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LAC REGIONAL WORKFORCE
DEVELOPMENT PROGRAM (Advance)



Jamaica Labor Market Sector Assessment

MAY 2017

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The use of non-discriminatory language or that which constrains gender is taken into consideration in the LAC Advance 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—known as the Advance Program—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. Advance works to build target institutions' capacity by (1) improving curriculum design and pedagogy, (2) providing professional development opportunities for faculty and staff, (3) enhancing labor market bridging services to help students find gainful employment after graduating, (4) strengthening recruitment and admissions processes, and (5) providing both local and US scholarships for disadvantaged students to attend technical programs.

The Program has designed and conducted a baseline assessment to examine the labor supply and demand in selected sectors—market demand for skills, in particular—in each of the countries in which the Program is working. The goal is that this assessment will not only help technical training institutions in Jamaica revamp their offerings, but also, more generally, will help decision-makers understand what the demand for skills might look like in the future. 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. The assessment identifies the key stakeholders and participants who may be involved in efforts to strengthen market-relevant technical training programs based on Jamaica's workforce needs.

FHI 360's sector assessments identify priority skill needs by working backwards from market demand. It entails significant use of a value chain framework, a tool that is designed to be adopted by local stakeholders and identify and analyze ongoing demand for the types of skills provided through technical education at the tertiary level. A traditional labor market assessment is based on detailed occupational mapping, but in Jamaica—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.

In Jamaica, we first undertook desk research and reviewed key economic, employment, and educational data to answer questions about the overall economic context and employment trends and briefly reviewed relevant policies.

What did we find?

- A. Demographics:** Youth 15–29 represent 29% of Jamaica's 2.7 million population, and 42% of the working age population. Jamaica is now considered to be at an intermediate stage of demographic transition, with the share of children decreasing and the elderly population segment growing the fastest. While the proportion of the population living in urban areas has increased, 45% of Jamaica's population still live in rural areas.
- B. Macroeconomic Context:** Jamaica is characterized by low growth, heavy reliance on tourism and remittances, high exposure to external shocks, and a high level of debt. The GDP has essentially stagnated since 2012: real per capita GDP growth in Jamaica has averaged just 1% annually over the last three decades, largely due to low productivity growth, and poverty remains high. The economy is dominated by services, and trade in goods is largely undiversified. Though foreign direct investment is vulnerable to external pressures and suffered during the 2008–09 economic crisis, it has been on a steady rise since 2011, with the largest beneficiary sectors in 2015 being tourism, mining, and information and communications technologies (ICT).

- C. Education:** Educational attainment has improved in Jamaica in recent years. Furthermore, employment rates are much higher for those with a university education, followed by those with post-secondary vocational training. In 2015, 35% of youth were neither working nor in school. Unemployment rates are highest for those with a primary or secondary education, while those with less than a primary education are the most likely to be inactive. Around 17.7% of employed Jamaican youth were undereducated for their positions.
- D. Labor Market:** As of July 2016, 12.9% of the labor force are unemployed, and 36.2% of the unemployed are young people aged 14–24. 33.7% of young women and 26.1% of young men are unemployed nationally, with younger cohorts and rural inhabitants more likely to be unemployed. Of the employed population, nearly half are in informal employment. Young people are particularly likely to be informally employed: less than a quarter of employed youth have formal jobs. The services sector absorbs the greatest portion of the labor force, followed by agriculture and industry. Women outnumber men in nearly all services subsectors. The private sector employs around 90% of the labor force, and 82% of private sector employees work in micro, small, and medium enterprises.

Our next step was to conduct a sector selection based largely on qualitative data, since publicly available data at the sector level is virtually non-existent. Our key selection criteria were the sector's size, potential growth, and the estimated likelihood of the project having an impact on the sector's employment or competitiveness. Based on the results of this process, we chose the top-ranked four sectors as a starting point for the assessment. We then focused our attention on identifying business owners in these sectors to prepare for a set of interviews conducted by FHI 360.

