

The Report of the
International Expert Panel
review of
Grand Challenges Canada

September 2015

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Dear Mme Saucier

I am pleased to submit to you the Final Report of the International Expert Panel review of Grand Challenges Canada. Over the past six months, my colleagues on the Panel and I have had the opportunity to learn about Grand Challenges Canada by reviewing a range of documents on your programs and outcomes, meeting with the Board of Directors and the management team, and speaking with stakeholders and innovators from across the globe. This report summarizes the findings of our deliberations and considerations for Grand Challenges Canada, including looking to the future.

I would like to conclude by thanking all of the individuals who contributed to this report. First and foremost, I would like to thank my fellow Panel members. It was a genuine pleasure to work with this group of thoughtful and engaged individuals who are all experts in their own right. The quality and depth of this report is a testament to their knowledge and insight. I would also like to thank all of the stakeholders and innovators who took the time to share their views and experiences with the Panel. Our deliberations were richer and deeper because of their time and contributions. Finally, I would like to thank the team that supported the Panel and the preparation of our report.

Best regards

Marie-Lucie Morin, Chair
International Expert Panel

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Executive Summary

Grand Challenges Canada (GCC) was launched in May 2010 as an Alternative Service Delivery (ASD) vehicle for the Government of Canada with the objective of supporting transformative innovations in global health.

The programs delivered by GCC have been consistent with the continuous and sustained focus on global health issues internationally, driven by the Millennium Development Goals (and their successor the Sustainable Development Goals). Progress has been achieved: increasing global attention to maternal, newborn and child health has led to significant advances. However, persistent challenges remain. GCC's work in global mental health has also helped both to raise the profile of this significant challenge internationally and increase investment in this critical area. Over this same period, innovation has played a growing role in global health, providing new and potentially transformative solutions to critical health challenges.

Over its first five years, GCC has built a development innovation platform to address two primary types of challenges: *Targeted Challenges* in maternal, newborn and child health and global mental health, and *Innovator-defined Challenges* through the Stars in Global Health program. The concept of Integrated Innovation[®] sits at the centre of GCC's approach, which is defined as "the coordinated application of scientific/technological, social and business innovation to develop solutions to complex challenges."

In late 2014, the Board of Directors of Grand Challenges Canada commissioned an International Expert Panel to assess GCC's impact over its first five years of operations and to provide recommendations for future direction. The Panel's work was undertaken in parallel with an independent Summative Evaluation of the Development Innovation Fund in Health (the funding vehicle for GCC) that is scheduled to be completed in September 2015.

Building on its deliberations and findings, the Panel articulated a set of future considerations for Grand Challenges Canada in eight core areas: Structure, Governance, Funding, Performance Measurement, Organizational Architecture, In-country Relationships and Science Diplomacy, Priorities and Transition to Scale.

In the Panel's view, GCC's programs have met identified global health needs, particularly in maternal, newborn and child health and global mental health. The Panel also found that the *Stars in Global Health* program is a useful vehicle to mobilize and engage innovators in Canada and in low- and middle-income countries (LMICs). More broadly, the Panel felt that Grand Challenges approach, as an innovation platform, makes an important contribution to solving problems and maximizing impact.

The Panel opined that GCC has already achieved significant outcomes, for which the ultimate impact will be fully realized in the next phase of operations. The Panel also recognized GCC's role in four additional areas: promoting Canadian leadership in

development innovation, stimulating innovation in LMICs, developing new models of social finance, and focusing attention on critical health challenges.

The Panel was of the view that GCC is likely to deliver on its long-term outcomes, based on its robust pipeline of innovations that are already starting to go to scale and on projections of impact that have been modelled. That being said, the Panel also stated that scaling impact in a sustainable manner is a challenge for any innovation enterprise and that more focus on successful models of sustainable scaling of innovation is needed.

The Panel recognized that GCC's flexibility to operate will be an important driver of its continued efficiency and effectiveness. Given its mission, the Panel was of the view that it is appropriate for GCC to continue to rely on core funding from the Government of Canada. The Panel also suggested that GCC should do more to mobilize complementary funding from other sources. The Panel noted that a significant challenge to GCC's long-term sustainability will be its inability to accept financial returns beyond principal on its investments.

Finally, the Panel commended the leadership of GCC's CEO, his personal commitment and that of the team over GCC's first five years of operation. Looking ahead, Panel members highlighted the need to focus on organizational strengths, human resources development and ensuring that GCC has all the necessary tools to fulfill its mission.

Introduction

Grand Challenges Canada (GCC) is a not-for-profit organization that was launched in 2010. Funded by the Government of Canada and as per its stated vision, the organization supports Bold Ideas with Big Impact in global health to save and improve lives in low- and lower-middle income countries.

In late 2014, the Board of Directors of Grand Challenges Canada commissioned an International Expert Panel to review GCC's impact and outcomes over its first five years of operations, and to provide recommendations for its future direction. The terms of reference are included as **Annex 1**.

The members of the Panel were:

1. Ms. Marie-Lucie Morin (Chair)
2. Dr. Maharaj Kishan Bhan
3. Prof. Catherine Clark
4. Mr. Gary Cohen
5. Dr. Carol Dahl
6. Dr. Alex Deghan
7. Dr. Glenda Gray
8. Dr. Arthur Kleinman
9. Dr. Nelson Sewankambo.

Biographies of the Panel members are included as **Annex 2**.

The Panel was asked to consider seven questions:

1. To what extent does Grand Challenges Canada meet pressing global needs?
2. To what extent is Grand Challenges Canada delivering on its short-term expected outcomes?
3. Given its current programs and activities, is Grand Challenges Canada likely to deliver on its ultimate outcome of saving and improving lives?
4. In what ways and to what extent is the Government of Canada's investment in Grand Challenges Canada providing value for money?
5. How does Grand Challenges Canada's performance compare with that of comparator organizations globally?
6. How has Grand Challenges Canada influenced the brand Canada is projecting internationally, including with respect to science diplomacy?
7. Taking into account Grand Challenges Canada's plan between 2015 and 2020, what are your suggestions for future directions?

The Panel met several times via teleconference and gathered in Toronto, Ontario, in July 2015. Members were briefed by management from Grand Challenges Canada about its programs and activities, reviewed extensive documentation and reports, and conducted numerous interviews with Grand Challenges Canada's innovators and other stakeholders. A list of people interviewed and reference documents are included as **Annex 3**.

This report outlines significant findings from the Panel's deliberations and lays out some key considerations for GCC for the future.

This report has three main parts:

Part I – Background

Part II – Synthesis and Summary of Findings

Part III – Future Considerations.

Part 1 – Background

A Brief History of Grand Challenges Canada

A Grand Challenge is one or more specific critical barrier(s) that, if removed, would help solve an important health problem in the developing world, with a high likelihood of global impact through widespread implementation.

Grand Challenges Canada, 2010

Grand Challenges Canada (GCC) was created as the primary delivery vehicle for the *Development Innovation Fund (DIF)*. This fund, announced in the Government of Canada's Federal Budget 2008, was intended to:

Support the best minds in the world as they search for breakthroughs in global health and other areas that have the potential to bring about enduring changes in the lives of the millions of people in poor countries.

Following Budget 2008, the federal government undertook a year-long process to determine how and who would implement the DIF. After extensive consultation, the decision was made that a consortium of three organizations would deliver the DIF:

Grand Challenges Canada would be the primary delivery vehicle.

Canada's International Development Research Centre (IDRC), to ensure strong accountability to the Government of Canada, and to help engage developing country researchers.

The Canadian Institutes of Health Research (CIHR), to provide and/or certify world-class peer review processes.

The intention was that GCC, as an outside-of-government organization with an independent board of directors, collaborating with the other consortium members, would be an alternative service delivery vehicle to which the Government of Canada would transfer the risk associated with investing in development innovation with a particular focus on global health. GCC would have both the capacity and expertise to manage the risks associated with innovation, and the nimbleness to respond to opportunities as they arise in the rapidly shifting innovation domain. An intensive, year-long process was undertaken to implement GCC, building on best practices for a development innovation organization. (Please see **Annex 4** for a description of GCC's governance structures and processes.)

In 2013, a **Formative Evaluation** of the Development Innovation Fund in Health was completed. The overall assessment from this evaluation was that:

Good progress has been made on implementation within the sphere of direct control, and planning has begun for a number of activities (scaling, etc.) that are in the spheres of direct and indirect influence.

A **Summative Evaluation** of the Development Innovation Fund in Health is being done for the Government of Canada by Oxford Policy Management, and is scheduled to be completed in September 2015.

Launch and Program Development (2010–2012)

GCC was launched on May 3, 2010, with a commitment from the Government of Canada of \$225M over five years. This funding was later re-profiled to extend to March 2017. By design, the Government of Canada provided GCC with a broad mandate, and freedom to set and define its own priorities within the domain of global health. Following its launch, GCC focused on developing and implementing its approach to global health innovation, called the ‘Grand Challenges approach.’ Key dates and accomplishments to date are outlined on the **Timeline of GCC’s Accomplishments** (right). Entries in green are some of GCC’s more significant **partnerships**, entries in red are **announcements**, and entries in blue are the launch of new **programs**.

GCC’s current programs and activities are summarized in the **Process Map** (see next page), which provides an overview of GCC’s **funders and funding** from government (green), **funding to innovators** from GCC (blue), **governance mechanisms** (red), and descriptions of **processes and programs** (black). This process map does not include programs and partnerships that have concluded, such as the Point-of-Care Diagnostics program and the partnership with the Bill & Melinda Gates Foundation on Phase II Grand Challenges Explorations projects.

A Timeline of GCC’s Accomplishments



Development Innovation Fund in Health (IDRC) \$225M 2010–2017



Grand Challenges Canada

Board of Directors
Scientific Advisory Board

~50% of Funding



Proof of Concept: Targeted Challenges



~50% of Funding

Proof of Concept: Innovator-Defined Challenges

Proof of Concept \$250K

Saving Lives at Birth (MNCH)

Saving Brains (MNCH)

Global Mental Health (Non-MNCH)

Stars in Global Health (MNCH)

Stars in Global Health (Non-MNCH)

Proof of Concept \$100K



10–15% of the most successful projects at Proof of Concept



Transition to Scale
Described in more detail in the *Grand Challenges Canada Transition to Scale Investment Process* box. Innovators identify and engage *scaling partners* that provide matching funding along with knowledge and expertise.

Scaling Partnership (DFATD) \$10M 2013–2015



Investment Committee
Global Health Investment Fund

Transition to Scale Up to \$3M



Partners at Scale
Some innovations require further investment to achieve their full impact at a national or multinational level. Grand Challenges Canada will facilitate the handoff of these innovations to scaling partners as appropriate. The primary partners are domestic governments, non-government organizations and multinationals.

Program Development

The first Grand Challenges to be addressed by GCC were announced in fall 2010. They included a partnership with the Bill & Melinda Gates Foundation to co-fund Canadian and low- and lower-middle-income country (LMIC) innovators in Phase II of the *Grand Challenges Explorations* program, and the launch of a Grand Challenge in *Point-of-Care Diagnostics*.

Over the next several years, GCC developed two streams of challenges: **Targeted Challenges** in maternal, newborn and child health and global mental health, and **Innovator-defined Challenges** through the *Stars in Global Health* program. These programs are summarized in the box to the right, and are described in more detail in **Annex 5**.

At the same time, GCC developed the concept of Integrated Innovation[®], which is defined as “the coordinated application of scientific/technological, social and business innovation to develop solutions to complex challenges”. This concept recognizes that “scientific/technological innovations have a greater chance of going to scale to achieve global impact and sustainability if they are developed from the outset in conjunction with appropriate social and business innovations”. Integrated Innovation is at the heart of the Grand Challenges approach, and is described in more detail in **Annex 6**.

Program Delivery and Transition to Scale (2012–2015)

Having identified its core programs, GCC’s focus shifted in 2012 from program identification to program delivery and transition to scale. This shift in focus was crystalized in GCC’s *Strategic Plan to 2020*, which was approved by its Board of Directors in 2012 and sets out the following vision and mission:

Vision: Bold Ideas. Big Impact. A Better World.

Mission: Saving and improving lives in low- and lower-middle-income countries through Integrated Innovation.

GCC also recognized that, to maximize impact and effectively manage the risks of innovation, it would have to go beyond simply identifying and supporting transformative

THE TARGETED CHALLENGES

Saving Lives at Birth is focused on addressing the challenge of maternal and newborn survival, and calls on the brightest minds across the globe to identify and scale up transformative prevention and treatment approaches for pregnant women and newborns around the time of birth.

Saving Brains is focused on the fulfilment of human capital potential by focusing on interventions that nurture healthy child and brain development in the first 1,000 days of life.

Global Mental Health seeks to improve treatments, and expand access to mental health care in low- and middle-income countries.

INNOVATOR-DEFINED CHALLENGES

Stars in Global Health is a venture capital-like program that supports exceptional innovators who have Bold Ideas with Big impact in the area of global health, and who are based either in Canada or in low- or middle-income countries.

innovations; it would have to work to ensure that those innovations made it into the hands of those who are most in need, a process that GCC calls 'Transition to Scale.' To address this need, GCC developed and implemented the *Transition to Scale* (TTS) program. More detail on this program can be found in **Annex 7**.

Building on its *Transition to Scale* program, GCC also defined a secondary strategic priority focused on testing new models of private investment, blended value and pay-on-results, to mobilize private capital in support of global health innovation. As part of its commitment to deliver on this strategic objective, GCC became the anchor investor in the **Global Health Investment Fund** in 2013.

Given the current level of funding, it would not be possible for GCC itself to enable all of the potentially transformative innovations in GCC's pipeline to go to scale. In addition, GCC saw an interesting and potentially powerful opportunity to align development and diplomacy by using GCC's programs to engage with countries and regions of strategic importance to Canada. To capitalize on this opportunity, since 2012 GCC has partnered with and/or supported the implementation of a number of national Grand Challenges programs in such countries as Israel, Brazil, India, Peru, Thailand, South Africa and Ethiopia. (Please see **Annex 6** for a current list of Grand Challenges organizations.)

The outcomes of some of GCC's most promising innovations funded to date are included as **Annex 8**.

Looking Forward

GCC has been in operation for five years. Given that it can take 10–15 years for innovations to move from proof of concept to the market, GCC can still be considered to be in an early phase of implementation. Looking forward, GCC will pursue its strategic objectives, as established by the Board of Directors, with an increased focus on transition to scale. This approach is supported by two recent funding announcements by the Government of Canada:

1. The announcement on June 12, 2015, of \$161M in new funding from the Department of Foreign Affairs, Trade and Development (DFATD) to support programs and initiatives in maternal, newborn and child health (MNCH); in particular, *Saving Lives at Birth*, *Saving Brains*, *MNCH Stars in Global Health* and *MNCH Transition To Scale*.
2. The inclusion of \$22.8M in new funding in Budget 2015, for fiscal year 2016–2017, "to continue supporting GCC's innovative programming and work in a variety of areas"; the nature and purpose of this funding is under discussion with the Department of Foreign Affairs, Trade and Development.

An important issue for GCC in the coming year will be the potential renewal of the Development Innovation Fund in Health, building on the outcomes of the current Summative Evaluation of this initiative. GCC also plans to continue to mentor and support the growing global network of Grand Challenges organizations.

The State of the World: Innovation in Global Health

The International Expert Panel believed that it was important to understand GCC in the broader context of innovation in development, and the growing international focus on global health.

Global Health in the Sustainable Development Goals

Over the past decade, there has been continuous and sustained focus on global health issues internationally, driven by the Millennium Development Goals (MDGs), as well as a number of global health crises (including the recent Ebola outbreak). This focus has been particularly apparent in multilateral institutions, including the World Health Organization (WHO) and the World Bank. These institutions have renewed their focus on important global health issues, such as maternal, newborn and child health (MNCH), and have increased it in areas of non-communicable diseases, such as mental health. At the same time, important initiatives like GAVI, the Vaccine Alliance and the Global Fund to Fight AIDS continue to mobilize the international community, and have been identified as leading global health initiatives that have yielded impressive results.

In September 2015, the 17 Sustainable Development Goals (SDGs) were adopted by the UN General Assembly to replace the MDGs. The SDGs will run from 2015 to 2030, and will be a major focus of international development activities over this time. A number of the SDGs focus either directly or indirectly on global health and/or the importance of innovation, including:

Goal 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture

Goal 3: Ensure healthy lives and promote well-being for all at all ages

Goal 6: Ensure availability and sustainable management of water and sanitation for all

Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.

Other SDGs are focused on related issues, such as gender equality and the empowerment of women and girls (Goal 5).

