The Millennium Challenge Corporation (MCC) made a major investment to bring international higher education to Georgians, particularly in the areas of science, technology, engineering, and mathematics (STEM). Through this investment, MCC and the Government of Georgia brought San Diego State University (SDSU) to partner with three Georgian public universities to offer U.S. bachelor’s degree programs in STEM academic disciplines. The investment also aimed to enhance the capacity of Georgian public universities, with the goal of having Georgian university programs reach international standards and acquire international program accreditation.

MCC selected the RAND Corporation as the independent evaluator for this project. Using a mix of qualitative and quantitative methodologies, we examined the evolution of the partnership between SDSU and the Georgian partner universities, supported by MCC and the Millennium Challenge Account - Georgia. We look at SDSU Georgia’s programming, the roles and experiences of different stakeholders, and the impact of the program on participating students. In this report, we present data and findings from the first year of the evaluation (and a few recent updates from the second year). This report should be of interest to the program stakeholders as well as others interested in international development and higher education projects.

This study was undertaken by RAND Education and Labor, a division of the RAND Corporation that conducts research on early childhood through postsecondary education programs, workforce development, and programs and policies affecting workers, entrepreneurship, and financial literacy and decisionmaking. This study was sponsored by MCC, an innovative and independent U.S. foreign assistance agency that is helping lead the fight against global poverty. For more information about MCC, visit www.mcc.gov.

More information about RAND can be found at www.rand.org. Questions about this report should be directed to Charles_Goldman@rand.org, and questions about RAND Education and Labor should be directed to educationandlabor@rand.org.
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More than ever, nations around the world understand that science, technology, engineering, and mathematics (STEM) skills are key to driving economic growth and overall competitiveness. On July 26, 2013, the United States, through the Millennium Challenge Corporation (MCC), signed a five-year, $140-million compact with the Government of Georgia (GoG) to develop human capital, advance economic growth, and reduce poverty in the country. The Georgia II STEM Higher Education Project (hereafter, “the Project”) is one part of this compact. It involves an investment of $30 million from the United States and additional funds from Georgia aimed at improving the quality of Georgian university education in STEM fields. The GoG established the Millennium Challenge Account - Georgia (MCA) to direct all implementation under the compact.

The effort seeks to assure and enhance the delivery of high-quality STEM bachelor’s degrees in Georgia in four ways: (1) partnering with a U.S. university to offer U.S. STEM degree programs, (2) improving STEM-related infrastructure and technology in partner Georgian universities; (3) assisting partner Georgian universities in reaching international STEM standards and acquiring international program accreditation, and (4) preparing world-class skilled STEM specialists from diverse backgrounds. San Diego State University (SDSU) partnered with three Georgian public universities—Tbilisi State University (TSU), Georgian Technical University (GTU), and Ilia State University (ISU)—to fulfill these goals (hereafter, “the Partnership,” which has both bilateral and multilateral aspects). SDSU offers its U.S. bachelor’s degrees, taught in English, in facilities of the three partner universities. SDSU main campus faculty teach courses largely online. Initially, SDSU employs Georgian partner university faculty as SDSU adjunct faculty to assist with instruction and later to assume responsibility for teaching. The full program logic is depicted in Chapter 2 and forms the basis of this evaluation.

In 2018, MCC asked RAND Corporation researchers to conduct an independent evaluation of this effort. The evaluation addresses questions in six areas (Figure S.1).

Figure S.1. RAND Process and Outcome Evaluation Areas of Georgia II STEM Higher Education Project

1. Partnerships between SDSU and the 3 public Georgian universities
2. Implementation of the SDSU-Georgia program and other Project activities
3. Students’ perception of their program
4. Partnership sustainability
5. SDSU-Georgia program student outcomes
6. Economic return on investment
This interim report examines the (1) development of the Partnership, (2) implementation of SDSU program, (3) perceived effectiveness of the program, and (4) partnership sustainability into the future. The final report, expected in 2023, will reexamine these four areas as well as consider (5) student outcomes and (6) post-compact economic rate of return.

How the Study Was Conducted

We used a mixed-methods approach for this study. We used a qualitative approach with an understanding of the thinking behind the Project design and the processes that accompanied its implementation. For this part of the study, we reviewed Project documentation and conducted interviews with principal stakeholders at MCC, MCA, and SDSU and partner university leadership. We also conducted focus group discussions with participating faculty and students and interviews with employers and other stakeholders. Together, this information enabled us to understand

- how the Partnership evolved
- how the SDSU program was implemented and the challenges it faced
- support provided to implement the program
- policies that hindered or facilitated the Partnership and program
- sustainability efforts.

The quantitative approach uses a student tracer survey administered to SDSU students and a comparison group of students enrolled in comparable STEM programs in Georgian public and private universities. The survey was administered to both groups in 2019 and 2020 to collect baseline information on their views toward their programs and perceived effectiveness, as well as demographic and current employment information. The final survey will be administered in 2023 to capture changes in employment and wages after degree completion and differences among both groups.

Study Findings

This section presents the primary findings related to areas 1–4.

Establishing, Organizing, and Supporting Partnerships Was Challenging, but Partnerships Improved Over Time

Although SDSU led the development of all Partnership activities, the activities related to the delivery of the curriculum, faculty training, and building capacity were implemented jointly between SDSU and the three Georgian public universities. The analyses demonstrate that SDSU and partner universities faced early challenges in partnership building. Such challenges are not unique: Building strong partnerships among diverse organizations is complex.
In particular, the partnerships tended to be between SDSU and individual institutions instead of a single group ready to address common issues and goals. Furthermore, the strategic vision and goals of the Partnership were defined not by the organizations but by the U.S. and Georgian governments. The level of SDSU leadership engagement and frequency of SDSU leadership meetings with partners fluctuated over the years in part because of SDSU leadership turnover, which led to some of the Georgian universities viewing the Partnership as one-sided. However, current SDSU leadership, including the current SDSU president and dean, are highly involved and invested in the current Partnership, as well as in redefining it after the compact ends.

MCC and MCA provided critical support to SDSU to navigate the Georgian context, establish relationships, and implement the program. MCC and MCA worked with the GoG to issue the necessary decrees and waivers regarding government policy, such as permitting SDSU degrees to satisfy the requirement for local accreditation without complying with the specific local standards.

Program Implementation Had Both Successes and Challenges

Implementation of the Program had both successes and challenges in five key areas:

• **Student enrollment.** At the beginning of the initiative, there was a significant struggle to enroll the planned number of students. According to our interviews, many Georgians among the target student population found the $7,500 tuition too expensive or too risky to spend on a new and unknown program. Because of this, the Program was in jeopardy right at the beginning but was maintained through support from MCC and MCA, who were able to raise significant funds from private organizations and the GoG for student scholarships.

• **Facility renovation.** The compact funds were used to renovate the facilities at the three partner universities, although TSU and ISU received most of these benefits rather than GTU. SDSU provided technical assistance to ensure that the facilities and labs renovated were comparable to those on SDSU’s main campus. SDSU students and faculty viewed these facilities very positively, and, for some students, the facilities were an important reason why they applied to the SDSU program.

• **Professional development.** SDSU built the capacity of Georgian faculty by providing them with extensive professional development and classroom experience in the SDSU program. Trained Georgian faculty initially served as assistant instructors to the main campus faculty, who taught mostly via internet video links with some in-person visits. Once the Georgian faculty were deemed qualified, they assumed responsibility as instructors of record for future courses. Georgian faculty praised the training they received and relationships they built with SDSU faculty. Students interviewed noted improvement in the teaching pedagogy of Georgian faculty but also indicated the need for more training.

• **International accreditation.** SDSU supported the partner universities as they prepared their STEM programs for international accreditation. SDSU provided faculty training and built linkages between the American program accreditation agencies and the partner
universities. Each university also convened two committees to work with SDSU on accreditation and transition issues after the compact ends. The level of readiness for accreditation has varied across the partner universities, with more-advanced plans at TSU and ISU.

- **Employer engagement.** Employers, important actors to the success of the SDSU program implementation, were heavily involved in the fundraising process. They also served on the SDSU Georgia advisory board. However, engagement of employers in providing SDSU students with internships varied greatly.

**SDSU Student Experiences Show Satisfaction with Facilities but Less with Coursework and Faculty Support**

Figure S.2 shows that the majority of SDSU Georgia students were highly satisfied with the facilities and equipment provided by the SDSU program, but they were less satisfied with some aspects of the program (as shown in other parts of Figures S.2 and S.3). These aspects included levels of faculty support and interaction, the extent to which the Program provided students with the theoretical and practical education needed for the workplace, the quality of courses, the number of general education courses, and opportunities for outside internships. Students in the comparison group were generally more satisfied with these aspects of their programs, with the exception of facilities and equipment and internship opportunities. Although the survey results may reflect areas of the SDSU program that need to be improved, they also may reflect the high expectations that SDSU students, who are the top students in Georgia, had for the programs.

We found that women and men generally had similar views of their programs, but women were less satisfied with opportunities for internships and job placement, which may reflect greater challenges that women face in the STEM job market.
Figure S.2. Students Who Are Satisfied or Very Satisfied with Resources and Courses, by Student Group

<table>
<thead>
<tr>
<th>Resource</th>
<th>SDSU</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory facilities and equipment</td>
<td>32%</td>
<td>72%**</td>
</tr>
<tr>
<td>Support from faculty aimed at improvement of my educational outcomes</td>
<td>51%</td>
<td>62%</td>
</tr>
<tr>
<td>Quality of the courses within my major field of study</td>
<td>44%*</td>
<td>69%</td>
</tr>
<tr>
<td>Number of the general education courses outside your major field of study</td>
<td>23%**</td>
<td>50%</td>
</tr>
</tbody>
</table>

Notes: Comparison group includes students from similar disciplines in Georgian programs other than SDSU. Authors' calculations based on 347 SDSU students and 1,227 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group. * significant at $p \leq .05$; ** significant at $p \leq .01$.

Figure S.3. Students Who Agree or Strongly Agree About Program Aspects, by Student Group

<table>
<thead>
<tr>
<th>Aspect</th>
<th>SDSU</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Involves high level of interaction with faculty</td>
<td>59%</td>
<td>68%</td>
</tr>
<tr>
<td>Provides theoretical understanding needed for success in my career</td>
<td>43%**</td>
<td>64%</td>
</tr>
<tr>
<td>Provides practical skills needed for success in my career</td>
<td>41%</td>
<td>47%</td>
</tr>
<tr>
<td>Offers good opportunities for internships outside of the university</td>
<td>36%</td>
<td>33%</td>
</tr>
</tbody>
</table>

Notes: Comparison group includes students from similar disciplines in Georgian programs other than SDSU. Authors’ calculations based on 338 SDSU students and 1,212 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group. ** significant at $p \leq .01$. 

xiii
Partnership May Be Sustainable in Ways Beyond the Program

All partners are interested in sustaining STEM programs and their relationships after the compact closes. Although it appears that the SDSU program in its current form cannot be sustained because of its high costs, all partner universities, with support from SDSU, are moving toward obtaining international accreditation for their STEM programs. The content and pedagogy of the Georgian programs have been influenced greatly by the SDSU program. Obtaining accreditation will promote the continuation of quality STEM programs.

As a part of continuing partnership between SDSU and the Georgian universities, SDSU is considering a program that would allow students to earn an SDSU degree in the future through the SDSU online World Campus as a supplement to their partner university–accredited degree. In addition, SDSU is pursuing ways to collaborate in research and graduate education. SDSU recently received funding from the U.S. Department of State to improve Georgian scholars’ research capacity, train them on research methodologies and statistical approaches, mentor them to participate in international conferences, and assist them and their students in publishing research papers.

Implications for the Future

The Partnership has had successes in implementing the SDSU U.S. STEM degrees in Georgia, but SDSU is not planning to continue to admit students to its own degree programs in Georgia after 2019. Instead, SDSU has been supporting the partner universities to seek American program accreditation for their own programs in both English and Georgian. The findings of this interim study point to several areas that need to be addressed to ensure the establishment and sustainability of such internationally accredited STEM programs. SDSU, the partner universities, MCC, and MCA have started work in several of these areas:

- **Continuing to invest in training Georgian faculty.** Student interviews and surveys raised concerns about faculty support and interaction with students in the SDSU program. Although SDSU has trained Georgian faculty on new content and teaching methods, the training may need to be continued and expanded to other faculty. Partner universities should provide ongoing opportunities to train their faculty on new teaching methods that engage students and promote both theoretical and practical knowledge in their fields.

- **Encouraging STEM employment opportunities for women.** Because student surveys found some evidence of barriers for women in the Georgian STEM labor market, government and universities should encourage employers to implement policies that promote equity in placing students into work-based learning opportunities to improve female participation in the STEM labor market after graduation.

---

1 As of October 2020, after this report was prepared, TSU has received accreditation for two programs.
• **Promoting buy-in and support for international accreditation.** Our interviews and focus groups indicate that there is not much awareness among Georgian families and employers regarding the value of having international accreditation, which posed challenges for SDSU in recruiting students and is likely to pose similar challenges as the Georgian universities develop internationally accredited STEM programs. The GoG and the Georgian universities should engage in efforts to promote knowledge and support among the various stakeholders surrounding international accreditation to ensure student recruitment success into these programs and employment opportunities for program graduates.

• **Revising government policies to sustain internationally accredited programs.** Our findings show that such programs are more expensive than typical Georgian programs, and families have difficulty affording them, so an equitable and sustainable financial model is essential to sustaining the programs. The GoG is working with the World Bank on modifying its model for financing higher education programs in ways that will allow these accredited programs to collect higher-than-standard tuition and provide increased public financial aid, which will be essential to making these programs accessible to a wide portion of Georgian society in the future.

We will continue to monitor these issues through the study’s final report, scheduled for 2023.
Acknowledgments

We are grateful for the support and insights of key staff at MCC and MCA in helping us frame the research design and conduct this evaluation, in particular Jenny Heintz, Ami Amin, Ryan Moore, Magda Magradze, Zura Simonia, and Nodar Surguladze. We very much appreciate the cooperation of the many project stakeholders who provided information and participated in our interviews and focus groups.

We appreciate the contributions of RAND colleague Thomas Goughnour. We also appreciate the careful reviews of this report by stakeholders, our RAND colleagues Krishna Kumar, Fatih Unlu, and Shanthi Nataraj, and Kevin Kinser.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABET</td>
<td>Accreditation Board for Engineering and Technology</td>
</tr>
<tr>
<td>ACS</td>
<td>American Chemical Society</td>
</tr>
<tr>
<td>GoG</td>
<td>Government of Georgia</td>
</tr>
<tr>
<td>GTU</td>
<td>Georgian Technical University</td>
</tr>
<tr>
<td>HSPC</td>
<td>Human Subjects Protection Committee</td>
</tr>
<tr>
<td>ICC</td>
<td>intraclass correlation coefficient</td>
</tr>
<tr>
<td>ISU</td>
<td>Ilia State University</td>
</tr>
<tr>
<td>MCA</td>
<td>Millennium Challenge Account - Georgia</td>
</tr>
<tr>
<td>MCC</td>
<td>Millennium Challenge Corporation</td>
</tr>
<tr>
<td>MRI</td>
<td>magnetic resonance imaging</td>
</tr>
<tr>
<td>Q</td>
<td>question</td>
</tr>
<tr>
<td>RFP</td>
<td>request for proposal</td>
</tr>
<tr>
<td>SDSU</td>
<td>San Diego State University</td>
</tr>
<tr>
<td>STEM</td>
<td>science, technology, engineering, and mathematics</td>
</tr>
<tr>
<td>TSU</td>
<td>Tbilisi State University</td>
</tr>
</tbody>
</table>
1. Introduction and Background

Progressive higher education that is responsive to the needs of the labor market is essential to any nation striving to propel its economy toward growth and rapid development. Recognizing this, Georgia and its Ministry of Education, Science, Culture and Sport has sought to educate and sustain highly skilled workers, as well as become a destination country for those interested in pursuing high-quality educational experiences abroad.

Georgia, like other former Soviet republics, has been undergoing a major economic and social transition over the past three decades. Georgia’s post-Soviet transition has emphasized moving away from central planning and control while increasing the role of market mechanisms and private enterprise in the economy, although different Georgian governments have struck different balances among public and private solutions to the nation’s development.

Within this context, Georgia’s higher education system has undergone significant modernization reforms in recent years, aiming at better alignment with and integration into European and Western education networks while preparing a highly skilled and innovative workforce.

Georgia is a middle-income country with gross domestic product per capita of about $4,000 (2015) to $4,800 (2019) during the period we conducted our research (World Bank, undated). The affordability of international education is thus a major challenge for Georgia and Georgians.

Despite significant reforms, important gaps remain. Georgia lacks sufficient science, technology, engineering, and mathematics (STEM) programs to sustain strategic STEM fields of study and research and to fulfill the demands of the labor market. The Soviet legacy of highly centralized control over the education system has prevented greater synchronization between the Georgian market demands and higher education offerings. In addition, when it comes to STEM education, significant gender gaps still exist: Female students represent only about one-third of all students enrolled in STEM-related fields of higher education. Finally, if the opportunity is available to them, many young Georgians prefer to be educated abroad, and those with the best skills also tend to seek employment abroad.

To address these challenges, the Millennium Challenge Corporation (MCC) made a major investment aimed at facilitating high-quality inclusive university-level STEM education in Georgia. Through this investment, San Diego State University (SDSU) partnered with three Georgian public universities—Tbilisi State University (TSU), Georgian Technical University (GTU), and Ilia State University (ISU)—to offer SDSU’s U.S. bachelor’s degrees in a range of STEM disciplines to Georgian students. The primary goal of this effort, the Georgia II STEM

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2 Observations in this introduction are drawn from the evaluation solicitation (MCC, 2018b), the monitoring and evaluation plan (MCC, 2018a), and our interviews.
Higher Education Project, is to develop a system to assure and enhance the long-term delivery of high-quality STEM bachelor’s degrees in Georgia. The Project has also aimed to increase capacity of the Georgian public universities to offer internationally accredited programs.

In 2018, MCC asked RAND Corporation researchers to provide an independent evaluation of this effort. Specifically, we were asked to perform a process-and-outcomes evaluation that addresses six evaluation questions related to (1) an assessment of partnerships between SDSU and the three public Georgian universities; (2) the implementation of the SDSU Georgia Program and Project-related activities; (3) students’ perception of the Program; (4) the sustainability of the Project; (5) SDSU Georgia Program student outcomes; and (6) the Program’s economic return on investment.

This evaluation, scheduled to end in 2023, is being conducted in two stages. The first stage, documented here, provides an interim description and analysis of the Georgia II STEM Higher Education Project. We focus on questions related to implementation and partnerships (items 1 and 2) and students’ perception of the program (item 3). We also take an initial look at program sustainability through the lens of the research we have conducted thus far (item 4). Later analysis will cover student outcomes and economic return on investment (items 5 and 6) and will return to questions involving sustainability and general outcomes in light of new findings. It is perhaps useful for readers to think of this first report as a foundational reference document in which we explore the two most critical factors—implementation and partnerships—on which the program is founded and that ultimately can enhance or constrain the ability of the program to reach its goal.

Both qualitative and quantitative analyses informed this first part of the study. We conducted interviews and document reviews with stakeholders and participants in the SDSU Georgia program and its various partners. We also are fielding a survey of students in the SDSU Georgia program and a comparison group of students in other Georgian university STEM programs. The survey includes a baseline wave administered during 2019 and 2020 that asks students about their families, experiences in the programs, and future plans. Because the program had already enrolled four annual cohorts of students at the time of our baseline survey, our survey serves as a baseline for our evaluation but not an overall baseline from the program perspective. The survey will include an endline (follow-up) wave in 2023, when these students typically should have completed their programs, to measure their employment and graduate education outcomes. Our data and methods will be described in greater depth in Chapter 3.