- A. The **tourism** sector's direct employment is estimated to be around 90,000, which represents around 8% of the workforce. Thus, it is clearly one of Jamaica's largest sectors, though its growth potential is somewhat uncertain, with negligible growth since the world financial crisis. Nevertheless, several segments appear to be promising, especially health tourism.
- B. Jamaica's agriculture sector is most likely the largest sector on the short list, although the **agribusiness** portion, which includes commercial production of horticulture, seafood, and specialty products such as coffee, as well as their processing, is only a fraction of that total employment. Overall, Jamaica's agribusiness sector probably has lower growth potential than some other countries in Central America and the Caribbean, mainly due to the challenges for achieving scale economies—even relative to countries such as Honduras and Guatemala. Nonetheless, some niche sectors such as coffee and sauces have good potential.
- C. One of the most distinctive industries, for which Jamaica has a clear competitive advantage, is music and related entertainment and **creative industries**. Though the current size of this sector is no more than 10,000–15,000 full time-equivalent jobs, its growth potential was listed as 'high' mainly due to the recent growth of the animation segment, as well as the evident potential for a film production sector to take off. The potential impact of the Program would primarily focus on digital animation, which is small but appears to be in a rapid growth phase. It would also focus on arts management, which could increase the stability and growth potential for all sectors, including music, by improving the quality of intellectual property protection (IP), marketing, and distribution of Jamaican-branded products.

Next, we conducted primary data collection to analyze the priority value chains—those that have been identified as generating employment now and in the future—interviewing representatives of 41 organizations. 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, comparing existing programs with the programs available in Trinidad and Tobago as a reference point.¹

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 parallel diagrams of existing and potential education offerings, **we found that there are several occupations and potential occupations in Jamaica identified either by actors or by the assessment teams for which there are currently no technical training programs at the university level.** In covering specific value chains within the tourism and creative industries sectors, this analysis captures only a portion of the potential need.

- A. In the tourism sector, Jamaica is in the process of diversifying its offerings beyond all-inclusive resorts to more niche segments. This development is driving employers' demand for skills, for example, in preparing innovative and nutritious food. In the health and wellness tourism value chain, there is a potential demand for technical tertiary training programs in sports studies, sports tourism management, food science and technology, and culinary management.
- B. In the last decade, Jamaica's agro-processing sector has become an increasingly important contributor to the country's economic performance and employment, growing in strength alongside global demand for processed foods. Across agro-processing actors, there is a clear demand for three core groups of skills: in business development, entrepreneurship, and the ability to target and export to overseas markets. Medium and large agro-processors also require food safety testing—and though outside the scope of the project, basic literacy for factory workers. As a result, there is a potential demand for tertiary and technical programs in food processing, food chemistry, and food technology that incorporate technical food safety courses as these skills help agro-processors fulfill the certification requirements for international markets. There are also opportunities for upgrading of existing courses in entrepreneurship and business studies, agribusiness management, agritourism, and agricultural communications to offer more aligned business skills, such as incubating a business from the ground up, marketing to international consumers and access international markets, and selling agribusiness as a sector with career opportunities for youth.
- C. The creative industries, deeply embedded in the cultural identity of Jamaica, are a driving force of economic development. They bridge creative segments as well as link to external industries such as tourism and Business Process Outsourcing (BPO). Across the industries, interviewees spoke of the need for management skills. In the animation value chain, interviewees identified the need for familiarity with specific technology as well as communication and self- and project management skills. In this segment, there is a potential demand for technical tertiary training programs in animation studies and technical theater production (in addition to the needs identified in the BPO sector).

¹ Trinidad and Tobago was selected as a reference point as it was noted by interviewees to be competitive with Jamaica in the selected sectors, particularly in Business Process Outsourcing.