The Burden of Global Health Challenges

The burden of disease for MNCH challenges is staggering. According to the Canadian Network for Maternal, Newborn and Child Health:

- In 2013, 289,000 women died from preventable causes related to pregnancy and childbirth, and 99 per cent of these deaths occurred in developing countries.
- Another 10–15 million women suffer severe or lasting illnesses or disabilities each year, caused by complications during pregnancy or childbirth.
- About 15 per cent of all pregnancies present a potentially life-threatening complication.

Further, the *Saving Lives at Birth* partners indicate that:

The onset of labour marks the start of a high-risk period for both mother and baby that does not ease until at least 48 hours after birth. During this short period of time, 145,000 maternal deaths, 1.45 million neonatal deaths and 1.2 million stillbirths occur each year.

Increasing global attention to maternal, newborn and child health in the past five years (through the UN Secretary-General’s *Every Woman Every Child* initiative, for example) has led to significant advances in these areas. However, analysis of recent reports suggests that progress remains slow in two important areas:

1. Persistently high newborn mortality rates.
2. Moving beyond survival to “thrival”.

A similarly compelling argument can be made about the importance of global mental health and its impact on the global burden of disease:

Mental health disorders are prevalent in all regions of the world, in every community and across every income level. Nearly 14 per cent of the global burden of disease is attributable to mental health disorders, with almost three-quarters of this burden affecting people in LMICs. Mental health disorders are the largest contributor to the overall global burden of non-communicable disease, and are themselves risk factors for both communicable and non-communicable diseases, as well as disability.

The importance of global mental health was reinforced by the 66th World Health Assembly, which adopted the WHO’s Comprehensive Mental Health Action Plan 2013–2020 in May 2013. This plan includes several indicators and targets, such as a 20 per cent increase in service coverage for severe mental health disorders. This reinforces the directions taken in GCC’s *Global Mental Health* program.

Both MNCH and global mental health have a significant impact on the global burden of disease, and they are both areas in which Canada, through GCC and other organizations and institutions, are showing leadership.

Innovation in Global Health

Innovation plays an important and growing role in global health, providing new and potentially transformative solutions to critical health challenges. Many countries, including

Canada, have recognized the important role for innovation in development, and have begun to strengthen existing and implement new approaches in this regard, many by launching Grand Challenges initiatives.

The Grand Challenges (GC) family of grant initiatives began in 2003 as a single program, Grand Challenges in Global Health, launched by the Bill & Melinda Gates Foundation, the Foundation for the National Institutes of Health, the Canadian Institutes of Health Research and the Wellcome Trust. In 2008, Canada announced its Grand Challenges program, which launched in 2010 as Grand Challenges Canada. Over a similar timeframe, USAID launched its Grand Challenges for Development program and its related Development Innovation Ventures program. Since 2012, the GC family of grant programs has grown substantially into a global network for innovation, whose members include Grand Challenges Brazil, India, Peru, South Africa, Thailand, Japan and Israel. (Please see **Annex 6** for more information on Grand Challenge organizations.)

Canada has invested in development innovation through the International Development Research Centre, GCC, the Department of Foreign Affairs, Trade and Development, and through a number of other platforms. Canada has also shown global leadership in the area of innovative financing mechanisms through the pneumococcal advanced market commitment, AG Results¹, and through GCC's role as the anchor investor in the Global Health Investment Fund.

The potential for Canada to play a leadership role in global health innovation was reinforced in the report of the *Expert Panel on Canada's Strategic Role in Global Health*, jointly undertaken by the Canadian Academy of Health Sciences and the Council of Canadian Academies and released in 2011, which found that:

Canada has the opportunity to be an innovator in global health. This role would be built on a commitment to integrated innovation: combining scientific and technological innovations with social, cultural and business innovations to achieve sustainable impact at scale.

Given its limited size and resources, and the breadth and scope of the existing global health innovation ecosystem (described in more detail in **Annex 9**), it is not possible for Canada, in general, and GCC, in particular, to try to make a meaningful impact on global health as a whole. Rather, it is important to identify those areas that are neglected or underfunded in which Canada can show leadership and maximize its impact.

Having placed the role and impact of GCC in its global context, Parts 2 and 3 of this report provide a summary of the panel's analysis of and future considerations relating to GCC's efforts to enable innovation to address these critical issues.

¹ AgResults is an international program to increase agricultural productivity and food security in developing countries.

Part 2 – Synthesis and Summary of Findings

This part of the report summarizes the Panel’s findings, and is divided into six sections that correspond to the first six questions in the Terms of Reference (included as **Annex 1**). These findings are derived from a number of sources, including: a range of background documents and reports, interviews with Grand Challenges Canada’s partners, innovators and stakeholders, and Panel members’ knowledge and expertise. (Please see **Annex 3** for a complete list of documents and interviews.)

1. To what extent does Grand Challenges Canada meet pressing global needs?

Synthesis

- GCC does meet identified global health needs, particularly in maternal, newborn and child health and global mental health.
- The *Saving Brains* and *Global Mental Health* programs address otherwise neglected areas of global health.
- The *Stars in Global Health* program is a useful vehicle to mobilize and engage innovators in LMIC countries.
- Going forward, the *Transition to Scale* program will be an increasingly important driver of success for GCC.
- GCC could engage with LMIC governments to a greater degree. In particular, it could do a better job of engaging Ministries of Health, enabling them to identify and mobilize proven innovations to meet their health needs.

Summary of Findings

Stakeholders felt that GCC has focused on and made good progress against pressing global challenges. The programs to address these challenges (*Saving Lives at Birth*, *Saving Brains* and *Global Mental Health*) are seen to be important and impactful. Innovators and other stakeholders were largely in agreement that GCC has a niche in development innovation. GCC can identify challenges, locate potentially interesting innovations, develop applications in a discerning way, and fund them to go to scale.

Maternal, Newborn and Child Health (Saving Lives at Birth and Saving Brains)

Both the Panel and stakeholders who were interviewed recognized the contribution of Grand Challenges Canada in addressing maternal, newborn and child health (MNCH) challenges. They emphasized the unique contribution to measuring progress and addressing issues associated with “thrival” through the *Saving Brains* program. Stakeholders also expressed support for the *Saving Lives at Birth* program, with its focus on the 48 hours around the time of birth, the most critical and dangerous time for mothers and newborns.

Global Mental Health

Innovators gave evidence of the importance of GCC's investment in global mental health, and the ability of this investment to mobilize local resources. As one innovator stated:

My work with Grand Challenges Canada has made a difference in terms of mental health research in Zimbabwe, and particularly in the community, because my team had managed to successfully complete a cluster-randomized controlled trial, while also managing to convince local health authorities that it was necessary to integrate mental health into the general public health stream.

The Panel noted that there are potential areas of synergy between GCC's work in MNCH and global mental health. For example, there are a number of areas, such as maternal depression and adolescent health, that could be explored by GCC and that have strong correlated elements.

Stars in Global Health

There is evidence of a continued need and demand for this program globally, based on the growing number of applicants and an increase in the quality of the applications (as measured by higher peer-review scores) in each successive round. Stakeholders and innovators advised that the *Stars in Global Health* program is a useful vehicle to mobilize the latent talent and ideas of innovators in LMICs.

In addition to its primary objective, the *Stars in Global Health* program has also helped to identify additional areas of potential focus for GCC. Over the first seven rounds of investment, several clusters of projects have emerged in areas like water and sanitation, menstrual hygiene management, vision, hearing and disabilities.

Transition to Scale

Transition to scale was identified as an area in which there is both the greatest need (opportunity) and where there are significant challenges. A particular challenge noted during the Panel's investigations was the need to consider the absorptive capacity of communities and countries in which GCC and its innovators are active. This challenge (and its related opportunity) is discussed in more detail below.

The Panel was of the view that the *Transition to Scale* program would be critical to GCC's success in the coming years. Members also suggested that GCC should deepen its understanding of the entire innovation ecosystem, and build the necessary relationships and networks to enable the handoff of promising innovations to the appropriate scaling partners at the right time.

The Panel also suggested that an important driver of the success for this program would be engagement with large-scale implementation partners in LMICs. These partners should

include global not-for-profits, multinational corporations, local governments (ministries of health) and multilateral institutions.

Is Grand Challenges Canada engaging sufficiently with low- and lower-middle income countries to ensure that their needs are being addressed?

Several stakeholders highlighted that the ultimate users of innovations in low-income countries, whether government institutions or individuals, often lack the financial means to purchase or access new solutions. As such, they felt that it will be increasingly important for GCC to engage with ministries of health, and to better understand national health plans and priorities, to ensure that the innovations that it supports are appropriate for the communities and countries in which it works.

The Panel suggested that there is also an opportunity for GCC to engage more deeply with national ministries of health to help make the linkages between the targets in their national health strategies and available/ proven global health innovations that might help to address their specific challenges. To simplify and streamline this engagement process, the Panel suggested that GCC could build “packages” of successful innovations that address specific challenges that could be implemented through LMIC health systems.

The Panel also emphasized that there is an opportunity for GCC to identify and mobilize in-country champions who can help to connect them both with local innovation hubs and institutions and with senior levels of government, particularly in ministries of health.

2. To what extent is Grand Challenges Canada delivering on its short-term expected outcomes?

Synthesis

- A number of stakeholders expressed the view that, in five years, GCC has achieved more than would be expected from an innovation-oriented organization in terms of short-term outcomes (improving access to health products and services).
- Innovators indicated that GCC is making a unique contribution to fostering and supporting innovation in LMICs.
- Stakeholder and innovators offered the following lessons learned:
 1. The importance of engaging LMIC innovators
 2. The need for longer-term grants
 3. The importance of Integrated Innovation
 4. The utility of the transition-to-scale process
 5. The importance of consistency throughout the transition-to-scale process
 6. The challenge of turnover in program staff, and the resulting effects on the consistency of engagement over time.

- GCC management offered a complementary list of lessons learned from their experiences and perspectives:
 1. The power of the venture capital approach to portfolios of innovation
 2. The importance of understanding different scaling models
 3. Managing risk and embracing failure
 4. The power of partnerships
 5. The need to focus on results
 6. The potential for reverse innovation.

Summary of Findings

Stakeholders felt and the Panel agreed that GCC has already achieved tangible results in its first five years. The Panel reviewed outcomes across GCC's programs and was of the view that:

- GCC is funding initiatives including the *Saving Lives at Birth* and *Saving Brains* programs that are viewed as contributing to improvements in maternal, newborn and child health.
- GCC is making a significant contribution in global mental health.
- Although there are already outcomes being realized from the *Stars in Global Health* program, stakeholders recognize that most of the impact from this portfolio will be derived from those projects that transition to scale.
- It is too early in the *Transition To Scale* program for projects to be realizing impact, but significant impacts are projected, both by the conclusion of the funded projects and, more significantly, by 2030.

The Panel identified a number of specific findings in relation to each of these programs, which are captured in **Annex 5**.

To what extent is Grand Challenges Canada fostering and supporting innovation?

Innovators indicated that GCC is making a unique contribution to fostering and supporting innovation in LMICs. Particular elements of the GCC approach that were cited as being important in this regard included a focus on catalyzing new relationships and partnerships on the ground. As one innovator said:

The innovator community and network that was built up through Grand Challenges Canada has been of immense value. I have been introduced to those involved in field work to pioneer products, and had met informative people; I have learned a lot through the meetings.

Stakeholders and innovators also indicated that GCC plays a valuable, ongoing role in catalyzing international organizations and innovators to come together at Grand Challenges community meetings to share learnings and insights. Examples include:

- The inclusion of engineers, social scientists and other professionals in funding competitions, which gives them a new avenue to use their knowledge and skills to address health challenges
- The development of grant-writing workshops and online tools that help younger researchers from LMICs gain valuable experience and insight on writing grant proposals
- Flexibility in terms of a willingness to work with innovators to overcome challenges and to make necessary changes to proposed project approaches.

What are the key lessons learned?

Stakeholders and innovators offered the following perspectives:

1. **The importance of engaging LMIC innovators.** GCC's focus on engaging LMIC innovators in a meaningful way was seen as an important driver, both for the achievement of immediate and intermediary outcomes as well as the ultimate outcome of saving and improving lives.
2. **Need for longer-term grants.** Some innovators noted that GCC's grants are on the shorter side (two to three years), and that these timelines can be a challenge for innovators whose innovations take longer to develop and prove².
3. **The importance of Integrated Innovation.** Several innovators pointed to the importance and utility of GCC's focus on combining scientific, business and social innovation from the outset of a project, as an important enabler of long-term sustainability and success.
4. **The utility of the transition-to-scale process.** A number of innovators flagged that the transition-to-scale process was a worthwhile and educational experience. As one innovator stated:

It was the first time I was put in front of professionals with venture capital or equity funding experience and what I learned from the process aided me in future talks with investors.

Several innovators also reflected positively on having someone from GCC on their board of directors to ensure the fast flow of information, and to encourage rapid and effective course corrections, when needed.

5. **The importance of consistency throughout the transition-to-scale process.** One common critique of the transition-to-scale process was that the process itself shifted and changed, often more than once, from the time that an innovator applied, to the time when a decision was finalized. As one stakeholder said:

² Note that these time constraints were a product of Grand Challenges Canada's funding horizon with the Government of Canada and, perhaps, point to the need for a more flexible and/or permanent funding arrangement that would enable grants to be tailored to the needs of innovators, rather than the needs of government funders.

When we applied and when we found out we had been advanced to the final stages of the application, it was a grant opportunity. It only became a loan in the very final stage. Though we were still able to capitalize on the opportunity, this sudden change was very shocking and seemed out of the blue.

6. **The challenge of turnover in program staff and the resulting effects on the consistency of engagement over time.** One further critique of GCC was that there was perceived to be a high turnover rate among project staff. This is an ongoing risk for a small organization like GCC, where there is only one primary staff and one manager per program.

Management at GCC identified some additional lessons learned from the first five years:

1. **The power of the venture capital approach to portfolios of innovation.** It is important to fund a big pipeline of innovations at proof of concept, but then only support compelling innovations at transition to scale that have the potential for transformative impact and sustainability.
2. **The importance of understanding different scaling models.** Innovations in services/service delivery, social/business innovations and scientific innovations often take very different paths to scale. A related learning was that the public and private sector must often work together to achieve scale.
3. **Managing risk and embracing failure.** It is impossible to innovate without failure, but failures should be fast, inexpensive, and the team should learn from them and then share these lessons widely.
4. **The power of partnerships.** The most important element of a sustainable innovator is the identification and engagement of a 'smart' partner, with the resources, experience and skills needed for scaling.
5. **The need to focus on results.** It is important to measure critical results (e.g., lives saved and improved) on target beneficiaries (e.g., women and children), which requires a robust system to collect and analyze data.
6. **The potential for reverse innovation.** There is potential for some of the innovations that are developed for low-resource settings to be of use in Canada, particularly in northern and remote communities.

3. Given its current programs and activities, is Grand Challenges Canada likely to deliver on its ultimate outcome of saving and improving lives?

Synthesis

- In the Panel's view, GCC is likely to deliver on its long-term outcomes, based on its robust pipeline of innovations that are already starting to transition to scale, and based on projections of impact that have been modelled.
- Grand Challenges Canada as an innovation platform makes an important contribution to solving problems and maximizing impact.

- Performance measurement will become increasingly important for GCC in the coming years.
- Scaling impact in a sustainable manner is a challenge for any innovation enterprise. More focus on successful models of sustainable scaling of innovation is needed.
- GCC is building on its focus on global partnerships by helping to launch the *Every Woman, Every Child Innovation Marketplace* to create a more efficient market at transition to scale.
- The Panel identified three areas where GCC could deepen its focus, in order to further increase its likelihood of success:
 - Learn from failure
 - Focus on implementation
 - Focus on measurement.
- There could also be an opportunity for GCC and its funding partners to work together more closely to make better use of in-country assets.
- There could be an opportunity to replicate the Grand Challenges approach in other priority sectors of development.

Summary of Findings

Stakeholders noted that innovation can be a very long-term proposition, and that it might be 10 or even 15 years before the ultimate impacts of GCC's innovations are fully realized. Because of this, the immediate results from investments in innovation are only a small part of a much larger picture. As a result, GCC has focused on balancing current outcomes with projected future impacts.

GCC's outcomes reporting documentation shows that funded innovations are already saving and improving lives. Looking ahead, GCC must now focus on optimizing the impact of its programs looking to 2020 and beyond. In order to achieve this, it is necessary to quantify potential future results. To this end, GCC has developed a set of impact projections to 2030, working with **Results For Development**, a global consultancy focused on measuring impact and enabling accountability in the development sector. To date, GCC has modelled the projected impacts to 2030 of 20 of its 70 current transition-to-scale innovations. These projections indicate that, by 2030, these innovations will have saved hundreds of thousands of lives and improved tens of millions of lives. The Panel felt that modelling impact and performance measurement will become increasingly important for GCC in the coming years.

