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LAC REGIONAL WORKFORCE DEVELOPMENT PROGRAM



Guatemala Labor Market Assessment

NOVEMBER 2016

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The use of non-discriminatory language or that which constrains gender is taken into consideration in the LAC Regional Workforce Development Program, made possible by USAID. This document has deferred the use of terms associated with traditional masculinity, understanding the importance of using inclusive language for potential beneficiaries of this program.

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EXECUTIVE SUMMARY

The LAC Regional Workforce Development Program (RWDP) is strengthening the capacity of select two- and three-year tertiary technical education programs in Honduras, Guatemala, and Jamaica to provide market-relevant, quality training to disadvantaged youth for increased employment. RWDP works to build target institutions' capacity by (1) improving curriculum design and pedagogy, (2) providing professional development opportunities for faculty and staff, and (3) enhancing labor market bridging services to help students find gainful employment after graduating.

The Program has designed and conducted a baseline assessment to examine the labor markets, and in particular, market demand for skills, in each of the countries in which the Program is working. This evaluation of each country's labor market analyzes economic trends and patterns and identifies growth sectors. The study looks at the demand for technical education graduates, and the supply of qualified workers in selected growth sectors. It entails significant use of a value chain framework, a tool that is designed to be adopted by local stakeholders and identify and understand ongoing demand for the types of skills provided through technical education at the tertiary level. The goal is that this assessment will not only help technical training institutions in Guatemala revamp their offerings, but also, more generally, will help decision-makers understand what the demand for skills might look like in the future.

FHI 360's labor market assessments identify priority skill needs by working backwards from market demand. A traditional labor market assessment is based on detailed occupational mapping, but in Guatemala – as in many other developing countries – this approach is not viable due to data limitations. The process of gathering and analyzing data to properly select growth sectors, identifying and interviewing key informants in those sectors, and validating information with experts can take a significant amount of time, but is indispensable for conducting analysis based on sound quantitative and qualitative evidence.

First, we undertook desk research and quantitative analysis to answer questions about the overall economic context and employment trends and briefly reviewed relevant policies. We then conducted a rigorous sector selection based on quantitative and qualitative data, choosing five priority sectors as a starting point for the assessment (vegetables and legumes, textiles and apparel, processed food, non-alcoholic beverages, and tourism). In our case, the selected five sectors were not merely the top-ranked ones; rather, rankings ranged from 1 to 11. That the five selected sectors are among the top eight is well within the desired ranking range. We then focused our attention on mapping business owners in these sectors to prepare for a set of interviews conducted by FHI 360.

Next, we conducted primary research to analyze the priority value chains - those that have been identified as generating employment now and in the future – interviewing representatives of 29 organizations in the target geographical region. During this phase, we honed in on the skills demanded by employers that can be developed within the context of two- and three-year technical degree programs, as these are the focus of the project. We paired this analysis with research into existing technical training and education programs, and how well they are matched to the demands of employers.

What did we find? Though economic growth has been moderate in Guatemala since the global economic crisis of 2009, GDP growth is not keeping up with population growth, and economic gains have not been inclusive. This is in part because public investment in social services is low; for example, the government only spends 34 cents on each young person per day. This is a contentious issue in the country, as recent

investigations have alleged that officials – including the former President and Vice President - have diverted tax revenues for personal enrichment. As a result of meager investment, poverty has increased in the last 25 years, while the net elementary enrollment rate has fallen. Although official unemployment is minimal, the informal economy predominates and female labor force participation is low, particularly among indigenous and rural women.

Overall, the majority – 77% -- of the working-age population has a basic education or less, however, Guatemalan youth are becoming increasingly educated. According to FHI 360's calculations based on the 2013 ENCOVI survey, 19% of 15-29 year olds who are not in school have a secondary education – the target population for this Program -- and an additional 4% have at least some post-secondary education.

Guatemala continues to be stymied by serious issues of inequality, with decent work opportunities beyond the reach of many, but particularly for rural, indigenous, and female youth. Investments in education that both align with the current needs of employers and anticipate future demand can help both businesses and individuals to meet their full potential.

In mapping priority value chains in our selected sectors, we aimed to learn how they are structured, what opportunities exist within them, and the existing and potential responses of the education system to these opportunities. By pairing our value chain maps with workforce overlays showing specific positions, alongside “sister” or parallel diagrams of existing and potential education offerings, we found that there are a number of occupations and potential occupations in Guatemala identified either by actors or by the assessment teams for which there are currently no technical training programs at the university level.

- In the vegetables and legumes sector, this includes food processing technicians to regulate production practices; logistics and transportation technicians to ensure the safety and quality of goods being delivered to market; and marketing and sales specialists to create opportunities in new and existing markets.
- In the textiles and apparel sector, this includes designers familiar with international trends and marketing specialists to sell innovative designs; and machine maintenance technicians to support “speed to market” production.
- In the processed food and non-alcoholic beverages sectors, this includes technicians who can carry out continuous product research relevant to local businesses; as well as logistics and transportation technicians whose knowledge of local markets and geography can help businesses take advantage of new opportunities.
- In tourism, this includes marketing and sales managers with knowledge of web design, graphic design, and publications for local and international marketing.

Economic growth can help the poor either through the creation of decent jobs and income-generating opportunities or through the social services expenditures that are dependent on government revenues. Today, however, neither is occurring in Guatemala to the extent necessary to reverse recent increases in poverty. Educational enrollment at the primary level has decreased, and nationally, only 23% of the out-of-school youth population has completed upper secondary school, though this is an improvement over past generations.

This analysis identifies specific sectors of potential economic growth. The sector selection undertaken for this assessment is a rigorous and iterative -- rather than static -- exercise: as the economy grows and

changes, and new information becomes available, the analysis will need to be updated. Furthermore, the assessment is far from exhaustive, as there are very promising sectors beyond the ones analyzed here.

Our goal is to understand the specific functional and skills needs of businesses in these sectors in the Western Highlands. Across all value chains, the need for logistics and transport technicians was noted; logistics is both a constraint and a major potential opportunity as Guatemalan businesses currently must operate within the context of a limited and deteriorating road infrastructure. Especially in legumes and vegetables and food and beverage production, there is a need for researchers, people who understand what's happening in the global and Guatemalan markets vis-à-vis these products (how tastes are changing) etc., and who have the technical capability to reformulate, repackage, or remarket products to better appeal to consumers.

Furthermore, the assessment will help technical training institutions and local stakeholders become familiar with value chain maps and learn how to develop and analyze them, and in so doing build local capacity for analysis and action that will reach far beyond the findings of this document. This ability will allow local stakeholders to detect and evaluate how economic opportunities and relationships between market actors will drive skills needs -- not only today but also in the future. In order for educational institutions to better address the needs of these businesses, they must first talk to them. Currently, the connections between academia and the private sector in the target region are few and weak. This assessment can provide a common understanding upon which all parties may begin and maintain a conversation about how the technical education system can better respond and adapt to the needs of employers.

ACRONYMS

AGEXPORT	Guatemalan Association of Exporters / Asociación Guatemalteca de Exportadores
ANACAFE	National Coffee Association / Asociación Nacional del Café
ASCONFEG	Union of Knitwear, Textile Guild, and the Tailoring Association of Guatemala
ASIES	Research and Social Studies Association
BANGUAT	Bank of Guatemala / Banco de Guatemala
CACIF	Coordinating Committee of Agricultural, Commercial, Industrial and Financial Associations / Comité Coordinador de Asociaciones Agrícolas, Comerciales, Industriales y Financieras
CAMTUR	Guatemalan Chamber of Tourism
CELADE	Latin American Center of Demographics
CEPAL	Economic Commission for Latin America / Comisión Económica para América Latina
CIU	International Classification for Industrial Standards / Clasificación Internacional Industrial Uniforme
COFETARN	Economic, Tourism, Environment and Natural Resource Development Commission
ENCOVI	National Survey of Living Conditions / Encuesta Nacional de Condiciones de Vida
ENEI	National Survey of Employment and Income / Encuesta Nacional de Empleo e Ingresos
ENJU	National Youth Survey / Encuesta Nacional de la Juventud
ENS	National Health Survey / Encuesta Nacional de Salud
FHI 360	Family Health International 360
FUNDESA	Development Foundation of Guatemala / Fundación para el Desarrollo de Guatemala
GDP	Gross Domestic Product
IADB	Inter-American Development Bank

ICEFI	Central American Institute for Fiscal Studies / Instituto Centroamericano de Estudios Fiscales
IGSS	Guatemalan Social Security Institute / Instituto Guatemalteco de Seguridad Social
IMF	International Monetary Fund
IOM	International Organization for Migration
INAB	National Forestry Institute / Instituto Nacional de Bosques
INE	National Statistical Institute of Guatemala / Instituto Nacional de Estadística
INGUAT	Guatemalan Tourism Institute
INJUD	National Youth Institute of Guatemala / Instituto Nacional de la Juventud
INTECAP	Technical Institute for Training and Productivity / Instituto Técnico de Capacitación y Productividad
MAGA	Ministry of Agriculture, Livestock and Food / Ministerio de Agricultura, Ganadería y Alimentación
MARN	Ministry of Environment and Natural Resources / Ministerio de Ambiente y de Recursos Naturales
MDG	Millennium Development Goals
MINECO	Ministry of Economy / Ministerio de Economía
MINEDUC	Ministry of Education / Ministerio de Educación
MINITRAB	Ministry of Labor / Ministerio de Trabajo
MSMEs	Micro, small and medium enterprises
OECD	Organization for Economic Cooperation and Development
PRONACOM	National Competitiveness Program / Programa Nacional de Competitividad
SAFT	Selected Tertiary Academic Training Venues / Sedes académicas de Formación Terciaria seleccionados

SEGEPLAN	General Secretariat of Planning and Programming of the Presidency
TNE	Net Enrollment Rate / Tasa neta de escolaridad
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
USAC	Universidad de San Carlos de Guatemala
USAID	United States Agency for International Development
VESTEX	Industry Association of Apparel and Textiles
WB	World Bank
WDI	World Development Indicators (World Bank)
WEF	World Economic Forum
WGI	World Governance Indicators

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The document draws upon FHI 360's knowledge gained through carrying out labor market assessments in Latin America, Africa, the Middle East, and Asia.

OBJECTIVES OF THE PROGRAM

The LAC Regional Workforce Development Program (RWDP) is strengthening the capacity of select two- and three-year tertiary technical education programs in Honduras, Guatemala, and Jamaica, providing market-relevant, quality training to disadvantaged youth for increased employment. The Program is funded by the United States Agency for International Development (USAID) Bureau of Latin America and the Caribbean (LAC) and the Office of Regional Sustainable Development (RSD). With a regional post in Honduras and country offices in Honduras, Guatemala, and Jamaica, FHI 360 engages stakeholders from education and the private sector in each country to strengthen market relevant technical training programs based on each country's workforce needs. RWDP works to build target institutions' capacity by (1) improving curriculum design and pedagogy, (2) providing professional development opportunities for faculty and staff, and (3) enhancing labor market bridging services to help students find gainful employment after graduating.

Additionally, RWDP improves access for disadvantaged students to selected technical education programs by (1) strengthening institutions' recruiting and admissions practices and (2) providing local and US-based scholarships for disadvantaged students with strong leadership potential to attend the technical programs being strengthened. To carry out this work, RWDP provides grants to local organizations to support disadvantaged youth in attending technical programs and engages local, regional, and U.S.-based academic institutions to partner with local technical institutions to strengthen degree programs, student services, and scholarship programs. Through RWDP, FHI 360 is leveraging its presence in Honduras, Guatemala, and Jamaica to promote the exchange of best practices and lessons learned in tertiary technical education and workforce development between the three countries, with positive implications for the greater LAC region and beyond.

RWDP is being implemented by FHI 360, an international nonprofit human development organization dedicated to permanently improving living conditions by promoting comprehensive solutions and local efforts. The organization employs professionals in health, education, labor, nutrition, environment, economic development, civil society, gender, youth, research and technology, creating a mix of capabilities to meet today's development challenges. FHI 360 serves populations in more than 70 countries and throughout the United States.

PURPOSE OF THIS LABOR MARKET ASSESSMENT

The Program has begun with an assessment to identify key stakeholders and program participants. By design, many of the individuals taking part in assessment activities will be part of future program activities, either as counterparts, stakeholders, or beneficiaries. The assessment process provides a way of understanding how these individuals might be engaged constructively to ensure relevance, local ownership, and sustainability of program activities. Secondly, the Program has designed and conducted a baseline assessment to examine a major element of the system: the labor markets, and in particular, market demand for skills, in each of the countries in which the Program is working. This evaluation of each country's labor markets identifies economic trends and patterns, growth sectors, demand for technical education graduates, and supply of qualified workers, allowing stakeholders to understand the economic context and employment potential in Guatemala. It entails significant use of a value chain framework, a tool that is designed to be adopted by local stakeholders and identify and understand ongoing demand for the types of skills provided through technical education at the tertiary level. This assessment will help technical training institutions in Guatemala identify and respond to employer demand for skills, and will allow decision-makers understand what skills demand might look like in the future.

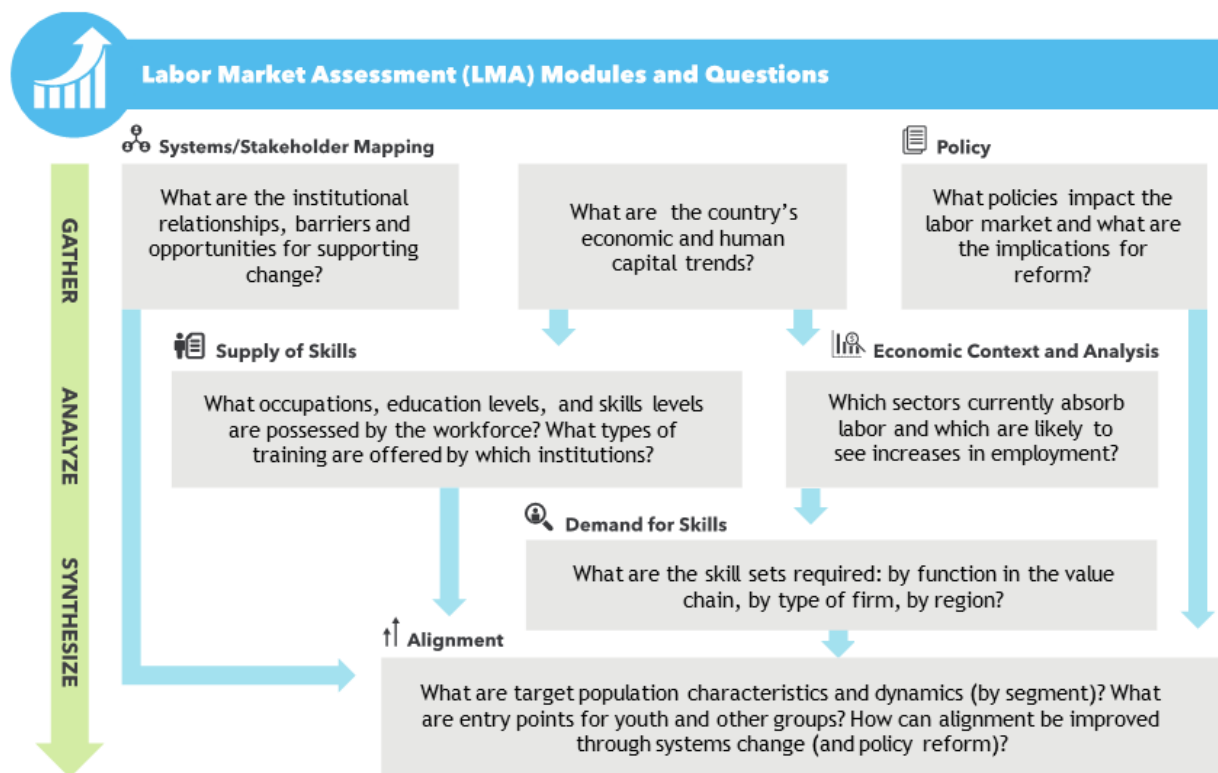
METHODOLOGY

FHI 360's labor market assessments identify priority skill needs by working backwards from market demand. A traditional labor market assessment is based on detailed occupational mapping, but in Guatemala – as in many other developing countries – this approach is not viable due to data limitations. Specifically, in Guatemala it is difficult to access updated and complete data on employment by detailed sector, occupation, and geography. Therefore, to understand the demand for skills, we follow a rigorous methodology. We begin by a) researching the general socio-economic, demographic and education context; then b) look at the market demand for products and services and consider how these may affect demand for skills; c) select growth sectors likely to generate jobs in the near future, d) map the primary and secondary stakeholders who will be key in supporting change in the system, and e) interview employers and experts to understand how industry structure and value chain relationships within these sectors influence skills demand, as well as the type of employment opportunities. The process of gathering and analyzing data to properly select growth sectors, and then identifying and interviewing key informants in those sectors can take a significant amount of time (particularly in a data-poor environment like Guatemala), but is indispensable for a conducting an analysis based on sound quantitative and qualitative evidence.

FHI 360's labor market assessment framework is modular and can be customized to different areas of focus and degrees of depth depending on client needs, context, and the challenges to be addressed (see Figure 1 below). For each module, there is an overarching question and a set of associated tools that can help arrive at the answer. Tools are drawn from a range of fields including economics, education, psychology, and business; they include frameworks, approaches, and data sources as diverse as value chains, social network analysis, product space, and the global trade share matrix. In addition, there are questions for use in structured interviews and guidelines for focus groups with the full range of actors in a labor market system. The conclusions derived from the analysis are depicted using infographics accompanied by a simple narrative to help make the findings actionable for decision-makers. We believe that our approach provides a better understanding of the ultimate goal of most labor market assessments: the nature of employer demand for skills. Our tools and approaches help to combine quantitative and qualitative information in such a way that we can recognize the prevailing “patterns” of labor market behavior, their drivers, and therefore their expected future direction.

The figure below illustrates our comprehensive framework for examining all aspects of a labor market system.

FIGURE 1. FHI 360’s Labor Market Assessment Framework



Source: FHI 360, Workforce Connections

This approach seeks to establish a bridge between the demand for skills (knowledge, attitudes and skills) by employers, the general labor market, and educational institutions, with the goal of aligning degree programs and training opportunities with labor market demand. By the end of the Program, the goal is to achieve better links between public sector institutions, higher technical education institutions and private sector entrepreneurs, so that together they can create pathways to better employment, and help the Guatemalan economy fulfil its growth potential.

TABLE 1. Guatemala: Labor Market Assessment Tool Matrix¹ (Schematic Conceptualization of Important Questions, Tools, and Answers)

Area of Inquiry	Question	Data Source	Principal Tools ²
1. SYSTEMS What are the institutional relationships, barriers, and opportunities for supporting change (current and ideal)?	Who are the actors and intermediaries in the system? How do they interact with each other?	<i>In-Country Interviews:</i> (typical stakeholders include government ministries in education, labor, etc., education institutions, private sector employers and associations, and intermediaries such as employment matching firms, youth/advocacy groups) <i>Secondary Sources:</i> (World Bank, ILO, etc.)	Stakeholder map identifies institutions and actors in the system and traces the dynamic flows of decision-making, resources, and information between them, as visualized in a series of maps.
2. ECONOMIC CONTEXT What is the economic, human resource, and policy landscape	What are the key economic, human resource, and policy indicators?	Data analysis: World Bank Indicators; UNESCO Institute of Statistics; UN National Accounts; National Statistics agencies, etc.	Data dashboard prepared before the evaluation stage previews data and information such as economic growth, investment, potential for diversification, human development (demographic data), levels of education, employment by sector, current offering and future demand of skills, etc.
	Where is employment and where is it growing/shrinking?	Data Analysis: National statistic agencies; UNIDO; ILO Interviews with employers and economic analysts	Sector selection methodology presents sectors with evidence of growth, trade matrix to see where and in what country a sector is gaining or losing a portion of the market
3. SUPPLY OF SKILLS What are the skills being provided and by what institutions; how can skills be classified and measured; what skills exist (or should exist) in the system?	What are the levels and trends in educational attainment of the population?	Education enrollment statistics (typically from the Ministry of Education)	Stock and flows diagram reveals a dynamic picture of skills supply in a workforce, as represented by formal education levels. Can be constructed for a subset of the labor force and further disaggregated by gender or age group.

¹ FHI360. *Market Analysis Tool Matrix*. Workforce Connections Project FHI 360, USAID. Washington, D.C.

² FHI360. *Market Analysis Tool Matrix*. Workforce Connections Project FHI 360, USAID. Washington, D.C.

Area of Inquiry	Question	Data Source	Principal Tools ²
4. DEMAND FOR SKILLS Which sectors are likely to see increases in employment and what are the skill sets required? What is a framework for linking sector growth and skills demand?	What sectors have high employment growth potential?	Data analysis: = Observatory of Economic Complexity (Harvard and MIT)	Trade-share matrix ³ allows the reader to understand the value and strength of different segments of a country's export market, relative to global past performance and global growth in demand of those segments. Product Space analysis ⁴ , reflects export trends based on competitiveness and economic complexity. ⁵
	What occupations, processes, skills, requirements, and certifications are associated with specific value chains? What skills are in demand?	In-country focus groups and interviews with value chain actors	Value chain analysis Shows how a product flows through different market channels at the country level; identifies constraints and opportunities for improving different channels' performance at different levels of the chain; and identifies employment and entrepreneurship entry points for youth by education/skill level.
5. PUBLIC POLICY What policies impact the labor market and what are the implications of reform?	What are the policy areas that impact employment; how do different legal traditions impact employment outcomes?	Interviews with employers and government Secondary sources (World Bank; ILO; national reports; journal articles etc.)	Presents an overview of the policy areas that impact the labor market and provides an interview guide with specific questions to be asked during both desk research and of stakeholders during field research.

³ International Trade Center. Trade Map: List of Exported Services for the Selected Service. Switzerland. Accessed June 29, 2016. [http://www.trademap.org/\(X\(1\)S\(zaiwhoynkidcy155hnsnvf55\)\)/Service_SelService_TS.aspx](http://www.trademap.org/(X(1)S(zaiwhoynkidcy155hnsnvf55))/Service_SelService_TS.aspx).

⁴ Hausmann, Ricardo, Hidalgo, Cesar, et al., "Atlas of Economic Complexity: Mapping Paths to Prosperity." Harvard University Center for International Development and MIT Macro Connections Media Lab. Massachusetts. 2011. Accessed July 1, 2016. http://atlas.cid.harvard.edu/explore/tree_map/export/gtm/all/show/2014/.

⁵ Hausmann, Ricardo, Hidalgo, Cesar, et al., "Atlas of Economic Complexity: Mapping Paths to Prosperity."

Area of Inquiry	Question	Data Source	Principal Tools ²
6. ALIGNMENT (Aligning education programs with skills demand)	What are the needs of curriculum in order to develop necessary technical skills and soft skills in the identified subsectors?	Facilitated discussions between sector employers, education institutions, etc.	A structured process allowing educational institutions to use the findings of the analysis to develop offerings that respond to local labor market needs.

Source: FHI 360, *Workforce Connections*

In the first phase (depicted at the top of the framework in Figure 1) we undertook a period of desk research. The review of secondary literature included a series of related documents that helped in orienting our research and sector selection (see list of references). Next, an in-depth review, analysis, and discussion of quantitative information served to answer questions about the overall economic context, human capital employment trends, and characteristics of the target population in Guatemala. We then conducted a preliminary sector selection according to a rigorous three-step process, selecting five sectors (legumes and vegetables; clothing and textiles; chocolates, candies, baked goods and other processed foods; non-alcoholic beverages; and tourism). Finally, we focused our attention on mapping stakeholders to prepare for a set of interviews conducted by FHI 360.

In the second phase, we conducted primary research to analyze priority value chains - those that have been identified as generating employment now and in the future – by interviewing businesses in the Western Highlands, where the Program will focus.⁶ During this phase, we honed in on the functional roles mentioned by employers for which skills can be developed within the context of two- and three-year technical degree programs, as these are the focus of the Program. We paired this analysis with research into existing technical training and education programs, and how well they are matched to the demands of employers. To present the findings, for each of the selected sectors we developed a value chain map with workforce overlay, a “sister” or parallel diagram that aligns positions with existing and potential degree programs, and corresponding analysis. The results of this stage of analysis demonstrated opportunities for strengthening technical programs across selected sectors. The interview guide and survey appear in Annex A.

The third phase will serve as the “alignment” process, allowing educational institutions to use the findings of this assessment to develop offerings that respond to local labor market needs. The universities and technical training institutions, are some of the key stakeholders that will benefit from the findings: the goal is for discussions between employers and educators to build on the findings of this labor market assessment, using tools including value chain mapping to identify and develop curricula for existing and new two- and three-year technical degrees.

⁶ Although much of this assessment focuses on the Western Highlands, the socioeconomic analysis is based largely on national data; furthermore, the methodologies presented here can easily be adapted to investigate the national context or another region, and so this analysis does not necessarily preclude a focus on other populations.

LIMITATIONS OF THE ASSESSMENT

It should be noted that this assessment is not meant to be a comprehensive labor market analysis that focuses on presenting a series of historical and current labor market indicators. Although indicators such as employment by detailed sector would bolster the analysis, as noted above, data on employment are limited in Guatemala. Therefore, without precise numbers, this assessment relies on published estimates and those provided by experts regarding employment in each of the sectors studied here. Furthermore, though data used in the trade-share matrix is the most recent reliable data available, it does not reflect changes in the composition and value of exports since 2014, which may be significant in particular sectors which have been impacted in recent years by internal and/or external factors.

SOCIOECONOMIC CONTEXT

Guatemala is a land of diversity. It is multicultural and multiethnic, home to the Maya, Xinca, Garifuna y Ladina peoples; and multilingual, with 25 different languages spoken in the country. The total population is 15.6 million, of which indigenous people represent about 38.8%.⁷ Guatemala's 22 departments are divided in 340 municipalities.

The agriculture sector absorbs the greatest portion of the labor force (31.9%), followed by trade with 26.8%; and manufacturing industries with 14.8%.⁸ The economic growth figures from the Bank of Guatemala range from around 3% to 4% (Figure 4) without reaching the country's potential economic growth of 7% considered in the Peace Accords, due to low labor productivity.

Guatemala continues to face challenges stemming from an unfinished peace agenda. Additionally, the rise of globalization; international competition; the lack of basic social services in rural areas such as decent health care and education; limited employment opportunities particularly in the formal sector; internal and international migration patterns; the fight for control of natural resources; climate change and resulting natural disaster all affect the possibility of achieving more inclusive social development for both rural and urban populations.

PRINCIPAL DEMOGRAPHIC TRENDS

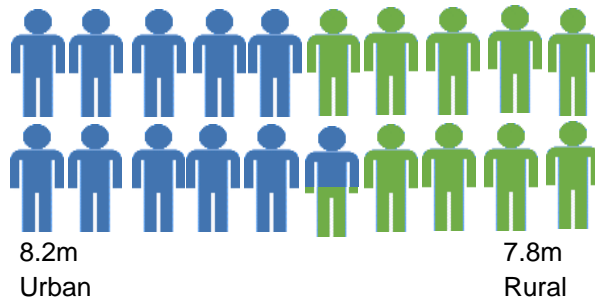
More than half of Guatemala's population is under 25 years old, with those under 15 representing just over a third of the population. 51% of the population is female. While the urban population has increased, 49% of Guatemala's population live in rural areas (Figure 2).

⁷ Guatemala National Institute of Statistics. *National Survey of Living Conditions (2-2014)*. <https://www.ine.gob.gt/index.php/encuestas-de-hogares-y-personas/condiciones-de-vida>

⁸ Guatemala National Institute of Statistics. *National Survey of Living Conditions (2-2014)*.

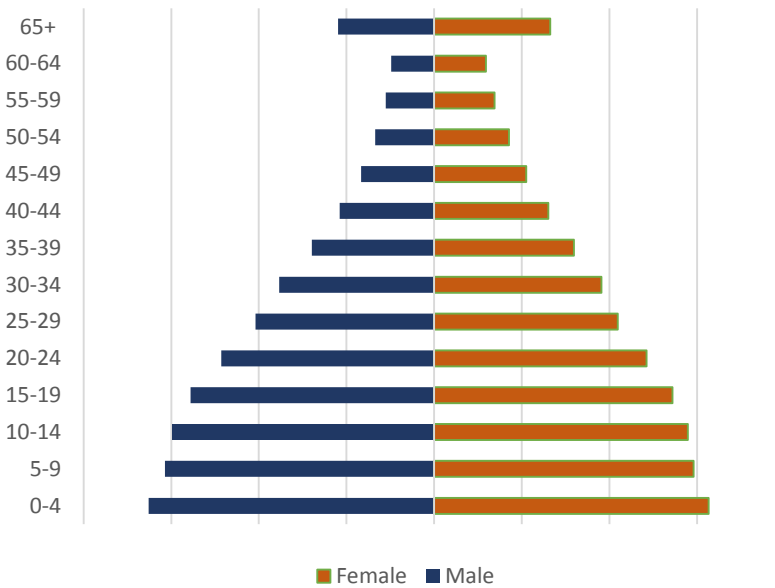
An important source of information is the national census, but because the last census was carried out 13 years ago, it is difficult to fully capture some of the more recent demographic changes in Guatemala. However, with an annual growth rate of 2.4% from 1980-2015, the population is expected to reach 18 million by 2020.⁹

FIGURE 2. Population Structure: Urban and Rural



Source: WDI 2014

FIGURE 3. Population Pyramid 2016



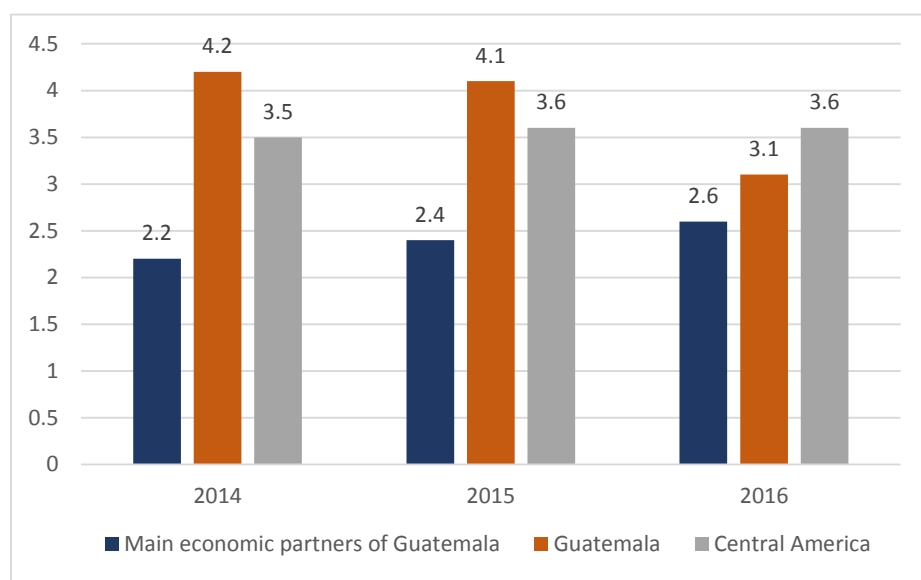
Source: UNDP 2015

9 Secretary of Planning and Development. "Indicators: Demographics." Guatemala City. Accessed June 2016. http://www.segeplan.gob.gt/2.0/index.php?option=com_remository&Itemid=274

MACROECONOMIC CONTEXT

Since 2013, the GDP growth rate has stayed between around 3%-4% - relatively healthy - and the World Bank forecasts it will stabilize at around 3.5% through 2018.¹⁰ However, GDP per capita growth has not topped 2.1% since 2007.¹¹ Currently, economic growth in Guatemala does not contribute appreciably to poverty reduction and is less significant considering the impact of remittances; the World Bank has indicated that real economic growth accounts for just a third of poverty reduction,¹² with very little contribution to improvements in the living conditions of the population. The challenge is to achieve sustained and inclusive economic growth.

FIGURE 4. Real Economic Growth



Source: Banguat, 2016

Most development plans and initiatives in Guatemala ultimately attempt to confront the same issue – addressing entrenched poverty by broadening social inclusion and supporting more and better income-generating opportunities for women and rural and indigenous populations. In preparing this assessment, the team has reviewed a series of relevant documents, including the National Development Plan “*K’atun Our Guatemala 2032, Wealth for everyone*” which has defined as a national priority the establishment of conditions that stimulate current and potential productive economic. The national development plan, however, does not select sectors for investment.

¹⁰ World Bank. *Global Economic Prospects: Divergences and Risks*. Washington, D.C. June 2016. <http://www.worldbank.org/en/publication/global-economic-prospects#data>.

¹¹ World Bank. “World Bank Indicators: GDP per capita growth (annual %).” Washington, D.C. 2016. <http://data.worldbank.org/indicator/NY.GDP.PCAP.KD.ZG?end=2015&locations=GT&start=2006>.

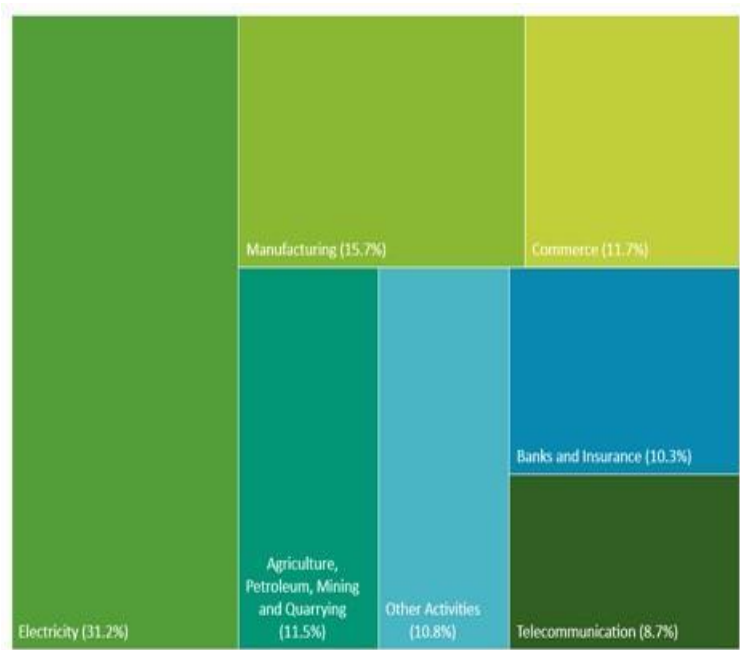
¹² World Bank, 2008

The "Guatemalans Improve Guatemala" initiative proposed by FUNDESA and CACIF has engaged private and public sector actors to tackle the challenges of social inclusion in the country. A study produced by the initiative in 2011 included an extensive economic and sector analysis, upon which this assessment draws.

Additionally, AGEXPORT (the Guatemalan Association of Exporters) is working to help rural entrepreneurs gain access to employment and income through access to markets through its “Encadenamientos Empresariales” project. Leadership at AGEXPORT has expressed interest in working to develop a grassroots-driven agenda for integrated rural development, supported by strong demand-based technical linkages with local universities.

In Central America, in contrast to other regions in Latin America, economic dynamics as measured by some short term indicators remain positive; namely, increased household consumption, given the increase in real income and family remittances , while investment continues to grow moderately.¹³ However, in the case of Guatemala, gross fixed capital formation (formerly gross domestic investment) in constant values as compared to the GDP, has progressively decreased in recent years, from 20.8% in 2004 to 13.4% in 2015.¹⁴

FIGURE 5. Foreign Direct Investment, 2015



¹³ Bank of Guatemala. FDI Flow Chart by Economic Activity and Country of Origin. 2014. http://www.banguat.gob.gt/inc/ver.asp?id=/Publica/v_man_bpagos/flujo_IED_2014.htm&e=115682

¹⁴ World Bank. Gross capital formation (% of GDP). Data based on national accounts from WB and OECD, 2016, accessed on August 18, 2016.. <http://datos.bancomundial.org/indicador/NE.GDI.TO.TL.ZS?locations=GT&view=chart>.

Source: *Banguat, 2015.*

This decrease has been more evident in the case of public investment, mainly in construction, where just 1.5% of GDP was spent in 2014, compared to 3.9% of GDP in 2001.¹⁵ This limits the level of productivity in the country given low investment in the deteriorating road network and in productive infrastructure, which are key factors for future economic growth and social and economic development.

According to statistics from the Bank of Guatemala, the beneficiary sectors of foreign direct investment (FDI) are light manufacturing, electricity, trade, mining, agriculture and telecommunications. During the period 2010-2015, the highest growth in investment was observed in the manufacturing sector (78%), electricity (65%) and trade (43%). The largest growth in the year 2015 was in the electricity sector, totaling \$377 million USD, while investment in manufacturing totaled \$189.3 million, investment in trade was \$141.9 million and investment in agriculture reached \$130.5 million USD.

PUBLIC POLICY: HOW DOES POLICY IMPACT OPPORTUNITY?

Although today 2 in 3 Guatemalans are under the age of 30, the Guatemalan government's annual investment in the development of young people is just \$124 USD per person (34 cents a day). Moreover, the structure and composition of investment is inadequate. Public spending on youth as a percent of the national public budget was 8.1% between 2006-2011 and just 2.1% for the same period in relation to GDP.¹⁶ Actual investment is not keeping up with the amount required in order to reduce poverty and inequity, and over the past 10 years, investment in education has not exceeded 3% of GDP (Figure 6).

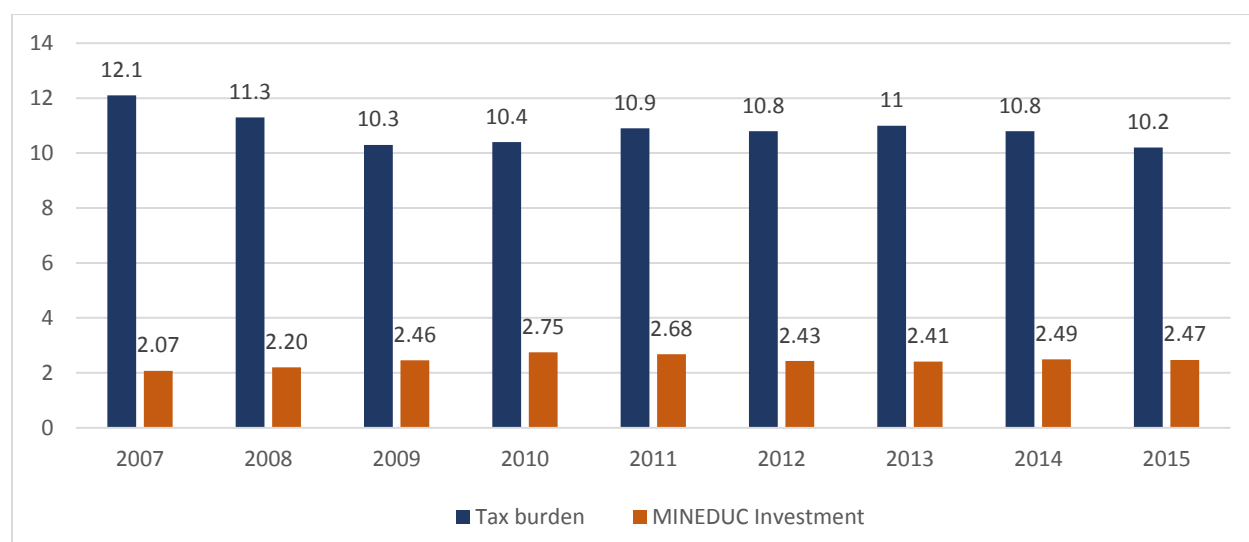
There is a direct correlation between the ability to invest by the state, institutional weakness and the level of tax revenue. Tax collection in Guatemala is hampered by corruption and a large informal sector. In 2015, tax revenue reached just 10.2% of GDP, the lowest proportion since 1997. That same year, the president and vice president, along with the head of the tax agency and others, were arrested and jailed for a massive corruption scheme that involved pocketing import taxes. The scandal has generated public outrage regarding corruption and low levels of public spending, as decreased spending has actually resulted in a reduction in the size of the state compared to twenty years ago. The deterioration in state social policy has severely constrained efforts to combat hunger, poverty and inequality.¹⁷

¹⁵ United Nations Development Program. *Guatemala: Millennium Development Goals Final Report, 2015.* Accessed: July 19, 2016. <http://www.gt.undp.org/content/guatemala/es/home/presscenter/articles/2016/01/11/informe-final-de-cumplimiento-de-los-objetivos-de-desarrollo-del-milenio.html>.

¹⁶ Central American Institute for Financial Studies. "Public Investment in Youth." Enrique, Maldonado. Guatemala. Accessed September 2, 2016. <http://icefi.org/publicaciones/principales-retos-del-presupuesto-publico-2016-elementos-para-la-discusion-ciudadana>.

¹⁷ Central American Institute for Financial Studies. "Public Investment in Youth." Enrique, Maldonado.

FIGURE 6. Guatemala's tax burden remains static with limited social investment in public education



Source: FHI 360 using data from 2007-2015 National Budgets. Global tables, Ministry of Finance.

In 2016, total direct public investment in children and youth is estimated to reach 16.9 billion quetzales (US \$2.2 billion) or just 3.23% of GDP. Although the rates are relatively higher than those in 2015, the possibility of reaching this figure is considered difficult given current fiscal policy.¹⁸ Guatemala is Central America's largest economy, yet has the lowest levels of public investment in children and adolescents in the region. This is one of the causes of unaccompanied migration to the US and early entry into the labor market.

Relative to neighbors in Costa Rica, El Salvador, and Panama, there is a negative perception by enterprises, citizens, and experts regarding the ability of the Guatemalan government to develop and implement policies that would help the private sector grow.¹⁹ Other surveys show similar findings. The country ranks 81 of 189 economies on the World Bank Ease of Doing Business Scale; with employers reporting crime, informality, political instability and corruption as the greatest obstacles to doing business (Figure 7).²⁰ The WEF's Global Competitiveness Report lists slightly different obstacles, including access to finance, corruption, inadequate education for work, and inadequate infrastructure;²¹ according to a Manpower survey,²² 20% of employers in Guatemala reported that it is difficult to find skilled labor. Compared to the LAC region as a whole, a higher percentage of firms in Guatemala identify corruption as

¹⁸ Central American Institute for Financial Studies. "Public Investment in Youth." Enrique, Maldonado.

