

Proposed Strategic Research Network - Research Plan for FY 2022-23

2022-04-05
Prepared by DSRD, TBS

No.	Project Name	Project Description	Identified by Department	Lead	Output
Horizontal Reporting on BIGS Programming and the BIGS Program Universe					
1	Development of the BIGS Program Profiles	<p>This project aims to provide a clear outline of each Business Innovation Growth Support (BIGS) program, including program description, the program objectives, expected results/outcomes in the short term and long term, performance measurement indicators, beneficiary profiles, recommendations from previous program evaluations, etc. This study focuses more on a traditional program activity architecture. Various data sources will be leveraged to extract information, such as the PIF/PIPs, TB Sub, program web pages, program evaluation reports and other information sources.</p> <p>The profiles will help researchers to understand the program data they are working with and provide reliable and up-to-date information for the BIGS program performance assessment and impact analysis from a horizontal perspective.</p>	TBS's mandate	TBS	a new database
2	Understanding of the BIGS Beneficiary	<p>The enterprises receiving support over the program duration will be analyzed to improve a better understanding of BIGS beneficiaries. The analysis will be conducted for each program stream or a group of program streams with the similar objectives and type of support.</p> <p>Research questions include but not limited to:</p> <ol style="list-style-type: none"> What are the characteristics of a program's beneficiaries? <ul style="list-style-type: none"> - Geographic characteristics - by province - By industrial sector (e.g. cleanTech firms) - By firms age and size (e.g. scales-up, SMEs) - By type of enterprises (e.g. for-profit, non-for profit) - By GBA+ (e.g. woman-owned firms) What are the determinants of receiving different BIGS program support? What are the economic performance of the BIGS beneficiaries after receiving support? The indicators include employment growth, revenue growth, productivity, number of high-growth firms, etc. Expected outcomes and indicators identified/ designed for each program stream will be considered in the analysis. The extent to which certain groups have more access to the BIGS programs? 	<p style="text-align: center;">TBS's mandate</p> <p>NRCan: Quantifying and understanding Canadian Cleantech firms</p> <p>DEC: Better identify clientele of companies funded by the BIGS geographically and sectorally (i.e. automotive industry, aerospace, durable goods, etc.).</p> <p>ACOA: Regional economic development; Inclusive growth including labour market participation and performance of under-represented groups such as women, Indigenous peoples, visible minorities, persons with handicaps, youth</p>	TBS/STC	Part of the 3rd Annual Report released through Webpage and Open Data Portal
3	Assessment of Overall Innovation Programs Alignment and Complementarity	<p>Qualitative and quantitative analysis, examine innovation programs alignment with innovation policies, identify overlap, complementarity and gaps.</p> <p>Research questions include but not limited to:</p> <ol style="list-style-type: none"> Did the BIGS programs reach the target recipients as the program was intended for? Did the programs achieve the expected objectives and policy goals collectively? What is the complementary between innovation programs? 	<p style="text-align: center;">TBS's mandate</p> <p>Finance Canada: What is the complementary between innovation programs? How do innovation programs complement each other?</p> <p>ISED</p> <ol style="list-style-type: none"> Ensuring that recent investments and programs supporting innovation since the Innovation and Skills plan are meeting desired results and policy goals. An overview of the federal business innovation funding continuum study 	TBS/Finance Canada/ISED	Part of TBS release through Webpage and Open Data Portal
4	Annual Production of Diversity and Skills database	<p>Availability of GBA+ information (gender, age, education, immigrants, visible minority, disability, indigenous, labor market experience) at individual level in the BIGS micro database enables inclusive growth analysis and impact on under-represented groups</p>	<p style="text-align: center;">TBS's mandate</p> <p>ACOA: Inclusive growth including labour market participation and performance of under-represented groups such as women, Indigenous peoples, visible minorities, persons with handicaps, youth</p>	TBS/STC	a new database
5	International Innovation Support Programs	<p>The purpose of this study is to document the current state of innovation and growth support program evaluation from other jurisdictions. The study will look at the experience and best practices on various aspects, such as program design and delivery, methodology and indicator used to assess program performance, assessment of program alignment and complementarity from a horizontal perspective in other advanced economies.</p>	TBS's mandate	TBS	An analytical report