---

3 We added question 3 to the original five evaluation questions to provide a clearer structure for reporting our findings.
A Word on Study Terminology

In what follows, we will refer to the agreements, arrangements, contractual ties, and collaboration between SDSU and the three participating Georgian public universities as “the Partnership”; we will refer to all of the activities that developed from MCC’s funding for university-level STEM education in Georgia as “the Project.” The term Project thus includes the SDSU Georgia program and all other activities designed to build the infrastructure, capacity, and sustainability of partner universities. When discussing SDSU’s degree program in Georgia specifically, we will refer to it in the text as “the SDSU Georgia program” or “the Program.”

Organization of This Report

Following this introduction, Chapter 2 contains a brief overview of the Project under assessment, its background, and its logic. Chapter 3 presents a review of the evaluation questions, methodologies, and data sources that we will use to address these questions. Chapters 4–7 present our initial findings on four of the evaluation questions: Chapter 4 on the Partnership development, Chapter 5 on the implementation activities, Chapter 6 on the outputs of the Project, and Chapter 7 on sustainability. Chapter 8 is a brief conclusion.

Appendixes provide additional details. Appendix A presents photographs of building and equipment improvements from the Project. Appendix B summarizes the data collection. Appendix C analyzes the tracer study balance and expected power. Appendix D provides information about the study. Appendix E contains additional figures, and Appendix F records stakeholder comments on drafts of this report and our responses.
Like many ambitious programs in higher education, the Georgia II STEM Higher Education Project was designed to meet real-world needs; this requires the substantial effort of many different partners to meet intended goals. In this chapter, we provide the recent historical background of the Project and describe the Georgia-specific challenges that the Project was designed to meet. We also describe Project partners, intended student participants, and different stakeholders involved in the effort. We then present the Project’s logic model, a framework that we adapted from one of the Project’s foundational documents. It shows how goals could be made actionable and outcomes realized through meaningful and orchestrated efforts. Finally, we close the chapter with a short discussion of issues that were noted in the foundational documents that helped us frame our evaluation.

Overview of the Project and Implementation Plan

On July 26, 2013, the United States, acting through MCC—an independent U.S. foreign aid agency with a mission to help lead the fight against global poverty—signed a five-year, $140-million compact with the Government of Georgia (GoG), whose parliament ratified the compact. The largest investment in Georgia’s education sector to date, the compact has aimed to develop Georgia’s human capital, advance economic growth, and reduce poverty in that country. The Georgia II STEM Higher Education Project, the focus of this evaluation, is a part of this compact and involves a $30 million investment aimed at improving the quality of Georgian university education in STEM fields and thereby fostering a skilled Georgian labor force and increasing Georgians’ earning potential.

The compact entered into force on July 1, 2014, and ended on June 30, 2019. The Millennium Challenge Account - Georgia (MCA) was designated by the Georgian government to administer and oversee all Georgia II STEM Higher Education Project activities. As we describe subsequently, several activities in the Project are continuing beyond the compact period. Because MCA was required to terminate after this period, the GoG formed the Millennium Foundation to continue as a successor to MCA. The foundation involves many of the same key personnel to oversee the Project and others funded under the compact. In this report, we use MCA to refer to both MCA and the Millennium Foundation and include activities and observations that take place both during and after the compact period.

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4 This section draws heavily from MCC, 2018a, and MCC and MCA websites (MCC, 2018a; MCC, 2018b; and MCA, undated-b) and is supplemented by observations from our initial interviews.
The key goal of the Project is the *long-term delivery of high-quality STEM bachelor’s degrees in Georgia*. The Project has aimed to attain this goal by

- bringing a U.S. university to Georgia to partner with Georgian public universities to offer U.S. bachelor’s degree programs taught in English in the STEM academic disciplines
- providing capacity enhancement for Georgian public universities with the goal of Georgian university programs reaching international standards and acquiring international program accreditation
- improving infrastructure and technical conditions and increasing capacity of Georgian higher education institutions
- preparing world-class skilled STEM specialists from diverse backgrounds.

Importantly, because lower levels of labor force participation of women and lower-income families can be a significant constraint to economic growth and poverty reduction (Gay, Javakhishvili, and Shubitide, 2014), an overall objective and important element of the Project is promoting social and gender integration within all of the Project activities (MCA, 2014). The Project has set out to do so by

- implementing activities based on the findings and recommendations of studies that identify barriers to female and socially vulnerable students’ participation in STEM programs
- ensuring that higher education programs include specific activities for outreach, mentoring, and career counseling programs directed toward women, low-income students, and other disadvantaged populations
- offering needs-based scholarships (MCA, undated-a).

Additionally, overall, the Project did not have the recruitment of foreign students among its primary objectives, attraction of international students into Georgian university programs has been one of the priorities of the GoG. MCC and MCA worked with SDSU to make its Georgia degree programs accessible to foreign students, who were seen as a source of financing for the program because they are charged higher tuition than Georgians and are not eligible for local financial aid.

**The Partnership**

Following a multistage competitive bidding process, which we describe briefly in Chapter 4, MCA selected SDSU to offer its own U.S. bachelor’s degrees in Tbilisi, Georgia. As part of the bidding process, SDSU selected three public Georgian universities as partners: TSU, GTU, and ISU.

MCA signed a 15-month pre-enrollment agreement with SDSU, under which SDSU undertook the necessary actions to enroll students starting in July 2014, followed by a 45-month Collaborative Agreement to complete the remainder of the Project through July 2019 (which approximately coincided with the compact end date). SDSU has been responsible for design, development, and delivery of the academic programs, as well as for the required infrastructure
improvements and establishing connections with potential employers. According to this agreement, SDSU was expected to

- administer and offer academic programs that are professionally and regionally accredited and internationally recognized
- assist partner universities to become ready to apply for accreditation
- develop the curriculum and train Georgian faculty
- engage in outreach to diverse high school students for recruitment
- develop facilities that deliver the SDSU programs
- develop partnerships with industry.

SDSU programs offered in Georgia were to be professionally accredited by the Accreditation Board for Engineering and Technology (ABET) for engineering disciplines and certified by the American Chemical Society (ACS) for chemistry.

To be able to offer SDSU programming within the existing institutional framework in Georgia, as well as to build local capacity, SDSU partnered with three public universities in Tbilisi, Georgia. Currently, SDSU is in the process of implementing U.S. and Georgian bachelor’s dual degree programs in six disciplines: chemistry, computer science, computer engineering, electrical engineering, civil engineering, and construction engineering.

Because SDSU did not have independent authorization to operate in Georgia, students were required to register at one of the three partner universities in their field of study, as indicated in Table 2.1. As we explain further in Chapters 4 and 5, SDSU operated the entire academic program, which was integrated within each major field. Students were effectively free to choose which partner university to register at. This choice had no effect on the access to classes, faculty, or facilities, which SDSU managed in a unified fashion.

<table>
<thead>
<tr>
<th>Partner University</th>
<th>SDSU Degree Program</th>
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</thead>
<tbody>
<tr>
<td>Tbilisi State University</td>
<td>Chemistry</td>
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<td></td>
<td>Biochemistry</td>
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<td>Computer engineering</td>
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<td>Georgian Technical University</td>
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<td>Civil engineering</td>
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<td>Construction engineering</td>
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</table>

Upon graduation, students receive a diploma from SDSU and an equivalent diploma from the partner university they selected for registration. For instance, students enrolling in computer engineering at SDSU could select any of the three partner universities to host their registration
and issue their Georgian diploma, while students enrolling in civil engineering were required to register at GTU because it was the only partner university authorized for that program.

Participants

Students are the key targeted participants of the Project, which aimed to recruit highly qualified Georgian high school students interested in STEM. Some of these students might have pursued education abroad had they not had the opportunity of obtaining an SDSU degree. These students are expected to benefit in three main ways: The Project (1) could help improve their STEM skills to match employer needs in Georgia, (2) could help increase their income, and (3) could provide them with opportunities to pursue graduate education. The Project has implemented efforts to target women and international students to join the program.

Other Stakeholders

Other stakeholder groups have been involved in the design and delivery of the Project or provision of support but are not considered participants. We are collecting information from the following groups to further understand the nature of the Partnership and programming (SDSU Georgia program) provided for the purpose of informing participants’ outcomes:

- **MCC**: provides funding to establish the Project, assistance with gaining cooperation of key stakeholders in Georgia (such as the GoG), and technical assistance on the implementation of the program
- **MCA**: provides project design and legal support and seeks funding opportunities from the GoG and private businesses to cover participating students’ tuition
- **SDSU administrators**: design and administer the SDSU Georgia program, engage in recruitment strategies, and seek funding and provide support for partner universities to become ready for accreditation of their STEM programs
- **partner university administrators**: facilitate access of SDSU to partner university facilities and faculty and work with SDSU Georgia on improving the partner universities’ STEM programs and achieving accreditation
- **Georgian and American SDSU faculty**: SDSU faculty from the campus in San Diego teach in the SDSU Georgia program either remotely or in person; they also train Georgian faculty, selected competitively, to teach in the same programs
- **Georgian employers**: serve on the advisory board to inform labor market needs and provide internship opportunities.

Logic Model

The guiding logic model for the Project is presented in Figure 2.1. As shown, partnerships between SDSU and Georgian public universities are expected to implement a variety of activities, specified in the Activities column, to inspire and facilitate improvements to the partner universities’ infrastructure and equipment, contribute to local faculty development, implement a new U.S.-based curriculum, provide online instruction, and promote student representation and
inclusiveness. There is a specific interest in increasing female interest in STEM fields. The activities, in turn, are expected to help attract students to enroll in the program and obtain SDSU degrees and to develop capacity of Georgian universities to pursue and acquire engineering and technology accreditations for the participating programs to ensure sustainability. These short-term outcomes are expected, in turn, to lead to an increased availability of quality engineers and improved structures for world-class research in the medium term. In the long term, the program participants are expected to have better employment opportunities and higher incomes because of the improved curriculum, faculty, and infrastructure quality than their counterparts who received similar degrees in other programs.

Early enrollment setbacks moved the partners to engage in significant recruitment efforts and popularization of STEM subjects, which added to the activities envisioned in the original logic model (MCC, 2018a).

**Figure 2.1. Project Logic Model**

SOURCE: Adapted from MCC, 2018a, p. 15.
NOTES: Firm-level productivity spillovers and reduced imports of education and human capital are considered desired outcomes of the Project. However, they are shaded out because it may be difficult or impossible to measure them in this study.

**Background on Cost-Benefit and Beneficiary Analysis**

MCC policies require projects to demonstrate a prospective return on investment before they can be approved. With a budget of $30 million for the SDSU Georgia Partnership from the U.S.
government, the economic rate of return was estimated to be 10 percent over a 20-year horizon. This rate of return was estimated using information in the technical proposal and financial proposal received from SDSU in February 2014, which was based on costs and enrollment projections, as well as a variety of documentation and analyses carried out by MCC and the GoG. As documented in the compact’s Monitoring and Evaluation Plan (MCC, 2018a), this return assumed an average operating cost (average annual tuition) of $7,434 per student in the U.S. degree program and $1,589 in the ABET-accredited partner programs from year 7 on.

The initial estimate assumed that the annual student intake for the U.S. degree programs would start at 495 in the first year of the program (compact year 2) and increase to 610 by year 5. The estimate also assumed that the total annual enrollment in the programs in a given year would reach a steady state of 2,155 starting in year 7. Over time, the U.S. degree program students will be replaced by the same number of ABET-accredited partner students as the U.S. degree programs are phased out.

As we discuss in Chapter 5, enrollment has been considerably lower than these original projections, likely reducing the Project’s realized return on investment. In the final report, we will compare these assumptions with the evidence available to estimate the return on investment that the Project is expected to achieve.

Review of Foundational Documents and Evidence

MCC has given us multiple documents that record various planning and implementation activities about the Project. These documents address labor market needs, constraints to economic development, sources of economic challenges, the program design proposed by SDSU, and evaluation and monitoring plans. Review of these documents provides context for the overall evaluation. The review offers a useful overview of the expectations for the evolution of the Project, the predicted challenges, some discussion for how to overcome them, and plans to sustain the gains (Technical Proposal . . ., 2013, pp. 16–19).

Multifaceted preparatory work was conducted prior to the onset of the SDSU Georgia Partnership to determine the particular needs of the Georgian economy, evaluate constraints that hinder its growth, and identify the gaps and needs in the Georgian labor market (GoG, 2011). Two demand studies assessed the extent to which an establishment of a branch of a U.S. university in Georgia would be a useful and sustainable endeavor that would benefit the Georgian economy and succeed in the regional market (Demand Study . . ., 2011, and a 2010 study by Art and Science Group, LLC, that is not available to the general public). Another study estimated the income advantage of receiving a dual Georgian-American degree compared with a regular degree from a top Georgian institution (Gutbrod, 2011). The Technical Proposal of SDSU shed light on the thought and planning behind the Project activities, the expectations for the student enrollment, anticipated challenges, and plans for sustainability (Technical Proposal . . ., 2013). The Monitoring and Evaluation Plan also outlined the main assumptions
behind the Project and its evaluability (MCC, 2018a).

Using both quantitative and qualitative data, the preparatory studies pointed to low technological innovation (MCC, 2011, pp. 79–87) and underdeveloped human capital (MCC, 2011, pp. 32–38) as primary binding constraints to Georgia’s economic growth, precipitated, in large part, by the low quality of higher education in the areas of science, engineering, and technology. According to these analyses, the delivery of high-quality STEM degree programs in Georgia could be a potent way to tackle these challenges (Demand Study . . . , 2011, p. 69).

The intervention was designed to address the root causes identified by these preparatory reviews. With the overarching goal of reducing “poverty through economic growth in Georgia by means of MCC’s assistance to strengthen good governance, economic freedom, and investments in Georgia,” the Project offers a public-good rationale for the necessity of the STEM higher education intervention and its accompanying investment (Demand Study . . . , 2011, p. 3; GoG, 2011, pp. 32, 49; MCC, 2018a, p. 6). Furthermore, the Monitoring and Evaluation Plan clearly states the Project’s role in strengthening “the linkage between market-demanded skills and the supply of Georgians with technical skills relevant to the local economy and support delivery of high-quality STEM degree programs in Georgia” (MCC, 2018a, p. 6) through “the long-term delivery of high-quality of STEM bachelor’s degrees in Georgia” (MCC, 2018a, p. 12).

Thus, the logic model guiding the Project was based on the expectation that the SDSU Georgia programs, as part of the broader Partnership, would provide high-quality STEM education, which ultimately would lead to the benefits that would spread beyond the degree programs’ immediate graduates. The strength of the evidence for the Project’s theory of change is varied, in part, because of the lack of reliable nationwide data on Georgian STEM graduates and Georgian labor markets (MCC, 2018a, p. 48). In some cases, when the evidence in Georgia is limited (e.g., on educational spillovers), Project documents used evidence from other contexts (e.g., United States), with appropriate caveats explicitly stated (MCC, 2018a, p. 25). Still, some assumptions on the benefit streams were not supported in Project documents with empirical evidence—for example, that the intervention would reduce the need to import highly skilled STEM workers—because no such data were collected (MCC, 2018a, p. 48).

The SDSU Georgia Partnership is situated in the broader context of multiple activities working contemporaneously toward the common goal of improving Georgia’s economic performance through improved education. These complementary activities have focused on the improvement of the learning environment infrastructure in schools, professional development for educators, education assessment support, and workforce development through provision of industry-led skills (MCC, 2018a, pp. 7–12). However, our review did not find a detailed discussion of how the Partnership complements, aligns with, or competes with other initiatives in the country—for example, with the European universities and other foreign degree programs.
3. Evaluation Design

As stated in the introduction, the RAND evaluation is a process-and-outcomes evaluation designed to address six evaluation questions related to (1) an assessment of partnerships between SDSU and public Georgian universities, (2) the implementation of the SDSU Georgia program and other Project activities, (3) students’ perception of their program, (4) Partnership sustainability, (5) SDSU Georgia program student outcomes, and (6) economic return on investment. Our evaluation questions are shown in Table 3.1. These are primarily derived from MCC’s solicitation for the external evaluation, MCC’s logic model presented in Figure 2.1, and discussions with MCC regarding the Partnership, vision, and goals.

Although the logic model suggests that the Project could have broader effects on the Georgian economy by improving household income, providing firm-level productivity spillovers, reducing imports of education (i.e., greater reliance on high-quality educational resources domestically), and reducing imports of human capital (foreign labor), these outcomes will be addressed in only a limited way by the RAND evaluation. Fully addressing such outcomes would require collecting firm-level data, which is beyond the scope of the study and would take longer than the study period. Thus, the RAND evaluation focuses on the participants and their outcomes.

RAND’s Mixed-Methods Approach

The evaluation uses a mixed-methods approach, which allows us to examine a variety of aspects of the Project, including partnerships, design and implementation, outcomes, barriers to and facilitators of high-quality implementation, cost, and sustainability. Here, we describe the primary components of our approach; we offer more information in subsequent related chapters as necessary. A more-thorough explanation of the evaluation design is available in the Project’s Evaluation Design Report (Goldman et al., 2019).

**Quantitative analyses:** Quantitative data are generated primarily from a tracer study, which is a survey conducted with graduates of an education program to learn about their employment or experiences at a specific future point. This method allows us to examine Project outcomes, including student perceptions of the SDSU Georgia degree programs, employment while enrolled in the university and after graduation, and wages after degree completion. To strengthen our ability to isolate the effects of the Project on student outcomes, we will examine how the outcomes of interest compare between SDSU Georgia students and other students who attended and completed degrees in similar disciplines at different universities.

Students participating in the survey were enrolled in SDSU Georgia as of June 2019 and were part of the first four entering cohorts. Unfortunately, administrative data for other programs
<table>
<thead>
<tr>
<th>Evaluation Question</th>
<th>Key Measures and/or Outcomes</th>
<th>Data Sources</th>
<th>Data Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1. How was the Partnership established and carried out? How did it change over time?</td>
<td>(1) Criteria for identifying a partner organization, (2) partner organization capacity, (3) nature of coordination and collaboration, (4) shared understanding and commitment, (5) shared understanding of what constitutes project success, (6) joint decisionmaking; (7) accountability in pursuit of common outcomes, (8) perceptions of mutual benefit, (9) incentives needed for the success of the program, and (10) presence of communication structures and trust</td>
<td>Current and former MCC staff; MCA staff; Georgia Ministry of Education, Science, Culture and Sport; SDSU leadership; and TSU, ISU, and GTU leadership</td>
<td>Interviews, Project documentation, and memorandum of understanding between SDSU and three partner universities</td>
</tr>
<tr>
<td>Q2. Were the activities implemented through the Project aligned with the program design as documented in the logic model?</td>
<td>Implementation of activities covering (1) installing and developing STEM infrastructure and installing equipment, (2) providing training to Georgian faculty, (3) engaging SDSU U.S. faculty in implementing the SDSU curriculum, (4) engaging in continuous improvement efforts, (5) engaging in outreach efforts to attract diverse high school students to enroll in program and popularize STEM, and (6) raising funds for students’ scholarships</td>
<td>Current and former MCC staff; MCA staff; SDSU leadership and faculty; and TSU, ISU, and GTU leadership and faculty</td>
<td>Interviews and focus groups, walk-through observation of labs, and document review</td>
</tr>
<tr>
<td>Q3. How do SDSU Georgia and comparison group students view their programs?</td>
<td>Student perceptions of their experiences and future plans</td>
<td>Students in Partnership programs and students in comparison groups</td>
<td>Tracer surveys</td>
</tr>
<tr>
<td>Q4. To what extent are the Project activities sustainable?</td>
<td>(1) Popularization of STEM disciplines; (2) awareness, visibility, and appreciation of STEM programs; and (3) program accreditation</td>
<td>High school students; advisory board; Georgia Ministry of Education, Science, Culture and Sport; and TSU, ISU, and GTU leadership and financial information</td>
<td>Interviews, focus groups, and financial and budget reports</td>
</tr>
<tr>
<td>Q5. What is the impact of SDSU Georgia program on outcomes in income, better skill match to employers, and a greater share of students choosing to pursue graduate education? Does the impact of the program differ between men and women, students from different academic backgrounds, and different countries?</td>
<td>(1) Wages, (2) job characteristics (hours worked, sector worked, occupation, location), (3) employment tenure, (4) skill match with employer, and (5) enrollment in graduate programs</td>
<td>Students in Partnership programs and students in comparison groups</td>
<td>Tracer surveys</td>
</tr>
<tr>
<td>Evaluation Question</td>
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<td>Q6. What is the post-compact economic rate of return? How accurate were the original estimates and assumptions?</td>
<td>(1) Fixed costs of program, (2) ongoing costs, and (3) wages</td>
<td>Work plans; budgets; MCC staff; MCA staff; SDSU leadership; TSU, ISU, and GTU leadership; and the Georgian government</td>
<td>Review of literature/documents and interviews, tracer surveys, and information collected in Q1–Q4</td>
</tr>
</tbody>
</table>

are not available to select comparison students. Therefore, we adopted a two-stage approach to construct the comparison group. We first selected programs in the same or similar fields to SDSU Georgia and those with entrance exam scores similar to SDSU Georgia. We then recruited students within these programs to join the comparison group.