¹⁹ World Governance Indicators

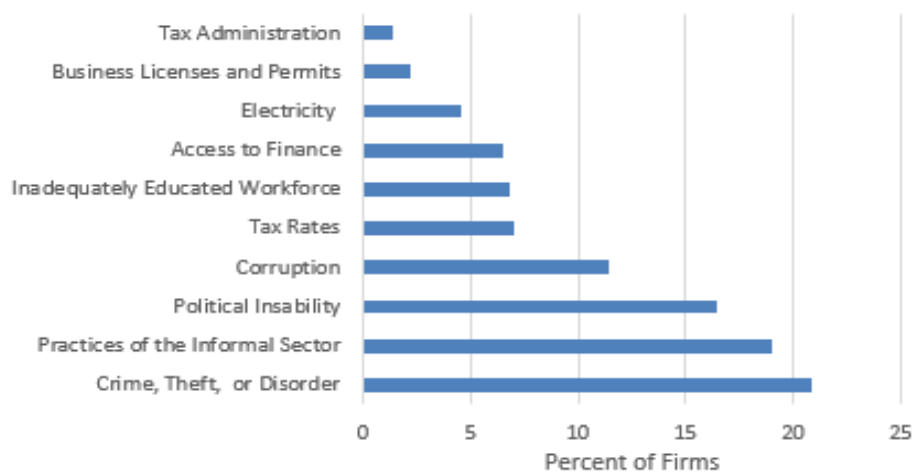
²⁰ World Bank. *Ease of Doing Business Scale*. June 2015. <http://www.doingbusiness.org/rankings>. Accessed September 2, 2015.

²¹ World Economic Forum. *The Global Competitive Report 2014-2015*. Klaus Schwab. New York. 2015, page 198.

²² The Manpower Employment Expectation survey for the second quarter of 2016 included a representative sample of 626 employers in Guatemala. 23% expect to increase hiring, 5% anticipate a decrease, 67% expect to stay the same and 5% do not know. Companies in the western region of the country are the most optimistic, with 22% expecting to increase their profits.

a major constraint to business, and Guatemala is ranked 123 of 168 countries on the Corruption Perceptions Index.²³

FIGURE 7. Obstacles to Doing Business in Guatemala



Source: World Bank Ease of Doing Business Scale.

SOCIAL CONTEXT

From 1989 to 2014, extreme poverty in Guatemala has increased by 5.3 percentage points, going from 18.1% in the base year to 23.4% in 2014, equivalent to 3.7 million people.²⁴ The extreme poverty line is Q.5,750.00 per year per person (US\$756).²⁵ The situation of overall poverty is similar, though less dramatic. Although overall poverty decreased from 62.8% in the base year to 51% in 2006, it increased again, reaching 59.3% in 2014. This amounts to nearly 5.7 million people living on less than Q.10,218.00 a year (US\$1,344).^{26,27}

²³ Transparency International. *Corruption Perception Index: Guatemala*. 2015. <http://www.transparency.org/cpi2015>.

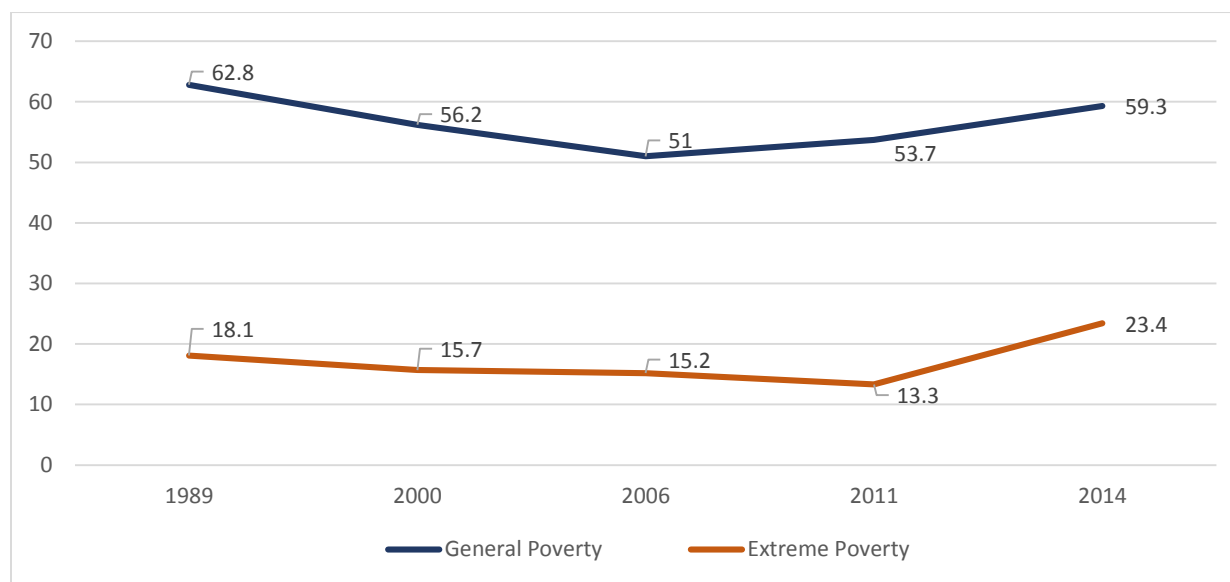
²⁴ MDG Final Report 2016. The extreme poverty line represents the cost of acquiring a food basket that meets the annual minimum calorie requirements per person. Those in extreme poverty are individuals whose total annual expenditure is less than this amount. The aggregation of these costs, plus consumption costs of other nonfood goods and services determines the general poverty line.

²⁵ Bank of Guatemala. Exchange rate of US \$ 7.60 as of August 18, 2016.

²⁶ Bank of Guatemala. Exchange rate of US \$ 7.60 as of August 18, 2016

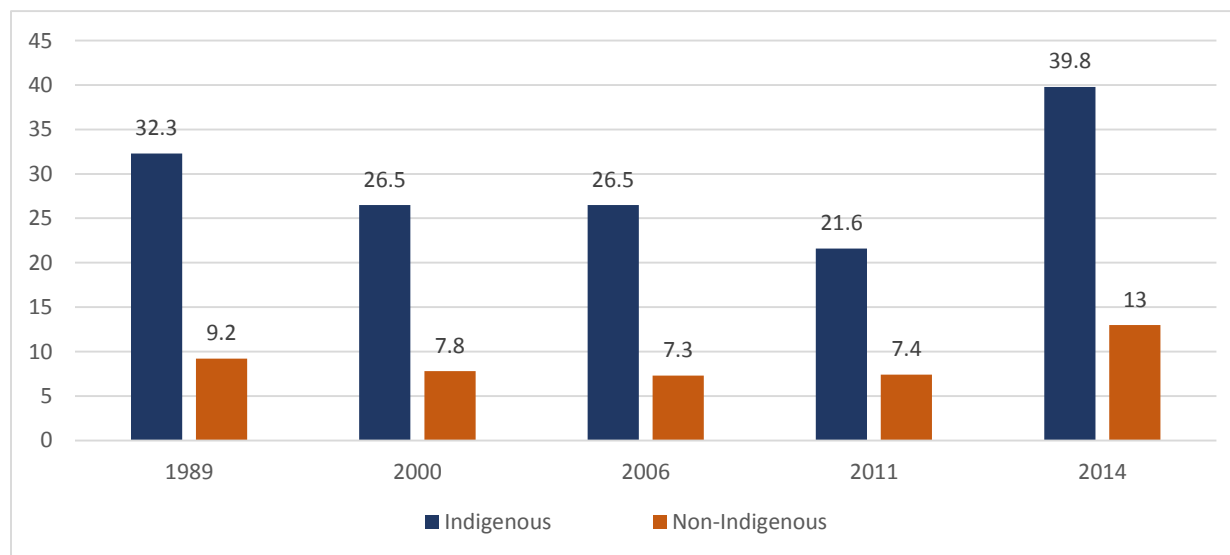
²⁷ Guatemala National Institute of Statistics. *National Survey of Life Conditions (2-2014)*. Guatemala City. 2014. Accessed July 3, 2016. <https://www.ine.gob.gt/index.php/encuestas-de-hogares-y-personas/condiciones-de-vida>.

FIGURE 8. Evolution of Poverty and Extreme Poverty, 1989-2014 (% of the population)



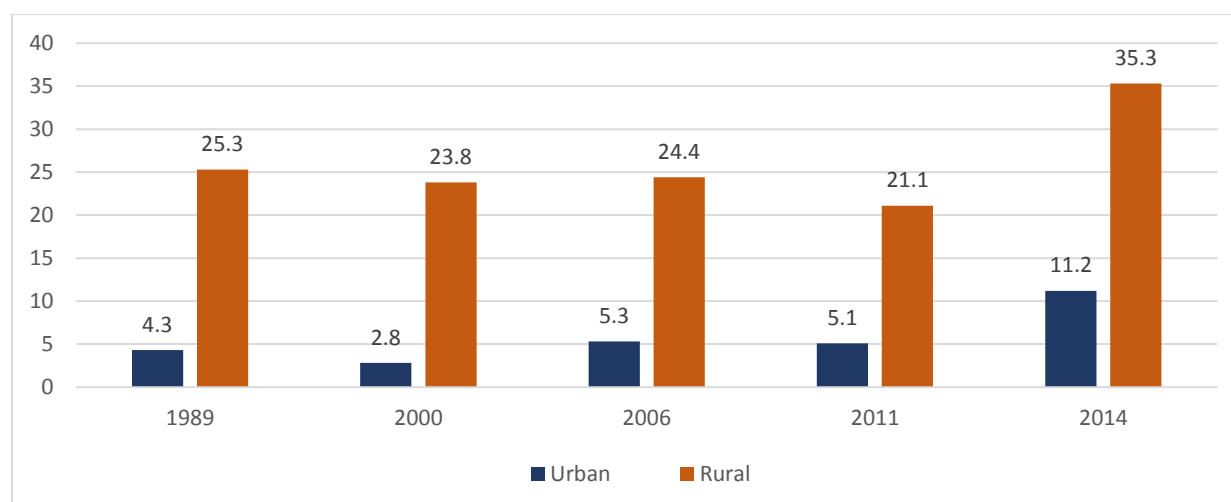
Source: ODM Final Report 2015, ENS 1989 and ENCOVI from 2000 to 2014

FIGURE 9. Extreme Poverty by Ethnic Group (percentage)



Source: MDG Final Report, 2015. ENS 1989 and ENCOVI 2000 to 2014.

FIGURE 10. Extreme Poverty by Region (by percentage)



Source: MDG Final Report, 2015. ENS 1989 and ENCOVI 2000 to 2014.

The indigenous population, people in rural areas, and those living in the southwest, north and northwest (which includes the departments of Alta Verapaz, Quiché, Huehuetenango, San Marcos and Sololá) continue to experience the highest rates of poverty.²⁸ Moreover, 46.5% of the population under the age of 5 suffers from chronic malnutrition.²⁹ The non-indigenous population and people living in urban areas have experienced a smaller increase in poverty. Poverty in Guatemala is based on exclusion, inequality and inequity.³⁰ The lack of public policies with an inclusive and long-term vision, and the decrease in investment in social systems, deepens gaps in access to and provision of social minimums, such as education and health, and reduces opportunities for income gained from decent work.

In general, the population living in rural areas, indigenous groups, and women continue to experience low levels of improvement in human development. According to the ENCOVI 2014, the financial cost of lifting people out of extreme poverty implies a financial investment of Q 5.5 billion (US \$718 million)³¹ while overall poverty eradication requires an investment of Q 36 billion (US \$4.7 billion).³²

²⁸ United Nations Development Program. *Guatemala: MDG. Final Report, 2015.*

²⁹ Guatemala National Institute of Statistics. *National Survey of Women's Health: ENSMI 2014-2015.* Indicators Report. November, 2015. Guatemala. Accessed: August 2, 2016. <http://dhsprogram.com/pubs/pdf/PR57/PR57.pdf>.

³⁰ United Nations Development Program. *Guatemala: MDG Report (Objetivos de Desarrollo del Milenio. Informe Final), 2015.* Guatemala National Institute of Statistics. *National Survey for Employment and Income (2-2014).* Accessed August 18, 2016. <https://www.ine.gob.gt/sistema/uploads/2015/07/22/YXFVZe0clFRDUPYUNwuVak3gjNsF8g2w.pdf>.

³¹ Bank of Guatemala. Exchange rate of US\$7.60 as of August 18, 2016.

³² Bank of Guatemala. Exchange rate of US \$ 7.60 as of August 18, 2016.

EDUCATION

On average, Guatemalans 15 years and older have 5.6 years of schooling³³, which falls to 3.4 years for indigenous women. While the net primary school enrollment rate rose from 71.6% in 1991 to 98.7% in 2009, since then the rate has decreased, falling to 80.7% in 2015. This move away from achieving universal primary education further increases the exclusion of youth from basic and diversified education.³⁴ Historically, public investment in education has been insufficient and as a result, public school systems are unable to sustain and absorb growing numbers of students. This has been true at every educational level except primary.³⁵ Around 4 million Guatemalans under the age of 21 do not have access to education.³⁶

On national reading tests in 2015, 26 graduating students out of 100 passed, while in mathematics just 9 out of 100 passed. Reading scores between 2013-2015 show a decrease in passing scores, falling from 27.2% to 14.6%. Mathematics showed a similar downward trend during the same time period, falling from 21.4% of students passing to 18.4%.³⁷ The principal determining factors of low evaluation results include insufficient investment in quality educational programs; lack of attention in native languages for children, particularly those in early years of schooling; and weakness in the training and professionalism of teachers, among other factors. For students, limitations exist in cognitive development for approximately half the population of children in Guatemala, due to malnutrition.\

Accordingly, these statistics identify poverty as a principal cause of lack of attrition in schools: 57% of those not in primary school have dropped out because of poverty; as have 69% of those not in lower-secondary; and 70% of those not in upper secondary.³⁸

³³ National Survey of Living Conditions (2-2014).

³⁴ United Nations Development Program. *Guatemala: Objetivos de Desarrollo del Milenio. Informe Final, 2015.*

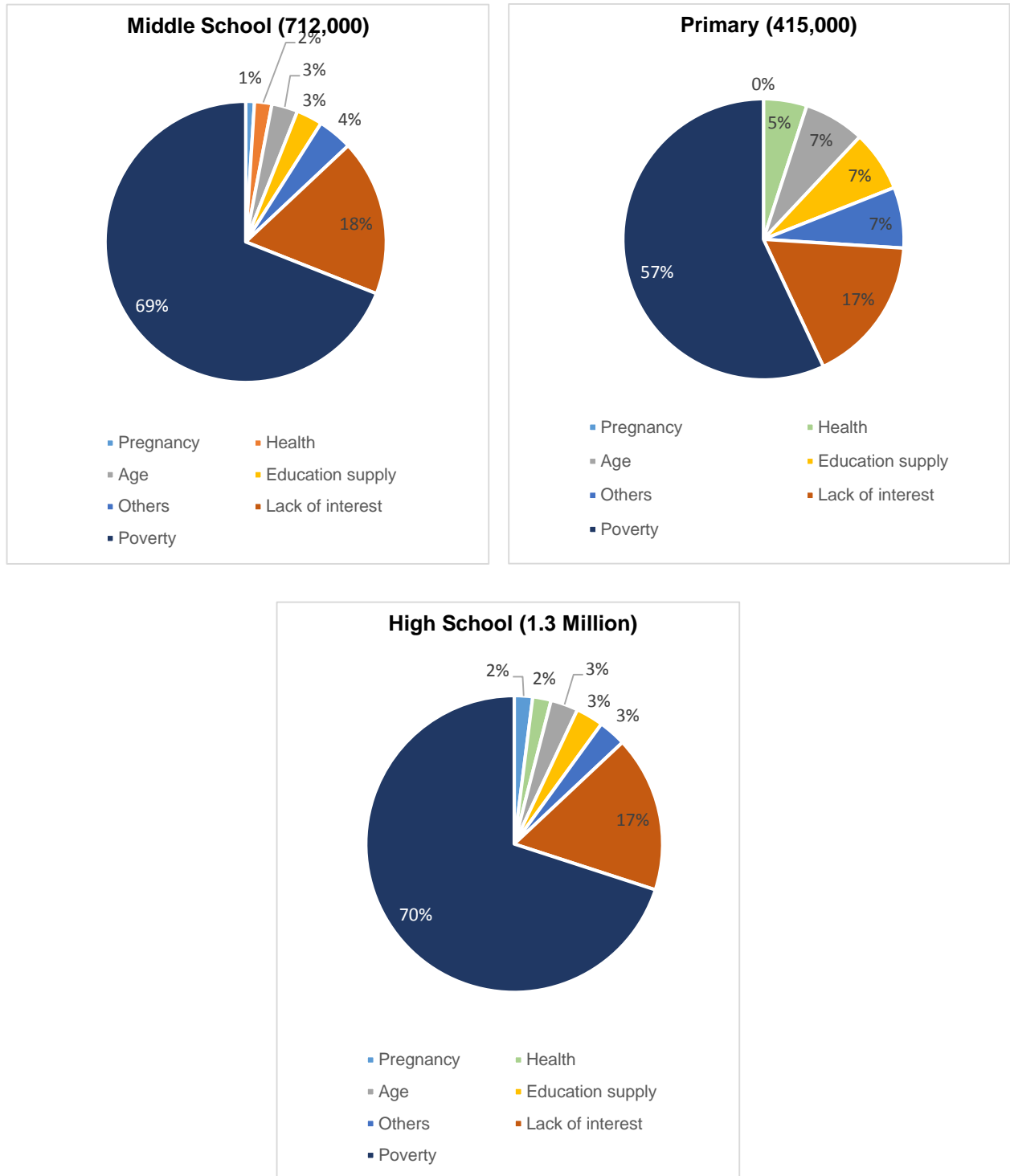
³⁵ The gross enrollment rate indicates the percentage of the population registered for each grade, regardless of age, according to national regulations.

³⁶ Guatemala National Institute of Statistics. *National Survey of Life Conditions (2-2014).*

³⁷ Employers for Education 2015.

³⁸ Central American Institute for Financial Studies. "Public Investment in Youth." Enrique, Maldonado. Guatemala City. 2015.

FIGURE 11. Why are Children and Youth Out of School?



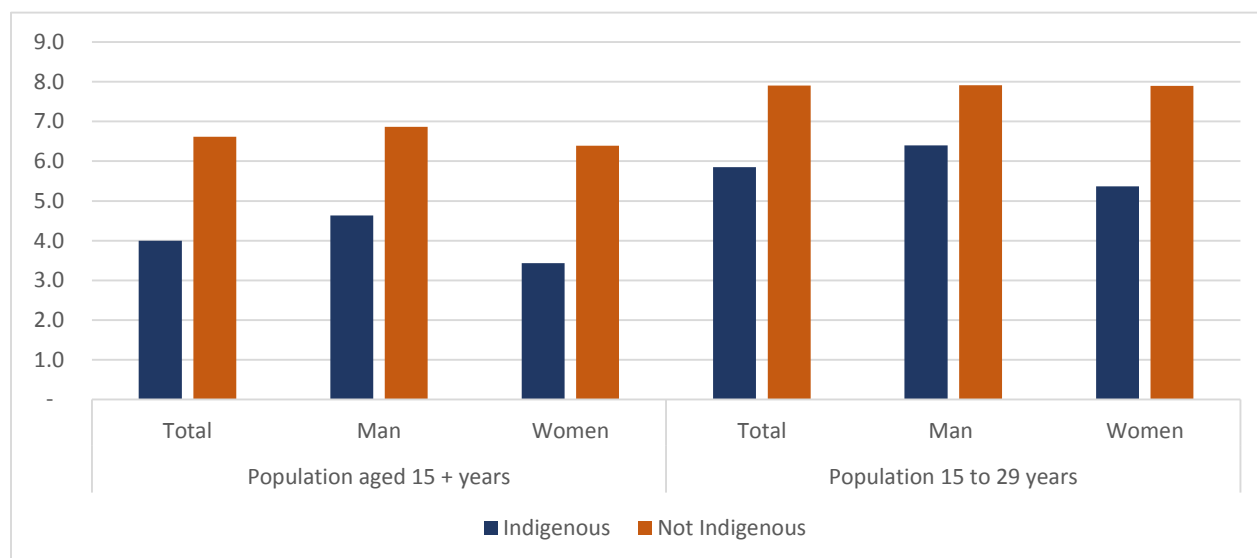
Source: ICEFI/International Plan based on Survey of Living Conditions (ENCOVI) 2014. National Statistics Institute. Note: There is no information on the pre-primary education level.

GUATEMALAN YOUTH: STRENGTHS AND CHALLENGES

The supply side of the labor market is made up of the knowledge and skills of individuals to manufacture goods and services. The main source of this human capital comes from the accumulation of years of schooling of an individual as well as the characteristics and qualities of the education system itself, which shape the face of labor supply. This educational capital that people accumulate throughout their lifetime is based on the foundation of the first stage of formal education, and will continue to have a significant impact on the development and well-being of individuals and society alike over the course of generations.

In this respect, Guatemala faces a major challenge in the educational characteristics of the population: on average, the national population has not completed primary education. The breakdown by sex and ethnicity also reveals a strong pattern of social inequality that is systematically manifested in various ways. These challenges are even greater for the indigenous population (with only 4 average years of schooling, as opposed to 6.6 years for non-indigenous) and for women (5.3 years, compared to 6 for men). Moreover, indigenous women 15 years of age and older attain only 3.4 years of education while non-indigenous men achieved 6.9 years of schooling.

FIGURE 12. Average Number of Years of Schooling by Age, Sex, and Ethnicity

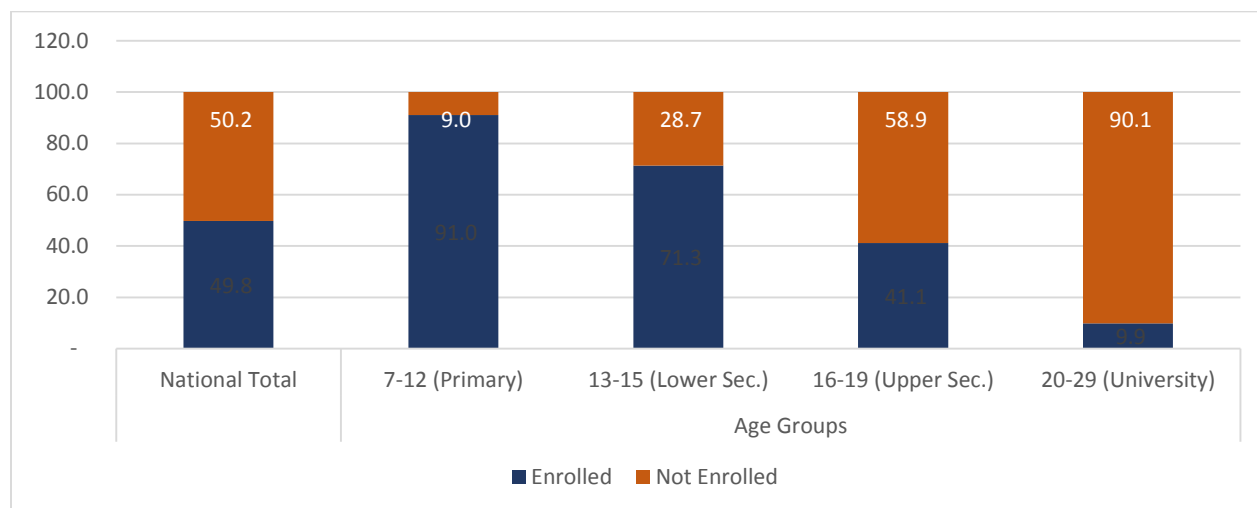


Source: Calculated based on the Encuesta Nacional de Condiciones de Vida (ENCOVI) 2014.

Data analysis for the 15-to-29 age cohort shows a significant change in the number of year of schooling achieved: the youth population has 1.4 more years of schooling than the total population aged 15 and over. Although gender and ethnicity gaps continue to manifest themselves in the young population, the results indicate that there have been reductions in these gaps, particularly in regard to indigenous women.

The analysis of the ENCOVI 2014 indicates that 50.2% of the population between 7 and 29 years old was not enrolled in the education system in the year 2014.³⁹ The breakdown of the results according to age ranges corresponding to school years as an individual moves through the lifecycle: 9 out of 10 children of school age attend primary education; 7 out of 10 adolescents between 13 and 15 years of age (at the basic level) are enrolled in the education system; 4 out of 10 young people between 16 and 19 years studying (upper-secondary) and only 1 in 10 young people between 20 and 29 years old was enrolled in university.

FIGURE 13. Educational Enrollment of Young People According to Age Range



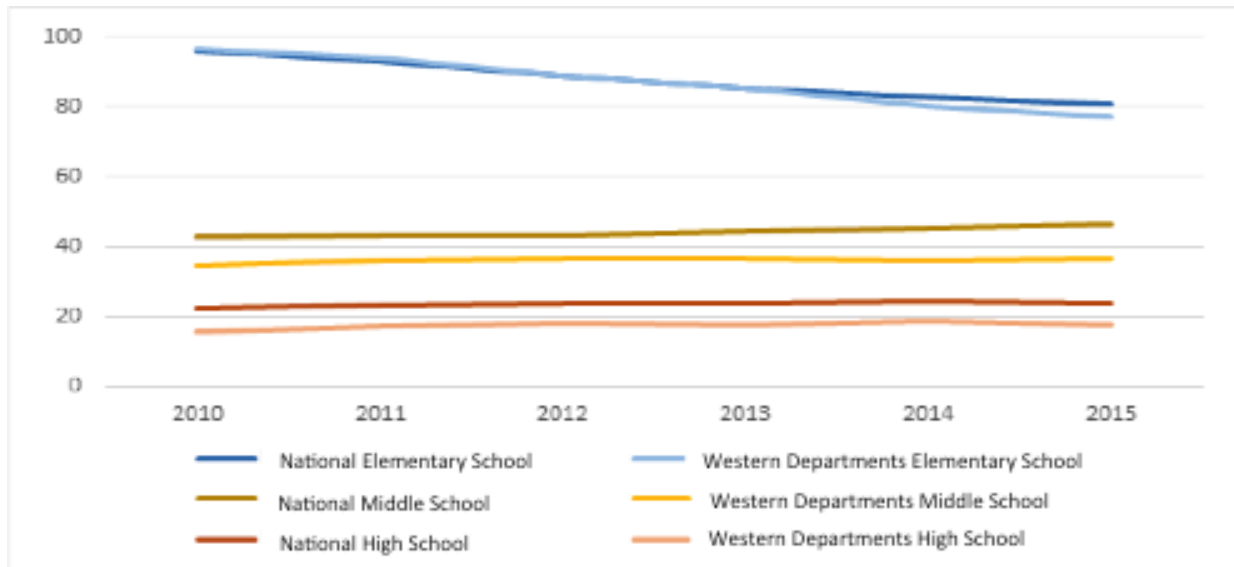
Source: Calculated based on the Encuesta Nacional de Condiciones de Vida (ENCOVI) 2014.

The percentage of the population that is registered at the age-appropriate educational level is low after primary education, and very limited for the population at university age. As such, 90% of young people between 20 and 29 years of age are not studying and only 6.5% of this age group is part of the national university population, equivalent to about 176,000 young people (ascending to 217,000 young people taking into consideration the population between 16 and 19 years old).

The net enrollment rate over time demonstrates an additional challenge in education in Guatemala: during 2010-2015 the education system has experienced a steady decline in primary education because of low public investment in education, among other factors, and has not been able to achieve an increase in net enrollment rates on the lower and upper-secondary levels. This same phenomenon is repeated in the western departments of the country (Huehuetenango, Quetzaltenango, San Marcos, Totonicapán and Quiché), which also experience lower levels of schooling.

³⁹ Guatemala National Institute of Statistics. *National Survey of Life Conditions (2-2014)*.

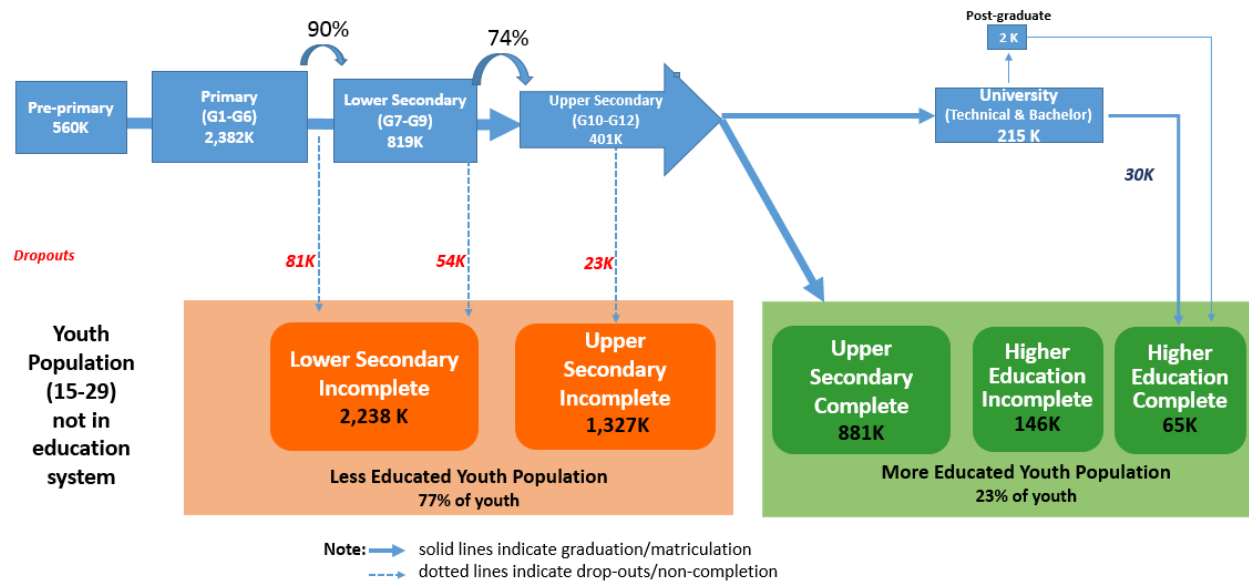
FIGURE 14. Net Enrollment Rate Over Time (Percentages)



Source: MINEDUC, 2015.

According to estimates from the ENCOVI 2014, about 2.6 million youth ages 15 to 29 years old (55.7%) participated in the labor market. The majority of those only worked while a small minority, 8.2%, both worked and studied. The remaining 44.6% did not participate in the labor market: of these, 28% neither worked nor studied and only 16.3% of all 15- to 29 year olds only studied. The chart below illustrates the distribution of the student population and the working age youth population according to their participation in the educational system and the labor market.

FIGURE 15. Flows of Talent

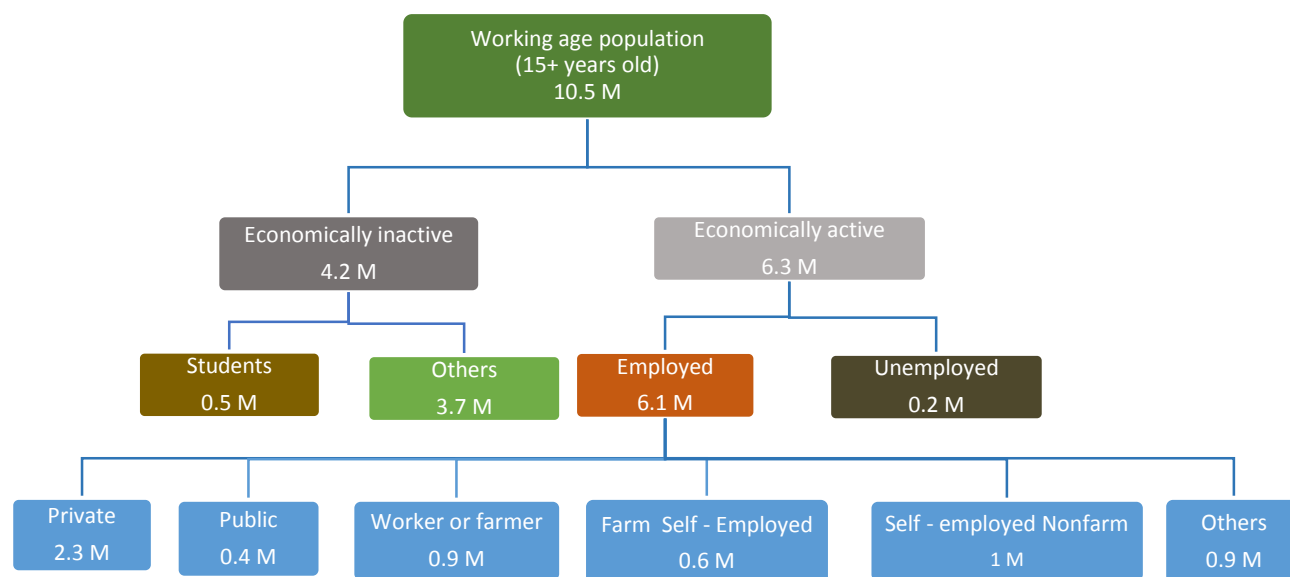


Source: FHI 360 based on data from the National Survey of Living Conditions (ENCOVI) 2014, System of Education Information (MINEDUC)

LABOR MARKET CONTEXT

The economically active population includes approximately 6,316,005 people over the age of 15, of whom 65% are men and 35% are women. The national unemployment rate is 2.9%. Women are slightly more likely to be unemployed (3.3%) than men (2.7%).⁴⁰

FIGURE 16. Working Age Population and Economic Activity, 2014



Source: ENEI, 2-2014

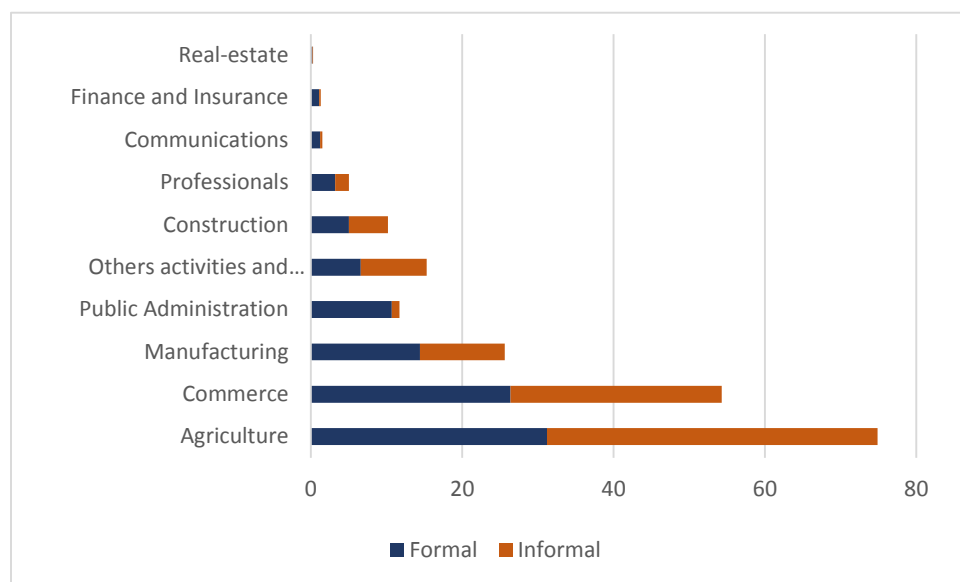
Around two-thirds of the working age population is economically active. Of the employed population, the largest group is in private employment, with the second largest group being self-employed in nonfarm work, followed closely by farmers and laborers, and others.

The World Bank (2014) mentions that employment is a key link between macroeconomic performance and microeconomic prosperity. Therefore, initiatives and actions aimed at promoting employment have the potential to significantly advance the objectives of public agendas that promote development. According to a USAID / ANACAFE / PCVR labor market study in eight municipalities in the departments of Huehuetenango and San Marcos, the potential supply and demand for employment for young people in both departments is limited. This is due to the fact that there are few job opportunities, and those that exist are difficult to fill because young people do not have the required profiles due to lack of experience, little technical training, and have not attained sufficient levels of and secondary education.⁴¹

⁴⁰ Guatemala National Institute of Statistics. *National Survey of Life Conditions (2-2014)*.

⁴¹ USAID/ANACAFE/PCVR/Education. *Final Labor Market Report on Eight Municipalities in the Departments of Huehuetenango y San Marcos*. Washington, DC. March, 2015.

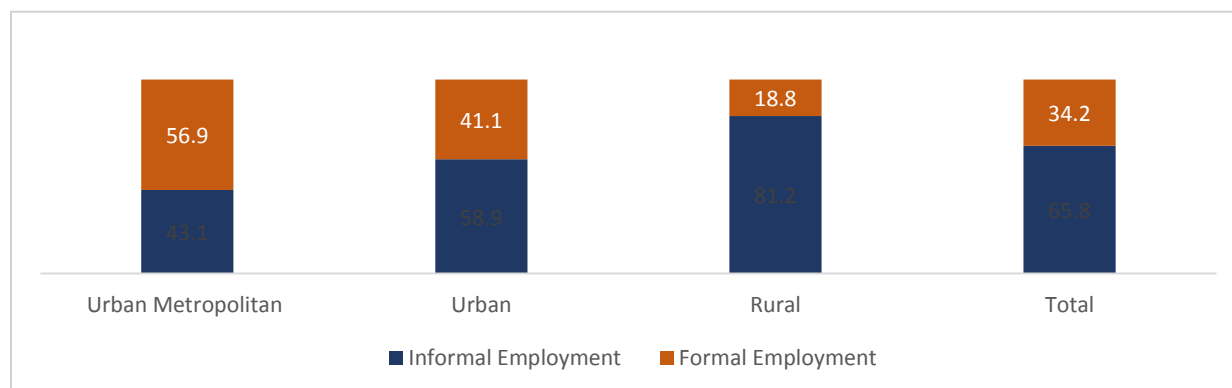
FIGURE 17. Employment by Major Industry Sector, 2014



Source: ENEI 2-2014.

The employment rate in the informal sector reached 65.8% in 2014. Of all Guatemalan employees, 2.1 million work in the formal sector and 4 million in the informal sector.⁴² Agriculture is the economic activity that absorbs the greatest amount of labor (31.2% of the formal labor force and 43.7% of the informal labor force); followed in order of importance by trade with 26.4% of the formal labor force and 27.9% of the informal labor force; and manufacturing industries with 14.4% of the formal labor force and 11.2% of the informal labor force.

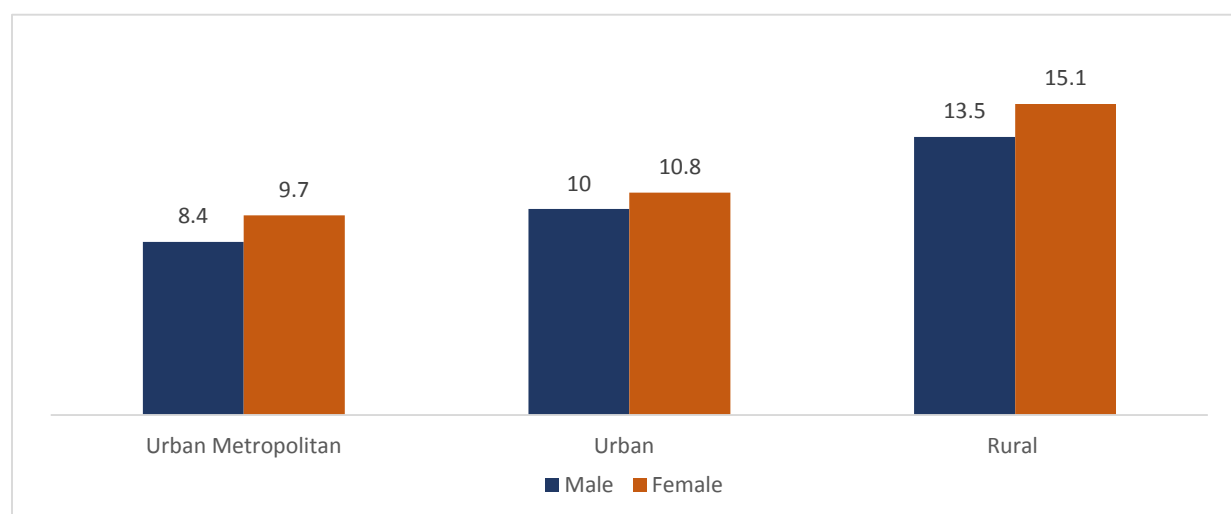
FIGURE 18. Employment by Economic Sector and Region



Source: ENEI 2-2014

⁴² Guatemala National Institute of Statistics. *National Survey of Life Conditions (2-2014)*.

FIGURE 19. Underemployment by Sex and Region



Source: ENEI 2-2014

Although many women manage to find a job when seeking employment, women are more likely to be underemployed than men. This is particularly true in rural areas. 65.9% of working women end up in the informal sector (as do 65.7% of employed men).⁴³ This form of precarious employment without social protection⁴⁴ is more likely to affect women in rural areas (82.2% of whom work in the informal sector), indigenous people (78.4%), adolescent girls between 15 and 17 years (93.8%) and older adults (87.2%). Most informal employment is found in rural areas (43.9%) for women and in non-metropolitan urban areas (36.9%). Informal employment is also prevalent among youth populations (28.8% of whom work in the informal sector) and adults (57.9%). Most women in the informal sector work in trade (42.3%), services (18.3%), industry (17.9%) and agriculture (16.8%).⁴⁵

PRODUCTIVITY

During the period 1989-2014, the average growth rate of labor productivity was -0.2%, with cyclical swings (Figure 20). The performance of this indicator is explained by a number of factors, including the moderate growth of the economy (with an average of 3.5% for the aforementioned period, according to the IMF); limited human capital of workers (low educational level and low technical and professional skills); low productivity of much of the working population as almost two thirds work in the informal sector;

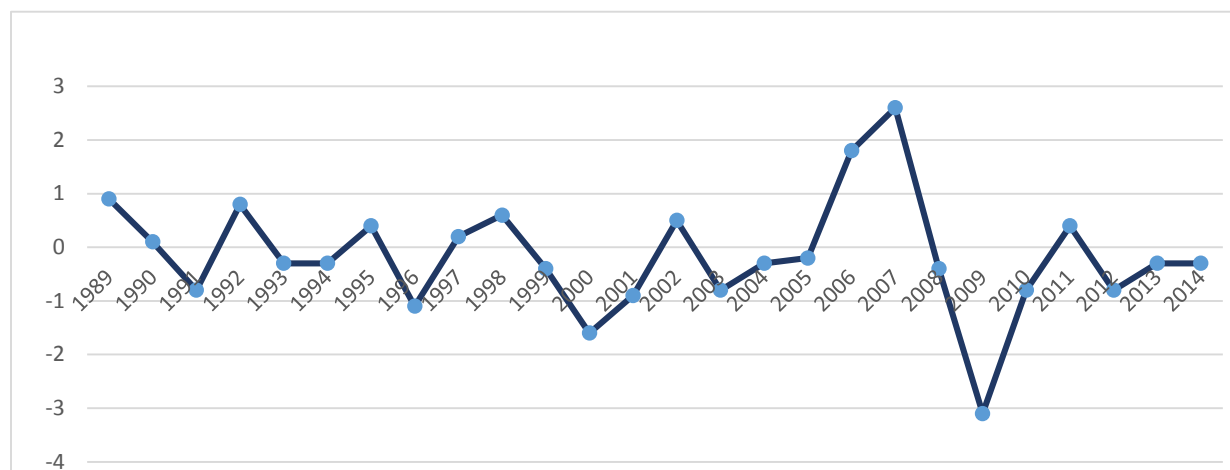
⁴³ This includes all employed individuals in the following categories: a) employers, employees and workers in businesses with fewer than 6 people; b) all own-account or autonomous workers, excluding professionals and technicians, c) all non-paid family workers, and d) domestic servants (INE, 2014: 83). ENEI-II

⁴⁴ Guatemalan Institute of Social Security. *Annual Labor Report, 2014*. Guatemala. http://www.igssgt.org/images/informes/subgerencias/resumen_ial2014.pdf. Access to health services, loans, public pensions (IGSS), paid vacations, bonuses, etc.