The Panel recognized that scaling innovations was not and could not be the responsibility of GCC alone, and Panel members appreciated the approach that GCC takes to enable and support long-term sustainability through the *Transition to Scale* program. To this end, the Panel heard that just the involvement of GCC with a project can provide a boost to its long-term sustainability:

If an organization like Grand Challenges Canada says they will fund an innovation (even with matched funding), another financial investor might find it more comforting.

The Panel cautioned that scaling impact in a sustainable manner is a challenge for any innovation organization. It suggested that, for the future, GCC may want to put an even stronger focus on identifying and replicating successful models to sustainably scale innovations, and to engage with large-scale implementation organizations and institutions in the countries of focus.

How is the grand challenges model contributing to the achievement of this ultimate outcome? Could it be improved to increase the likelihood of success?

A number of stakeholders emphasized that the Grand Challenges approach (with its focus on solving concrete problems, on maximizing impact, and on leveraging partners and resources) has, in their view, been a success. In particular, they cited the importance of Integrated Innovation and the strong focus on solving problems.

The Panel noted that GCC is leveraging its *Transition to Scale* platform and is building on its focus on global partnerships by helping to launch the *Every Woman, Every Child Innovation Marketplace*. This Marketplace will create a more efficient market for innovations at transition to scale, by encouraging better coordination among key funders, and also by providing a channel for private investment and a better selection of opportunities. The Marketplace will also provide an implementation model for the *Every Woman Every Child* initiative Sustainable Development Goal (SDG) targets, which could be replicated for other SDGs.

Through its deliberations, the Panel identified three areas where GCC could further focus, in order to increase its likelihood of ongoing success and impact:

- **Learning from failure.** The Panel appreciated GCC's approach of 'failing fast and learning from failure' and suggested that, in the future, GCC could further enhance their capacity to take risk, to identify and understand failure, limit its cost, and then share these learnings more broadly.
- **Focus on implementation.** Building on the caution raised at the end of the previous subsection, the Panel suggested that it will be important for GCC to deepen its engagement with national governments and implementation partners to better understand their needs and capabilities, in order to enable the scale-up of innovation. The Panel felt that it will be critical to ensure that the projects and innovations that are funded meet the actual, on-the-ground needs of regions and communities (and not just broadly defined global health priorities).
- **Focus on measurement.** The Panel felt that effective performance measurement will be a key driver of GCC's ongoing success, as it will allow the organization to accurately measure and communicate impact.

In reviewing GCC's relationships with its funding partners (Canada's International Development Research Centre and the Department of Foreign Affairs, Trade and Development) the Panel suggested that there is an opportunity for all three partners to work more closely together, and to make better use of their respective in-country assets. For example, the Panel suggested that projects in a region that are funded by GCC, IDRC or DFATD could be linked together in a single portfolio.

Stakeholders noted how the Grand Challenges approach has helped to shape and change the focus on innovation investment in their countries, including Israel and Peru. Given the success of the GCC approach and its early results, the Panel was of the view that there could be an opportunity to replicate this model in other priority sectors, as determined by the Government of Canada or as identified internally by GCC.

4. In what ways and to what extent is the Government of Canada's investment in Grand Challenges Canada providing value for money?

Synthesis

- The Panel recognized that GCC is a complex organization that contributes to the achievement of a range of outcomes, and that its long-term success will depend on its organizational structure and governance.
- The Summative Evaluation that is currently being undertaken is focused on answering the question of value-for-money in a rigorous manner. That being said, innovators and stakeholders indicated that GCC is providing value for money based on projections of future impact, and that these projections can be further refined as more projects run their course.
- In addition to the outcomes it achieves, stakeholders indicated that GCC can be seen as providing value for money in four additional ways:
 1. Promoting Canadian leadership in development innovation
 2. Stimulating innovation in LMICs
 3. Developing new models of social finance
 4. Focusing attention on critical health challenges.
- The Panel recognized that GCC's flexibility to operate is an important driver of its continued efficiency and effectiveness.
- Given its mission, the Panel was of the view that it is appropriate for GCC to rely on funding from the Government of Canada.
- That being said, the Panel also suggested that GCC can do more to mobilize complementary funding from other sources.
- A challenge that should be addressed is GCC's ability to accept financial return beyond principal on its investments.

Summary of Findings

Stakeholders recognized that, although GCC's mandate is to save and improve lives, there are a range of other benefits and outcomes that it can support while delivering on this mandate. Given that GCC is entering a more mature phase of operations, the Panel suggested that it may be an appropriate time for GCC to take stock of its organizational structure, to ensure it aligns with its medium- and long-term objectives.

The Panel recognized that the Summative Evaluation that was taking place in parallel with its deliberations would provide a more appropriate venue to undertake a quantitative analysis of GCC's value for money. However, the Panel did provide an overall view on this question, based on deliberations and the views expressed by the innovators and stakeholders that were interviewed. The Panel found that:

Grand Challenges Canada is making tangible, measurable differences in some of the greatest areas of inequity in the world, especially in the maternal and child health space, and also in mental health.

Stakeholders also spoke about four additional ways in which GCC provides value for money, which are supported by data from documents and reports:

1. **Promoting Canadian leadership in development innovation.** In its first five years, GCC has supported over 660 projects, including 231 by Canadian innovators, with a total value of \$42.8M. This support has helped to build Canada's brand as a global leader in this area. One innovator said:

Canada has a reputation in the global community of providing more than just basic support for global problems. Investing in scalable technologies and ideas will keep Canada known as an innovative aid country committed to finding solutions and solving problems, as opposed to the Band-Aid approach other nations take.

2. **Stimulating innovation in LMICs.** GCC has made a significant investment in innovation in LMICs, with 430 projects valued at \$133M in 54 countries globally. Innovators indicated that GCC provides a unique opportunity to explore new and potentially transformative global health innovation. In particular, one innovator advised that:

Grand Challenges Canada had provided an opportunity that didn't exist elsewhere, to even attempt to make an impact in one country without expensive drugs and doctors.

3. **Developing new models of social finance.** GCC was the anchor investor in the Global Health Investment Fund. As stated by the fund's manager, GCC played a critical role in becoming the first significant investor in the fund. GCC has also played a role on the Fund's Investor Advisory Committee and Charitable Oversight Committee. With regard to the latter Committee, the fund manager said of GCC's CEO, Dr. Peter Singer:

There is nobody who holds our feet to the fire more strongly with regard to our mission than him. He is tough, which is good.

GCC has also developed and implemented an Investment Committee as part of its *Transition to Scale* program.

4. **Focusing attention on critical health challenges.** Through GCC's work on *Saving Brains*, there has been a gradual shift in Canada's approach to MNCH issues to include 'thrival' (i.e., the development of children after birth).

The Panel recognized that efficiency and effectiveness are important drivers of an organization's ability to deliver value for money. It suggested that GCC's **flexibility to operate** will be an important driver of its continued efficiency and effectiveness. In particular, it will be important for GCC to have flexibility around the mechanisms it uses to undertake its work and, potentially, the need for what may be a more staff-intensive facilitative model.

In addition to structure, the Panel recognized that an organization's governance also plays an important role in its efficiency and effectiveness, and it outlined some considerations in that regard. (Please see the **governance** section in Part III of this report.)

Is the Grand Challenges Canada model likely to become financially independent or sustainable over time, or is it a model that should focus on leveraging public and private resources?

Stakeholders felt that investments in fostering innovations for the public good will always require public support and sustainability of the GCC model, independent of government funding, is unlikely. Further, the panel suggested that it would be difficult for GCC to continue as an alternative service delivery mechanism for the Government of Canada's priorities in development innovation if an increasing amount of its funding comes from sources outside of the government.

Stakeholders and innovators also felt that there will be a continued need for public investment in innovation, especially in the initial stages (i.e., the proof-of-concept phase), while private resources would be required for scaling up and marketing successful innovations. Thus, GCC plays a dual role of supporting and fostering innovation (as it currently does) while exploring ways of leveraging and providing linkages to private and public resources for scaling up successful innovations.

...there will be a continued need for public investment, especially in the initial stages of innovation (i.e., proof-of-concept phase), while private resources would be required for scaling up and marketing successful innovations.

Other stakeholders and partners said that opportunities to make non-grant investments with financial returns would have the potential to make GCC more financially independent. Even in this scenario, however, they recognized that there would still need to be significant funding support from the Government of Canada. They added that funding projects in the developed world through a profitable enterprise might be self-sustaining but that would be unlikely in the developing world.

The Panel recognized that GCC has been successful in leveraging public investments and in using them to attract funds from other sources (with current total leverage at greater than a 1:1 ratio). It strongly encouraged GCC to continue with its focus on leveraging public

funds. This leveraging could be further maximized through earlier engagement with implementation partners, including large-scale not-for-profits and multinational corporations.

One important issue relating to sustainability that was raised by GCC's management is the disjuncture between the desire to recycle financial returns from non-grant investments for mission-related purposes and the regulations for not-for-profit corporations in Canada's Income Tax Act, which require that all profits received by a not-for-profit be incidental and unanticipated. Accordingly, GCC has had to take a conservative approach to financial returns on its non-grant investments, capping them at return of principal. As a result, and in contrast to the traditional venture capital model, the 'winners' in its investment portfolio cannot help to compensate for the 'losers' and GCC's overall return is constrained.

This challenge is not unique to GCC but it does present a significant barrier to an investment-based approach to enhancing long-term sustainability of the organization. As such, it would be helpful to clarify the ability of GCC to receive returns from mission-related investments.

5. How does Grand Challenges Canada's performance compare with that of comparator organizations globally?

Synthesis

- It is difficult to identify direct comparator organizations because of GCC's unique approach to development innovation and performance measurement.
- Examples of organizations with some comparable characteristics are the Grand Challenges program of the Bill & Melinda Gates Foundation, and the Grand Challenges and Development Innovation Ventures programs of USAID's Global Development Lab.
- GCC is more focused on LMIC innovators than many comparator organizations.
- GCC takes a more active and engaged role in supporting its innovators than many other global funders.
- Innovators appreciated GCC's efforts to raise their profile through social and traditional media, and they indicated that this enhanced profile helped them to mobilize additional resources.
- The engagement of the GCC team, and its willingness to support and enable innovators, are effective and appreciated aspects.

Summary of Findings

Stakeholders felt that there are no other organizations that perfectly replicate GCC, although there are some that conduct comparable programs. One interesting comparator for some elements of GCC's work is the Grand Challenges Programs of the Bill & Melinda Gates Foundation. It was noted that, although GCC had worked closely with, and is doing similar work to, the Bill & Melinda Gates Foundation, GCC has been taking a different approach. Innovators indicated that GCC was more willing to fund practical projects that had "boots on

the ground,” whereas the Bill & Melinda Gates Foundation wanted more high-level projects: the latest chemistry, the latest engineering, the latest DNA or protein analysis.

GCC’s management identified the U.S. Global Development Lab as another interesting comparator. Although larger in scale, the Lab contains USAID’s Grand Challenges program, as well as Development Innovation Ventures, which is similar to GCC’s *Stars in Global Health* program. While GCC is outside of government, the Lab is part of USAID, the lead U.S. government agency that works to end extreme global poverty. The advantage of having the Lab inside government is that it provides closer alignment with the parent development agency, while the disadvantage is that there is less flexibility to operate. It is perhaps for this reason that USAID, DFID and other partners created an independent Global Innovation Fund, which has similarities to GCC.

From a practical perspective, many innovators said that the experience of working with GCC was different from experiences with other funders:

Grand Challenges Canada representatives were always there to provide support for any needs or challenges that arose. The Program Officer also forwarded other opportunities for funding, and helped to create a new network of collaborators.

Innovators appreciated GCC’s commitment to fund principal investigators in LMICs. This focus on LMIC innovators was noted as an important positive contrast between GCC’s approach and other foundations focused on development innovation.

Grand Challenges Canada stood out as being an organization that is empathetic to those in developing world countries and not having a bias towards applicants from the developed world.

THE U.S. GLOBAL DEVELOPMENT LAB

Launched in April 2014 as an integrated entity within USAID, the U.S. Global Development Lab seeks to increase the application of science, technology, innovation and partnerships to extend the Agency’s development impact and help to end extreme poverty. The Lab, headed by an Executive Director has five centres and two offices:

- The Center for Data, Analysis and Research
- The Center for Development Innovation
- The Center for Global Solutions
- The Center for Transformational Partnerships
- The Center for Mission Engagement and Operations
- The Office of Evaluation and Impact Assessment
- The Office of Engagement and Communications.

The Lab has a broad range of focus areas, including: Food Security and Nutrition Modernizing Food Assistance; Ending Preventable Child and Maternal Deaths; Energy Access; Water Solutions: Child Literacy; Financial Inclusion; Human Rights, Participation, and Accountability; and Humanitarian Response

The USAID Grand Challenges for Development initiative is part of the Lab and has launched six challenges to date.

The budget request for the Lab for 2016 was \$190.5M US.

Innovators also appreciated the media support and coverage that they received from GCC, as one innovator highlighted:

(Our Innovation) has received an incredible amount of promotion through social media of both Grand Challenges Canada and the Government of Canada. This promotion helps spread our message and promote global sales.

A final differentiator between GCC and other comparator organizations that innovators identified was the focus on networking among its portfolio of grantees, as illustrated by an innovator who told the following story:

...an Israeli innovator had a product that worked extremely well with my innovation; it is a social enterprise with a for-profit model. Grand Challenges Canada brought the two projects together.

6. How has Grand Challenges Canada influenced the brand Canada is projecting internationally, including with respect to science diplomacy?

Synthesis

- GCC is seen as a helpful diplomatic asset for Canada.
- It may be useful to consider providing dedicated regional funding to support the science diplomacy component of GCC's work.
- It would be helpful for GCC to articulate a clear path forward in terms of how it will continue to grow and evolve its role in terms of science diplomacy.
- GCC is a leader in the global network of Grand Challenges organizations.

Summary of Findings

Many stakeholders indicated that GCC has strengthened Canada's brand as a leader in development innovation. As one said:

Grand Challenges Canada has helped us support other Canadian institutions related to S&T (science and technology) and especially our health/research agenda ... this strengthens Canada's brand as a centre of innovation and a responsible partner dedicated to finding constructive solutions to health and governance challenges.

This view was corroborated by a survey of Canadian Heads of Mission, partners and foreign senior government officials on the issue of Grand Challenges Canada and science diplomacy.

The Heads of Mission interviewed felt that Grand Challenges Canada plays a helpful role by engaging with local scientific and entrepreneurial communities, further indicating that the organization has been instrumental in connecting and supporting long-term relationships between local research communities and Canada. There was also acknowledgement of the utility of Grand Challenges Canada's programs to support more traditional diplomatic engagement:

We were able to maximize the impact for Canada in Southeast Asia by arranging to time Grand Challenges Canada funding announcements with the annual summer ministerial dialogue with ASEAN, attended by our Foreign Minister.

Several Heads of Mission highlighted the utility of GCC in opening productive dialogue in regions that might otherwise be hard to engage.

GCC has been approached several times to consider launching regional initiatives, including, for example, a Grand Challenges program on the safe detection and disposal of mines and other unexploded ordinances in Laos. Currently, however, GCC does not have dedicated funding to support these types of initiatives.

Stakeholders felt that GCC's strength has been, in part, because of its strong local engagement. The organization had made an effort in a short time to connect to the important global conversations. Particular mention was made of CEO Dr. Peter Singer's activities in this regard.

Overall, stakeholders expressed the view that, in terms of size, GCC has been 'punching above its weight' in its role in building Canada's global brand. The Panel acknowledged that this role requires dedicated resources and that, in the future, it may be useful to consider providing dedicated regional funding to support the science diplomacy component of GCC's work.

One opportunity that was identified was for Canada to make better use of GCC's networks to strengthen diplomatic relations:

Canada's advocacy and public diplomacy efforts would be well served by a better established series of institutional linkages between missions abroad and Grand Challenges Canada. Every new project, no matter what size it is, is an opportunity to convey our messages and reiterate our priorities in a host country.

To what extent has the Grand Challenges model influenced other countries?

It was clear from feedback from other Grand Challenges organizations that GCC holds a leading role in the broader Grand Challenges movement, especially with regard to relationships with Israel, Peru, Thailand and Ethiopia. One went so far as to suggest that GCC had "*branded the Grand Challenges community as a Canadian initiative.*" Several Grand Challenges organizations indicated that they would not exist without GCC's support and mentorship, particularly in Israel and Peru.