There are two major survey waves for both treatment and comparison groups: a baseline wave and an endline wave. As noted in Chapter 1, during our baseline wave in 2019 and 2020, the first four cohorts had enrolled in SDSU’s program, so our survey captures them during their time in university sometime before they graduate. During 2020 and 2022, ACT Global, a Georgian survey company, will recontact the students in the sample annually to maintain their current contact information. During 2023, ACT Global will conduct the endline, when all of the baseline students will have graduated if they complete their degrees in four years, as we expect is typical in Georgia.

The baseline data collection occurred from May 2019 to May 2020. The survey was developed initially in English, then translated into Georgian, followed by a back translation into English to check the translation, along with pilot testing and cognitive interviews with respondents outside but similar to the survey population.

For the treatment group, every student who was a member of SDSU Georgia cohorts 1–4 was invited to attend an in-person event to complete a paper survey. All students were also invited (and received multiple follow-ups) to complete an electronic survey if they had not completed it at an in-person event.

The procedures for the comparison group are discussed more fully in the Evaluation Design Report (Goldman et al., 2019). As explained there, we selected public and private universities in the Tbilisi region and specific programs that generally matched the subjects offered by SDSU Georgia. The largest components of this sample come from the same three public universities that are partners with SDSU. Aside from these, eight small private universities make up the remainder of the potential sample. We estimated that up to 13,427 students could have been in all of the programs we selected (based on the number of students admitted to each program). ACT Global presented the list of comparable programs and cohorts to the administration of each university and requested access to administer the survey. ISU and some of the private universities emailed all of the targeted students to invite them to complete the survey electronically (and sent multiple follow-ups). TSU, GTU, and other private universities selected...
a set of classes that were most likely to enroll some of the targeted programs and cohorts and invited ACT Global to administer the survey in person at the conclusion of those classes. We asked TSU and GTU, which have by far the largest numbers of eligible students, to continue their efforts until at least 400 students completed the survey, which they did. A few private universities declined to participate.

The treatment group has 399 valid responses, and the comparison group has 1,270 valid responses. The treatment group represents about a 62-percent response rate from the 642 students that enrolled in cohorts 1–4. Because most eligible students at TSU and GTU were not invited to participate, it is difficult to compute a response rate for the comparison group. Appendix C shows the number of comparison group responses from each university.

For the baseline survey, we used logistic regression to compare the SDSU Georgia and comparison students in terms of educational program affordability, employment status during college, perceived program quality, and future plans. Appendix C examines the balance in the quantitative study and anticipated statistical power for the wages outcome. As we note in Appendix C, there are some differences in characteristics between the SDSU and comparison group students, raising concerns about the comparability of the two groups and their responses. In view of these differences, this analysis controlled for the covarying factors of gender, family income, mother’s education level, entrance test scores, and program start year. Statistical inference is based on cluster-robust standard errors that take into account clustering of student measures within programs.

For the final report scheduled in 2023, the primary outcome of the quantitative study at the endline point is self-reported monthly wages in employment. We also intend to measure rates of attending graduate education as of the endline.

We describe in Appendix D our collaboration with the Education Strategy Center in Georgia to conduct this evaluation. ACT Global is collecting data for the survey and high school focus groups. RAND and Education Strategy Center staff are conducting all other interviews, focus groups, and document reviews.

Qualitative analyses: We use a variety of qualitative approaches to gain a detailed understanding of the thinking behind the Project design and the processes that accompanied its implementation. We review Project documentation and contrast the assumptions that guided the development of project logic with the insights from broader multidisciplinary literature on similar projects in developing countries, as well as on collaboration and partnerships. We then, in collaboration with MCC, identify principal stakeholders, including those who are currently leading the effort and people involved in the early development of the Partnership from MCC, MCA, SDSU, and consultants to MCC. Working closely with administrators at SDSU Georgia and three public Georgian universities, we also identify faculty and students who are familiar with and have been involved in the SDSU program to participate in the focus groups. The goal of the focus groups is to gain insight into how the Partnership evolved and the different challenges and developments in the course of implementation. ACT Global conducted focus groups in ten
high schools around the country with senior students interested in STEM to ask them about their awareness of university STEM programs, including SDSU. We also interviewed employers and SDSU Georgia advisory board members and donors.

In all cases, we asked those assisting with recruiting of focus group participants to include respondents with a broad range of viewpoints rather than mostly ones with favorable or unfavorable views. Where respondents were comfortable in English, we conducted discussions in English. For respondents who preferred Georgian, a bilingual team member conducted the discussions in Georgian and either provided a running translation or transcribed Georgian notes into English following the discussion.

To minimize potential inadequacies in one source of data and enhance overall validity of the findings, it is important to collect data from multiple sources using a mix of qualitative methodologies. We also interview MCC, MCA, and the Ministry of Education, Science, Culture and Sport of Georgia (current and previous staff who were involved in and/or have knowledge of the Project) to understand the support provided, policies that hindered or facilitated the Partnership, implementation of the Project activities, and sustainability efforts.

Qualitative data sources are summarized in Table 3.1, and more detail on the participants, sample sizes, and topics is offered in Appendix C. Additional detail is also available in the study’s Evaluation Design Report (Goldman et al., 2019).

For question 1 (Q1) (about the Partnership), we create specific indicators from the literature on best practices in developing strong partnerships. We then identify practices implemented by the Partnership from the interviews and organize identified practices within each of the key practices identified in the literature. We compare the practices to understand the extent to which the Partnership established between SDSU and the three public universities incorporated best practices.

For Q2 (about implementation), the interview responses are categorized under each of the six activities. Two people from our team review the responses under each activity and develop additional subcodes when necessary. We then analyze the interview data across different stakeholder groups and sites to highlight common themes, lessons learned, and areas of divergence. Variation among the universities allows us to draw contrasts to understand how contextual differences might affect the implementation of the activities.

For Q4 (about sustainability), we organize and analyze interview responses across three dimensions of sustainability, including (1) financial sustainability, (2) improved STEM education offered by the partner universities through obtaining international accreditation, and (3) stakeholder buy-in of the benefit of international accreditation.

We summarize the evaluation questions, key outcomes, data sources, and types in Table 3.1. For more detail on the evaluation design, see the study’s Evaluation Design Report (Goldman et al., 2019). We reordered and renumbered the evaluation questions and added Q3 regarding outputs of the Project to the evaluation questions from the original design in the Evaluation Design Report to provide a clearer structure for presenting findings.
Limitations of the Evaluation

This is a complex project; thus, it is challenging to assess. Although we are conducting interviews and focus groups with stakeholders representing many different participant and beneficiary groups, we are necessarily limited by the information they provide. We compare that information with documents produced during the Project and our student survey results, where these are available, but there are many topics for which we must rely on stakeholder interviews, including their recollections of events and rationales at the start of the Project, several years before our interviews. Thus, the conclusions we draw may be affected by the selection of stakeholders we interview, by their recollection of past events, and potentially by their own selection of what information and impressions to share with us.

As just noted, the survey samples of SDSU and comparison group students have some different characteristics, notably higher entrance test scores, higher parental education, and more men in the SDSU sample compared with the comparison group. These differences raise concerns about the comparability of the two groups and their responses, so we have adjusted comparisons based on observable covariates. Nevertheless, unobservable and/or uncontrolled covariates may still introduce bias into these comparisons.

Our student survey contains responses from a significant fraction of the SDSU Georgia students, while the responses from the comparison group typically represent a smaller fraction of the relevant STEM programs at other Georgian universities. Thus, the survey responses may not reflect the views of all of the members of the target populations and could suffer from biases in the selection of comparison group students made available for our survey, although we did not observe efforts to steer this selection in obvious ways. In addition, any survey is subject to respondent self-reporting recollection and biases.
Evaluation Question 1. How Was the Partnership Established and Carried Out?

**Summary of findings.** Although SDSU led the development of all Partnership activities, it relied heavily on MCC and MCA to establish the legal and operating conditions in Georgia for the program to proceed. SDSU and the three Georgian partner universities faced early challenges in partnership building, which is understandable because building strong partnerships among diverse organizations, especially in a cross-national context, is complex. The partnerships tended to be between SDSU and each individual institution—focused on the delivery of curricula, faculty training, and building capacity—instead of a single group ready to address common issues and goals.

Furthermore, the strategic vision and goals of the Partnership were defined not by the organizations, but by the U.S. and Georgian governments. The level of SDSU leadership engagement and frequency of SDSU leadership meetings with partners fluctuated over the years, in part because of SDSU leadership turnover, which led to some of the Georgian universities viewing the Partnership as one-sided. However, current SDSU leadership, including the SDSU president and dean, are highly involved and invested in the current Partnership, as well as in redefining it after the compact ends.

Introduction

In this chapter and the next three, we present initial evidence on the first four evaluation questions using the data collected during the first year of our evaluation (with selected recent updates from the second year). This chapter summarizes promising practices of strong partnerships and reports on what we learned about the partnerships between SDSU and the three Georgian partner universities, as well as the major supports provided by MCC and MCA. Our analysis relies primarily on our interviews with the stakeholders, supplemented by a review of the Collaborative Agreement and working documents produced by the Project.

The next three chapters present initial findings on implementation, student experiences, and sustainability.

Most of the data used in these chapters predate the impacts of the COVID-19 pandemic, which, as of April 2020, has resulted in Georgian universities, including SDSU, closing all physical campuses and shifting to online and virtual teaching. The COVID-19 situation also resulted in significant restrictions on travel and interactions. Depending on how long these changes and restrictions last, there could be significant effects on SDSU and the partner universities and potentially on the expected benefits related to graduate employment and income.
As reflected in the introduction in the next sections, we assess the Partnership based on a series of practices identified in related literature as key practices adopted by successful partnerships, which include (1) identifying partnership goals and participants, (2) selecting partners with capacity, (3) creating a shared vision of partnership goals, (4) encouraging joint decisionmaking, (5) coordinating action among partners, and (6) adopting mechanisms of accountability. In the following sections, we mention one of these key practices with some citations of the literature that informed our selection of that practice, followed by our assessment on that practice.

**Strategic Vision Defined Prior to Identifying Partner Organizations**

According to the literature, a promising practice of strong partnerships is for all partner organizations to get together prior to forming a partnership to discuss the partnership’s strategic vision and goals. Discussing the strategic vision early on promotes buy-in and common understanding among the organizations (Bodilly, Karam, and Orr, 2011; Tushnet, 1993). Governments defined the strategic vision before partner organizations formed the Partnership.

The strategic vision of the Partnership between SDSU and public universities in Georgia was defined by the Georgian and U.S. governments prior to its establishment, with input from MCC. The development of the vision was based on a constraints analysis and demand studies reviewed in Chapter 2, which found that the low quality of higher education in the areas of science, engineering, and technology is among the primary and binding constraints to Georgia’s economic growth. The analysis pointed toward the need for delivery of high-quality STEM degree programs in Georgia as a potent way to address these challenges.

The development of the strategic vision on how to improve the STEM program followed a complex path. According to our interviews, prior to 2013, the GoG lobbied the U.S. government to fund a higher education project, specifically to open a U.S. university branch campus, possibly in Batumi, to improve STEM education. Given the high costs of such a strategy (estimated by the GoG to be at least $100 million) and the lack of interest from U.S. universities, this strategy was abandoned for another vision to build a consortium or partnership between a U.S. university and universities in Georgia to create a new university that delivers bachelor’s degrees in STEM.

At that time, the GoG was interested in having private Georgian higher education institutions partner with a U.S. university. Interviewees told us that the GoG’s rationale was that a significant amount of resources and support had already been spent unsuccessfully on improving public higher education institutions in Georgia.

The Georgian government shifted in emphasizing public over private university partners. In 2012, MCA issued a request for proposal (RFP) for consortia of American and Georgian universities to develop an American-style university in Georgia. Our understanding is that the tender was open to consortia that included both public and private universities in Georgia and that the leading proposal was submitted by a consortium, including, from the United States,
Michigan State University, the University of Missouri, and the University of California, Los Angeles, and two private Georgian universities, Free University and Agricultural University. Around this time, the GoG changed, and the new government had a strong preference for investing in public rather than private institutions, in contrast to the previous government. As a result of this change, the first proposal process was canceled, and MCA issued another RFP emphasizing investment in public institutions.

SDSU’s 2013 proposal was selected as the leading contender in this process. SDSU proposed to partner with two Georgian public universities, TSU and ISU, to create a new university in Tbilisi. This institution would be called the American University of Georgia and would operate as a distinct university. However, stakeholders told us that MCC and MCA viewed the proposal as infeasible within the allocated resources. MCA requested a revised approach from SDSU in 2014, which required less resource investment. The proposed approach was for SDSU to offer specific SDSU bachelor’s degrees in Tbilisi by partnering with three Georgian public universities: TSU, ISU, and GTU. The proposed approach also aimed to prepare the partner universities to receive international accreditation for their own degree programs in the future.

Organizational Capacity Was Not Fully Considered in Partner Selection

Another promising practice from the literature stresses the importance of selecting partners who possess the necessary capacity to carry out the work required to achieve the goals of the program (Bodilly et al., 2004; Bodilly, Karam, and Orr, 2011).

MCC and MCA provided funding to SDSU to assess the capacity of potential partner universities. But given the strategic interest to invest in public institutions and build their capacity, the selection of Georgian higher education institutions was practically limited to the three main public universities in Tbilisi, with perhaps inadequate consideration to whether these institutions had the needed skills, staffing, and organizational culture to meet the Partnership goals. In fact, the capacities of the three institutions varied.

**Capacity for successful partnerships varied across Georgian universities.** TSU and ISU appear to have had significant capacity to be successful partners with SDSU. Both universities seem to have had strong basic science specializations, although their science programs were theoretically oriented, and they had much more limited engineering and applied science programs. TSU had in place only two applied science or engineering programs, including computer science and electrical engineering, while ISU had none. But the lack of experience in applied STEM programs was balanced by the type of faculty they recruit. TSU and ISU put in...
place mechanisms to recruit young leaders and faculty who are outward looking and who have interest in implementing applied STEM programs. Faculty at both institutions and other observers told us that many of the faculty members had studied abroad and collaborated on STEM research and publications with international organizations. As we discuss in the next few paragraphs, GTU showed considerably less capacity.

**Georgian university governance structure may have limited faculty and administration capacity and buy-in at some partner universities.** Our discussions indicated that GTU had structural and cultural barriers and limited faculty capacity to support the Partnership and the Partnership goals. For example, GTU faculty were trained on an outdated education model that inhibits program and organizational innovation and growth. This seems to be partly because GTU faculty have been on staff for a long time, and we did not hear of efforts being in place to attract faculty with more-recent training. Having mostly unchanging and few new faculty made it difficult to train them on the SDSU model and build their capacity so they could improve their STEM programs and have them ready for international accreditation.

Georgian university governance structure may have inhibited the full adoption of innovations called for by SDSU’s efforts. This is because the faculty elect the university rector (president), and thus the success of leadership efforts to modernize STEM programs is intertwined with faculty interest and buy-in. Although the same structure is implemented at all three partner universities, we heard this issue mentioned as a challenge primarily for GTU.

We understand that, in 2020, GTU embarked on a major internal reform to address many of these issues, and we will monitor and update the developments through the study’s final report, scheduled for 2023.

**Partners operated bilaterally more than as a group.** Although the initiative called for the development of partnerships between SDSU and the three Georgian universities, interviewees suggested that the relationships were developed mostly between SDSU and each partner separately.

The rectors of the three partner universities sat on the SDSU Georgia advisory board along with leadership from SDSU, MCC, MCA, and others. The occasional SDSU Georgia advisory board meetings provided a high-level forum for updates and sometimes major issues. But this board was advisory rather than a formal governance mechanism, and the four universities did not form a specific entity, aside from the board, to strategize jointly or tackle common issues together. Our data suggest that SDSU mostly worked independently with each partner university to implement its program and build each partner university’s capacity in terms of organizational capability, human resources, and facilities.
Partner Institutions Had Shared Understanding of Goals but Varied Views of International Accreditation

Literature on partnerships stresses the importance of selecting partners that participate in the creation of a shared vision and goals to ensure buy-in (Dhillon, 2005).

The partnerships’ two goals were established early. The goals of the Partnership were established in the RFP prior to the bidding process and bringing all of the partner organizations on board. Specifically, the Partnership had two main goals:

- offer a U.S. bachelor’s degree in STEM academic disciplines
- build capacity of the existing STEM programs at Georgian partner institutions.

The second goal was initially ambiguous but was operationalized more specifically as SDSU assisting the partner universities to prepare their STEM academic programs for international ABET and ACS accreditation.

Our interviews revealed that partner institutions understood the Partnership goals. In addition, all three higher education institutions established accreditation (ABET) committees, whose role was to work closely with SDSU Georgia to improve their STEM programs (e.g., increasing faculty capacity and ensuring adequate facilities and resources to run high-quality STEM programs).

The level of buy-in on the importance of having partner institution programs internationally accredited varied across institutions. In our interactions with the TSU faculty and administration, we observed that TSU saw the benefits of obtaining international accreditation for its STEM programs (engineering and chemistry) and viewed this effort as complementing its existing international and exchange programs. Our interactions with ISU faculty and administrators also conveyed that ISU understood the importance of international accreditation and how it might make the university more competitive in Georgia. In contrast, GTU viewed itself as being part of Europe’s higher education institutions. The leadership and some faculty at GTU questioned whether international or U.S. accreditation of local degrees would be valuable to employers, either in general or compared with a U.S. bachelor’s degree.

Responsibilities, especially among MCA and SDSU, were not always clear to all partners. Although the goals of the Partnership were understood among partners, interviews revealed a few instances that suggested that institutional responsibilities were unclear. This led to misunderstanding and tension between SDSU and MCA. Specifically, in the early stages, SDSU understood that there would be an adequate number of students to pay for and enroll in its program. SDSU administrators involved at that time told us that they did not think that SDSU would be responsible for student recruitment. SDSU was not well-equipped to recruit students or

We have 25 international programs and 22 hosted by TSU. And we are a big actor in exchange program. We have 179 exchange students, and last year we hosted 100 faculty from other countries. We also have dual programs. This is why we are paying special attention to accreditation.

—TSU administrator
make connections with other Georgian government entities or private organizations to provide scholarships. As discussed in Chapter 5, SDSU ended up relying heavily on support from MCA and the MCC country office to raise funds and attract students.

San Diego State University Led the Partnership

The literature also emphasizes the importance of having an inclusive leadership approach. Inclusivity promotes consensus and supports partnership activities, including joint decisionmaking, regardless of whether leadership focuses on one partner or is distributed across partners (Bodilly, Karam, and Orr, 2011; McLaughlin, Groves, and Lundy-Wagner, 2018).

**San Diego State University Led the Partnership.** The goals and activities were determined by SDSU, MCC, and MCA, with little input from partner institutions. In the initial stages, meetings at leadership levels across SDSU and partner universities occurred frequently, mostly to ensure that goals and activities were understood and to promote buy-in.