This analysis identifies specific sectors with potential economic growth. The sector selection undertaken for this assessment is an 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. There are other promising value chains and sectors beyond the ones analyzed here.

Highlighting emerging or growth sectors can inform the Program, guide the selection of institutions, help us to reach youth and guide them in career selection and areas of study, and understand the specific functional and skills needs of businesses in these sectors in Jamaica. The assessment will also 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, although connections between academia and the private sector in the country often exist, they can be further strengthened. This assessment can provide a common starting point that all parties can use to improve the technical education system’s ability to better respond and adapt to the needs of employers.

ACRONYMS

| | |
|--------------------|--|
| BPIAJ | Business Process Industry Association of Jamaica |
| BPO | Business Process Outsourcing |
| CARICOM | Caribbean Community |
| CASE | College of Agricultural Science and Education |
| CDB | Caribbean Development Bank |
| CIA | Culinary Institute of America |
| CIDA | Canadian International Development Agency |
| CSEC | Caribbean Secondary Education Certificates |
| CTO | Caribbean Tourism Organization |
| FDI | Foreign Direct Investment |
| HEART Trust/NTA | Human Employment and Resource Training Trust / National Training Association |
| IICA | Inter-American Institute for Cooperation on Agriculture |
| ICT | Information and Communications Technologies |
| IDB | Inter-American Development Bank |
| ILO | International Labour Organization |
| IP | Intellectual Property |
| JAMPRO | Jamaica Promotions Corporation |
| JEA | Jamaica Exporters Association |
| JSA | Jamaican Spa Association |
| LAC RWDP | Latin America and the Caribbean Regional Workforce Development Program |

| | |
|--------|--|
| MSMEs | Micro, Small, and Medium Enterprises |
| NES | National Export Strategy |
| PIOJ | Planning Institute of Jamaica |
| RADA | Rural Agricultural Development Authority |
| RCA | Revealed Comparative Advantage |
| STATIN | Statistical Institute of Jamaica |
| TVET | Technical and Vocational Education and Training |
| UNCTAD | United Nations Conference on Trade and Development |
| USAID | United States Agency for International Development |
| UTECH | University of Technology |
| UWI | University of the West Indies |
| WB | World Bank |
| WTTC | World Travel and Tourism Council |

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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, particularly through tools developed under the Workforce Connections program.

OBJECTIVES OF THE PROGRAM

The Advance Program 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 the education and private sectors in each country to strengthen market-relevant technical training programs based on each country's workforce needs. Advance 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, Advance 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, Advance provides grants to local organizations to support disadvantaged youth in attending technical programs and engages local, regional, and US-based academic institutions to partner with local technical institutions to strengthen degree programs, student services, and scholarship programs. Through RWPD, 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.

Advance 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 SECTOR ASSESSMENT

The Program has begun with an assessment to identify the key stakeholders and participants who may be involved in efforts to strengthen market-relevant technical training programs based on Jamaica's workforce needs. 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—in particular, market demand for skills—in each of the countries in which the Program is working. This assessment will help technical training institutions in Jamaica identify and respond to employer demand for skills, and will allow decision-makers to understand what skills demand might look like in the future. 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 Jamaica. It entails significant use of a value chain framework, a tool that is designed to be adopted by local stakeholders to identify and understand ongoing demand for the types of skills provided through technical education at the tertiary level.

