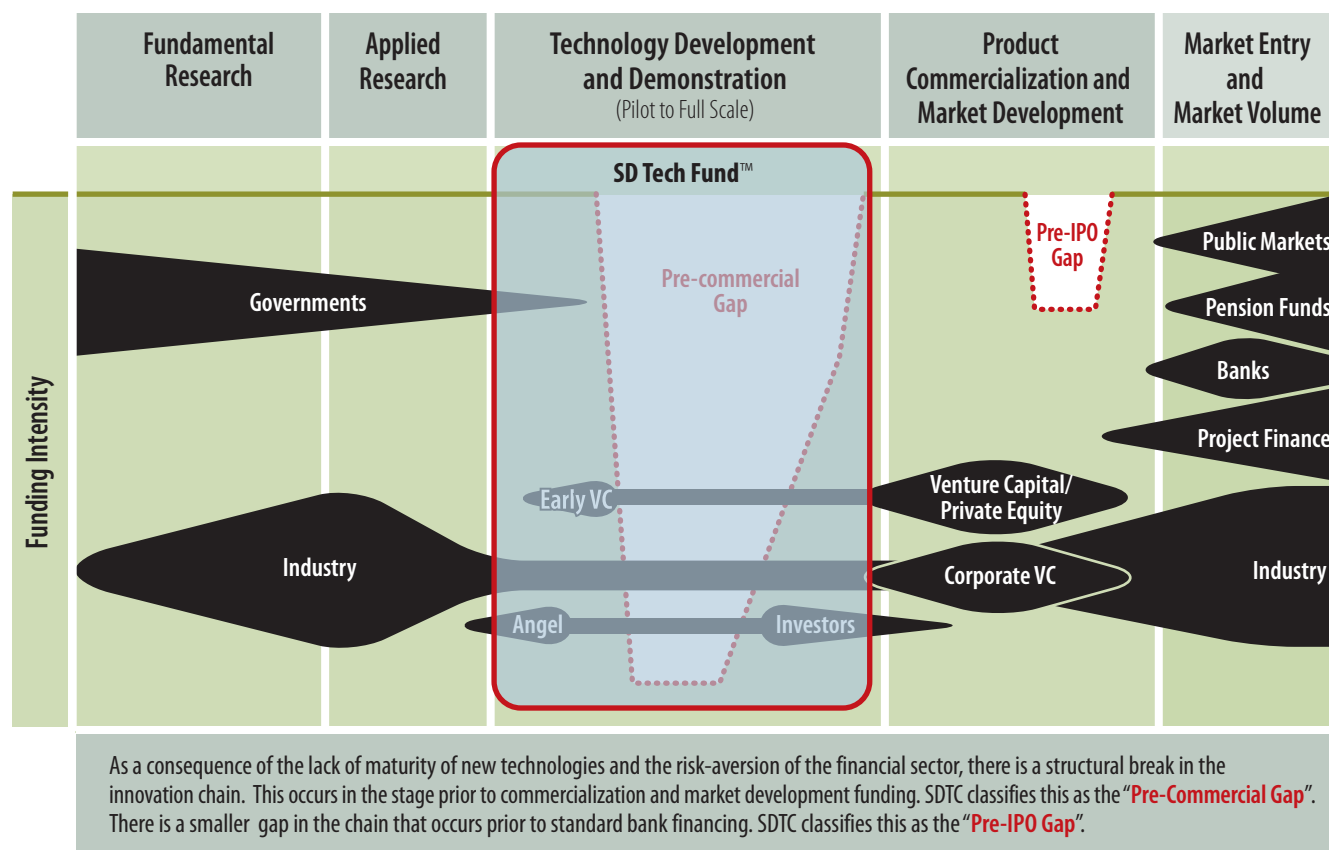


11. SDTC refers to the Brundtland Report’s definition of sustainable development: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

## 1.1 Bridging the funding gap

Any new technology must move through a series of stages. Between initial research and commercialization are the critical development and demonstration stages, which are often characterized by a financing gap (see Figure 6). For the entrepreneurs behind Canada's clean technologies—that is, the products and processes that would contribute to cleaner air and water, mitigate the impacts of climate change and improve the productivity of Canadian industry—it can be difficult to secure funding to sustain their efforts at these critical stages, primarily due to the financial and market risks associated with unproven technologies. This financing gap is therefore a significant barrier to market entry for many Canadian cleantech producers.

Figure 6: **Bridging the pre-commercial financing gap**

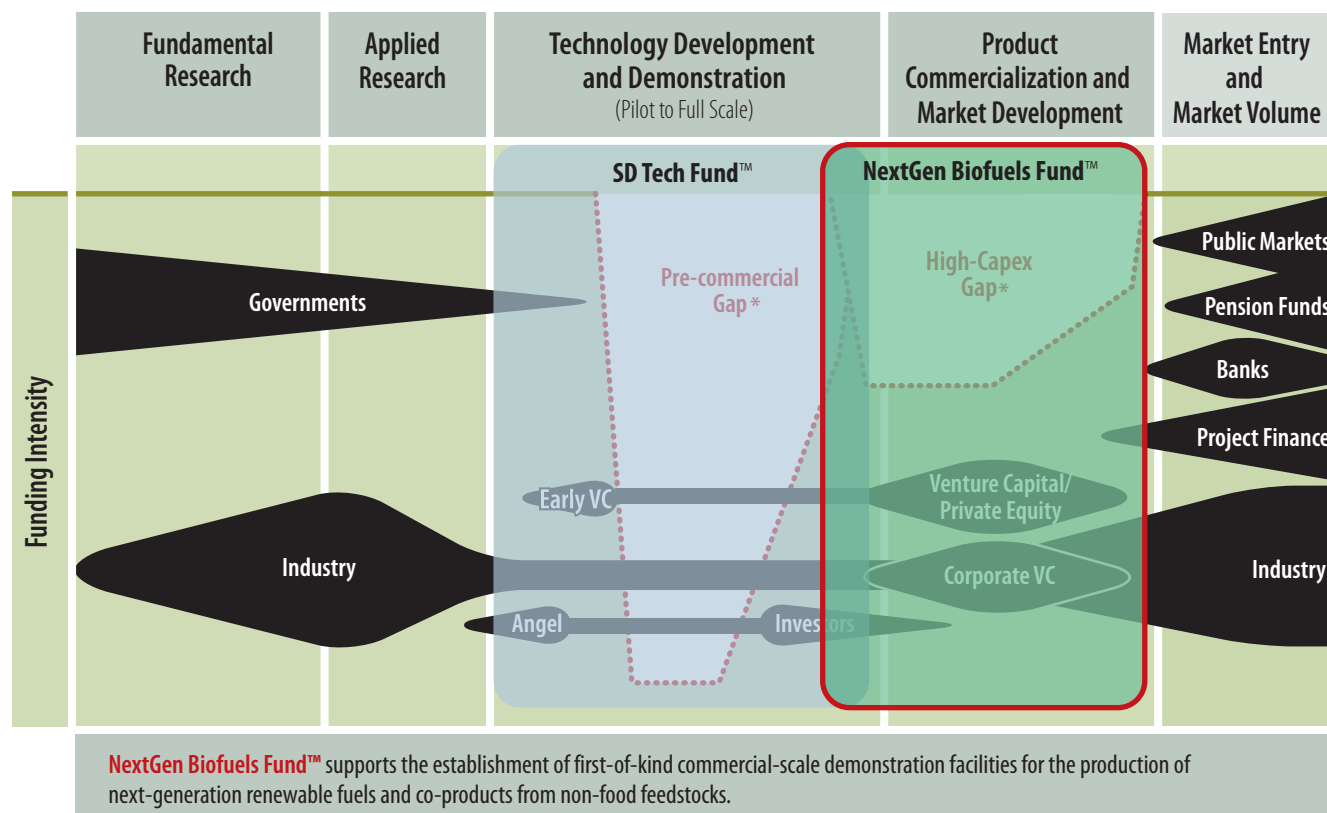


SDTC bridges the financing gap by helping cleantech innovators carry out practical, 'real-world' demonstrations of their technologies, which allow them to attract follow-on financing and move toward market entry. SDTC accomplishes this by providing funding for commercial demonstration projects from two separate funds totalling \$1.2 billion. These funds are complementary and address sequential gaps in the innovation chain.

SDTC's first and largest fund is the **SD Tech Fund™**, which supports the development and pre-commercial demonstration of clean technology innovations. Under SDTC's present funding agreement (Funding Agreement Four), the SD Tech Fund™ is to direct at least \$440 million to support technologies that address climate change and clean air issues. The remaining \$150 million supports technologies that address issues pertaining to clean water and soil.

The second fund is the \$275 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 7). The NGBF is targeted directly at helping cleantech producers overcome this high-CAPEX funding gap.