Some partner universities indicated that they did not see themselves as equal partners with SDSU in the early stage. They felt like their voices were not being heard, and they could not make programmatic decisions related to the Partnership. In particular, GTU viewed SDSU as lacking understanding of its history and its environment (see the first quotation in the text box). Another staff member characterized early discussions with SDSU as one-sided. The staff vocalized to SDSU that they would like to have a computer science degree because it is a national need, as well as a university priority, but SDSU was resistant until there was a change in SDSU Georgia leadership. The new dean was seen as more collaborative in terms of decisionmaking, which led to the creation of a computer science program and increased involvement of faculty in the ABET process (see the second quotation in the text box).

partners are increasing their roles and are likely to take leadership roles in the near future. It is important to note that the level of SDSU leadership engagement and frequency of SDSU leadership meetings with partners fluctuated over the years in part because of turnover in SDSU leadership. This might explain some of the dissatisfaction that partner universities felt with SDSU leadership early in the Partnership. However, the impression we take from our interactions is that the current SDSU president and dean are highly involved and have invested in the current Partnership, as well as in redefining it after the compact ends. Interviews suggest that
Partner institutions are likely to have a larger leadership role in defining future Partnership vision and activities.

Coordinated Activities Aligned with Goals, but Partner Input Was Limited in Some Areas

The literature on coalition-building espouses meaningful, coordinated action among partners as a promising practice and sign of a strong partnership. Effective partners develop activities together and implement them jointly or at least with some robust level of coordination (Bodilly, Karam, and Orr, 2011; Keith, 1993).

**Overall, activities were aligned with the two Partnership goals.** The activities addressed all relevant aspects. They included recruiting students, providing appropriate infrastructure, delivering the SDSU curriculum, providing faculty professional development, and engaging in continuous improvement. The extent and quality of implementation of each component are discussed in detail in Chapter 5.

**Previous agreements and contracts may have constrained flexibility in activity development.** SDSU led the development of the activities for the Partnership with limited input or engagement from the Georgian universities. These activities were mutually agreed on between MCA and SDSU; this might have limited the extent to which SDSU could have made modifications to the activities to take into account local conditions. Our perception is that SDSU viewed its contract as one that constrained the ability to make modifications to the model selected. SDSU and partner universities did not engage in discussions to determine whether there was flexibility that could allow the SDSU curriculum to be slightly modified without compromising the integrity of the SDSU degree. In particular, there were two areas of concern that interviewees consistently noted:

1. **General education.** The traditional Georgian curriculum included a very limited number of general education courses. U.S. degrees, including those that qualify for U.S. regional and programmatic accreditation, require much more general education. Having students in the SDSU program take two years of such courses was new and thus not received well. Some Georgian faculty and students questioned the need for all of the general education courses, while others raised the need to restructure the general education courses (e.g., eliminate U.S. history) to make them more contextually relevant. In the course of the interviews, one TSU faculty member expressed doubts similar to that of the student quoted in the text.
box at left. The faculty member did note, however, that it is too early to tell how the changes to the Georgian curriculum will affect students’ employability in the future (as shown in the text box on the previous page).

2. **Faculty selection.** Another area in which Georgian universities did not have much input, at least in the early stages of the Partnership, was in the selection of faculty who would be involved in the program. Over time, SDSU Georgia has been more open to considering input regarding which faculty would be trained to deliver the SDSU curriculum, as illustrated in the quotation at right.

   *Activities related to the delivery of the curriculum and faculty training were implemented jointly.* There was consensus among those interviewed that SDSU Georgia and partner institutions’ deans, staff, and faculty were in contact regularly via face-to-face meetings and virtually to carry out these activities and work closely together to develop assessments and syllabi and assist in teaching. A faculty member from a partner university explained, “I have SDSU instructors that meet and contact me every day. They send materials and discuss them with us.” Another said, “We have training courses with SDSU for one month in the United States. We also have practical training, where they send us video lectures and material to review before our lecture. We can ask them any questions and have lots of meetings with them virtually.”

   Contractually, the Georgian partner universities were not expected to be involved in activities related to outreach efforts to attract high school students to SDSU programs, raise funds to support student scholarships, and popularize STEM fields.

**Informal Monitoring Activities and Formal Systems Were Used to Hold All Accountable**

   There is broad consensus in the literature that the development of mechanisms for accountability is essential for a partnership’s success. These give all partners a stake in the outcome and enable midcourse corrections when and where necessary (Bodilly, Karam, and Orr, 2011; Marsh, 2002; Wenger, 1998).

   **SDSU engaged in informal mechanisms to hold partner institutions accountable.** At the leadership level, SDSU met frequently with partner university administration and faculty to ensure that the partners understood the goals and expectations. At the faculty and staff level, SDSU also made sure that it met frequently with its counterparts at the partner institutions to follow up on delivery of the curriculum, scheduling of courses, provision of training, and staying up to date on deadlines, with an eye to holding partners inside and outside the college accountable for meeting expectations. In addition, the SDSU Georgia advisory board, while not a governing body, nonetheless provided a useful venue to discuss progress and address issues.
among the leadership of SDSU and the partner universities. Finally, all partner universities signed agreements that defined their rights and responsibilities. According to our interviews, few viewed these documents to be a tool of accountability. At a more detailed level, stakeholders mentioned in interviews that, as a result of SDSU’s monitoring, there were a few instances in which partner university faculty selected to participate in the SDSU program were replaced because of lack of capacity and instructional quality.

MCA is the legal entity that monitored the Program and put in place mechanisms to hold SDSU and its partners accountable. MCA monitored SDSU budget and expenditure, as well as some of its activities related to student recruitment and raising student funds for scholarship. MCA was not involved in monitoring quality of the curriculum delivery, which was SDSU’s responsibility. MCA conducted quarterly meetings and provided audit reports to its supervisory board chaired by the Georgian prime minister and five other ministers, including the minister of education. As discussed in the next section, in addition to its monitoring function, MCA provided needed support and incentives to the Partnership.

MCA and the MCC Country Office Provided Critical Support to SDSU to Establish the Partnership and Ensure Its Continuity

SDSU had limited experience with major international projects prior to this project, and a number of our interviewees pointed out ways in which SDSU was not aware of the legal and regulatory issues that would have to be addressed so that the Partnership could operate in Georgia. Several enabling decrees and waivers of the GoG policy turned out to be needed. Interviewees told us that because MCA is governed by a board that consists of influential ministers, MCA, working with its board, was able to facilitate the approval and processing of the necessary changes and decrees in a timely manner. When the compact was negotiated, MCC asked that its board be filled at the ministerial level, in part, to facilitate such actions.

SDSU’s method of operation differs in significant ways from Georgian university practices. Therefore, at MCA’s request, the GoG made changes to the higher education law that allowed the GoG to propose specific decrees so that SDSU could operate and implement its activities in Georgia. The decrees that the GoG passed covered making student tuition free of value-added tax, allowing SDSU degrees to satisfy the requirement for local accreditation without complying with the specific local standards, and changing the financing scheme. For example, MCA contracts are almost always structured to pay for deliverables. SDSU is not accustomed to this type of structure and had difficulty organizing its budget and setting up its operations. Other decrees passed allowed SDSU to employ a provisional admission process to enroll students to accommodate the summer release of the national exam results (which are required for admission to Georgian universities)—several months later than SDSU needed to meet its application timelines in the spring. In addition, when student recruitment initially fell far short of expectations (as explained in Chapter 5), MCA and the MCC country office led the efforts to
recruit students, conduct targeted fundraising campaigns with private organizations, and request additional public support from the GoG. These activities enabled SDSU to launch its academic programs in Georgia.
5. Implementing the Program and Overcoming Challenges

Evaluation Question 2. Were the Activities Implemented Through the Project Aligned with the Program Design as Documented in the Logic Model?

**Summary of findings.** Data suggest that Project activities were planned to align with the program design as documented in the logic model, but implementation of the activities has had both successes and challenges. Challenges were met early on with student recruitment; partners underwent a significant struggle to draw in the planned number of students because of inability or unwillingness of Georgian students to pay the posted tuition price. To enable the program to proceed, MCC and MCA were able to raise funds for student scholarships from private organizations and the GoG. Compact funds were used to install and/or renovate facilities at all three of the partner universities, although TSU and ISU received most of these benefits compared with GTU. Georgian STEM faculty were supported with extensive professional training, development opportunities, and classroom experience in the SDSU program; interviews with students suggested growth in Georgian faculty capability overall but also indicated a need for some additional training. SDSU faculty have been engaged in the delivery of the curriculum both in person and online, but, overall, students expressed the desire for more-direct interaction with U.S. faculty, which they felt was hindered by online delivery because faculty were not always accessible to answer questions after class. Finally, each university has convened committees to work with SDSU on accreditation and transition issues after the compact ends. The level of readiness for accreditation has varied across the partner universities, with more advanced capability apparent at TSU and ISU and less at GTU.

**Introduction**

In this chapter, we review the efforts of SDSU, MCC, MCA, and the partner universities to implement the program. This chapter contains ten sections covering the different aspects of implementation on topics that are guided by the logic model shown in Figure 2.1. It also addresses other issues that arose in our interviews and visits.

In several cases, we refer to the Collaborative Agreement that MCA and SDSU signed on October 27, 2015, to formally lay out the expectations for MCA and SDSU’s activities in the Project. This agreement was amended each year of the Project to reflect updates for the year, but we limit our references to the first one, because it captures the expectations at the starting point. For the most recent status of certain activities, we refer to the SDSU *Spring 2020 Progress*
Report from March 15, 2020. Although these documents were provided to us for the evaluation, they are not publicly available.

The Project Struggled with Student Recruitment Initially, but Later Efforts Raised Recruitment over Time

MCC, MCA, and SDSU had ambitious targets for the numbers of students to be enrolled in the program that were informed by preliminary market analyses. SDSU struggled significantly to enroll the planned number of students, because Georgians within the target population (which was intended to include a broad cross-section of academically talented students) were unwilling or unable to pay US$7,500 per year for the SDSU programs in Georgia. Affordability was further reduced because the Georgian lari depreciated against the U.S. dollar by about 25 percent between the time the program was planned in 2014 and when the first students enrolled in 2015. SDSU Georgia’s tuition was about ten times the rate charged at public universities and between three and ten times the rate charged at private universities. The affordability issue imperiled the entire program, but a number of actions maintained it, including raising significant funds for student scholarships discussed in the next section.

Unwillingness to pay for a new and unknown program made student recruitment very challenging at the start. Initial plans called for a first cohort of about 500 students, growing to 610 students per cohort after four cohorts. Recruitment began at the onset of the program but faced formidable challenges. Interviewees reported that the small number of Georgian families with significant means preferred to send their children abroad rather than enroll them at SDSU in Georgia. Hence, SDSU enrollment drew from students in middle-income families, and they could not or did not want to pay for the full tuition at SDSU.

In addition, the new program had low recognition in Georgia, further limiting student interests in the first cohort or two. As SDSU and MCA made outreach efforts to schools and the general public, application and enrollment numbers continued to increase every year through cohort 4, and, by then, SDSU had more applicants than the number of spots it could afford to offer.

Enrollment for the first year of the program, 2015–2016 enrollment (cohort 1), fell well short of the original target, with only 86 students enrolled. One hundred and twenty-seven students enrolled in 2016–2017 (cohort 2), 199 enrolled in 2017–2018 (cohort 3), 230 enrolled in 2018–2019 (cohort 4), and 138 enrolled in 2019–2020 (cohort 5). Across all five cohorts, 780 students were enrolled in the SDSU Georgia degree programs (although not all remained enrolled). Even as student enrollment increased over the cohorts, it was constrained by the availability of

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5 Figures taken from the SDSU Spring 2020 Progress Report, not available to the general public.
The Program reached reportedly unprecedented enrollment numbers for women in STEM in Georgia (SDSU Spring 2020 Progress Report). Over time, women constituted 35 percent of the student body of the SDSU Georgia programs. Most recent available data from March 2020 show that, of 534 currently enrolled students, 37 percent are women.

**Project Raised Significant Funds for Student Scholarships, Enabling Program Implementation in Tbilisi**

Although scholarship funding may not have originally been expected to be a major factor in sustaining the program, it quickly became apparent that scholarship funds were perhaps the most crucial factor in moving forward with the SDSU programs in Georgia. Without scholarship funds, the program risked being shut down or scaled back before it even got off the ground. Georgian students admitted to SDSU (who made up the vast majority of enrollments) were eligible for the GoG’s maximum scholarship of 2,250 Georgian lari (about $700) per year. Although this offset the $7,500 tuition, much of the rest of the difference had to be made up from scholarships.

**MCA and the MCC country office, in partnership with SDSU, mobilized quickly and deliberately to raise scholarship donations.** These entities acted as soon as it became apparent how important scholarships would be in addressing families’ unwillingness or inability to pay the proposed tuition. MCA, the MCC country office, and SDSU engaged in several deliberate efforts. They solicited businesspeople individually and in groups with the assistance of the U.S. ambassador to Georgia and received a number of direct donations and introductions to others who would support the program. In some cases, companies agreed to make donations to sponsor students who would be placed as interns in those companies. In other cases, SDSU placed interns with companies, and, if the companies were pleased with the students’ performance, SDSU asked the companies to sponsor these or other students in the program. Overall, as of March 2020, SDSU reported that it had received about $3.1 million in donations from 24 donors for scholarships. Interviewees repeatedly stated that the program would not have been able to launch or continue admitting students without these scholarship funds.

**The GoG mobilized additional sources of funding.** The compact provided support for the first four cohorts, although, as just noted, additional funding was required to support students in these cohorts. The GoG agreed to use project income (known as *reflows*) from the already-concluded first U.S.-Georgia compact to supplement the funding in this second compact to fund student scholarships and support the Project in other ways. As the compact ended, the GoG in 2019 provided $11.2 million in addition to these reflows to support an additional cohort 5 with a maximum of 150 students (which is all that the amount of funding would support). As of this writing, we are not aware of any plans to continue funding additional cohorts beyond cohort 5.
which demonstrates that, without substantial core funding, a program on this model is difficult or impossible to sustain in Georgia.

**International Students Were Seen as a Source of Program Financing, but Recruitment Proved Difficult**

Stakeholders involved in early stages of the Project anticipated that SDSU’s programs in Georgia would draw students from nearby countries, which would enrich the program and provide a source of funding because these students would be expected to pay a tuition rate of $10,125, even higher than the full tuition for Georgians. In line with this interest, SDSU, MCA, and the MCC country office made what appear to be extensive efforts to recruit international students, but these efforts seem to have had limited success.

**Multiple factors proved challenging for recruiting international students.** In interviews, stakeholders offered a number of reasons for the difficulties in recruiting international students. One challenge was the perception of facilities. Many of the buildings and facilities at the partner universities were not seen as enticing; this was especially acute in the early cohorts, before SDSU’s specific facilities were renovated (some illustrations of this issue can be seen in the existing non-renovated TSU building photographs in Appendix A). The partner universities did not offer modern and conveniently located dormitories, so international students faced challenges and uncertainties in housing.

International relations posed other challenges. Georgia does not operate embassies in all countries where students may be interested in living, and at least one prospective student spent months in a third country with a Georgian embassy because of the challenges with obtaining a visa. U.S. policies also played a role. There is significant exchange between Georgia and Iran. From 2016 to 2018, SDSU had a U.S. Department of the Treasury license, allowing it to enroll some Iranian students, but the license was not renewed, so SDSU was no longer able to enroll Iranian students after 2018. In other countries, local education and labor market practices limited the attractiveness of SDSU. Turkey was cited specifically as not recognizing such degrees as SDSU’s, and, therefore, men could not be exempt from military service during their studies. Additionally, all Turkish students would face barriers to employment in Turkey.

**SDSU, MCA, and the MCC country office connected with multiple resources to address challenges in international recruitment.** These partners asked the U.S. Department of State’s EducationUSA and the Kennedy-Lugar Youth Exchange and Study Abroad Program to assist with recruiting students. SDSU attended international education fairs and made recruiting visits to multiple countries, including Turkey, Azerbaijan, other Central Asian countries, India, and China. In some countries, SDSU contracted recruitment agents who would receive a commission if they sent students who enrolled.

Overall, these efforts were seen as mostly ineffective. After significant efforts during the first two years, SDSU reportedly reduced its priority on recruiting international students and focused
nearly entirely on students residing in Georgia, which include both Georgian citizens and some foreign residents.

**STEM Infrastructure and Equipment Were Installed and Developed Significantly Across Partner Universities**

MCA used compact funds to construct, renovate, and equip a range of classrooms and labs across the partner university campuses. According to our interviews, SDSU faculty and leadership provided significant technical recommendations for the construction, renovation, and equipment plans. SDSU faculty told us that they generally based these recommendations on teaching laboratories and classrooms on SDSU’s main campus, as well as the requirements of ABET and ACS accreditation and other best practices.

**TSU and ISU benefited much more than GTU from new and renovated facilities and equipment.** MCA officials reported that the allocation of new and renovated facilities was made based on multiple factors, including the programs offered and number of students enrolled at each partner university.

Figures 5.1–5.3 show three examples of Project-renovated facilities. Appendix A provides a larger selection of photographs from our February 2019 visit to the three partner universities (and some subsequent updates). These photographs show a number of the key facilities that have been constructed, renovated, and equipped (including some work in progress as of that time). Additional photographs offer comparisons with existing unrenovated facilities and some facilities that have been renovated and equipped with international support other than that provided by the compact.
Figure 5.1. New SDSU Georgia Chemistry Laboratory at TSU

Figure 5.2. New SDSU Lecture Theater at TSU
At TSU, major projects include

- the renovation of most of an entire teaching building with a new lecture theater, classrooms, and teaching laboratories (the lecture theater is illustrated in Figure 5.2, and other facilities are shown in Figures A.5–A.7).
- the renovation of other classrooms and laboratories in the main academic building (Figures 5.1 and A.3); these can be compared with the condition of existing facilities in Figures A.1–A.2
- outfitting laboratories with benches, fume hoods, and equipment for chemistry and engineering and, in particular, the installation of a state-of-the-art magnetic resonance imaging (MRI) machine in the renovated chemistry lab (Figure A.4), which was necessary to meet ACS standards
- outfitting renovated classrooms with modern furniture and educational technology, in part to facilitate remote teaching from faculty on the main campus.

At TSU, renovations overall focused on making existing spaces suitable for the SDSU and future accredited programs.

At ISU, MCA and ISU itself funded the construction of an entirely new four-story building on the ISU campus (shown in Figures 5.3, A.8, and A.9). The building is purposely designed to contain teaching laboratories, classrooms, and office space for the SDSU program and presumably the future accredited programs. Possibly because of the more ambitious construction
approach at ISU, it has taken considerably longer to bring this facility online compared with the renovations at TSU. It opened for use in fall 2019.

At GTU, MCA funded and developed a renovated laboratory for chemistry, which, according to our interviews at GTU, was not being used, seemingly because students in chemistry were served by the renovated laboratories at TSU. GTU has existing laboratories used for the SDSU program (one is shown in Figure A.10) and, like TSU, has some classrooms and other facilities that were renovated through partnerships or donations aside from the SDSU program (Figure A.11).

**Important equipment was not available in Georgia.** A great deal of the equipment had to be procured from outside Georgia—some from the United States and other equipment from closer sources in Europe, if it was available there. Local conditions also led to ingenious solutions. For example, the main TSU academic building that contained the renovated chemistry laboratories on its second floor had no elevator suitable for moving the heavy MRI machine, so MCA staff and SDSU faculty and students worked together to construct an open elevator platform in the center of a large open stairwell that was suitable for moving the MRI machine and other heavy equipment up to the laboratory floor.

**Students and faculty recognized the need for and appreciated the new and renovated facilities and equipment.** In our focus groups, students and faculty praised the new and renovated facilities and equipment. Several students told us that the superior infrastructure swayed them to select SDSU. Main campus faculty reported that the facilities were at least equivalent to what is available on the main campus and, in some cases, superior. Faculty and students also identified aspects of SDSU and American higher education practices that the new facilities supported, specifically a strong safety culture and accommodations for students with special needs. Faculty especially noted that these aspects represented a positive change from the practices in Georgian universities.