There is no doubt that the Grand Challenges Canada leadership and professional team were of great help to us from the very beginning. Naturally, we hope to have this highly valuable support in the future.

7. Taking into account Grand Challenges Canada's plan between 2015 and 2020, what are your suggestions for future directions?

The panel's responses to this question are addressed in the final section of this report, **Future Considerations**.

Part 3 – Future Considerations

The final and perhaps most important task outlined in the Panel's Terms of Reference was to identify significant future considerations for GCC and to provide suggestions and recommendations for the future. The Panel's deliberations focused on eight areas:

1. **Structure**
2. **Governance**
3. **Funding**
4. **Performance Measurement**
5. **Organizational Architecture**
6. **In-country Relationships and Science Diplomacy**
7. **Priorities, Approach and Implementation Going Forward**
8. **Transition to Scale.**

Each of these areas is explored in more detail below.

1. Structure

The Panel considered the current structure of GCC and suggested that **flexibility and nimbleness of operations** will be critical for GCC's ongoing ability to manage the risks of innovation and optimize efficiencies.

Recognizing that GCC's current structure has advantages, the Panel nevertheless recommended that, over time, the Board of Directors should regularly review GCC's structure to ensure that it remains the most appropriate and efficient structure through which to deliver on its objectives.

2. Governance

The Panel deliberated on the nature and structure of Grand Challenges Canada's governance and how it has evolved over the five years of its existence. The Panel recognized that a strong governance structure will be critical for Grand Challenges Canada's ongoing success. Important components of this structure include the peer review process, which has been very effective and is seen as a key ingredient in Grand Challenges Canada's success to date. Another component that was highlighted is the Scientific Advisory Board, which will continue to play an important role.

The Panel recognized that there is an inherent tension in Grand Challenges Canada between the need for a close association with the government (to deliver on its development and innovation priorities) and the need for governance independence, as an important driver of success.

The Panel outlined some steps that could be taken to further strengthen and better enable the current governance structure to meet future challenges and opportunities:

- There could be a greater representation of low- and middle-income country (LMIC) stakeholders and innovators on the Board of Directors.
- The Investment Committee could consider having a sitting member from a LMIC who might also sit on the Board of Directors, as appropriate.
- It could be beneficial to have provincial representation on the Board of Directors.

International Advisory Board

The Panel suggested that it could be beneficial for GCC's senior management team to have access to **additional strategic advice and guidance** in key areas. For example, an International Advisory Board (IAB) could be established to advise the CEO and the senior management team on strategies to engage and mobilize LMIC governments, multinationals and multilateral organizations and initiatives. The Panel suggested that it could be helpful for the IAB to include a senior manager from the Department of Foreign Affairs, Trade and Development (DFATD), as well as a representative from a multi-lateral organization, such as the World Health Organization.

3. Funding

The Panel considered the nature, structure and sources of GCC's funding, and its role as an alternative service delivery vehicle for the Government of Canada in development innovation. The Panel reviewed both its base funding from the Government of Canada and the funding that it has leveraged from partners.

The Panel was of the view that, because the outcomes of GCC's investments are public goods (i.e., lives saved and improved, economic growth and development achieved) that **the Government of Canada should continue to provide core funding for GCC's operations and programs**. The Panel also underlined that innovation organizations are best positioned to optimize their impact if their funding cycle is sustainable and predictable.

The Panel recognized that GCC has been successful at leveraging external resources to maximize the impact of its base funding. It recommended that GCC should continue to leverage funding at the program and portfolio levels from outside partners in the private, public and not-for-profit sectors.

For the future, the Panel suggested that GCC would be more financially sustainable if it could maintain its not-for-profit status while realizing returns on its investments. These returns would be reinvested in mission-related activities and programs. The ability to realize returns on investment would:

1. Enhance investees' likelihood of long-term success by giving them an opportunity to demonstrate their ability to repay GCC as a proof point with other financial partners, allowing them to enter into more sophisticated financial transactions more quickly or with more favourable rates
2. Enable GCC to better leverage public funds, as some of these returned dollars could be used to offset operational expenses, and

3. Increase GCC's impact and reach by allowing the organization to recycle funds and multiply the impact of each returned dollar by granting or investing it in future projects.

The panel emphasized, however, that this type of return on investment is unlikely to ever fully fund GCC.

The Panel suggested that GCC could **better leverage its relationship with its funding authorities (DFATD and IDRC)** to make use of their in-country assets. For example, the Panel suggested that projects in a region that are funded by GCC, IDRC or DFATD could be linked together in a single portfolio. Moreover, staff at DFATD and IDRC could assist GCC in carrying out its operations, and in providing additional scaling support. This leveraging of resources would be optimized through collective and reciprocal efforts.

4. Performance Measurement

The Panel noted that performance measurement will become increasingly important for GCC over the next five years. In this regard, it recognized the efforts by GCC to develop and implement an **Impact Dashboard**. The Panel welcomed the development of this tool, while recognizing that it will require further refinement in order to achieve the required level of robustness. Further, the Panel recommended that GCC explore ways in which the data in the Impact Dashboard could be presented, in order to maximize its utility and impact (e.g., disaggregating the data by country, gender, etc.) The Panel suggested that working with relevant, third-party experts with longer-standing experience with such tools would enable GCC to optimize its efforts in this regard.

5. Organizational Architecture

The Panel recognized that GCC is a lean organization, and that its organizational architecture has evolved organically over its first five years. As GCC enters a more mature phase of operations, now is an appropriate time to take stock of its organizational structures, to ensure that they align with its medium- and long-term objectives. In its deliberations on GCC's organizational architecture, the Panel suggested that it could be helpful to:

- Provide additional organizational support for the CEO, and the provision of this support should be considered a critical enabler of success
- Make use of internships, short-term assignments and/or an "embedded" officer to leverage external expertise from within government (in particular, DFATD and IDRC), and from other Grand Challenges institutions globally
- Engage additional staff to enable more field visits and deeper in-country engagement with innovators, as well as to support efforts to sustain and scale innovations. These activities are cited by innovators as being of extremely high value and are distinguishing features of GCC and its approach.

As part of this stocktaking process, the Panel recommended that GCC develop a forward-looking **talent management plan**. Among other elements, this plan could explore how to

nurture more robust “global” engagement skills among senior leadership, and to assess the potential benefits and costs of bringing on board a senior manager with operational experience in growing and developing organizations of this type.

6. In-country Relationships and Science Diplomacy

While recognizing its success to date, the Panel recommended that, going forward, **Grand Challenges Canada should link more strategically to LMIC national health plans and health priorities** to better ensure that the innovations that GCC supports address the significant challenges identified in these countries. In addition, the Panel suggested that this process of engagement should include formally identifying and mobilizing in-country champions for GCC. The track record GCC has established over the past five years and the relationships that it has built will help to enable these discussions.

Another interesting potential connecting point for GCC’s technologies that the Panel identified is the Global Strategy for Women’s and Children’s Health. Given the importance of this strategy, the Panel suggested that GCC could develop integrated packages of innovations around some of its elements (for example, a focus on adolescents).

The Panel recognized both the quality and breadth of the global innovation network that Grand Challenges Canada has developed in the period under review. In so doing, Grand Challenges Canada has become an important diplomatic asset for the Government of Canada. Grand Challenges Canada, through its technical engagements with governments, and on the ground, elevates Canada’s brand as a supporter of global innovation and entrepreneurship that cuts across differences in culture, religion and creed. In fact, the values inherent in science include important Canadian values.

The Panel recognized that Grand Challenges Canada holds a unique position, distinct from an NGO, as an alternative service delivery organization that is wholly funded and supported by the Canadian government and with the imprimatur of the government, to advance its development and diplomacy agenda, through innovation and world-class science around global grand challenges. The Panel also recognized that Grand Challenges Canada’s in-country relationships are critical to its ongoing success. Further, the Panel recognized that Grand Challenges Canada has a unique role as a “super connector”, which allows it to have a greater impact than other comparable organizations. Given Grand Challenges Canada’s role as a diplomatic asset, GCC, IDRC and DFATD should work together to ensure the best possible alignment of resources and activities to maximize the impact of development strategies.

Grand Challenges Global Network

Finally, the Panel recognized the importance and potential impact of the global network of Grand Challenges initiatives in which GCC plays a leadership role. Bearing in mind the impact on its own resources and capacity, the Panel recommended that GCC strive to continue to play a leadership role, both in growing the global network of Grand Challenges initiatives and in mentoring its members.

7. Priorities, Approach and Implementation Going Forward

Grand Challenges Canada's initiatives in its chosen areas of focus have already yielded substantial results. Although progress has been achieved globally, particularly in MNCH, much work remains to be done in the current areas of focus. The Panel considered some of the current areas of focus and offers the following assessments:

Global Mental Health: The Panel recognized that **Grand Challenges Canada has developed a unique leadership role in global mental health**³. It also suggested that this is a relatively neglected area and, as such, it is important for GCC to continue its work in this area. There will be funding considerations once the first phase of the Development Innovation Fund in Health is complete, and the Panel is hopeful that the Government of Canada will give consideration to providing the resources necessary to continue this work.

The Panel also highlighted the potential to realize synergies in new areas that would bring together GCC's work in MNCH and mental health (for example, in areas like maternal depression and adolescent health).

Stars in Global Health: The Panel noted that this program has been successful in creating a pipeline of proven global health innovations. The Panel was of the view that this program should continue, particularly given the rich existing pipeline of innovations. It recognized that any innovation platform should have clear priorities, but it would also be important that some flexibility be provided to explore innovation in other areas. For example, additional areas of focus, such as sanitation and water, emerged organically in GCC's pipeline of innovations over the past five years.

Over time, GCC has developed a distinctive Grand Challenges approach that is focused on **Integrated Innovation** — the deep understanding of the problem set and the potential to bring together new and different actors to integrate science, business and social innovation. The Panel noted that this has been effective in enabling innovations to transition to scale.

The Panel also recognized that GCC puts a strong focus on funding and enabling innovators in LMICs. The Panel underlined that this focus is unusual among global health funders and is a highly desirable feature. It serves to build the capacity of developing countries not only to address their own problems, but also to contribute to the generation of global ideas and innovations that will benefit many more countries and address global security threats, such as those posed by the emergence of novel diseases. Scientific engagement also serves Canadian interests to promote stability by empowering a traditional source of moderate leadership in LMIC countries. Scientists frequently are the thought leaders of society, and play important leadership roles in many LMICs. Creating this type of ecosystem, however, requires dedicated resources for the long term.

³ Grand Challenges Canada's leadership will be recognized at a major event on mental health in spring 2016, co-hosted by the World Bank Group and the World Health Organization.

The Panel suggested that the facilitative approach that GCC takes in managing its innovators is highly valuable, with significant short- and long-term benefits, and should be continued and more deeply resourced and staffed.

Finally, the Panel suggested that, given its early results, the GCC model could be replicated in other sectors determined by the priorities of the Government of Canada and/or identified through the *Stars in Global Health* program.

8. Transition to Scale

The Panel expressed the view that the **Transition to Scale program will be critical over the next five years**. Being able to demonstrate that innovations are successfully scaling their innovations will be a measure of success for GCC in the future. Of course, transition to scale does not imply that GCC should become a vertically integrated funder or service provider from proof of concept through to global market penetration. Rather, GCC should ensure that it maintains a deep knowledge of the innovation process continuum so that handoffs and other connections can be made to the appropriate scaling partners at the right times.

The Panel also recognized that **large-scale implementation partners** (for example, multinational companies, global not-for-profits and ministries of health) **will be critical to the success of Grand Challenges Canada's transition-to-scale activities**. As such, the Panel recommended that GCC should engage these implementation partners as early as possible in the development of its projects and programs.

Annexes

Annex 1: Terms of Reference for the Expert Review Panel

The Grand Challenges Canada Expert Review Panel will address the following questions:

1. To what extent does Grand Challenges Canada meet pressing global needs?
 - a. *Is Grand Challenges Canada engaging sufficiently with low- and lower-middle income countries to ensure that their needs are being addressed?*
2. To what extent is Grand Challenges Canada delivering on its short-term expected outcomes?
 - a. *To what extent is Grand Challenges Canada fostering and supporting innovation?*
 - b. *What are the key lessons learned?*
3. Given its current programs and activities, is Grand Challenges Canada likely to deliver on its ultimate outcome of saving and improving lives?
 - a. *How is the grand challenges model contributing to the achievement of this ultimate outcome?*
 - b. *Could it be improved to increase the likelihood of success?*
4. In what ways and to what extent is the Government of Canada's investment in Grand Challenges Canada providing value for money?
 - a. *Is the Grand Challenges Canada model likely to become financially independent or sustainable over time or is it a model that should focus on leverage of public and private resources?*
5. How does Grand Challenges Canada's performance compare with that of comparator organizations globally?
6. How has Grand Challenges Canada influenced the brand Canada is projecting internationally, including with respect to science diplomacy?
 - a. *To what extent has the Grand Challenges model influenced other countries?*
7. Taking into account Grand Challenges Canada's plan between 2015 and 2020, what are your suggestions for future directions?

Annex 2: Members of the International Expert Panel

Marie-Lucie Morin served as the World Bank's Executive Director for Canada, Ireland and the Caribbean from 2010 to 2013. Prior to joining the World Bank, she was appointed national security advisor to the Prime Minister of Canada and Associate Secretary to the Cabinet in November 2008. From 2006 to 2008, she served as Deputy Minister of International Trade and, from 2003 to 2006, as Associate Deputy Minister of Foreign Affairs.

Ms. Morin acquired extensive experience abroad during postings to San Francisco, Jakarta, London and Moscow. In 1997, she became Canada's Ambassador to the Kingdom of Norway, with concurrent accreditation to the Republic of Iceland, a position she held until 2001. She was awarded the Governor General's 125th Anniversary of the Confederation of Canada Medal. In 2011, she received the Association of Professional Executives of the Public Service of Canada's (APEX) Global Public Servant Award. Ms. Morin was made "Chevalier de la Légion d'Honneur" (France) in 2012.

Maharaj Kishan Bhan is currently a National Science Professor at the Indian Institute of Technology, Delhi, Government of India, and an Advisor to the World Health Organization. He is a fellow of the Indian Academy of Science and the Third World Academy of Science. Dr. Bhan is a Former Secretary to the Government of India, Department of Biotechnology, Ministry of Science & Technology. He has an MBBS, MD Pediatrics, DSc. (Honorary), and is a Fellow of the Indian National Science Academy, a Fellow of the Academy of Sciences and a Fellow of the Academy of Medical Sciences. His research interests include gut microbiology, nutrition-infection crosstalk, diarrheal disease and affordable health technology development. He has over 200 publications in peer-reviewed journals. His contribution to national and developing-country programs includes development of a Rotavirus vaccine, zinc as treatment of diarrhea and low osmolarity ORS. He is dedicated to championing the cause of human health and development, particularly for the vulnerable. His main endeavour has been to bring the use of science and technology to several health programs for children.

Dr. Bhan has provided advocacy and leadership to many programs in India, including promotion of oral rehydration therapy, micronutrient supplementation, introduction of new vaccines and greater coverage with existing ones; he has provided innovative concepts for novel program design and delivery. The IMNCI integrated program developed under his chairmanship has been introduced in the reproductive child health program of the Government of India. This strategy is playing a key role in reducing child mortality in India. He contributed to the development of biomedical research and biotechnology in India and, over a decade, established many new institutes, clusters and innovation support agencies.

Catherine Clark is Adjunct Professor at the Center for the Advancement of Social Entrepreneurship (CASE) at Duke University's Fuqua School of Business, and Founder and Director of the CASE i3 Initiative on Impact Investing. Named in 2014 one of America's Top 20 Women working in philanthropy, social innovation and civic engagement, she is also Co-Principal Investigator for the Social Entrepreneurship Accelerator at Duke (SEAD), part of USAID's Global Development Lab, launched in 2014 by Hillary Clinton and Raj Shah.

Prof. Clark was recruited to Duke in 2007 by the late J. Gregory Dees, the founder of the academic study of social entrepreneurship. In 2013, she was appointed as the sole academic member of the U.S. National Advisory Board to the Social Impact Investing Taskforce established by the UK Presidency of the G8, and she completed a two-year project and 10 case studies on high-performing impact investment funds, *Impact Investing 2.0*. She is co-author of *The Impact Investor: Lessons in Leadership and Strategy for Collaborative Capitalism*. She is the board chair for Investors' Circle, an advisor to ICAP Partners, and helped create the standards for B Corporations and the Global Impact Investing Rating System.