⁴⁵ Central American Institute of Financial Studies. "Public Investment in Youth." Enrique, Maldonado; Guatemala National Institute of Statistics. National Employment and Income Survey (2-2014).

limited and deteriorating road infrastructure and deteriorating productivity; and the impacts of natural disasters (Hurricanes Mitch, Stan, Agatha, among others) and the 2008-2009 global recession.⁴⁶

FIGURE 20. Growth Rate of Labor Productivity (in %, 1989-2014)



Sources: IMF and ECLAC

Using the labor market as a mechanism to achieve the Millennium Development Goals is a serious challenge in Guatemala. Low levels of labor productivity, the prevalence of large segments of the working population living in poverty (20.1% in 2014), and those who participate in self-employed activities (40.5% in 2014) create conditions unfavorable to poverty reduction and the success of the MDGs.

Furthermore, of the employed population, 20.4% has completed only primary education; 20.7% only secondary, and just 1.4% has gone to university, which contributes to the precariousness of work. However, as mentioned earlier, although the population 15 years and older has just 5.6 years of schooling on average, young people aged 15-24 have 7.2 years of schooling, meaning that the level of education is increasing for younger generations.

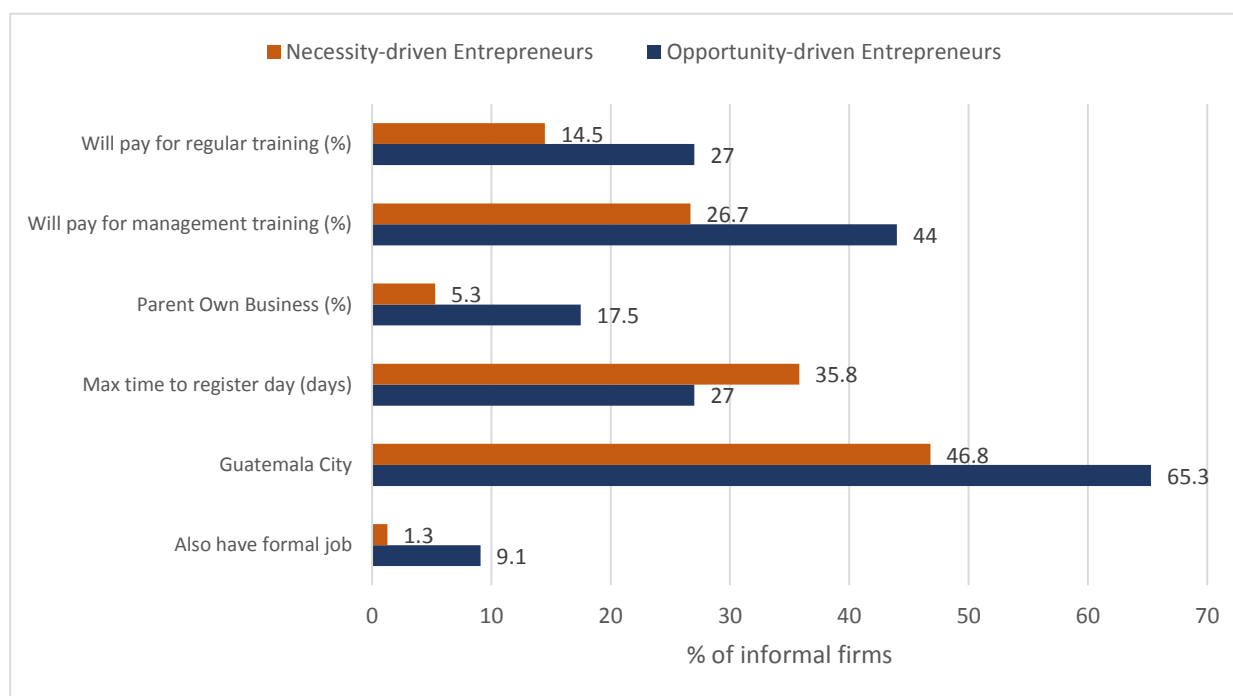
FIGURE 21. Productivity and Poverty



⁴⁶ National Maternal Health Survey: ENSMI 2014-2015. Guatemala National Institute of Statistics. National Survey of Women's Health: ENSMI 2014-2015.

CHARACTERISTICS OF ENTREPRENEURSHIP

FIGURE 22. Opportunity-driven enterprises tend to be more productive than necessity-driven enterprises



Source: *Global Entrepreneurship Monitor 2014-2015*

Micro, small and medium enterprises are the main source of employment in Guatemala: they account for 85% of total employment and approximately 40% of GDP.⁴⁷ The Global Entrepreneurship Monitor (GEM) ranks Guatemala among the highest group of countries worldwide (13 out of 80 countries studied) in terms of entrepreneurship. The GEM's Early Entrepreneurial Activity (TEA) indicator qualifies the level of entrepreneurial activity in a country; Guatemala has a TEA of 19.3% (2013-2014). The percentage of people who consider entrepreneurship as a desirable career choice in Guatemala is 89%, ranking Guatemala in 3rd place.⁴⁸ While these statistics may be seen as positive, they also show a lack of job opportunities.⁴⁹

⁴⁷ Inter-American Development Bank. *Bank Industrial MSME Financing Partnership*. Washington, DC. 2010. <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=37953697>.

⁴⁸ Babson University et. al. *Global Entrepreneurship Monitor: 2014 Global Report*. United States. 2014. <http://www.babson.edu/Academics/centers/blank-center/global-research/gem/Documents/GEM%202014%20Global%20Report.pdf>

⁴⁹ Babson University et. al. *Global Entrepreneurship Monitor: 2014 Global Report*.

Entrepreneurs in Guatemala are driven more by necessity than by opportunity.⁵⁰ The majority of entrepreneurs in Guatemala are self-employed. 71% of them are consumption-focused, and have created small businesses out of necessity. In 42% of cases, they do not generate any additional jobs.⁵¹ Meanwhile, opportunity-driven entrepreneurs are more likely to have formal jobs, live in the city of Guatemala, pay for their training and have parents who own their own business.⁵²

Slightly more women than men are business owners (52.7% versus 47.3%).⁵³ Of the total TEA businesses in Guatemala, 35.9% are held by people with a low level of formal education: 8.8% have no schooling, 10.7% have not completed primary and 16.4% have a primary education. 3.4% have incomplete basic education, and 10.7% have completed basic education. At the diversified/upper secondary level, 1.9% did not complete and 31.2% of entrepreneurs completed this level of education. 12.6% abandoned college prematurely, while only 4.6% of business entrepreneurs graduated from college.⁵⁴

ANALYSIS AND SECTOR SELECTION

Inclusive economic growth is necessary for poverty reduction in Guatemala. If current patterns of economic growth continue without increasing productivity, it would take the country more than 24 years to reduce extreme poverty to less than a tenth of the population, and almost 60 years to reduce overall poverty to less than a third of the population.⁵⁵ Substantive changes must be introduced in order to turn the country around. However, reaching an average annual growth rate of at least 6% over the next 10 years will require public policies formulated around a sustainable, comprehensive, and long-term vision. Additionally, policies must consider better investment practices, improvement in human capital, and innovation and modernization of processes in sectors that currently have lower competitive advantage.

In general, poverty has been associated with the lack of what society considers basic economic resources or living conditions.⁵⁶ Under a more nuanced concept of poverty, however, it can be seen as the deprivation of the capabilities and fundamental rights of individuals, and therefore it is not only linked

⁵⁰ World Bank. Guatemala Economic DNA: Harnessing Growth with a Special Focus on Jobs.

⁵¹ Ministry of Economy. Guatemala Emprende: National Policy on Entrepreneurship, 2015. Guatemala. 2015. Accessed July, 2016. http://www.mineco.gob.gt/sites/default/files/SDE/Emprendimiento/guatemala_emprende_version_final.pdf.

⁵² World Bank. Guatemala Economic DNA: Harnessing Growth with a Special Focus on Jobs.

⁵³ Ministry of Economy. Guatemala Emprende: National Policy on Entrepreneurship, 2015.

⁵⁴ Ministry of Economy. Entrepreneurs in Guatemala, Entrepreneurship Policy, 2015.

⁵⁵ FUNDESA. Guatemalans Improve Guatemala: A Proposal for a More Prosperous, Solidary, and More Secure Guatemala. Guatemala. 2012. <https://issuu.com/fundesaguatemala/docs/mejoremosguate>.

⁵⁶ Williams, Louise D. "Training for the World of Work: A Approach." The Jobs Challenge: Fresh Perspectives on the Global Employment Crisis. (Vol 15: 1). 2012.

to lack of income.⁵⁷ Improving education and health care would allow the poor and potentially poor more opportunities to overcome poverty.⁵⁸

The UNDP concept of human poverty sees lack of sufficient income as an important factor in human deprivation, but not the only one.⁵⁹ For the UNDP this definition of poverty is closely linked to the concept of human development, understood as a process of broadening people's choices, allowing people live a long and healthy life, and have access to the knowledge and resources needed for a decent standard of living.⁶⁰

In order to advance in this direction in Guatemala, there is a clear need for more investment in human capital and to create more and better jobs. This includes more and better investment in health and education, formulated around a comprehensive, long-term vision, leaving behind the lackluster efforts of program interventions of the past. Economic growth alone will not get Guatemalans out of poverty – what is needed for inclusive growth is a skills-based, people-centric virtuous cycle of skills and investment.

Beginning in the 1990s, the lack of opportunity in Guatemala has created new migration patterns, mainly composed of those looking for work abroad. The southwest of the country has been the greatest contributor to migration abroad, with 24.7% of emigrants hailing from this region.⁶¹ The immigrant population from Guatemala living in the United States is made principally of those of working age. Of these migrant workers in the United States, most find jobs in the construction industry, manufacturing and in certain service sector activities, particularly in food, recreation and lodging, and in administration.⁶² However, it is important to note that 55.6% of immigrants to the United States in 2012 did not graduate from high school,⁶³ thus limiting their future opportunities.

The role of generating good employment opportunities is crucial. However, as important as boosting productivity and growth is the integration of efforts under a broad strategic vision.

STAKEHOLDER MAPPING

Figure 23 below shows the labor market system actors - organizations, individuals and entities initially identified as agents of potential support to achieve the strengthening of tertiary technical education in Guatemala. It includes actors from the public sector, private sector, civil society organizations, national

⁵⁷ Sen, 2000:114

⁵⁸ Sen, 2000: 118

⁵⁹ United Nations Development Program. *Guatemala: Millennium Development Goals Final Report, 2015.*

⁶⁰ United Nations Development Program. *Guatemala: Millennium Development Goals Final Report, 2015.*

⁶¹ IOM

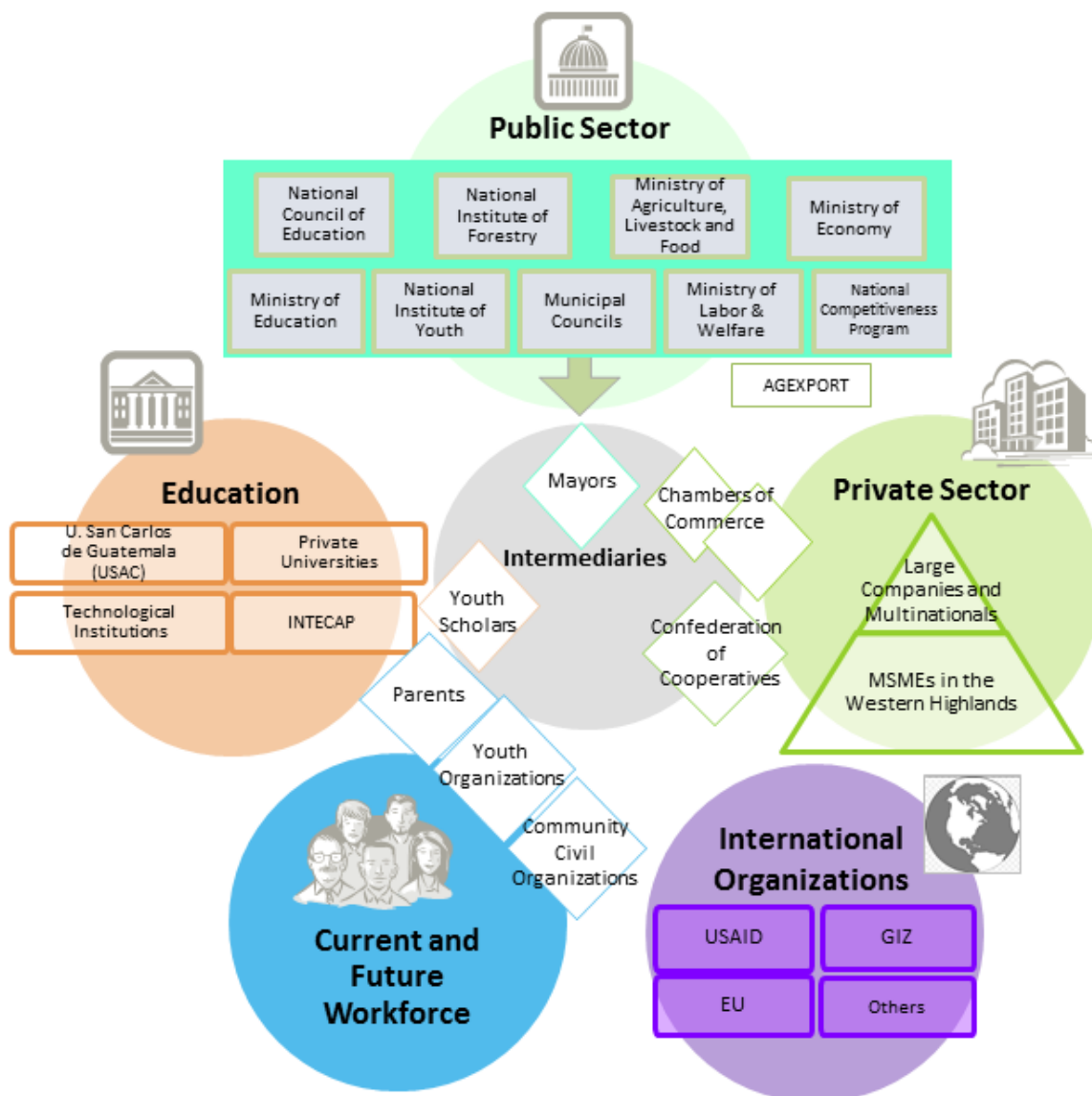
⁶² Center for Central American Financial Studies. Inter-American Development Bank, Multilateral Investment Fund. *Profile of Guatemalan Population in the United States.* June 2014. <http://www.cemla-remesas.org/principios/pdf/PrincipiosRemesas-Guatemala-2014.pdf>.

⁶³ Center for Central American Financial Studies. Inter-American Development Bank, Multilateral Investment Fund. *Profile of Guatemalan Population in the United States.*

and international cooperation, the education sector, and the present and future workforce. Additionally, it shows intermediaries, who are the actors with relationships and links with one or more groups of actors.

Some of the actors are linked to the technical supply and demand for skills in the labor market, others are key to influencing public policies and therefore contributing to the transformation of education in the country. Other actors support engagement between technical tertiary institutions and academia. Further below, Table 2 identifies potential roles for the stakeholders identified on the labor market system map. The first column lists the actor and the second described how they are already, or could be, helping tertiary technical education to improve the skills of young people and increase their integration into the labor market. During the development of the Program additional actors are likely to emerge as well.

FIGURE 23. Guatemala Workforce Development System Actors



Source: Adapted from *Workforce Connections*, FHI 360.

TABLE 2. Stakeholder Roles

PUBLIC SECTOR	
National Education Council	Actor for secondary education reform and transition for tertiary technical careers.
USAC-Universidad de San Carlos of Guatemala	Actor in favor of supporting innovative tertiary technical careers and providing scholarships to students.
Technical Institute for Training and Productivity	Actor to expand technical training at the tertiary level.
Ministry of Education- (national and departmental)	Manages secondary technical programs (<i>ciclo diversificado</i>) and the National System of training for work.
Municipal Councils at the Departmental level	Actors in the promotion, dissemination and investment in tertiary education.
Mayors	Actors in support of strengthening post-secondary non-tertiary education, diversified cycle, and tertiary technical education.
National Institute of Youth	Reference for identifying youth organization leaders inside the country.
National Institute of Forestry	Technical assistance and tertiary training centers for forestry issues
Ministry of Agriculture, Livestock and Food	Technical assistance and centers of tertiary education in agriculture, livestock and food issues.
Ministry of Labor and Social Welfare	Technical assistance and tertiary education in issues concerning labor policy.
Ministry of Economy	Reference to Entrepreneurship Policy, Foreign Trade Policy and support for economic growth.
National Competitiveness Program	Manages programs and projects in support of competitiveness.
PRIVATE SECTOR	
Private universities present in the target areas	Actor in favor of strengthening existing degree programs and encouraging innovative proposals for tertiary technical education.
Federations National Council of Cooperatives and Development Foundation	Institutional space to support young leaders in tertiary education processes that drive scholarship program at the tertiary level. Support internships for students and job creation.
Chambers of Commerce and Subsidiaries	Strategic actors in employment generation.
Guatemalan Association of Exporters	Actor in opening export markets and thus in generating employment for technical university students.
AGEXPORT	
Small, medium and large enterprises	Generators of jobs and improving business competitiveness.
Technological Institutes	Technical training centers with technological specialties updated in response to labor demand
INTERNATIONAL ORGANIZATIONS	
Programs and Projects directly involved in youth employment and technical education from international cooperation.	Coordination of efforts to support post-secondary non-tertiary technical education and tertiary technical education.
CIVIL SOCIETY ORGANIZATIONS	
Community social organizations according to the cultural context.	Reference for the support and promotion of rural tertiary technical education
Youth Organization	Promotion, dissemination and identification and motivation of young leaders to diversified post-secondary non-tertiary technical education and tertiary technical education.
Youth Scholars	Disadvantaged youth with leadership potential in their communities to promote development and which are selected for scholarships in careers of technical tertiary education promoted by the program
Parents of Youth Scholars	An essential part of the educational community.

SECTOR SELECTION

The evaluation team used a rigorous methodology to assess and prioritize sectors with respect to their potential for job creation. Predicting job growth with some degree of precision is almost impossible, especially given the short period of time and insufficient data to complete a full analysis. However, using certain widely available data, combined with selected qualitative criteria and expert opinion, project managers were able to develop an objective framework for selection of sectors.

Criteria and Methodology for Sector Selection

The team adapted a methodology developed for the World Bank⁶⁴ that was designed to conduct a rapid reconnaissance assessment with limited resources. The approach ranks sectors according to three sets of criteria in a Sector Appraisal Matrix, as described below and seen in Figure 27.

Step 1. Identifying Sector Selection Criteria

The first step, before even collecting data, is to establish the sector selection criteria.

Size of sector. The indicators in this group all aim to characterize the scale of the sector, which is linked to the capacity to absorb employment. If reliable employment data at the appropriate level of disaggregation were available, no other indicators would be needed in this group. However, in Guatemala, as in many countries, only rough estimates of employment are available at the individual sector level. For almost all sectors data on exports or expenditures are available, so where the reliability of the employment data is weak, the weight for employment is reduced and the score for the size criterion is derived from a weighted average of the scores for employment, exports and/or expenditure.⁶⁵ These data, in turn, can also be enhanced when quantitative or qualitative estimates can be generated indicating the intensity of activity in that sector for the target region, as opposed to the entire country. For example, although palm oil is quite 'large' for Guatemala as a whole, it is virtually non-existent in the target region.

Growth potential. An accurate prediction of which sectors will grow is by definition impossible. However, some indicators such as recent trends in export growth tend to correlate with future growth. In addition, forecasts made by working groups of sector experts⁶⁶ incorporate valuable industry-specific knowledge of market and technology trends. This group of indicators also includes an "economic diversity" measure, derived from the Atlas of Economic Complexity⁶⁷, which estimates the potential contribution to industrial

⁶⁴ "Sector Competitiveness Analysis Tools: A Reference Guide," Finance and Private Sector Division, World Bank. June, 2011.

⁶⁵ The goal is to understand the current size of the sector's employment, i.e., how many people it will impact. Since employment data is not easily available, we use proxies. Size of exports is a good proxy for "size" – it's reliable data, but it's skewed toward more expensive products - i.e., relative employment in tobacco, for example, is likely to be lower than the relative value of exports -- and it doesn't aid in estimating employment in a product or service largely sold in the domestic market. So for this reason we like to also include domestic expenditure (both business to business, or intermediate; and business to consumer, or final consumption) to get a balanced picture of the value of production. The total export amount plus domestic expenditure gives us the total value being produced, which is a reasonable proxy for 'size' (with the exception mentioned above that \$1 million of higher value products will not represent as much employment as \$1 million in a low value product).

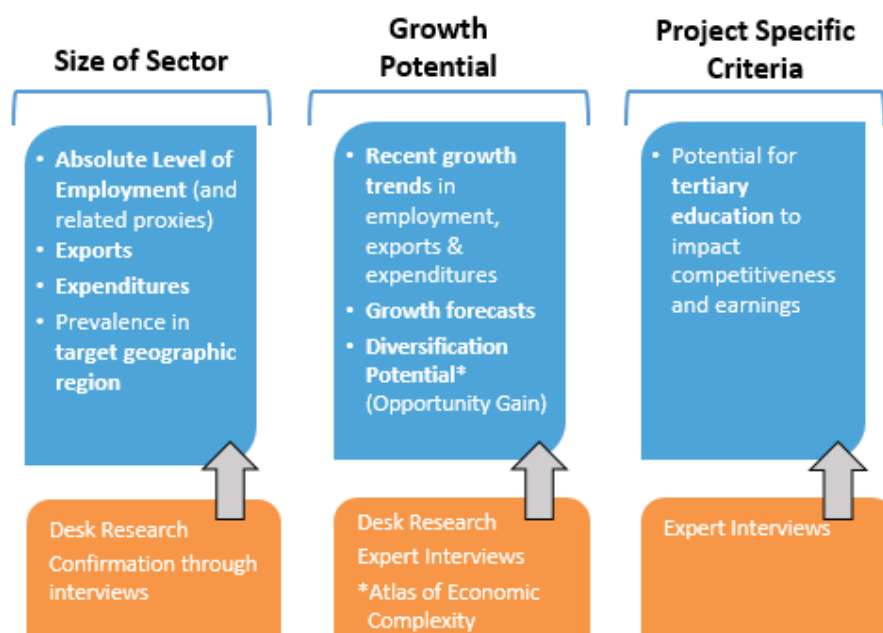
⁶⁶ FUNDESA. *Guatemalans Improve Guatemala: A Proposal for a More Prosperous, Solidary, and More Secure Guatemala*. Guatemala. 2012. Accessed June 2016. <https://issuu.com/fundesaguatemala/docs/mejoremosguate>.

⁶⁷ Hausmann, Ricardo & Hidalgo, Cesar, "Atlas of Economic Complexity: Mapping Paths to Prosperity" Harvard University Center for International Development and MIT Macro Connections Media Lab, 2011.

diversity and economic complexity (the “opportunity gain” indicator) from expanding economic activity in any given sector. This indicator has been shown to correlate highly with future GDP growth.

Project specific criteria. The final group of indicators incorporates criteria with specific reference to the LACRWD Program’s terms of reference. The “higher educational potential” indicator attempts to capture the potential for the LACRWD Program to impact competitiveness, employment and poverty in a sector direct or indirectly via interventions in tertiary educational institutions (both via education and direct university-industry linkages with sectors such as contract research, applied research centers, and student projects). The “Prioritized Occupational Families” reflect the government’s ranking of priorities for specific sectors based on their occupational linkages.

FIGURE 24. Sector Selection Categories and Criteria



Step 2: Creating the Long List

Drawing on existing data sources, the team compiled a “long list” of roughly 144 sectors and subsectors, representing the widest possible universe of goods and services to be considered. This was drawn from the key exports, leading domestic industries,⁶⁸ and notions of emerging sectors.⁶⁹ Certain sectors were eliminated because they failed to meet basic requirements of the project, therefore obviating the need for data-driven analysis (such as metal ores, a conflict industry in Guatemala).

⁶⁸ National Accounts, Average Consumption and Household expenditure.

⁶⁹ FUNDESA. *Guatemalans Improve Guatemala: A Proposal for a More Prosperous, Solidary, and More Secure Guatemala*.

Step 3: Developing the Sector Appraisal Matrix

Based on information from initial interviews and applying the sector selection criteria, the candidate sectors were subsequently narrowed down to a “medium list” and finally a short list through use of a sector appraisal matrix (see Figure 27). The matrix allows both quantitative and qualitative information to be assessed together by converting all criteria to scores ranging from 1 to 5. Weights are applied to each criterion, resulting in a total score for each sector.

Because of the systematic and well-established data collection mechanisms, the most reliable and objective data were for exports and domestic expenditures. In some cases, like for the ‘economic diversity index,’ we had quantitative data only for product sectors, so we used qualitative judgement to estimate scores for the services sectors. While very few sectors have official data on employment at this level of aggregation, nearly all sectors have reliable data on at least exports or expenditures. For this reason, the sum of weights assigned to those two indicators is greater than to employment in the appraisal matrix.

While it is not recommended that projects strictly follow the priority rankings that result from the sector rubric, this provides a consistent and objective framework for discussion, enabling administrators to isolate any subjective criteria more clearly when a deviation is made from the formal classification. The following sections give further detail on selection criteria: under the category of size of the sector, this includes territoriality or presence of the sector in the target region, and under the category of growth potential, these include trade behavior analysis and product diversification and economic complexity.

Territoriality

The program aims to assist the following populations: disadvantaged youth from rural and urban communities that live in communities with high crime or violence rates; indigenous populations; and those excluded because of ethnicity, sex, religion, disability or sexual orientation or identity. Attention is also placed on addressing gender inequalities.

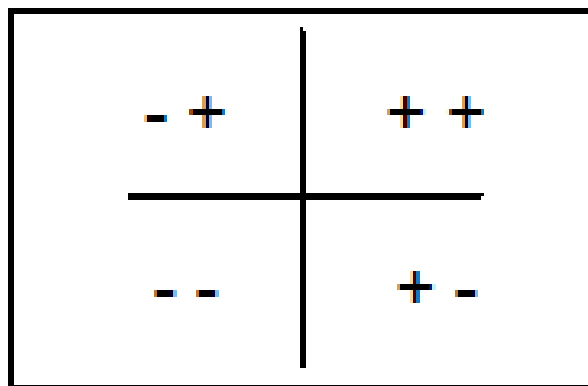
The program will work in departments that have a high incidence of poverty such as Quezaltenango (56.0%), San Marcos (60.2%), Huehuetenango (73.8%), Totonicapán (77.5%) and Quiché (74.7%).⁷⁰ One of the criteria considered in the Sector Appraisal Matrix was the existence of sectors in these departments and their potential for employment growth as understood by experts. The deliberation was based on a 1 to 5 ranking, where 1 was related to low potential relationships in employment in the region and 5 was related to high potential employment generation. It should be noted that this territorial weighting does not preclude a focus on other populations. If desired, this criterion could be removed to broaden sector selection geared toward the national context or changed to focus on another target region or regions.

⁷⁰ Guatemala National Institute of Statistics. *National Survey of Life Conditions (2-2014)*.

Trade Behavior Analysis

Both the volume and performance of exports have been important criteria in the sector selection evaluation, under the broader selection category of growth potential. It is necessary to assess whether exports have grown only because the market size has grown or if market shares have indeed expanded. Therefore, it is important to combine these criteria: the value of exports with patterns of market behavior.

One tool to analyze the dynamic behavior of recent trade is the trade share matrix.⁷¹ The matrix categorizes exports into two dimensions: (1) on the x-axis, the annual growth rate of the world market during a given time period, and (2) on the y-axis, the annual growth rate of Guatemala's exports during that time period. The size of each bubble indicates the value of exports.



- **Quadrant + +:** indicates that both world markets and the country's exports are growing faster than average; this corresponds to the "stars" quadrant in the "Boston Consulting Group Matrix" (BCG).
- **Quadrant + -:** indicates that world markets are growing faster than average, but the country's exports are growing slower than average (or shrinking); this corresponds to the "opportunities" quadrant in BCG Matrix.
- **Quadrant - -:** indicates that the world market is growing slower than average (or shrinking), and the country's exports are as well; this corresponds to the "challenges" quadrant in BCG Matrix.
- **Quadrant - +:** indicates that world market is growing slower than average (or shrinking), but the country's exports are growing faster than average; this corresponds to the "cash cows" quadrant in BCG Matrix.

The resulting Guatemala trade share matrix, describing the top 30 export products⁷² for the years 2010-2014, outlines the dynamic behavior of trade in Guatemala relative to the world (Figure 25). In order to provide the "relative" context to optimize the four quadrant titles, an extra frame showing the average growth of the country's exports (parallel to x-axis) and the average growth of the world market (parallel to y-axis) has been added with red dotted lines.

⁷¹ The trade share, or Bethesda, matrix is an adaptation of the venerable Boston matrix originally introduced by the Boston Consulting Group for the analysis of firm-level strategy. For a compact and accessible treatment of the strategic implications of the Boston matrix, see Koch, R., (2009). *The Financial Times Guide to Strategy. How to Create and Deliver a Useful Strategy.* 3rd edition. London. The trade share matrix has a similar strategic dimension, but is used here primarily as a predictive device.

⁷² These are the top 25 out of 1,250 products in the Harmonized System (HS) codes at the 4-digit level. These 25 products represent \$7.5 billion in exports, and account for 65% of Guatemala's total commodity exports.

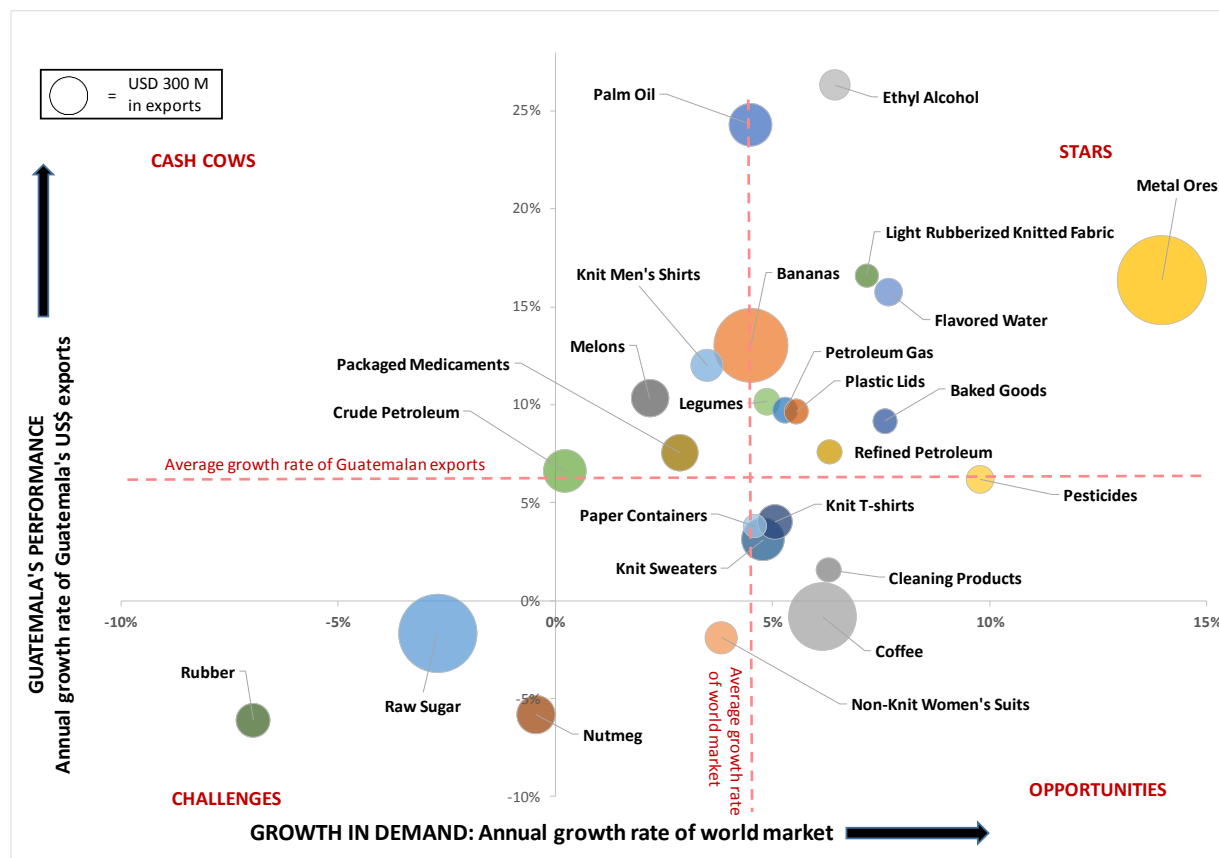
- Guatemala’s ‘stars’ quadrant, where Guatemala’s growth is above average in markets that are also growing at an above average rate, includes legumes, petroleum gas, plastic lids, refined petroleum, light rubberized knitted fabric, flavored water, baked goods, palm oil, and ethyl alcohol (a synthetic organic chemical used at the industrial level).⁷³
- The “cash cows” quadrant, indicating where Guatemala’s performance is strong in a relatively weak market, includes products such as bananas, knit men’s shirts, melons, crude petroleum, and packaged medicaments.
- The “opportunities” quadrant, where the global market is growing faster than average but Guatemala’s export growth rate is below average, includes paper containers, knit t-shirts, knit sweaters, cleaning products, coffee, and pesticides.
- Finally, the products found in the “challenges” quadrant, where both the global market and Guatemala’s exports are both growing slower than average include women’s suits⁷⁴, raw sugar, rubber, and nutmeg.

Given the potential outcomes of the trade share matrix, the study has included as a criteria of selection a derivative of the rate of growth of exports in Guatemala and the rate of growth of Guatemala’s share of the world market. To boost competitiveness, a higher weight is placed on products in the star and cash cow quadrants.

⁷³ Metal ores also appears in this quadrant, but as it is a conflict industry in Guatemala, has been disqualified for support and not included in the sector selection process.

⁷⁴ Specifically, this category includes women’s suits as well as other apparel such as separates, skirts, dresses, pants, shorts, etc. that are not knitted or crocheted, but generally made of woven fabric.

FIGURE 25. What are the trends in relative market share and export market size? (Guatemala Trade Share 2010-2014)



Source: Developed by FHI360, based on international trade data for 2010 and 2014 from MIT. Note: This matrix does not reflect changes in Guatemalan or global exports since 2014, which may be significant in particular sectors that have been impacted by internal and/or external factors.⁷⁵

Product diversification and economic complexity

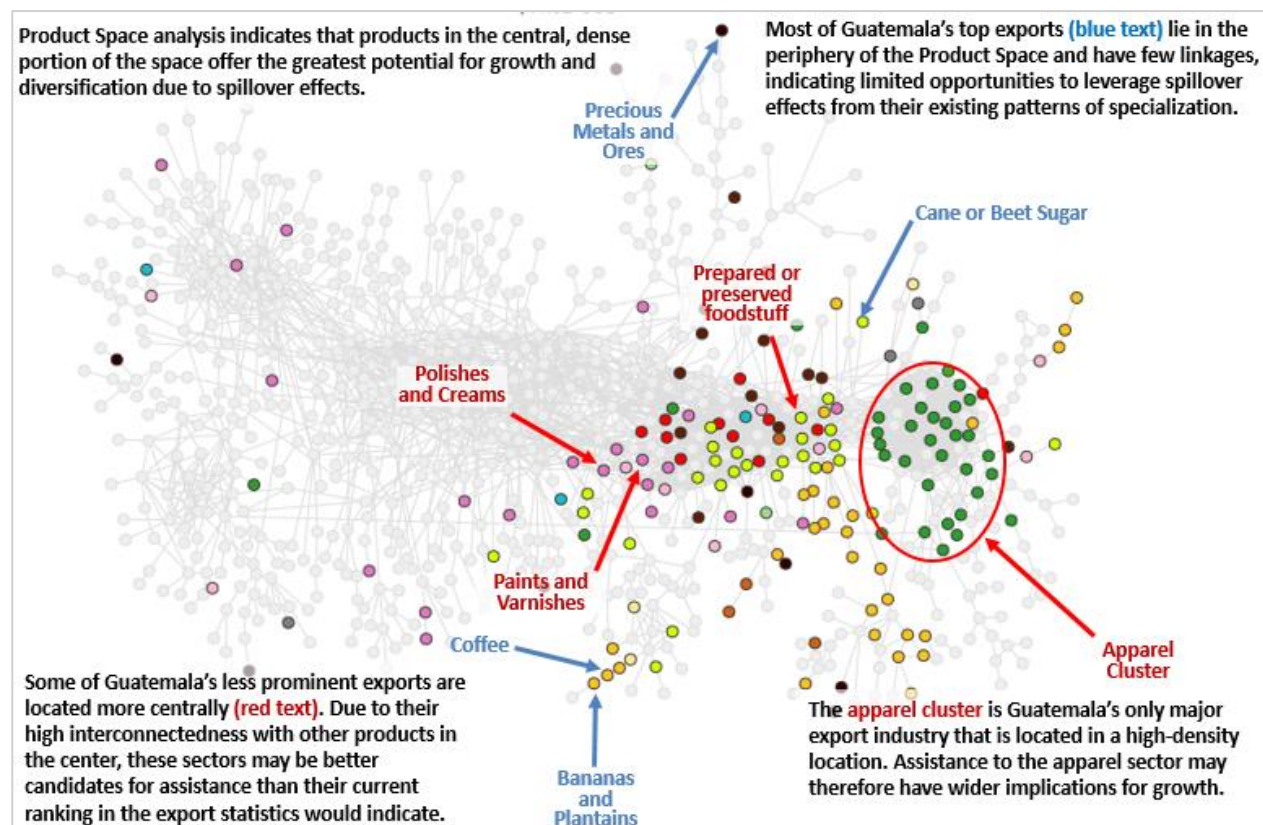
Another indicator that add considerable accuracy to the “Growth Potential” criteria is derived from the Atlas of Economic Complexity.

Our ability to extract meaningful information from highly aggregated and unreliable data is often quite limited, but trade data tends to be more detailed and of a more uniform quality (since data can be verified from two sources, the exporters and the importers), and some researchers at Harvard University have developed pioneering new methods to utilize these data. Their “product space analysis” utilizes, across all countries in the world, the correlation between increases in exports for specific products and that country’s subsequent growth. Their analysis concludes that income rises faster in countries whose

⁷⁵ Here we note that metal ores lies in the upper right-hand quadrant due to an increase in prices in the international market during 2010-2014. However, the position or size of the bubble does not imply significant job creation, in contrast to the vegetables and fruits sector, for example, where the total value of exports is lower, but the sector generates higher employment. It is also important to note that foreign direct investment in the mining sector in Guatemala has declined in recent years, and that it is a conflict sector, especially in rural communities.

product mix has a higher “economic complexity,” meaning that production is dependent on a denser and more tightly integrated network of overlapping capabilities, ranging from natural resources to infrastructure to human capital such as skills and intellectual property. This economic complexity is correlated with income growth because on the whole, the complex products tend to be more difficult to produce, and their scarcity raises their value.

FIGURE 26. How Can Product Space Analysis Improve Sector Selection in Guatemala?



Source: R. Hausmann, C. Hidalgo et al., “Atlas of Economic Complexity” Kennedy School, Harvard University & MIT Media Lab. http://atlas.cid.harvard.edu/explore/product_space/export/gtm/all/show/2014/

The product space analysis can serve as a guide to optimizing future export diversification for a country, using a special mapping of the products’ relationships to one another. It depicts a network map in which products are closer to one another if growth in their exports is correlated.⁷⁶ Based on conditional probability analysis of trade flows, for any given export product in which a country currently specializes, there are other products that share the same resources and labor capabilities (including skills). For example, countries competitive in the export of fresh flowers also tend to be competitive in the export of fresh fish, since both depend on the existence of a world-class cold chain.⁷⁷ If an economy is competitive

⁷⁶ The Atlas of Economic Complexity. Accessed at <http://atlas.cid.harvard.edu/about/glossary/>

⁷⁷ DAI (2010). The World Bank Sector Competitiveness Analysis Tools (SCAT) Reference Guide, 35-36.

in exporting product X, then it will have higher chances of upgrading to production of other products that are in the neighborhood of product X on the map.

In the product space visualization above, each colored bubble on the chart represents a product that Guatemala exports. Colored bubbles (as opposed to gray) have a Revealed Comparative Advantage (RCA) score of 1 or greater.⁷⁸ This means that Guatemala is already successfully exporting the selected product. The color of the bubble represents the category of export products (e.g. green for textiles and apparel, yellow for processed foods), while the location of the bubbles on the map reflects the degree to which the products are linked in global experience, through the kinds of technology, skill sets, or other factors required to produce them.

The central, dense area of the Product Space is the best

Unfortunately, most of Guatemala's existing high volume export products are concentrated in the periphery of the product space, where there are very few of the growth-inducing spillover effects that foster economic complexity. In fact, most of the biggest export products only have one linkage in the product space network (coffee, bananas, palm oil, cane sugar), while other products such as electric machinery, packaging materials and milk products (all of which Guatemala exports but in smaller quantities) are located in the center of the product space, with as many as 15, 20 and even 25 growth-inducing linkages. The textiles and apparel cluster is the exception to this rule – while the various products are clumped together in a high-density cluster, indicating strong linkages and spillover effects among its various products, these products have very few linkages to products in other sectors. For this reason, its location in the product space is neither central nor peripheral, but a little of both.

For this reason, despite the difficulties of diagnosing sector potential through more traditional measures such as growth in productivity and investment, the product space results for Guatemala provide support for selection of certain sectors that have been shown to lead to higher economic complexity (and therefore incomes) in other countries.