Figure 7: **Bridging the high-CAPEX financing gap**



The NGBF can also help Canada meet the targets outlined in the *Renewable Fuels Regulations*<sup>12</sup> while realizing the sustainability benefits associated with the production and use of renewable fuels. Another purpose of the NGBF is to encourage the retention and growth of Canada's technology expertise and innovation capacity for next-generation renewable fuels.

SDTC's newest fund is the **SD Natural Gas Fund™**, which supports the development and demonstration of new downstream natural gas technologies. This fund brings together contributions from the Canadian Gas Association through its Energy Technology Innovation Canada initiative with matching contributions from SDTC's SD Tech Fund™.

12. 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. They 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 they produce and import.

## 1.2 Mission statement and objectives

The mission of SDTC is to “act as the primary catalyst in building a sustainable development technology infrastructure in Canada.” Underlying this mission is the intent for it to become the centre of a national network of stakeholders and partners advancing cleantech solutions.

The Foundation’s overarching goals consist of the mission statement described above as well as the following three objectives outlined in Article 2 of pending Funding Agreement 5:

- Fund the development and demonstration of new sustainable development technologies related to climate change, clean air, clean water and clean soil to make progress toward sustainable development;
- Foster and encourage innovative collaboration and partnering among 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; and
- Ensure timely diffusion by funded recipients of new sustainable development technologies in relevant market sectors throughout Canada.

SDTC’s aim is to fund projects while building a critical mass of capability in the area of sustainable development technology innovation—with entrepreneurs and innovators from all sectors working together—to contribute to the creation of a robust Canadian cleantech infrastructure. The ultimate goal is the demonstration and diffusion of Canadian innovations—and to transform the marketplace in a way that increases the adoption and use of these technologies. Through these efforts, Canada will realize environmental improvements and economic growth that will benefit all Canadians.

## 1.3 Purpose of the corporate plan

Under the terms of Funding Agreement Four, SDTC is required to “provide a corporate plan as well as a summary of the corporate plan annually to the Minister.”<sup>13</sup> This report is intended to fulfill this obligation and includes a number of items outlined in Funding Agreement Four, including:

- Short- and medium-term outcomes according to the Foundation’s mandate;
- References to the successes and remaining challenges outlined in last year’s corporate plan;
- Details of SDTC’s funds and their management;
- Planned expenditures for the upcoming year, including (but not limited to) the amount of revenue to be drawn from fund income;
- Planned activities for the upcoming year and their anticipated results;
- Anticipated revenues from other sources;
- Risk assessments and mitigation strategies; and
- Ongoing performance monitoring strategies.

The development and execution of this report reflects SDTC’s 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.

13. See Section 11.06 of Funding Agreement Four pertaining to the SD Tech Fund.

## 2. Performance expectations

This report highlights 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

As outlined in its funding agreements, SDTC is accountable to the Government of Canada. Conformity with expectations 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™ (see Figure 8) is organized into nine elements called 'work scopes', with each one intended to contribute to the fulfillment of one or more of SDTC's primary goals. Work scopes are broken down according to the actions taken within them and assessed according to the results of those actions.

Similar to the SD Tech Fund™, the NextGen Biofuels Fund™ (NGBF) has an evaluation logic model (see Figure 9) that serves as an operational framework and planning tool to describe the steps taken to achieve SDTC's goals. The activities depicted within the NGBF's evaluation logic model are organized into seven work scopes associated with one or more of the fund'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. These outcomes are measured to assess SDTC's success in achieving its purpose and mission. The logic models are also used at the operational level to help define the roles, responsibilities, and annual goals and objectives of SDTC management and staff.

### 2.2 Compliance, audit, evaluation and public accountability

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

#### **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. Additional reporting and evaluation requirements will come into effect with Funding Agreement Five.

## 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 (see Figure 8 in Section 2.1). They also cover SDTC's activities undertaken between July 1, 2013, and June 30, 2014, 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, 2014, through June 30, 2015.

### 3.1 Protect SDTC's investment

**Objective:** To apply due diligence to the project application and acceptance process (including contract definition and project management); to integrate funding activities with the financial sector and, where appropriate, complement other programs by facilitating co-funding and follow-on funding opportunities for SDTC applicants; and to facilitate co-funding and follow-on funding opportunities by leveraging SDTC's due diligence expertise to accelerate investment by others.

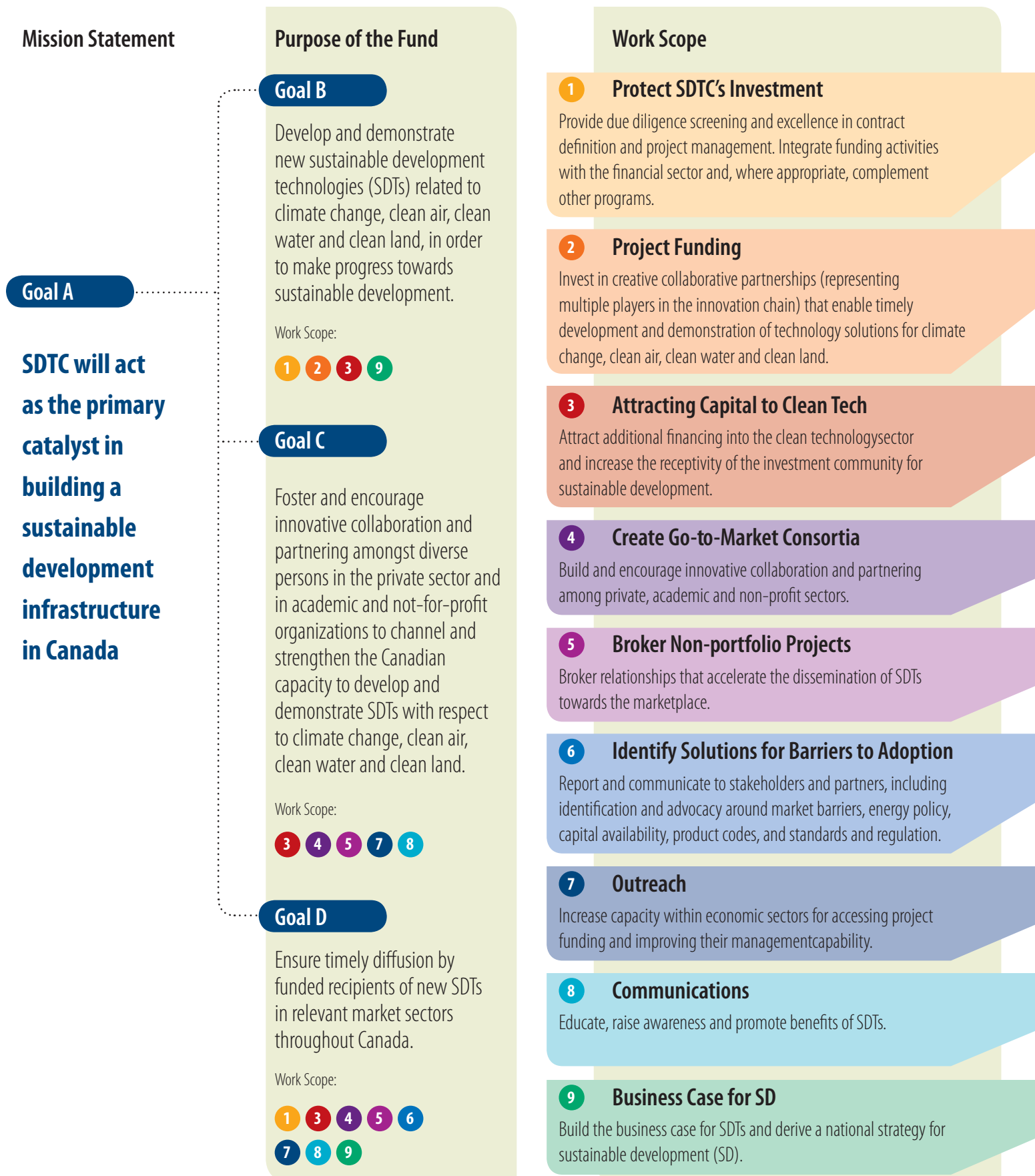
To achieve its mandate and make prudent use of public money, SDTC must ensure it invests in the right technologies with the right management under the right terms and conditions. This is realized through the application of the following management processes:

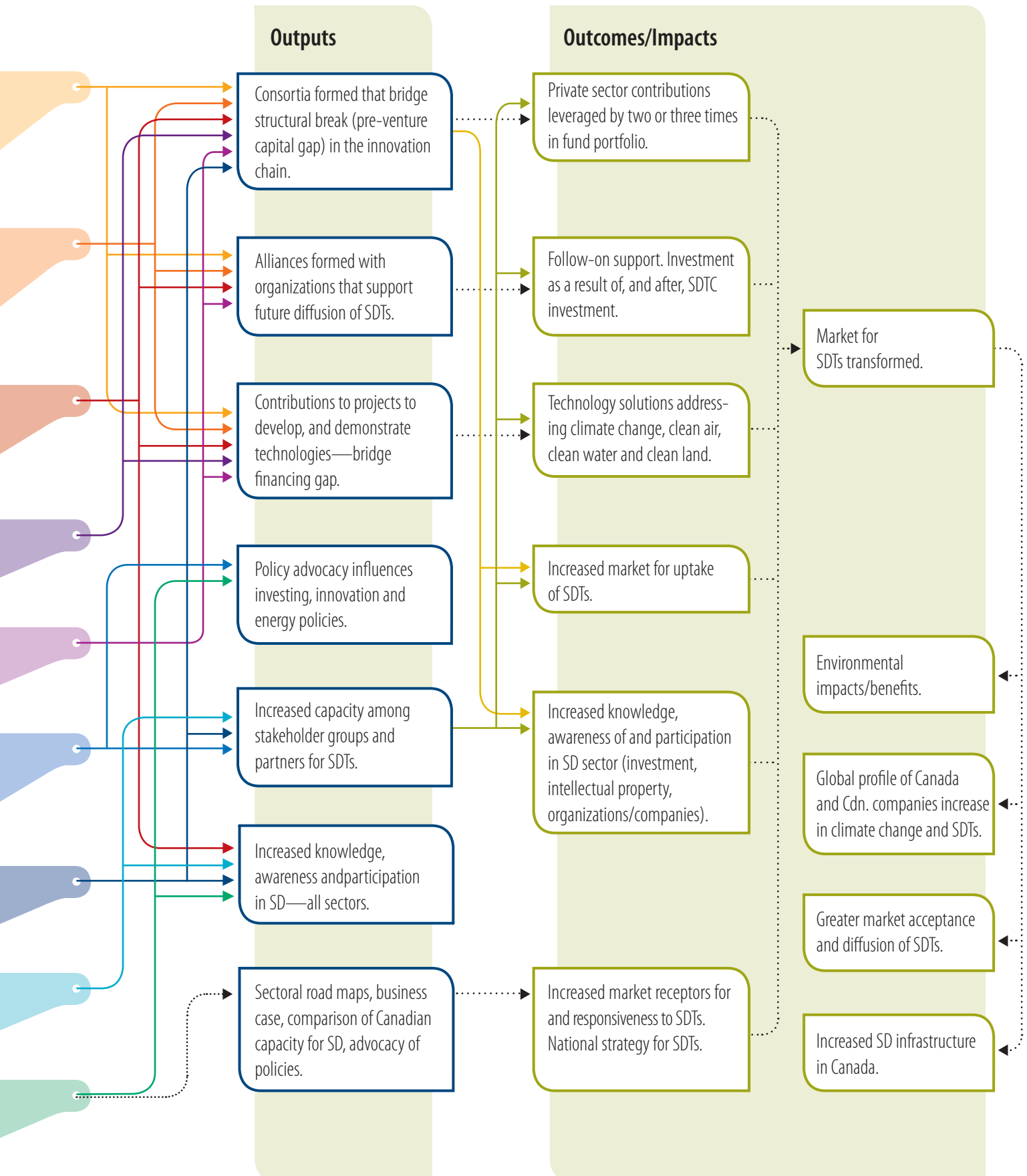
- Process and schedule;
- Project selection criteria; and
- Integrating funding with the financial sector.