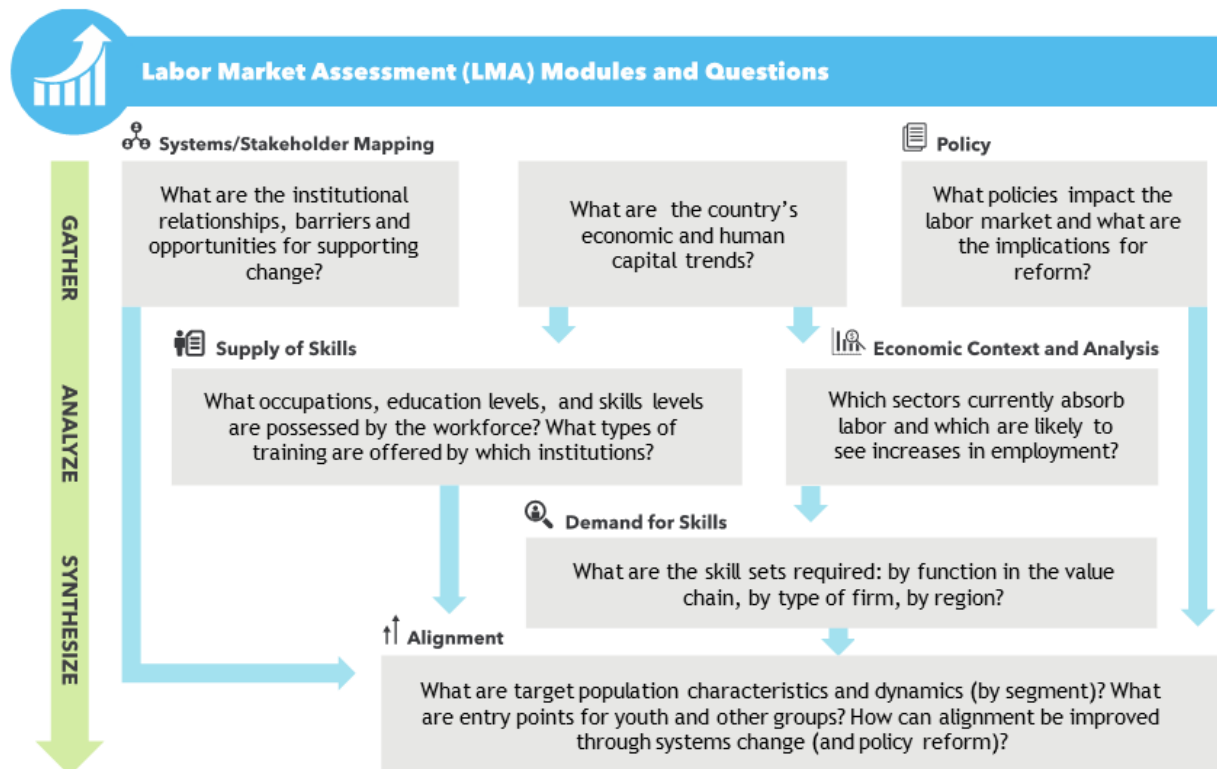
METHODOLOGY

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 Jamaica—as in many other developing countries—this approach is not viable due to data limitations. Specifically, in Jamaica 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) looking at the market demand for products and services and considering how they may affect demand for skills; c) selecting growth sectors likely to generate jobs in the near future; d) mapping the primary and secondary stakeholders who will be key in supporting change in the system; and e) interviewing 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 at least several months (particularly in a data-poor environment like Jamaica), but is indispensable for 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, many of which will be described in this report. In addition, the framework includes 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 allows us to recognize the prevailing patterns of labor market behavior, their drivers, and therefore their expected future direction.

Figure 1 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 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 Jamaican economy fulfil its growth potential.

Table 1. Jamaica Labor Market Sector Assessment Tool Matrix

| 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? | <p>In-country interviews: 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.</p> <p>Secondary sources: World Bank, International Labour Organization (ILO), etc.</p> | Stakeholder map identifies institutions and actors in the system and traces the dynamic flows of decision-making, resources, and information between them. |
| 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; United Nations (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 offerings, and future demand of skills. |
| | Where is employment? Where is it growing/shrinking? | <p>Data analysis: National statistic agencies; United Nations Industrial Development Organization (UNIDO); ILO.</p> <p>Interviews with employers and economic analysts.</p> | Sector selection methodology identifies sectors with evidence of growth, trade matrix to see which sectors in a country are gaining or losing a portion of the global 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? | Data analysis: Education enrollment statistics (typically from the Ministry of Education); household surveys; and census data (National Statistics agencies). | 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. |