No.	Project Name	Project Description	Identified by Department	Lead	Output
BIGS Program Impact Analysis					
1	The Impact of the Government Innovation Support on Canadian Businesses	<p>The objective of this study is to assess the impact of the BIGS programming on the firms' economic performance and innovation capacity. Firstly, the BIGS program streams will be classified into different categories based on the goals of programs, expected outcomes and/or target recipients (themes could be innovation capacity, export performance, research and development, for example). Secondly, identify common indicators for each program category. Then, the impact analysis will be undertaken for each theme of program streams by using common indicators (e.g. employment, revenue, export, productivity, R&D expenditure, etc.). Quasi-experimental methods and Econometric modeling will be used in this research. The analytical framework will be more on a firm-centric architecture.</p> <p>This research would provide insights into the effectiveness of program streams in serving firms and other beneficiaries; help identify issues or deficiencies requiring further investigation; and provide an opportunity to identify best practices.</p> <p>Research questions include but not limited to:</p> <ol style="list-style-type: none"> 1. What is the impact of the BIGS programming on the high-growth firms? Whether the level of investment in programs that support the creation of high-growth firms is sufficient? 2. Did the government funding have an impact on clean technology? What are the effects of government funding on Cleantech firms' economic growth as compared to their counterfactuals? 3. Did the government innovation support the commercialization and export growth? Measure the effectiveness of export development programs. 4. The economic performance of majority-owned by women after receiving government innovation support. Did they grow faster than their counterfactuals? 5. What is the best design/practice of SME-focused program streams to support SMEs? 	<p>TBS's mandate Finance Canada:</p> <ol style="list-style-type: none"> 1. Scale ups enterprises and their relative performance 2. Are enterprises that interact with TCS programs when they are young more likely to be categorized high growth firms? <p>AAFC: Impact assessments and GBA plus across the entire suite of AAFC programs</p> <p>NRCan: a study that looks to understand the effects that government funding of Cleantech firms has on metrics such as growth, revenues and employment as compared to firms who have not received funding.</p> <p>ISED; DEC</p> <ol style="list-style-type: none"> 1. Regionalize data by province and break large provinces up into sub-regions 2. Comparisons of firms supported vs. not supported by BIGS, to understand the added value or loss of value of BIGS programs 	TBS/STC	Statistical tables and analytical report
2	What is the short-term versus long-term metrics of program impacts	<p>The objective of this study is to assess the program impacts in short-term versus long-term and associated determinants. In short term, do government innovation support have a positive effect on the contribution to employment and wages, R&D expenditures? Therefore, the supported firms will achieve important intermediate and long-term outcomes such as increasing sales and the total revenue? What factors determine the short-term outcomes and long-term outcomes? Various parameters will be examined, such as program design, financial funding intensity, program attributes and firms' certain characteristics, regional or national economic cycles, firms' human capital, firms' innovation behavior or R&D investment, etc. The complex economic analysis methods will be employed in this study. Machine Learning methods may be used to estimate heterogeneous causal effects.</p> <p>Research questions include but not limited to:</p> <ol style="list-style-type: none"> 1. What are the impacts of BIGS programming in short-term and long-term? 2. What are the determinants most likely associated with short-term and long-term outcomes? 3. What are the impacts of external factors (political, economical, social, technological, environmental, ethical, social, legal) on the success of these programs? 	<p>TBS' mandate Finance Canada</p>	TBS/Finance Canada (STC support)	Statistical tables and analytical report
No.	Project Name	Project Description	Identified by Department	Lead	Output