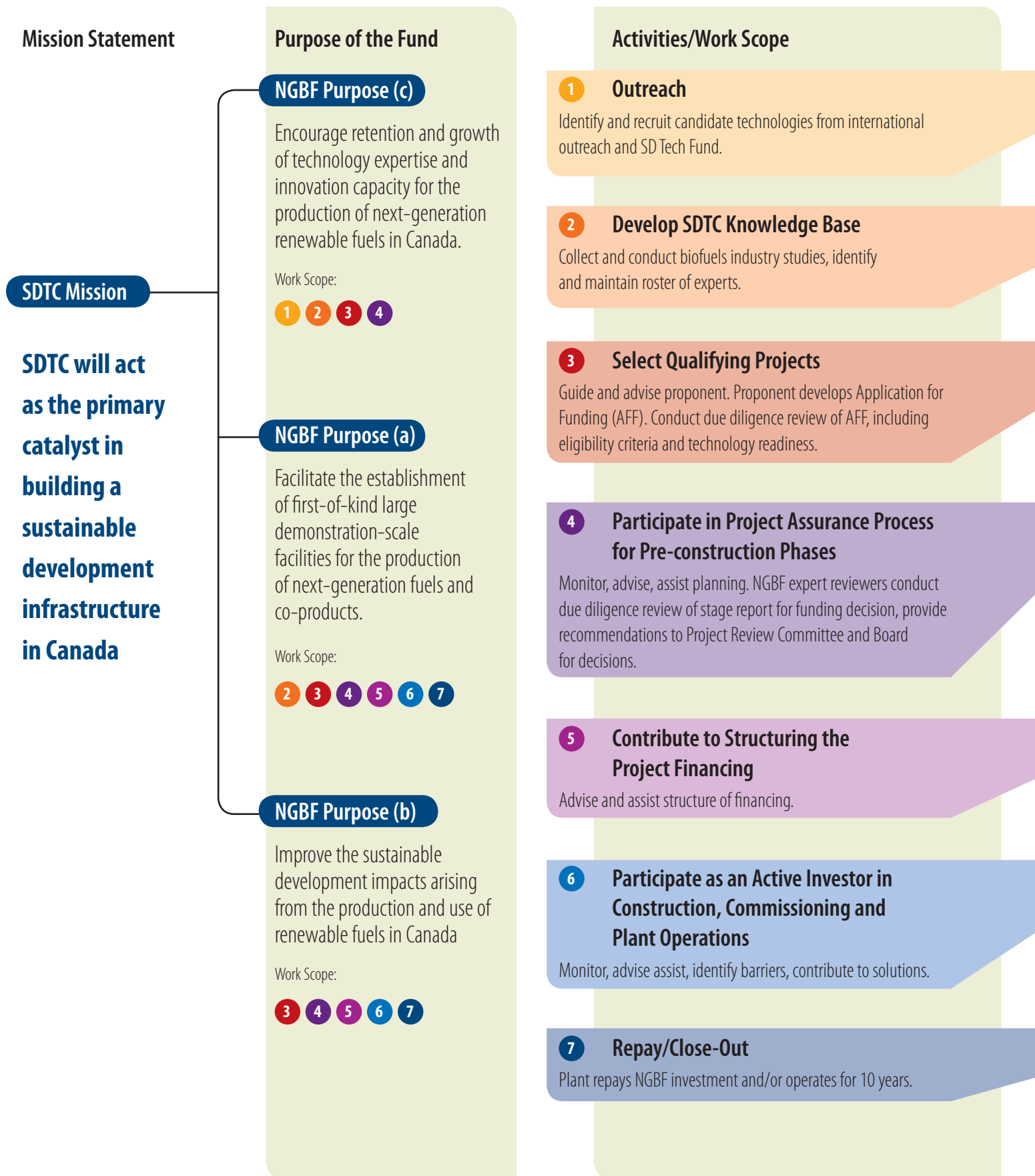
#### 3.1.1 Process and schedule

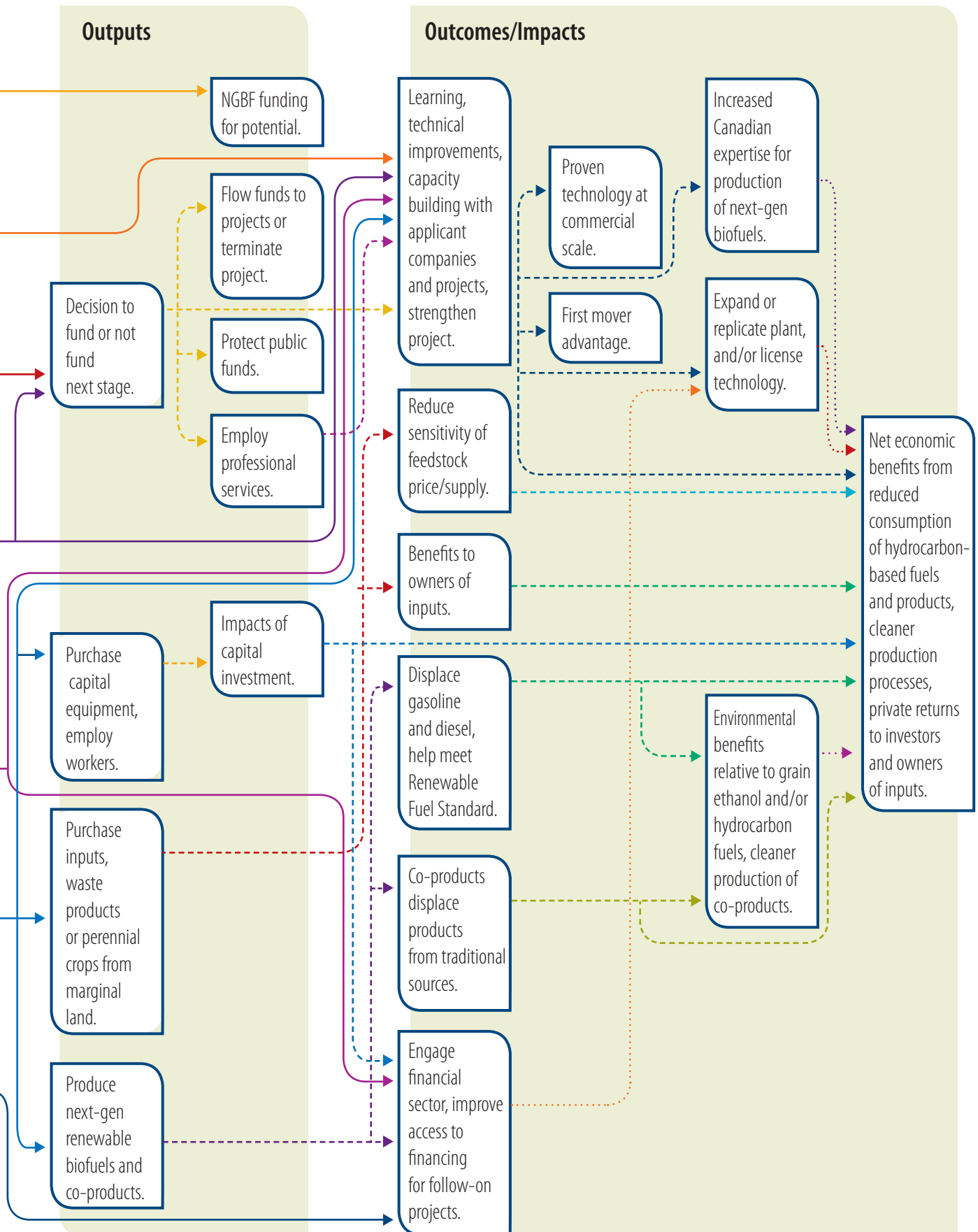
Between July 1, 2013 and June 30 2014, SDTC completed two funding rounds and approved funding for 26 projects. During this period, \$97 million in project funding was allocated for new projects and modifications to existing projects. From 2002 through June 30, 2014, SDTC placed 24 rounds of funding calls. By the end of June 2015, 26 rounds of funding will have been processed to the Board-approval stage. To date, 276 projects have been approved for funding by SDTC, representing a cumulative total of \$707 million of SDTC funding, including conditional funding allocations based on Funding Agreement Five.

Figure 8: SD Tech Fund™ logic model









SDTC continues to invest significantly in outreach activities to increase stakeholder awareness of the SD Tech Fund™'s investment priorities, application process and screening criteria. This has led to a continual improvement in the quality and viability of applications received.

Applicant outreach activities in 2013/2014 included speaking at targeted events for entrepreneurs; advertising online and in print publications; and leveraging the marketing channels available through SDTC partnerships, workshops and webinars, which reached more than 1,000 stakeholders and 30 regional partners. As a result of these activities, SDTC received 201 Statements of Interest (SOIs) over this period.

Outreach efforts were supplemented by an increase in the level of pre-application screening to limit applications to those who most closely fit the mandate, have technologies that fall into SDTC priority investment areas or offer disruptive clean technologies.

In many cases, an applicant's technology demonstrated real potential but the application itself was not fully developed. This may be due to a lack of clarity or completeness, an incomplete or inappropriate consortium, or a lack of a clear path to securing full project funding. In these cases, SDTC may work with applicants to address these issues and invite them to join the SDTC Virtual Incubator™: an industry facing, capacity building program that uses toolkits, webinars, workshops and industry partnering sessions to prepare targeted entrepreneurs for funding readiness.

#### **Planned actions – 2014/2015**

SDTC is currently capitalized under *Economic Action Plan 2013* to maintain its current momentum of deal flow and conduct the next rounds of funding. SDTC will leverage its Virtual Incubator™ program to increase SOI quality through earlier and more rigorous pre-screening as well as enhanced guidance for entrepreneurs with high-potential innovation.

### **3.1.2 Project selection criteria**

Project selection is a competitive process that assesses technology performance, market 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 to undertake the important job of proposal review, with 166 active reviewers currently on its roster. SDTC staff members 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 2013/2014, 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 – 2014/2015**

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.



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

### 3.1.3 Integrating 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 the current funding agreement, 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.

Eighty-two percent of leveraged funding currently comes from the private sector including \$733 million of venture capital investment, demonstrating that industry considers these technologies good investment opportunities.

#### Planned actions – 2014/2015

SDTC will continue to create awareness and understanding of the potential benefits to the private sector of investing in clean technology projects. It 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 initiatives 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.

The current funding agreement specifies that at least \$440 million must be allocated to support projects that meet the SD Tech Fund™'s objectives associated with climate change and clean air. Of these projects, 80 percent are to be primarily focused on climate change and 20 percent on clean air. SDTC has achieved these targets. Furthermore, SDTC encourages projects with multiple environmental benefits. Currently, 89 percent of SDTC projects generate two or more environmental benefits.

As of June 30, 2014, SDTC has funded 276 projects representing a cumulative value of \$2.6 billion, including those conditionally approved under the new Funding Agreement Five. 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 71 clean water/clean soil projects receiving funding approval, representing \$152 million in allocation. Of these, seven projects totalling \$18 million were approved for allocation between July 1, 2013, and June 30, 2014. Currently, 42 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, 2014, SDTC is on track to exceed each of these targets, allocating \$83 million for clean fossil fuels and \$55 million for hydrogen.

## Planned actions – 2014/2015

The new funding announced in *Economic Action Plan 2013* allowed SDTC to continue with funding calls in the second half of 2013 and the first half of 2014. This, in turn, will enable SDTC to conduct further funding rounds in the second half of 2014 and again during the first half of 2015. In line with the scheduling under Funding Agreement Five, SDTC has conditionally allocated \$100 million under two funding rounds. New applications for funding are currently under consideration.

Anticipating the new funding agreement (which emphasizes the creation of strategic energy technology advantage areas for Canada), SDTC will place a greater focus on investing in projects related to unconventional oil and gas, distributed power generation, industry and community energy efficiency, as well as targeted longer-term opportunities.

## 3.3 Attract capital to SDTC portfolio technologies

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

In 2009, SDTC launched the Follow-on Financing Program to facilitate additional private investment for its portfolio companies. As of June 30, 2014, a total of 276 companies—into which SDTC has invested \$707 million—have raised \$2.6 billion in follow-on financing from the private sector. Fifty-six percent of this has come from outside of Canada, with 73 percent of foreign financing coming from the United States.

The success of this program not only provides a strong validation of SDTC's alignment with the market, it also 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 investors.

Since the launch of the Follow-on Financing Program, SDTC has forged strong and constructive relationships with investors at all stages and asset classes, including seed and angel investors, venture capital investors, private equity, public markets, corporate strategic investors, commercial lenders and others.

Venture capital investment continues to play a particularly important role in SDTC's follow-on financing activities. The Foundation interacts with virtually every venture capital investor in Canada that invests in clean technology, exchanging deal flow along with market insights and emerging trends. SDTC has also extended its reach to include working relationships with many of the most active American and international cleantech venture capital investors. It is also working closely with the venture capital industry to better educate it on the attractive attributes of the clean technology asset classes that have helped improve investor sentiment toward sustainable technologies.

SDTC also conducts a number of outreach activities to identify and engage potential investors. For example, it has partnered with the TMX Group since 2009 to hold the TSX-SDTC Cleantech Investor Day, which provides an opportunity for private and publicly listed SDTC portfolio companies to present to more than 100 capital market professionals such as investment bankers, analysts, venture capital investors and institutional investors. SDTC has also held several 'speed dating' investor events in partnership with the TSX.

Members of SDTC's Market Transaction Team (MTT) participate in the selection committees for several major investment conferences, where SDTC portfolio companies frequently have the opportunity to pitch to investors. Some of these events include:

- Banff Venture Forum;
- Canadian Financing Forum (Vancouver);
- Agri-Investment Forum (Toronto);
- Atlantic Venture Forum (Halifax);
- Propel Energy Tech Forum (Calgary); and
- San Francisco Cleantech Forum.

As SDTC's portfolio matures, many of its companies will require capital at later stages and at a greater scale to efficiently fuel their growth going forward. For example, many SDTC portfolio companies have now evolved to the point where they need project financing for full commercial project deployments—which will necessitate the development of different kinds of relationships with a different set of investors.

#### **Planned actions – 2014/2015**

The MTT will continue to undertake sector-focused events to strengthen SDTC's network of investor relationships and provide an efficient platform for SDTC portfolio companies to meet with and pitch to potential investors.