As shown in the text box, a Project stakeholder expressed pride in the development of these facilities and hinted that these facilities might spur the partner universities to make additional similar investments using other sources of support in the future.

A number of other stakeholders also expressed pride in these facilities and concern about the future. SDSU is currently operating all of the facilities that are open (in practice as of 2019, this mostly means facilities at TSU, because the ISU facilities were not yet open and GTU had limited facilities for the program). SDSU is responsible for the maintenance, use, and supervision of technical personnel necessary for the major equipment, such as the MRI machine, to function. Because the plan is to hand these facilities fully to the partner universities as SDSU winds down its own degree programs, many stakeholders expressed concern about the costs and technical skills required to maintain the facilities after this.
point. Partner university faculty and leadership shared these concerns and said the expenses could be significant. As we discuss in Chapter 7, a sustainable financial model will be crucial to maintaining these facilities in top working condition.

Training Was Provided for and Appreciated by More Than 100 Georgian Faculty and Administrators

SDSU has conducted significant training and development for Georgian faculty to become SDSU adjunct faculty and teach in the SDSU programs. The purpose of this training, per the Collaborative Agreement, is not only to support SDSU’s delivery of its own degree programs but also to create “a springboard to develop capacity for the partner institutions to develop their own US and Internationally accredited programs” (Collaborative Agreement . . . , 2015, p. 14).

The overall development model starts with SDSU working with all three partner universities to identify faculty in each relevant discipline for training and development. Over time, partner universities and SDSU’s department chairs collaborated more on selecting faculty. As the focus has started to shift toward building capacity for the partner universities so they can independently offer accredited programs, partner universities have increasingly prioritized choosing faculty that are identified as critical to their plans for accredited programs. SDSU Georgia’s dean screened all nominated faculty for English proficiency prior to their selection for the program. Because these faculty are appointed as SDSU adjunct faculty, the final selection lies with the SDSU department chair.

These selected faculty generally travel to San Diego to receive training in delivering materials for their courses. The number of slots to travel to the main campus, however, is limited each year by budget constraints, so some faculty have to wait for their opportunity. In San Diego, Georgian faculty attend special trainings (e.g., how to operate lab equipment) and observe live lectures and video lectures. In some cases, faculty may return to the main campus more than once for progressive training on their subjects.

Each Georgian faculty member serves as an assistant instructor twice, while an SDSU main campus faculty member serves as instructor of record. The first time the Georgian faculty member assists, the role might be limited to working with SDSU faculty on developing assessments and syllabi, observing the teaching (which is often by internet video), helping students with questions live in Tbilisi, and doing some grading. The second time, the Georgian faculty member might also assume some of the instruction responsibility under the supervision of the instructor of record. After serving as an assistant instructor twice, the Georgian adjunct faculty are qualified to

I visited SDSU main [campus], and when I attended the lectures, I was completely lost. It was completely different from what we did at [my university] or anywhere. I was nervous. I read resources. I attended lectures. I worked on myself. Now I think this is a wonderful job. This is what university students need to do. . . . I am for the implementation of similar programs at any universities.

—Partner university faculty member
assume responsibility as instructor of record, generally with the main campus faculty member available as a mentor and resource. Throughout these processes, SDSU main campus faculty mentor Georgian faculty remotely through regular communication, information exchange, troubleshooting, and resource sharing. As noted in the next section, general education used a somewhat different model from the major fields.

**Georgian faculty from all partner universities emphasized the usefulness of the training they received from SDSU.** In interviews, faculty also recognized the responsiveness of the main campus colleagues and the high quality of mentorship they received. Georgian faculty said that main campus faculty were “there for them” day or night, despite the time difference. Some noted using the materials they acquired through SDSU to teach their students in other programs as well. Georgian faculty generally praised the teaching style, student focus, and assessment tools and strategies they learned from the main campus faculty. Numerous Georgian faculty called the experience “transformative.”

Administrators also participate in professional development with SDSU, including on such topics as ABET accreditation, fundraising, working with external donors, and student recruitment. Partner university administrators said that they increasingly value this professional development as they plan for the transition of SDSU programs and the potential development of their own internationally accredited degree programs.

As of April 2020, 92 Georgian faculty and nine administrators have been trained, and these participants have also visited the main campus as part of their training (SDSU Spring 2020 Progress Report).

**The SDSU Curriculum Was Delivered Mostly Through Distance Technologies, with Some In-Person Visits (and a Few Resident Faculty for General Education)**

SDSU implemented its degree programs in Georgia through the Partnership and by engaging both U.S. and Georgian faculty. The Collaborative Agreement specified that SDSU was to offer bachelor’s degree programs in Georgia in partnership with the partner universities and that these programs “must meet the standards of quality instruction, academic rigor and educational effectiveness of degree programs delivered at SDSU’s home campus/university and required for professional and regional US accreditation” (Collaborative Agreement, p. 2).

SDSU programs in Georgia deliver the same fundamental program that students receive on the main campus, with the same overall learning objectives and granting the same degree that main campus students receive. But because of the cohort sizes in Georgia, SDSU has limited the variety of general education classes and major field electives offered to maintain reasonable class sizes.

**General education was taught with specially recruited resident SDSU faculty and aroused controversy.** SDSU degrees, like most American degrees, have a substantial general
education requirement, more than what is traditional in Georgian universities. As discussed in Chapter 4, many Georgian students and some Georgian faculty in our focus groups questioned the amount of general education and the value of these courses.

General education courses, which stress writing and critical thinking, were initially taught by faculty members that SDSU recruited to reside full-time in Georgia. These instructors were generally new (some adjunct staff or former graduate students) and were recruited specifically for these jobs and not culled from the established general education faculty of the main campus. As of spring 2019, three full-time general education faculty were in residence. Over time, Georgian faculty may assume greater responsibility for delivering general education courses because a number of Georgian faculty have been trained in these fields.

**Major field courses were taught largely remotely, which some students did not appreciate.** In the major fields, as noted in the previous section, main campus faculty initially led all courses. Main campus faculty taught mostly by internet video links, with Georgian faculty available in person to assist students. Main campus faculty also visited for two to three weeks during the semesters or for longer periods of up to six weeks during the summer. These visits enabled the main campus faculty to work more directly with the Georgian faculty and teach a portion of their class in Tbilisi rather than exclusively over the video links.

Several students in focus groups expressed dissatisfaction with the limitations of remote interaction with the main campus faculty (as shown in the text box on this page). Many students specifically noted that there were sometimes technical difficulties with the video links. SDSU leadership was aware of student dissatisfaction and implemented a number of strategies to improve faculty-student connection, including training Georgian faculty to provide on-site support and requiring faculty to hold regular office hours (online for main campus faculty and in-person for Georgian faculty).

**Electives choices were limited to maintain reasonable class sizes, which dissatisfied some students.** Students in our focus groups expressed some dissatisfaction with the reduced choices available in both general education and electives, even though they understood the practical rationale behind that decision (inefficiency in offering classes for a small number of students).

**Some students participated in exchange programs with the main campus.** Through 2019, 63 Georgian students participated in exchange programs on the SDSU main campus. Of these, 35 spent one or two semesters studying on the main campus and were able to engage with SDSU faculty on research projects during that time. Another 28 students visited the main campus for
summer research programs. These programs were fully funded through SDSU, and students were selected through a competitive process.

Multiple Approaches Were Used to Attract High School Students to the Program and Popularize STEM Education More Generally

Recruitment of high school students and broader efforts to popularize STEM fields were considered core parts of the Project. SDSU made efforts to recruit high school students, which included purposeful efforts to recruit female students into STEM disciplines.

Most students learned about the program through word-of-mouth. Our baseline survey provides insight into SDSU’s outreach efforts to popularize STEM disciplines in general and SDSU degree programs specifically. As Figure 5.4 shows, students who enrolled at SDSU reported a range of ways they learned about the program. About 40 percent of the students surveyed indicated learning about the program through word-of-mouth, while 31 percent of the students heard about the program through high school events, followed by media, SDSU representatives, and STEM academies.

The STEM academy program brought together high school students and current SDSU students, contributing to recruiting and popularizing STEM fields. According to our interviews, one way that SDSU reached out to high school students was by visiting and conducting a STEM academy. The STEM academy program was intended as a useful general outreach effort, a way to attract students to SDSU, and a way to popularize STEM. The STEM academy program brought SDSU faculty, including Georgian faculty, and current SDSU students to Georgian high schools for presentations, lunches, and games. One of the key aspects of the STEM academies was that they provided an opportunity for potential high school and current SDSU students to engage. SDSU has also invited SDSU partner university faculty to observe the STEM academies (and, as noted in the accreditation section later in this chapter, partner universities are adopting this form of outreach).

Other recruitment efforts helped attract students. According to our interviews with MCC, MCA, and SDSU, students also learned about SDSU from SDSU’s presence at educational fairs, from newspapers, and, in some cases, from direct emails and phone calls from SDSU. Students also learned about the SDSU program through their teachers and web searches. Finally, SDSU hired a consulting firm that helped promote SDSU’s programs across high schools.

In response to concerns about English-language preparation, SDSU established five regional centers across Georgia where students can learn English to better prepare themselves for the English-language university program.
Figure 5.4. SDSU Students Who Report Various Ways of Learning About SDSU

<table>
<thead>
<tr>
<th>Method</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word of mouth</td>
<td>41%</td>
</tr>
<tr>
<td>High school event with SDSU representatives</td>
<td>31%</td>
</tr>
<tr>
<td>Internet media</td>
<td>21%</td>
</tr>
<tr>
<td>SDSU representatives via phone, e-mail or SMS</td>
<td>21%</td>
</tr>
<tr>
<td>STEM Academy</td>
<td>16%</td>
</tr>
<tr>
<td>TV</td>
<td>8%</td>
</tr>
<tr>
<td>Higher education fair</td>
<td>8%</td>
</tr>
<tr>
<td>Recruiter</td>
<td>8%</td>
</tr>
<tr>
<td>University introduction program</td>
<td>1%</td>
</tr>
<tr>
<td>Competition event</td>
<td>0%</td>
</tr>
</tbody>
</table>

NOTE: Authors’ calculations based on 399 SDSU students.

SDSU implemented activities to popularize STEM fields with university students and faculty. In addition to its outreach to high school students, SDSU supported initiatives to popularize STEM fields for university students and faculty. Through SDSU efforts and advocacy, the ACS opened a chapter in Georgia, spurring Georgian faculty and students in chemistry to organize annual student conferences for both SDSU students and faculty and across Georgian higher education. SDSU also sponsored academic clubs for SDSU students related to science and engineering fields; the clubs offer them an additional way to engage with STEM fields outside the formal curriculum. Several Georgian stakeholders noted that the activities spearheaded by SDSU served to introduce STEM into Georgian society.
There were efforts to attract women and socially vulnerable students to the program. The STEM academy and other programs specifically focused on attracting women and socially vulnerable students and raising their interest in STEM fields. SDSU student clubs also invited Georgian women with successful STEM careers to visit and interact with students (see the first quote at right).

Socially vulnerable students were also recruited through several methods. SDSU hired an outreach consultant to visit 500 schools in the regions outside the Tbilisi area and offer English-language support classes to socially vulnerable students (as mentioned in the previous section). SDSU also implemented outreach to Armenian and Azeri communities and provided full-tuition scholarships to students from ethnic minorities using funds donated by the U.S. Embassy in Tbilisi.

Some interviewees cited challenges with recruiting students from diverse ethnic, regional, and socioeconomic backgrounds. Because most students are from Tbilisi, there is less focus on the needs of students, such as providing attractive dormitories to house them or offering financial aid for living expenses (see the second quote at right), from other regions.

High school administrators and students we interacted with seemed unaware of SDSU and STEM options in Georgia. We conducted student focus groups in ten Georgian high schools, including some that SDSU indicated that it had previously conducted outreach at or recruited students from. In general, these school administrators and the students selected for the groups seemed fairly unaware of both the SDSU program specifically and STEM degree options in general in Georgia. We are unsure how effective the SDSU and partner efforts just described have been in raising awareness of SDSU and STEM degree options in Georgia.

Partners Engaged Employers; Employers Expressed High Opinions of the Students, but Some Wanted More Involvement

SDSU, MCA, and the MCC country office were active in engaging employers to serve on the SDSU Georgia advisory board, recruit students for internships, oversee students’ capstone projects, and donate funds to support students’ tuition. SDSU holds job fairs and open houses for employers and prospective students and has established a career center that aims to link SDSU graduates with the local employers. Employers serve on the SDSU Georgia advisory board and participate in the events organized by SDSU.
Multiple activities and events connected employers with SDSU students. Connecting the program and its students with employers appears to be effective. As one SDSU stakeholder explained (see the text box at right), SDSU has engaged employers to work directly with students on capstone projects.

SDSU students also participate in events organized directly by local employers (e.g., a create-a-thon). Students who worked with employers through SDSU programs, internships, or other activities have been hired by these employers and, in some cases, before graduation on a part-time basis.

Some employers wanted to be more involved. Some employers we interviewed clearly valued their involvement with the SDSU program, but a number of them indicated that they would have liked to have been more involved with the program and its activities rather than simply providing funding for scholarships or occasional internships.

Employers recognized the quality of SDSU students. In general, employers we interviewed that had experience with SDSU students as interns or as hires expressed high opinions of their quality. Employers expressed appreciation for the overall quality of the students and the standard of their training in engineering and chemistry. In a strong endorsement of the program, stakeholders report that, after having a number of SDSU students as interns, one employer decided to sponsor four-year scholarships for ten SDSU students. Other employers have made similar commitments at lower levels.

Georgian Universities Are Planning to Seek Accreditation for 12 Programs, but Important Challenges Remain

The Project has emphasized partner universities’ development of their own ABET- and ACS-accredited programs. Accreditation will allow the universities to continue international education practices in the longer term, especially after the compact-funded SDSU cohorts in Georgia end. Nonetheless, significant challenges remain both within the partner universities and at the government policy level.

Each participating university is actively engaged in the process of ABET and/or ACS accreditation. Initially, the plan was to facilitate the ABET and ACS accreditation of the partner university programs linked to SDSU. In compact year 2, however, SDSU proposed that other programs within the partner universities that are not linked to SDSU could benefit from the SDSU facilitation, should they decide to apply for ABET or ACS accreditation. Partner universities are interested in offering programs in both Georgian and English; individual
programs may be offered in either or both languages. The English-language options can draw directly on materials from the SDSU programs, while the Georgian-language programs may blend content and techniques from the SDSU programs with elements of the partner universities’ existing Georgian-language programs. Programs in fields not offered by SDSU can benefit from SDSU’s general faculty development and mentorship, as well as advice on the accreditation process.

SDSU facilitates accreditation efforts through training, faculty and administrator workshops, and building links between ABET and ACS and Georgian universities. As of February 2019, SDSU sponsored at least 15 Georgian faculty and administrators from partner universities to attend the ABET international symposium and continued to mentor these faculty after. This action appears to have spurred the partner universities to allocate funds to send additional faculty and administrators to the ABET symposium in March 2020—which, unfortunately, was canceled because of COVID-19.

**Partners value what they have learned from SDSU programs.** Partner university faculty and administrators cited the many practices they have learned from participating in SDSU programs. In addition to the exposure to the curriculum and teaching methods, partner university faculty members explained that they were copying student recruitment strategies from SDSU, including the popular STEM academies, to reach out to prospective students and communicate the quality of the university program.

**Transfer of knowledge and facilities is being planned.** Each partner university has convened two committees of faculty and administrators to work closely with relevant SDSU counterparts. The transition committees are expected to operate for three to four years to coordinate the transfer of knowledge and facilities from SDSU’s control to the partner universities’ control. In addition to the transfer of physical facilities and equipment, the transition committees are considering how to adopt practices in recruiting and selecting students, maintaining laboratory equipment, and planning for future costs of these activities. The ABET committees are tasked with coordinating each partner university’s efforts to attain ABET accreditations (and ACS certification for chemistry).
Accreditation readiness appears uneven across partner universities. From our conversations with stakeholders in February 2019, it appeared that the readiness level for accreditation has varied across the partner universities. All three partner universities had taken at least the basic steps of accreditation by February 2019 by establishing their transition and accreditation committees, and all three had plans for programs to pursue accreditation.

These plans seemed most advanced at TSU and ISU. In interacting with TSU and ISU administration and considering the feedback we received from MCA staff, we saw significant understanding of the requirements of accreditation and the resources that will be necessary to achieve it at both universities. Faculty also mentioned challenges in the process, especially regarding the financial sustainability of the anticipated costs for teaching, materials, and laboratories.

Stakeholders inside and outside GTU reported that GTU was at a lower level of readiness. At GTU, we interacted with faculty who were eager to pursue accreditation, but they also stated that GTU faculty and administration more generally had limited understanding of the value of accreditation and the human and material resources necessary to achieve and maintain accreditation. GTU faculty reported that they were not receiving enough guidance on how to meet ABET’s high standards, although they appreciated the ongoing support and resource-sharing by SDSU. Meeting both local and international accreditation standards was also cited as a challenge, although we understand that the GoG may be allowing international accreditation to satisfy the requirement for local accreditation without having to comply with the different details applicable to the local accreditation (perhaps because of the efforts of this Project).

The general tension of whether accreditation will prove to be straightforward or challenging for the partner universities is illustrated by two contrasting quotations in the text box on the previous page.

In the year since our visit, indications show that all three of the partner universities—including GTU—have made significant progress toward ABET and ACS accreditation with the support of SDSU and MCA. SDSU’s Spring 2020 Progress Report lists 12 programs across the three partner universities with specific plans for accreditation, with some programs at each of the three universities that are either continuing an existing Georgian language program or intending to admit their first cohort of students in fall 2020, as shown in Table 5.1. Other programs are intending to admit their first students in fall 2021 or later. Two additional programs listed in the table have had discussions and reviews regarding accreditation but currently do not show specific plans for admitting students or planning for accreditation reviews (shown as “unknown” in the table).⁶

We note that accreditors’ requirements, including capstone projects (which require facilities access and significant faculty interaction), limit the cohort size of these programs well below

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⁶ As of October 2020, after this report was prepared, ABET has granted accreditation to TSU for two programs: computer science and electrical and electronic engineering.
what is typical in some Georgian STEM programs, where annual intakes can reach 500 students per program.