One of the more fascinating features of the product space analysis is that it indicates spillover effects between sectors that have very few buyer-supplier linkages (the type of linkages that are used to construct input-output tables, which lie at the core of the national accounts measures and much of our traditional thinking about economic development). Unfettered by the limitations of input-output relationships, the trade growth data have revealed subtler and hidden relationships between sectors, whereby skills and tacit knowledge built up in one sector can be applied to other seemingly unrelated sectors. For example, workers with a low level of education may be able to go from the hotel industry more easily to health care, or experienced workers in the garment industry may tend to be better prepared to work in the medical device industry.

It is important that Guatemala goes beyond a “labor-intensive labor market” to one that is economically diverse and supported by the accumulation of skills, innovation, and development of necessary production capacities. This can be aided by selecting products in the center of the product space, which offer the greatest potential for economic growth and diversification due to spillover effects. Economic diversification in this sense will increase competitiveness and therefore drive exported products in the

⁷⁸ The Revealed Comparative Advantage (RCA) is an index used to calculate the relative success a country has had in the export of a certain good. An RCA > 1 indicates that the country's share of the world export market in that product is higher than its average world market share (across all products). See <http://atlas.cid.harvard.edu/about/glossary/>

international market. The assessment team has adapted Hausmann's formula, below, to devise three different strategies for sector support.

The product space, because it is based on capabilities, indicates where coordinated investments in skills and business could be expected to yield higher returns - towards the center of the product space. But where exactly, and for how many of the dots, should we target investments in skills?

Let's assume the product space is like a chess game. As a country, what are your moves? How do you pick your next move? Do you just start randomly putting money into a cluster of sectors that are near or associated with a growth sector?

The complexity index, mentioned above, helps us identify the most strategic (and longer) moves that can be made. But before we begin evaluating which move we should make, at this time, we need to understand where we are on the map, and in time.

The product space database contains historical data that is often used as a benchmark to interpret the "big data" that comprises the export patterns. Using that information and current information, the products sort themselves into "communities" by focusing on the linkages among products. So for example, if there was a strong linkage between "woven fabrics of cotton" and "electrical capacitors" (which there is) they end up in the same community.

Once we have done that we are ready to analyze our next moves, and that is where we sort the product communities into columns – yielding a table with three options, as noted above. The first option, "Jobs, jobs, jobs" – the list of sectors a policy maker should prioritize if his/her position is "I need to place as many people, as fast as possible, regardless of their skills, in jobs", despite the fact that prioritizing these sectors may actually hurt a country's competitiveness because they will be competing globally based on low wages. The third option is made up of Strategic Bets – the list of sectors that would benefit from serious, medium to long-term investment. That over time would create high-skilled jobs and position the country at a much higher level in the value chain(s) related to those products. The second, is probably the most realistic list. Called Parsimonious Transformation, it provides a list of sectors that a government strapped for funds can consider, where some of the sectors would offer immediate employment options for a share of the population, while the other sectors would create the foundation for longer-term growth and competitiveness. We have applied the product space formula to the data from Guatemala and a table showing the top sectors for each of these strategic options is presented in Annex C.

If our criteria in this labor market assessment were only economic, there would be no need to go further. This calculation provides an excellent option for sector selection with both jobs and competitiveness in mind. For the purposes of this education project, however, we felt it was important to introduce a number of qualitative criteria, such as the feasibility of addressing the top sectors' challenges with tertiary level technical degrees and the presence of the sectors in our target regions. Thus we have used the product space analysis as only one of the criteria for selecting sectors. Going forward, it would be useful to analyze the difference between the product space matrix as produced, and the sectors we selected. For example, one could use the product space analysis to offer insights into the distance and movement between workers in the informal sector, into the "Jobs, jobs, jobs" sectors (as was done in a similar analysis for Morocco). This would require further research, however.

The Sector Appraisal Matrix which takes these criteria into account appears below.

FIGURE 27. Sector Appraisal Matrix

CANDIDATE VALUE CHAINS	CURRENT SIZE	GROWTH POTENTIAL				OTHER CRITERIA	TOTAL SCORE	RANK							
		Employment	Exports	Presence in Occidente Region	Expenditures (Intermed & Final)				2010-14 Growth in Guatemala's Exports	2010-14 Growth in World Market Size	Forecast Employment Growth	Economic Diversity Index	Prioritized Occupational Families	Higher Education Potential Impact	
<i>Weights ==></i>	40	15	5	15	5	45	10	10	10	15	15	5	10	100	
Food Processing	3.9	4	4	4	5	3.6	3	5	5	2	5.0	5	5	78.5	1
Logistic services	4.0	5	3	3	5	3.2			2	4	5.0	5	5	75.8	2
ICT (incl software & call centers)	2.3	2	4	3	1	5.0			5	5	3.7	1	5	74.5	3
Tourism	3.9	4	5	4	4	3.0			3	3	5.0	5	5	73.5	4
Financial services	3.0	3	2	3	4	3.8			2	5	5.0	5	5	73.2	5
Textiles, apparel and footwear	4.8	5	5	5	5	2.1	2	3	3	1	5.0	5	5	72.4	6
Forest products, furniture & packagin	3.1	4	3	2	4	3.6	4	1	5	4	4.3	5	4	70.0	7
Horticulture	3.2	3	4	3	5	3.1	4	3	4	2	3.7	1	5	64.5	8
Construction	3.6	5	2	3	3	2.6			2	3	3.6	5	3	63.3	9
Education services	3.4	5	1	3	2	2.8			1	4	3.7	1	5	63.2	10
Beverages (non-alch)	2.3	2	3	2	3	3.8	5	4	5	2	3.0	1	4	61.0	11
Other non-traditional agriculture	3.0	3	4	3	2	2.9	2	4	4	2	3.6	1	5	60.9	12
Metals & machinery	2.6	2	3	3	4	3.1	3	1	4	4	3.7	1	5	59.5	13
Health care services	2.2	1	1	4	3	3.4			1	5	3.7	1	5	59.1	14
Retail & Wholesale Trade	4.1	4	1	5	5	1.4			2	1	3.6	5	3	56.5	15
Dairy and livestock	2.5	4	1	1	4	3.1	2	5	1	4	2.3	1	3	55.0	16
Pharmaceuticals	1.8	1	4	2	1	3.4	3	2	3	5	3.0	1	4	54.0	17
Coffee	3.4	4	4	3	2	2.0	1	4	1	2	2.9	1	4	53.8	18
Honey	1.8	1	1	3	1	3.4			4	3	3.0	1	4	53.7	19
Extractive industries	2.0	2	5	1	2	3.7	4	3	5	3	1.0	1	1	52.0	20
Energy	1.4	1	2	1	3	3.2			2	4	3.6	5	3	50.7	21
Grains	3.0	5	2	1	4	2.3	3	5	1	1	1.7	1	2	50.0	22
Other light manufacturing	2.2	3	2	2	2	2.0	1	2	3	2	3.7	1	5	46.5	23
Plastics & chemicals	2.3	2	3	2	5	2.0	2	1	3	2	2.3	1	3	43.5	24
Poultry	1.6	2	1	1	3	3.0	1	2	3	5	1.0	1	1	43.1	25
Bananas	1.9	3	5	0	1	2.7	5	2	2	2	1.0	1	1	42.1	26
Palm oil	0.9	1	3	0	1	3.3	5	3	4	2	1.0	1	1	40.0	27
Seafood and aquaculture	0.9	1	2	0	2	3.3	4	4	4	2	1.0	1	1	40.0	27
Sugar	2.1	3	5	0	3	1.3	1	1	1	2	1.1	1	1	32.2	29

Of the ranked sectors above, we have selected five for further exploration in this report, covering the three major industry sectors: legumes and vegetables; textiles and apparel; processed foods including chocolates, candies, baked goods and other products; non-alcoholic beverages; and tourism. While it is not recommended that projects slavishly follow the priority rankings resulting from the sector appraisal matrix, it does provide a consistent and objective framework for discussion, allowing managers to isolate

any subjective criteria more clearly when a departure from the formal ranking is adopted. A brief justification for the final selection follows. In our case, the five sectors selected – food processing, tourism, textiles, horticulture (aka legumes and vegetables), and non-alcoholic beverages -- ranked #1, #4, #6, #8, and #11, respectively, well within the desired ranking range.

Legumes and Vegetables

This sector (aka horticulture) is in many ways an ideal sector for RWDP, especially given its target region in the highlands. Residents of the region are especially isolated from the modern economy by poor road infrastructure and factors related to language and culture. Among those who are rural residents, where some of the deepest pockets of poverty have been identified, a common denominator is access to land on which some horticultural crop can be grown (and for those who are landless, the most accessible occupation involves labor or services related to food processing, discussed below). Demand growth is reliable and, most importantly, the key success factors for improving agricultural productivity and incomes, especially for export products, are well known. Most if not all of those techniques involve improved training and technical expertise, so as with tourism, horticulture is a sector for which, in addition to the relatively high quantitative factors listed in the sector selection matrix, has a number of strong qualitative arguments in its favor. One disadvantage of horticulture and related sectors (food processing, beverages) is their low rating on the economic diversity index, as compared with milk and dairy products, for example.

Textiles and apparel

Along with tourism and construction services, textiles and apparel is one of the largest employers in Guatemala, and one in which rivalry is fierce, so an activity that has even a relatively small impact on competitiveness is likely to affect the employment prospects of a large number of relatively poor and uneducated Guatemalans. Guatemala produces a significant amount of the cloth material that goes into its garments, rather than importing nearly all of its inputs, like many neighboring countries. Also, unlike many of its competitors in the cut, make and trim (CMT) segment of the industry, a portion of Guatemala's clients are also interested in indigenously designed garments made from traditional locally grown and hand woven materials. The exact size and characteristics of this segment of the industry is not known, but it is reported to be centered in the Mayan highlands, and it could have significant potential for higher value-added growth with enough attention to marketing and commercialization of these garments.

Processed foods

Food processing shares many of the advantages described in the horticulture section. Although a smaller percentage of the population engages in processing than in primary production, processing represents an important employment opportunity for those without direct access to land for cultivation. Value chain upgrading strategies can focus, for example, on reducing the number of middlemen or using newer, more efficient processing technologies that can be effective at smaller scales. Key capabilities that RWDP can address are middle managers, food scientists (quality control, process engineers), and specialists in packaging, logistics and marketing.

Non-alcoholic Beverages

Unlike food processing, beverages is a narrower sector, which excludes alcoholic drinks and milk products. While its growth prospects appear to equal or exceed those of food processing, its smaller footprint in the region and lower employment overall lower its score relative to food processing.

Tourism

From a sector selection perspective, the diversity of the tourism sector is one of its greatest strengths (substantively) but also weaknesses (from the analyst's point of view). The multiplicity of types of employers and self-employment activities, from hotels to restaurants, transporters, travel agencies, attractions, handicrafts, and guides, makes the sector difficult to define precisely, much less to gather data. On the other hand, that very diversity ensures that the tourism sector provides ample opportunities for RWDP impacts via at least two channels: directly via hiring of tertiary sector graduates, and indirectly via jobs created by those graduates. Worldwide, demand for tourism is one of the most robustly growing sectors, and within Guatemala, even when one type of tourism (say sand-and-sun) is threatened, other types (such as cultural and business tourism) generally presents opportunities for development. Nevertheless, as competition in the Caribbean and Central American markets is intense, having a diversity of qualified middle managers and specialists in quality control, communications, facilities maintenance, attractions, marketing and logistics planning is increasingly necessary to remain competitive.

VALUE CHAIN ANALYSIS

After sector selection a further analytical tool used to get to the demand for skills is value chain mapping. Value chain mapping helps implementers and policymakers understand industry structure and dynamics by identifying the (approximate) number and type of firms and diagramming their roles and relationships.⁷⁹ A value chain map (see Figure 28 as an example) shows how a particular product flows through different market channels at the country level, and helps to identify constraints and opportunities for improving the performance of each channel.⁸⁰ Adapted from agricultural economics to broader uses in development, value chain mapping is often the first step for economic growth programs wishing to increase the incomes of a particular group of firms or individuals (for example smallholder farmers or contract workers). A workforce overlay to a value chain map helps identify where training and skills development are needed and how they can be delivered, such as through general education, technical education, vocational training, or on the job learning. It can also help identify career pathways for youth within a sector.

Value chain maps also help us understand industry structure and firm-to-firm relationships. For example, some channels may be vertically integrated (all functions performed by one firm) whereas others may be partially integrated, and others completely fragmented (many microenterprises selling products directly in an open market). Industry structure is directly related to value chain governance, i.e. whether power is concentrated in the hands of one firm or many firms, and whether chains are buyer or supplier-driven.⁸¹

⁷⁹ Steen, Cynthia, Rich Magnani, and Lara Goldmark. *Competitiveness Strategies for Agriculture-Related MSES: From Seeds to Supermarket Shelves*. Washington, D.C. 2005. Accessed June 2016.

https://www.microlinks.org/sites/microlinks/files/resource/files/ML3520_mr_37_competitive_strategies_for_ag-related_mses.pdf

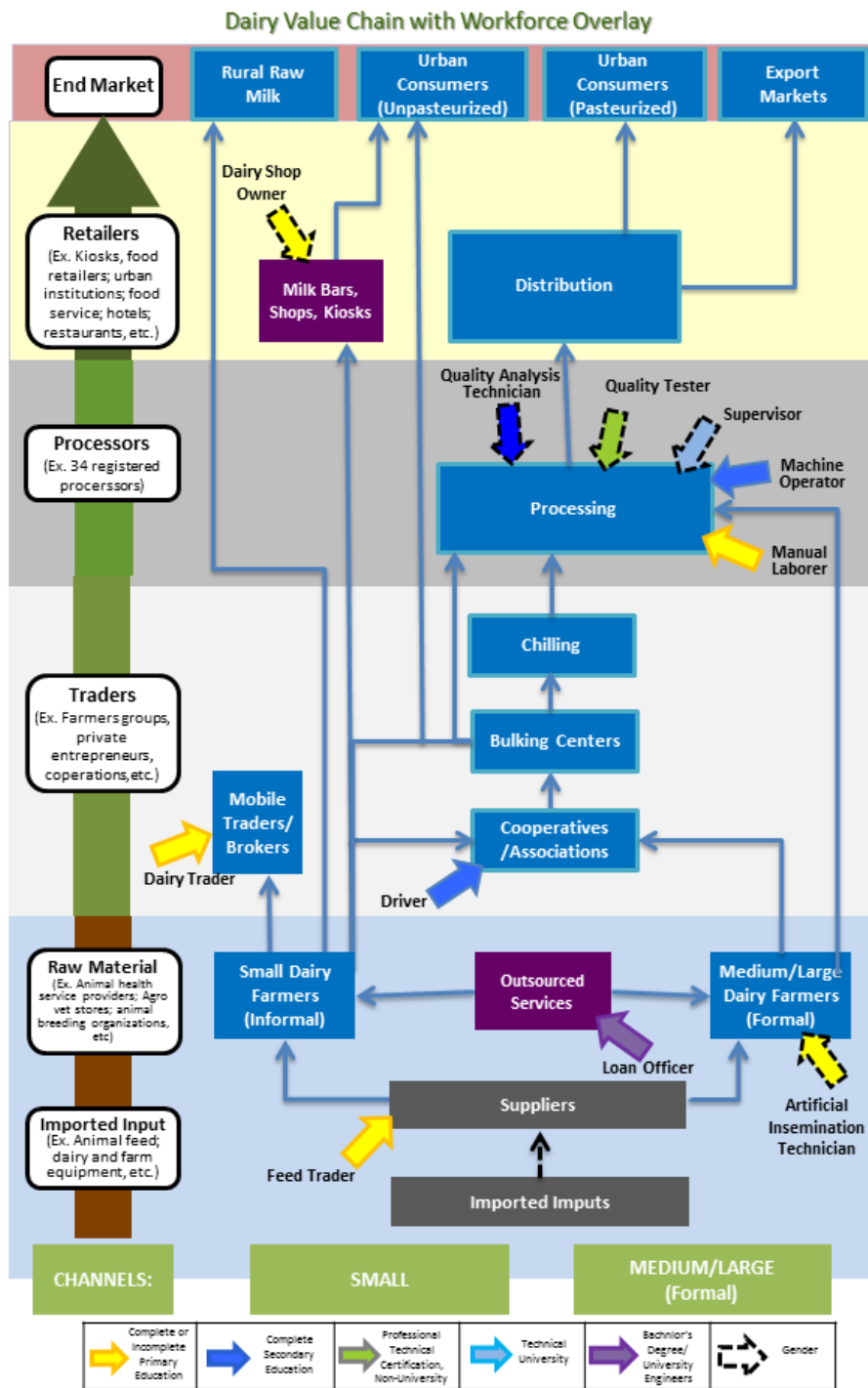
⁸⁰ Ibid. 10.

Consequently, understanding industry structure is critical when identifying potential employer partners to work with on skill building. For example, a lead firm buying products from hundreds of supplier firms will effectively set quality standards in the market, and these quality standards will have implicit skills requirements throughout the value chain. A lead firm is likely to be interested in bringing the quality (and therefore the skills) of suppliers up to standard, and may be willing to co-invest in skill-building initiatives. Such a partnership provides what value chain practitioners call “leverage” – a point of entry that allows your intervention to impact large numbers of firms and/or workers.

On the other hand, where lead buyers are located overseas (as with some segments of the apparel chain), this relationship changes; the lead buyer may not be interested in investing in quality and skills improvements in its suppliers as it may be more cost-effective to source from countries where quality is already high. In these situations, industry may work with the government and educational system to develop their own training programs to improve the quality of suppliers – but the investments and quality improvements may not trickle down to the SME level.

In the value chain figure, the colored arrows are used to signify employment opportunities. These entry points have particular skills needs that are identified according to the arrow’s patterns and color, indicating the education or training requirements for the position. A gender lens is included: arrows outlined in dotted lines indicate professions that industry experts consider to be particularly suitable for women as well as men (i.e. based on observed practice rather than traditional stereotypes).

Figure 28. Stylized Value Chain Map



Source: FHI 360

In addition to the value chain maps, as part of the study, “**sister**” diagrams are presented. The “**sister**” diagram links technical positions in the value chain with educational programs (existing and non-existent) in Guatemala.

Understanding the function of positions as they relate to knowledge, skills, and attitudes taught at the secondary, tertiary-technical, and university levels aids in analyzing the continuity of education for young people. However, it is important to note that continuity is not mandatory for young people to advance academically and professionally. Moreover, “carreras”, although they follow linear production processes, do not mean that young people are forced in a defined direction or path in their long-term professional roles.

The “sister diagram” identifies technical positions according to the level of education required: a) at the secondary (*Perito*) education cycle, b) at the technical university level, including programs that currently exist among academic offerings, along with those that do not exist, but were identified by the sector as a need, and c) at the *Licenciatura / Ingeniero* level (4+ years of university education). Below this description of educational offerings associated with the technical needs by stage in the value chain the diagram shows a) occupations associated with INTECAP (Technical Institute for Training and Productivity) training at the post-secondary (not tertiary) level, and b) those occupations defined by the International Labor Organization’s (ILO) International Standard Classification of Occupations (ISCO) as requiring education at the ISCED 5 level. INTECAP offerings complement training that takes place within formal education institutions.

The ILO’s ISCO is important to understand in the case of Guatemala for several reasons. Primarily, the Congress of the Republic of Guatemala is currently in the process of passing regulations pertaining to “Government Agreement in Support of the National Labor Training System,” while the Ministry of Education is undertaking an initiative to align existing technical education programs with the ILO’s ISCO standards. Looking towards the future, the diagram shows not only existing occupations in the sectors, but also those occupations that have the potential to contribute to productivity and competitiveness in identified sectors according to international standards.

BUILDING A VALUE CHAIN MAP

In order to develop the value chain maps, FHI 360 interviewed representatives of businesses about key interacting elements: core processes, direct and indirect actors, influence of the environment and other external forces; labor needs, and links between all actors in the value chain.

Core Processes

Through secondary information, core processes were identified as stages through which a product must pass, from the idea to its consumption in the market.

Direct actors

Principal direct actors are those that are involved with production processes such as inbound logistics, production, processing, outbound logistics, marketing and sales, and service. The main direct actors who

are embedded in the production processes were identified. Direct actors are those who take direct possession of the product and “own it” in connection with other actors in the chain.⁸²

Indirect actors

Main indirect actors were identified as those who provide operational services and / or support services in the chain to direct actors on different levels. These actors do not assume a direct role in the product, and while they can have a link with the product or service at a certain moment of production, they are not connected throughout the process. These include input suppliers, operational service providers, service providers and regulatory support organizations.

Environmental Influences

Environmental influences identified include external economic, political, environmental, and cultural forces that affect the chains, even though they cannot be controlled by direct or indirect actors in the value chain. Some examples are: the creation of new health laws, the price of products such as coffee, and the availability of environmental resources, among others. This issue of the power and influence of external forces was addressed throughout the field interviews.

COLLECTING THE INFORMATION

Secondary information

This information includes a collection of general information, statistics, studies, documents, desk analysis, evaluation and selection of different sectors, which provides knowledge of products, services and links that make up each value chain. This is part of the technical economic and social context evaluation that provides a comprehensive analysis in order to identify the potential of a product or sector.

Primary information

This step allows the technical team to obtain in-depth information to understand the operations and concerns of a group or actor in the chain. Primary information collection was conducted in two ways:

- **Interviews:** Interviews collected information directly from actors in the selected sectors. An interview guide⁸³ was developed to obtain data regarding value chain information; business networks; company information; staff recruitment; general and specific skills; and the current and future needs of the sector itself. The selection of actors interviewed was conducted based on the

⁸² Lundy, Mark. *A Participative Guide for Inclusive Business Models for Small Farmers. Version 2.0.* 2014. Accessed May 2016. <https://cgspace.cgiar.org/handle/10568/49607>.

⁸³ See Annex A, Interview Form.

territorial focus of the program,⁸⁴ covering 8 large companies, 5 medium companies and 16 small companies.⁸⁵

- **E-mail survey:** The survey collected information from the companies' human resource staff on the development of workforce skills and competencies required generally and specifically by the sector. This survey was oriented toward actors in the selected sectors and other sectors of interest.⁸⁶

SECTORS, SUBSECTORS, PRODUCTS AND SERVICES IDENTIFIED

Three levels of aggregation were identified for the selected sectors: sector (general level overall), subsector (industry) and corresponding products or services related to economic activity.

The following table shows the selected sectors categorized based on the traditional grouping of economic activities in three main groups: primary, secondary and tertiary activities. Subsequent sections follow the order presented in the table.

TABLE 4. Categorization of Selected Sectors

TRADITIONAL GROUPING	GENERAL CHARACTERISTICS OF THE SECTOR		SECTOR	SUBSECTOR	PRODUCTS AND SERVICES
Primary Activities	Use of natural resources	1	Agriculture	Non-traditional Agriculture	Legumes and vegetables for export
Secondary Activities	Transformation of goods	2	Manufacturing	Processed Foods	Chocolates, sweets, and baked goods
				Beverages	Non-alcoholic beverages
				Textiles and Apparel	Manufactured apparel
Tertiary Activities	Provision of knowledge, skills, and time	3	Services	Tourism	Lodging, restaurants and transportation

⁸⁴ 29 interviews were conducted by a field team in Guatemala in the departments of Quetzaltenango, Quiché, Totonicapán, Huehuetenango, and Chimaltenango.

⁸⁵ Size of business is characterized as follows: microenterprise: 1-10 employees; small enterprise: 11-25 employees; medium enterprise: 26 to 60 employees; large enterprise: more than 60 employees.

⁸⁶ 9 email surveys were returned to the field team.

AGRICULTURE: LEGUMES AND VEGETABLES VALUE CHAIN

Globalization and the effects of climate change have moved market demand toward eco-friendly production practices throughout the legumes and vegetables value chain. While the organic movement is driven by demands from external markets such as in the United States and Europe, consumers in Guatemala are also beginning to participate and drive the trend in the national market. As a result, certification in the value chain is necessary, from seed to store. This requires an upgrading of skills and technology particularly in order for smaller producers to benefit from this movement. Key positions as this trend continues in the market include food processing technicians, logistics and transportation, and marketing and sales. Food processing technicians, responsible for regulating production practices, are key in order to ensure that organic standard practices are implemented at all stages of production. These technicians may also conduct laboratory research to enhance knowledge of a product itself as well as how it can be marketed. Logistics and transportation technicians are important in this sector in order to account for the safety and quality of goods being delivered from the farm to the factory, or to the port for export. Marketing and sales technicians are necessary in order to create opportunities in both existing and new markets. These workers would need an understanding of technology, specifically in the use of social media, graphic and web design.

The subsector “Non-traditional agriculture and products” includes legumes and vegetables exported such as broccoli, peas (Chinese and sweet), French green beans, zucchini, baby corn and mini-carrots. Due to the frequency of natural disasters in Guatemala, the non-traditional agriculture sector in Guatemala has had to learn to adapt to the unpredictable challenges of climate that may affect production. For example, after the 2008-2009 global economic crisis, Guatemala faced a drought, which in some instances destroyed up to 90% of crops.⁸⁷ In 2010, indigenous and rural communities faced the eruption of the Pacaya Volcano and tropical storm Agatha, causing devastating landslides and floods. Approximately 500,000 Guatemalans were affected as a result, many of them living and working in agriculture-producing regions.

Despite unstable production years, Guatemala is recognized as a leader in non-traditional export products such as in snow peas, green beans and mini-carrots for several reasons. This is due to the variety of goods produced in Guatemala’s many microclimates; the ability of producers and agriculture associations to plan for disasters and control their crops; and Guatemala’s proximity to large markets such as the United States. As a result, agricultural production in the country is expected to continue to grow. This pattern of growth is evident historically. Non-traditional exports represented 58% of exports in 1980 and grew to 76% of products exported in 2015.⁸⁸ Peas are the highest ranked of all exports, according to a United Nations (COMTRADE) report, the United Nation’s statistical database on trade.⁸⁹ Exports recorded for vegetables from the year 2002 to 2015 represent an average growth of 8%, despite

⁸⁷ World Bank. *International Bank for Reconstruction and Development and International Finance Corporation Country Partner Strategy for the Republic of Guatemala for the Period FY 2013-2016*. Washington, DC. August 2012.

⁸⁸ Bank of Guatemala. *Guatemala in Numbers, 2015*. Department of Macroeconomic Statistics. Guatemala City. 2015. Accessed June 2016. http://www.banquat.gob.gt/Publica/guatemala_en_cifras_2015.pdf.

⁸⁹ Economic Commission for Latin America and the Caribbean. *Strengthening the Tourism Value Chain in Antigua, Guatemala and the Rural Municipalities of the Sacatepequez Department*. Mexico City, Mexico. 2016.

periodic downturns from the 2008-2009 economic crisis and due to natural disasters.⁹⁰ The main external markets for non-traditional export vegetables are the United States, Canada and European countries, and to a lesser extent, to some Central American countries and Mexico. While domestic markets do exist for non-traditional agriculture in super markets and in local stores, producers focus on international markets due to better prices.⁹¹ In 2011, FUNDESA (The Guatemalan Development Foundation) stated that the non-traditional agriculture subsector employed 123,000 individuals, and is expected to reach 248,000 by 2021.⁹² This represents a growth of 102% employment in the subsector alone.⁹³ For the legumes and vegetable subsector in 2010, 32,750 are considered direct jobs and 4,529 are considered indirect jobs.⁹⁴

The sector is governed by the National Committee of Peas and Vegetables, part of AGEXPORT, which represents 28 exporting companies. The process of decision-making in the Committee is managed by the board, composed of representatives from leading companies engaged in the export of peas, including the Cooperativa Unión Cuatro Pinos, Frutesa, Cooperativa Magdalena, Det Pon and Grupo Siesa. These businesses are engaged in production, and processing and packaging, and two of them are also involved in commercialization.

From the perspective of those interviewed in the sector, the future of agriculture will move from traditional practices to more advanced practices, focused more on organic agricultural production. Here, obtaining and maintaining organic production certifications from international companies and organizations will be important to actors throughout the value chain process.⁹⁵ Moreover, input supplies, farming practices, storage facilities, and production and packaging processes will need additional specialization and improved competencies in order to meet the standards and needs of organic certifiers.

Understanding the Interrelationships Among Principal Actors in the Legumes and Vegetables Value Chain

In order to understand global and national pressures on businesses in the legumes and vegetables industry in Guatemala as highlighted above, the value chain below combines the functionality of a value chain with an understanding of knowledge and skill needs and constraints as described by those interviewed in this study. Effectively, the legumes and vegetables value chain can be divided into five stages that make up the core production. These include providers of inputs and services; production; processing and packaging; marketing; and final consumer markets. Positions available as illustrated in the value chain are divided into three categories of positions including i) directors and managers,

90 Bank of Guatemala. *Guatemala in Numbers, 2015*. Department of Macroeconomic Statistics. Guatemala City. 2015.

91 Economic Commission for Latin America and the Caribbean. *Strengthening the Tourism Value Chain in Antigua, Guatemala and the Rural Municipalities of the Sacatepequez Department*. Mexico City, Mexico. 2016. Accessed July 29, 2016. http://repositorio.cepal.org/bitstream/handle/11362/39871/1/S1600119_es.pdf

92 FUNDESA. *Guatemalans Improve Guatemala: A Proposal for a More Prosperous, Solidary, and More Secure Guatemala*. Guatemala. 2012. Accessed June 2016. <https://issuu.com/fundesaguatemala/docs/mejoremosguate>.

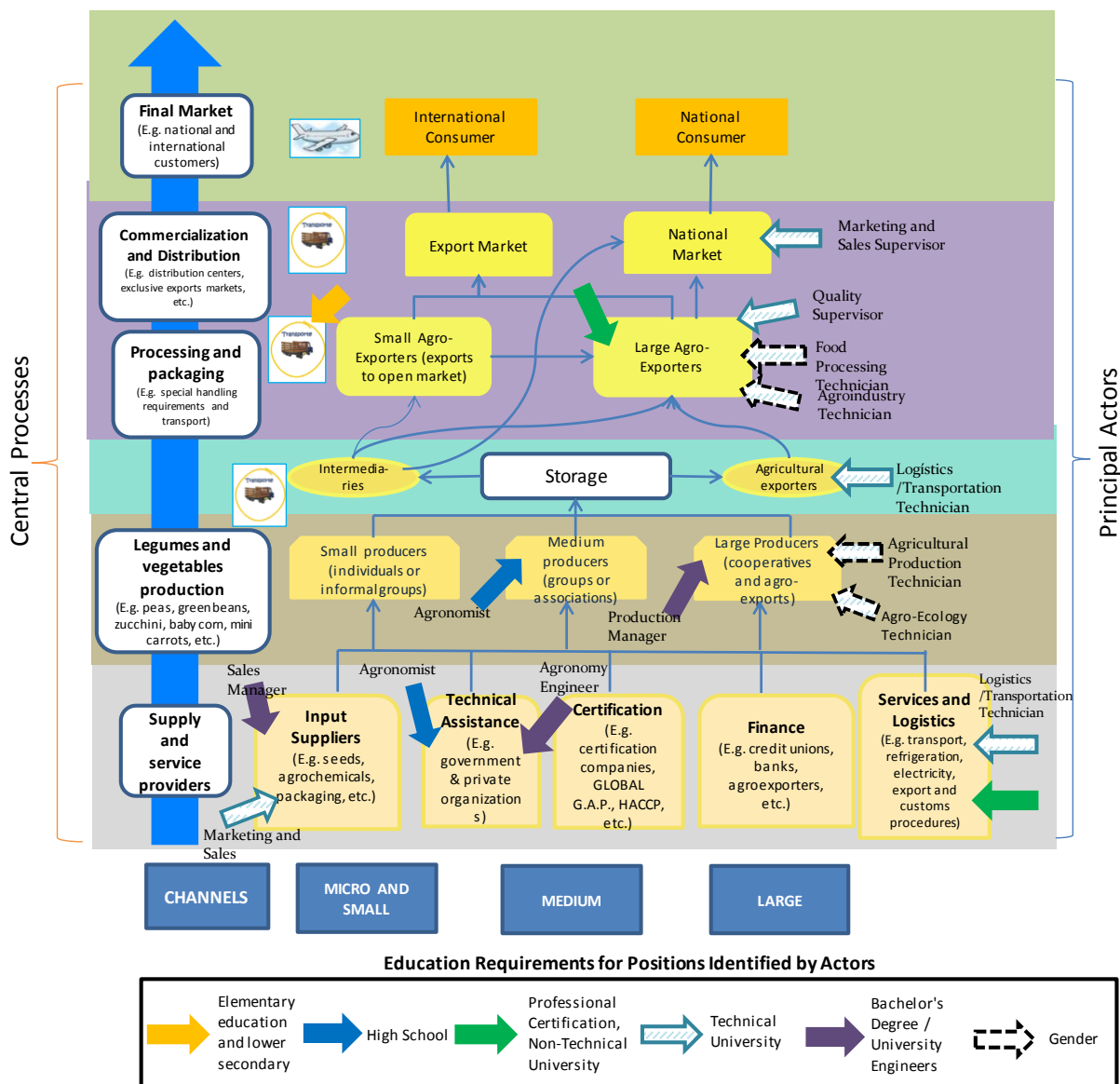
93 FUNDESA. *Guatemalans Improve Guatemala: A Proposal for a More Prosperous, Solidary, and More Secure Guatemala*. Guatemala. 2012.

94 AGEXPORT. *Duplicating Exports and Employment in Guatemala: AN AGEXPORT Proposal. A Renewed Strategy, 2012-2015*. Guatemala. June 2015. Accessed June, 2016. <http://www.export.com.gt/wp-content/uploads/competitividad/PropuestasdeAGEXPORT/Caraturaportadaresumenejecutivo.pdf>.

95 Two medium businesses producing legumes and vegetables (with 21 and 1 year operating in the market) and three small businesses (with 25, 20, and 10 years operating in the market) were interviewed for this study.

occupied by university graduates; ii) technical and operational posts: which are held professionals with secondary education and those with university education, and iii) skilled workers: which are occupied by workers with primary and basic education.

FIGURE 29. Legumes and Vegetables Value Chain Map with Workforce Overlay



- Inputs and Services.** Suppliers provide companies with inputs such as seeds, fertilizers, agrochemicals and packaging supplies, much of which is imported from Germany or the United States. Additionally, businesses, institutions and/or organizations that provide technical assistance, certification processes, financial, and additional services such as AGEXPORT are included in this stage of production. In this stage, foreign seed companies drive the chain development as they invest heavily in research and innovation and sell through importing agencies in the domestic market. In this stage, the assessment has detected a need for logistics and transport technicians.

- Production.** In this stage, direct actors that are categorized into three groups: i) small producers (individual or those community-based initiatives), ii) medium producers (groups or associations, often affiliated with large cooperatives and trade unions) and iii) large producers. These entities create support networks for producers and have power in the sector commensurate with their size. In this stage, the production process is carried out, from the preparation of soil conditions, to the harvest of agricultural products. The processing of crops and transport of products is carried out with small and medium producers in two ways: i) intermediaries who buy base production to meet the volume demands of small exporters and in some cases, of agricultural exporters who supply local markets on the national level and operate informally in the chain; and ii) directly to exporters through which agreements have been established for the purchase of goods and strategic collection centers allow exporters to move production to processing plants. Direct and indirect actors in this stage have mentioned a need for Agricultural Production Technicians, while the assessment has detected a need for Agroecology Technicians.
- Processing and packaging.** This stage is composed of direct actors who are in charge of business operations or who rent out processing plants and refrigeration systems where the process of selecting, cleaning, and packaging of vegetables takes place. The process for marketing is carried out by businesses through a distribution center, where logistics and transport processes are organized. This allows the handling of cargo and the distribution of products, land transportation, the supervision of customs procedures, and the shipment of the final product according to the destination. In this stage, actors identified a need for Quality Management Supervisors, Food Processing Technicians, and Agro-industry technicians.
- Commercialization.** In this stage direct stakeholders, who have a role as intermediaries (brokers), manage logistics and customs regulations abroad and also market to large supermarket chains, hotels and restaurants domestically or to importers. Quality and quantity of product are important in this stage in order to sell a product at an agreed upon price. Here, actors have identified a need for Marketing and sales supervisors.
- End market.** This stage is the responsibility of national and international direct actors. Nationally there are companies that are responsible for the purchase and distribution of vegetables to chain restaurants, hotels, local markets, supermarkets and shops. At the international level there are companies that collect and distribute to supermarket chains, restaurants, hotels, etc.

Limitations of the Legumes and Vegetable Value Chain

The main limitations or barriers facing the sector are related to access to credit for producers who have limited financial support systems, the lack of modern infrastructure in order to ensure the production, processing and packaging of quality products, and finally; lack of agricultural research supported by the private sector and universities. These limitations, such as in restricted access to credit, harm actors particularly those at the base of the value chain, from attaining purchasing power, thereby limiting investments and future growth. Additionally, these financial barriers impede further integration of groups in horizontal and vertical commercial networks, thus slowing the transformation of producers and actors at the base of the value chain.

Furthermore, limited access to modern infrastructure, including adequate irrigation systems, communication channels, and storage facilities hinder levels of productivity, and affects the quality and quantity of crops produced. Most small producers do not have the capacity to maintain such irrigation

systems, and also have difficulty obtaining sufficient water supplies. Instead, small producers depend on the rainy season, which introduces uncertainty as seen in the 2010 drought.

There are also limitations associated with the cold chain production process. Larger producers who have access to the technology and infrastructure in the cold chain process are those who benefit. For example, ideally, and for those businesses who have this equipment, the life of freshly harvested crops can be maintained or extended from the time they leave small farms to the time they sit on supermarket shelves. Here, storage facilities are important as to keep goods fresh before export or transfer to market. Often, those who do not have cold rooms to extend the life of fresh vegetables may deliver a product that does not meet the quality standards of customers.

Actors and associations also mentioned that the strained relationship between universities and the private sector is a disadvantage as producers look to change and expand current markets with organic production. Often, agricultural research is done in isolation in universities and the private sector, which ultimately restricts the transfer of new knowledge to producers and associations who need it most. Research of agricultural practices concerning climate change, for instance, would allow for the transfer of knowledge suitable to adapt to the climatic and soil conditions where productive activities take place.

Other actors highlighted additional concerns in the legumes and vegetable sector including:

- High social unrest in regions with high agricultural production.
- Lack of professional and technical development, resulting from the lack of opportunities for specialization.
- Weakness in knowledge transfer of productive activities to young people due to emigration, thus losing knowledge exchange generationally, particularly in the case of a family business.
- Lack of soil conservation practices in sloped production areas for small producers.
- Lack of access training in areas of technology.
- International political issues; the case of England and the European Union, which have influenced the decline of exports to Europe due to falling prices.
- Lack of implementation of social policies by the government.
- Weak legal institutions and frameworks which fail to regulate and control the migration and infestation of pests, insects, and disease, thus affecting crops.

Key Positions and Associated Skills in the Legumes and Vegetables Value Chain

The current outlook for occupations in the value chain of legumes and vegetables identifies two types of occupational categories: i) permanent salaried workers (workers or employees) and ii) temporary workers. Growth can be seen across the sector in organic production practices for both national and international markets. This growth is related to the demand of products derived from population growth both domestically in Guatemala and abroad; both salaried and temporary positions have been increasing. Moreover, this means growth in market share, and the demand for products allows the generation of new products that create new opportunities for promotion, production and marketing. This will require additional technical training for small farmers, as they become incorporated with new products and formal producers throughout the value chain. Temporary workers are those individuals hired for planting,

cultivation and harvesting. Most of the activities that are categorized as temporary employment are mainly carried out by women and take place either during harvest, during selection stages where the quality of products is determined, and during packaging processes. Currently, 64% of workers in the non-traditional agricultural sector are female.

As these market trends continue, high-priority in-demand positions include food processing technicians, logistics and transportation technicians, and marketing and sales technicians. Food processing technicians, responsible for regulating production practices are key in order to ensure that organic standard practices are implemented at all stages of production. These technicians can also be trained in laboratories in research that enhances knowledge of a product itself and how it can be marketed as well; this requires strong analytical skills, and oral and written communication skills in order to create and promote new products. Logistics and transportation technicians are important in this sector in order to account for the safety and quality of goods being delivered from the farm to the factory, or to the port for export, and must have knowledge of the commercialization and, when applicable, the export process. Marketing and sales technicians are necessary in order to create opportunities in both existing and new markets. These workers would need an understanding of technology, specifically in the use of social media, graphic and web design. Understanding market context and the needs and desires of consumers is also important for marketing personnel in order to achieve successful campaigns in new markets. Additional positions and related skills are outlined in Annex D.

Attitudes

University students coming from technical programs bring competitive advantages to businesses according to survey respondents. Several of these advantages include important attitudes that increase work effectiveness and efficiency; increased production quality; creating work- friendly environments (thus increasing productivity and access to the market directly); improvement in incomes of producers, partners, and ultimately families.

Attitudes most often described by those interviewed as important relate to having a positive spirit, self-motivation, and the ability to work well in groups. Self-motivation and the desire to improve oneself were seen as important particularly for temporary workers as they are monetarily incentivized based on the amount of products packed. Qualities relating to responsibility, ability to listen, and a dedication to quality were also valued by those interviewed. Dedication to quality may be important for businesses focusing on export markets as goods seen as having the highest quality are generally exported. This is important as it relates to the cost of sales with intermediaries and with exporters as well. Marketing and sales technicians were seen as having an advantage where they could demonstrate a desire to improve in their roles and determination to succeed. Food processing technicians are at an advantage in this sector if they are socially committed to their work and dedicated to preserving the environment, particularly as organic production moves the sector toward safe, sustainable farming and production practices. Additional attitudes are outlined in Annex D.

Legumes and Vegetables: How Can Educational Institutions Serve the Sector?

Although actors described the need for more formal education and training in the areas of kitchen and administrative staff, options remain limited in the country on the technical and university level. Options for formal programs are described below.

Secondary education programs focused in this sector include:

- Food industry

- General secondary education with concentration in food industry

These programs are available nationally and are standardized according to an established curriculum defined by the Ministry of Education. While many receive the Perito distinction, the quality of education is low, and many students struggle to achieve age appropriate reading and mathematics levels.