Prior to her academic work, she was a professional impact investor who founded and ran a foundation and venture fund incubated by Fred Wilson and Jerry Colonna of Flatiron Partners, a JP Morgan Partners affiliate, and was Vice President at the Markle Foundation, where she helped manage the foundation's portfolio of grants and program-related investments. Dr. Clark holds a BA from the University of Virginia and an MBA from Columbia Business School. She has published over 25 books, articles and case studies.

Gary Cohen is Executive Vice President and President, Global Health and Development, at BD (Becton, Dickinson and Company), a global medical technology company with over 45,000 employees in 50 countries. He is also acting CEO of GBC Health (a coalition of companies dedicated to improving the health of workforces and communities), Vice Chair and board director of the U.S. Fund for UNICEF, and a board director of the CDC Foundation, Perrigo Company and Accordia Global Health Foundation. He further serves as a Vice Chair of the UN Special Envoy's Office for Financing the Health-Related Millennium Development Goals, and recently served on the UN Commission on Life-Saving Commodities for Women and Children. He frequently serves as an advisor, advocate and speaker on topics associated with advancing health and human rights among under-resourced and vulnerable populations in various venues, including the United Nations, World Bank, U.S. Department of State and World Economic Forum-Davos.

Mr. Cohen is the founder of Together for Girls, a partnership of five UN agencies led by UNICEF, including the CDC, U.S. Department of State-PEPFAR and USAID, Department of Foreign Affairs, Trade and Development Canada and others. It works to end violence against children, particularly sexual violence against girls. He is a member of the UN Secretary-General's Network of Men Leaders, associated with the UNITE campaign to end violence against women and girls. Mr. Cohen holds BA and MBA degrees from Rutgers University and previously served on its board of trustees.

Carol Dahl is the Executive Director of the Lemelson Foundation, and leads the foundation's work to use the power of invention to improve lives. The Foundation inspires and enables the next generation of inventors and invention-based enterprises to promote economic growth in the United States, and to help solve social and economic problems for the poorest populations in developing countries. Prior to joining the Foundation in July 2011, Dr. Dahl worked for the Bill & Melinda Gates Foundation in various roles, including Founding Director of the Global Health Discovery Program and Director of Staff for the overall Global Health Program. During her tenure at the Gates Foundation, she built the platform discovery

innovation programs, Grand Challenges in Global Health and Grand Challenges Explorations.

Previously, Dr. Dahl served as Vice President for Strategic Partnerships at Biospect Inc. (now Pathworks Diagnostics). From 1990 to 2001, she worked at the U.S. National Institutes of Health in several capacities, including founding Director of the Office of Technology and Industrial Relations at the National Cancer Institute, and Program Director at the National Center for Human Genome Research. From 1986 to 1990, she was a faculty member of the University of Pittsburgh and the Pittsburgh Cancer Institute.

Dr. Dahl currently serves on the Advisory Group for the USAID Global Development Lab and the Executive Committee of the Aspen Network of Development Entrepreneurs, as well as in the role of Chair of the Life Science Discovery Fund Board of the State of Washington.

Alex Dehgan is the co-founder of a new start-up, Conservation X Labs, focused on bringing transformational technological, financial and behavioural change innovations to conservation. Dr. Dehgan is also working with Duke University and Coursera to create a MOOC on innovation and design for global grand challenges in conservation and development, and was the inaugural Rubenstein Fellow at the University. Alex recently served as the Chief Scientist at the U.S. Agency for International Development, with rank of Assistant Administrator. He founded and headed the Office of Science and Technology, created the Grand Challenges for Development initiative at USAID, and conceptualized, designed and co-created the Global Development Lab at the Agency.

Prior to coming to USAID, he held a number of positions within the Office of the Secretary, and with the Bureau of Near Eastern Affairs at the U.S. Department of State. At the State Department, Dr. Dehgan developed political and science diplomacy strategies to address some of the most challenging foreign policy issues in Iran, Iraq, Egypt and the greater Islamic world. These included initiating the Obama Administration's diplomatic efforts with Iran through science diplomacy, working with Ambassador Dennis Ross, and serving as a liaison to the late Ambassador Richard Holbrooke. He was also the founding Afghanistan Country Director for the Wildlife Conservation Society's Afghanistan Program. Through his leadership, WCS led efforts to create Afghanistan's first two national parks, conducted the first comprehensive biological surveys of the country in 30 years, and curtailed illegal wildlife trade on U.S. and ISAF military bases. He is currently writing a book, *The Snow Leopard Start-up*, on this topic, through PublicAffairs, an imprint of Perseus Books Group.

Glenda Gray, MBBCh, FCPaed (SA), DSc (honoris causa) and a NRF A-rated scientist, is President of the Medical Research Council. Dr. Gray is a Professor of Paediatrics in the Faculty of Health Sciences at the University of the Witwatersrand in Johannesburg, South Africa. She is also a professor in the Vaccine and Infectious Disease Division at the Fred Hutchinson Cancer Research Institute. She was Executive Director of the Perinatal HIV Research Unit before joining the MRC to lead their Office of AIDS Research. She is the Co-PI of the NIH-funded HIV Vaccine Trials Network, and the Director of HVTN International Programs. In 2002, Dr. Gray was awarded the Nelson Mandela Health and Human Rights Award for pioneering work done in the field of Mother-to-Child Transmission of HIV-1. She is

a member of the Academy of Science in South Africa, and chairs their standing committee on health. She is a member of the Institute of Medicine of the National Academies and serves on their Global Health Board.

Dr. Gray has also been awarded the IAPAC “Hero of Medicine” award for work done in the field of HIV treatment in children and adults. In 2009, James McIntyre and Dr. Gray received the N’Galy-Mann lectureship in recognition of their HIV research contribution in South Africa. In June 2012, she received a DSc honoris causa from the Simon Fraser University, Vancouver. She was also admitted into the American Academy of Microbiology in 2012. In 2013, she received the country’s highest honour, the Order of Mapungubwe, granted by the president of South Africa for achievements in the international area that have served South Africa’s interest.

Arthur Kleinman, a physician and anthropologist, is now in his 39th year at Harvard University. A graduate of Stanford University and Stanford Medical School, with a Master’s degree in social anthropology from Harvard and trained in psychiatry at Massachusetts General Hospital, Dr. Kleinman is a leading figure in several fields, including medical anthropology, cultural psychiatry, global health, social medicine and medical humanities. He conducted research in Taiwan from 1969–1978 and, since then, has conducted research in China. Dr. Kleinman is professor of medical anthropology in the Department of Global Health and Social Medicine, and professor of psychiatry at Harvard Medical School. He is the Esther and Sidney Rabb professor of anthropology in the Department of Anthropology in the Faculty of Arts and Sciences (FAS), and was appointed the Victor and William Fung director of Harvard University’s Asia Center in 2008. Dr. Kleinman has published six single-authored books, including *Patients and Healers in the Context of Culture*; *Social Origins of Distress and Disease: Depression, Neurasthenia and Pain in Modern China*; *Rethinking Psychiatry*; *The Illness Narratives*; *Writing at the Margin*; and *What Really Matters*. He has also co-edited books on culture and depression; SARS in China; world mental health; suicide; placebos; AIDS in China; and the relationship of anthropology to philosophy (*The Ground Between: Anthropologists Engage Philosophy*). Dr. Kleinman is currently writing a book on caregiving, based on his articles in *The Lancet*, *The New England Journal of Medicine* and other publications. His current projects include a comparative study of eldercare for dementia in six Asian settings; an ethnographic study of trust in the doctor-patient relationship in China; planning for a major meeting on global mental health services delivery; and development of Southeast Asia studies at Harvard.

Nelson K. Sewankambo, MBChB, M.Sc., M.Med., FRCP, Doctor of Laws, Honoris Causa, was trained in internal medicine and clinical epidemiology/biostatistics. A Professor of Medicine, he was Dean of Makerere University Medical School in Kampala, Uganda, for 11 years and subsequently Principal (Head) of Makerere University College of Health Sciences. His leadership was characterized by a persistent desire and efforts to continuously improve Makerere University’s research output. Dr. Sewankambo devoted his last 16 years of professional life to the advancement of medical education, research and capacity development. He led teams of academicians, composed of experts in Europe, North America and Africa, to develop and manage a very successful model, the Infectious Diseases Institute at Makerere, for strengthening a medical school in the developing world. He initiated a successful research capacity-building consortium involving seven African

institutions (four universities and three research institutes) and two universities in the United Kingdom, Cambridge and the London School of Hygiene & Tropical Medicine. He is the principal investigator of a five-university consortium under the capacity-building Medical Education Partnership Initiative (MEPI).

Dr. Sewankambo was founder and principal investigator in Uganda for the internationally renowned Rakai Health Sciences Program (formerly Rakai Project), where he continues to be an active researcher/investigator in HIV/AIDS, and has contributed to a large volume of scientific publications in peer-reviewed journals. He provided mentorship and development for many Ugandan junior and mid-level researchers. He is spearheading initiatives for research on knowledge translation in Africa to advance the use of evidence-based policies and practice. He has participated in many national and international program reviews.

Annex 3: Reference Documents and Interviewees

Reference Documents

The seven questions for the International Expert Panel and related reference documents are set out below.

1. **To what extent does Grand Challenges Canada meet pressing global needs?**
 - a. **Is Grand Challenges Canada engaging sufficiently with low- and lower-middle-income countries to ensure that their needs are being addressed?**

Does Grand Challenges Canada Address a Demonstrable Need and is it Responsive to the Needs of Canadians?

Relevance of Grand Challenges Canada Programs and Activities to Government of Canada Priorities

2. **To what extent is Grand Challenges Canada delivering on its short-term expected outcomes?**
 - a. **To what extent is Grand Challenges Canada fostering and supporting innovation?**
 - b. **What are key lessons learned?**

Management Statement on Grand Challenges Canada's Outcomes (updated March 30, 2015)

Strategy Roadmap (updated March 30, 2015)

Portfolio reviews for Saving Lives at Birth, Saving Brains, Global Mental Health, Stars in Global Health, Transition to Scale and Point-of-Care Diagnostics programs

3. **Given its current programs and activities, is Grand Challenges Canada likely to deliver on its ultimate outcome of saving and improving lives?**
 - a. **How is the Grand Challenges model contributing to the achievement of this ultimate outcome? Could it be improved to increase the likelihood of success?**

Theories of Change for: Grand Challenges Canada overall and for Saving Lives at Birth, Saving Brains and Global Mental Health programs

Grand Challenges Canada Strategic Plan

Grand Challenges Canada Business Case

Strategy Roadmap (updated March 30, 2015)

4. **In what ways and to what extent is the Government of Canada's investment in Grand Challenges Canada providing value for money?**
 - a. **Is the Grand Challenges Canada model likely to become financially independent or sustainable over time, or is it a model that should focus on leverage of public and private resources?**

Efficiency and Economy of Grand Challenges Canada

Portfolio reviews for Saving Lives at Birth, Saving Brains, Global Mental Health, Stars in Global Health, Transition to Scale and Point-of-Care Diagnostics programs

Strategy Roadmap (updated March 30, 2015)

5. **How does Grand Challenges Canada's performance compare with that of comparator organizations globally?**

Based predominantly on stakeholder and innovator interviews

6. **How has Grand Challenges Canada influenced the brand Canada is projecting internationally, including with respect to science diplomacy?**
 - a. **To what extent has the Grand Challenges model influenced other countries?**

Blog: "Combining Innovation and Diplomacy to Solve Global Health and Development Challenges" (January 2014)

Launch of partnership announcements: Israel, Peru, Brazil and India

Announcements of first projects: Israel, Peru and Brazil

7. **Taking into account Grand Challenges Canada's plan between 2015 and 2020, what are your suggestions for future directions?**

Grand Challenges Canada Strategic Plan

Grand Challenges Canada Business Case

Interviewees

Performance and Relevance

- Graham Flack, Deputy Minister, Canadian Heritage
- Elissa Golberg, Assistant Deputy Minister – Partnerships for Development Innovation, Department of Foreign Affairs, Trade and Development
- Paul Samson, Director General – International Trade and Finance, Finance Canada
- Stephen Lucas, Deputy Secretary to the Cabinet – Plans and Consultations, Privy Council Office
- Jean-François Perrault, Assistant Deputy Minister – International Trade and Finance, Finance Canada

Overview

- Khalil Shariff, Chief Executive Officer, Aga Khan Foundation Canada
- Keith Martin, Executive Director, Consortium of Universities for Global Health
- John Cairns, President, Canadian Academy of Health Sciences
- Paul Davidson, President, Association of Universities and Colleges of Canada

Written submissions by email:

- Dave Toycen, President and Chief Executive Officer, World Vision Canada

Geographic Priorities/Science Diplomacy

Written submissions by email:

Israel

- Vivian Bercovici, Canadian Ambassador to Israel, Government of Canada
- Manuel Trajtenberg, Chair – Planning and Budgeting Committee, Council for Higher Education
- Avi Hasson, Chief Scientist, Ministry of Economy
- Ilan Fluss, Director, Policy Planning & External Relations Department, Agency for International Development Cooperation (MASHAV)
Submissions by Jacob Fisher, Head of Tnufa Program, Office of Chief Scientist *and* Maor Chester, Economist, Strategy and Economic Research Unit, Office of the Chief Scientist, Ministry of Economy
- Aliza Belman Inbal, Director of the Pears Program for Global Innovation, Tel Aviv University
- Rafi Barak, Israeli Ambassador to Canada

Brazil

- Antonio Carlos Campos de Carvalho, Professor Titular de Fisiologia e Biofísica, Instituto de Biofísica Carlos Chagas Filho, Universidade Federal do Rio de Janeiro

India

- Peter MacArthur, Director-General, Trade and Diplomacy, South-Southeast Asia and Oceania Bureau, Department of Foreign Affairs, Trade and Development Canada
On behalf of Don Bobiash, Canadian Ambassador to Indonesia, Government of Canada
and Susan Gregson, Assistant Deputy Minister – Asia Pacific, Government of Canada
- Vijay Sappani, Founder, Sri Lankans Without Borders, Canada

Palestinians

- Katherine Verrier-Frechette, Permanent Representative of Canada to the Palestinian Authority

ASEAN

- Yongyuth Yuthavong, Deputy Prime Minister, Government of Thailand
- Pisan Manawapat, Former Thai Ambassador to the United States of America
- Phil Calvert, Canadian Ambassador to the Kingdom of Thailand
- Don Bobiash, Canadian Ambassador to Indonesia (Submission by Peter MacArthur)
- Susan Gregson, Assistant Deputy Minister – Asia Pacific, Government of Canada, Ottawa (Submission by Peter MacArthur)

Africa

- Alexandre Lévesque, High Commissioner in the United Republic of Tanzania

Saving Lives at Birth and Saving Brains

- Wendy Taylor, Director of the Center for Accelerating Innovation and Impact, U.S. Agency for International Development (USAID)
- Nathaniel Foote, Managing Director, TruePoint/Harvard Center on Developing Child, United States of America
- Tarun Dua, Medical Officer – Program for Neurological Diseases and Neuroscience, Management of Mental and Brain Disorders, Department of Mental Health and Substance Abuse, World Health Organization (WHO), Switzerland
- Faith Miguia, Director of Clinical Operations, Jacaranda Health, Kenya

- Jena Hamadani, Head of the Child Development Unit, International Centre for Diarrhoeal Disease Research (icDDR,b), Bangladesh
- Taona Kuo, Senior Manager, Every Woman Every Child, United States of America

Global Mental Health

- Vikram Patel*, Joint Leader, Mental Health Innovation Network, Switzerland/UK
- Pamela Collins*, Associate Director for Special Populations, National Institute of Mental Health, United States of America
- Dixon Chibanda, Senior Consultant Psychiatrist, Harare Central Hospital, Zimbabwe
- Atif Rahman, Professor of Child Psychiatry, University of Liverpool, United Kingdom
- David Ndeti, Professor of Psychiatry, University of Nairobi, Kenya
- Soumitra Pathare, Consultant Psychiatrist, Ruby Hall Clinic, and Coordinator, Centre for Mental Health Law and Policy, Indian Law Society, India
- HE Prof Kivutha Kibwana, Governor of Makueni, Kenya
- Dr. Chauhan, State Nodal Officer for Mental Health, Department of Health and Family Welfare, Government of Gujarat, India

**Also a member of Grand Challenges Canada's Scientific Advisory Board*

Stars in Global Health

- Florin Gheorghe, Chief Executive Officer, Arbutus Medical, Canada
- Madhukar Pai, Canada Research Chair in Translational Epidemiology & Global Health, Department of Epidemiology, Biostatistics & Occupational Health, McGill University, Canada
- Ophira Ginsburg, Scientist, Women's College Research Institute, Canada
- Karen Yeates, Associate Professor, Queens University, Canada
- Dhananjaya Dendukuri, Chief Executive Officer & Co-Founder, Achira Labs, India
- Patricia Garcia, Dean of the School of Public Health, Cayetano Heredia University (UPCH), Peru

Written submissions by email:

- Keneth Mitambo, Chief Executive Officer, STAMP Investments Holdings Ltd., Kenya

Point-of-Care Diagnostics

- Rob Taylor, Deputy Director for Surveillance and Epidemiology, Bill & Melinda Gates Foundation, United States of America
- David Goldfarb, Assistant Professor – Department of Pediatrics, Division of Infectious Disease, and Associate Member – Department of Pathology and Molecular Medicine, McMaster University
- Greg Matlashewski, Professor – Microbiology & Immunology, Faculty of Medicine, McGill University

- Chandrasekhar Nair, Director and Chief Executive Officer, Bigtec Labs, India
- Dhananjaya Dendukuri, Chief Executive Officer and Co-Founder, Achira Labs, India

Transition to Scale/Social Finance

- Michelle McIntosh, Senior Lecturer – Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Australia
- Sidhant Jena, Chief Executive Officer, Jana Care, United States of America
- Ranjan Nanda, Staff Research Scientist, International Centre for Genetic Engineering and Biotechnology (ICGEB), India

Written submissions by email:

- Gavin Armstrong, Chief Executive Officer, Lucky Iron Fish, Canada

Annex 4: Grand Challenges Canada's Governance Structures and Processes

Grand Challenges Canada is a federally incorporated, not-for-profit organization governed by a volunteer Board of Directors, chaired by **Mme Guylaine Saucier**. Given its role as an alternative service delivery vehicle for the Government of Canada in development innovation, GCC's governance and administration systems and policies were also explicitly developed to align with the practices and requirements of the Treasury Board Secretariat.