The MTT, through SDTC's Capital Markets Specialist, will also continue to work with partners such as the TSX and the Toronto Financial Services Alliance to broaden the types of asset classes and investors engaged in the cleantech sector. SDTC and its partners will actively target public market investors, investment bankers, research analysts, debt investors, project financiers and institutional pension funds to promote relevant investment opportunities among later-stage SDTC portfolio companies and unlock more institutional capital into the Canadian cleantech market.

As an example, as part of SDTC's increasing emphasis on capital markets and to capitalize on current favourable conditions in the public markets, there are plans to co-host a one-day event with several venture capital investors and investment banks to share market insights, increase the visibility of SDTC portfolio companies and identify potential portfolio candidates.

### **3.4 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 includes approximately 1,050 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 900 organizations were directly involved in SDTC-funded projects.

#### **Planned actions – 2014/2015**

SDTC will continue to integrate 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.

### **3.5 Broker non-portfolio projects**

**Objective:** To broker relationships that accelerate the dissemination of sustainable development technologies toward the marketplace.

In some cases, technologies that apply for SDTC funding do not meet the established 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 the potential to produce environmental or economic benefits but does not directly fit the funding criteria, SDTC will broker relationships to 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 – 2014/2015**

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, the Program of Energy Research and Development, the National Sciences and Engineering Research Council and the National Research Council.

### **3.6 Identify solutions to adoption barriers**

**Objective:** To 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, among 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.

Stemming from its participation in the three major federal reviews on innovation—*Review of Federal Support to Research & Development*, *Beyond the Horizon: Canada's Interests and Future in Aerospace* and *Canada First: Leveraging Defence Procurement Through Key Industrial Capabilities*—SDTC has continued its work in supporting early stage companies in their efforts to bring their technology closer to commercialization. Building on its philosophy of partnering and building consortia, SDTC has identified and fostered the integration of best-in-breed companies from across Canada to provide robust, internationally competitive solutions in response to key market opportunities.

#### **Planned actions – 2014/2015**

The first integrated package, the Autonomous Community Solutions initiative, being demonstrated in 2014, combines leading Canadian technologies for waste, water, heat, electricity generation, and energy storage in a modular "utility in a box". This system is currently being demonstrated in Canada's high arctic as a means to improve quality of life and enable northern development. It also represents a substantive export opportunity for the Canadian companies involved. Work on additional integrated solutions will begin in 2014/2015, with initial packages being explored in the areas of mining, renewable fuels and food security. 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 decision-makers. 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 to work 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.

### 3.7 Workshops and outreach

**Objective:** To 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 2013/2014, SDTC hosted workshops and participated in a number of cleantech-related conferences, with management and staff accepting invitations to speak at several events throughout the year, including the Toronto Global Forum and the GLOBE Conference in Vancouver.

#### Planned actions – 2014/2015

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.

### 3.8 Communications

**Objective:** To educate, raise awareness and promote the benefits of sustainable development technologies.

SDTC undertakes a number of communications initiatives to disseminate related information, provide education and raise awareness of sustainable development technologies in Canada. In 2013/2014, SDTC held events with federal ministers and other senior members of provincial and federal governments. It also appeared before both the House of Commons Committee on the Environment and the Senate Committee on Energy, the Environment and Natural Resources.

For example, in February 2014 the Government of Canada, SDTC and the Canadian Gas Association together announced the intention to create the new SD Natural Gas Fund™ to support the development and demonstration of new downstream natural gas technologies. In June 2014, the Honourable Greg Rickford, Canada's Minister of Natural Resources and Minister for the Federal Development Initiative for Northern Ontario, and Jim Balsillie, Chair of SDTC, together announced nearly \$10 million in new investments for five Ontario projects under the SD Tech Fund™. This announcement followed the conclusion of an energy innovation roundtable in Waterloo, Ontario, hosted by Natural Resources Canada.

"The investments announced today demonstrate our government's commitment to environmental stewardship and creating high quality jobs in Ontario. By supporting advanced research and technology, our government is investing in Canadian prosperity and a cleaner environment."

**The Honourable Greg Rickford,**  
Canada's Minister of Natural Resources and  
Minister for the Federal Economic Development Initiative for Northern Ontario

#### Planned actions – 2014/2015

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, press kits and annual report/annual report supplement.

## 3.9 Business case for sustainable development

**Objective:** To build the business case for sustainable development technologies and inform the development of 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.

The Market Innovation Fund establishes joint funds with industry, leveraging public monies to allow industry to support technology development and demonstration. The SD Natural Gas Fund™ is the first mechanism of this program, with a fund valued at \$30 million over a three-year term. An SD Business Case™ for downstream natural gas was initiated in October 2013 and April 2014, identifying technologies and investment priorities in the areas of residential, commercial, industrial, power generation, transportation and renewable natural gas.

SDTC continues to work to implement the recommendations of its SD Business Cases™ for the aerospace, defence and security (ADS) sectors, which have led to the creation of the ADS Cleantech Program as a way to address recent changes in Canada's defence procurement strategy.

The June 2008 report, *Canada First: Leveraging Defence Procurement Through Key Industrial Capabilities*, detailed the modernization procurement plan for defence acquisitions. These acquisitions are subject to Industry Canada's Industrial and Technology Benefits (ITB) Policy, which requires every dollar of procurement be matched with an equivalent amount of Canadian content. This can be done directly (by using Canadian suppliers) or indirectly (by investing in strategic capabilities or leveraging Canadian companies into global supply chains). The ITB Policy was modified in 2009 to include mechanisms that would enable those affected by it (mainly large ADS companies) to make strategic 'win-win' investments in Canada, and again in 2014 to place additional focus on value propositions that have greater alignment with SDTC (i.e., technology focused, high-value activities in Canada). ADS prime contractors now recognize the ability to get a 'double win' from activities in Canada, as exports of innovative Canadian products to other countries are eligible for offsets in that country.

### Planned actions – 2014/2015

SDTC will continue to use the Market Innovation Fund to engage with other sectors and will undertake an SD Business Case™ with a new program contributor to determine areas of future investment focus. A long-term approach will identify priority areas and sectors for future SD Business Case™ development.

SDTC will continue to engage with the ADS and natural gas sectors to deliver made-in-Canada solutions addressing key industry priorities (in particular, the recent changes to the defence procurement strategy). It will also engage other sectors such as the energy pipeline sector (through the Canadian Energy Pipeline Association), the electricity sector (through the Canadian Electricity Association) and the mining sector (through the Mining Association of Canada) to determine the priorities of these sectors. Partnering with these sectors 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 should be undertaken in future years.



### 3.10 Accelerate portfolio company growth

**Objective:** To maximize the economic, social and environmental returns of the investments made in SDTC portfolio companies.

Even after a company has proven its technology, critical market-access and growth-capital gaps can make it difficult to take things to the next level. Successfully scaling a company through and beyond the market-entry stage requires different competencies and expertise compared to those needed to demonstrate and scale the technology.

SDTC's goal is to have at least 20 portfolio companies achieve a minimum revenue threshold of \$100 million each by 2020. (This is often referred to as the '20 by 2020 portfolio'.) To achieve this goal, a cross-functional Market Transaction Team (MTT) was established in late 2013 to act as SDTC's dedicated vehicle to facilitate investment, market access and revenue growth for the highest impact portfolio companies. SDTC tracks the portfolio of companies to identify companies with the potential to meet the \$100 million by 2020 threshold. The MTT provide strategic support to ensure that these companies have the best opportunity to meet this objective.

The MTT's success is measured on the basis of helping SDTC's top portfolio companies close financial and commercial deals, with specific targets established for each program. The MTT supports these transactions by providing market advisory services to portfolio companies; making targeted, pre-vetted introductions between portfolio companies and potential financial and commercial partners; and sharing SDTC due diligence and project status information with prospective investors and customers to accelerate and de-risk investment or purchase decisions.

Leveraging SDTC's presence in major cities across Canada, the MTT provides in-market coaching to top portfolio companies in a cost-effective manner while also broadening and deepening SDTC's relationships with local investors, strategic corporate partners and cleantech adopters. To increase the MTT's capacity to deliver upon its mandate, SDTC added two new Regional Directors in early 2014 in Toronto and Calgary, further improving its reach and influence in the capital markets and oil and gas sectors, respectively.

#### Planned actions – 2014/2015

The MTT will develop account management plans for the anticipated 20 by 2020 portfolio companies, which will more explicitly define the kind of support SDTC can provide to accelerate their revenue growth (and thereby help SDTC meet its \$100-million revenue target by 2020). The MTT also plans to leverage other capacity building programs led by partner organizations to supplement SDTC's limited resources and ensure maximum impact.

### 3.11 Access to global export markets and partnerships

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

The Canadian market is generally too small to build large, financially sustainable cleantech companies—necessitating the need to look beyond our borders for business growth. For this reason, the clean technology industry in Canada is highly export-oriented, with approximately 80 percent of cleantech SMEs in Canada participating in exporting compared to just nine percent of SMEs in other sectors.<sup>14</sup> Some of the fastest-growing markets are in developing countries, which also happen to be some of the most challenging and risky markets for early stage companies (which often lack the resources or expertise to avoid costly mistakes).