Technical Tertiary Programs (2-3 years): The following degrees are offered at the technical tertiary level:

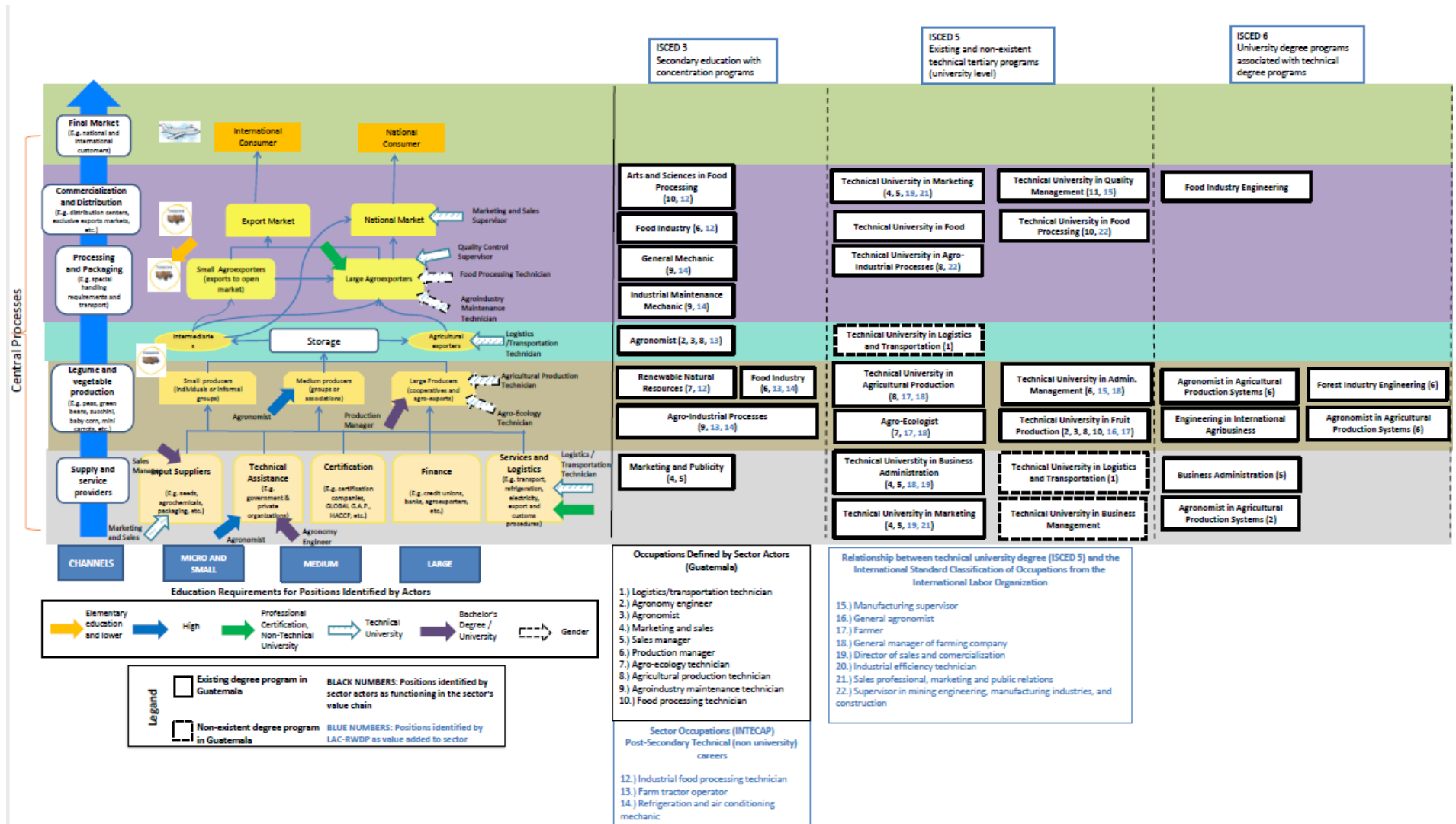
- **Quality and food production processes:** Instituto Tecnológico Universitario del Sur, USAC, Palín Escuintla
- **Agro-industrial processes:** Rural University, Quetzaltenango, Coatepeque, Salcajá, Centro Universitario del Sur, USAC, Escuintla
- **Fruit Farming Production:** Universidad de San Carlos; San Juan Chamelco, Alta Verapaz
- **Agro-ecology:** Universidad Rural, at campuses in Unión Cantinil, San Pedro Soloma, Nentón, Huehuetenango
- **Agroindustry:** Centro Universitario del Sur, Universidad de San Carlos

University Degree Programs (4 years): The following degrees are offered at the *licenciatura* level:

- **Food Industry engineer:** Centro Universitario del Sur Occidente, Mazatenango, USAC
- **Agroindustry engineer:** Centro Universitario del Sur, USAC, Escuintla, Universidad Rural, at Quetzaltenango, Coatepeque and Salcajá campuses.
- **Forestry industry:** Universidad de San Carlos; San Juan Chamelco, Alta Verapaz
- **Forestry:** Central University of the Northwest, Huehuetenango
- **International agro-business:** Universidad de San Carlos; San Juan Chamelco, Alta Verapaz
- **Agronomy:** USAC, Guatemala City, Centro Universitario de Occidente, USAC, Quetzaltenango
- **Agronomy, specializing in agricultural production systems:** Universidad de San Carlos; Central University of the Northwest, Huehuetenango
- **Environmental engineering:** Rural University, Quetzaltenango
- **Agronomic engineering:** Rural University, at Huehuetenango, Jacaltenango, Santa Cruz Barillas; Santa Cruz del Quiché; Nebaj; Ixcán Playa Grande, Pachalum, San Pedro, Sacatepequez, San Marcos campuses
- **Agriculture and Forestry:** Universidad de San Carlos, Guatemala City.

The “sister” or parallel diagram below depicts information on existing and potential tourism-related educational offerings matched to the key positions in the tourism value chain. Here we note a potential need for the following university technical training programs (with potential occupations): agriculture production (technician in agriculture production); quality control.

FIGURE 30. Technical Positions, Occupations, and Education Level in the Legumes and Vegetable Value Chain vs. Existing and Non-Existent Career Options in Guatemala



MANUFACTURING: TEXTILES AND APPAREL VALUE CHAIN

Guatemalan textiles and apparel production are important to national and international markets both in terms of design and production. Guatemala's deeply embedded indigenous cultures reflect their beliefs and heritage through intricate designs and bold colors. As the world globalizes, many traditional indigenous designs are beginning to find external niche markets and new opportunities. Likewise, Guatemala's proximity to large markets such as the United States and to a lesser extent, Central American and Mexican markets make Guatemala a strategic investment for international companies, particularly as export producers respond to the immediate demand via the "speed to market" method of production. The quality of goods produced in this way can only be maintained with additional investments in technology and appropriate training, both costly for maquila and smaller producers alike due to high taxation and maintenance costs of imported machines, and the low level of education found in the current labor market. Necessary positions to support both domestic and export producers in the textiles and apparel chain include machine maintenance technicians and designers. Maintenance technicians are crucial in both MSMEs and in maquilas because the "speed to market" production in this industry means that businesses rely heavily on working equipment in order to complete orders in a given time frame. Otherwise, particularly for smaller businesses, older technology must be used as a backup, which may affect quality of product and the time in which an order is completed. These technicians would need knowledge of the machines themselves, fine motor skills, and the ability to work under pressure. Designers also must be informed of market trends in order to create innovative designs and also how to market them. This is interesting in national production of indigenous patterns where producers have more freedom in which goods they produce. Designers should be aware not only of market trends, but understand production costs as well.

The textiles and apparel value chain is part of the manufactured apparel subsector. Until the mid-1980s, the sector was almost exclusively oriented towards national and Central American market production. However, a government-incentivized shift in development model moved the industry from import substitution to a focus on export production. This was promoted by the government through free trade zones and tax breaks, particularly on imported primary materials for large producers. A comparative advantage in this division of the sector is that there are no quota restrictions mandated to enter the US market. The sector was challenged during the 2009 financial crisis when foreign direct investment dropped to levels that were lower than for both El Salvador and Honduras. The lack of investment from major investors such as the United States, United Kingdom and Spain has had noticeable effects on the textile industry.⁹⁶

Two productive segments in this value chain have developed in the industry: one focused on national production made up of small and medium enterprises (SMEs), and the other, export-oriented and managed by large foreign enterprises. Value chain governance is led by the Association of Apparel and Textile Industry, VESTEX, part of the Association of Non-Traditional Exporters, or AGEXPORT. SMEs are largely supported by the Union of Knitwear, Textile Guild, and the Tailoring Association of Guatemala, or ASCONFEG. This organization seeks to strengthen production and the supply chains of the SMEs that they represent on a national level by: i) finding financial resources that benefit their members, ii) government support; and iii) identification of niche markets. Although the member companies of the Association have no clear and definite comparative advantage today, some have managed to locate institutional and advertising niche markets. Large businesses and exporters benefiting from free trade

⁹⁶ World Bank. *International Bank for Reconstruction and Development and International Finance Corporation Country Partner Strategy for the Republic of Guatemala for the Period FY 2013-2016*. Washington, DC. August, 2012.

zone legislation import a “complete package model” from international clients and provide a unique supply chain based on the customer’s desired end product. Because of the distinction in market, SMEs and large producers have not developed productive chains or clusters where knowledge sharing, technology transfer, among others, might occur within their location in national context, and as a result, these markets function in isolation.⁹⁷

Apparel and textiles were the most exported goods in Guatemala in 2015, followed by sugar, coffee, and bananas.⁹⁸ The Bank of Guatemala estimated that 79% of exports in this sector were destined for US markets; 11% for Central American markets, and 3% to Mexican markets.⁹⁹ Additionally, between the period of 2002 and 2015, textiles and apparel grew at an annual rate of 6%, suffering a dive during the 2008-2009 financial crisis, and slowly stabilizing thereafter.¹⁰⁰ By 2014, manufacturing industries contributed 3.2% of GDP.¹⁰¹ In the domestic market, the majority of textile manufacturing is based on the production of traditional garments (knit shirts, cotton trousers, fiber pants, socks, uniforms, etc.) carried out by 180 apparel manufacturers.¹⁰² This includes the production of traditional textiles sold and worn by indigenous communities. 70% of exports are also based on these products. Major external markets for indigenous goods include the United States and Europe. In 2010 apparel and textiles accounted for 110,087 jobs, of which 72,915 jobs are considered direct jobs, and 37,172 are considered indirect jobs.¹⁰³ The subsector is estimated to reach 224,000 jobs in 2021, representing a 60% increase from employment estimated in 2011.¹⁰⁴ VESTEX, the Industry Association of Apparel and Textiles, estimates that 46% of jobs in the textile sector are held by women.¹⁰⁵

While growth in both production and employment are reflected in these statistics, business owners and managers of micro and small businesses in the departments of Quiché, Totonicapán, and Quetzaltenango had mixed reactions when it came to individual growth and future employment needs.¹⁰⁶

⁹⁷ International Centre for Trade and Sustainable Development. *Apparel and Textile Sector and Sustainable Development in Guatemala*. Switzerland. 2010. Accessed June 2016. <http://www.ictsd.org/downloads/2011/03/el-sector-textil-y-confeccion-y-el-desarrollo-sostenible-en-guatemala.pdf>.

⁹⁸ VESTEX. *Guatemala Apparel and Textile Industry*. Guatemala City. 2015.

⁹⁹ VESTEX. *Guatemala Apparel and Textile Industry*. Guatemala City. 2015.

¹⁰⁰ Bank of Guatemala. *Guatemala in Numbers, 2015*. Department of Macroeconomic Statistics. Guatemala City. 2015. Accessed June 2016. http://www.banquat.gob.gt/Publica/guatemala_en_cifras_2015.pdf.

¹⁰¹ Bank of Guatemala. *Guatemala in Numbers, 2015*. Department of Macroeconomic Statistics. Guatemala City. 2015.

¹⁰² VESTEX. *Guatemala Apparel and Textile Industry*. Guatemala City. 2015. Accessed September, 2016. <http://vestex.com.gt/wp-content/uploads/2015/03/VESTEX-ENG.pdf>.

¹⁰³ AGEXPORT. *Duplicating Exports and Employment in Guatemala: AN AGEXPORT Proposal. A Renewed Strategy, 2012-2015*. Guatemala. June 2015. Accessed June, 2016. <http://www.export.com.gt/wp-content/uploads/competitividad/PropuestasdeAGEXPORT/Caraturaportadaresumenejecutivo.pdf>.

¹⁰⁴ FUNDESA. *Guatemalans Improve Guatemala: A Proposal for a More Prosperous, Solidary, and More Secure Guatemala*. Guatemala. 2012.

¹⁰⁵ VESTEX. *Guatemala Apparel and Textile Industry*. Guatemala City. 2015.

¹⁰⁶ A total of seven businesses were interviewed (6 small, of which 3 were cooperatives, and one micro enterprise). One large business was also interviewed to validate the construction of the chain.

This was due in part to business owners weighing the costs of updating technology and training their personnel versus maintaining current production operations. A micro-enterprise in the department of Totonicapán also noted that growth is challenging particularly for micro and small producers due to contraband items produced in Mexico and illegally brought into the Guatemalan market. As a result, many of these producers competing for market share must produce goods of lesser quality to sell at lower prices. Other small producers noted that they were looking to move into new markets, as part of their business in the future will move toward *maquila* production if market demand increases. Growing *maquilas*, requiring employees to complete one specific task, will need additional training for staff, as well as investments in new technology and machinery in the future.

In general, textile business owners looking to open new markets are considering the “speed to market” model that many clients in the United States stress. VESTEX states that speed and consistency in the quality of production will be important in the coming years, as trends come and go quickly, and e-commerce is changing the way apparel has been traditionally sold.¹⁰⁷ However, while one large *maquila* in Guatemala City noted that they do fill orders for e-commerce markets, demand from these types of clients has not yet become the norm. Instead, others expect increased market demand based on a renewed interest in artisan goods. Therefore, producers concerned about new business, meeting the demands of foreign markets, and maintaining the quality and consistency of their products may need to reconsider traditional supply and value chains. For both branches of production, it will be important for the industry to understand the dynamics of local and international trends to diversify and explore better options for commercialization in new markets. As this occurs, industry leaders and business owners must upgrade the skills, knowledge, and attitudes of their workers in order to achieve success in these new markets.

The participation of women in the companies interviewed is balanced when compared with men, although there are still cultural barriers to women holding positions that require a university technical degree. For example, some felt that women’s role should be to attend to domestic chores, and begin a family at an early age, thus reducing the family economic burden by shifting the burden onto a new family. In general, both men and women face other barriers linked to poverty such as the lack of nearby educational institutions and the availability of remittances that often discourage the search for better productive work options.

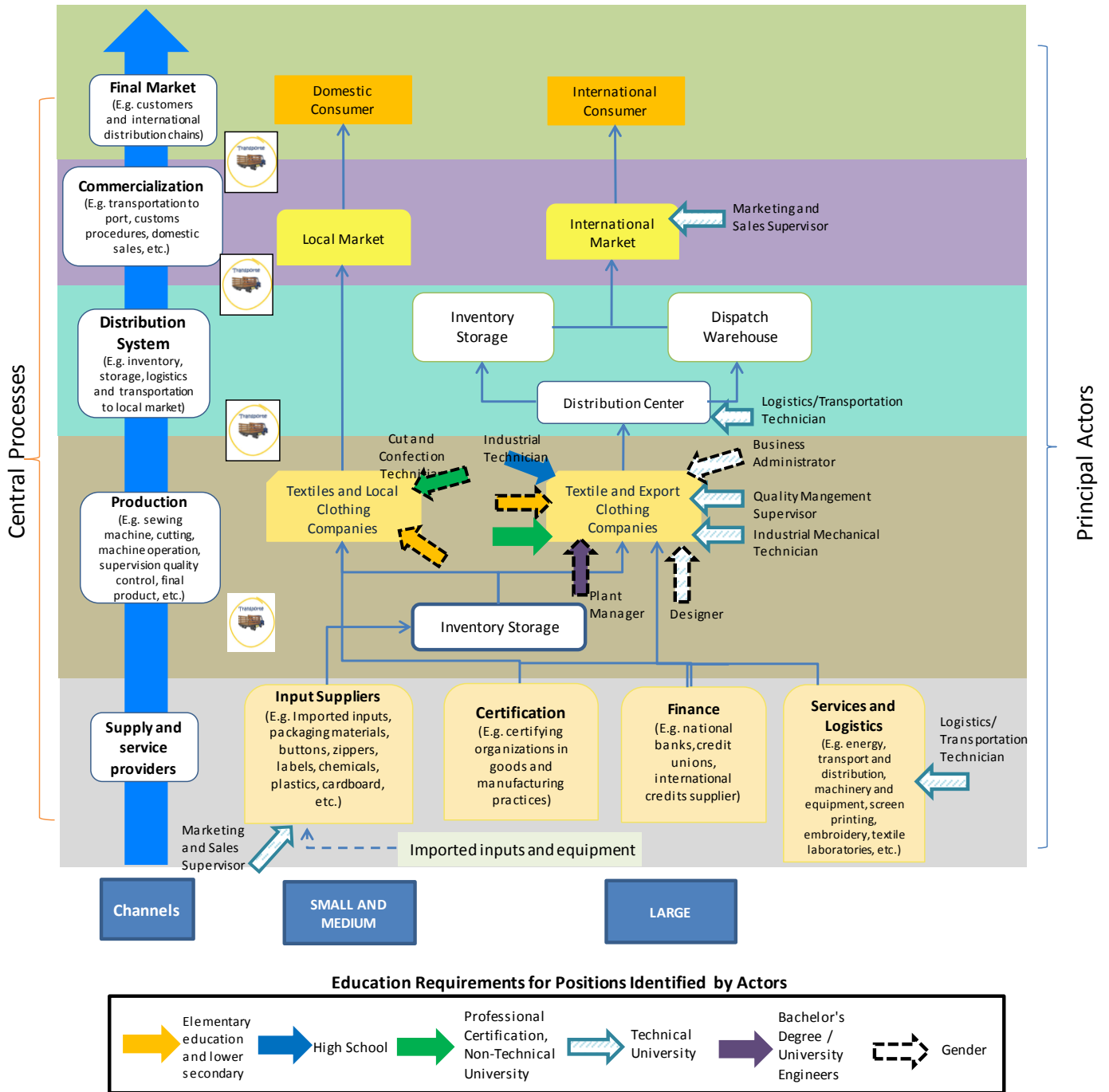
Understanding the Interrelationships Among Principal Actors in the Textiles and Apparel Value Chain

The textiles and apparel value chain with workforce overlay can help identify skills constraints and opportunities to address future needs in production for both domestic and international markets.

The value chain can be divided into five stages that make up the core processes of textile production across the size and level of production in the industry. These stages include input suppliers and services; manufacturing and production; distribution systems; commercialization; and final market.

¹⁰⁷ VESTEX. *Market Tendencies in the United States*. Guatemala City. August 25, 2016. Accessed September, 2016. <http://vestex.com.gt/wp-content/uploads/2015/04/VESTEX-US-Market-Presentation-082516.pdf>.

FIGURE 31. Textiles and Apparel Value Chain Map with Workforce Overlay



Production for the Domestic Market:

- 1. Input and Service Providers.** In the first stage, input suppliers include companies that supply the demand for fabrics from local textile factories and those that supply imported fabrics, yarns, accessories (zippers, buttons, trusses, etc.), chemicals, machinery, and packaging. 28 textile mills, and more than 60 trimming companies exist in Guatemala, according to VESTEX.¹⁰⁸ Services supporting this stage of production include institutions or organizations providing technical assistance, financing, and equipment maintenance, such as ASCONFEG, among others.
- 2. Production.** The second stage consists of direct actors divided into three groups including formal and informal micro, small, and medium-sized enterprises (MSMEs). During this stage, textiles and garments are manufactured for the local market and include casual clothes, uniforms, and patterns and colors based on Guatemala's indigenous traditions. The level of specialization and expertise is very low and value added usually stems from cutting services or the assembly of garments. Many of the companies in this stage are found in the informal sector and, according to those interviewed, operate largely in isolation from sector associations, education centers, and financial institutions. As a result of informality and little oversight, it is not uncommon for employers to fail to pay minimum wage to their employees.
- 3. Distribution.** In the third stage of the value chain, distribution systems and logistics are largely handled by MSMEs themselves, due to the fact that many of them, because of their size, have limited resources to contract outside providers. As a result, MSMEs often act as intermediaries between the final stage of the production process and end markets. This is to say that as opposed to larger producers who work through distributors, many MSMEs take their products directly to market both nationally and regionally.
- 4. Commercialization.** The fourth stage involves direct sales in local markets, principally with small and medium businesses that are responsible for distribution and wholesale purchasing in local markets. Producers compete for price without differentiating in product. This is largely the case for the apparel industry, producing goods for consumption in local and national markets. Here, producers have direct relationships with clients and produce based on the needs of their clients.
- 5. End market.** The fifth stage includes the final market, or the consumer or client.

Export Production:

- 1. Input and Service Providers.** In the first stage input suppliers include companies that supply fabrics, yarns, needles, silk screening, embroidery, and accessories (labels, seams, zippers). Service providers supporting these processes include laundry, laboratories, freight forwarders, equipment maintenance, and energy providers, among others.
- 2. Production.** The second stage in the value chain is made up of direct actors categorized into three groups: i) local textile companies, ii) foreign textile companies and iii) internationally owned companies that manage machine inputs. According to information from VESTEX, production in

¹⁰⁸ VESTEX. *Guatemala Apparel and Textile Industry*. Guatemala City. 2015. Accessed September, 2016. <http://vestex.com.gt/wp-content/uploads/2015/03/VESTEX-ENG.pdf>.

this sector of the chain is designed for export, the main destinations being the United States and Central America. Exported products include hosiery, baby clothes, knitted cotton shirts, pants, and shorts; cotton dresses and skirts, and plain weave shirts. Here, companies receive orders from buyers that include production instructions on what to produce, how much to produce, when to produce it, etc., or what is commonly referred to as the “complete package model.”¹⁰⁹

3. **Distribution.** The third stage is defined by a system of distribution, composed of direct actors, large manufacturing companies, and logistics management companies who coordinate inventory handling, storage area, and dispatch to ports. Exports produced in the Western Highlands most often leave Guatemala for the United States market according to the bills of lading.
4. **Commercialization.** The fourth stage is related directly to overseas clients, who purchase goods based on the needs of buyers.
5. **End Market.** The fifth stage includes the final market, or the consumer or client.

Limitations in the Textiles and Apparel Value Chain

The main limitations or barriers facing the textiles and apparel value chain in the local market are associated with access to credit for MSMEs, limited training and education opportunities available for MSMEs and informal enterprises, and the lack of available technology, investments, and maintenance and repair services.

Access to credit remains a challenge for businesses in Guatemala as a whole for MSMEs, as most operate without the security of a financial guarantor. Businesses are unable to make long-term business investments not only in the training of workers, but also in machinery, technology, infrastructure, etc. thereby limiting expanded production and future markets. MSMEs complained about this across departments, as many resent the fact that they do not have the same privileges, incentives, tax breaks, support, etc. that large *maquilas* do under current government regulation, thereby limiting MSMEs’ growth potential. Moreover, informal businesses are doubly challenged by limited access to credit as informal businesses are not associated with trade unions, industry associations, etc. This means that these businesses do not have legal representation and do not pay taxes on imports or otherwise. While evading taxes may be ideal as this keeps prices low and therefore competitive with formal producers, many informal businesses continue to produce like this because even formal businesses are limited in accessing credit.

Informal production also changes the way that production takes place on the sectorial level of the textile and apparel sector for several reasons. First, low prices mean that these businesses can compete for sales with larger firms, regardless of quality. Secondly, the shifting nature of informal production makes it hard for sector organizations such as VESTEX and ASCONFEG to standardize and regulate prices of certain primary goods, as informal businesses can often sell products at a fraction of a cost of formal businesses.

Training and education opportunities are not generally satisfying the needs of either formal or informal businesses, which have trouble accessing these due to the strict demands of production and limited availability of offerings, and because training opportunities by INTECAP and industry associations do not match the knowledge and skills demanded within the sector. First, actors noted that it is difficult to send

¹⁰⁹ VESTEX. *Market Tendencies in the United States*. Guatemala City. August 25, 2016. Accessed September, 2016.

employees to outside (or even inside) training opportunities because of the time cost. *Maquilas* and MSME producers must operate and produce in a strict period of time in order to fill client's orders, and as a result, they are limited in their time they can dedicate to training. Secondly, informal businesses do not have training channels as formal businesses have with institutes such as INTECAP. While VESTEX and AGEXPORT have in the past created short training programs for informal businesses, most informal businesses rely on themselves for any training needs. While formal businesses do take advantage of training opportunities when the time permits, actors in the Western Highlands noted that training does not always fit with their needs, but due to the low cost of INTECAP programs, businesses take advantage of what they can and fill additional needs inside of their businesses.

Finally, high costs and limited training restricts the amount of specialized technology and machinery that would allow for a greater volume and quality of work, currently achieved manually. MSMEs are often unable to make these investments not only due to the lack of available credit, but also due to the challenge of maintaining machines. MSMEs which have made investments in machinery stated that because they do not have maintenance technicians on staff; these positions are contracted based on need. However, because machines are largely imported, few technicians in country know how to fix broken machinery, and therefore SMEs often rely on old equipment when newer technology breaks down. *Maquilas* are less affected by this, as they often hire technicians on staff full time as they must fill large demands in short periods of time. Additionally, *maquilas'* relationship with foreign producers particularly in the United States provides the support necessary to overcome challenges in machinery.

Other limitations in this sector are: Unfair competition arising from smuggling and low associativity, causing prices and quality to drop; lack of software to help keep records; absence of corporate vision to create the business structure to calculate adequate profit margins based on cost and utility; limited expansion of traditional fabric market due to its high price; lack of raw materials; limited access to specialized technology and machinery that would allow for a greater volume and quality of work than that achieved manually; bureaucracy and red tape; and a lack of government incentives for small businesses and associations.

Key Positions and Associated Skills in the Textile and Apparel Value Chain

Perhaps the most important positions and related knowledge, skills, and attitudes stem from the needs of employers to create innovative marketing and sales strategies in order to understand the consumption patterns and meet the demand of consumers in both the domestic and international markets. Within this area, employers described cost and product analysis as important skills in order to increase productivity, lower costs, and remain competitive.

Other actors mentioned the need for innovative and creative designers with the ability to not only design products that follow trends in color, cut, and material, but also know how to use technology and machinery in silk screening and embroidery. This need was defined in micro and small enterprises, where owners, who also function in the role of management, may be the only staff members with higher levels of education that know how to operate more advanced equipment.

Also crucial in the textile and apparel value chain were technicians working in the area of logistics and distribution systems, who, as mentioned previously, often act as market intermediaries not only in Guatemala, but also in Mexico, Honduras, and El Salvador. Persons working in these positions would need business and sales skills in order to sell at advantageous prices.

Finally, maintenance technicians who are in limited supply in Guatemala play a key role in operations. As previously mentioned, *maquilas* and MSMEs who thrive off of client relationships, quality, and consistency of goods, rely on fully functioning machinery. This is more crucial for those who have made the

investment into newer machines and technologies, as it is damaging to productivity when these imported machines need repair.

Particularly, sector respondents identified the following positions as critical to strengthen, according to stages of value chain activities:

MSMEs stated that those who have graduated from universities generally carry out middle management responsibilities in the positions described above. Smaller companies, such as those interviewed, producing for the local market are more likely to be managed by owners of the company, thus limiting opportunities for advancement for lower level employees. In the case of companies that focus on exported products, many have developed internal training programs for middle managers and recognize the value of different work experiences as part of resume building for workers as well. The interaction between tertiary technical educational institutions, universities, and the businesses associated with this value chain is currently based on supervised internships, as a graduation requirement for students. However, actors spoke to the competitive advantages that could exist in the future by employing more technically trained staff. A small business in Quetzaltenango said knowledge on this level would be beneficial in that by understanding market conditions, business could maximize opportunities for innovation in both existing and new markets. Another small business in Totonicapán suggested that additional technical professionals on staff would help their business obtain contracts appropriate to the level of existing human capital, skills, and technology available in the business. However, while INTECAP and VESTEX have developed training programs to upgrade skills for employees in areas that educational programs in the universities do not include in their courses of study, the majority of those interviewed stated that INTECAP programs alone are insufficient to meet their needs. As a result, businesses rely on internal training processes, supplemented with INTECAP or VESTEX trainings when available.

Actors stated that the participation of women in the positions described above is generally balanced when compared with men, although barriers still exist for women to achieve higher levels of education at the university technical level. These barriers for women often relate to cultural issues such as traditional gender roles. In general, both men and women face other barriers linked to poverty such as the lack of nearby educational institutions and the availability of remittances that often discourage the search for better productive work options.

Attitudes

Attitudes described by those interviewed as important for were most often relating to the rigid nature of production and procedures within the business itself. For example, many attitudes were associated with completing expectations such as being responsible; disciplined; punctual; objective when making decisions and communicating with other employees; taking responsibility for actions; and a commitment to the security of the company. These attitudes described were not necessarily relating to critical thinking skills, but rather associated with following instructions from managers. Other small businesses in Quetzaltenango noted the importance of taking initiative and being proactive on the job while another in Santa Cruz del Quiché perceived that managers see a difference in the quality of work of those who take an interest and see a value in their role in the company versus those who do not. Those interviewed suggested that designers should be innovative, creative, and be able to work well in a group setting. Machine maintenance technicians should have the desire to learn and have a positive attitude. Additional attitudes are outlined in Annex D.

Additionally, it should be noted that actors described an unintended effect on attitude due to remittances, as they perceived a tendency of young people who receive remittances to become inactive, both in school and in the work place. Family members who migrate to such places as the United States send

money to their family in Guatemala. Those who remain often come to depend on this extra income, and actors noted that those who receive remittances often lack the motivation to work or to study.

Textiles: How Can Educational Institutions Serve the Sector?

Actors across various departments described the competitive advantage of hiring young people with university level education. Those interviewed stated that technical knowledge could help increase production and sales; open new national and international markets through informed analysis; increase quality of goods produced; cut costs; and ultimately increase social development in local communities. Existing programs that aim to address the needs of the textile industry in target populations in the Western Highlands are described below:

1. Secondary education programs related to textiles include:

- Electronics and Digital Devices
- Industrial Electronics
- Industrial Electricity

These programs are available nationally and are standardized according to an established curriculum defined by the Ministry of Education. While many receive the *Perito* distinction, as noted previously in this study, quality of education is low, and many students struggle to achieve age appropriate reading and mathematics levels.¹¹⁰ Those with this specialization are often employed in larger *maquilas* where there is a consistent need for maintenance technicians. Moreover, many workers who have attained this level of education may be overqualified in their roles in the *maquilas*, however, secondary education and skills training are not well-linked to the needs of business.

2. INTECAP Programs: INTECAP offers a certificate programs for the following specializations:

- Commercial and Domestic Electrician
- Industrial Design

3. Technical Tertiary Programs (2-3 years): The following degrees are offered at the technical tertiary level:

- **Supervision and Quality Management:** Universidad Galileo, Guatemala City
- **Electronics:** USAC, Instituto Tecnológico Universitario del Sur, Escuintla.
- **Electronic Installment Supervision:** Universidad Galileo, Guatemala City
- **Manufacturing Processes:** USAC, Instituto Tecnológico Universitario del Sur, Escuintla.
- **Management:** Universidad Rafael Landívar, Quiché

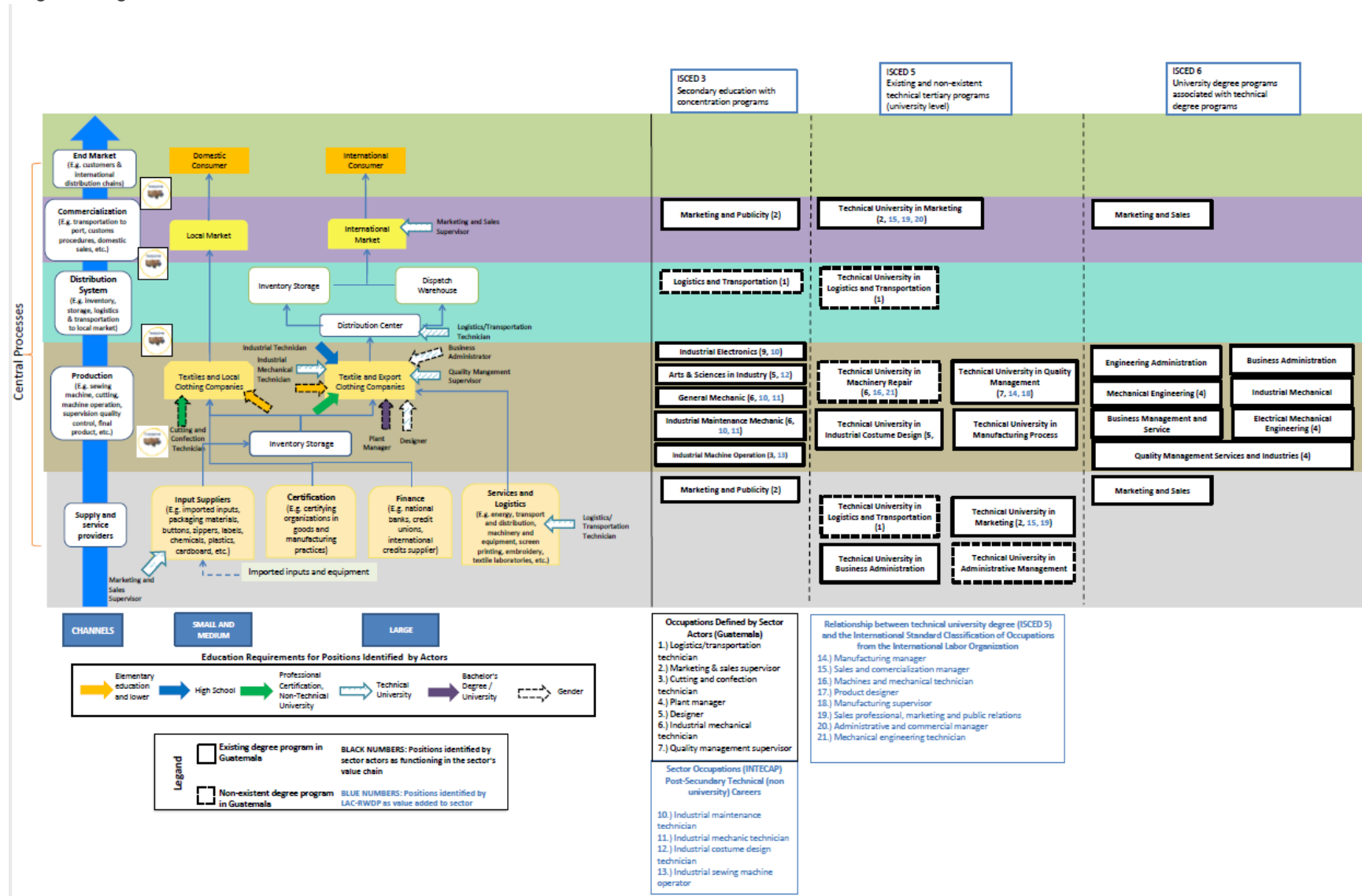
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4. University Degree Programs (4 years): The following degrees are offered at the *licenciatura* level:

- **Business Administration:** University of Mariano Galvez, Huehuetenango, Santa Cruz de Quiché; Quetzaltenango; Galileo University; University of Rafael Landívar, Quetzaltenango, Santa Cruz del Quiché

The “sister” or parallel diagram below depicts information on existing and potential textile-related educational offerings matched to the key positions in the textile value chain. Here we note a need for technicians in marketing. Actors spoke to a need for positions to create new client relationships in expanding markets such as in the “complete package model” or in artisanal patterns and products, designers who have knowledge of various technologies, and personnel to manage logistics and distributions. Additionally, programs in industrial design (designers) and industrial maintenance (maintenance technicians) are important to consider in this value chain.

FIGURE 32. Technical Positions, Occupations, and Education Levels in the Textiles and Apparel Value Chain vs. Existing and Non-Existent Degree Programs



MANUFACTURING: CHOCOLATES, CANDIES, BAKED GOODS AND OTHER PROCESSED FOODS VALUE CHAIN

In recent years, changes in patterns of traditional diets of Guatemalans and abroad have allowed for the diversification of products in the chocolates, candies, baked goods, and other processed foods sector. Not only does this mean a movement from plant based to protein based diets, but within this, a consumer conscious and preference for “healthy” products such as whole grain and nut breads. Of particular importance in this sector is the need for continuous product research at the university level that addresses the needs of local businesses. This is of particular importance for MSMEs who do not have the facilities for research labs in order to compete in the national and export market with larger producers who are able to perform this function internally. The sector requires food processing technicians in order to remain competitive. These technicians should have knowledge of food safety and quality production management practices. Additionally, because smaller producers sell their products directly in the local market, logistics and transportation technicians are important for MSMEs. Knowledge of local markets and geography are necessary for businesses to find new opportunities.

Food security remains a prevalent issue in Guatemala due to extreme income and social inequality between indigenous and non-indigenous populations in rural and urban areas. Traditionally, rural, largely indigenous populations have relied on plant-based, low energy density food options compared to urban populations whose diet relies more heavily on animal protein and higher energy foods.¹¹¹ However, globalization, urbanization, and advances in technology and communication have begun to alter traditional diet patterns for both Guatemalan and global consumers alike. Moreover, increasing populations, the growth of GDP per capita in developing countries, a greater demand for protein-based products, and prolonged life expectancy contribute to changes in diet.

These changes are evident in Guatemala’s manufacturing sector, particularly in the subsector of chocolate, candies, baked goods, and other processed foods, where trends in production are driven by both local and global food preferences, and according to actors interviewed in this study, indicate movement toward “healthy products” such as whole grain and nut breads, refined pastry processes, and organically produced goods. Diversification of products for consumers in both local and global markets raises the need for additional training for those across stages of the value chain, particularly as organic production is certified from the input stage to the packaging and distribution stage. Smaller producers and businesses noting this shift stressed that they are often unable to access technology necessary to compete due to high costs, taxation, and maintenance of technology. Actors in Guatemala City, Quetzaltenango, and Alta Verapaz mentioned the comparative advantage that larger producers have in the sector, as small businesses are unable to conduct their own research into emerging trends in the market. Some companies have begun to create strategic alliances with universities to ensure skill and knowledge training for their employees; this is crucial in order for producers to understand and explain the nutritional value and benefits in new products and thus to remain competitive. However, collaborative efforts between the private sector and universities in this field are isolated. SMEs limited by inadequate facilities, human capital, and financial resources continue to produce traditional goods, thus lagging behind competitively.

¹¹¹ Department of Public Health and Family Medicine, Tufts University School of Medicine. *Secular Trends in Food Patterns of Guatemalan Consumers: New Foods for Old*. Food Nutrition Bulletin. December 2008 (29:4). Boston, Massachusetts.

Governance of the value chain is led by the Food and Beverage Export Commission, a division of the Association of Exporters of Non-Traditional Products (AGEXPORT). AGEXPORT represents more than 80 companies located in the department of Guatemala and in the western region of the country. The Commission supports its partners through strategic objectives such as promoting innovation, increasing productivity, strengthening quality and safety, and promoting companies in markets of interest, and staff a qualified training team.¹¹² They also represent their members through various guild associations such as sweets, gums, chocolates and related products; bakery industries; packaging companies, sausage, and processed meats; restaurants and food processors; and food manufacturers.

Small businesses in the sector face limitations to remaining competitive without the necessary technology or research facilities; this is problematic as approximately 70% of the companies represented by the Food and Beverage Export Commission and located either in the department of Guatemala or in the Western Highlands are classified as micro, small, and medium enterprises (MSMEs).¹¹³

Regardless of discrepancies between large and small producers, the sector continues to grow both nationally and abroad. Exports of the processed foods subsector (including beverages) represented \$410 million USD in 1995 and grew to \$2.3 billion USD in 2015. The processed foods and beverage subsectors represented 40% of national production of all processed foods, followed by baked goods (15% of total exports).¹¹⁴ Manufacturing industries including food, beverages and snuff contributed 3.2% to national GDP in 2014.¹¹⁵ Principal destinations of sector exports include Central America, the Caribbean, Mexico, and the United States.¹¹⁶ Guatemala also has signed trade agreements with Taiwan, Colombia, and Chile and produce high quality goods to meet the demand of these markets.¹¹⁷ According to the perception of interviewed actors, the industry's growth trend will continue to be positive as commercial links and the demand for high quality organic products increase in both local and international markets.

In the food-processing subsector, 75,000 people were employed in 2011, and employment was estimated to reach 185,000 in 2021, representing a growth of 147% employment in the subsector.¹¹⁸ Increased participation of supermarkets in food distribution and technology related to logistics efficiency of processed versus fresh foods also contribute to growing employment opportunities. For women,

¹¹² AGEXPORT Industry Information. Food and Beverage Commission. Guatemala City. Accessed September 2016.

<http://export.com.gt/sectores/comision-de-alimentos-y-bebidas/>.

¹¹³ AGEXPORT. "Industry Information, Food and Beverage Commission." Guatemala City. 2016. Accessed September 2016.

<http://export.com.gt/sectores/comision-de-alimentos-y-bebidas/>.

¹¹⁴ USDA Foreign Agricultural Service. *Guatemala Food Processing Ingredients 2015*. Guatemala City. 2015. Accessed September 2016.

http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Food%20Processing%20Ingredients_Guatemala%20City_Guatemala_12-22-2015.pdf

¹¹⁵ Bank of Guatemala. *Guatemala in Numbers, 2015*. Department of Macroeconomic Statistics. Guatemala City. 2015.

¹¹⁶ FUNDESA. *Guatemalans Improve Guatemala: A Proposal for a More Prosperous, Solidary, and More Secure Guatemala*. Guatemala. 2012.

¹¹⁷ USDA Foreign Agricultural Service. *Guatemala Food Processing Ingredients 2015*. Guatemala City. 2015

¹¹⁸ FUNDESA. *Guatemalans Improve Guatemala: A Proposal for a More Prosperous, Solidary, and More Secure Guatemala*. Guatemala. 2012.