**Table 5.1. Partner University Degree Programs Pursuing ABET Accreditation or ACS Certification as of March 2020**

<table>
<thead>
<tr>
<th>University and Program</th>
<th>Language(s)</th>
<th>Expected First Student Admissions</th>
<th>ABET/ACS Review Conducted or Anticipated</th>
<th>Annual Cohort Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TSU</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td>English</td>
<td>2020</td>
<td>2023 (for ACS certification)</td>
<td>30 (announced in 2020)</td>
</tr>
<tr>
<td>Computer science</td>
<td>English and Georgian</td>
<td>Continuing a current program that already has graduates for Georgian track</td>
<td>ABET visit November 2019</td>
<td>100 (Georgian, current); 30 (English, announced in 2020)</td>
</tr>
<tr>
<td>Electrical and electronic engineering</td>
<td>English and Georgian</td>
<td>Continuing a current program that already has graduates for Georgian track</td>
<td>ABET visit November 2019</td>
<td>40 (Georgian, current, announced in 2020)</td>
</tr>
<tr>
<td>Computer engineering</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td><strong>ISU</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil engineering</td>
<td>English</td>
<td>2020</td>
<td>2024</td>
<td>25 (announced in 2020)</td>
</tr>
<tr>
<td>Computer engineering</td>
<td>English and Georgian</td>
<td>Sophomores in 2018–2019 for Georgian version</td>
<td>2021</td>
<td>30 Georgian (announced in 2020); 10 (English, announced in 2020)</td>
</tr>
<tr>
<td>Electrical engineering</td>
<td>English</td>
<td>Continuing a current program that already has graduates for Georgian track; English track (2020)</td>
<td>2024</td>
<td>Announced in 2020</td>
</tr>
<tr>
<td>Computer science</td>
<td>English</td>
<td>2021</td>
<td>2025</td>
<td>25 (planned in 2021)</td>
</tr>
<tr>
<td><strong>GTU</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biomedical engineering</td>
<td>English and Georgian</td>
<td>Continuing a current program that already has graduates for Georgian track; English track (2020)</td>
<td>2020</td>
<td>Georgian (40); English (5, announced in 2020)</td>
</tr>
<tr>
<td>Civil engineering</td>
<td>Georgian</td>
<td>2020 (freshmen and sophomores)</td>
<td>2024</td>
<td>25 (announced in 2020)</td>
</tr>
<tr>
<td>Construction engineering</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>Computer engineering</td>
<td>Georgian</td>
<td>2021 (tentative)</td>
<td>After 2025</td>
<td>25 (planned in 2021)</td>
</tr>
<tr>
<td>Electrical engineering</td>
<td>Georgian</td>
<td>2020 (freshmen and sophomores)</td>
<td>2024</td>
<td>25 (announced in 2020)</td>
</tr>
<tr>
<td>Computer science</td>
<td>English</td>
<td>2020</td>
<td>2024</td>
<td>25 (announced in 2020)</td>
</tr>
</tbody>
</table>

Stakeholders varied in how valuable they thought accreditation would be in Georgia. Some thought accreditation would raise the quality of degree programs, increase job opportunities for students, and help attract more talented Georgian students into these programs. There is an expectation that accreditation will help increase the number of international students who would see Georgian education as appealing. As one stakeholder put it, “The certification is the proof of quality.” Other stakeholders were not sure that international accreditation would raise the prestige of the programs in the eyes of the public, especially to the level of the prestige assigned to an American degree. They noted that building recognition of American and international accreditation was an ongoing challenge in Georgia, where there is little experience with this form of international subject-matter accreditation.

Others noted that although ABET accreditation would be useful in attracting high-quality students and providing them with a high-quality education, ABET requires a higher amount of science content in the engineering curriculum compared with current Georgian programs. This increased focus on science may be incompatible with local industry demand for “simple practical engineers.” However, stakeholders expressed the possibility that training engineers to ABET standards could increase the skill content of local industry in the future, moving employers to higher-value products and services.

Policies must adapt to support accredited programs. In Chapter 6, we review the issues related to financing these accredited programs, which will likely cost up to several times more than current Georgian degree programs and thus require a new structure for funding them and supporting students financially to ensure broad access to the programs.
Evaluation Question 3. How Do SDSU Georgia and Comparison Group Students View Their Programs?

Summary of findings. Analysis of baseline student survey responses show that about three-quarters of SDSU Georgia students were highly satisfied with the facilities and equipment provided by the SDSU program but were less satisfied with other aspects of the Program. Students reported lower rates of satisfaction with faculty support and interaction, the extent to which the Program provided them with the theoretical and practical education needed for the workplace, the quality of courses, the number of general education courses, and opportunities for outside internships. Students in the comparison group were generally more satisfied with these aspects of their programs, with the exception of facilities and equipment and internship opportunities. Nearly 40 percent of SDSU students said that, if given the chance to choose again, they would have not chosen the Program or were not sure (compared with less than 20 percent in the comparison group who said the same about their own programs). Although the survey results may reflect areas of the SDSU program that need to be improved, they may also reflect the high expectations that SDSU students, who are the top students in Georgia, had for the programs.

Introduction

In this chapter, we present descriptive and comparative analysis of the baseline student survey responses related to educational program affordability, employment status during students’ education, perceived program quality, and future plans as reported by SDSU Georgia and comparison group students. Note that, because this chapter reports on SDSU Georgia and comparison group students, we use the simpler SDSU designation throughout.

To reduce the effect of potential differences between the SDSU and comparison group students who responded to the survey, we used statistical models. Specifically, we used logistic regressions to estimate the differences between both groups of students while controlling for student-level factors that may be related to students’ experiences and perceptions: gender, family income, mother’s education level, entrance test scores, and entrance year (Appendix C presents the comparison of the groups on these measures). In the figures that follow, we report unadjusted percentages for SDSU students and percentages for the comparison group, adjusted to match the characteristics of the SDSU group. Statistical inference takes into account the nested nature of data using cluster-robust standard errors at the program level (within universities). The figures
delineate $p$-values next to the items that show a statistically significant difference between SDSU and comparison students (* for .05 or less and ** for .01 or less). We highlight the instances where we find gender differences in survey question ratings.

**Most SDSU Students Found the Program Expensive**

The majority of SDSU and comparison group students reported challenges in being able to afford their educational expenses (e.g., pay for tuition, books, and housing), with SDSU students reporting greater challenges. SDSU students found their program more challenging to afford than comparison group students. As Figure 6.1 shows, 77 percent of SDSU students found it “somewhat challenging,” “difficult,” or “very difficult” to pay for their education, compared with 68 percent of their peers in the comparison group.

![Figure 6.1. Percentage of Students Who Found It Challenging or Difficult to Afford Educational Expenses, by Student Group](chart)

<table>
<thead>
<tr>
<th>Difficulty in affording educational expenses</th>
<th>Percentage of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>SDSU</td>
<td>77%</td>
</tr>
<tr>
<td>Comparison Group</td>
<td>68%</td>
</tr>
</tbody>
</table>

**NOTES:** Authors' calculations based on 371 SDSU students and 1,246 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group.
Most SDSU students rely on financial aid sources that they do not need to repay. As Figure 6.2 shows, almost three-quarters of SDSU students noted that “most” or “all” of their funding for educational expenses comes from financial aid that does not need to be repaid, compared with less than half of comparison group students (understandable because SDSU’s tuition is much higher than other options in Georgia). Comparison group students (50 percent) rely more heavily on family to financially support their education. A much smaller proportion of students in both groups reported that they rely on their own resources or financial aid that would require repayment (student loans are basically unknown in Georgia). A smaller proportion of men reported having their financial aid paid by family, compared with women, irrespective of education program. Similarly, women in the SDSU program reported relying less on family to pay for their tuition and other expenses than women in the comparison group.

**Figure 6.2. Sources of Funding for Educational Expenses, by Student Group**

NOTES: Authors’ calculations based on 358 SDSU students and 1,226 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group. ** significant at $p \leq .01$. 
SDSU Students Are More Likely to Work During University and to Hold a Job That Is Closely Related to Their Studies

As illustrated in Figure 6.3, nearly half of the students in the SDSU program and nearly 70 percent in the comparison group reported not working during the current academic year when they were students, so SDSU students were much more likely to hold a job. Overall, men who were students were more likely to work than women who were students, irrespective of education program. However, female students enrolled in the SDSU program were more likely to work than women students in the comparison group. The commercial private sector is the largest employer of both groups of students, but especially for SDSU students, followed by self-employment. A larger proportion of men report being self-employed than women. Of students who have a job, those in the comparison group work on average 32.7 hours per week (standard deviation = 17.2), compared with 21.2 hours per week (standard deviation = 12.4) for SDSU students.

Figure 6.3. Employment Status, by Student Group

NOTES: Authors’ calculations based on 356 SDSU students and 1,194 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group. ** significant at p ≤ .01.
Of students who reported working, SDSU students were much more likely to say their job was completely or very related to their program (28 percent), compared with comparison group students (6 percent), as shown in Figure 6.4.

**Figure 6.4. Extent to Which Student Jobs are Related to Programs Being Studied, by Student Group**

![Bar chart showing the extent to which student jobs are related to programs being studied by student group.

NOTES: Authors' calculations based on 187 SDSU students and 500 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group. * significant at \( p \leq .05 \); ** significant at \( p \leq .01 \).
SDSU Students Perceived Low Program Quality and Value on Several Important Dimensions

SDSU students had low perceptions of many program aspects. A smaller percentage of SDSU students “agreed/strongly agreed” with survey items indicating that their program prepares them well academically, compared with students in the comparison group. Figure 6.5 shows that only 17 percent of SDSU students reported that their programs offer a good selection of courses, compared with half of comparison group students. Similarly, only about 40 percent of SDSU students indicated that their program promotes theoretical and practical understanding of a subject, lower than the comparison group (especially with regard to theoretical understanding). Although the SDSU model is based on a high level of interaction between students and faculty, only about 60 percent of SDSU students reported experiencing this type of interaction, similar to levels in the comparison group. Around 40 percent of SDSU students reported satisfaction with opportunities for internships and job placements—rates that are similar to the comparison group. Table E.1 in Appendix E contains a version of this figure with some additional items.

Student focus group discussion findings presented in Chapter 5 provide insights into the survey results. Specifically, SDSU students in our focus groups expressed that their high expectations of the program did not consistently align with their experiences. Some students anticipated and preferred having more faculty from the United States teach them in person in order to have the “American education experience.” Furthermore, students were dissatisfied with the online nature of the program in which some classes relied on videos taped by U.S. professors and shown to students by Georgian faculty lecturers. This mode of instructional delivery, sometimes coupled with technological glitches at the beginning of the program, led to limited interactions between faculty and students during classroom instruction. In those classes, students expected to have American professors—and not Georgian faculty—answer their questions and to develop relationships with SDSU main campus professors. Students also expected to have a wider range of elective courses in the field in which they specialized and a balance of theory and practice in their SDSU curriculum. Those who were in the early phases in their programs indicated that they mostly had lectures and would have liked to have been exposed to more experiential learning.
SDSU students were satisfied with the infrastructure but less satisfied with faculty support and course quality and variety. Figure 6.6 shows that about three-quarters of SDSU students reported being “satisfied/very satisfied” with laboratory facilities and equipment. About the same percentage felt similarly about the financial aid, grants, and scholarships made available by their program, compared with a much smaller percentage of comparison group students. However, a much lower proportion of SDSU students (half or less) reported being satisfied with the support provided by their faculty and the quality of their courses in their major field of study, while comparison group students were generally more satisfied. SDSU students were particularly dissatisfied with the number of general education courses outside their major field.

There were no gender differences in student program satisfaction—with only few exceptions. Men, irrespective of program, were more satisfied in their internship and placement opportunities than women. Table E.2 in Appendix E contains a version of this figure with some additional items.

SDSU satisfaction with infrastructure and labs was substantiated in the focus group results presented in Chapter 5. SDSU students raised concerns regarding the support that the Georgian
faculty provided them, with a few indicating that the Georgian faculty were not as well prepared as SDSU faculty. Some raised issues with general education courses, preferring to have a better balance between such courses and courses specific to their major during the first two years of the program. Others were concerned that the program did not provide an adequate selection of general education courses. Students were mandated to take these courses even when the content might not be relevant to Georgia.

Figure 6.6. Students Who Are Satisfied or Very Satisfied with Resources and Courses, by Student Group

<table>
<thead>
<tr>
<th>Resource</th>
<th>SDSU</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory facilities and equipment</td>
<td>32%</td>
<td>72%**</td>
</tr>
<tr>
<td>Availability of financial aid, grants and scholarships</td>
<td>44%</td>
<td>64%**</td>
</tr>
<tr>
<td>Support from faculty aimed at improvement of my educational outcomes</td>
<td>51%</td>
<td>62%</td>
</tr>
<tr>
<td>Quality of the courses within my major field of study</td>
<td>44%*</td>
<td>69%</td>
</tr>
<tr>
<td>Number of the general education courses outside your major field of study</td>
<td>23%**</td>
<td>50%</td>
</tr>
</tbody>
</table>

NOTES: Authors’ calculations based on 347 SDSU students and 1,227 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group. * significant at $p \leq .05$; ** significant at $p \leq .01$. 

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A significant fraction of SDSU students said they would not choose their current program again. As Figure 6.7 shows, most students indicated that they would still choose their current program if they were given the opportunity to choose another program. But nearly 40 percent of SDSU students said that they would not have chosen the program or were not sure (compared with less than 20 percent in the comparison group who said this).

Figure 6.7. Students Who Would Definitely or Probably Reenroll in Current University, by Student Group

NOTES: Authors’ calculations based on 338 SDSU students and 1,226 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group. ** significant at \( p \leq .01 \).
Future Plans for Many Students, Especially from SDSU, Include Going Abroad

Figure 6.8 shows that two-thirds of SDSU students reported having plans to attend graduate or professional school abroad. Half indicated plans to look for or find a job abroad, a slightly higher rate than that of the comparison group (57 and 41 percent, respectively). Men generally indicated plans to look for jobs abroad more than women. A higher proportion of women at SDSU also reported looking for jobs abroad than comparison group women. Students in the comparison group had some interest in attending graduate school in Georgia, but few SDSU students did. Table E.3 in Appendix E contains a version of this figure with additional items about future plans.

**Figure 6.8. Student Plans After Completing Degree, by Student Group**

<table>
<thead>
<tr>
<th>Plan Description</th>
<th>SDSU</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply for/attend graduate school abroad</td>
<td>66%</td>
<td>57%</td>
</tr>
<tr>
<td>Look for/find a job abroad</td>
<td>52%*</td>
<td>41%</td>
</tr>
<tr>
<td>Attend graduate/professional school in Georgia</td>
<td>24%</td>
<td>33%</td>
</tr>
</tbody>
</table>

NOTES: Authors’ calculations based on 333 SDSU students and 1,205 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group. * significant at $p \leq .05$.  

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7. Initial Sustainability Analysis

Evaluation Question 4. To What Extent Are the Project Activities Sustainable?

Summary of findings. Initial assessment of the future of the Partnership suggests that some elements may be sustainable after the compact ends. All three partner universities, with SDSU support, are moving toward obtaining international accreditation for their STEM programs. The Georgian programs have adopted important elements of content and pedagogy from the SDSU program, which provides a foundation for pursuing accreditation. If accreditation can be obtained, it will promote the continuation of quality STEM programs in Georgia. But successfully sustaining these programs will require buy-in from the Georgian government, employers, and other stakeholders. These programs will also need a financial model that permits universities to charge higher tuition to cover the cost of these programs and have sources of financial aid to ensure accessibility. Finally, in addition to activities related to accreditation of Georgian programs, SDSU is pursuing ways to continue its relationships with the partner universities through collaborations in research and graduate education and the possibility of awarding an SDSU degree as a supplement to a partner university–accredited degree.

Introduction

We have presented study findings related to Program partnerships, implementation, and general outcomes, such as student and faculty perceptions of the SDSU curriculum. This part of the report has primarily dealt with the past—an examination of decisions, policies, activities, and perceptions made at the program’s inception and through 2019. This evidence, while not complete, offers a broad view of the Partnership’s global, economic, social, and professional STEM contexts. These findings offer enough of a critical foundation to begin thinking about how these contexts will affect the longer-term sustainability of the program and its activities.

Here, we offer our initial assessment of the prospects for SDSU program sustainability. It should be noted that these findings draw only from the evidence collected so far; they do not include information related to SDSU student outcomes or the program’s economic return on investment—two critical factors needed to fully understand the future feasibility of any in-progress academic program. We will offer a fuller assessment of program sustainability in the 2023 report, taking into consideration new findings, as well as those presented in this interim study.
Partners Are Taking Steps Toward Sustainability

Affordability and accreditation are important factors in the program’s longer-term sustainability. It was clear early on that the provision of the current model for offering SDSU degrees is unlikely to be sustainable given the tuition cost and affordability. SDSU and the partner universities, in collaboration with MCA, have engaged in a variety of activities to sustain the improvements that were implemented as part of the Program. As discussed earlier, the three Georgian universities are moving toward international accreditation of their STEM programs. Although these programs are not SDSU programs, they have been heavily influenced by the SDSU program in terms of content and pedagogy. Obtaining accreditation will promote the continuation of quality STEM programs. The projections provided to us from the Project partners suggest that, to be sustained, the accredited programs are likely to need lower tuition costs than the SDSU program but higher tuition costs than the nonaccredited programs. Currently, the GoG does not allow universities to charge higher than the standard tuition price, so, to make these programs sustainable, some flexibility will be required.

Steps toward changes in financing have already begun. According to our interviews, the three partner universities indicated that they will be able to offset the higher-than-standard tuition costs from internal resources for an initial period. After this period, however, they will need flexibility to set higher tuition rates and likely additional public scholarship support to help students (especially ones from lower-income families) afford these higher charges. Discussions with the GoG regarding these issues are in the very early stages. The Georgian government is also working with the World Bank on a new model for financing higher education that could provide options to sustain the costs of running internationally accredited programs while maintaining broad access. MCA is also developing a student loan program with a Georgian bank that could provide an important source of student financing for these programs.

Program accreditation needs more buy-in from key stakeholders. The Partnership has made the idea of accreditation much more visible in Georgia. For example, in a recent interview, we learned that at least one of the private universities will be going through international program accreditation as well, reportedly motivated by the partner universities’ international accreditation efforts. But as indicated in Chapters 4 and 5, stakeholders in Georgia vary in how they view accreditation. There is still more to do to ensure employer and other stakeholder buy-in regarding the importance of accreditation and how these programs reflect quality. As discussed in Chapter 5, SDSU is in the process of transitioning its outreach effort to the partner universities so that they can take the lead in raising the awareness of their programs, of the importance of accreditation, and of STEM in general. The partner universities are starting to adopt some of SDSU’s practices (such as the STEM academies) to inform students and the public about their programs. These systematic and structured practices will be important because it might be more difficult to promote support among students, families, and employers regarding
the partner universities’ internationally accredited programs compared with SDSU’s U.S. degrees.

Other steps toward sustainability are in the early stages. Following the compact period, SDSU will be exploring options to continue offering students in Georgia the chance to earn an SDSU degree as a supplement to an accredited partner university degree (in some sense, the reverse of the current program in which students receive the partner university degree as a supplement to the SDSU degree). To enable this plan, SDSU is looking to use its online World Campus as a platform to support an SDSU degree in Georgia. This would require less SDSU in-person presence and cost than the current Program. The plan would possibly grant SDSU-equivalent credit for some courses taken in ABET- or ACS-accredited programs at the three partner universities. SDSU has formed a task force, which was scheduled to conduct a feasibility study of this idea in spring 2020, although COVID-19 is likely to delay those plans.

Finally, SDSU administrators and faculty members expressed a strong interest in continuing to build capacity of the three partner universities by supporting STEM research and graduate education in Georgia. As an initial move in this direction, SDSU recently received funding from the U.S. Department of State to improve Georgian scholars’ research capacity, train them on research methodologies and statistical approaches, mentor them to participate in international conferences, and assist them and their students in publishing research papers.

As noted at the beginning of Chapter 4, the COVID-19 situation and its associated restrictions on in-person interaction and travel could have significant effects on SDSU and the partner universities and their plans for sustainability.

These observations on sustainability are based on the information we have at this stage. We will revisit these topics in the Project’s final evaluation.
Operating under the framework of the compact, the governments of the United States and Georgia have provided significant funding to launch SDSU’s STEM bachelor’s degrees in Georgia. As we describe in this report, SDSU works in partnership with three Georgian public universities, TSU, ISU, and GTU, to deliver its degrees. The Project also aims to sustain the innovations in curricula, laboratories, and teaching methods by helping the partner universities develop and receive international accreditation for their own STEM degree programs in the future.

**The Partnership was led by SDSU.** We found that SDSU led the development of the Partnership activities, but the activities related to the delivery of the curriculum and faculty training and building capacity were implemented jointly.

**Partner universities varied in their capacity.** We found that the capabilities of the partner universities seemed to vary significantly, with TSU and ISU generally having good capabilities and GTU less so.

**Recruiting students proved a major challenge, posing concerns for the Project’s rate of return.** The Project was approved based on an ambitious enrollment plan and strong levels of future enrollment in the partner university–accredited degree programs. Based on these forecasts, it was expected to generate a financial rate of return of 10 percent or more. Apparently because of limited ability to pay and low awareness of the new program among prospective students, enrollment has been well below the initial forecasts. Although enrollment increased in cohorts 2, 3, and 4, enrollment was constrained by the availability of scholarship funding and remained well below the initial forecasts of 500–610 students per cohort.

As a result of these cost and enrollment issues, we expect that the overall rate of return on the Project will be considerably lower than the initial estimate of 10 percent. In our final report, we will analyze the Project’s rate of return, with a focus on examining student outcomes in terms of individual wages, employability, improved matched education-employment skills, and pursuit of STEM graduate degrees.