GCC's Board of Directors has three sub-committees, as follows:

1. Audit & Finance Committee
2. Nominating & Governance Committee
3. Compensation Committee.

The Audit & Finance Committee is currently chaired by **Mr. Morris Rosenberg**, the former Deputy Minister of Foreign Affairs. The chairs of the Nominating & Governance and the Compensation Committees are currently vacant. Both of these committees were chaired by the late chairman of the Board, Mr. Joseph L. Rotman, and interim chairs have yet to be named.

The Vice President of Operations and General Counsel oversees the risk management framework and risk register, and reports on a quarterly basis on changes to key risks to the Audit & Finance Committee, which reviews risk occurrences and mitigation activities. This committee, in turn, reports to the full Board of Directors, as appropriate.

In 2013, an Investment Committee was created through a formal resolution of the Board of Directors, to support the Board in its decision-making process in relation to the *Transition to Scale* program. The mandate of the Investment Committee is to:

Provide recommendations to Grand Challenges Canada's Board of Directors to make investments that optimize impact at scale in a sustainable manner.

The Investment Committee is chaired by **Mr. Gerhard Pries**, managing partner and CEO of Sarona Asset Management. The roles and responsibilities of this committee are discussed in greater detail in the following section.

The Board of Directors is also supported by an independent international Scientific Advisory Board (SAB), chaired by **Dr. Abdallah Daar**, founding chair of the Global Alliance for Chronic Disease, which has domain expertise in GCC's core challenges and program areas. The mandate of the SAB is to:

Provide advice and mentorship to management, to enable the success of Grand Challenges Canada's portfolios.

GCC produces annual financial statements (which are independently audited) and an Annual Report. It also produces a comprehensive set of accountability data and supporting documentation, which is submitted to its funding partners (IDRC and DFATD).

Annex 5: Overview of Grand Challenges Canada's Programs

Grand Challenges Canada has two primary streams of programming:

1. **Targeted Challenges**
2. **Innovator-defined Challenges**

Targeted Challenges

At the G8 meeting in 2010, Canada announced the Muskoka Initiative on Maternal, Newborn and Child Health (MNCH). This initiative (which was renewed in 2015 for another five years) established MNCH as a top development priority for the Government of Canada. This commitment is consistent with the *Every Woman Every Child* movement launched by UN Secretary-General Ban Ki-moon during the United Nations Millennium Development Goals Summit in 2010 and with the World Health Organization's Global Strategy for Women's and Children's Health.

Recognizing the importance of maternal, newborn and child health as a priority for the government and the international community, as well as the impressive innovation capacity in this field in Canada, Grand Challenges Canada made the decision to focus several of its challenges in this area.

Saving Lives at Birth

In 2011, Grand Challenges Canada became a founding partner in the Saving Lives at Birth Grand Challenge, in partnership with USAID, the UK Department For International Development, the Government of Norway and the Bill & Melinda Gates Foundation. The focus of this challenge is on saving the lives of mothers and newborns in the 48 hours around the time of birth. The objectives of this challenge are to mobilize ground-breaking prevention and treatment approaches for pregnant women and newborns in poor, hard-to-reach communities around the time of childbirth.

As one of Grand Challenges Canada's more mature programs, this partnership has already seen a number of innovations begin to transition to scale, some with support from Grand Challenges Canada and others through external partners, including multinational companies. Examples of successes to date include:

- Use of the Rice 360 Institute for Global Health's bCPAP (Bubble Continuous Positive Airway Pressure) showed a 33 to 50% decrease in neonatal mortality among neonates with respiratory distress syndrome in Malawi
- The Odón Device (a low-cost instrument to deliver the fetus when complications occur during the second stage of labour) was licensed and is being taken to scale by BD (a Fortune 500 medical technology company).

The number of successful innovations from this pipeline indicates that it is already having positive short-term outcomes and that these outcomes will continue to grow as the portfolio and partnership continues.

Saving Brains

Also in 2011, Grand Challenges Canada identified and launched the first request for proposals for a Grand Challenge in Saving Brains. This novel program is focused on:

“Developing sustainable ways to promote and nurture healthy child and brain development in the first 1,000 days at scale with lasting impact on human capital in low-resource settings”.

In fall 2013, Grand Challenges Canada announced the launch of the *Saving Brains* partnership, which includes the Aga Khan Foundation Canada, the Bill & Melinda Gates Foundation, World Vision, the Bernard van Leer Foundation, the Maria Cecilia Souto Vidigal Foundation, UBS Optimus Foundation and the Norlien Foundation.

Stakeholders, including the World Health Organization (WHO), stated that the *Saving Brains* program, with its focus on child survival interventions and child survival outcomes, is undertaking important work. They see this program as making a contribution to the UN's Sustainable Development agenda and goals. With regard to scaling up, stakeholders felt that this work was relevant, especially when they are giving advice to countries about how results can be implemented at a national level.

(The Saving Brains program is) making a contribution to the UN's Sustainable Development agenda and goals.

In analyzing the outcomes of the *Saving Brains* portfolio, Grand Challenges Canada's Scientific Advisory Board offered the following views:

Saving Brains is having a meaningful impact on harmonizing the field of Early Childhood Development by bringing together the domains of health, learning and behaviour.

The Saving Brains Program's work on metrics and its investments in assessment tools are important contributions to the field.

Global Mental Health

A third Grand Challenge was launched in early 2012 and focused on non-communicable disease. This challenge originally had a broader mandate that included hypertension; over time, it has become more tightly focused on Global Mental Health. Although mental health is not an explicit development focus for the Canadian government, the decision was made to focus on this challenge because:

- The disease burden is high (mental health disorders account for almost 14% of the global burden of disease).
- There was strong Canadian capacity in the field.
- Grand Challenges Canada would be the first organization to fund global mental health priorities that stem from the large global Grand Challenges prioritization exercise that was published in *Nature* in July 2011.

It was felt that this field offered the potential to create an important niche, both for Grand Challenges Canada and for Canada.

Canada's leadership in global mental health, through Grand Challenges Canada, has been recognized in a number of forums and reports. The report of the Global Health and Mental Health All-Party Parliamentary Groups in the UK, *Mental Health for Sustainable Development*, recognized Canada's leadership in this field through Grand Challenges Canada:

The Canadian Government is funding the world's largest body of global mental health research projects through Grand Challenges Canada.

A 2014 report from the UK Overseas Development Institute states:

Mental health is a critically important issue in global health today, and yet does not receive due policy attention. Mental illness will likely affect one in four people within their lifetime and neuropsychiatric conditions now account for 13% of the global burden of disease.

Grand Challenges Canada was also awarded a Special Presidential Commendation in 2015 from the American Psychiatric Association "in recognition of their global development leadership in mental health and maternal-child health".

Innovators strongly endorsed both the early impact of Grand Challenges Canada's work in global mental health and its potential for longer-term transformative impact. As one innovator stated:

Grand Challenges Canada had facilitated accomplishments that were never thought possible, such as successfully engaging with policy-makers.

Innovators highlighted that their projects were having tangible outcomes for patients with mental health issues, such as depression, anxiety, bipolar disorder, schizophrenia, etc. Examples included referrals from traditional healers for patients to attend health centres, which had never previously occurred.

Grand Challenges Canada's work has helped to raise the profile of mental health issues and, through this higher profile, engage policy-makers, including governors and senior government officials.

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mental health issues and, through this higher profile, engaged policy-makers, including governors and senior government officials.

This view of the Global Mental Health portfolio was echoed by Grand Challenges Canada's Scientific Advisory Board, which stated in a recent review that:

Grand Challenges Canada has established a networked community of innovators, and is playing a catalytic role in building the capacity of current and future leaders in the space.

The interim nature of current results underestimates the true value of the program, which will be fully realized in 5–10 years.

Point-of-Care Diagnostics

With the overarching goal of creating a more sustainable market for high-performance, low-cost, point-of-care diagnostics for global health, Grand Challenges Canada and the Bill & Melinda Gates Foundation launched a joint Point-of-Care Diagnostics initiative in 2010 to create a new class of point-of-care diagnostics that would be easy to use, low cost, multiplexed and able to assess disease stage and provide information on prognosis. The initiative focused on the development and integration of best-in-class diagnostic components into one or more interoperable 'plug-and-play' point-of-care platforms capable of running a menu of tests from different developers.

When asked about the importance of Grand Challenges Canada in the point-of-care diagnostics space, partners and innovators both indicated that the inclusion of implementation research had been helpful. (Grand Challenges Canada introduced implementation research projects as part of its portfolio of projects in this area.) These innovators were seen as offering keen insight, as they are much closer to the end users than were more technical innovators.

Because of the increased level of investment globally in this area, Grand Challenges Canada made the decision not to continue this initiative as a separate program but to include point-of-care diagnostics within the broader *Stars in Global Health* portfolio.

Innovator-Defined Challenges

Stars in Global Health

At the same time that the above Grand Challenges – now referred to collectively as the **Targeted Challenges** – were identified, Grand Challenges Canada also launched a broader, innovator-defined program known as ***Rising Stars in Global Health*** (now known as *Stars in Global Health*). The first round of the *Rising Stars* program focused only on young Canadian innovators with potentially transformative global health innovations. Over subsequent rounds, this program was expanded to include innovators in low- and lower-

middle-income countries (LMICs), innovators who were further along in their careers, and innovators outside the more traditional research-oriented academic fields.

At the heart of the *Stars in Global Health* program is the understanding that innovators in LMICs have a unique base of knowledge, perspectives and, in some cases, personal connections. Grand Challenges Canada recognizes that these innovators are best positioned to identify key health challenges and solutions in their communities.

Stakeholders recognized that the *Stars in Global Health* program has been successful at building a pipeline of innovations at the proof-of-concept stage. Although many of these innovations are already having some impact, the majority of the impact from this program will be seen once successful projects transition to scale (discussed in greater detail below).

In reviewing the *Stars in Global Health* portfolio, Grand Challenges Canada's Scientific Advisory Board indicated that:

Lives saved and improved are significant, and they are conservative. At least half of the impact is indirect and unaccounted for, i.e., lives improved due to ripple effect ... Knowledge outputs and the careers transformed are impressive.

Transition to Scale (TTS)

The goal of the Transition to Scale program is to support innovators from Canada and from low- and middle-income countries who are positioned to take their global health ideas to scale. The proposed innovations would need to have achieved proof of concept; have a strong likelihood of achieving substantial and measurable health gains in an under-resourced setting; and would need to optimize impact and sustainability by using an Integrated Innovation approach. A key component of this program is partnerships, to optimize sustainability and impact. To enable and leverage partnerships, Transition to Scale proposals require 50% matching through partnerships to be eligible for Grand Challenges Canada funding.

Innovators were, overall, positive about their engagement with the Transition to Scale team at Grand Challenges Canada. Because of the comparative newness of this program and because of the longer timeline to impact, many innovators were not yet demonstrating impact. Grand Challenges Canada's management is working with transition-to-scale innovators to map out their anticipated impacts, both by the conclusion of their project as well as by 2030.

Several innovators and partners noted that Grand Challenges Canada's focus on catalyzing partnerships was an enabler of longer-term success. Other stakeholders added, however, that it will be important for Grand Challenges Canada to help innovators make connections into the larger global health ecosystem, including national health systems, larger not-for-profit organizations, multilaterals, and national aid agencies and departments. Innovators also emphasized the beneficial role of the network of innovators inside Grand Challenges Canada's portfolio, and the importance of sharing information and mutual learning.

In reviewing the *Transition to Scale* (TTS) program during a recent portfolio review, Grand Challenges Canada's Scientific Advisory Board noted that:

Ultimately, the TTS program provides investments with the credibility to attract partners and investors capable of supporting scale.

While some investments will generate significant financial returns, others will make an important contribution to humankind and health, which is equally important (e.g., an Ebola rapid diagnostic test that might not otherwise attract funding, given the current stage of development)

Additional information on the TTS program can be found in Annex 7.

Annex 6: What is a Grand Challenge organization?

The idea of defining and solving *Grand Challenges* originated in the field of mathematics in the early twentieth century, when Dr. David Hilbert articulated 23 problems that have inspired and challenged mathematicians to this day. The concept of using defined 'challenges' to drive innovation was re-launched in 2003 by the **Bill & Melinda Gates Foundation**, which funded a process to identify 14 *Grand Challenges in Global Health*. Unlike Hilbert, who simply articulated a set of challenges, the Gates foundation launched a competition to fund world-leading innovators to develop novel solutions to these challenges. In so doing, it created the first modern Grand Challenges organization.

Seeing the potential of the Gates foundation model, other organizations and governments decided to use a similar Grand Challenges approach to address pressing development challenges. Some countries have launched Grand Challenges initiatives within existing organizations such as the Grand Challenges for Development initiative within USAID. In Canada, the decision was made to launch a Grand Challenges initiative in a not-for-profit organization outside of government.

In launching **Grand Challenges Canada** in 2010, Canada became the first country to take a Grand Challenges approach in its Official Development Assistance (ODA) envelope, followed shortly by the United States the same year. In Canada, the decision was made to focus exclusively on global health, while the U.S. has taken a broader approach, with challenges in areas such as voter participation and agriculture. In subsequent years, a number of countries have launched their own Grand Challenges organizations, including India, Brazil, Israel, Thailand, Peru and South Africa.

All of the organizations in the Grand Challenges family share a methodology (the Grand Challenges approach), but are independent, with their own mandates, priorities and sources of funding. The Grand Challenges approach provides a platform or operating system to allow organizations to partner in areas of common interest; for example, the *Saving Lives at Birth* partnership includes GCC, the Bill & Melinda Gates Foundation, USAID, the UK Department For International Development and the Government of Norway.

Following is a list and short description of current Grand Challenges organizations, their launch dates and their areas of focus.

Existing

Grand Challenges Brazil

Grand Challenges Brazil is an initiative of the Brazilian Ministry of Health. Established in February 2013, the program started by funding domestic solutions to maternal, newborn and child health challenges. Programmatic and financial support for the initiative comes from the Bill & Melinda Gates Foundation and Brazil's National Council on Research.

Grand Challenges India

In 2013, the Department of Biotechnology (DBT) of India, its Biotechnology Industry Research Assistance Council (BIRAC) and the Bill & Melinda Gates Foundation launched

Grand Challenges India. The initiative funds innovation in vaccines, drugs, agricultural products and interventions related to malnutrition, family and child health by 2018. To date, the initiative has made investments in a wide range of innovative programs, including (in partnership with GCC) scaled funding for a mobile crèche day-care model and a novel solution for the elimination of deadly visceral leishmaniasis in rural India.