² FHI 360. *Market Analysis Tool Matrix*. Workforce Connections Project FHI 360, USAID. Washington, DC.

| Area of Inquiry | Question | Data Source | Principal Tools ² |
|---|---|--|---|
| 4. DEMAND FOR SKILLS Which sectors are likely to see increases in employment? 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 allows the reader to understand the value and strength of different segments of a country's export market, relative to past global performance and global growth in demand of those segments. Product Space analysis ³ reflects export trends based on competitiveness and economic complexity. ⁴ |
| | 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? 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. | Government levers for spurring employment 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. |
| 6. ALIGNMENT (Aligning education programs with skills demand) | What are the curricular requirements to develop necessary technical 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

³ 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/.

⁴ Hausmann, Ricardo, Hidalgo, Cesar, et al., "Atlas of Economic Complexity: Mapping Paths to Prosperity."

In the first phase (depicted at the top of the framework in Figure 1), we undertook desk research. The review of secondary literature included a series of documents, including published reports, research papers, and sector profiles 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 Jamaica. We then conducted a preliminary sector selection according to a rigorous process, selecting three sectors (tourism, business process outsourcing, and creative industries). Finally, we mapped 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 and sector experts. 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, focusing on how well they are matched to the demands of employers. For each of the selected sectors, we developed a value chain map with an overlay depicting key positions and required education (a “workforce overlay”), a parallel diagram that aligns positions with existing and potential degree programs, and a corresponding analysis. The results of this stage of analysis demonstrated opportunities for strengthening technical programs across selected sectors. The interview guide appears 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 sector assessment, using tools including value chain mapping to identify and develop curricula for existing and new two- and three-year technical degrees.

LIMITATIONS OF THE ASSESSMENT

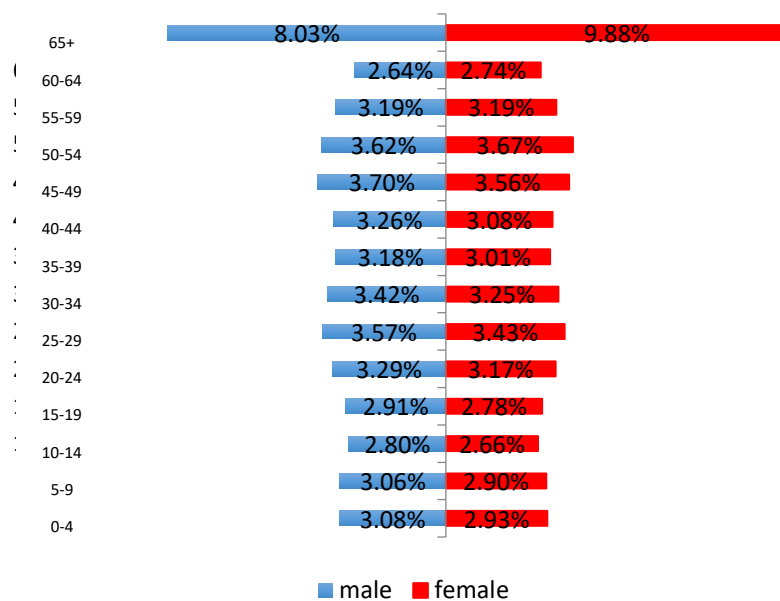
It should be noted that this assessment is not meant to be a comprehensive labor market analysis that presents a series of historical and current labor market indicators. Although indicators such as employment by detailed sector would bolster the analysis, data on employment are limited in Jamaica, as noted above. Therefore, without precise numbers, this assessment relies on published estimates and qualitative inputs provided by experts regarding employment and growth potential in each of the sectors studied. Additionally, the team encountered some reluctance, particularly on the part of employers in certain sectors, to provide specific employment and growth data.