**MCA and MCC supported the Partnership in crucial ways.** SDSU’s capacity in building partnerships and implementing education degrees in international settings was limited before this project. SDSU relied heavily on MCC and MCA support to issue decrees and waivers of GoG policy and raise funds for student scholarships to be able to implement the program and build the Partnership.

**Compact funds were used to build and renovate teaching and laboratory facilities, especially at TSU and ISU.** SDSU provided technical assistance to ensure that the facilities and labs renovated were comparable with those on the SDSU main campus. SDSU students and
faculty viewed these facilities very positively and, for some students, the facilities were an important reason why they applied to the SDSU program.

**Despite considerable investment and efforts, SDSU Georgia students viewed many aspects of their programs unfavorably.** Although the majority of SDSU students were highly satisfied with the labs and equipment provided by the SDSU program, they were less satisfied with their access to faculty, selection of courses, and the theoretical and practical preparation for employment. Students in our survey desired more interaction with U.S. faculty, which was hindered by the fact that many of the courses were conducted online with somewhat limited faculty accessibility to answer student questions immediately after class. The survey results reflect areas of the SDSU program that could have been improved. To some extent, our student focus group findings suggest that the survey results also reflect the high expectations that SDSU students, who are the top students in Georgia, had for the programs.

**There were a few gender differences in how students viewed their programs.** Survey results show that gender differences centered their views on available opportunities for internships and job placement. Men reported higher satisfaction with those aspects of their programs than women. This finding might reflect a cultural inclination toward providing more employment opportunities for men. Future programs should take this finding into account and encourage employers to implement improved policies to ensure equity in placing students into work-based learning opportunities to improve participation of women in the STEM labor market.

**Many SDSU Georgia students plan to go abroad, raising questions about one of the Project’s rationales.** Our survey results indicate that many of the STEM students we surveyed plan to go abroad after their bachelor’s degree for further study or employment. For SDSU, this interest is strong in the majority of students. If these students go abroad and do not return to Georgia, this will pose a significant challenge to one of the Project rationales, specifically preparing students for STEM careers in Georgia. Students may, of course, spend a period of time working and studying abroad after their initial degree, eventually returning to Georgia with important skills to develop STEM industries in Georgia. But this willingness to return may depend on how the economy and wage levels develop in Georgia.

**SDSU built capacity of Georgian faculty and administration and helped prepare them to pursue international accreditation.** In addition to improving facilities, SDSU built the capacity of Georgian faculty by providing them with extensive professional development and classroom experience in the SDSU program. This capacity-building helps prepare their STEM programs and administrators for international accreditation.

**There is strong interest in sustaining the Project’s efforts, but capacity varies.** All partners are interested in sustaining the programs they developed and the relationships in some form after SDSU winds down instruction of the final cohort of students (the planned final cohort in this model was admitted in 2019, and no further cohorts were planned). All three partner universities, with support from SDSU, are moving toward obtaining international accreditation.
for their STEM programs, although TSU and ISU generally appear to have greater capacity than GTU to realize these plans.\footnote{As noted in Chapter 5, as of October 2020, ABET has granted accreditation to TSU for two programs.}

**Challenges in implementation and stakeholder support must be addressed to sustain accredited programs.** Obtaining accreditation will promote the continuation of quality STEM programs in Georgia, although more work needs to be done with employers and other stakeholders to raise awareness of the value of these accredited programs in Georgia.

These accredited programs should also consider the lessons from the baseline student survey, which indicates that SDSU students had lower levels of satisfaction despite considerable investments in the program, especially regarding course selection, balance between theory and applied courses, availability of internships, and more inquiry-based instruction. The student survey also points to students’ interest in interacting with U.S. faculty. The partner universities will likely not be able to provide high levels of interaction with foreign faculty, although they might be able to incorporate some relationships, possibly under the umbrella of a supplementary SDSU degree using SDSU’s online World Campus.

**Government policy must be revised to sustain accredited programs.** Initial discussions with the GoG have started to address changes needed to make the accredited programs sustainable and affordable, including the need to allow universities to charge higher than the standard programs, possibly by modifying the model for financing higher education programs in Georgia in general. Financial aid will also be essential for these programs to be accessible to a wide portion of Georgian society in the future.

**Several paths are open for continued development.** The governments of the United States and Georgia, MCC, MCA, SDSU, TSU, ISU, GTU, and Georgian employers and donors have all made significant commitments to this project. Although the current form of SDSU teaching is planned to end with the 2019–2020 entering cohort, as we just discussed, partner universities are pursuing internationally accredited degree programs that could sustain at least some of the impacts of this project. Partner universities can also benefit from the significant investment in infrastructure.

SDSU and the partner universities are also working to form partnerships in research and graduate education that may be sustainable even after the current intensive model of educating undergraduate STEM students ends.

We will continue to monitor and explore these issues and track the outcomes of the first four SDSU Georgia cohorts through the study’s final report, scheduled for 2023.
Appendix A. Photographs of Tbilisi Campus Facilities

SDSU Georgia Construction, Renovation, and Equipment Photos

Photo credits:
*Charles A. Goldman, February 2019
**Millennium Challenge Account - Georgia, November 2019
Tbilisi State University

Figure A.1. Existing Main Building (Not Renovated)∗
Figure A.2. Existing Faculty Chemistry Lab*
Figure A.3. New SDSU Chemistry Labs*
Figure A.3. New SDSU Chemistry Labs*—Continued

Figure A.4. SDSU MRI Machine*
Figure A.5. Renovated SDSU Teaching Building*
Figure A.6. New SDSU Lecture Theater*

Figure A.7. New SDSU Circuits Lab*
Figure A.8. New SDSU Building at ISU (Exterior)**
Figure A.9. New SDSU Building at ISU (Interiors)**
Figure A.9. New SDSU Building at ISU (Interiors)**—Continued
Figure A.10. Existing Civil Engineering Laboratory Used in SDSU Program*
Figure A.11. Classrooms Renovated with Non-MCC/SDSU International Partner Funding*
## Appendix B. Data Collection Summary and Timeline

**Table B.1. Topics, Sample, and Timeline for Stakeholder Engagement**

<table>
<thead>
<tr>
<th></th>
<th>Interviews with SDSU Georgia Leadership</th>
<th>Interviews with SDSU-U.S. Leadership</th>
<th>Interviews with SDSU-U.S. Faculty</th>
<th>Interviews with Partner University Leadership</th>
<th>Focus Groups with Georgian Faculty</th>
<th>Focus Groups with SDSU Students</th>
<th>Focus Group with High School Students</th>
<th>Interviews with Ministry of Education</th>
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<td>2 individuals</td>
<td>1–3 individuals</td>
<td>3–4 individuals</td>
<td>3 groups</td>
<td>3 groups</td>
<td>2 groups</td>
<td>10 groups</td>
<td>1 individual</td>
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<td><strong>Sample to date</strong></td>
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<td>4 individuals</td>
<td>3 groups</td>
<td>3 groups</td>
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<td>Shared understanding</td>
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<td>Capacity building</td>
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<td><strong>Q4: Sustainability</strong></td>
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<td>Popularization of STEM</td>
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<td>Skill match to employers</td>
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<td>Rate of return</td>
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<td>Interviews with MCA</td>
<td>Interviews with Others</td>
<td>Interviews with Employers</td>
<td>Tracer Surveys</td>
<td>Contact Surveys</td>
<td>Documentation and Literature Review</td>
<td>Walk-Throughs</td>
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<tr>
<td>Desired sample</td>
<td>1–5 individuals, as available</td>
<td>1–5 individuals, as available</td>
<td>1 international education center</td>
<td>15 individuals or groups</td>
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<td>2,800–5,400</td>
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<td>Sample to date</td>
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<td>8</td>
<td>1,669</td>
<td>0</td>
<td>Documents</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Selection of partners</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaboration</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared understanding</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q2: Activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Infrastructure</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity building</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outreach to students</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q3: Outputs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Student experience</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q4: Sustainability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Popularization of STEM</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Awareness of SDSU</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accredited programs</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q5: Impact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earnings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill match to employers</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q6: Economic return</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate of return</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Validity of assumptions</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix C. Survey Completion, Tracer Study Balance, and Power Estimates

Comparison Group Survey Completion, by University

Of the 1,669 completed surveys, 1,270 were from the student comparison group. Table C.1 presents the numbers and percentages of completed surveys by university in the comparison group. GTU and TSU have the largest overall enrollments in these fields, with ISU and the private universities enrolling fewer students. The distribution of the comparison group approximately follows these enrollment levels.

<table>
<thead>
<tr>
<th>University</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Georgia Technical University</td>
<td>503</td>
<td>39.6</td>
</tr>
<tr>
<td>Tbilisi State University</td>
<td>442</td>
<td>34.8</td>
</tr>
<tr>
<td>Ilia State University</td>
<td>138</td>
<td>10.9</td>
</tr>
<tr>
<td>Agricultural University of Georgia</td>
<td>117</td>
<td>9.2</td>
</tr>
<tr>
<td>Free University</td>
<td>47</td>
<td>3.70</td>
</tr>
<tr>
<td>Caucasus University</td>
<td>22</td>
<td>1.7</td>
</tr>
<tr>
<td>Black Sea University</td>
<td>1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Balance of the Treatment and Comparison Groups

Having similar treatment and comparison groups is important to the validity of the comparisons being made. As shown in Table C.2, the treatment and comparison groups have some differences in the demographic variables, which we will control for as explained shortly.

The treatment group includes a lower proportion of women and a higher proportion of students from families with higher maternal education. University entrance exam scores (measured for each program entering cohort) are also somewhat different. Because the test score distributions are necessarily different because of the selectivity of SDSU’s program, we will seek to balance the demographic characteristics listed using a propensity score model while controlling for test scores as a regression variable, as explained further in the next section.
Table C.2. Balance in Treatment and Comparison Group

<table>
<thead>
<tr>
<th>Variable</th>
<th>Treatment Percentage</th>
<th>Comparison Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>40.1</td>
<td>49.9</td>
</tr>
<tr>
<td><strong>Family income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afford to buy whatever we want</td>
<td>1.0</td>
<td>3.7</td>
</tr>
<tr>
<td>Enough to buy food, but need to save for car/house</td>
<td>27.6</td>
<td>34.8</td>
</tr>
<tr>
<td>Enough to buy food and daily clothes, but need to save for expensive clothes and appliances</td>
<td>57.5</td>
<td>42.0</td>
</tr>
<tr>
<td>Enough to buy food and daily clothes, but need to save for expensive clothes</td>
<td>11.4</td>
<td>14.8</td>
</tr>
<tr>
<td>Can hardly buy food</td>
<td>2.6</td>
<td>4.8</td>
</tr>
<tr>
<td><strong>Mother’s education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postsecondary degree or greater</td>
<td>84.2</td>
<td>64.9</td>
</tr>
<tr>
<td>Incomplete higher education</td>
<td>4.0</td>
<td>5.3</td>
</tr>
<tr>
<td>Vocational education and training</td>
<td>4.3</td>
<td>16.4</td>
</tr>
<tr>
<td>Upper secondary school (high school)</td>
<td>6.2</td>
<td>11.3</td>
</tr>
<tr>
<td>Less than upper secondary school</td>
<td>1.2</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>Entrance year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014 or earlier</td>
<td>0.0</td>
<td>2.7</td>
</tr>
<tr>
<td>2015</td>
<td>7.2</td>
<td>8.5</td>
</tr>
<tr>
<td>2016</td>
<td>13.9</td>
<td>21.0</td>
</tr>
<tr>
<td>2017</td>
<td>30.4</td>
<td>25.9</td>
</tr>
<tr>
<td>2018</td>
<td>48.5</td>
<td>41.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Treatment Mean</th>
<th>Comparison Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Range)</td>
<td>(Range)</td>
<td></td>
</tr>
<tr>
<td>Entrance exam score for program cohort</td>
<td>2085.2</td>
<td>1919.9</td>
</tr>
<tr>
<td></td>
<td>(2029.8 to 2149.4)</td>
<td>(1696.2 to 2211.9)</td>
</tr>
</tbody>
</table>

**SOURCE:** Student survey and Georgian national examination scores.

### Statistical Power Calculations for Endline Survey Outcome

As mentioned, survey data are being collected from a treatment group of current SDSU Georgia students and a comparison group of students from similar non–SDSU Georgia programs in partner universities and other universities in Tbilisi with average entrance test scores as similar as possible to the SDSU Georgia programs.
Table C.3 shows the estimated statistical power for the main outcome variable of post-
graduation wages, starting with the baseline sample of 399 in treatment and 1,270 in comparison
(with Type I error of 5 percent). We desire a statistical power of at least 80 percent, which
appears to be met by all of the scenarios we considered. We discuss the different scenarios and
the different assumptions that were considered in these calculations:

1. **Average monthly wages:** Gutbrod (2011) used a matched résumé study with local
employers to estimate that current domestic graduates in Georgia earn a median wage of
US$800 per month and that graduates of an American degree program that have
otherwise identical résumés earn 44 percent more than the median on average. We
estimate power based on a 25-, 33-, and 50-percent increase in wages. Gutbrod estimated
that the standard deviation of domestic graduate wages is $580 if all observations are
considered and $308 if the top and bottom 10 percent of outliers are removed. We used a
comparison group wage of $800 and a monthly standard deviation of $400 consistent
with these figures, which translates the 25-, 33-, and 50-percent increase in wages to an
effect size of 0.5, 0.66, and 1 standard deviation, respectively.

2. **Clustering of individuals within programs:** intraclass correlation coefficients (ICCs)
ranging between 0 and 0.1. Larger ICC values indicate more correlation across
individuals within programs and universities, making it harder to detect differences
across programs and therefore lowering power. We assumed an average of 50 students
per cluster. We do not know the extent to which covariates that will be included in the
models will be able to explain the between-cluster variance. An ICC of 0 corresponds to
the optimistic scenario where all between-cluster variance can be explained with the
covariates.

3. **Number of responses at baseline in year 1:** The number of completed surveys is 399
and 1,270 for the treatment and comparison students, respectively.

4. **Response rate at the final follow-up in year 5:** Other tracer studies have achieved
response rates of about 30 percent when following up multiple years after graduation
with no efforts to prepare or maintain contact with respondents for the survey. Because
we expect to maintain contact with respondents over time, we hope to achieve a better
response rate, especially in the treatment group, which is likely to remain engaged with
SDSU and the Project. We therefore simulate several assumptions of final follow-up rates
in year 5 of 30 percent, 45 percent, or 60 percent for the comparison group. The response
rate for the treatment group is assumed to always be 15 percent higher than that of the
comparison group (45 percent, 60 percent, and 75 percent).

5. **Differences in characteristics between the treatment and comparison groups:** We
will use a propensity score–weighting approach to account for the differences in the
characteristics of the treatment and comparison students with regard to demographics and
family income. As just noted, test scores are not likely to overlap sufficiently to make
them suitable for the propensity score matching, so they will be used as a regression
variable. An initial implementation of this propensity score approach on the baseline data
yielded a design effect of 1.2. For these power calculations, we assume a slightly
conservative design effect of 1.5 (i.e., the effective size of the analytic sample size in the
comparison group is assumed to be two-thirds of the total sample).
Power is improved considerably from the estimates provided in the *Evaluation Design Report* (Goldman et al., 2019), even with a smaller sample size, because of our decision to not use the entrance exam score variable to match treatment and comparison groups, which would greatly reduce the effective sample size. As just noted, test scores will be treated as a regression variable to control for the relationship between test scores and earnings. Using the test scores only as a regression variable poses a risk that the differences in characteristics between treatment and comparison students cannot be fully adjusted by a regression variable alone, possibly calling into question the wage comparison. In addition, as we stated in the *Evaluation Design Report* (Goldman et al., 2019), we are also prepared to use simpler Ordinary Least Squares regressions without propensity score matching as a supplement to the propensity score model, which offers even more power, although with a greater risk that the differences between the treatment and comparison groups raise questions about the validity of the outcome comparison.

**Table C.3. Power to Detect a Difference in Monthly Wages**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Power by Wage Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>ICC</td>
</tr>
<tr>
<td>Conservative</td>
<td>0.10</td>
</tr>
<tr>
<td>Moderate</td>
<td>0.10</td>
</tr>
<tr>
<td>Optimistic</td>
<td>0.10</td>
</tr>
<tr>
<td>Optimistic</td>
<td>0.05</td>
</tr>
</tbody>
</table>
Appendix D. Study Administrative Information

Human Subjects Protection

RAND’s institutional review board, the Human Subjects Protection Committee (HSPC), has oversight of the entire evaluation study. RAND HSPC has approved the procedures to collect and store data from all procedures in the evaluation. All evaluation activities are being conducted under the applicable Georgian law protecting human subjects.

Data are generally stored in a de-identified form with identifiers restricted to crosswalk files that are carefully controlled. Crosswalk files stored by ACT are stored on a server isolated from the internet and backed up and shared with RAND only through physical media. Other files not containing identifiers are stored on network-accessible computers and shared with RAND through a secure file transfer system.

Preparing Data Files for Access, Privacy, and Documentation

Data files and documentation for the surveys and high school focus groups will be prepared in a way that can be used by other researchers once the evaluation concludes. Procedures will respect the privacy of individual respondents. We do not expect that it will be feasible to release the other stakeholder interview notes without compromising individual privacy.

Dissemination

We plan to disseminate this interim report through briefings and discussions with select stakeholders in Georgia and MCC headquarters, as well as by publishing the report publicly. We will follow a similar process for the final evaluation report at the end of the evaluation.

Evaluation Team Roles and Responsibilities

RAND collaborates with the Education Strategy Center in Georgia to conduct this evaluation. ACT Global, a Georgian firm, has been appointed as the local data collection contractor by MCA and RAND.

Charles A. Goldman leads the team as program manager. Goldman, an economist, has 25 years of experience conducting mixed-methods evaluations of tertiary education programs around the world. He also oversees all quantitative aspects of the evaluation.

Goldman is assisted throughout the evaluation by Rita Karam as deputy program manager. Karam, an education policy researcher, has 16 years of experience conducting mixed-methods
Goldman and Karam manage a team of U.S.- and Georgia-based experts who will collaborate on all facets of the evaluation.  

Katya Migacheva, a social psychologist, supports the entire evaluation, focusing on interviewing, instrument development, and document review.  

Matthew Cefalu, a statistician, takes lead responsibility for sampling design and analysis for the tracer study.  

Thomas Goughnour, a cost analyst, participates in the analysis of economic costs and benefits.  

Troy Smith, an economist, and Louay Constant, an education policy researcher, are supporting the team with additional effort in developing and analyzing the tracer study, as well as with other aspects of the evaluation.  

In Georgia, working through the Education Strategy Center, Irakli Matkava, an expert on Georgian development, is the lead on managing and carrying out research activities in Georgia, including interacting with MCA, the Georgian government, and the universities; overseeing the work of the data collection contractor; and conducting interviews and site visits.  

Also in Georgia, working through the Education Strategy Center, Giorgi Meladze, an experienced manager of education institutions in the country, conducts background research and assists Matkava with activities in Georgia.  

ACT’s head of development projects, Sopho Chachanidze, manages the data collection activities for the survey and high school focus groups.
Appendix E. Additional Figures

Figures E.1 and E.2 reproduce Figures 6.5 and 6.6, with a few additional items.

**Figure E.1. Students Who Agree or Strongly Agree on Program Aspects, by Student Group**

NOTES: Authors’ calculations based on 338 SDSU students and 1,212 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group. * significant at \( p \leq .05; \) ** significant at \( p \leq .01. \)
Figure E.2. Students Who Are Satisfied or Very Satisfied with Resources and Courses, by Student Group

NOTES: Authors’ calculations based on 347 SDSU students and 1,227 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group. * significant at \( p \leq .05 \); ** significant at \( p \leq .01 \).
Figure E.3 reproduces Figure 6.8 with two additional items. A similar proportion of SDSU and comparison group students indicated that they plan to look for a full-time (about 60 percent) or part-time (about one-third) job after graduation.