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.

14. Analytica Advisors. (2012). The 2013 Canadian Clean Technology Industry Report.



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—into more than a dozen later-stage SDTC companies. SDTC has supported these transactions directly by sharing stage-appropriate deal flow with EDC and, when requested and authorized to do so, with due diligence and project status information to help facilitate a more streamlined investment review by EDC.

Barriers related to 'bankability' (i.e., the ability to access commercial banks and/or project debt) continue to be a structural impairment to many new post-demonstration cleantech companies. The bankability gap is particularly critical for cleantech companies with capital-intensive technologies, where project financing is critically needed but rarely available for first-of-kind commercial deployments. Helping these companies overcome this barrier remains a collective focus for both SDTC and EDC.

Some of the more notable transactions over the past year that have helped SDTC portfolio companies bridge the bankability gap include \$20 million in EDC-led commercial project financing for BioAmber's biochemical production facility in Sarnia, Ontario; and an EDC-led issuance of a large surety bond that enabled Vancouver's Nexterra to secure a £47.8 million waste-to-energy project in the United Kingdom—the first commercial deployment of its kind outside North America.

Because educating companies about growth capitalization during the earlier stages of development can help avoid costly mistakes later as they seek to scale their businesses, SDTC and EDC co-hosted the Growth Capital Strategies Workshop in March 2014 to advise cleantech companies on how to plan ahead and successfully secure more efficient forms of growth capital.

Over the past year, SDTC and EDC have also undertaken a global market prioritization exercise to identify the international markets of greatest strategic importance to export-ready portfolio companies. Working from priorities previously expressed by SDTC-funded companies as well as sector-specific market intelligence from EDC, China and Western Europe were identified as the highest priority markets for SDTC to focus on in tandem with EDC and the Department of Foreign Affairs, Trade and Development (DFATD). These two markets will complement previously identified priority markets such as the United States and the Middle East.

SDTC works with DFATD in many other ways to help support the federal government's international trade initiatives. For example, SDTC participates on the Sustainable Technology Advisory Board, which was created to help DFATD's Trade Commissioner Service support Canada's cleantech industry more effectively.

In addition, SDTC continues to work with the Consulate General of Canada in both New York and Silicon Valley to identify and select the most appropriate cleantech companies that would benefit from the Canadian Technology Accelerator for Cleantech. SDTC is a founding member of this important platform that will bring Canadian innovations into the U.S. and global export markets.

## **Planned actions – 2014/2015**

SDTC's portfolio companies have not only identified China as one of the most lucrative markets but also as one of the most challenging to enter. Consequently, SDTC will be working with EDC and the International Finance Corporation (IFC) to bring a number of portfolio companies to Hong Kong and mainland China to meet with state-owned enterprises, investors and government officials. This represents a leveraged, cost-effective and de-risked way SDTC can promote this market opportunity to its top companies and link them to DFATD and EDC, which can provide them with the market access and financing they need to fuel their commercial growth. SDTC will also continue its work in the Middle East, specifically the United Arab Emirates (UAE), where SDTC has signed a memorandum of understanding with the Ministry of the Economy to support the UAE's objective to build an innovation economy as well as its own interests in providing portfolio companies with access to this important market.

### 3.12 Enable market entry and commercial transactions

**Objective:** To ensure the timely diffusion of SDTC's portfolio into the market.

Creating go-to-market consortia has always been a core element of SDTC's mandate at every stage of 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.

SDTC's Market Transaction Team (MTT), which executes the Technology Adoption Partnership initiative, connects with large corporations through a variety of outreach activities, including hosting 'open innovation' events, attending international forums and invitation-only partner events, and meeting with executives to understand their technology needs. The MTT builds highly trusted relationships with its network of corporate partners and makes strategically targeted introductions between SDTC portfolio companies, both directly and indirectly through partners such as DFATD and EDC.

SDTC's value proposition to its corporate partners 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 \$2.6 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.

Focused on building a pipeline of corporate investment and commercial opportunities for SDTC portfolio companies, the Technology Adoption Partnership initiative has engaged more than 100 multinational enterprises since its launch, with more than 50 subsequently entering into discussions with SDTC portfolio companies—resulting in a small but growing number of transactions per year.

To help it focus and prioritize on the most strategic corporate partners, the MTT has developed a Corporate Partnering Scorecard to rate companies on attributes such as having an open innovation program and a corporate venture arm, as well as the degree to which they are strategically relevant to SDTC portfolio companies. The MTT also works in partnership with SDTC's Virtual Incubator™ to share corporate relationships that are relevant to early stage companies in the pipeline.

SDTC has entered into formal partnership agreements with a few select corporate partners that have demonstrated the capacity and intent to invest or commercially partner with SDTC portfolio firms. To date, agreements have been signed with Veolia, Enbridge, Hatch and General Electric—and most of these partners have since closed a financial or commercial transaction with one or more SDTC portfolio companies.

#### **Planned actions – 2014/2015**

The MTT will utilize the newly developed Corporate Partnering Scorecard to identify three to five of the highest priority corporate partners with whom SDTC will seek to build deeper relationships (with the potential to sign memoranda of understanding). Formalizing these corporate relationships can lead to multi-faceted benefits such as increased deal flow, consortium partnerships, follow-on financing and commercial adoption.

The MTT will plan and conduct an SDTC-hosted transportation summit in late 2014, bringing together SDTC portfolio companies whose technologies are applicable to users in the transportation sector along with potential global corporate partners and investors with strategic interests in these technologies.

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

## 4. SDTC actions and results: NextGen Biofuels Fund™

The NextGen Biofuels Fund™ (NGBF) was created in September 2007 to support the establishment of first-of-kind, large-scale demonstration facilities for the production of next-generation renewable fuels and co-products.

The NGBF was initially structured to align with federal and provincial initiatives such as the renewable fuels standard (RFS)<sup>15</sup> as well as various forestry and agricultural programs, clean energy initiatives and climate change efforts. 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 project financing vehicle for first-of-kind, commercial-scale demonstration facilities that has operated with 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 has been 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 has also been 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.

### 4.1 Transition to project construction

Since the NGBF's outset, financial support has been directed toward front-end development positioned earlier in a project's lifecycle. However, as a small number of projects (and the industry) has matured, the NGBF is now transitioning toward later stage project development approaching construction. Accordingly, plant construction for a small number of leading Canadian projects is anticipated to start in 2015 (with final NGBF funding decisions pending).

15. International Energy Agency (2011). Technology roadmap: Biofuels for transport. Retrieved from [http://www.iea.org/papers/2011/biofuels\\_roadmap.pdf](http://www.iea.org/papers/2011/biofuels_roadmap.pdf).

As of June 30, 2014, the NGBF has received 14 AFFs. Active AFFs are representative of a variety of feedstock and process pathways for the production of next-generation renewable fuels across Canada, with applicants including leading biofuel technology companies as well as strategic partners from the energy and forestry sectors.

The final funding decisions for construction for two mature projects are anticipated in 2014. One of these projects has progressed through the NGBF Project Assurance Process (PAP) and has been approved for prior Phase 2 and Phase 3 funding. The second project has independently financed requisite front-end development and will seek funding only for plant construction pending successful completion of due diligence. The NGBF also expects three additional AFFs for projects identified at an advanced stage of development in 2014, with funding decisions hoped to be made in early 2015.

In 2014, one large project was cancelled and consequently withdrawn from the NGBF project deal flow. This is consistent with an environment that has been less than favourable for biofuel project deployment due to limited access to project financing and competition from low-cost natural gas and other petroleum-based fuel alternatives. Active funding requests pertaining to the AFFs received to date do not exceed NGBF fund availability, which is currently at \$275 million. Additional funding requests for project AFFs expected to be received in the short term are expected to change the current fund availability outlook.

## 4.2 Current state of the next-generation renewable fuels industry

While the production pathways for next-generation renewable fuels and co-products have not yet been validated commercially, several notable milestones have occurred during the past year. That being said, bottlenecks to the development of renewable fuels technologies and commercial-scale plant deployment still persist.

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

- The first wave of next-generation biofuel plants have completed construction in the U.S., Europe and Canada, with several plants currently undergoing de-bottlenecking and commissioning activities. This includes small-scale commercial projects by Ineos Bio, Kior, Chemtex, Abengoa and POET. Commercial plants by Enerkem and Dupont remain under construction.
- Some momentum in the development of next-generation biofuel projects has been observed within Canada's municipal waste industry.
- 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.
- While some small next-generation biofuel commercial projects are being rolled out globally, factors that impact industry deployment include limited access to financing; declining long-term gasoline demand in North America; reaching the 'blend wall' with first-generation ethanol; and the opposition to RFS2 by U.S.-obligated parties in light of the unavailability of next-generation biofuels supply. Additionally, major changes to energy markets, including newly discovered shale oil and gas reserves, are perceived by some as a potential solution to U.S. energy dependence issues.
- Petroleum companies have traditionally played a dominant role in providing much-needed financial support for next-generation biofuel technology demonstrations. However, a recent retreat from investment by petroleum companies has deepened the problems associated with the biofuels industry's limited access to financing.
- Governments are reassessing the costs and benefits of their biofuels policies. While there is enough waste biomass in Canada to supply 120 world-class biorefineries, the lack of a harmonized Canada-U.S. biofuels policies is affecting the development of Canadian projects.
- SDTC continues to receive interest in the NGBF. As the fund timeline for disbursement nears completion, companies are expediting efforts to advance project development to potentially access funding.