Grand Challenges Israel

Launched in 2014, Grand Challenges Israel is dedicated to supporting technological and innovative solutions to challenges in global health and food security in developing countries. Grand Challenges Israel is operated by the Office of the Chief Scientist within the Ministry of Economy, in collaboration with MASHAV, Israel's Agency for International Development Cooperation within the Ministry of Foreign Affairs. The program supports Israel's efforts to contribute to the global campaign for international development and cooperation, as well as its aim of introducing Israeli technological innovation to this new, challenging and growing market. Since its establishment, the organization has funded 10 proof-of-concept grants of approximately \$150,000 each. In July 2015, it put out a call for a second round of proof-of-concept applications. Grand Challenges Israel has been modelled on and mentored by Grand Challenges Canada.

Grand Challenges Peru

Grand Challenges Peru is a joint funding initiative of CONCYTEC (Peru's national council for science, technology and technological innovation) and GCC. Since its launch in 2014, the collaboration has funded over \$2.2 million in Peruvian proof-of-concept projects under GCC's Stars in Global Health program. Effective seed grants that secure private sector or other financial partners are eligible for scaled funds of up to \$1 million.

Grand Challenges South Africa

Grand Challenges South Africa is a partnership between the Department of Science & Technology of the Republic of South Africa, the South African Medical Research Council, and the Bill & Melinda Gates Foundation. Grand Challenges South Africa was launched in 2014 with an inaugural call to applications entitled *All Children Thriving*, under the *Measuring Integrated Solutions for Healthy Birth* grand challenge. The first round of applications for two-year seed grants of up to \$500,000 and four-year full grants of up to \$2.5 million closed in June 2015.

Grand Challenges Japan

Launched in 2015, Grand Challenges Japan is an initiative to support the development of drugs and vaccines to eliminate neglected tropical diseases, such as visceral leishmaniasis, elephantiasis and Chagas disease. The program is funded by an initial pledge of \$4 million from the Tokyo-based Global Health Innovative Technology Fund (GHIT), a partnership of five Japanese pharmaceutical companies, two Japanese government ministries and the Bill & Melinda Gates Foundation.

Grand Challenges Thailand

Launched in May 2015 by Thailand's Deputy Prime Minister, Dr. Yongyuth Yuthavong, Grand Challenges Thailand is a national initiative that brings together domestic research, development and innovation communities to tackle key issues for national development and

global health. Grand Challenges Thailand is funded by the Royal Thai Government and managed by the National Research Council of Thailand under the Thailand Research Organization Network (TRON). Research projects under Grand Challenges Thailand will foster innovations for the betterment of those in need, and will collaborate with partners in the broader Grand Challenges movement. The Government of Thailand has proposed an eventual expansion of this initiative to Grand Challenges ASEAN, which would include all ASEAN countries in innovation sourcing and investment.

Under development

Grand Challenges Ethiopia

Launching in September 2015, Grand Challenges Ethiopia was proposed by the Ethiopian Ministry of Health as part of a wider Health Sector Transformation Plan (HSTP). In addition to funding domestic innovations at proof of concept and scale, the organization proposes to serve as a testing ground for globally sourced innovations (i.e., those originating with other Grand Challenges organizations).

Grand Challenges Africa

Launching in September 2015, Grand Challenges Africa will be an initiative of the Alliance for Accelerating Excellence in Science in Africa (AESA). AESA is a programmatic unit of the African Academy of Sciences, and aims to foster the long-term sustainable development of science excellence, global health research leadership and innovation in Africa. It will do so by proactively identifying challenges that hinder rapid scientific advancement in Africa, holding open calls for proposals with transparent review processes, and actively managing and evaluating grants and their impacts.

Annex 7: Overview of the *Transition to Scale* Program

The need to manage the risks of innovation is at the core of Grand Challenges Canada's two-stage approach to funding innovation: innovations that are funded at proof of concept are managed with a comparatively light touch and few milestones. Only the best 10–15 percent of these innovations transition to scale. They are managed with an intense focusing of resources and attention to help catalyze success and impact. The *Transition to Scale* (TTS) process is outlined in a box on the following page.

If an innovation is found to be a good candidate for TTS, it is vetted through an in-depth due diligence process. Grand Challenges Canada has developed a venture capital-like approach to due diligence, with a parallel independent scientific review conducted by the Canadian Institutes of Health Research (CIHR). It is important to highlight that the process of taking innovations to scale often takes 5–10 years, with some technologies taking even longer. As such, the TTS program is still very much in its infancy, and Grand Challenges Canada is taking a 'learning-by-doing' approach to rapidly prototype, learn and improve the program.

A significant lesson learned over this time has been that there is no single approach to scaling that can be applied to all innovations. It is through this early lesson that Grand Challenges Canada developed a venture capital-like approach to identifying, selecting and catalyzing the scaling of innovations. As part of this approach, GCC takes a portfolio approach to managing risk, with a mix of lower risk/lower return and higher risk/higher return projects. It supports some projects that will deliver on a shorter timespan and some that will take 5–10 years to realize their full impact. Several case studies of *Transition to Scale* projects are included in boxes below, and on the following pages.

Case Study of Transition To Scale Project: *Lucky Iron Fish*

Iron deficiency is a ubiquitous nutritional deficiency affecting more than two billion people worldwide, mostly children and women of reproductive age. This condition can lead to anemia, weakness, impaired cognitive ability, compromised physical development in children and increased risk of illness. It can even lead to death.

To address the challenge of iron deficiency in Cambodia, a culturally acceptable, inexpensive, lightweight iron ingot was designed in the shape of a fish, known as a 'Lucky Iron Fish', to provide families with a novel, at-home, culturally acceptable fortification method. To date, over 6,500 Lucky Iron Fish have been sold in Cambodia, providing ~30,000 people with access to a consistent source of iron. Based on conservative estimates in Cambodia, ***about half of the children under the age of five and women of reproductive age are iron deficient, and will have a health benefit from using the Lucky Iron Fish.***

Grand Challenges Canada invested \$500,000 in Lucky Iron Fish as a zero percent interest loan that commenced October 4, 2013. This structure was selected because the organization is generating revenues (the ingot retails for \$25) both in developed and developing markets. A zero percent interest rate was provided to ensure they received patient capital, which tested the strength of their revenue-generating business model handling risk capital.

Grand Challenges Canada's Transition-to-Scale Investment Process



Sourcing (Deals)

Deals are sourced from the pipeline of *Stars*, *Saving Lives at Birth*, *Saving Brains* and *Global Mental Health* granting platforms. Strategic partner pipelines (Bill & Melinda Gates Foundation, Philips, Skoll, etc.) are also vetted.

Curation

Grand Challenges Canada continuously cultivates and curates the opportunities on its active deal list by first screening through its portfolio framework, and by evaluating for team, client/user demand, market, health outcomes, go-to-market strategies, organizational and financial models.

Thesis Identification

Using the curated rankings, preliminary deal theses (including how deals fit into portfolios) are formulated. The preliminary investment thesis guides due diligence on each investment opportunity.

Full Due Diligence

Focused due diligence (similar to venture capital) is undertaken to identify key risks, and develop organizational and health pro forma that then drive deal structuring efforts. An independent scientific review managed by the Canadian Institutes of Health Research (CIHR) supports this process.

Deal Structuring

Grand Challenges Canada structures each deal individually, using a range of financial instruments that includes grants, repayable grants, sub-market loans and others.

Investment Committee Approval; Negotiations; Disbursement

The Investment Committee (external to Grand Challenges Canada) is engaged quarterly to review and discuss funding opportunities. The Investment Committee is made up of private equity venture capital, angel, entrepreneur, academic and policy experts. The Committee chair is a GCC Board member.

Portfolio Management

Each deal is nurtured with a focus on human resources development (key hires), governance structuring, fundraising, demand creation and market formation analysis, intellectual property strategic roadmaps, product/model market fit, go-to-market iterations, business development, building strategic alliances, and identifying and managing Environment, Gender and Governance (EG2) aspects that are critical to ensure success.

Exit

Grand Challenges Canada is a patient investor and deals are often structured with 10–12-year time horizons to enable organic growth by organizations. TTS has seen several organizations raise follow-on financing, and Grand Challenges Canada TTS is now considering a cap of \$3M over all investments in a particular organization or initiative.

At the core of the transition-to-scale process is the **Investment Committee** of business and social innovators. The Investment Committee's mandate is to:

Provide recommendations to Grand Challenges Canada's Board of Directors to make investments that optimize impact at scale in a sustainable manner.

This Committee plays a pivotal role in the transition-to-scale process by providing management with advice on the due diligence and structuring of deals. The Committee also makes recommendations to the Board of Directors on whether and to what level they should approve particular investment opportunities. The Committee is composed of six members who have a blend of expertise in venture capital/angel investing, and scientific and social innovation.

The transition-to-scale approach is driven by partnerships. Grand Challenges Canada believes that it is the innovators on the ground in LMICs who have the best knowledge and understanding of local markets, policies and cultural practices, and that they are best situated to engage with local partners. That being said, there are countervailing factors impacting local innovators, including depth of experience and ability to scale. Innovators work to identify and engage partners on the ground in the countries and regions in which they are implementing their innovations, to help fill gaps in experience and in capacity to scale. These 'smart' partners provide knowledge and expertise, along with matching funds.

Case Study of Transition To Scale Project: *Inhaled Oxytocin*

An estimated 287,000 women die each year due to pregnancy-related causes, overwhelmingly in the poorest countries of the world. Hemorrhage is the leading cause of maternal mortality, linked to almost one-third of these deaths. Oxytocin is the World Health Organization's recommended 'gold standard' therapy in the prevention of postpartum hemorrhage (PPH), capable of reducing the incidence of PPH by ~50%. Currently, oxytocin is administered mainly by injection; however, in this form, oxytocin requires cold chain storage, which limits the coverage of this lifesaving commodity, particularly in low-resource settings.

The *Saving Lives at Birth* partners supported scientists at **Monash University** to develop a heat-stable, dry oxytocin powder that can be provided through an inhaler, similar to asthma medication. This not only eliminates the need for cold chain storage and multiple consumables often unavailable in resource-limited settings (such as needles and syringes) but, as an inhaled product, provides the potential for task-shifting to lower-tiered health providers and perhaps to mothers themselves.

GlaxoSmithKline, Grand Challenges Canada, McCall MacBain Foundation, Planet Wheeler Foundation and Monash University are working together to co-develop, register and distribute the product in regions of high maternal mortality. A \$16.6M USD early-phase development program is in progress to fast-track the development of the product for market entry in a span of 4 to 6 years, compared to the traditional development pathway of 10+ years. ***If inhaled oxytocin were to become widely available, it has the potential to save the lives of 20,000 pregnant women per year worldwide.***

Grand Challenges Canada also plays an important role in helping to identify and syndicate potential partners in the broader global health ecosystem that innovators may not have encountered on their own, which will help to enable these innovations to go to scale. Grand Challenges Canada is developing a toolkit of social finance approaches through risk capital and, more recently, outcomes-based payment structures that can further support innovations as they go to scale.

Annex 8: Examples of Successful GCC Innovations

The following are examples of successful innovations (excerpted from: **Grand Challenges Canada Annual Report 2014–2015**).

Chlorhexidine (John Snow International (JSI))

- *The risk of newborn death can be decreased by 23% in Nepal through the use of chlorhexidine on the newborn's umbilical cord stump, when applied within the first 24 hours of life.*
- *The Saving Lives at Birth partners' investment in the novel use of chlorhexidine by JSI/Chlorhexidine Navi Care Program (CNCP), the Ministry of Health and Population (MoHP) and partners enabled more than 1,200,000 newborns in Nepal to receive the antiseptic, saving more than 7,000 lives.*
- *Looking forward, the continued implementation of this strategy in Nepal alone could save at least an additional 10,000 lives by 2020, should circumstances remain the same.*



Almost three million babies die each year in the newborn period and roughly 28% of all newborn deaths are a result of infection. A freshly-cut umbilical cord can be the entry point for life-threatening systemic infections. In Nepal, it was once common practice to apply ash, mustard seed oil, dung and other such materials to the umbilical cord stump, in the belief that these were protective. JSI, through an investment from the *Saving Lives at Birth* partners, has pioneered the use of chlorhexidine (CHX) in Nepal as an alternative to other materials applied to the umbilical cord stump, shown to decrease risk of newborn death by 23%.

JSI/CNCP, with the Government of Nepal and partners, has incorporated the use of CHX immediately after cord cutting as a part of essential newborn care for both home and facility deliveries. For community promotion and distribution, Female Community Health Volunteers (FCHVs) have been trained, supported and provided with CHX, along with counselling and promotional materials to support CHX distribution and use. CHX is provided to pregnant woman during their eighth month of pregnancy, either from the FCHV or during their antenatal care visit at the health facility. The program currently includes 49 of 75 districts, and will be implemented nationwide within the next two to three years. In addition, CNCP has assisted the MoHP in building a sustainable program, with inclusion of CHX in in-service and pre-service training curricula; local production of high-quality product; incorporation of CHX in the national data collection forms and the country's essential drug list; and support of the development of the government's multi-year procurement plan. Should current trends in Nepal continue, an additional 10,000 lives could be saved by 2020.

JSI spearheaded the creation of the CHX Working Group in Nepal and contributes to the global CHX Working Group, sharing lessons and best practices to encourage other countries to initiate this program. The advocacy work of the group saw CHX selected as one of top 13 commodities by the United Nations Commission on Life-Saving Commodities for Women and Children in 2012. In addition to Nepal, CHX is now being scaled up in six countries. JSI/CNCP is serving as a living university, hosting teams from over 20 countries, to learn about program implementation in Nepal.

Transforming the trajectory of young children through early childhood care (Kidogo)

- *Many working mothers living in urban slums face the difficult decision of whether to leave their child at home unattended, in the care of an older sibling, or at overcrowded and poor-quality, home-based “baby care” centres.*
- *In response, Kidogo built and operates best-practice community baby care centres and supports the improvement of local home-based care centres.*
- *Only six months into the project, the team is running two best-practice centres, serving about 100 children, with one centre already at operational break-even.*
- *Kidogo is now working to improve existing home-based baby centres and to show the impact of Kidogo centres on child cognitive outcomes.*



Mothers living in urban slums often face a difficult decision of whether to leave their child at home unattended, in the care of an older sibling, or at a local “baby care” centre, where conditions are often very poor.

Kidogo Early Years is a social enterprise that seeks to transform the trajectory of young children living in East Africa’s urban slums by providing high-quality, affordable, early childhood care and education through a “hub-and-spokes” model. The team builds and operates best-practice community centres, or “hubs,” which provide young children (six months to six years) with a holistic early child development (ECD) intervention, including a safe and stimulating physical environment, nutritious meals, a play-based curriculum and well-trained, supportive caregivers. Kidogo also supports the improvement of local baby care centres (“spokes”), providing training, materials and ongoing support to improve the quality of community-based childcare.

Thus far, 60 children in Kibera and 40 children in Kangemi are receiving care at the two best-practice centres. The Kangemi centre passed operational break-even in its second month, and Kibera has experienced a 100% growth in numbers from third term in 2014 to first term in 2015. The innovators report that they are attracting parents from outside their immediate catchment area because parents heard “Kidogo is the best school in all of Kibera”. Parents tell them their kids don’t cry any more before coming to school because they love coming to Kidogo.

Over the course of the grant, they expect 180 children to regularly attend one of Kidogo’s hub or spoke centres, and to demonstrate that this has led to improved development in at least half of these children. Kidogo will demonstrate that improving child development by providing high-quality, affordable, early childhood care and education is possible, even in impoverished, informal, urban settings.

The Friendship Bench (University of Zimbabwe)

- *A brief, task-shifted, cognitive behavioural therapy intervention has proven to be an effective strategy for addressing common mental disorders in low-resource settings.*
- *This model, which was developed and tested by the Zimbabwe Aids Prevention Program with funding from Grand Challenges Canada, has been implemented in 24 clinics in Harare, with 2,960 individuals screened for depression to date, of whom 288 are currently receiving the intervention.*
- *If taken to scale, this innovation would ensure that the entire population of Harare has access to treatment for common mental disorders through primary health clinics.*



Shortages of trained mental health workers are an issue that is endemic to many low-resource countries and regions. For example, in Harare, an estimated 30% of primary care users suffer from mental health disorders, yet there are only three mental health specialists serving the city's 33 clinics, who receive upwards of 600 referrals per month.

To overcome this challenge, Dr. Dixon Chibanda of the University of Zimbabwe and his colleagues have developed a brief, task-shifted, cognitive behavioural therapy intervention to address common mental disorders. The intervention is delivered by supervised lay health workers on a wooden bench within the grounds of municipal clinics, and includes a participant income generation activity through the creation and sale of purses and other totes made from plastic bags ("Zeebags"). In a pilot study funded by Grand Challenges Canada, 81% of people suffering from depression and anxiety disorders displayed a pronounced reduction in symptoms after three sessions of this therapy, compared to 26% who did not receive the therapy. A randomized control trial (RCT) is underway to further validate the health outcomes and to determine the feasibility of expanding into other municipalities and target populations (for example, HIV-positive pregnant mothers).