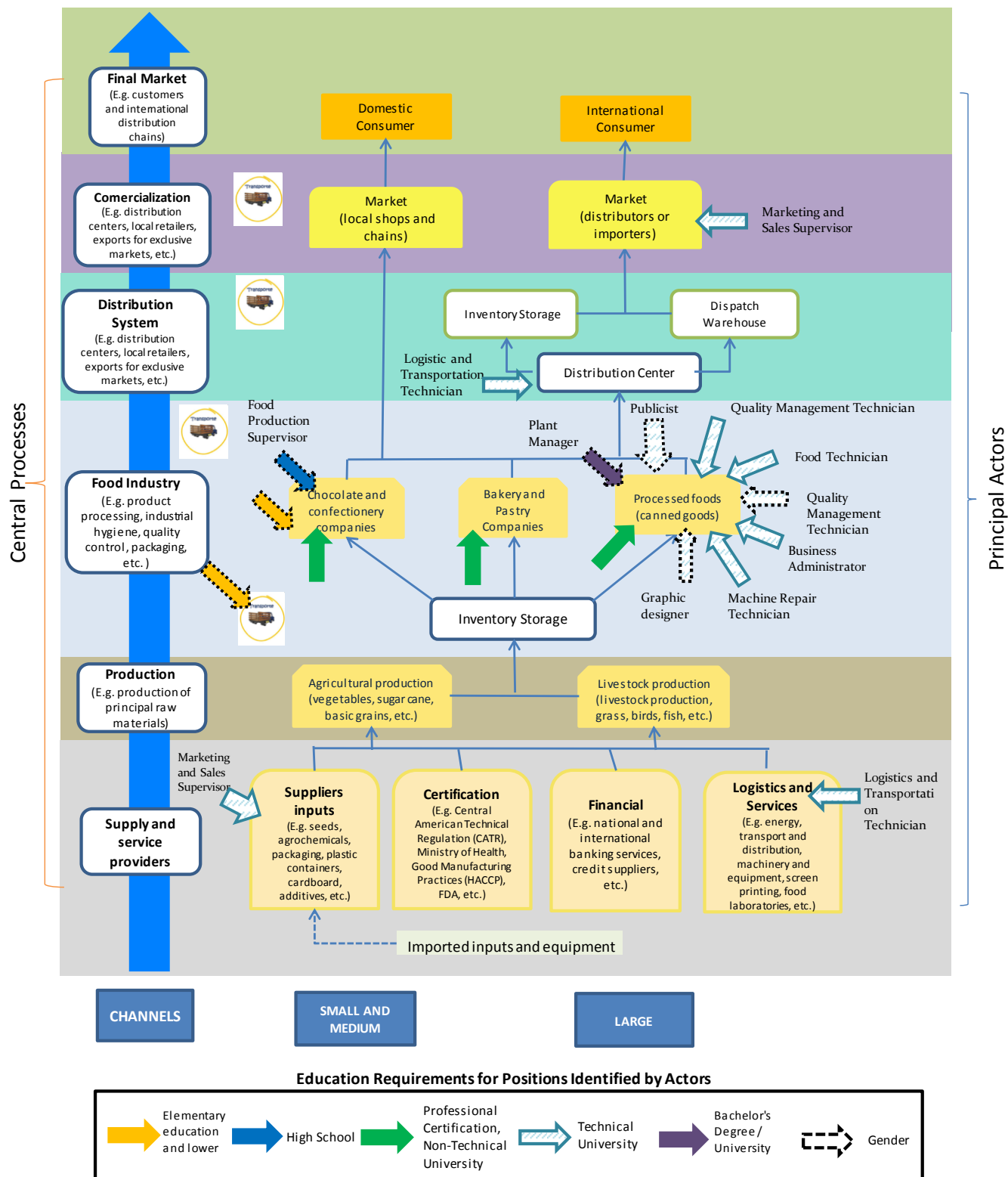
traditional gender roles in domestic positions and trades still persist. Apart from existing perceptions, there otherwise exists equal labor force participation of gender in these businesses.

Understanding the Interrelationships Among Principal Actors in the Chocolates, Candies, Bakery Products, and other Processed Foods Value Chain

In order to understand global and national pressures on businesses in the chocolates, candies, bakery products, and other processed foods industry in Guatemala as highlighted above, the value chain below combines the functionality of the value chain with an understanding of knowledge and skill needs and constraints as described by those interviewed in this study.

Effectively, the value chain can be divided into six stages that make up the core processes production. These stages include providers of inputs and services; production; food Industry; distribution system; marketing, and finally, consumer end markets.

FIGURE 33. Map of the Chocolates, Candies, Bakery Products, and other Processed Foods Value Chain



1. **Inputs and Service Providers.** The first stage of the core processes involves providers of inputs and services, namely: i.) companies that supply seed, fertilizers, agrochemicals, and other technology packages; ii) livestock production with suppliers of concentrates, vaccines, prophylactic plan, technology, genetics and other packages; iii) food industry with raw materials suppliers, packaging and machinery; and iv) transport services providers, electric energy, logistics, banks, certifications and other services. Here, actors noted the need for Sales and Marketing Managers and Logistics and Transportation Technicians.
2. **Production.** The second stage consists of small, medium and large producers who carry out the process of production of commodities: i) agricultural production such as sugar, grains, cocoa, flour, vegetables, etc., ii) livestock production such as dairy, meat products, sausages, eggs, among others.
3. **Food Industry.** The third stage in the value chain, the food industry, transforms raw materials and food processing takes places. The main products are: i) confectionery, including companies engaged in producing chocolate for hot beverages; ii) bakery products, including companies engaged in the production of bread, cakes and pastries, and iii) companies engaged in other processed foods such as sauces, canned goods and snacks. Actors noted the need for Business Administrators; Machine Repair Technicians; Quality Management Supervisors Graphic Designers and Publicists; and Food Technicians, while the assessment team identified a potential need for Industrial Mechanical Technicians.

Firms must comply with certifications that guarantee food safety and good manufacturing practices. The importance of standards and certification processes in this stage of the value chain can generate benefits such as a higher yield of the labor force and other factors of production, improvements in working conditions, and a reduction of long-term damage to the environment. Some important industry standards are the HACCP (Hazard Analysis & Critical Control Points) system of food safety management; S.Q.F. (Safe Quality Food) system that ensures food safety and quality management; Global G.A.P. voluntary standards through which agricultural products can be certified; and RTCA (Central American Technical Regulation), which regulates food additives and their maximum allowable limits in different products.

4. **Distribution.** The fourth stage, system distribution, consists of direct actors who engage in product distribution and related logistics. Many companies have created divisions in their businesses to perform this function, while others do it through companies that import goods and distribute products. Smaller companies may handle distribution themselves, and take their products directly to distributors, super markets, local markets, etc. while larger companies would have warehouses and storage facilities equipped with the necessary infrastructure. Here, actors noted the need for Logistics and Transportation Technicians.
5. **Commercialization.** The fifth stage, marketing and commercialization, is composed of small and medium sized businesses who operate stores, and secondly distribution centers and importers, responsible for the logistics of distribution processes and product positioning in the domestic market, as well as legal procedures and transport for the international market. Here, actors noted the need for Sales and Marketing Managers.
6. **End Market.** The final stage of the value chain is the end consumer, either national and international. Nationwide distribution companies are in charge of purchasing and / or distribution of products to convenience stores, bakeries, supermarkets, and shops. Internationally this

activity is mainly carried out by importing companies that distribute products through distribution centers, supermarkets, branch stores, and neighborhood stores.

Limitations in the Value Chain

In addition to limited access to technology and the lack of food research done in the private sector, main limitations or barriers facing the sector include the lack of access to capital, the high price of raw materials, and service costs and food safety. Access to capital is a particular challenge for small and medium producers. However, financial institutions that provide access to capital often require a business to demonstrate that company growth is above average, which is not always possible to demonstrate, particularly for smaller enterprises. This limitation means that companies cannot upgrade human capital or infrastructure. Secondly, prices of raw materials are affected by the dynamics of international commodity prices, mainly basic grains and agricultural products, much of which is produced in the United States. As a result, the rising price of raw materials may particularly affect small and medium-sized enterprises and there are no incentives or support structures for this type of business investment. This is true for organic and health related products, which, because of stricter regulatory and quality requirements, are higher in price. Thirdly, service costs and food safety affect productivity and competition of businesses in the processed foods sector. In addition, current market liberalization regulations consider reducing tariff barriers, sanitary regulations and food sovereignty, so that companies meet certain certifications and standards at national and international levels to ensure the quality of products. Compliance processes and related updating costs are often investments small and medium enterprises are not willing or able to pay, which may mean risks associated with faulty food production processes.

Additional limitations highlighted by actors are included in the list below:

- The business climate is affected by the country's insecurity associated with disappearances, theft, among other risks, representing additional costs
- Inadequate infrastructure that does not facilitate commercialization.
- Lack of potable water, and reliable electric energy in order to carry out production processes
- Illegally imported Mexican products compete with products produced in Guatemala, particularly in the northwest of the country near the northern border with Mexico. Goods brought in from Mexico, while illegal, are competitive in both price and quality.
- Misinformation and the lack of streamlined procedures at the institutional level. Certain procedures are done at the municipal level, others at the department level, and others in the country's capital.

Key Positions and Associated Skills in the Chocolates, Sweets, Bakery Products, and other Processed Foods Value Chain

As traditional diets of Guatemalans and consumers abroad begin to diversify companies and producers must think about necessary technical positions that will allow businesses to remain competitive in new markets. These needs include product research development/ food processing technicians and logistics and transportation technicians. Other positions include quality management, and marketing and sales managers. Currently in small and medium sized businesses, those interviewed consider that the lack of trained and experienced workers in the positions mentioned limits the ability of employees to assume

greater responsibilities that ultimately contribute to more efficient production processes. This is not a great limitation for large companies that are able to invest in training programs for their middle managers, however it is necessary to understand in terms of future potential growth for the sector as a whole.

Product researchers and food processing technicians need to understand domestic and international health policies and food safety regulations in order to remain committed to producing a quality good. Understanding production processes is also important for these researchers in order to analyze the characteristics of processed food under various circumstances. Oral and written communication is also important for marketing and sales purposes so that employees can effectively describe the characteristics and benefits of a new item. Logistics and transportation technicians who distribute and sometimes sell products directly for smaller companies would need similar knowledge and skills to fulfill their roles and responsibilities. Additional positions and related skills are outlined in Annex D.

The companies interviewed believe that they would have a greater competitive advantage if they hired people with higher technical training. This would ensure product quality, efficiency of resources, improved customer service, expansion into new markets, and reliability and standardization of production processes, thus achieving a multiplier effect of training for other employees of the company as well.

Attitudes

Attitudes described by actors that were important for technical positions included a commitment to quality, responsibility, the ability to work well in a group, and honesty. Particularly as the sector moves into health food and organic production, actors in Quetzaltenango noted that commitment to quality is of priority to them, as they aim to produce products of high standards. Other business owners in Huehuetenango noted that logistics and transportation technicians should be organized and punctual in order for the transportation of goods to be delivered efficiently and according to industry standards. Because many companies described a commitment to the environment as important for technicians, it is important for delivery routes to be carefully planned to avoid waste of time and energy. Additional attitudes are outlined in Annex D.

Chocolates, Sweets, Bakery Products, and other Processed Foods: How Can Educational Institutions Serve the Sector?

Although actors described the need for more formal education and training in the areas of logistics and transportation and food technicians, options remain limited in the country at the technical and university level. Companies would be willing to receive young college technical trainees part time, under the conditions of the company because they feel it is a good practice for youth to gain on the job experience while still in school. This also supports students and young workers to develop initiatives and suggest areas in which the company can make improvements. Options for formal programs are described below.

1. Secondary education programs related to food processing include:

- Food Industry
- Renewable Natural Resources
- Agronomy

These programs are available nationally and are standardized according to an established curriculum defined by the Ministry of Education. While many receive the *Perito* distinction, as noted previously in this

study, the quality of education is low, and many students struggle to achieve age appropriate reading and mathematics levels.

INTECAP Programs:

INTECAP offers various programs of non-tertiary post-secondary technical training of short duration such as: Confectionery, Baking, Chef in Guatemalan Cuisine, International Chef, Industrial Baker, Food Safety, Waiter, and Maître d', among others. Especially for this sector, INTECAP also offers a secondary degree (*bachillerato*) in Science and Arts with specialization in industrial food processing, which is offered at the INTECAP Training Center in Santa Lucia Cotzumalguapa, Escuintla.

2. Technical Tertiary Programs (2-3 years): The following degrees are offered at the technical tertiary level:

- **Food Processing:** University of San Carlos; Centro Universitario del Sur Occidente, Mazatenango
- **Productive Processes and Food Quality:** Instituto Tecnológico del Sur, Universidad de San Carlos, Palín, Escuintla
- **Agro-industrial Processes:** Rural University, at campuses in Quetzaltenango, Coatepeque, Salcajá, Universidad de San Carlos, Centro Universitario del Sur, Escuintla
- **Fruit Farming Production:** Universidad de San Carlos; Centro Universitario del Noroccidente Huehuetenango.
- **Producción agrícola:** Universidad de San Carlos, Centro Universitario de San Marcos.
- **Agro-ecology:** Universidad Rural, campuses in La Unión Cantinil, San Pedro Soloma, Nentón, Huehuetenango.
- **Agroindustry:** Universidad de San Carlos, Centro Universitario del Sur, Escuintla.

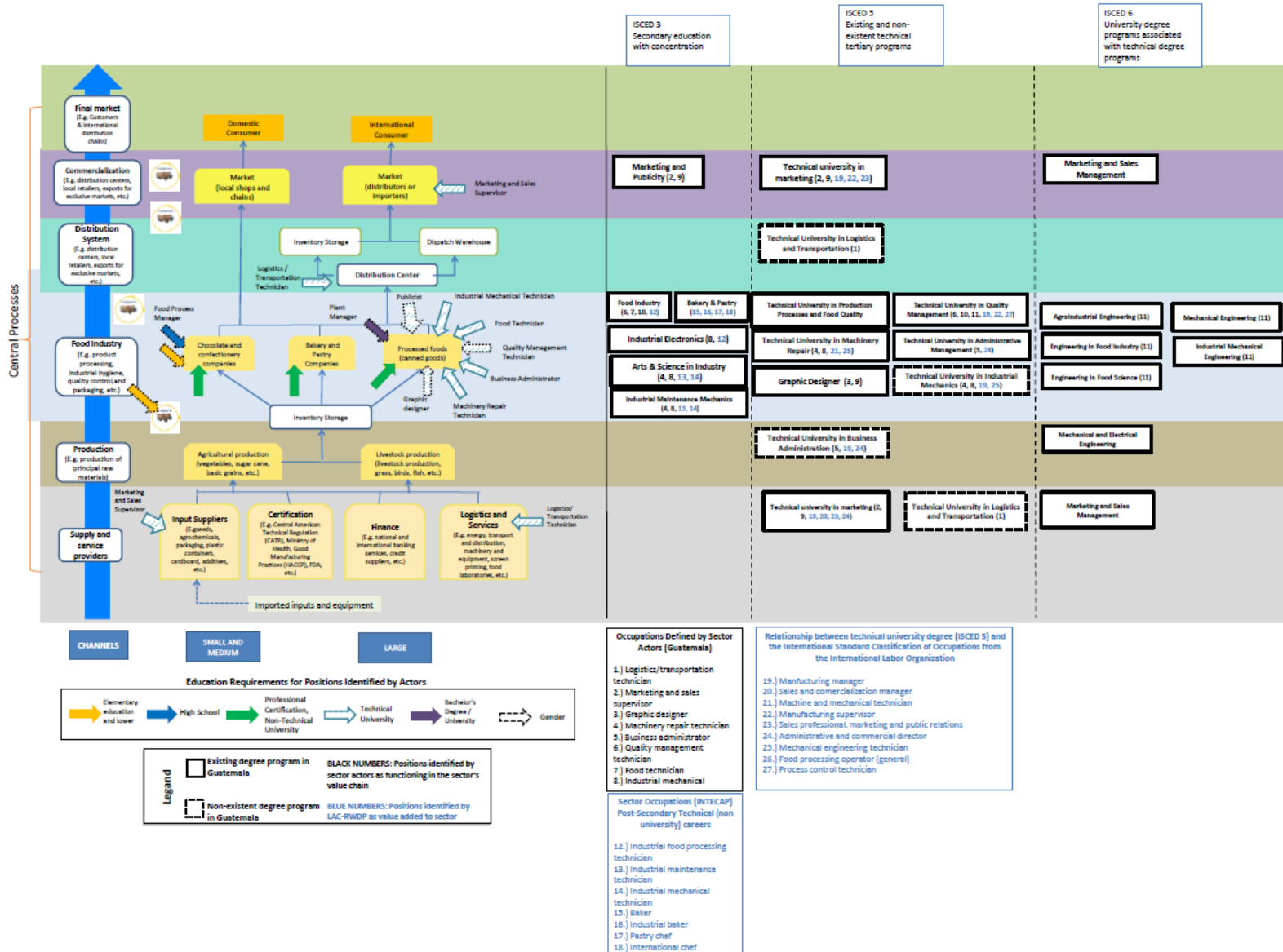
3. University Degree Programs (4 years): The following degrees are offered at the *licenciatura* level

- **Food industry engineering:** Instituto Tecnológico Maya de Estudios Superiores, Universidad de San Carlos, San Juan Chamelco, Alta Verapaz
- **Agroindustry engineering:** Universidad de San Carlos, Centro Universitario del Sur, Escuintla. Universidad Rural, sedes, Quetzaltenango, Coatepeque y Salcajá
- **Forestry industry:** Instituto Tecnológico Maya de Estudios Superiores, Universidad de San Carlos, San Juan Chamelco, Alta Verapaz
- **Forestry:** Universidad de San Carlos, Central University of the Northwest, Huehuetenango
- **International agro-business:** Instituto Tecnológico Maya de Estudios Superiores, Universidad de San Carlos, San Juan Chamelco, Alta Verapaz
- **Agronomy:** Universidad de San Carlos, Guatemala City

- **Agronomy, specializing in agricultural production systems:** Universidad de San Carlos; Central University of the Northwest, Huehuetenango
- **Environmental engineer:** Rural University, Quetzaltenango
- **Agronomic engineering:** Rural University, Huehuetenango, Jacaltenango, Santa Cruz Barillas; Santa Cruz del Quiché; Nebaj; Ixcán Playa Grande, Pachalum, San Pedro, Sacatepequez, San Marcos
- **Agriculture and Forestry:** Universidad de San Carlos, Guatemala City.

The “sister” or parallel diagram below depicts information on existing and potential food processing-related educational offerings matched to the key positions in the value chain. Here we note a potential need for the following university technical training programs (with potential occupations): logistics and transportation (logistics technician); production processes and food quality (quality management technician); food industry (researcher).

FIGURE 34. Technical Positions, Occupations, and Education Levels in the Chocolates, Candies, Bakery Products, and other Processed Foods Value Chain vs. Existing and Non-Existent Degree Programs in Guatemala



MANUFACTURING: NON-ALCOHOLIC BEVERAGES VALUE CHAIN¹¹⁹

The non-alcoholic beverage chain in Guatemala has grown over the past ten years, due in part to its production of natural beverages and the country's access to variety of fruits and vegetable products. This sector has also responded to the demand for healthy products as it has begun to produce a more diverse array of teas and juices, while at the same time, the sector's leading products are driven by demand for sodas, bottled water, and artificial juices. Much of the sector's production is based on the large amounts of imports from the United States, including sugars and concentrates that supply the raw materials for many beverages. Poor roadways are often problematic for logistics purposes, and as a result, technicians are needed who know routes that are suitable for delivery and distribution purposes.

Leading products in this sector include sodas, artificial juices, and natural beverages based on Guatemala's rich supply of fruits and vegetables.¹²⁰ The sector is governed by the National Commission of Food and Beverage Processors, a division of the Association of Non-Traditional Products Exporters of AGEXPORT. Of the 200 companies in the food processing industry (including beverages, preserved foods, confectionary, and other processed foods), 60 of these are members of AGEXPORT's National Commission of Food and Beverage Processors. The United States Department of Agriculture estimates that 90% of these are located either within Guatemala City or in the Western Highlands where fruit and vegetable production is plentiful. 25% of companies are categorized as large; 50% are medium with growth potential (according to USDA); and 25% are small companies.¹²¹ Large companies that produce these goods in the metropolitan areas of Guatemala also have regional distributors throughout the country.¹²²

Growth in this sector is noticeable, particularly in natural beverages and artificial juices, in which production grew by 60% over the past ten years.¹²³ As noted earlier, companies that export food products and beverages represented \$410 million USD in 1995, and grew to \$2.3 billion USD in 2015, while manufactured food and beverages contributed 3.2% to national GDP in 2014.¹²⁴ The distribution of beverages in Guatemala itself also grew 43.6% between 2005 and 2014, during which time the distribution of soft drinks grew 34.9%.¹²⁵ Growth in both national and international consumption is also reflected in the workforce. In the beverage subsector, 18,000 people were employed in 2010, and employment was estimated to reach 48,600 in 2021. This would represent a growth of 172% additional jobs in the subsector.¹²⁶

¹¹⁹ For the purposes of this study, alcoholic beverages were not considered as part of the value chain analysis.

¹²⁰ USDA Foreign Agricultural Service. *Guatemala Food Processing Ingredients 2015*. Guatemala City. 2015.

¹²¹ Ibid.

¹²² Ibid.

¹²³ Ibid.

¹²⁴ Bank of Guatemala. *Guatemala in Numbers, 2015*. Department of Macroeconomic Statistics. Guatemala City. 2015. Accessed June 2016. http://www.banguat.gob.gt/Publica/guatemala_en_cifras_2015.pdf.

¹²⁵ Superintendent for Administration. Statistical Bulletin. Methodological Link. November 2014. <http://sat.gob.gt/sitio/index.php/esat/47-estadicas-tributarias/7880-boletin-estadistico.html>.

¹²⁶ FUNDESA, 2011. *Guatemaltecos Mejoremos Guatemala*.

The main importers of drinks from Guatemala are El Salvador, Honduras and Mexico.¹²⁷

According to the perception of individual respondents, the industry is expected to remain stable with potential to expand, considering growing market opportunities. Interviewees noted that growth in the industry is associated with the increase in population and closely related to water quality; the sector is growing more in the area of nutritious natural drinks, which are linked to increased purchasing power. In the sector labor participation of men is higher (60%) relative to the participation of women (40%). Previously mentioned perceptions of women's role in the labor market are replicated in this sector. The value placed on university technical education depends on the size of the company, especially when it comes to wage compensation.

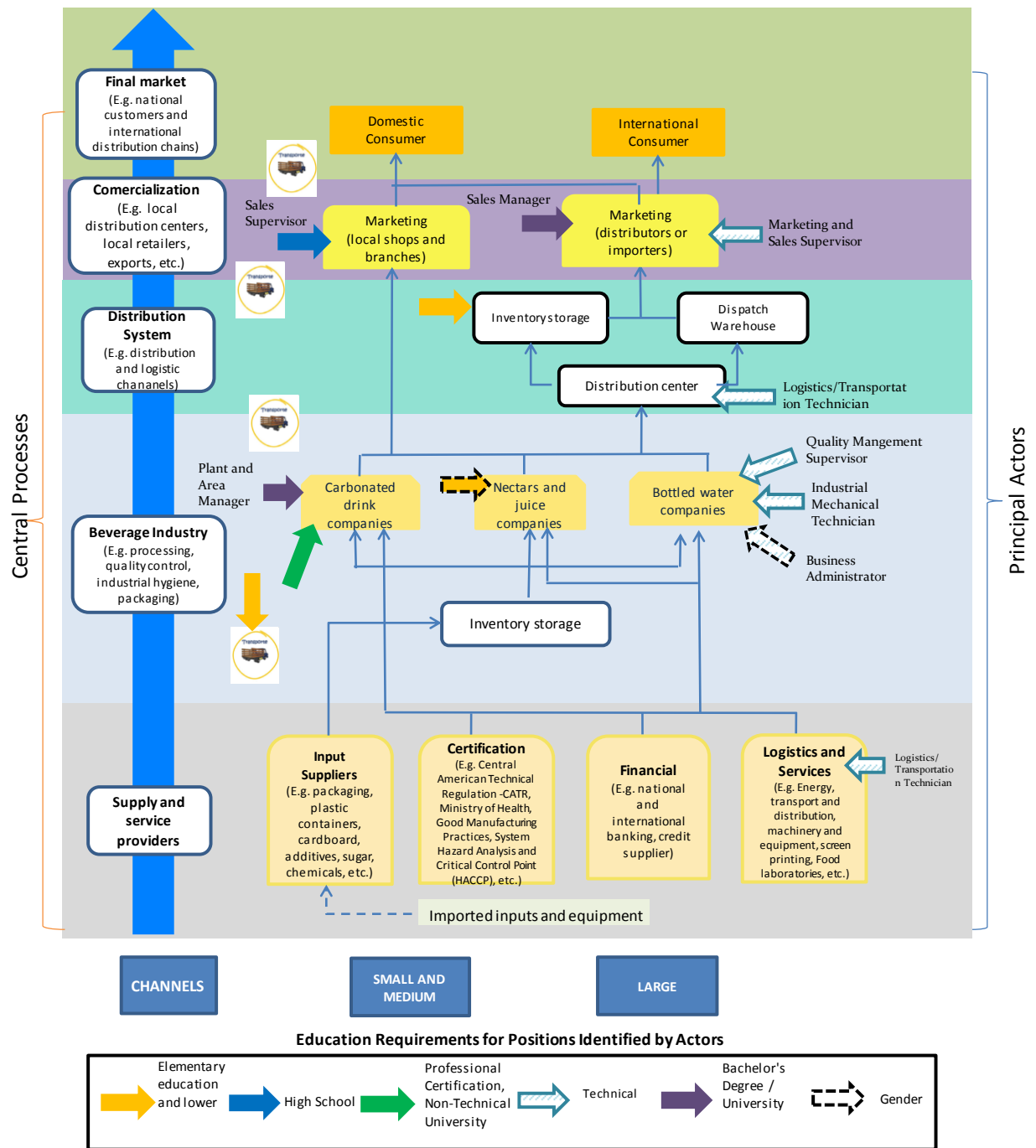
Understanding the Interrelationships Among Principal Actors in the Non-Alcoholic Beverages Value Chain

In order to understand global and national pressures on businesses in the non-alcoholic beverages industry in Guatemala as highlighted above, the value chain below combines the functionality of a value chain with an understanding of knowledge and skills constraints as described by those interviewed in this study.

Effectively, the non-alcoholic beverages value chain can be divided into five stages that make up the core production. These are defined as providers of inputs and services; beverage industry; distribution system; commercialization and marketing; and finally, consumer end markets.

¹²⁷ USDA Foreign Agricultural Service. *Guatemala Food Processing Ingredients 2015*. Guatemala City. 2015.

FIGURE 35. Non-Alcoholic Beverages Value Chain with Workforce Overlay



1. **Suppliers and Service Providers.** The first stage of the value chain includes companies that supply raw materials such as sugars, gases, concentrates, chemicals and machinery, packaging, containers, and other supplies. Service providers associated with these processes include companies that provide transportation, machinery maintenance, cleaning, education and training, and product promotion, among other services. Many larger processors import their raw ingredients directly while smaller companies rely on importers and distributors to obtain these goods, or buy inputs from the local market. Here, a need for Sales and Marketing Managers and Logistics and Transport Technicians was identified by actors.
2. **Beverage Industry.** The second stage in the value chain consists of direct actors categorized as small, medium and large beverage companies. In this stage, the manufacturing process of beverages is performed. Small businesses are generally related to bottled water, while midsized businesses such as FERSAN SA and the Fountainhead and India Group, Quiché, produce carbonates drinks and focus their markets on specific areas of the country such as Quiché, Huehuetenango, Quetzaltenango and other departments. Large businesses produce a variety of drinks and produce for both national and international markets.

In this stage of the value chain, certification systems and standards are needed to improve the performance of the workforce, among other production factors. Some important industry standards are the HACCP (Hazard Analysis & Critical Control Points) system of food safety management; the S.Q.F. (Safe Quality Food) system that ensures food safety and quality management; the Global G.A.P. voluntary standards through which agricultural products can be certified; and the RTCA (Central American Technical Regulation), which regulates food additives and their maximum allowable limits in different products. Here, a need for Business Administrators and Quality Management Supervisors was identified by actors, and a need for Industrial Mechanical Technicians was identified by the assessment team.

3. **Distribution.** The third stage in the value chain includes distribution systems where direct actors are engaged in product distribution and logistics. Large companies carry out this activity internally, while others work with domestic distribution services and exporters. A need for Logistics and Transportation Technicians was identified by the assessment team.
4. **Commercialization.** The fourth stage is defined by commercialization and marketing activities carried out by actors who participate in different channels and markets. These include small subsidiaries and warehouses in the case of small and medium enterprises; distribution companies responsible for the logistics of distribution processes and product positioning in the domestic market; and bottling companies that have a strong distribution system. Here, a need for Sales and Marketing Managers is noted by actors.
5. **End market.** The fifth stage is made up of national and international actors. On the national level, distributors are responsible for the buying and/or distribution of products for supermarket chains, other distributors, local neighborhood stores, recreation centers (zoos, theme parks), etc. On the international level, importers that distribute products through distribution centers, supermarkets, and local neighborhood stores carry out this activity.

Limitations of the Non-Alcoholic Beverages Value Chain

The main limitations or barriers facing the sector are associated with innovation, infrastructure and adequate manpower. There are innovation weaknesses in companies in Guatemala, which is due to limited access to productive resources in technology, lack of opportunity to improve the interaction between academia and the private sector, and little investment in research and development by individual businesses and clusters.¹²⁸ Small and medium producers need access to working capital to enable business growth, which is restricted.

Infrastructure and available logistics systems are insufficient, including -- for many -- an unpaved road network as the only option for internal transport, thus leading to higher packaging and transportation costs. These conditions -- which affect most sectors in the country -- along with poorly trained workers, translate into competitive disadvantages.

Additional limitations highlighted by actors are included in the list below:

- Maintaining competitive prices
- The need to modernize and comply with regulations on the activity in an increasingly demanding market.
- Complexity in compliance with national market mainly due to the constant changes in regulations.
- Limited access to technologies available only outside of Guatemala, where import taxes are high, such as on machinery.
- The need for greater investment in water and solid waste treatment linked to environmental protection.

Key Positions and Associated Skills in the Non-Alcoholic Beverage Sector Value Chain

Important technical positions identified in the non-alcoholic beverage sector include technicians in logistics and transportation and sales and marketing personnel. Business owners and managers in Quetzaltenango noted the need for logistics and transportation personnel because of the state of road infrastructure in more rural areas, particularly those areas where fruits and vegetables are produced and farmers are limited as to where and how they can move their product to the processing stage in this sector. Logistics and transportation specialists are also needed for delivery of final products and must know the geography of the region, and how to use software programs that register the delivery of a product. Actors in the Western Highlands and those in Guatemala City also stated that these technicians must understand health and food safety standards and marketing techniques, as smaller producers supplant intermediaries and transportation technicians fill this function instead

Secondly, as the sector begins to expand into new markets nationally and internationally in natural fruit and vegetable juices and teas, marketing and sales staff who understand the nutritional benefits of a product are needed in order to reach new customers. Being able to bridge the knowledge of the development of a product from farm to factory to store shelf is important, and can particularly help expand the market to younger customers who are more conscious about what they are drinking. Marketing teams who understand this and online platforms will therefore be able to reach younger consumers who may be more concerned about production practices and the contents of a product due to concern for the impact

¹²⁸ AGEXPORT. *Roadmap for High Impact to Accelerate the Growth of the Manufacturing Sector*. April 2016. Accessed September 2016. <http://export.com.gt/wp-content/uploads/2016/04/Doc-Hoja-de-ruta-manufacturas-low.pdf>.

on climate and the environment and on their own health. Additional positions and related skills are outlined in Annex D.

Attitudes

Interviewed actors in the non-alcoholic beverage sector noted that across levels and roles of staff positions, employees must be committed to quality and to the preservation of the environment through safe and responsible farming and production practices. Although most mentioned this as a responsibility of management, who should demonstrate their commitment through their actions and decisions, actors in Guatemala City noted that this is important for all participants in the value chain as roles are distinct and production is decentralized. As companies become more focused on organic production, a commitment to social responsibility and the protection of the environment is necessary in order for customers to “buy” the idea of buying consciously produced goods. Employees in logistics and transportation positions must also be punctual and trustworthy as they are often the face of a company when a product is delivered to a distribution center or a store directly. Those working in marketing and sales positions should also have a desire to learn not only about new technologies and marketing platforms, but also about products themselves in order to be able to excel in their positions. Additional attitudes are outlined in Annex D.

Non-Alcoholic Beverage Value Chain: How Can Educational Institutions Serve the Sector?

Although actors described the need for more formal education and training in the areas of logistics and transportation and food technicians, options at the technical and university level remain limited in the country. Companies would be willing to receive young college technical trainees part time, under the conditions of the company because they feel it is a good practice for youth to gain on the job experience while still in school. This also supports students and young workers develop initiatives and suggest areas for where the company can make improvements. Options for formal programs are described below.

1. Secondary education programs focused in tourism include:

- Food Industry
- Renewable Natural Resources
- Agronomy

These programs are available nationally and are standardized according to an established curriculum defined by the Ministry of Education. While many receive the *Perito* distinction, as noted previously in this study, the quality of education is low, and many students struggle to achieve age appropriate reading and mathematics levels.

2. **INTECAP Programs:** Technician in industrial food processing, industrial maintenance technician, industrial mechanic and technician; Industrial Boilermaker. In addition, INTECAP offers a *bachillerato* (secondary degree) in Arts and Sciences with specialization in industrial food processing taught at the training center of Santa Lucia Cotzumalguapa, Escuintla.

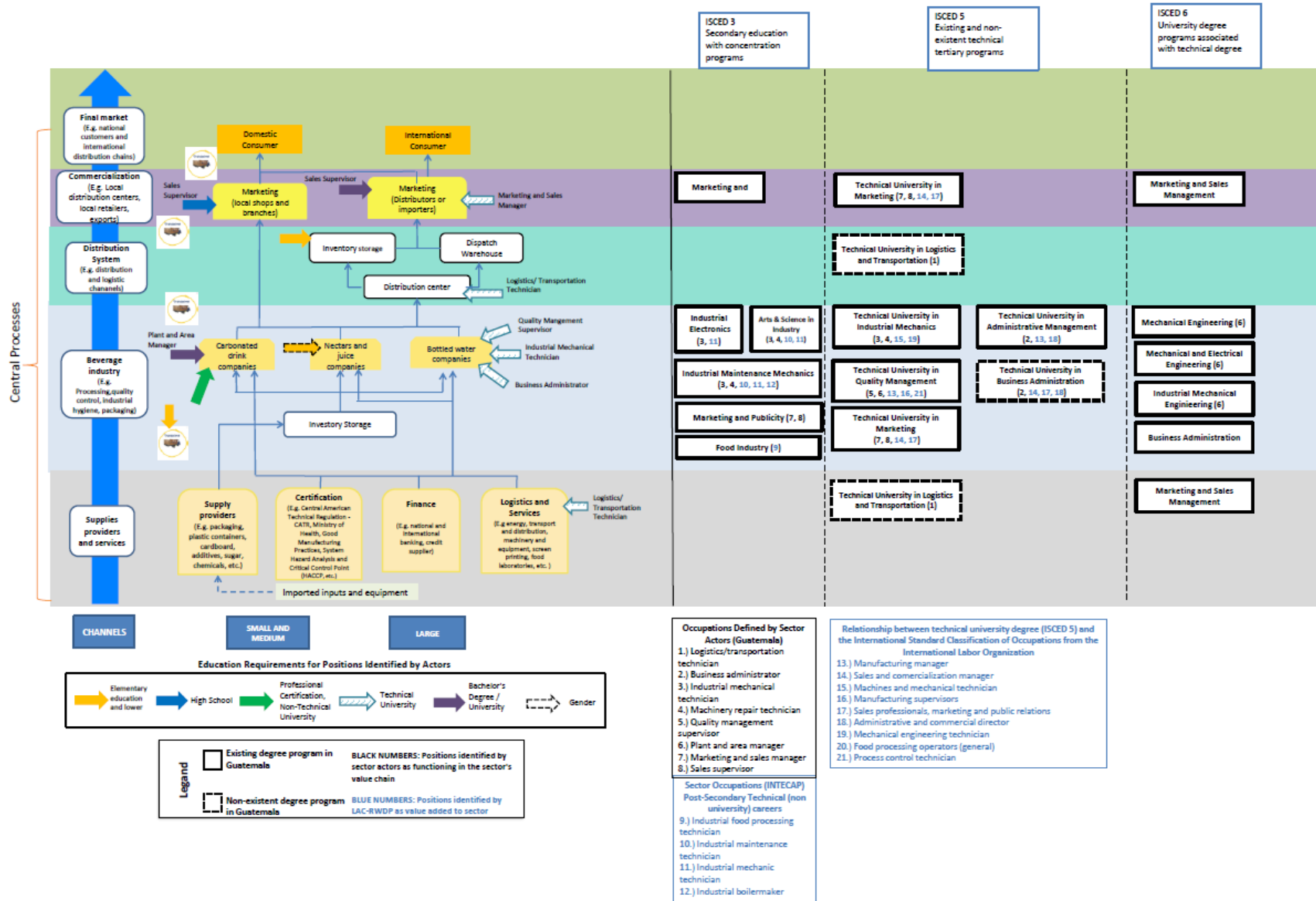
3. **Technical Tertiary Programs (2-3 years):** The following degrees are offered at the technical tertiary level:

- **Food Industry:** Instituto Maya de Estudios Superiores, Universidad de San Carlos; San Juan Chamelco, Alta Verapaz

- **Productive Processes and Food Quality:** Instituto Tecnológico Universitario del Sur, Universidad de San Carlos, Palín, Escuintla
 - **Agro-industrial processes:** Rural University, campuses in Quetzaltenango, Coatepeque, Salcajá, Universidad San Carlos, Centro Universitario del Sur, Escuintla
 - **Fruit Farming Production:** Universidad de San Carlos, Centro Universitario del Nor Occidente, San Marcos.
 - **Agro-ecology:** Universidad Rural, campuses in La Unión Cantinil, San Pedro Solomá, Nentón, Huehuetenango.
 - **Agroindustry:** Universidad de San Carlos, Centro Universitario del Sur, Escuintla
- 4. University Degree Programs (4 years):** The following degrees are offered at the *licenciatura* or engineer level:
- **Food Industry engineer:** Instituto Tecnológico Maya de Estudios Superiores, Universidad de San Carlos, San Juan Chamelco, Alta Verapaz
 - **Agroindustry engineer:** Universidad de San Carlos, Centro Universitario del Sur, Escuintla, Universidad Rural, campuses in Quetzaltenango, Coatepeque y Salcajá
 - **Forestry industry:** Instituto Tecnológico Maya de Estudios Superiores, Universidad de San Carlos, San Juan Chamelco, Alta Verapaz Forestry: University of San Carlos, Central University of the Northwest, Huehuetenango
 - **International agro-business:** Instituto Tecnológico Maya de Estudios Superiores, Universidad de San Carlos, San Juan Chamelco, Alta Verapaz
 - **Agronomy engineering:** Universidad de San Carlos, Guatemala City
 - **Agronomy, specializing in agricultural production systems:** University of San Carlos; Central University of the Northwest, Huehuetenango
 - **Environmental engineer:** Rural University, Quetzaltenango
 - **Agronomic engineering:** Rural University, Huehuetenango, Jacaltenango, Santa Cruz Marillas; Santa Cruz del Quiché; Nebaj; Ixcán Playa Grande, Pachalum, San Pedro, Sacatepequez, San Marcos
 - **Agriculture and Forestry:** Universidad de San Carlos, Guatemala City.

The “sister” or parallel diagram below depicts information on existing and potential tourism-related educational offerings matched to the key positions in the tourism value chain. Here we note a potential need for the following university technical training programs (with potential occupations): logistics and transportation (logistics technician); production processes and food quality (quality management technician); food industry (researcher).

FIGURE 36. Technical Positions, Occupations, and Education Level in the Non-Alcoholic Beverages Value Chain vs. Existing and Non-Existing Career Options in Guatemala



SERVICES: TOURISM VALUE CHAIN

While Guatemala's tourism industry has traditionally been defined by its richness as a cultural destination, the country boasts a plethora of activities and experiences that not only draw people to various parts of the country, but gives tourists a reason to stay. Issues of security have complicated tourism; however, the tourism industry itself must overcome its own issues in order to strengthen as a whole. INGUAT's (the Guatemalan Institute of Tourism) current market strategy does not focus on micro, small, and medium sized businesses that make up the vast majority of its members. As a result, MSMEs are challenged in their growth and competitiveness and it will be important for industry leaders to consider these challenges for smaller businesses to create inclusion. A specific position within businesses themselves which can counter some of these challenges include marketing and sales managers with knowledge of web design, graphic design, and publications to promote nationally in the local market and internationally in order to open new markets. Management of software, social networking, and oral and written communication will be important.

Historically, Guatemala's tourism sector, a subsector of the service industry which includes hotels, restaurants and transportation, has been based on the country's claim as a cultural destination. Tourism revenues accounted for 2.9% of GDP during the period from 2009 to 2013.¹²⁹ Tourism is the third source of foreign exchange, and Guatemala has long been an affordable destination for tourists. Primary markets in 2014 included guests from El Salvador, the United States, Honduras, Mexico, Nicaragua, Canada, Costa Rica, United Kingdom, Belize, and Spain.¹³⁰ Tourists are drawn to the country of "eternal spring," home to twenty-two indigenous groups and fourteen unique eco-regions for a variety of reasons.¹³¹ These include religious and spiritual tourism, language schools, health tourism, and business tourism, all of which contribute to the variety of unique experiences found in Guatemala.

In 1990, the INGUAT established a categorization system for tourism in Guatemala, which effectively divided the country into several regions in order to market tourist destinations and products. Among these marketing strategies is the Altiplano (Highlands), a Living Maya Culture including the departments of Chimaltenango, Sololá, Totonicapán, Quetzaltenango, Quiché, Huehuetenango and San Marcos. This includes traditional destinations of Panajachel and Chichicastenango.

Insecurity has direct and indirect effects on Guatemala's tourism industry. However, business owners and hotel managers in the departments of Quetzaltenango, Huehuetengango, and Quiché remain cautiously optimistic as they look to adapt to and take advantage of an incremental rise in international tourists.¹³² Actors across the tourism sector stressed the need for qualified staff capable of using technology and social media platforms to connect with new markets; those trained in software programs

¹²⁹ World Bank, 2014.

¹³⁰ Guatemalan Tourism Institute. *Tourism Statistic Bulletin: January – December 2014*. Guatemala City. 2014. Accessed September 7, 2016. <http://www.inguat.gob.gt/media/boletines/boletin-anual-2014.pdf>.

¹³¹ National Council of Protected Areas. Biodiversity of Protected Areas. Guatemala City. August 2014. Accessed September 1, 2016. <http://www.conap.gob.gt/index.php/quienes/conap-central/direccion-tecnica/planificacion/estadisticas-e-indicadores-ambientales/category/74-estadisticas-conap.html>.