### 4.3 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 and two percent renewable content in diesel fuels in Canada;
- 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.

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.

### 4.4 Planned actions – 2014/2015

The main NGBF objectives for the period from July 1, 2014, through June 30, 2015, can be summarized as follows:

- Secure funding decisions pertaining to anticipated new applications at advanced stages toward final investment decisions;
- Secure final funding decisions for construction for projects that are scheduled to start plant deployment in 2015;
- Advance the transition of the NGBF toward a focus on near-term construction of plants; and
- Leverage the existing infrastructure of the first wave of next-generation biofuel plants in Canada, which represent a wide range of technology pathways and feedstocks from the forestry, agricultural and waste management industries.

## 5. Financial plans

### 5.1 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 2014 and 2015, 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 *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 2013 and 2014, 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 for 2015 and 2016:

- The plan continues to be predicated on a declining balance fund; however, it now takes into consideration the extension of the fund end date to December 31, 2021, as defined in draft Funding Agreement Five, revisions to other relevant funding agreement dates, and the new eight-year, \$325 million allocation.
- A commitment has been made to invest \$896 million to eligible projects over the life of the SD Tech Fund™. This amount includes a \$610 million commitment as per Funding Agreement Four plus an additional \$286 million as per Funding Agreement Five.
- Driven by the number of applications and complexity of technology opportunities, the workload will reach a plateau within the next few years. Operating budgets will be at a peak from 2015 through 2017; this will allow the continued screening of new applications while managing a peak in the number of projects undergoing contracting and execution.
- The increasing number and breadth of projects, combined with the increasing data-collection requirements to satisfy mandatory reporting obligations, will increase the cost per project.
- SDTC will continue to utilize outsourced services for core work in the areas of legal, human resources and information systems, as appropriate.
- Expenditures will include work to enhance the results reporting methodology related to projects' environmental benefits quantification and market transformation.
- As companies funded through the SD Tech Fund™ graduate from the SDTC portfolio, the Foundation is helping them 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 funding contributions by two to three times. The plan is to allocate funding twice annually to new projects until December 31, 2017, with contractual disbursements continuing to June 30, 2021. These efforts remain robust as evidenced by the creation of the SD Natural Gas Fund™. The Foundation anticipates that approximately \$140 million will be allocated in total by 2016.
- Projects typically last three years with contracted disbursements linked to milestone achievements (with one additional year on average to contract, for a total of four years). A 10 percent contractual holdback provision provides incentive for delivery of a final report addressing the project results upon completion.
- The grant investment portfolio will be managed to meet the liquidity obligations of the project disbursements and operating costs.
- SDTC's lifecycle budget is calculated based on the knowledge that all annual and otherwise scheduled deliverables required under Funding Agreement Five need to be prepared and delivered throughout the lifetime of the fund. These include the corporate plan, annual report, annual report supplement, public meeting, members meeting, post-contract reports and evaluations, and corporate performance and value-for-money audits, as well as all requirements brought about by the *Federal Accountability Act*.



### 5.1.2 Project allocation and disbursements – 2014/2015

Based on the additional allocation received in Canada's 2013 Federal Budget, SDTC is able to allocate an additional \$80 million to new projects in 2014. Annual project disbursement payments are projected to be \$54 million in 2014, and between \$50 M and \$60 M per year for each of 2015 and 2016. For the period of January 1 to July 31, 2014, SDTC's project disbursements totaled \$24 million, bringing total disbursements since inception to \$464 million. By the end of 2014, total disbursements since inception are projected to be between \$485 and \$505 million.

### 5.1.3 Operating expense budget and 2016 preliminary expense budget

Operating Expenses	2015 Planned Budget*	2016 Preliminary Budget
Governance	\$ 909,000	\$ 930,000
Mandatory reporting	\$ 967,000	\$ 983,000
Project screening and evaluations	\$ 2,763,000	\$ 2,834,000
Project contracting and monitoring	\$ 1,021,000	\$ 1,045,000
Infrastructure development and outreach	\$ 2,467,000	\$ 2,519,000
Financial audit	\$ 26,000	\$ 27,000
General administration	\$ 2,118,000	\$ 1,818,000
Outsourced services	\$ 747,000	\$ 762,000
Investment fund management fees	\$ 30,000	-
Technical and financial audit costs	\$ 259,000	\$ 231,000
<b>Total Operating Expenses**</b>	<b>\$ 11,307,000</b>	<b>\$ 11,149,000</b>

\* Based on June 30, 2014 estimates. The 2015 budget will be presented to the SDTC Board in November.

\* Operating expenditure budget includes under spend carry forward from previous years.

### 5.1.4 Investment portfolio status

SDTC continues to closely manage its \$111 million (as of June 30, 2014) 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, 2014, the RBC investment account had a market value of \$57 million and the TD account had a market value of \$54 million. The investment portfolios are invested in accordance with the provisions of Funding Agreement Four.



Asset Allocation Ratings Breakdown – June 2014  
Sum of Market Value (\$1,000,000s)

Rating	Government	Other	Total
AAA	\$ 3,306	-	\$ 3,306
AA	\$ 12,891	\$ 7,716	\$ 20,607
A	-	\$ 1,698	\$ 1,698
Money market securities	-	\$ 54,441	\$ 54,441
High-interest savings accounts	-	\$ 31,298	\$ 31,298
<b>Total</b>	<b>\$ 16,197</b>	<b>\$ 95,153</b>	<b>\$ 111,350</b>

% Breakdown

Rating	Current	Maximum	Available
Other AAA	0%	20%	20%
Other AA	6.9%	70%	26.6%
Other A	1.5%	80%	80%
Government AAA	3%	No limit	No limit
Government AA	11.6%	No limit	No limit
Government AA	0%	No limit	No limit
Money market securities	48.9%	No limit	No limit
High-interest savings accounts	28.1%	No limit	No limit
<b>Total</b>	<b>100%</b>		

## 5.2 NextGen Biofuels Fund™

### 5.2.1 Financial assumptions

The NextGen Biofuels Fund™ (NGBF) is a \$275-million<sup>16</sup> declining balance repayable fund with the disbursement period ending in 2017 and the end of the fund's life in 2027.

Based on the AFFs on hand as of June 30, 2014, two 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.

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.

16. Based on NRCan fiscal reporting at time of printing

### 5.2.2 Operating expense budget and 2016 preliminary expense budget

Operating Expenses	2015 Planned Budget*	2016 Preliminary Budget
Governance	\$ 140,000	\$ 143,000
Mandatory reporting	\$ 82,000	\$ 84,000
Project screening and evaluations	0	0
Project contracting and monitoring	\$ 541,000	\$ 546,000
Infrastructure development and outreach	\$ 50,000	\$ 51,000
Financial audit	\$ 16,000	\$ 16,000
General administration	\$ 251,000	\$ 256,000
Outsourced services	\$ 1,000	\$ 1,000
Investment fund management fees	\$ 22,000	-
<b>Total Operating Expenses</b>	<b>\$ 1,103,000</b>	<b>\$ 1,097,000</b>

\* Based on June 30, 2014 estimates. The 2015 budget will be presented to the SDTC Board in November.

### 5.2.3 Investment portfolio status

SDTC continues to closely manage the current \$59-million (as of June 30, 2014) 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, 2014, the RBC investment account had a market value of \$26 million and the TD account had a market value of \$33 million. The investment portfolios are invested in accordance with the provisions of Funding Agreement Four.

Asset Allocation Ratings Breakdown – June 2014

Sum of Market Value (\$1,000,000s)

Rating	Government	Other	Total
AAA	-	-	-
AA	-	\$ 81	\$ 81
A	-	-	-
Money market securities	-	\$ 33,052	\$ 33,052
High-interest savings accounts	-	\$ 26,435	\$ 26,435
<b>Total</b>	<b>-</b>	<b>\$ 59,568</b>	<b>\$ 59,568</b>

### % Breakdown

Rating	Current	Maximum	Available
Other A	0%	20%	20%
Other AA	0.1%	70%	26.6%
Other AAA	0%	80%	80%
Government AAA	0%	No limit	No limit
Government AA	0%	No limit	No limit
Government AA	0%	No limit	No limit
Money market securities	55.5%	No limit	No limit
High-interest savings accounts	44.4%	No limit	No limit
Total	100%		

## 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 have been reduced substantially);
- Regulatory and policy risks (which have also been reduced substantially);
- Governance risk; and
- Evaluation risk.