To date, 2,960 people have been screened for depression across 24 public health clinics in Harare and 288 people are currently receiving the cognitive behavioural therapy in the intervention arm of the RCT. The sale of Zeebags created by these participants has helped generate personal income and many participants have been further empowered to begin their own small enterprises (e.g., soap and dressmaking). To oversee the delivery of the intervention, the city health department created and supports eight new permanent posts for study supervisor managers. Dr. Chibanda and his team intend to expand the Friendship Bench program within Harare and to the cities of Chitungwiza (pop. 350,000) and Gwero (pop. 150,000), by integrating this approach into existing programming for the prevention of mother-to-child transmission of HIV.

Strengthening street food safety in Bangladesh (icddr,b)

- *This project tested the quality of street food sold in Bangladesh and found that the majority of this food was contaminated with fecal E.coli.*
- *The team carried out a food safety education program with a healthcare package that can improve food safety knowledge, attitudes and practices among street food vendors.*
- *The team's work led to the implementation of the Safe Food Act 2013 to protect public health by making food safer, followed by passing of the 'Formalin Control Act-2015' by the Bangladesh Parliament.*

Street food is a substantial contributor to the urban food supply in 74% of World Health Organization member states and is an important source of nutrition for people with low incomes. Bacterial contamination in street food is a significant cause of enteric disease in these countries. Unpublished reports from Bangladesh suggest that there is poor perception of food safety among street food vendors and a high level of fecal contamination of street food.

This project tested the quality of food items from 115 street vendors in Dhaka between December 2013 and October 2014, and found that 50% of these items were contaminated with fecal *E.coli*.

As a result of this study, a food safety education program was launched with an aim to improve food safety knowledge, attitudes and practices among street food vendors. After 12 weeks, significant changes were found in vendors' hygiene behaviours, and the amount of *E. coli* found in their foods was reduced. Moreover, the results of the study led rapidly to the implementation of the Safe Food Act 2013 to protect public health by making food safer, followed by passing of the 'Formalin Control Act, 2015' by the Bangladesh Parliament. The Health Officer of Dhaka is now considering different options, such as providing improved food carts and registering the vendors, to facilitate improved hygiene behaviours and improve accountability.



Annex 9: The Global Health Innovation Ecosystem

As noted in the second chapter, there is a specific role for innovation within the broader domain of global health. Recently, this role has been highlighted in a “Call for Innovation in International Development,” which was released at the UN Third International Conference on Financing for Developing in July 2015 in Addis Ababa, and was endorsed by both DFATD and GCC, along with other governments and organizations supporting development innovation. It states that:

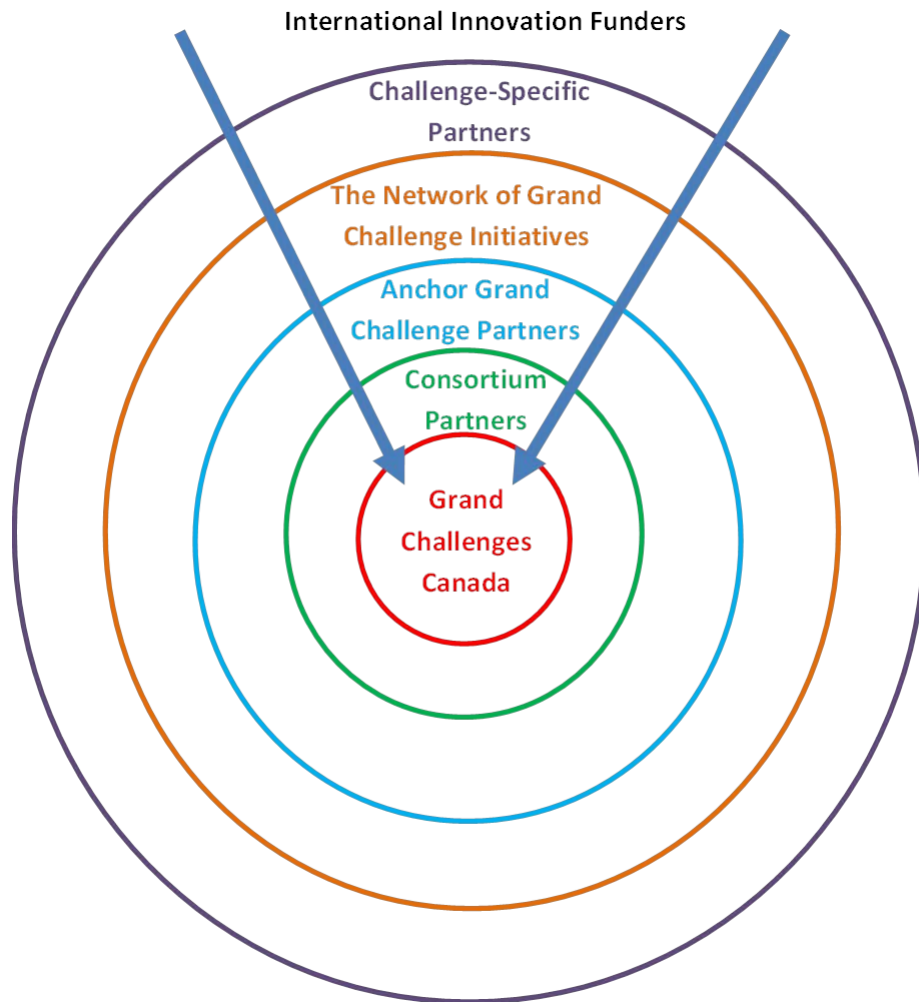
Over the next 30 years, the global community has an extraordinary opportunity to eradicate extreme poverty...Finding innovative solutions to complex development challenges will be essential, driving progress toward the Sustainable Development Goals and enabling billions of people to overcome hardship and reach their full potential.

An agenda of innovation will unleash the power of human enterprise to invent better futures. Innovations in health, agriculture, finance and other sectors have been vital in the life-saving and life-improving breakthroughs of recent times.

The statement goes on to advise that:

Innovation requires collaboration. Governments, the private sector, civil society, academia, development institutions and donors need to work together more than ever before – crossing traditional boundaries – to discover, fund and scale new solutions and tap the energy of innovation needed to reduce poverty at scale.

Because of its focus on international and cross-sectoral partnerships, GCC has contributed to positioning Canada to play a leadership role in development innovation going forward. In this context, it is useful to take a brief look at the ecosystem of global health innovation funders in which GCC operates. These funders can be grouped into expanding spheres of influence, as follows:



In thinking about the broader ecosystem in which GCC operates, it is important to remember that GCC is a funder of innovators and a catalyst for scaling. It does not undertake research or develop innovations itself, and it does not deliver global health products or services in the field. As such, the following description does not include organizations and institutions that focus on:

- The **performance** of global health research and innovation – for example, a broad range of academic institutions, social enterprises and not-for-profit organizations, both in Canada and in LMICs
- The **delivery** of global health innovation – for example, domestic governments, non-governmental organizations (NGOs) and private health systems.

International Innovation Funders

The broadest group in GCC's innovation ecosystem includes international funders of innovation in global health. Two groups, in particular, are important to highlight within this broad group:

1. The private sector
2. Multilateral institutions.

The Private Sector

Private sector contributions to global health innovation can be grouped into three broad categories:

1. Multinationals
2. Small and medium-sized (social) enterprises
3. Investors.

In terms of funding, multinational organizations can serve as important scaling partners and channels for promising global health innovations. One example from the GCC pipeline of innovations is the Odón Device, an innovation to assist with vaginal delivery in the cases of prolonged or troublesome second-stage labour. In 2013, BD (Becton, Dickinson and Company), in collaboration with the WHO and the *Saving Lives at Birth* partners, announced a collaboration to take this innovation to scale, which will involve an estimated investment of \$15M US or more in clinical trials, product development and manufacturing.

Another example is the \$16.6M US international collaboration that includes financial and research support from GlaxoSmithKline to accelerate the development of a heat-stable and low-cost inhaled form of oxytocin, which is a key treatment for the management of post-partum hemorrhage.

Increasingly, small- and medium-sized social enterprises (SMEs), both in Canada and in LMICs, are playing an important role in developing global health innovations and bringing them to market. Although they are not funders of global health research, they are increasingly important performers in global health innovation, and are an important driver of GCC's *Transition To Scale* program. An example of a Canadian SME engaged in global health, *Lucky Iron Fish*, can be found in **Annex 7**.

Finally, there is a broad range of investors that also play an important role in funding and supporting global health innovation. These investors include investment banks, family offices (companies that manage investments and trusts for families), high-net-worth individuals, venture capital funds, private equity firms and others. Investors play a critical role in transition to scale, and they have already partnered on programs (such as the UBS Optimus Foundation) and projects (such as a U.S. venture capital fund that partnered on GCC's Jana Care project).

Multilateral Organizations

There are three multilateral organizations that play a significant role in both developing and articulating global standards and policies in global health, and in funding some elements of global health innovation.

The World Bank

The World Bank is an important source of both financial and technical assistance to LMICs. The World Bank was an original partner in the *Saving Lives at Birth* partnership and the Bank remains an affiliate of the partnership. The World Bank Group, through its **global strategy for health, nutrition and population**:

- provides financing, state-of-the-art analysis and policy advice to help countries expand access to quality, affordable healthcare
- protects people from falling into poverty or worsening poverty due to illness
- promotes investments in all sectors that form the foundation of healthy societies.

More broadly, the World Bank works under the umbrella of the Universal Health Coverage (UHC) movement to:

Ensure all people receive quality, affordable care without suffering financial hardship. UHC aims to achieve better health and development outcomes, in line with the Millennium Development Goals, including reduced maternal and child mortality; improved nutrition for infants and children; and prevention and treatment of communicable disease.

This commitment to UHC was concretized in May 2014 when the World Bank Group and the WHO released a joint framework for monitoring progress towards the UHC, with two goals:

1. Financial protection: by 2030, no one is pushed into or kept in poverty by paying for healthcare
2. Service delivery: by 2030, everyone has access to essential health services.

In fall 2014, the World Bank Group and the governments of Canada, Norway and the United States committed to supporting the direction of a Global Financing Facility to enable the *Every Woman Every Child* initiative, and to support developing countries' plans to advance women's and children's health. The World Bank Group has also played an important role in helping to address the Ebola crisis in West Africa.

Going forward, the World Bank Group will be a critical partner in enabling transformative health innovations at scale in developing countries.

World Health Organization (WHO)

The World Health Organization is the directing and coordinating authority for health within the United Nations system. As such, the WHO plays an important policy role in all of GCC's Targeted Challenges, but is particularly active in global mental health, where their Department for Mental Health and Substance Abuse takes a leadership role as part of the Mental Health Innovation Network, along with the London School of Hygiene & Tropical Medicine's Centre for Global Mental Health. The WHO has also played a leadership role in raising the profile of global mental health challenges through its Comprehensive Mental Health Action Plan 2013–2020, which was released in May 2013.

UNICEF

UNICEF is a multilateral organization that promotes the rights and well-being of every child. Its programming focuses on the most disadvantaged children, including those in fragile contexts, those living with disability and those who are affected by global challenges, including rapid urbanization and environmental degradation. As part of its broad global mandate, UNICEF has several elements that are active in funding and supporting innovation:

- *Innovation Unit*: with a focus on the integration of technology, design thinking and partnerships with the private sector and academia
- *Innovation Centre Nairobi*: with a focus on field testing scalable innovations.

GCC works closely with UNICEF on its *Saving Brains* program, with a particular focus on metrics. GCC has also joined with them to support promising projects, such as the “Loving the Loo” project with iDE, a Winnipeg-based not-for-profit that is working with small business owners in Nepal to produce and market simple latrines. UNICEF has a very strong focus on early child development.

Challenge-Specific Partners

The Grand Challenges approach is, at its heart, a platform or operating system to allow a range of different funders to coordinate and align their efforts to address a common, pressing challenge. As such, some challenges will be supported by a broad range of Grand Challenges organizations, such as the *Saving Lives at Birth* partnership, while others will be supported by a single Grand Challenges organization, such as the *Global Mental Health* program.

The Aga Khan Foundation Canada

The Aga Khan Foundation Canada (AKFC), alongside its sister organization the Aga Khan Development Network, is focused on implementing community-driven solutions to development challenges. Through this focus on implementing solutions, the AKFC became a delivery partner for Grand Challenges Canada's *Saving Brains* partnership. As part of this partnership, the AKFC network will serve as one pathway for successful innovations to go to scale in LMICs.

The flexibility of the platform also allows for the inclusion of non-Grand Challenges organizations in partnerships to address specific challenges, such as the *Saving Brains* program whose partners include:

- The Aga Khan Foundation Canada
- The Bernard van Leer Foundation
- The Bill & Melinda Gates Foundation
- The Maria Cecilia Souto Vidigal Foundation
- UBS Optimus Foundation
- The Norlien Foundation
- World Vision Canada.

The Network of Grand Challenges Organizations

Currently, all Grand Challenges organizations have health as a primary focus, although some have multiple primary foci in addition to health. (Please see **Annex 4** for a current list of Grand Challenges organizations.)

Core Grand Challenges Partners

In addition to the consortium partners discussed above, there are two “core” partners (along with GCC) that play a strong leadership role, both in the network of Grand Challenges organizations and in global health innovation. They are described below.

The Bill & Melinda Gates Foundation

As outlined in the previous chapter, the Bill & Melinda Gates Foundation played a pivotal role in the Grand Challenges movement, both conceptually by funding the efforts to identify the original Grand Challenges in Global Health (2003) and by launching and funding (working very closely with the Foundation for the National Institutes of Health) the Grand Challenges in Global Health program (2004). The Gates foundation built on its original Grand Challenges program by launching the Grand Challenges Exploration program in 2008 (which is similar to the *Stars in Global Health* program at GCC).

GCC works closely with the Bill & Melinda Gates Foundation, and is currently partnering on the *Saving Lives at Birth* and *Saving Brains* initiatives, and on the Global Health Investment Fund. In the past, GCC also partnered on a *Point-of-Care Diagnostics* program (which completed the initial round of funded projects in 2015, and which is not being continued in its current form) and by co-funding Canadian and LMIC innovators who were successful in the second stage of the Grand Challenges Explorations program. GCC also partners with the Gates foundation and USAID to hold an annual Grand Challenges meeting that brings together innovators from the entire family of Grand Challenges organizations.

USAID

In 2010, USAID launched its Grand Challenges for Development initiative. It has launched or partnered in six challenges:

1. Fighting Ebola
2. Securing Water for Food
3. Saving Lives at Birth (with Grand Challenges Canada and the Bill & Melinda Gates Foundation)
4. All Children Reading
5. Powering Agriculture
6. Making All Voices Count.

USAID is a core GCC partner, and the two organizations work together on the *Saving Lives at Birth* initiative, and to organize and fund the annual Grand Challenges meeting.

Consortium Partners

As noted in the previous chapter, GCC, in its role as the primary delivery vehicle for the Development Innovation Fund in Health, is part of a consortium that includes Canada's International Development Research Centre and the Canadian Institutes of Health Research. In 2013, GCC also entered into a scaling partnership with the Department of Foreign Affairs, Trade and Development.

The International Development Research Centre (IDRC)

Established through the *International Development Research Centre Act* in 1970, IDRC's mandate is:

To initiate, encourage, support and conduct research into the problems of the developing regions of the world, and into the means for applying and adapting scientific, technical and other knowledge to the economic and social advancement of those regions.

IDRC's role in the Development Innovation Fund in Health consortium is to provide accountability to the Government of Canada.

The Canadian Institutes of Health Research (CIHR)

Created through the *CIHR Act*, CIHR's mandate is:

To excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products, and a strengthened Canadian healthcare system.

CIHR either conducts or validates the peer review process for GCC's funding competitions.

The Department of Foreign Affairs, Trade and Development (DFATD)

The mandate of DFATD is:

To manage Canada's diplomatic and consular relations, to encourage the country's international trade, and to lead Canada's international development and humanitarian assistance.

In 2013, DFATD signed a \$10M agreement with GCC to support the scaling of promising global health innovations. In 2015 the Department announced \$161M in funding for GCC's programming in maternal, newborn and child health. The 2015 Federal Budget included \$22.8M in new funding for the 2016–17 fiscal year “to continue supporting GCC's innovative programming and work in a variety of areas.”