¹³² Guatemalan Tourism Institute. *Tourism Statistic Bulletin: January – December 2014*. Guatemala City. 2014. Accessed September 7, 2016. <http://www.inguat.gob.gt/media/boletines/boletin-anual-2014.pdf>

for administrative and finance purposes; bilingual or multilingual staff; and trained chefs and kitchen personnel to cater to the tastes of international guests. While business managers and owners of micro (1-4 workers) small (5-10 workers) and large (50+ workers) hotels spoke of the benefits and the competitive advantages of having staff trained on the tertiary technical level, not surprisingly, micro and small businesses stated that they currently satisfy their needs by hiring those with a secondary education background. Larger businesses, therefore, remain those more likely to have staff with technical or *Licenciatura* degrees. The lack of technical knowledge in smaller businesses limits the success of the Guatemala's tourism industry to meet the needs of today's guests; 58.8% of hotels were categorized as micro enterprises in 2014.¹³³

Guatemala's main tourism segments are described briefly below:

- **Cultural Tourism:** Mayan archeological sites such as Tikal in the Petén, Quiriguá in Izabal, Iximche in Tecpan Chimaltenango along with the well-preserved colonial city of Antigua declared by UNESCO as a Cultural Heritage site have created and defined the tourist experience in Guatemala for many years. The importance of the indigenous textile industry and other artisanal products unique to indigenous communities across the country add to the appeal of a visit to various parts of the country for both national and international guests.
- **Religious and Spiritual Tourism:**
 - i) Religious Tourism: Guatemala, being a primarily Christian country, receives many evangelical Christian missionary groups, among others, from Europe and North America to participate in community projects such as the construction of schools, churches, community centers, homes, etc. These groups work through local non-profit organizations in departments such as Quiché.
 - ii) Spiritual Tourism: Spiritual tourism in Guatemala is based on the strength and prominence of the Mayan cultures. Tourists often visit Lake Atitlan for this reason, based on the mysticism surrounding the lake, and the many indigenous towns on its shores. Tourists also seek out Mayan shamans to perform cleansing rituals.
- **Language Tourism:** Spanish language schools in Guatemala are popular for expatriates and foreign visitors alike due to the relatively low cost of classes and the selection of schools in popular areas such as Antigua, Quetzaltenango, and Lake Atitlan. Many schools organize additional activities for students at a discounted rate and become tour operators themselves to local, popular destinations. Those visiting Guatemala for this purpose also have the option of being connected with home-stays for a more unique experience.
- **Health Tourism:** Foreign medical and dental groups travel to Guatemala for short periods of time to provide free or low cost services and care for those living in rural regions where medical resources are scarce. Others participate in health tourism by visiting mineral hot springs such as

133 Research and Social Studies Association (ASIES). *Guatemalan Tourist Sector Situation: 2013-2014*. Guatemala City. 2014. Accessed September 9, 2016. http://www.asies.org.gt/download.php?get=2014_DICE_Encuesta_de_Turismo.pdf.

the *Fuentes Georginas* located in the department of Quetzaltenango, known for the therapeutic effects.

- **Business tourism:** Business tourism is concentrated in Guatemala's largest urban hubs of Guatemala City and Quetzaltenango. For example, Guatemala City's tourism industry is largely focused on business tourists and large conventions or events. The presence of large international hotels largely depends on this steady stream of guests who come for regional and international conferences, seminars, and related business purposes.¹³⁴ In 2015, the Bureau of Conventions expanded their marketing appeal to the academic community by encouraging universities to bring international events to Guatemala.¹³⁵

In 2000, INGUAT built on previous efforts to establish a National Tourism Strategy, creating local tourism committees in order to formulate and implement strategic tourism plans.¹³⁶ Additionally, in 2004, the International Labor Organization (ILO) convened the first Consultative Meeting of Community Tourism in Guatemala, establishing criteria to promote and stimulate community tourism. Governance of the value chain at national and international level is coordinated across sectors, public, private and civil actors, and led by INGUAT, the lead agency and facilitator that promotes and encourages sustainable tourism development in Guatemala. Likewise, the Commission for Economic Development, Tourism, Environment and Natural Resources (COFETARN), composed of governmental and non-governmental organizations and civil society also participates in the value chain's governance. Self-managed tourist committees such as CAT, a legally organized representative that coordinates decentralization of tourism among local civic groups also have a voice. The business sector is represented by the Chamber of Tourism of Guatemala (CAMTUR) which promotes business development partnerships and promotes national and regional tourism development. Within tourism, sustainability and respect for the country's cultural diversity and Mayan heritage have become cornerstones of the industry, guided by the country's National Policy for Sustainable Tourism Development 2012-2022.¹³⁷

Since the early 2000s and again in 2012 under the National Policy for Sustainable Tourism Development, INGUAT has prioritized tourism regions within Guatemala, effectively dividing the country into seven sub-regions in order to market tourist destinations and products. The strategy was successful between 2013 and 2014, as the sector saw a 7.1% increase in the number of foreign tourists in the country.¹³⁸ Destinations prioritized and contributing to this growth include Guatemala City, the Altiplano, Petén,

¹³⁴ [Invest in Guatemala. *Tourism*. Guatemala City, 2015. Accessed September 6, 2016. \[http://www.investinguatemala.org/sites/default/files/5-tourism_eng_0.pdf\]\(http://www.investinguatemala.org/sites/default/files/5-tourism_eng_0.pdf\).](http://www.investinguatemala.org/sites/default/files/5-tourism_eng_0.pdf)

¹³⁵ Guatemalan Tourism Institute (INGUAT). "Bureau of Conventions Looks to Make Guatemala an Academic Events Destination." Guatemala City. February, 2015. Accessed August 28, 2016. <http://www.inguat.gob.gt/posts/buscan-posicionar-a-guatemala-como-destino-de-eventos-academicos-internacionales-159.php>

¹³⁶ Government of Guatemala, 2000.

¹³⁷ Government of Guatemala, President of the Republic. *National Policy on Sustainable Tourist Development in Guatemala, 2012-2022*. Guatemala City. May 24, 2012. Accessed September 3, 2016. http://www.segeplan.gob.gt/downloads/clearinghouse/politicas_publicas/Turismo/Politica_Nacional_DTS_Guatemala_2012_2022.pdf.

¹³⁸ Guatemalan Tourism Institute. *Tourism Statistic Bulletin: January – December 2014*. Guatemala City. 2014.

Izabal, Las Verapaces, the Pacific coast, and the *oriente*, or eastern part of the country.¹³⁹ Sites most frequently visited within these regions include Quiriguá, Antigua (a UNESCO World Heritage Site), and Tikal National Park.

However, despite the country's best efforts to strengthen tourism nationally by streamlining national and international marketing campaigns, concentrated efforts have created unintended consequences for some business owners in the tourism industry, which many owners and managers in the sector blame on INGUAT's lack of innovation and reliance on traditional tourism locations. For example, a small hotel owner in the department of Quiché noted that INGUAT has not established tourism promotion for municipalities and tourist destinations outside of larger focal points identified in INGUAT's market strategy. As a result, smaller operators in areas of lower concentration of tourist activities may not feel they are benefitting from their proximity to destinations that have been selected for promotion by INGUAT.¹⁴⁰ Another actor in Quetzaltenango noted that it was a prevalent practice in the tourism industry to understand sector needs based on strong, and larger businesses, suggesting the limitation of sector leaders to understand needs at all levels and for all sizes of business. The isolation of smaller businesses and those outside of main tourist hubs is concerning, considering the high percentage of businesses (hotel and other tour operators) that are considered either micro or small enterprises, as outlined in the table below:

TABLE 5. Size of Tourism Businesses, 2014

SIZE	% OF HOTELS	% OF TOUR OPERATORS
Micro (1-4 Workers)	58.8%	55.8%
Small (5-19 Workers)	23.6%	33.7%
Medium (20-49 workers)	3.2%	4.7%
Large (50+ workers)	14.4%	5.8%

Source: Research and Social Studies Association (ASIES). Guatemalan Tourist Sector Situation: 2013-2014. Guatemala City, 2014.

Employment in tourism reached 132,000 jobs in 2011, and 222,000 jobs are forecast for 2021, representing a growth of 68% additional employment in the subsector. Tourism revenues accounted for 2.9% of Guatemala's GDP in the period from 2009 to 2013. Tourism is the third source of foreign exchange and Guatemala has become a relatively affordable destination for major senders of tourists like the United States, Canada and Europe.

¹³⁹ Government of Guatemala. *President of the Republic. National Policy on Sustainable Tourist Development in Guatemala, 2012-2022*. Guatemala City. May 24, 2012.

¹⁴⁰ Research and Social Studies Association (ASIES). *Moving Toward Modern and Decentralized Tourism*. Guatemala City. November, 2015. Accessed August 20, 2016. http://www.asies.org.gt/download.php?get=201514aencuesta_turismo.pdf.

Direct jobs included in this statistic are those generated from hotels, travel agencies, airlines, restaurants, and other leisure activities.¹⁴¹ These figures are expected to grow in the future, and several of those interviewed echoed the potential for employment growth within their own business. Factors that businesses saw as boosting growth in the sector include improvement in strategic planning, increased hotel supply, private investment in the sector, improved infrastructure conditions and the rehabilitation of the Los Altos airport, which is scheduled to begin receiving international flights in December 2016.¹⁴² On the other hand, other employers felt the constraints of a limited supply of tourists, a lack of tourism promotion and public investment, and increased costs especially associated with new hires.

According to the companies interviewed, 49% of employees are women. In general, the companies expressed availability and interest to give part-time opportunities to young trainees. One element to consider is that the work can be covered by any other employee if the trainee is absent.

Understanding the Interrelationships Among Principal Actors in the Tourism Value Chain

In order to understand the global and national pressures on businesses in the tourism industry in Guatemala as highlighted above, the tourism value chain below combines the functionality of the value chain with an understanding of knowledge and skills needs and constraints as described by those interviewed in this study.

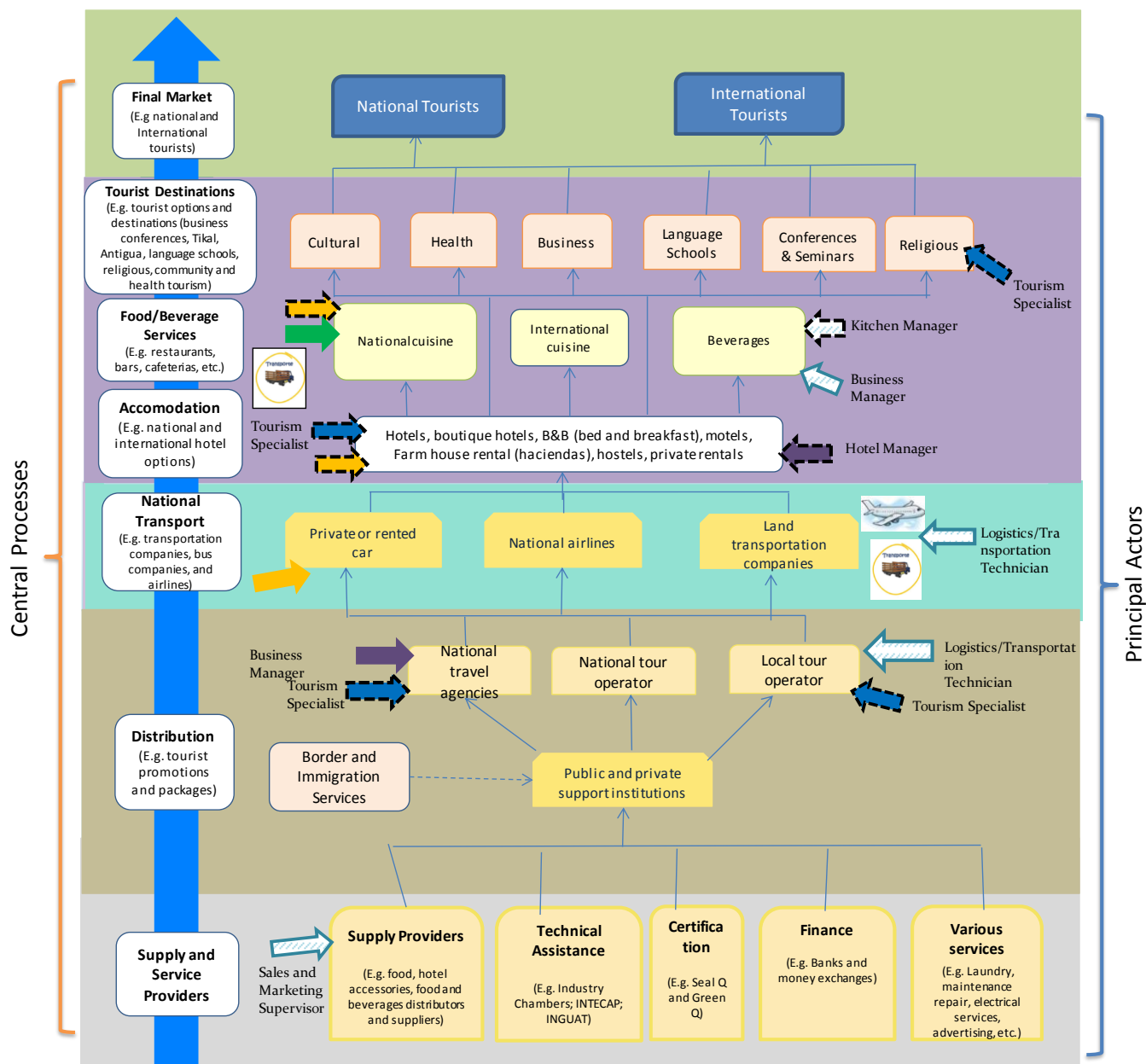
Effectively, the tourism value chain can be divided into six stages that make up the core processes of a tourist's experience. These stages include input suppliers and various services; distribution; national transport; accommodation, food and beverage services, tourist destination, and finally the end market which the chain serves. These "stages" of the tourism value chain contribute to a tourist's experience and are based on the purpose of tourism, as described in the previous section.

To understand the stages in the tourism chain, it is necessary to distinguish between two types of tourists, domestic and international, as well as the reasons for the trip (leisure, business, visiting family and friends, religious/spiritual purposes, language study, conferences and seminars, and health, among others).

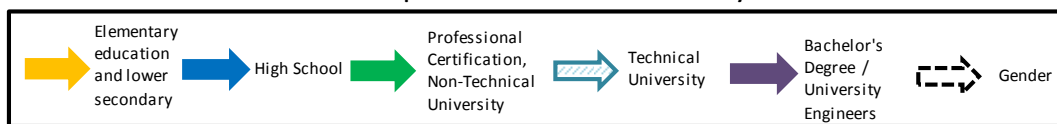
¹⁴¹ World Travel and Tourism Council. *Travel and Tourism: Economic Impact 2015 Guatemala*. London, 2015. Accessed August 25, 2016. <https://www.wttc.org/-/media/files/reports/economic%20impact%20research/countries%202015/guatemala2015.pdf>.

¹⁴² El Periodico. "Airport Rehabilitated in Quetzaltenango." September 9, 2016. <http://elperiodico.com.gt/2016/09/10/pais/reabre-aeropuerto-quetzalteco-para-vuelos-comerciales/>.

FIGURE 37. Map of the Tourism Value Chain



Education Requirements for Positions Identified by Actors



1. **Input suppliers and service providers.** The first stage is made up of input suppliers, companies that supply cleaning products, hospitality accessories (linens, furniture, equipment), restaurant accessories (glassware, kitchen, equipment and machinery), and food distributors and suppliers. The first stage also includes companies that supply laundry services, equipment maintenance, electrical maintenance, electricity, security, and other services. Actors across the tourism sector noted that while laundry and cleaning services are generally hired as staff by hotels and tour operators, security professionals are contracted out. Here, respondents mentioned the need for Logistics and Transportation Technicians, while the assessment team identified a need for Marketing and Sales Managers.
2. **Distribution.** In the second stage, distribution, actors are grouped into national and local tour operators and travel agencies. Large companies are located in the departments of Guatemala (51.7%) and Sacatepequez (14.7%) and include tour operators. Local tour operators and travel agencies generally have locations convenient to accessing multiple tourist destinations. Many small and medium operators on this level of the value chain are family operated. Here, respondents mentioned the need for Logistics and Transportation Technicians, while the assessment team identified a need for Marketing and Sales Managers.
3. **National Transport.** In the third stage, transport is divided into land and air transportation, though a few international cruise operators include Guatemala as part of their destination and exist to a lesser extent. Land transport is the main means of tourist mobility to more rural departments. Land transportation is divided into local tour operators who provide transportation services, companies that have established routes throughout the country, car rental companies, and those who use private vehicles. A study by INGUAT for December 2014 stated that approximately 70% of non-residents entered Guatemala via land routes, with 44.8% of those crossing from El Salvador.¹⁴³ Guatemala City's La Aurora airport saw an 8.3% increase in travelers in the period of 2013-2014.¹⁴⁴ Here, actors identified a need for Logistics and Transportation Technicians.
4. **Hospitality.** The fourth stage consists of direct actors operating in hotel companies, food and beverage services, and finally activities that draw tourists to Guatemala, such as cultural, health, business, Spanish schools, conferences or seminars, religious activities. These facets of a tourist's experience are outlined in a single stage on the value chain because they shape the core purpose of tourism for groups or individuals. Those interviewed noted that the hotel business is more developed and decentralized than the activity of tour operators, and is distinguished from tour operators in that that hotels focus on domestic tourists, while tour operators focus on foreign tourists. Additional actors in this stage are those that offer food and beverage services, namely restaurant and food stores, but also include food services within hotels such as bars, as well as clubs, informal food sales (street vendors), food stores and kiosks located at most tourist attractions. Here, actors identified a need for Kitchen and Restaurant Managers, Hotel Managers, Business Administrators, and Tourism Technicians.

¹⁴³ Guatemalan Tourism Institute. *Tourism Statistic Bulletin: January – December 2014*. Guatemala City. 2014.

¹⁴⁴ Guatemalan Tourism Institute. *Tourism Statistic Bulletin: January – December 2014*. Guatemala City. 2014.

5. Finally, the fifth stage of production is the end market, and is defined by the provenance of the tourist (national or international). Prior stages and activities of the value chain relate to the needs of these two distinct markets.

Limitations of the Tourism Value Chain

One main limitation or barrier facing the sector is associated with the global economic environment that may impact individuals' ability to travel, or associated costs. Other limitations include local and global disease outbreaks, natural disasters; and insecurity.

Guatemala has no tax incentives for tourism investment. There are no laws to encourage tourism in order to create financial leverage, and according to the Tourism Competitiveness Index of the World Economic Forum (2013) the least favorable indicators are public safety, environmental sustainability and land and air transport infrastructure, and price competitiveness the best indicator. There is a marked seasonality and dependence on the behavior of foreign markets, given that positionality does not exist for opening new markets. This is reflected in the operation and interests of INGUAT as it is markedly traditional and not very innovative.

According to respondents, major constraints to the development of the sector are:

Security issues. Beyond the prevalent security issues in Guatemala, actors across the departments of Quiché, Huehuetenango, and Quetzaltenango described limitations that challenge the tourism sector. While these deeply rooted issues of security in Guatemala have had grave effects on the perception of tourists not only from North America and Europe, but also from other Central American countries, this section explores additional barriers that negatively impact productivity and competitiveness in the tourism value chain.

Political uncertainty. Related to security concerns is the issue of the fragile state of Guatemalan institutions. This manifests itself in several ways that directly and indirectly affect the quality of services and the participation of businesses outside of large urban hubs. Hotel associations and actors who manage large conventions, international events, etc. often feel this constraint when organizing government functions due to the fact that government procedures for organizing events on the national, departmental, and municipal level are time-consuming. Hotels in Quetzaltenango who compete to hold such events stated that they are often strained financially based on the slow timeline of government procedures. As a result of this uncertainty, most medium and larger hotels who would be more likely to participate in such events contract temporary workers when needed and in general keep fewer people on full-time staff. The limited financial resources of the Government also affect public sector events at hotels.

Infrastructure. Another constraint is the lack of basic and adequate infrastructure in many areas. This includes not only roads safe for larger trucks to be able to deliver necessary goods and services, but also the availability of clean, safe water. The lack of adequate road infrastructure principally affects businesses outside of or between urban centers, decreasing the appeal for tourists. Potable water is a problem nationally, as noted by a medium sized business in Quetzaltenango. Water safety measures are supposed to be taken on by municipalities, one informant stated, however, there are no departmental or national safety standards, and there is no authority to regulate water services in the country. Instead, larger hotels are those more likely to create their own safety standards; however, this may not be possible for smaller businesses. This issue is more prevalent in rural areas where mining practices exploit and contaminate local water sources. Those most directly affected by the situation are indigenous communities, who, having little control over these resources on their ancestral lands, often live without access to clean water.

Traditional gender roles. An additional barrier as noted by those interviewed is the existence of strict, traditional gender roles, and limitations to full gender participation in the value chain. Managers and owners' perception of female participation was noted as limited, particularly at the tertiary technical level. The sector suffers from *machista* attitudes, though this has reduced in recent years according to a hotel owner in Quetzaltenango. There is a general preference for men to study, not women (general manager of a hotel in Quetzaltenango), and, specifically, parents do not believe that education for females is necessary at the tertiary technical level (hotel association, Quetzaltenango).

Other limitations. In addition, the interviewees noted insufficient access to technology due to high prices, a complex process to apply for Certification Q (INGUAT's quality certification), and the perception that although there are development plans with long-term vision for tourism in Guatemala, they are not fully implemented.

Key Positions and Associated Skills in the Tourism Sector Value Chain

The most sought-after skills for positions such as those in hotel management, business administration, and marketing and sales were those related to the use of technology. Due to the fact that the internet is increasingly used by both national and international tourists alike, the ability to connect with potential guests via electronic communication and marketing methods is crucial, particularly for the US market, where in 2014, it was identified that the internet is the most-used tool for US citizens as they plan their travels.¹⁴⁵ Comparatively, according to a study done by ASIES, 35% of hotels in Guatemala had a webpage while 61% of tour operators stated that they used a webpage. This may be related to the fact that hotels rely heavily on national tourism (77% of the market) while tour operators focus on international guests (with just 30% of their business from Guatemalan guests). This is to say that Guatemalans may continue to rely on local advertisements in newspapers, etc., friends, and family, and local travel agencies to make travel plans.¹⁴⁶ Hotel and tour operator owners confirmed this, noting that the movement toward social media platforms is crucial in order to be relevant to wider, particularly more international markets. However, actors found the development of these skills in their employees to be limited because technical programs focusing on this knowledge and skill set are not available in the department in the case of Huehuetenango; and there is limited access to technology due to high prices.

Additionally, managers and business owners identified the needs for professionals in kitchen services including those with an understanding of nutrition, seasonality of products, knowledge of international food culture, kitchen administration, and safety and food preparation. Because the Ministry of Health requires restaurants to achieve certain standards, restaurant managers regarded previous experience in restaurant hygiene (hand washing procedures; washing of utensils, pots, pans, etc.) as desirable in candidates. Others in Quetzaltenango commented that while the food industry in restaurants and hotels is moving toward international cuisine, it is hard to find those with this type of education, particularly outside of Guatemala City. A manager stated that programs that do exist in universities are expensive, limiting programs to those with the financial means. INTECAP offers certification for international cuisine, but trainings are for short periods, and offer limited knowledge and depth in the area. Instead, human resource managers hope to find candidates with experience working in these areas.

¹⁴⁵ Research and Social Studies Association (ASIES). *Moving Toward Modern and Decentralized Tourism*. Guatemala City. November, 2015.

¹⁴⁶ Research and Social Studies Association (ASIES). *Moving Toward Modern and Decentralized Tourism*. Guatemala City. November, 2015.

In the same vein, actors mentioned that Guatemala has become a recruitment pool for cruise ships and carriers coming into main hubs such as Puerto Barrios on the Caribbean Sea and Puerto Quetzal on the Pacific Ocean. These companies also look for the same knowledge and skills in their personnel. Here, basic English skills are important, as cruise ship passengers are most often from the United States, Canada, and the United Kingdom. These passengers, often leaving the ship to visit Antigua from Puerto Quetzal and Quiriguá from Puerto Barrios also require trained tour guides with English skills to enhance their experience. Additional positions and related skills are outlined in Annex D.

Attitudes

Actors working in the tourism industry in the Western Highlands described the importance of attitude in their staff, as a tourist's experience is based on the quality and attention of service they receive from hotels, tour operators, restaurants, guides – in short, everyone they encounter. Actors noted that Guatemalans are often seen as ideal for cruise ships and restaurants catering to international customers, as Guatemalans are known for being dedicated, hard workers. Managers in Quiché and Huehuetenango stressed that employees' self-esteem was important, as it is reflected in how comfortably and effectively they speak with customers. Similarly, the quality of customer service given by those working in the tourism industry is related to being proactive, responsible, trustworthy, and patient, particularly when working as part of a larger team. Actors mentioned that good teamwork is based on members sharing knowledge and experiences, so that team members can learn from and build off one another on the job. Specifically, for aforementioned technical positions in hotel management, business administration, marketing, kitchen administration, and staff such as chefs in food preparation services, these staff members must be adaptable to meet the needs of their guests and to properly manage their teams. Moreover, respect for cultural differences that employees these positions may encounter throughout interactions with guests is important in order to provide their guests with enjoyable experiences. Additional attitudes are described in Annex D.

Limitations in attitude were noted by actors, thus impacting guest's experience. A hotel owner in Quetzaltenango stated that staff do not always have a desire to excel on the job, or go above and beyond for customers. Other actors outside of Quetzaltenango stated that this may be due to the fact that "many are accustomed to the conditions of their family" and limit themselves as to what they can accomplish as individuals. Discipline is also necessary according to a hotel manager in Quetzaltenango in order to be consistent on the job. For these reasons, those interviewed described good customer service as a "gift" that cannot necessarily be taught in the classroom or on the job.

Tourism: How Can Educational Institutions Serve the Sector?

Although actors described the need for more formal education and training in the areas of kitchen and administrative staff, options remain limited in the country on the technical and university level. Options for formal programs are described below.

1. Secondary education programs focused in tourism include:

- Tourism and Sustainable Development
- *Bachillerato* in sciences, oriented toward tourism.
- Marketing and Advertising

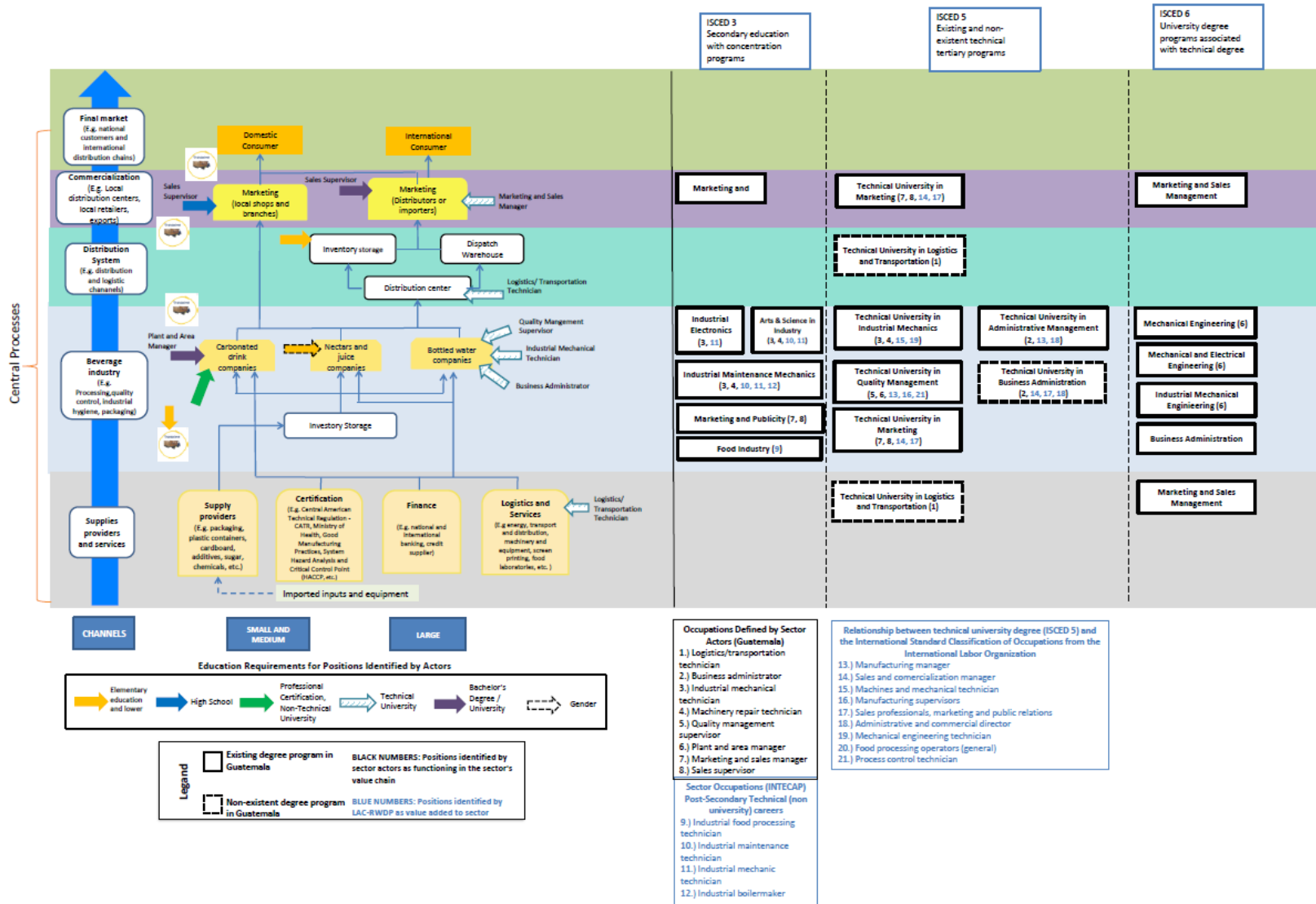
These programs are available nationally and are standardized according to an established curriculum defined by the Ministry of Education. While many receive the *Perito* distinction, as noted previously in this

study, quality of education is low, and many students struggle to achieve age appropriate reading and mathematics levels. Actors noted that *peritos* often work in smaller tourism businesses where employers are less likely to have the financial means to pay for those with higher levels of training.

2. **INTECAP Programs:** INTECAP offers a certificate program in Hotel Industry and Tourism. While all private businesses are welcome to participate in INTECAP programs, larger businesses have the power to request training specific to their needs, whereas smaller hotels that would have the need to train few people cannot request specialized training without paying additional costs. This is a barrier for micro, small and medium sized enterprises looking for training solutions outside of their companies.
3. **Technical Tertiary Programs (2-3 years):** The following degrees are offered at the technical tertiary level:
 - **Technical degree in Tourism and Hospitality:** University of Mariano Galvez, Huehuetenango
 - **Hotel Administration:** University of Mariano Galvez, Huehuetenango
 - **Gastronomy:** Universidad del Istmo, Guatemala City
 - **Marketing:** University of Rafael Landívar, Quetzaltenango, Santa Cruz del Quiché
 - **Marketing and Sales:** University of Rafael Landívar, Quetzaltenango, Santa Cruz del Quiché
 - **Business Management and Administration:** Universidad del Istmo, Guatemala City
 - **Business Management:** University of Mariano Galvez, Huehuetenango, Santa Cruz del Quiché, Quetzaltenango; Galileo University; University of Rafael Landívar, Quetzaltenango, Santa Cruz del Quiché.
4. **University Degree Programs (4 years):** The following degrees are offered at the *licenciatura* level:
 - **Hotel Administration:** University of Mariano Galvez, Huehuetenango
 - **Tourism and Gastronomy:** University of Mariano Galvez, Huehuetenango
 - **Hotel and Restaurant Administration:** University of Rafael Landívar, Quetzaltenango
 - **Tourism:** Universidad del Istmo, Guatemala City
 - **Marketing:** University of Rafael Landívar, Quetzaltenango, Santa Cruz del Quiché
 - **Business Administration:** University of Mariano Galvez, Huehuetenango, Santa Cruz del Quiché, Quetzaltenango; Galileo University; University of Rafael Landívar, Quetzaltenango, Santa Cruz del Quiché.

The “sister” or parallel diagram below depicts information on existing and potential tourism-related educational offerings matched to the key positions in the tourism value chain. Here we note a potential need for the following university technical training programs (with potential occupations): marketing and sales (marketing managers); business management (administrative staff); logistics and transportation (professional drivers); and gastronomy (chefs focused on international cuisine).

FIGURE 38. Technical Positions, Occupations, and Education Levels in the Tourism Value Chain Vs. Existing and Non-Existent Degree Programs in Guatemala



CONCLUSIONS

A COMMITMENT TO ECONOMIC AND HUMAN DEVELOPMENT

While progress has been made on social issues over the past decade, Guatemala has experienced stagnation and has even declined in progress in many major social indicators. Though economic growth in the years since the global economic recession has been moderate and sustained, it has not been inclusive or significant, given population growth. Economic growth has been insufficient to provide the market with enough jobs to create decent work for the majority of the population, so the informal sector predominates, dragging down both incomes and productivity.

Public spending on education, health, and welfare is another way by which human poverty can be addressed, but in Guatemala, this has not kept pace with the needs of a young population. The huge gap between needs and spending has contributed to the fact that poverty increased in the country over the last fifteen years, and the net primary school enrollment rate has deteriorated significantly. As a result, Guatemala has been unable to reduce its severe, systemic inequalities, and is one of the most economically unequal countries in Latin America, the most unequal region in the world.

In order to move towards higher levels of development, inclusive economic growth is required. This will in effect improve the living conditions of the population in health, education and social welfare. The combinations of effects that stem from economic growth have the ability to generate virtuous circles with a double dividend: economic development and improvement in human development.

For this reason, in this document we have identified dynamic economic sectors with potential for growth in the future. This can mean both economic opportunity and the ability to generate and increase the quality of employment. In this vein, we suggest that that educational offerings take into account the needs of the labor market in order to improve future demand for employment for young people, particularly for those living in disadvantaged conditions.

This assessment focuses on identifying sectors in which economic competitiveness can be boosted by strengthening the workforce. Truly equipping the workforce with the potential to positively change their own and their country's trajectory, however, requires that post-secondary technical university education, as well as non-technical university programs, are aligned with the needs of the labor market. Countries with successful workforce systems – such as Germany and Singapore – do so around a vision shared by the private sector, educational institutions, and government. Although Guatemala is not yet at this point, there is some hope that it is moving in that direction. To advance the human capital of the workforce of today and tomorrow, we suggest that the major actors in this system, particularly the private sector and academia, work to establish an institutionalized communication bridge that creates a better understanding of the needs, opportunities and challenges for both.

The five selected value chains considered here – legumes and vegetables, textiles and apparel, processed foods, non-alcoholic beverages, and tourism – each present distinct opportunities and challenges for Guatemala.

- In legumes and vegetables, as market demand shifts towards organic and eco-friendly products, certification is increasingly required, as are food processing technicians to regulate production practices; logistics and transportation technicians to ensure the safety and quality of goods being delivered to market; and marketing and sales specialists to create opportunities in new and

existing markets. Top skills for these positions as named by employers include research, analytical, communication, social media, and graphic and web design skills.

- In textiles and apparel, as indigenous textiles find niche markets abroad, production will require designers familiar with international trends and marketing specialists to sell innovative designs; while MSMEs and *maquilas* require machine maintenance technicians to support “speed to market” production. Top skills for these positions as named by employers include cost and product analysis; design; use, maintenance and repair of technology and machinery; and business and sales skills.
- In processed foods as well as non-alcoholic beverages, as international and Guatemalan consumers increasingly demand healthy products, the value chain will require technicians who can carry out continuous product research relevant to local businesses; as well as logistics and transportation technicians whose knowledge of local markets and geography can help businesses take advantage of new opportunities. Top skills for these positions as named by employers include research, communication and sales skills.
- Finally, MSMEs in the tourism sector wishing to grow and become competitive find that they are increasingly in need of marketing and sales managers with knowledge of web design, graphic design, and publications for local and international marketing. Top skills for these positions as named by employers include software and social media skills, and oral and written communication, as well as English.

Economic growth can help the poor either through the creation of decent jobs and income-generating opportunities or through the social services expenditures that are dependent on government revenues. Today, however, neither is occurring in Guatemala to the extent necessary to reverse recent increases in poverty. Educational enrollment at the primary level has decreased, and nationally, only 23% of the out-of-school youth population has completed upper secondary school, though this is an improvement over past generations.

This analysis has identified specific sectors of potential economic growth. The sector selection undertaken for this assessment was a rigorous and iterative -- rather than static -- exercise: as the economy grows and changes, and new information becomes available, the analysis will need to be updated. Furthermore, the assessment is far from exhaustive, as there are very promising sectors beyond the ones analyzed here.

Our goal was to understand the specific functional and skills needs of businesses in these sectors in the Western Highlands. Across all value chains, the need for logistics and transport technicians was noted; logistics is both a constraint and a major potential opportunity as Guatemalan businesses currently must operate within the context of a limited and deteriorating road infrastructure. Especially in legumes and vegetables and food and beverage production, there is a need for researchers, people who understand what’s happening in the global and Guatemalan markets vis-à-vis these products (how tastes are changing) etc., and who have the technical capability to reformulate, repackage, or remarket products to better appeal to consumers.

In order for educational institutions to better address the needs of these businesses, however, they must first talk to them. Currently, the connections between academia and the private sector in the target region are few and weak. This assessment can provide a roadmap to begin the discussion.

ANNEXES

ANNEX A: GUATEMALA INTERVIEW GUIDE FOR SECTOR ACTORS

Nombre:

Empresa:

Puesto Empresa:

Correo electrónico:

Teléfono:

INFORMACIÓN DE LA CADENA

1. ¿Cómo están organizados (gremial, asociaciones, cooperativas) y quien se considera la estructura más alta?
2. ¿Podría mencionar quienes son los actores clave dentro de la cadena, los que mueven el sector?
3. ¿Cuáles son los principales productos que ofrece como empresa?
4. ¿Cuáles son los principales productos o destinos que ofrece el sector?
5. ¿Las relaciones dentro de la cadena son como las que se presenta en el mapa, indique? (mostrar mapa)
6. ¿De dónde procede el productor o servicios y a donde está destinado? (De donde viene lugares, sitios, departamentos y donde va de acuerdo a su mercado nacional o internacional)
7. De la red de socios (proveedores insumos o servicios)
8. ¿La empresa o sector carece de algún insumo o servicio?

INFORMACION DE LA CADENA

9. Sector de la actividad:

- | | |
|---|---|
| <input type="checkbox"/> Agrícola | <input type="checkbox"/> Manufactura (textil, confección y calzado) |
| <input type="checkbox"/> Manufactura (bebidas) | <input type="checkbox"/> Servicios (turismo) |
| <input type="checkbox"/> Manufactura (alimentos procesados) | <input type="checkbox"/> Otro: |

10. Años de operación de la empresa:

- | | |
|---|-------------------------------------|
| <input type="checkbox"/> Menos de 1 año | <input type="checkbox"/> 1 a 5 años |
| <input type="checkbox"/> 6-10 años | <input type="checkbox"/> 11-20 años |
| <input type="checkbox"/> >21 años | <input type="checkbox"/> Otro: |

11. Departamentos donde opera empresa:

- | | | | |
|---|--|--|--|
| <input type="checkbox"/> Guatemala | <input type="checkbox"/> Retalhuleu | <input type="checkbox"/> Huehuetenango | <input type="checkbox"/> Chimaltenango |
| <input type="checkbox"/> Sacatepéquez | <input type="checkbox"/> Suchitepéquez | <input type="checkbox"/> Quiché | <input type="checkbox"/> Alta Verapaz |
| <input type="checkbox"/> Quetzaltenango | <input type="checkbox"/> San Marcos | <input type="checkbox"/> Totonicapán | <input type="checkbox"/> Baja Verapaz |
| <input type="checkbox"/> Izabal | <input type="checkbox"/> El Petén | <input type="checkbox"/> Escuintla | <input type="checkbox"/> Sololá |
| <input type="checkbox"/> Otro: | | | |

12. Empleos directos que genera la empresa (No. _____)

- | | |
|---|--|
| <input type="checkbox"/> Microempresa (1 a 10 empleados) | <input type="checkbox"/> Pequeña Empresa (11 a 25 empleados) |
| <input type="checkbox"/> Mediana Empresa
(26 a 60 empleados) | <input type="checkbox"/> Grande Empresa (> a 60 empleados) |
| Porcentaje de Mujeres: (_____%) | Porcentaje de hombres: (_____%) |

13. ¿Cómo se ve el crecimiento de los colaboradores en los próximos años?:

- Disminuir número de empleados
- Mantener mismo número de empleados
- Incrementar número de empleados

14. ¿Cuál es la razón de esta tendencia?

DEL PERSONAL CONTRATADO DE LA EMPRESA

15. De acuerdo a los puestos actuales de la empresa:

_____	Porcentaje maestría y doctorado	_____	Porcentaje Licenciatura
_____	Porcentaje Técnico universitario	_____	Porcentaje Diversificado
_____	Porcentaje Primaria y básicos	_____	Porcentaje Técnico no universitario

16. ¿Existen puestos de trabajo dentro de la empresa que requieren de colaboradores técnicos universitarios/técnicos no universitarios?:

SI

NO

Técnico Universitario

Técnico No Universitario

17. ¿Cuáles son las principales barreras o limitaciones de participación de mujeres en puestos técnicos universitarios?:

18. ¿Cuáles son las principales barreras o limitaciones de participación de hombres en puestos técnicos universitarios?:

IR MAPEO

19. Desde su percepción, ¿existe alguna(s) carrera técnica universitaria necesaria para la empresa o para el sector, que no exista o que hay que reforzar (Ej. Técnico producción frutícola, técnico procesos manufactura, técnico procesamiento alimentos)?

20. ¿La empresa donde labora podría recibir a jóvenes en formación a nivel técnico universitario de tiempo parcial, en alianza con las universidades?:

SI

NO

¿Porque?

HABILIDADES Y COMPETENCIAS

21. ¿Cuáles son los principales conocimientos requeridos para el técnico(s) universitario(s) identificado(s)?:
22. ¿Cuáles son las principales habilidades requeridas para el técnico(s) universitario(s) identificado(s)?:
23. ¿Cuáles son las principales actitudes requeridas para el técnico(s) universitario(s) identificado(s)?:
24. ¿Existe alguna otra competencia que quiera mencionar?
25. ¿Cuál cree que serían las ventajas competitivas que tendría la empresa o el sector de contar con el personal técnico universitario apropiado?
26. Si el sector académico o de formación, adecuara las carreras técnicas universitarias, acorde a los requerimientos de competencia profesional de la empresa o el sector, cree que la empresa contrataría a jóvenes bajo esta formación:
 SI NO

DEL SECTOR EN EL QUE TRABAJA

27. ¿Cuáles son las principales limitaciones o cuellos de botella de la empresa o el sector en el que se desarrolla?
 - a. ¿Ámbito Económico?
 - b. ¿Ámbito social cultural?
 - c. ¿Ámbito tecnológico?
 - d. ¿Ámbito Político legal?
 - e. ¿Ámbito Ambiental?
28. ¿Cuál es la tendencia del sector?