BIGS Program Impact Analysis					
3	Assessing BIGS economic performance for enterprises by firm size and age across differing BIGS program intervention types	<p>In FY 2020-21, the CPIAU conducted a review of international BIGS programs that have undertaken quasi-experimental impact assessments to see if international firms receiving support from the following program intervention types achieved better results than those that do not.</p> <ul style="list-style-type: none"> - Direct support for research and development - Provision of advisory services - Provision of export promotion services - Establishing networks and/or collaborative projects for multiple firms <p>Evidence from this review suggested that BIGS firms often experience positive results and that the results are most pronounced if the firms are smaller and younger.</p> <p>This project will seek to determine if there is a positive impact of the four major types of BIGS programs interventions on Canada's smaller and younger firms. This will fill an analytical gap as this has not been reported on in the Canadian context to date.</p>	TBS	TBS (STC support)	Statistical tables and analytical report
4	The impact of government direct and indirect innovation support on patent activity	The objective of this study is to examine the impact of government innovation support on the patent activity of the business sector. The study considers two types of government support: (1) direct support measured by the BIGS program, and (2) indirect support measured by SR&ED program. These two programs are the main tools that the Government of Canada uses to spur innovation. Since patent statistics are the main indicators of output innovation, this study also measures the impact of government support on business innovation. The project has already started	TBS	TBS (STC support)	Statistical tables and analytical report
5	The impact of BIGS and SR&ED on scale-ups	This project estimates the impacts of SR&ED and BIGS programs on the scale-ups performance, where the performance is measured in terms of exports, R&D expenditures and other innovation indicators.	TBS, Finance Canada	TBS/STC/Finance Canada	Statistical tables and analytical report
Specific Research Topics - CleanTech, IP Generation, Digital Technologies Uptake, and COVID Impact and others					
1	Intellectual Property Indicators to Measure Innovation	This project links trademarks and industrial design data to patent data, the LFE and BIGS program. This new dataset can complement innovation indicators and assess the impact of government support on the commercialization of innovation.	TBS	TBS/STC	new dataset and a report/presentation
2	Impact assessment of government support for transformational innovation	<p>This project aims to tackle the following questions:</p> <ol style="list-style-type: none"> 1. Do firms that invest in R&D and innovation activities in clean technologies seek support from government agencies? 2. Does access to government support contribute to the reduction of environmental footprint? 3. Does access to government support contribute to a shift in R&D and innovation activity at the firm level, such that those firms become more oriented towards environmental and clean technologies? 4. Does the provision of government support help the economic sustainability of clean-tech firms? 5. Are clean-tech firms productive in transforming subsidies into knowledge and technology creation? 	TBS and NRCan	Saint Mary's University sponsored by TBS (STC support)	Research paper
3	Corporate Innovation Inequality and Investment Slowdown	<p>This work will address the rising inequality of firms' innovation capacity (reflected by productivity and R&D expenditure) and its relationship with firms' investment rates in Canada. It will fill the gap by providing solid firm-level evidence of the relationship between growth inequality of innovation capacity and slowing corporate investment.</p> <p>This study will also investigate whether the government support for business innovation has contributed to reducing the gap in innovation capacity among firms and boosting overall corporate investment, assess the policy implications for building a dynamic innovation ecosystem.</p>	TBS	University of Waterloo sponsored by TBS (STC support)	Research paper
No.	Project Name	Project Description	Identified by Department	Lead	Output

Specific Research Topics - CleanTech, IP Generation, Digital Technologies Uptake, and COVID Impact and others					
4	Scale-ups and Canada's Innovation Policy Suite: Usage and Impacts	<p>This research project proposes two primary objectives:</p> <p>First, this project will describe how Canada's innovation policy suite has interacted with scale-ups over time. More specifically, what programs were used and at what intensity by different types of scale-ups – programs used prior to scaling-up, programs used post scaling-up, programs scale-ups typically paired with other programs, etc.</p> <p>Second, the project will assess the impacts of key programs and program combinations on businesses' economic and innovation performance, such as probability of scaling-up, sales growth, employment growth, R&D expenditures, exporting, patenting.</p>	ISED, TBS	ISED, University of Toronto, and TBS (STC support)	Research paper
5	Growth of Cleantech SME's from start-up to scale-up.		NRCan		
6	IP Generation - provide evidence/data on Canada's strength in IP generation and weakness in commercialization		NRCan		
7	Use and uptake of Digital Technologies (AI, Quantum, Internet of Things (IoT) in the natural resources sectors		NRCan		
8	Impact assessment of COVID emergency programming	The COVID emergency programming will become available in the Winter (October or November 2021).	ACOA, TBS		