#### 6.1.1 International competitiveness risk

**The issue:** In the rapidly shifting global cleantech market, the United States, China, South Korea and Europe are all aggressively investing in cleantech to capture a share of the economic opportunity. International networks are based on trust and long-term relationships that SDTC has earned and nurtured. SDTC's alignment with key Canadian partners is critical for maintaining Canada's international competitiveness and ensuring resources are allocated wisely.

**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 the SD Tech Fund™, and direct engagement with foreign markets through the execution of memoranda of understanding like those signed with United Arab Emirates.

SDTC is also connecting with Environment Canada on the growth of the Environmental Technology Verification program, which is using a pending ISO standard to create a global marketplace for verified technologies.

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 (DFATD) and Export Development Canada (EDC) 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. The Autonomous Communities Solutions is the first example of this approach, which will be used as a template for further actions. 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:** With SDTC's recapitalization announced in *Economic Action Plan 2013* and the subsequent action to develop Funding Agreement Five, the Government of Canada has strengthened its instrument to deliver economic results in the cleantech sector. SDTC is now poised to achieve greater results with relatively lower amounts of federal funding.

## 6.1.4 Regulatory and policy risks

**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. To this end, the federal government has been issuing strong regulations and streamlining the regulatory process for major projects. (However, further work is needed to fast-track the use of new technology in these projects—and in doing so, ensure the greatest environmental and economic benefits to Canada while enhancing global awareness of Canada's natural resource sector.) The work being done in this area 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 Governance risk

**The issue:** Funding Agreement Five introduces new and expanded governance requirements to ensure SDTC operates in an effective and transparent manner. The new procedures relating to cash flow statements, for example, will protect SDTC from the perceived risk of failure related to its financial management. At the same time, these new procedures will introduce a risk associated with additional operating expenses for SDTC to manage. To maintain an appropriate operating budget while implementing the new cash flow statement procedures outlined in Funding Agreement Five, SDTC will need to prioritize the management of governance risk.

**Mitigation:** SDTC will continue to operate within a formal governance model ensuring timely and accurate communications with the Government of Canada. The provision of transparent and accurate cash flow statements will be prioritized through the implementation of policies and procedures to manage and document cash flow and financial information. Reporting procedures will address the requirements outlined in Funding Agreement Five while mitigating the risk of increasing operating expenses.

### 6.1.6 Evaluation risk

**The issue:** Given the extra governance requirements described in Funding Agreement Five, SDTC faces a greater risk to reduce and manage its evaluation-related operating expenses. SDTC is a federally funded foundation that operates under a framework of legislative, contractual and policy requirements. Managing public money means that SDTC will be closely scrutinized through various accountability mechanisms.

**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) and 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 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.

SDTC has assessed the requirements of the Funding Agreement Five and has implemented processes to ensure adherence to the reporting and transparency requirements.

## 6.2 NextGen Biofuels Fund™

Current issues that may pose risks to the NextGen Biofuels Fund™ (NGBF) include:

- Construction timelines;
- Slowed industry momentum;
- Federal biofuel policy risk; and
- International demand.

### 6.2.1 Construction timelines

**The issue:** Due to delays associated with technology readiness and limited access to financing, the global next-generation biofuels industry has been slow to get off the ground. With the first Canadian plants scheduled to start construction in 2015, there is some risk that they will not be completed prior to the NGBF deadline for fund disbursement of March 31, 2017. This could lead to projects not being selected because they would not be able to be completed prior to the deadline.

**Mitigation:** Comprehensive reviews of proposed schedules for plant construction are conducted by NGBF experts during project due diligence to assure timelines are realistic with acceptable risk of not meeting project and disbursement deadlines.

### 6.2.2 Slowed industry momentum

**The issue:** As conventional fuel sources continue to be discovered at attractive cost structures, the economic business case for next-generation biofuels has weakened.

**Mitigation:** The NGBF will continue to focus on the strongest business cases in the projects it selects and funds.

### 6.2.3 Federal biofuel policy risk

**The issue:** At the time of the NGBF's inception, Canada's agriculture policy included measures to address economic pressures on farmers and market uncertainty inclusive of the use of agricultural residues for biofuel plant feedstock (such use would also help offset GHG emissions linked to increased oil and gas production). Based on recent market conditions, however, both government policy and public opinions have shifted.

**Mitigation:** New opportunities for biofuels should focus more on the natural resources sector for feedstock rather than the agriculture sector and align with evolving Government policies.

## 6.2.4 International demand

**The issue:** As the biofuels industry develops, international perception and the associated demand for biofuels are changing. While some expected biofuel opportunities have not materialized, others are just emerging. It is important that the allocation of funds and prioritization of projects reflect the current and future state of international markets.

**Mitigation:** The NGBF mandate should be allowed to pivot based on global demand of target biofuels.

## 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, it 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 on March 31, 2004, which provided the additional grant of \$250 million allocated in the 2003 Federal Budget and received in April 2004. Funding Agreement Two defined the obligations for the entire \$350-million grant.

*'Funding Agreement Three'* refers to the agreement signed on March 31, 2005, which addressed the additional investment of \$200 million received in April 2005, defined the obligations for the entire \$550 million, and expanded SDTC's mandate to include technologies addressing clean soil and clean water.

*'Funding Agreement Four'* refers to the agreement signed on August 9, 2012. This agreement addressed an additional investment of \$40 million and defined 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 six years.

*'Funding Agreement Five'* refers to the agreement under development at the present time.

*'Next Generation Biofuel Funding Agreement'* refers to SDTC's fourth capitalization and was signed on September 4, 2007. The agreement addressed the \$500 million allocated in the 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. Following repurposing the fund now stands at \$275 million.

## 7.3 Directors

SDTC is governed by a Board of Directors reflecting the broad interests of the public, private and academic sectors in Canada. It is composed of 15 Directors, seven of whom are appointed by the Government of Canada, including the Chairman of the Board. The remaining eight are appointed by the Members of the Foundation. (There are currently two vacancies.)

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.

The following table lists the members of the SDTC Board of Directors as of the preparation of this corporate plan:

Name	Title	Board Committee
<b>Jim Balsillie</b>	Chairman, SDTC; Founder/Chair, Centre for International Governance Innovation	Ex-officio on all Board committees
<b>Ken Ogilvie</b>	Vice Chair, SDTC; Executive Director, Emeritus, Institute for Environmental Innovation	CGC
<b>David Pollock</b>	Second Vice Chair, SDTC; Co-ordinator of Finance and Administration, Citizens for Public Justice	CGC*, PRC-S
<b>John Bradlow</b>	Partner, Penfund	HRC*, A&GI
<b>Michael J. Brown</b>	President and CEO, Emergex Capital Partners	PRC-S
<b>K. Ross Creelman</b>	Managing Director, Marwood Ltd.	HRC, CGC
<b>Daniel Gagnier</b>	Chair, International Institute for Sustainable Development	PRC-N*, AC
<b>Sarah Kavanagh</b>	Corporate Director and Commissioner, Ontario Securities Commission	AC
<b>Ronald Koudys</b>	President, Ron Koudys Landscape Architects	PRC-N
<b>Jason Lee</b>	COO, Ooka Island Inc.	PRC-S, PRC-N
<b>Gary Lunn</b>	Former Minister of Natural Resources	CGC
<b>Juergen Puetter</b>	Former Chair, SDTC; President, Aeolis Wind Power Corporation and Blue Fuel Energy	HRC
<b>Jacques Simoneau</b>	President and CEO, Univalor	AC*, 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. (There are currently four vacancies.) Their function is to provide an informed and representative perspective of sustainability and contribution toward the achievement of SDTC's mission and goals.

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, Council of Canadian Academies
Johanne G��linas	Partner, Raymond Chabot Grant Thornton's Strategy and Performance Consulting Group
D. Christine Hollstedt, RPF	Principle, Inspiring Leadership
Brenda Kenny	President and CEO, Canadian Energy Pipeline Association
James Knight	President and CEO, Association of Canadian Community Colleges
David Runnalls	Senior Fellow, Sustainable Prosperity; Distinguished Fellow, Centre for International Governance Innovation
Andrew T. B. Stuart	President and CEO, Isowater Corporation
Katherine Trumper	Management Consultant, Full Circle Architecture
Joseph D. Wright	Retired, President and CEO, Pulp and Paper Research Institute

## 7.5 Officers

Name	Title
Jim Balsillie	Chairman, SDTC; Founder/Chair, Centre for International Governance Innovation
Jane E. Pagel	Acting President and CEO, SDTC
Richard J. Whittaker	Vice President of Investments and CTO, SDTC
Ken Ogilvie	Vice Chair, SDTC; Executive Director, Emeritus, Institute for Environmental Innovation
David Pollock	Second Vice Chair, SDTC; Co-ordinator of Finance and Administration, Citizens for Public Justice