COMENTARIOS ADICIONALES (ALGÚN ACTOR IMPORTANTE A ENTREVISTAR)

ANNEX B. ELECTRONIC SURVEY

7.2 COMPETENCIAS

Instrucciones

Indique las competencias más importantes requeridas para los empleados de la empresa (si es vía electrónica). Si es personal el entrevistador anotará las respuestas que indique el entrevistado.

Habilidades y competencias

La Competencia Laboral es el "conjunto de conocimientos, habilidades y capacidades requeridas para desempeñar exitosamente un puesto de trabajo; dicho de otra forma, expresan el saber, el hacer y el saber hacer de un puesto laboral".

Competencia laboral

Conocimientos:
Conjunto de saberes adquiridos por distintas vías

Actitudes:
Disposición de ánimo manifestada de algún modo

Habilidades:
Capacidad y disposición para ejecutar acciones

Competencia

Indique los principales conocimientos requeridos para el técnico universitario identificado

7.2.4 DESARROLLO HUMANO	IMPORTANTE
1. Capacidad de adaptarse a nuevas situaciones	<input type="checkbox"/>
2. Capacidad de comunicación oral y escrita	<input type="checkbox"/>
3. Capacidad creativa	<input type="checkbox"/>
4. Capacidad para tomar decisiones	<input type="checkbox"/>
5. Habilidad para trabajar de forma autónoma	<input type="checkbox"/>
6. Capacidad crítica y autocrítica	<input type="checkbox"/>
7. Capacidad de formular y gestionar proyectos	<input type="checkbox"/>
8. Capacidad de autoformación y actualización permanente	<input type="checkbox"/>
9. Tener iniciativa	<input type="checkbox"/>
10. Compromiso ético	<input type="checkbox"/>

7.1.5 INTERPERSONALES	IMPORTANTE
1. Habilidad en resolución conflictos	<input type="checkbox"/>
2. Liderazgo que permita establecer y mantener la cohesión del equipo de trabajo para alcanzar las metas de la empresa	<input type="checkbox"/>
3. Capacidad de trabajar en equipo	<input type="checkbox"/>
4. Capacidad de comunicación en un segundo idioma	<input type="checkbox"/>
5. Capacidad para motivar y conducir hacia metas comunes	<input type="checkbox"/>
6. Capacidad de comunicación oral y escrita	<input type="checkbox"/>
7. Capacidad de comunicarse en idioma local	<input type="checkbox"/>
7.1.6 VALORES	IMPORTANTE
1. Responsabilidad social	<input type="checkbox"/>
2. Compromiso con la calidad	<input type="checkbox"/>
3. Valoración y respeto por la diversidad y multiculturalidad	<input type="checkbox"/>
4. Compromiso con su medio sociocultural	<input type="checkbox"/>
5. Compromiso con la preservación del medio ambiente	<input type="checkbox"/>
7.1.7 TECNOLÓGICAS	IMPORTANTE
1. Habilidad en el uso de tecnologías de la comunicación e información	<input type="checkbox"/>
2. Hacer análisis efectivo en Excel	<input type="checkbox"/>
3. Hacer presentaciones efectivas en power point	<input type="checkbox"/>
4. Identificar tecnologías actuales y emergentes y evaluar si son aplicables	<input type="checkbox"/>
5. Capacidad de utilizar redes sociales para comunicar o informar oportunamente	<input type="checkbox"/>

6. Habilidad para buscar, procesar y analizar información procedente de fuentes diversas	<input type="checkbox"/>
7.1.8 TÉCNICAS RELACIONADAS AL PUESTO	IMPORTANTE
7. Demostrar conocimiento y comprensión del contexto en el que desarrolla su trabajo	<input type="checkbox"/>
8. Capacidad para toma decisiones oportunas	<input type="checkbox"/>
9. Capacidad para identificar, plantear y resolver problemas dentro de su área	<input type="checkbox"/>
10. Capacidad para organizar, priorizar y ejecutar el trabajo	<input type="checkbox"/>
11. Capacidad de análisis y propuesta de mejoras para el sector	<input type="checkbox"/>
12. Planificar, dirigir y coordinar las actividades de producción	<input type="checkbox"/>
13. Uso apropiado de procedimientos y herramientas para el logro de objetivos de la empresa	<input type="checkbox"/>
14. Comprensión y lectura del idioma inglés	<input type="checkbox"/>
15. Capacidad de investigación para la mejora continua de la empresa	<input type="checkbox"/>
16. Manejo de maquinaria específica	<input type="checkbox"/>

ANNEX C. STRATEGIES FOR GUATEMALA

The following 3 strategies correspond to three potential strategies that might be pursued in Guatemala with regard to prioritizing sectors where the country is not already a strong exporter (defined as having an RCA < 1):

- “Jobs, jobs, jobs” – the highest priority placed on immediate expansion of employment in the short term, prioritizing sectors which are closely associated with products where Guatemala is already as strong exporter, and a lower value on spillover effects and product sophistication;
- Parsimonious Transformation – a judicious midpoint between the two extremes, and
- Strategic Bets – a greater emphasis on prioritizing sectors with a high potential payoff in terms of greater spillovers and product sophistication, maximizing the growth rate of per capita income in the medium term (5-10 years) and aiming for a more economically diverse industrial structure.

The following table shows the top sectors (defined here as one of 41 “product groups” aggregated from the commodity trade data) ranked according to the three alternative strategies.

TABLE A1. Economic Complexity Strategies for Guatemala¹⁴⁷

Rank	Jobs, Jobs, Jobs			Parsimonious Transformation			Strategic Bets		
	Product Group	Fill	Score	Product Group	Fill	Score	Product Group	Fill	Score
1	Horticulture	66%	60	Beverages	44%	52	Precision Instruments	0%	59
2	Seafood	29%	58	Cocoa	0%	52	Plastics & rubber	21%	55
3	Beverages	44%	57	Furniture	17%	49	Articles of Iron or Steel	14%	55
4	Construction Materials	24%	56	Seafood	29%	49	Machinery	2%	55
5	Apparel	55%	54	Construction Materials	24%	48	Electrical Machinery	2%	53
6	Cocoa	0%	53	Horticulture	66%	48	Glass & Glassware	11%	53
7	Footwear	33%	52	Articles of Iron or Steel	14%	47	Vehicles & Parts	0%	51
8	Fertilizers	20%	51	Stone & Ceramics	3%	46	Other Chemicals	18%	51
9	Other Agriculture	14%	51	Plastics & rubber	21%	46	Cocoa	0%	50
10	Coffee	50%	51	Dairy	10%	46	Furniture	17%	50

Source: FHI 360

The table shows the top 10 indicated sectors for each strategy, out of a total of 41 sectors considered (product groupings created by FHI 360). The column marked “Fill” is the percentage of products within that product group with an RCA > 1, indicating the percent of the product categories in that group for which Guatemala is already a strong exporter. For example, Guatemala shows a Fill of 66% for the Horticulture (legumes and vegetables) group, meaning it exports with a comparative advantage (RCA > 1) in 22 of the 32 products included in that group. The product groups in the top ten items in the Jobs, Jobs, Jobs strategy list have significantly higher Fill ratios than those on the Strategic Bets list, with the PT list falling somewhere in between.

¹⁴⁷ Based on methodology developed by Ricardo Hausmann, Harvard University & African Development Bank “Comparative Study on Export Policies in Egypt, Morocco & Tunisia,” 2012

For Guatemala, it makes sense that sectors such as horticulture, seafood, beverages, construction materials and apparel rank highest according to the Jobs, jobs, jobs strategy. Guatemala is already strong in many products within those sectors, so it is relatively easy for companies and associated support entities to diversify slightly into highly related products, using existing skills and capabilities. However, all of these sectors have relatively low product complexity and value-added, and while some of them appear (generally lower down) on the Parsimonious Transformation list, they disappear entirely from the Strategic Bets list. Cocoa & chocolate is the only product group that appears on all three lists, mainly because chocolate itself has a relatively high product complexity (for a food product) and yet Guatemala is on the verge of becoming an established exporter (with RCA = 0.6).

In the Parsimonious Transformation list, products such as furniture, articles of iron or steel, and plastics & rubber appear among the top 10 sectors, in part because the “distance” or difficulty is moderately low, while the payoff in terms of product complexity is moderately higher. These are judicious bets to add employment while boosting economic diversity and income growth in the medium term. Each of those three products also appears on the Strategic Bets list, though the ranking of furniture falls (economic complexity not very high) while the ranking of both articles of iron or steel and plastics and rubber have both climbed to the #3 and #2 positions, respectively. Along with precision instruments and machinery, these sectors all share a high economic complexity, while still being ‘within shooting distance’ for Guatemala within the medium term.

METHODOLOGY

The scores are calculated as the weighted average, for all 4-digit products with RCA<1, using the following formula:

$$Score_i = a_{Distance} \left(\frac{Distance_i - \min(Distance)}{\max(Distance) - \min(Distance)} \right) + a_{PCI} \left(\frac{PCI_i - \min(PCI)}{\max(PCI) - \min(PCI)} \right) + a_{wtshare} \left(\frac{wtshare_i - \min(wtshare)}{\max(wtshare) - \min(wtshare)} \right) + a_{StratValue} \left(\frac{StratValue_i - \min(StratValue)}{\max(StratValue) - \min(StratValue)} \right)$$

Where

a_x	is the weight associated with a particular indicator
Distance_i	is the degree of difficulty for a country to begin exporting good i with RCA>1. Also seen as “the proportion of knowledge necessary for a product that the country does not have.” By definition, if the country is already exporting the product with RCA>1, this distance is negligible. (Actually for this formula, 100-Distance is used, as lower distance is desirable)
PCI_i	is the Product Complexity Index, an indicator of the relative sophistication of capabilities necessary to produce good i
wtshare_i	is the country’s share of the total world trade in good i
StratValue_i	measures how much a country could benefit from manufacturing a specific new product i in terms of raising the country’s Economic Complexity Index.

RCA is the Revealed Comparative Advantage. Countries for which exports of good *i* are a greater share of their total exports than the share that product represents in world trade have an $RCA > 1$.

The weights used are the following:

INDICATOR	STRATEGIES		
	Jobs, Jobs, Jobs	Parsimonious Transition	Strategic Bets
Strategic value	0.1	0.2	0.4
Trade share	0.1	0.1	0.1
PCI	0.1	0.2	0.3
Distance	0.7	0.5	0.2

For the JJJ strategy, the most important factor is the short-term feasibility of reaching an $RCA > 1$ for that sector, and thus the Distance indicator is the most important (the lower the Distance, or the greater the Proximity, the more feasible it is to fill in exports in that product group). For the Strategic Bets strategy, the product complexity and the strategic value are weighted much higher.

ANNEX D. IDENTIFIED POSITIONS, SKILLS, AND ATTITUDES BY SECTOR

LEGUMES AND VEGETABLES SECTOR COMPETENCIES

POSITION IDENTIFIED IN THE VALUE CHAIN	SKILL / KNOWLEDGE IDENTIFIED	ATTITUDE IDENTIFIED
Sales Manager	Product commercialization; Marketing; Business strategy; Commercial processes; Understanding national and international business context; English language skills; Leadership; Ability to plan, prioritize, organize, and execute work; Persuasive; Analytical and problem solving capabilities; Ability to delegate activities; Ability to formulate and manage projects; Oral and written communication skills; Use of communication, information technology, and social networks; data analysis; Creativity	Professional ethics; Social responsibility; Dedication to preserve the environment
Agronomist	Crop management and cultivation; Ability to prioritize, organize, and execute work; Analytical and problem solving capabilities; Ability to delegate activities; Ability to work autonomously	Strong character; Professional ethics; Social responsibility; Determination; Desire to improve; Dedication to preserve the environment
Agronomy Engineer	Crop management and cultivation; English language skills; Leadership; Ability to plan, prioritize, organize, and execute work; Analytical and problem solving capabilities; Ability to delegate activities; Ability to formulate and manage projects	Strong character; Professional ethics; Social responsibility; Dedication to preserve the environment
Logistics and Transportation Technician	Product commercialization; Marketing; Commercial processes; Understanding national and international business context; Ability to prioritize, organize, and execute work; Persuasive; Analytical and problem solving capabilities; Ability to work autonomously	Strong character; Professional ethics; Desire to improve; Dedication to preserve the environment
Agro-Ecology Technician	Crop management and cultivation; Ability to prioritize, organize, and execute work; Analytical and problem solving capabilities; Ability to work autonomously	Strong character; Professional ethics; Social responsibility; Determination; Desire to improve; Dedication to preserve the environment
Agricultural Production Technician	Crop management and cultivation; Ability to prioritize, organize, and execute work; Analytical and problem solving capabilities; Ability to work autonomously	Strong character; Professional ethics; Social responsibility; Determination;

		Desire to improve; Dedication to preserve the environment
Production Manager	Production Processes; Financial administration and business administration for agriculture; English language skills; Leadership; Ability to plan, prioritize, organize, and execute work; Persuasive; Analytical and problem solving capabilities; Ability to delegate activities; Ability to formulate and manage projects; Oral and written communication skills; data analysis; Ability to manage individuals and groups	Strong character; Professional ethics; Social responsibility; Dedication to preserve the environment
Agro-industry Technician	Production Processes; Ability to prioritize, organize, and execute work; Analytical and problem solving capabilities; Ability to work autonomously	Strong character; Professional ethics; Social responsibility; Determination; Desire to improve; Dedication to preserve the environment
Food Processing Technician	Production Processes; Product commercialization; Leadership; Ability to plan, prioritize, organize, and execute work; Analytical and problem solving capabilities; Ability to delegate activities; Ability to work autonomously; Oral and written communication skills; data analysis; Creativity	Strong character; Professional ethics; Social responsibility; Determination; Desire to improve; Dedication to preserve the environment
Product Quality Supervisor	Production Processes; Leadership; Ability to plan, prioritize, organize, and execute work; Analytical and problem solving capabilities; Ability to delegate activities; Ability to formulate and manage projects; Oral and written communication skills; data analysis; Ability to manage individuals and groups	Strong character; Professional ethics; Social responsibility; Dedication to preserve the environment
Marketing and Sales Supervisor	Product commercialization; Marketing; Business strategy; Commercial processes; Understanding national and international business context; English language skills; Leadership; Ability to plan, prioritize, organize, and execute work; Persuasive; Analytical and problem solving capabilities; Ability to delegate activities; Ability to formulate and manage projects; Oral and written communication skills; Use of communication, information technology, and social networks; data analysis; Creativity	Professional ethics; Social responsibility; Dedication to preserve the environment

CHOCOLATES, CANDIES, BAKERY PRODUCTS, AND OTHER PROCESSED FOODS SECTOR COMPETENCIES

POSITION IDENTIFIED IN THE VALUE CHAIN	SKILL / KNOWLEDGE IDENTIFIED	ATTITUDE IDENTIFIED
Sales and Marketing Supervisor	Sales & marketing techniques; Understanding national and international business context; Commercial geography; Commitment to customer service; Ability to plan, prioritize, organize, and execute work; Understanding national and international business context; Oral and written communication skills; English language skills; Understanding of national and international laws and standards; Spreadsheet management; Creative; Use of communication, information technology, and social networks; Leadership; Analytical and problem solving capabilities; Ability to work on a team	Commitment to quality; Responsible; Honest; Social responsibility; Organized; Committed; Dedication to preserve the environment
Logistics and Transportation Technician	Health policies and food safety; Quality control; Machine maintenance; Sales & marketing techniques; Understanding national and international business context; Commercial geography; Commitment to customer service; Ability to prioritize, organize, and execute work; Understanding national and international business context; Oral communication skills; Use of communication, information technology, and social networks; Understanding machinery and equipment operation; Analytical and problem solving capabilities; Ability to work on a team	Commitment to quality; Responsible; Honest; Social responsibility; Organized; Punctual; Self-motivated; Self-motivated; Committed; Proactive; Dedication to preserve the environment
Food Production Supervisor	Health policies and food safety; Quality control; Ability to prioritize, organize, and execute work; Understanding of food production processes; Oral communication skills; Understanding machinery and equipment operation; Analytical and problem solving capabilities; Research abilities; Ability to work on a team	Commitment to quality; Responsible; Honest; Social responsibility; Organized; Committed; Dedication to preserve the environment
Plant Manager	Health policies and food safety; Quality control; Machine maintenance; Ability to plan, prioritize, organize, and execute work; Understanding of food production processes; Oral and written communication skills; Spreadsheet management; Leadership; Understanding machinery and equipment operation; Analytical and problem solving capabilities	Commitment to quality; Responsible; Honest; Social responsibility; Organized; Committed; Dedication to preserve the environment
Graphic Designer	Sales & marketing techniques; Understanding national and international business context; Ability to prioritize, organize, and execute work; Oral and written communication skills; Creative; Analytical and problem solving capabilities; Ability to work on a team; Ability to work autonomously	Commitment to quality; Responsible; Honest; Organized; Punctual; Self-motivated; Self-motivated; Committed; Proactive
Publicist	Sales & marketing techniques; Understanding national and international business context; Ability to prioritize, organize, and execute work; Oral and written communication skills; English language skills; Creative; Analytical and problem solving capabilities; Ability to work on a team; Ability to work autonomously	Commitment to quality; Responsible; Honest; Organized; Punctual; Self-motivated; Self-motivated; Committed; Proactive

Machine Repair Technician	Quality control; Machine maintenance; Ability to prioritize, organize, and execute work; Oral communication skills; Understanding machinery and equipment operation; Analytical and problem solving capabilities; Ability to work autonomously	Commitment to quality; Responsible; Honest; Social responsibility; Punctual; Self-motivated; Self-motivated; Committed; Self-aware; Helpful; Proactive
Business Administration	Sales & marketing techniques; Understanding national and international business context; Commercial geography; Commitment to customer service; Human resource management; Ability to plan, prioritize, organize, and execute work; Understanding national and international business context; Oral and written communication skills; English language skills; Understanding of national and international laws and standards; Spreadsheet management; Creative; Use of communication, information technology, and social networks; Leadership; Analytical and problem solving capabilities; Ability to work on a team	Commitment to quality; Responsible; Honest; Social responsibility; Organized; Committed; Dedication to preserve the environment
Quality Management Technician	Health policies and food safety; Quality control; Ability to prioritize, organize, and execute work; Understanding of food production processes; Oral and written communication skills; Understanding machinery and equipment operation; Analytical and problem solving capabilities; Ability to work on a team; Ability to work autonomously	Commitment to quality; Responsible; Honest; Social responsibility; Punctual; Self-motivated; Committed; Self-aware; Helpful; Proactive

NON-ALCOHOLIC BEVERAGE SECTOR COMPETENCIES

POSITION IDENTIFIED IN THE VALUE CHAIN	SKILL / KNOWLEDGE IDENTIFIED	ATTITUDE IDENTIFIED
Sales and Marketing Manager and Supervisor	Ability to plan, prioritize, organize, and execute work; Oral and written communication skills; Spreadsheet management; Leadership; Analytical and problem solving capabilities; Commercialization and marketing techniques; Ability to work on a team; Life-long learning; Ability to self-train; Data analysis; Numerical calculations; Use of communication, information technology, and social networks	Desire to learn; Collaborative; Responsible; Punctual; Organized; Social responsibility; Commitment to quality; Dedication to preserve the environment
Logistics and Transportation Technician	Health policies and food safety; Quality control; Ability to prioritize, organize, and execute work; Oral communication skills; Understanding machinery and equipment operation; Analytical and problem solving capabilities; Understanding of national and international laws and standards; Basic knowledge of electronics; Commercialization and marketing techniques; Ability to work on a team; Life-long learning; Ability to self-train; Numerical calculations	Desire to learn; Collaborative; Responsible; Trustworthy; Punctual; Organized; Social responsibility; Commitment to quality; Dedication to preserve the environment
Business Administrator	Health policies and food safety; Quality control; Ability to plan, prioritize, organize, and execute work; Oral and written communication skills; Spreadsheet management; Leadership; Analytical and problem solving capabilities; Understanding of national and international laws and standards; Computer Programming;	Desire to learn; Collaborative; Responsible; Trustworthy; Punctual; Organized; Social responsibility;

	Understanding of supply and value chains; Ability to work on a team; Life-long learning; Ability to self-train; Data analysis; Numerical calculations; Use of communication, information technology, and social networks	Commitment to quality; Dedication to preserve the environment
Industrial Mechanical Technician	Quality control; Machine maintenance; Ability to prioritize, organize, and execute work; Oral communication skills; Understanding machinery and equipment operation; Analytical and problem solving capabilities; Basic knowledge of electronics; Ability to work on a team; Life-long learning; Ability to self-train;	Desire to learn; Collaborative; Humble; Responsible; Trustworthy; Punctual; Organized; Social responsibility; Commitment to quality; Dedication to preserve the environment
Quality Management Technician	Health policies and food safety; Quality control; Ability to prioritize, organize, and execute work; Understanding of food production processes; Oral and written communication skills; Spreadsheet management; Leadership; Understanding machinery and equipment operation; Analytical and problem solving capabilities; Understanding of national and international laws and standards; Ability to work on a team; Life-long learning; Ability to self-train	Desire to learn; Collaborative; Humble; Responsible; Trustworthy; Punctual; Organized; Social responsibility; Commitment to quality; Dedication to preserve the environment
Plant and Area Manager	Health policies and food safety; Quality control; Ability to plan, prioritize, organize, and execute work; Understanding of food production processes; Oral and written communication skills; Spreadsheet management; Leadership; Understanding machinery and equipment operation; Analytical and problem solving capabilities; Understanding of national and international laws and standards; Understanding of supply and value chains; Ability to work on a team; Life-long learning; Ability to self-train; Numerical calculations;	Desire to learn; Collaborative; Humble; Responsible; Trustworthy; Punctual; Organized; Social responsibility; Commitment to quality; Dedication to preserve the environment

TEXTILE AND APPAREL SECTOR COMPETENCIES

POSITION IDENTIFIED IN THE VALUE CHAIN	SKILL / KNOWLEDGE IDENTIFIED	ATTITUDE IDENTIFIED
Sales and Marketing Supervisor	Understanding trends; Production Costs; Sales & marketing techniques; Understanding business processes; ability to collaborate with others; Ability to plan, prioritize, organize, and execute work; Understanding national and international business context; English language skills; Creativity; Persuasive; Analytical and problem solving capabilities; Use of communication, information technology, and social networks; data analysis; Leadership; Oral and written communication skills; Ability to formulate innovation solutions for the sector	Social responsibility; Responsible; Punctual; Honest; Visionary; Kind; Loyal to business; Dedication to preserve the environment
Logistics and Transportation Technician	Machine maintenance; Ability to prioritize, organize, and execute work; Understanding national and international business context; Life-long learning; Analytical and problem solving capabilities; Oral communication skills	Responsible; Proactive; Respectful; Punctual; Honest; Disciplined; Kind; Loyal to business; Dedication to preserve the environment
Plant Manager	Understanding machinery and equipment operation; Quality control; Machine maintenance; Understanding industry regulations and policies; ability to collaborate with others; Ability to plan, prioritize, organize, and execute work; Life-long learning; Analytical and problem solving capabilities; data analysis; Leadership; Oral and written communication skills	Social responsibility; Responsible; Proactive; Respectful; Honest; Patient; Kind; Loyal to business; Commitment to quality; Dedication to preserve the environment
Designer	Understanding trends, colors, and fit; Production Costs; Understanding machinery and equipment operation; Quality control; ability to collaborate with others; Ability to plan, prioritize, organize, and execute work; Use of design programs and related technology; Creativity; Life-long learning; Analytical and problem solving capabilities; Oral and written communication skills; Ability to formulate innovation solutions for the sector	Social responsibility; Responsible; Honest; Disciplined; Visionary; Kind; Loyal to business; Commitment to quality
Industrial Mechanical Technician	Understanding machinery and equipment operation; Machine maintenance; ability to collaborate with others; Ability to prioritize, organize, and execute work; Life-long learning; Fine motor skills; Analytical and problem solving capabilities; Oral communication skills	Responsible; Proactive; Respectful; Punctual; Honest; Disciplined; Patient; Kind; Loyal to business
Quality Management Supervisor	Understanding machinery and equipment operation; Quality control; Understanding industry regulations and policies; ability to collaborate with others; Ability to plan, prioritize, organize, and execute work; Life-long learning; Analytical and problem solving capabilities; data analysis; Leadership; Oral and written communication skills	Social responsibility; Responsible; Proactive; Respectful; Honest; Patient; Kind; Loyal to business; Commitment to quality
Business Administrator	Production Costs; Sales & marketing techniques; Understanding business processes; Understanding industry regulations and policies; ability to collaborate with others; Ability to plan, prioritize, organize, and	Social responsibility; Responsible; Honest; Patient; Visionary; Kind; Loyal

	execute work; Understanding national and international business context; English language skills; Life-long learning; Persuasive; Analytical and problem solving capabilities; Use of communication, information technology, and social networks; data analysis; Leadership; Oral and written communication skills; Ability to formulate innovation solutions for the sector;	to business; Dedication to preserve the environment; Commitment to the community
Industrial Technician	Understanding machinery and equipment operation; Quality control; Machine maintenance; ability to collaborate with others; Ability to prioritize, organize, and execute work; Life-long learning; Fine motor skills; Analytical and problem solving capabilities; Oral communication skills	Responsible; Proactive; Respectful; Punctual; Honest; Disciplined; Kind; Loyal to business; Commitment to quality
Cut and Confection Technician	Understanding machinery and equipment operation; Quality control; Ability to prioritize, organize, and execute work; Life-long learning; Fine motor skills; Analytical and problem solving capabilities; Oral communication skills	Responsible; Proactive; Respectful; Punctual; Honest; Disciplined; Patient; Kind; Loyal to business; Commitment to quality

TOURISM SECTOR COMPETENCIES

POSITION IDENTIFIED IN THE VALUE CHAIN	SKILL / KNOWLEDGE IDENTIFIED	ATTITUDE IDENTIFIED
Sales and Marketing Manager	Knowledge of local and regional culture; Knowledge of geography; Administration practices and policies; Understanding of national and international standards; Ability to work autonomously; Oral and written communication skills; Leadership; Ability to work on a team; Numerical calculations; Proficiency in a second language; Use of technology and software programs; Use of communication, information technology, and social networks; Research abilities	Adaptable; Responsible; Collaborative; Social responsibility; Value and respect for diversity and other cultures; Dedication to preserve the environment; Professional ethics
Business Manager	Knowledge of local and regional culture; Food manufacturing and safety norms; Quality control; Kitchen administration practices; Knowledge of geography; Administration practices and policies; Understanding of national and international standards; Ability to work autonomously; Oral and written communication skills; Conflict-resolution skills; Leadership; Ability to work on a team; Numerical calculations; Proficiency in a second language; Use of technology and software programs; Use of communication, information technology, and social networks; Research abilities;	Adaptable; Collaborative; Social responsibility; Value and respect for diversity and other cultures; Dedication to preserve the environment; Professional ethics
Tourism Specialist	Knowledge of local and regional culture; Knowledge of geography; Administration practices and policies; Understanding of national and international standards; Ability to work autonomously; Oral and written communication skills; Conflict-resolution skills; Leadership; Ability to work on a team; Proficiency in a second language; Use of technology and software programs; Use of communication, information technology, and social networks; Research abilities;	Adaptable; Responsible; Collaborative; Proactive; Trustworthy; Honest; Loyal; Patient; Social responsibility; Value and respect for diversity and other cultures;

		Dedication to preserve the environment; Professional ethics
Logistics and Transportation Technician	Knowledge of local and regional culture; Knowledge of geography; Understanding of national and international standards; Ability to work autonomously; Oral communication skills; Conflict-resolution skills; Ability to work on a team; Proficiency in a second language; Use of technology and software programs;	Adaptable; Responsible; Collaborative; Proactive; Trustworthy; Honest; Loyal; Social responsibility; Value and respect for diversity and other cultures; Dedication to preserve the environment; Professional ethics
Hotel Manager	Knowledge of local and regional culture; Quality control; Knowledge of geography; Administration practices and policies; Understanding of national and international standards; Ability to work autonomously; Oral and written communication skills; Conflict-resolution skills; Leadership; Ability to work on a team; Numerical calculations; Proficiency in a second language; Use of technology and software programs; Use of communication, information technology, and social networks;	Adaptable; Responsible; Collaborative; Social responsibility; Value and respect for diversity and other cultures; Dedication to preserve the environment; Professional ethics
Kitchen Manager	Nutrition; Understanding seasonality of products; Knowledge of local and regional culture; International cuisine; Food manufacturing and safety norms; Quality control; Kitchen administration practices; Administration practices and policies; Understanding of national and international standards; Ability to work autonomously; Oral and written communication skills; Conflict-resolution skills; Leadership; Ability to work on a team; Numerical calculations; Use of industrial kitchen equipment;	Adaptable; Responsible; Collaborative; Proactive; Trustworthy; Honest; Loyal; Patient; Social responsibility; Value and respect for diversity and other cultures; Dedication to preserve the environment; Professional ethics

BIBLIOGRAPHY

- AGEXPORT. *Duplicating Exports and Employment in Guatemala: AN AGEXPORT Proposal. A Renewed Strategy, 2012-2015*. Guatemala. June 2015. Accessed June, 2016. <http://www.export.com.gt/wp-content/uploads/competitividad/PropuestasdeAGEXPORT/Caraturaportadaresumenejecutivo.pdf>.
- AGEXPORT. "Industry Information, Food and Beverage Commission." Guatemala City. 2016. Accessed September 2016. <http://export.com.gt/sectores/comision-de-alimentos-y-bebidas/>.
- AGEXPORT. *Roadmap for High Impact to Accelerate the Growth of the Manufacturing Sector*. April 2016. Accessed September 2016. <http://export.com.gt/wp-content/uploads/2016/04/Doc-Hoja-de-ruta-manufacturas-low.pdf>.
- Bank of Guatemala. *Guatemala in Numbers, 2015*. Department of Macroeconomic Statistics. Guatemala City. 2015. Accessed June 2016. http://www.banguat.gob.gt/Publica/guatemala_en_cifras_2015.pdf.
- Babson, University of Development, et. al. *Global Entrepreneurship Monitor: 2014 Global Report*. United States. 2014. Accessed June, 2016. <http://www.babson.edu/Academics/centers/blank-center/global-research/gem/Documents/GEM%202014%20Global%20Report.pdf>
- Bank of Guatemala. "FDI Flow Chart by Economic Activity and Country of Origin." Guatemala City. 2014. Accessed July 19, 2016. http://www.banguat.gob.gt/inc/ver.asp?id=/Publica/v_man_bpagos/flujo_IED_2014.htm&e=115682.
- Benavides, Jorge. *Vamos por una Guatemala Más Próspera, Más Solidaria y Más Segura: Guatemaltecos Mejoremos Guatemala*. FUNDESA: CACIF. California. 2012. Accessed July 2016. <http://www.fundesaguatemala.org/en/>.
- Central American Institute for Financial Studies. "Public Investment in Youth." Enrique, Maldonado. Guatemala City. 2015. Accessed September 2, 2016. <http://icefi.org/publicaciones/principales-retos-del-presupuesto-publico-2016-elementos-para-la-discusion-ciudadana>.
- Central American Institute for Financial Studies. International Development Bank, Multilateral Investment Fund. *Profile of Guatemalan Population in the United States*. Washington, D.C. June 2014. Accessed July 2016. <http://www.cemla-remesas.org/principios/pdf/PrincipiosRemesas-Guatemala-2014.pdf>.
- Department of Public Health and Family Medicine, Tufts University School of Medicine. *Secular Trends in Food Patterns of Guatemalan Consumers: New Foods for Old*. Food Nutrition Bulletin. December 2008 (29:4). Boston, Massachusetts.
- Economic Commission for Latin America and the Caribbean. *Strengthening the Tourism Value Chain in Antigua, Guatemala and the Rural Municipalities of the Sacatepequez Department*. Mexico City, Mexico. 2016. Accessed July 29, 2016. http://repositorio.cepal.org/bitstream/handle/11362/39871/1/S1600119_es.pdf.
- El Periódico. "Airport Rehabilitated in Quetzaltenango." September 9, 2016. <http://elperiodico.com.gt/2016/09/10/pais/reabre-aeropuerto-quetzalteco-para-vuelos-comerciales/>.
- FHI360. *Market Analysis Tool Matrix*. Workforce Connections Project FHI 360, USAID. Washington, D.C. Accessed May 2016. www.wfconnections.org.
- FHI360. *Value Chain Mapping Tool*. Workforce Connections Project. FHI 360, USAID. Washington, D.C. Accessed May 2016. www.wfconnections.org.
- FUNDESA. *Guatemalans Improve Guatemala: A Proposal for a More Prosperous, Solidary, and More Secure Guatemala*. Guatemala. 2012. Accessed June 2016. <https://issuu.com/fundesaguatemala/docs/mejoremosguate>.
- FUNDESA. *Talent Gaps*. 2016. Private Counsel on Competiveness. Guatemala City. 2016.

- Government of Guatemala, *President of the Republic. National Policy on Sustainable Tourist Development in Guatemala, 2012-2022*. Guatemala City. May 24, 2012. Accessed September 3, 2016. http://www.segeplan.gob.gt/downloads/clearinghouse/politicas_publicas/Turismo/Politica_Nacional_DTS_Guatemala_2012_2022.pdf.
- Guatemalan Institute of Social Security. Annual Labor Report, 2014. Guatemala. 2014. Accessed July 2016. http://www.igssgt.org/images/informes/subgerencias/resumen_ial2014.pdf.
- Guatemala National Institute of Statistics. National Survey for Employment and Income (2-2014). Accessed August 18, 2016. <https://www.ine.gob.gt/sistema/uploads/2015/07/22/YXFVZe0clfRDUPYuNwuVak3gjNsF8g2w.pdf>.
- Guatemala National Institute of Statistics. *National Survey of Life Conditions (2-2014)*. Guatemala City. 2014. Accessed July 3, 2016. <https://www.ine.gob.gt/index.php/encuestas-de-hogares-y-personas/condiciones-de-vida>.
- Guatemala National Institute of Statistics. National Survey of Women's Health: ENSMI 2014-2015. Indicators Report. November, 2015. Guatemala. Accessed: August 2, 2016. <http://dhsprogram.com/pubs/pdf/PR57/PR57.pdf>.
- Guatemalan Tourism Institute. *Tourism Statistic Bulletin: January – December 2014*. Guatemala City. 2014. Accessed September 7, 2016. <http://www.inguat.gob.gt/media/boletines/boletin-anual-2014.pdf>.
- Hausmann, Ricardo, Hidalgo, Cesar, et al., "Atlas of Economic Complexity: Mapping Paths to Prosperity." Harvard University Center for International Development and MIT Macro Connections Media Lab. Massachusetts. 2011. Accessed July 1, 2016. http://atlas.cid.harvard.edu/explore/tree_map/export/gtm/all/show/2014/
- Inter-American Development Bank. Banco Industrial MSME Financing Partnership. Washington, D.C. 2010. Accessed July, 2016. <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=37953697>
- International Centre for Trade and Sustainable Development. Apparel and Textile Sector and Sustainable Development in Guatemala. Switzerland. 2010. Accessed June 2016. <http://www.ictsd.org/downloads/2011/03/el-sector-textil-y-confeccion-y-el-desarrollo-sostenible-en-guatemala.pdf>.
- International Trade Center. Trade Map: List of Exported Services for the Selected Service. Switzerland. Accessed June 29, 2016. [http://www.trademap.org/\(X\(1\)S\(zaiwhoynkidcy155hnsnvf55\)\)/Service_SelService_TS.aspx](http://www.trademap.org/(X(1)S(zaiwhoynkidcy155hnsnvf55))/Service_SelService_TS.aspx).
- Koch, R., (2009). *The Financial Times Guide to Strategy. How to Create and Deliver a Useful Strategy*. 3rd edition. London.
- Lundy, Mark. *A Participative Guide for Inclusive Business Models for Small Farmers. Version 2.0*. 2014. Accessed May 2016. <https://cgspace.cgiar.org/handle/10568/49607>.
- Ministry of Economy. Guatemala Emprende: National Policy on Entrepreneurship, 2015. Guatemala. 2015. Accessed July, 2016. http://www.mineco.gob.gt/sites/default/files/SDE/Emprendimiento/guatemala_emprende_version_final.pdf.
- National Council of Protected Areas. Biodiversity of Protected Areas. Guatemala City. August 2014. Accessed September 1, 2016. <http://www.conap.gob.gt/index.php/quienes/conap-central/direccion-tecnica/planificacion/estadisticas-e-indicadores-ambientales/category/74-estadisticas-conap.html>.
- National Ministry of Education, Republic of Colombia. Job Skills. Diana Aponte Martinez. Bogota, Colombia, 2015. Accessed June 2016. <https://www.scribd.com/doc/307709284/Competencias-Laborales>
- Private Counsel on Competiveness. Needs Assessment of Technical Professional Training in 25 Productive Sectors in Guatemala. Final Report. Guatemala City. January 2013.

- Research and Social Studies Association (ASIES). Guatemalan Tourist Sector Situation: 2013-2014. Guatemala City. 2014. Accessed September 9, 2016.
http://www.asies.org.gt/download.php?get=2014_DICE_Encuesta_de_Turismo.pdf.
- Research and Social Studies Association (ASIES). Moving Toward Modern and Decentralized Tourism. Guatemala City. November, 2015. Accessed August 20, 2016.
http://www.asies.org.gt/download.php?get=201514aencuesta_turismo.pdf.
- Secretary of Planning and Development. "Indicators: Demographics." Guatemala City. Accessed June 2016.
http://www.segeplan.gob.gt/2.0/index.php?option=com_remository&Itemid=274
- Steen, Cynthia, Rich Magnani, and Lara Goldmark. *Competitiveness Strategies for Agriculture-Related MSES: From Seeds to Supermarket Shelves*. Washington, D.C. 2005. Accessed June 2016.
https://www.microlinks.org/sites/microlinks/files/resource/files/ML3520_mr_37_competitive_strategies_for_ag-related_mses.pdf
- Superintendent for Administration. Statistical Bulletin. Methodological Link. November 2014.
<http://sat.gob.gt/sitio/index.php/esat/47-estadicas-tributarias/7880-boletin-estadistico.html>.
- Transparency International. Corruption Perception Index: Guatemala. 2015. Accessed July, 2016.
<http://www.transparency.org/cpi2015>.
- Tufts University School of Medicine, Department of Public Health and Family Medicine. *Secular Trends in Food Patterns of Guatemalan Consumers: New Foods for Old*. Food Nutrition Bulletin. December 2008 (29:4). Boston, Massachusetts.
- United Nations Development Program. Citizen Security with a Human Face: Evidence and Proposals for Latin America. New York. 2013. Accessed September 14, 2016.
http://hdr.undp.org/sites/default/files/citizen_security_with_a_human_face_executivesummary.pdf.
- UNESCO. Institute of Statistics. International Standard Classification of Education. ISCED 2011. Montreal, Quebec. Accessed August 17, 2016. <http://www.uis.unesco.org/Education/Documents/isced-2011-sp.pdf>.
- United Nations, Department of Economic and Social Affairs, Population Division. 2015. World Population Prospects: The 2015 Revision. New York. 2015. Accessed July 8, 2016. <http://esa.un.org/unpd/wpp/index.htm>
- United Nations Development Program. *Guatemala: Millennium Development Goals Final Report, 2015*. Accessed: July 19, 2016. <http://www.gt.undp.org/content/guatemala/es/home/presscenter/articles/2016/01/11/informe-final-de-cumplimiento-de-los-objetivos-de-desarrollo-del-milenio.html>.
- USAID/ANACAFE/PCVR/Education. *Final Labor Market Report on Eight Municipalities in the Departments of Huehuetenango y San Marcos*. Washington, DC. March, 2015.
- USDA Foreign Agricultural Service. *Guatemala Food Processing Ingredients 2015*. Guatemala City. 2015. Accessed September 2016.
http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Food%20Processing%20Ingredients_Guatemala%20City_Guatemala_12-22-2015.pdf.
- VESTEX. *Guatemala Apparel and Textile Industry*. Guatemala City. 2015. Accessed September, 2016.
<http://vestex.com.gt/wp-content/uploads/2015/03/VESTEX-ENG.pdf>.
- VESTEX. *Market Tendencies in the United States*. Guatemala City. August 25, 2016. Accessed September, 2016.
<http://vestex.com.gt/wp-content/uploads/2015/04/VESTEX-US-Market-Presentation-082516.pdf>.
- Williams, Louise D. "Training for the World of Work: A Approach." *The Jobs Challenge: Fresh Perspectives on the Global Employment Crisis*. (Vol 15: 1). 2012.

- World Bank. *Ease of Doing Business Scale*. June 2015. Accessed June 2016.
<http://www.doingbusiness.org/rankings>.
- World Bank. *Guatemala Economic DNA: Harnessing Growth with a Special Focus on Jobs*. Washington, D.C. August 2014. Accessed July 2016. **Error! Hyperlink reference not valid..**
- World Bank. *International Bank for Reconstruction and Development and International Finance Corporation Country Partner Strategy for the Republic of Guatemala for the Period FY 2013-2016*. Washington, DC. August 2012.
- World Bank. *Global Economic Prospects: Divergences and Risks*. Washington, D.C. June 2016.
<http://www.worldbank.org/en/publication/global-economic-prospects#data>.
- World Bank. *Guatemala Poverty Assessment: Good Performance at Low Levels*. Washington, D.C. March 18, 2009. Accessed August 2016.
<http://siteresources.worldbank.org/INTLACREGTOPPOVANA/Resources/GuatemalaPovertyAssessmentEnglish.pdf>.
- World Bank. *Sector Competitiveness Analysis Tools: Reference Guide*. Washington, D.C. June 2011. Accessed July 15, 2016.
[https://d3n8a8pro7vhmx.cloudfront.net/fhi360/pages/288/attachments/original/1416868093/World_Bank_Sector_Competitiveness_Report_\(SCAT\).pdf?1416868093](https://d3n8a8pro7vhmx.cloudfront.net/fhi360/pages/288/attachments/original/1416868093/World_Bank_Sector_Competitiveness_Report_(SCAT).pdf?1416868093).
- World Bank. "World Bank Indicators: GDP per capita growth (annual %)." Washington, D.C. 2016.
<http://data.worldbank.org/indicator/NY.GDP.PCAP.KD.ZG?end=2015&locations=GT&start=2006>.
- World Economic Forum. *The Global Competitive Report 2014-2015*. Klaus Schwab. New York. 2015. June, 2016.
http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf
- World Travel and Tourism Council. *Travel and Tourism: Economic Impact 2015 Guatemala*. London, 2015. Accessed August 25, 2016.
<https://www.wttc.org/media/files/reports/economic%20impact%20research/countries%202015/guatemala2015.pdf>

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