Figure E.3. Student Plans After Completing Degree, by Student Group

NOTES: Authors’ calculations based on 333 SDSU students and 1,205 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group. * significant at $p \leq .05$. 

NOTES: Authors’ calculations based on 333 SDSU students and 1,205 comparison group students. These values are adjusted for differences in covariates between SDSU and the comparison group. * significant at $p \leq .05$. 

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Appendix F. Stakeholder Comments and Responses

Note: Page numbers refer to various earlier revisions of the document.

<table>
<thead>
<tr>
<th>Page Number</th>
<th>Comment</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>The paragraph on GoG additional funding to the program seems to conflate the allocation of reflow money from GRDF [Georgia Regional Development Fund] to the SDSU project with the separate, additional $11.2 million that GoG committed in spring 2018. It should be made clear that the $11.2 million commitment was in addition to GRDF reflows.</td>
<td>Revised to clarify</td>
</tr>
<tr>
<td>vii</td>
<td>The last paragraph mentions how SDSU relied on MCC and MCA with help with waivers, etc., of GoG policies. It might be helpful to provide some more info on that—for example, what kinds of policies required waivers? (I see it is mentioned in page 21.)</td>
<td>Revised to add some details</td>
</tr>
<tr>
<td>x</td>
<td>Just a comment: On the graph, one of the questions is about general ed courses outside the major. It is my understanding that most of the Georgian STEM programs do not require any general ed courses. If I remember correctly, there was some pushback from SDSU students about why they needed to take courses outside their field of study. So, it's odd to me that comparison students were more satisfied with their general ed courses than SDSU students</td>
<td>No response needed</td>
</tr>
<tr>
<td>xi</td>
<td>It states that SDSU is developing a two-degree program from post-compact, but didn’t students in the compact-funded program also receive two degrees—one from the Georgian partner university and one from SDSU?</td>
<td>We clarified this throughout</td>
</tr>
<tr>
<td>xiv and vii</td>
<td>Ilia State and Ilya State—please make sure there is conformity throughout the document.</td>
<td>We standardized the spelling</td>
</tr>
<tr>
<td>2</td>
<td>It states that data [were] collected in 2019–2020. If this was prior to the COVID-19 lockdown, it would be helpful for that to be noted (although I see it is noted later, on page 14).</td>
<td>We think it's enough that we make the point later</td>
</tr>
<tr>
<td>4</td>
<td>It states that the agreement with SDSU went through July 2019, but the agreement can’t go beyond the Compact effective dates.</td>
<td>Added note</td>
</tr>
<tr>
<td>20</td>
<td>Faculty selection. Please confirm how faculty members were selected for training. My recollection is that there were definite criteria for selection, and any professor could apply.</td>
<td>We added information</td>
</tr>
<tr>
<td>26</td>
<td>It states that Iranian students were blocked from enrolling—but I think MCC had to request a waiver from Congress to allow them to enroll.</td>
<td>Clarified the situation in the text</td>
</tr>
<tr>
<td>37</td>
<td>It states that ABET accreditation requires more science than regular Georgian engineering degrees. Perhaps it is also important to note the requirement for a capstone project, which inhibits the Georgian universities ability to graduate hundreds of engineers at a time.</td>
<td>Added point earlier in this section</td>
</tr>
<tr>
<td>Page Number</td>
<td>Comment</td>
<td>Response</td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>18, 38, and 53 (comments apply generally)</td>
<td>Reference is made on page 18 to the promotion of gender and social integration as an overarching objective of the compact. Gender and inclusion are inferred in the compact's program logic with an output being an inclusive and diverse student body. But there is not much if any disaggregation by sex of findings, especially with regard to the student body and student participants. This is a real loss in terms of not being able to analyze the intersection of gender and various issues such as affordability, access to scholarships and tuition support and its impact, percentage of international students, use of facilities, participation in STEM academies, impact of targeted recruitment, etc., by sex. Given the de facto gender segregation in STEM, being able to examine these issues by sex would be an important learning for the compact but also for the agency. Is there any way to increase the analysis by sex especially with regard to the students?</td>
<td>We analyzed the survey results by gender and added information throughout the chapter</td>
</tr>
<tr>
<td>ix</td>
<td>&quot;Many Georgians found the $7,500 tuition too expensive.&quot; Many people find many things expensive. Without knowing the population of the interviewees, this phrase is not terribly convincing. I assume you mean something akin to &quot;many Georgians among the target population of potential students found the $7,500 too expensive,&quot; no? For a program that presumably aims to be reasonably elite in its student body (due to higher quality and international partnership), the mere fact of being expensive doesn't seem problematic in the absence of context about the &quot;who&quot; finds it expensive.</td>
<td>Edited to reflect this point</td>
</tr>
<tr>
<td>x</td>
<td>Similar to a comment I made on the evaluation brief, Figures S.2 and S.3 seem to need some kind of immediate explanation of who this &quot;comparison group&quot; is. Of course, in the executive summary you don't want to unpack the process, but even a phrase in the footnotes of each chart with something like &quot;comparison of students at comparable Georgian STEM programs.&quot;</td>
<td>Since the comparison group is described on page viii, we recommend not adding notes to the figures</td>
</tr>
<tr>
<td>Summary</td>
<td>The preface and the ES [executive summary] both refer to granting &quot;U.S. bachelor's degree programs&quot; but then do not refer back to whether or not these programs offered U.S. bachelor's degree programs. Seems like this loop should be closed in the ES if it's presented right up front as a key objective.</td>
<td>Added &quot;U.S.&quot; in conclusion to make it clear</td>
</tr>
<tr>
<td>6</td>
<td>The piece of the logic named &quot;Improved incentives and support structure for world-class research&quot; is obviously a complex web of issues, but one of the issues discussed much in the development of the program was the difficulty in a program of this type to attract and retain sufficiently skilled researchers/teachers to enable a high-quality bachelor's degree program (never mind the difficulty to retain talent when there is not an ecosystem of masters students, PhD students, fellows, etc., to make for an engaging research ecosystem). I didn't find anything in the report about the ability of the programs to attract and retain sufficiently skilled faculty. However, it seems consistent with some of the findings regarding the student's disappointed expectations (reasonable or not) about their faculty. Is it possible for you to better unpack this question of attracting and retaining faculty? If this is not something explored in your data collection/interviews, would it be possible to explore this issue in greater detail in the final report?</td>
<td>We will explore this issue in the final report</td>
</tr>
<tr>
<td>5</td>
<td>Typo: &quot;the opportunity obtaining a SDSU degree&quot;</td>
<td>Fixed</td>
</tr>
<tr>
<td>Page Number</td>
<td>Comment</td>
<td>Response</td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
<td>----------</td>
</tr>
<tr>
<td>5</td>
<td>&quot;This group of students were targeted for three reasons[ . . . ]&quot; This phrase reads awkwardly to me. The phrasing gives me the sense that you're referring almost to recruitment, i.e., the program targeted the program at the students with the greatest potential for these three outcomes. However, what I think you are saying is that the expected outcomes for these beneficiaries (i.e., benefit streams?) are X, Y, and Z. Am I correct that this phrasing gives the wrong impression here?</td>
<td>Revised as suggested</td>
</tr>
<tr>
<td>9</td>
<td>&quot;lack strong empirical basis.&quot; I'm left wondering whether this means to say that there simply wasn't direct empirical evidence provided in the documents or that, upon your own independent assessment, it is not empirically justified to think that a program of this type would help reduce &quot;imports of human capital&quot; (e.g., use of foreign STEM professionals where Georgian supply of the same is low). I don't have an opinion, but for the report's sake, it seems important to clarify which of these two things you are aiming to say here.</td>
<td>Clarified as referring to the content of the project documents</td>
</tr>
<tr>
<td>7</td>
<td>CBA [cost-benefit analysis]. Might it be within the scope of this report to do an initial screening of the model's assumptions/parameters, highlighting which ones you are able to assess as of this report and which are still outstanding for the 2023 report? Might be helpful.</td>
<td>Although some information is presented in the report that relates to the CBA, most notably the low enrollment compared with assumptions, we think this topic should be left for the final report</td>
</tr>
<tr>
<td>viii</td>
<td>As discussed during the online presentation made by RAND on June 23, 2020, this statement leaves a bad and wrong impression that the selection process of the partner universities was politically biased and unjust. What is meant here is the fact that a newly elected government changed strategic vision of the project and gave preference to public universities over the private ones (the main reasons [cost implications, etc.] for that strategic change are well described on page 15). The only challenge that remains here is that capacity of the selected public universities varies and GTU has to enhance its capability further to ensure sustainability of the project. Having said that, the MF [Millennium Foundation] strongly urges to rephrase the statement and substitute &quot;political motivation&quot; with &quot;strategic vision.&quot;</td>
<td>Changed</td>
</tr>
<tr>
<td>14</td>
<td>Same here. Replace &quot;political motivation&quot; with &quot;strategic vision.&quot;</td>
<td>Changed</td>
</tr>
<tr>
<td>51</td>
<td>Same here. Replace &quot;motivated by political considerations&quot; with &quot;motivated by a strategic vision.&quot;</td>
<td>Changed</td>
</tr>
<tr>
<td>23</td>
<td>It is true one of the obstacles to the expected level of the enrollment was high tuition fee (US$7,500). However, it should also be taken into consideration that drastic depreciation of Gel [Georgian lari] played a crucial role to increase the cost burden for Georgian families.</td>
<td>Clarified on p. 24</td>
</tr>
<tr>
<td>39</td>
<td>Please insert descriptive list of comparison group students' characteristics as an appendix to the report.</td>
<td>Added</td>
</tr>
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<tr>
<td>7</td>
<td>SDSU had to rely heavily on MCC and MCA support to issue decrees and waivers regarding Government of Georgia policy—this statement is under [the] headline: Establishing, organizing, and supporting Partnerships was challenging. It is written as the SDSU’s dependence on MCA/MCC support was not right or correct, while [the] primary role of MCA was exactly to facilitate SDSU’s activities in Georgia, to help immediately related to the legislative changes, [and] to coordinate activities between SDSU and Ministry of Education. U.S. university’s policies, teaching methodology, and approaches . . . differs from original Georgian realities, thus MCA/MCC collaboration, in my understanding, was necessary and effective, and it should be quoted/acknowledged in different wording.</td>
<td>Revised</td>
</tr>
<tr>
<td>8</td>
<td>The program was maintained through support from MCC and MCA—here would be good to mention outstanding support of GoG, who allocated additional $11.2 million to support sustainability of the project.</td>
<td>Since this is covered in the main text, we don't think it's needed here.</td>
</tr>
<tr>
<td>9</td>
<td>STEM infrastructure and equipment was installed and developed significantly but not evenly across partner universities—it never was intended to spread support evenly across the 3 PUs [partner universities]. Focus on infra and educational interventions was base of the status of the programs, number of students attending the PU programs and many other complex factors.</td>
<td>Changed heading and added information to the text on p. 26.</td>
</tr>
<tr>
<td>12</td>
<td>Major field courses were taught largely by remote methods, which some students did not appreciate—Related to current Covid outbreak and consequences on educational environment, this statement is outdated as indicator for evaluation.</td>
<td>We think this assessment is appropriate for the time period when we conducted the evaluation.</td>
</tr>
<tr>
<td>16–19</td>
<td>Need 1 paragraph statement related to the comparison students and possible breakdown between state university students versus private university students. Mixing of these groups creates uncertainty and cannot acknowledge them as reference groups, due to different infra and educational environments in these universities.</td>
<td>Added to appendix and referenced in text</td>
</tr>
<tr>
<td>xi</td>
<td>SDSU program in its current form does not appear sustainable—please explain the meaning of this statement.</td>
<td>Added brief explanation here</td>
</tr>
<tr>
<td>xi</td>
<td>All partner universities, with support from SDSU, are moving toward obtaining international accreditation for their STEM programs—In the report, [it] would be good to reflect progress of each PU, especially TSU regarding their current standings.</td>
<td>This is covered in the main body.</td>
</tr>
<tr>
<td>21</td>
<td>Specifically at MCA’s request, the higher education law was amended, which allowed GoG to introduce specific decrees to grant SDSU preferences to operate and implement its activities in Georgia. The GoG decrees determined exceptional regulations of student’s admission and provisional admission to SDSU programs, exceptional regulations of funding SDSU students and implementation of the SDSU program, and inter alia granting SDSU and its programs’ preferential accreditation regime and VAT [value added tax]-free tuition services.</td>
<td>We incorporated these points into the text.</td>
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<td>37</td>
<td>SD-Georgia hired an outreach consultant (Center for International Education [CIE]) who worked closely with local resource centers and visited each and every school in their designated territory (close to 500 schools were visited in the regions). SDSU Georgia dean and the recruitment team traveled all over Georgia holding STEM academies (one-day STEM workshops). CIE provided English language support courses under the title (English Language Academy) to students from socially vulnerable families. The 12 categories established by the Government of Georgia (including IDP category) were used to identify and support the students from social support (SS) and socially vulnerable (SV) backgrounds. Students were asked to fill out application forms and financial statements identifying themselves with SS or SV status. In addition, all students were asked to fill out financial statement forms to be considered for potential financial support even if they did not have the designated stats (SS or SV) from the government. All applicants were invited to interviews. The SS and SV students were offered close to 100% tuition scholarship to allow them to study at SDSU Georgia (if they successfully complete the NAEC [National Assessment and Examinations Center] exams). A separate recruitment strategy was implemented to attract students from Armenian and Azeri ethnic backgrounds. A separate scholarship fund of $150,000 was secured from the U.S. Embassy in Tbilisi to provide full funding to students from ethnic minorities.</td>
<td>Added this information</td>
</tr>
<tr>
<td>38</td>
<td>This is not reflecting SDSU Georgia’s experience. SDSU sought out and signed numerous MOUs [memoranda of understanding] with many potential employers to regulate their involvement with SDS-Georgia for internships, employment, and their active involvement in SDSU's year-long Capstone Senior Projects course. SDSU also has many prominent members of the local industry on its advisory board. SDSU has been holding annual internship and job fairs since 2016, and it has been in constant touch with the employers. Since the beginning of 2019, with the first cohort graduation, SDSU established an employer relations manager (ERM) position. ERM is responsible for building relationships and creating awareness among companies and organizations about the SDSU Georgia programs and seek their active participation. ERM is the bridge between academia and the industry and connects students with top employers and opportunities in the STEM field. ERM's goals are to increase job opportunities, recruitment, and hiring activity for the university’s students and graduates and manage employment events and opportunities. ERM also seeks to inform employers about the benefits of hiring SDSU Georgia students and alumni.</td>
<td>We think this section captures the major methods that employers are involved. Some employers told us they wanted a greater level of involvement as we stated.</td>
</tr>
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<td>45</td>
<td>This statement fails to point out that the tuition in the public universities is 2,250 Georgian lari and SDSU Georgia’s is ten times more. The most expensive private university’s tuition is half of SDSU Georgia’s tuition (about 11,000 Georgian lari). Accordingly, students studying at SDSU Georgia need financial aid to receive an American education.</td>
<td>We added some context here.</td>
</tr>
<tr>
<td>57</td>
<td>Access to faculty: All faculty were required to hold regular office hours, and they were provided offices for that. In addition, a lot of faculty members held office hours in their respective partner university offices. Help desks were set up for specific subjects (maths, physics, chemistry, etc.). Faculty were accessible, however, not all students took advantage of the opportunities. It may have to do with a mismatch of the realities of delivering an American</td>
<td>The survey represents students’ perceptions and we think it is presented accurately. We did add several of these</td>
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<td>education in Georgia, where students’ time management and study skills did not quite match the expectations on both sides.</td>
<td>points to earlier chapters on pp. 20 and 31–32.</td>
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<td></td>
<td>Selection of courses and the theoretical and practical preparation for employment: SDSU’s curriculum, choice of courses, and balance of theoretical and practical courses are regulated by ABET requirements. SDSU Georgia students cannot deviate from the SDSU syllabus or courses. Students complained about general education courses and the delay in starting courses in their major, but this is the strict lower-division (pre-major) and upper-division (major) separation of SDSU’s STEM programs. SDSU’s impaction criteria in moving from “pre-major” to “major” had to be enforced in Georgia as well. These were the realities of providing American education and an American diploma in Georgia; these could not be tweaked.</td>
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<td>More interaction with the U.S. faculty: SDSU did its best to provide more interaction. Time difference and other challenges created some shortcomings, however, Georgian faculty trained at SDSU have been extremely effective and compensated for this. The Georgian faculty’s instruction is rated highly by their mentors at SDSU. SDSU department chairs and faculty who monitored and mentored Georgian faculty found that the majority of them to be highly competent and professional.</td>
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<td>High expectations [that] SDSU students, who are the top students in Georgia, had for the programs: We found out that some SDSU Georgia students were comparing the courses they were taking at SDSU in the first two years with the courses their peers were taking in comparable programs in partner universities (or even in private universities). This is inevitable! The philosophical and pedagogical approach to the STEM curricula at SDSU and those at the Georgian universities were diametrically opposite (this is changing after ABET accreditation of programs at partner universities). However, though SDSU Georgia students’ “complaints” cannot be described as a mismatch or “higher expectations” because although there were some complaints (particularly about general education courses and some courses in their major) at the beginning, later (after they understood the curricular philosophy and upon graduation), they were extremely complimentary of the quality and mix of courses they took. They expressed satisfaction and said [that] “SDSU education set them apart from their peers.”</td>
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<td>SDSU has extensive international experience, not just with Mexico and China, but also with other Pacific Rim countries and the Middle East—these were all major international projects. SDSU’s record in Georgia speaks for itself; the partnership established with the three Georgian public universities to complete ABET accreditation of two programs way ahead of the schedule is a testimony to this too. I believe this project would have failed if it was not for SDSU’s extreme competence to navigate the “Georgian context.”</td>
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<td>Do the authors mean policy here? The Compact and all of its projects have been fully apolitical and [the] reference to politics is not correct here.</td>
<td>Revised</td>
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<td>Would be good to identify year here or say prior to 2013.</td>
<td>Added this information</td>
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<td>MCA or GoG was not involved in setting parameters for SDSU to partner with any particular university. GoG required that partner universities be public, however, GoG, MCA, and MCC were not involved in indicating who the partner universities should be for SDSU in Georgia.</td>
<td>Removed this statement</td>
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<td>SDSU selected its partner universities in Georgia and had significant funding from MCC/MCA to carry out evaluation of capacity of its future partner institutions. Would be great to note it in the report.</td>
<td>Added</td>
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<td>Not general but higher education law more specifically law on higher education.</td>
<td>Changed</td>
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<td>There was no “previously promised infrastructure” and maybe this is a mistake or should state “promised by SDSU Georgia project”?</td>
<td>Revised</td>
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<td>This statement is not accurate as there are high number of socially vulnerable.</td>
<td>Revised</td>
</tr>
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<td></td>
<td>Would like to know more on this topic. What type of involvement would the employers like in the SDSU Georgia programs? We may be able to use it in our work with the employers.</td>
<td>We'll be pleased to discuss this with you further outside the report.</td>
</tr>
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<td></td>
<td>There are other donors who have provided scholarships for over 81 students, and we might want to note it here (i.e. Cartu Foundation).</td>
<td>We summarized the donor funding on p. 25.</td>
</tr>
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<td></td>
<td>We could note here that “simple practical engineers” are not educated at higher education level but in TVET [technical and vocational education and training].</td>
<td>Thanks. We left the statement as is.</td>
</tr>
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<td>This statement is misleading. It should be noted that there are no student loans in Georgia and thus culture of repayment for funds acquired for education is nonexistent.</td>
<td>Added context</td>
</tr>
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<td>This is misleading. MCA also invested into GTU infrastructure.</td>
<td>We think the statement is reasonable and does not exclude that GTU received some investments.</td>
</tr>
</tbody>
</table>
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GoG—See Government of Georgia.


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MCA—See Millennium Challenge Account - Georgia.

MCC—See Millennium Challenge Corporation.


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