SOCIOECONOMIC CONTEXT

DEMOGRAPHIC CONTEXT

Jamaica's total population is 2.7 million, of which Afro-descendants represent about 92%.⁵ Youth 15–29 represent 29% of the total population and 42% of the working age population.⁶ Slightly more than half (50.5%) of the population are female.⁷ The population growth rate remained stable in the early 2000s, but began to decline in 2010,⁸ and the total population is expected to reach 2.87 million by 2030.⁹ As illustrated by the population pyramid, Jamaica is now considered to be at an intermediate stage of demographic transition (Figure 2), with the share of children decreasing and the elderly population segment growing the fastest.¹⁰ While the proportion of the population living in urban areas has increased, 45% of Jamaica's population live in rural areas (Figure 3).

Figure 2. Population Pyramid 2016



Source: Statistical Institute of Jamaica (STATIN)

⁵ Planning Institute of Jamaica, Economic & Social Survey Jamaica 2013; Statistical Institute of Jamaica (STATIN).

⁶ STATIN. 2014.

⁷ STATIN.

⁸ The World Bank. "Jamaica". 2015.

⁹ United Nations, Department of Economic and Social Affairs, Population Division. 2015. World Population Prospects: The 2015 Revision, custom data acquired via website.

¹⁰ Easton Williams, Population Institute, Planning Institute of Jamaica (PIOJ), "Population and Development in Jamaica with reference to the MDGs," presentation, June 14, 2009.

Figure 3. Population Structure: Urban and Rural

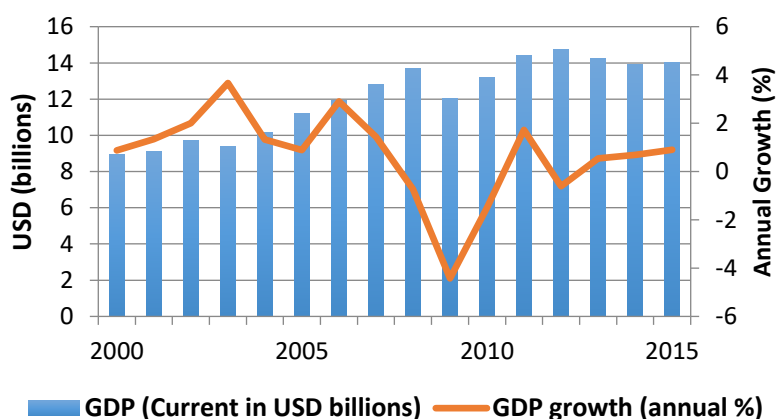


Source: WDI 2015

MACROECONOMIC CONTEXT

Like many countries in the Caribbean, Jamaica is characterized by low growth, heavy reliance on tourism and remittances, high exposure to external shocks, and a high level of debt.¹¹ Already struggling to maintain consistent growth, Jamaica was hit hard by the 2008–2009 global financial crisis, and though there was a recovery, the GDP has essentially stagnated since 2012 (Figure 4). In fact, real per capita GDP growth in Jamaica has averaged just 1% annually over the last three decades, making it one of the slowest-growing developing countries in the world.¹²

Figure 4. GDP levels and growth, 2000–2015



Source: WDI 2015

¹¹ Kandil, M. E., Lindow, G., Mansilla, M., Okwuokei, J. C., Schmittmann, J. M., Chen, Q., Li, X., Santoro, M., & Stavis, S. 2014. *Labor Market Issues in the Caribbean: Scope to Mobilize Employment Growth*. Working Paper No. 14-115. International Monetary Fund.

¹² World Bank, Jamaica Overview. <http://www.worldbank.org/en/country/jamaica/overview>.

The World Bank has identified widespread low productivity as the primary factor behind the country's poor economic performance.¹³ Productivity growth has been flat, on average, over the last two decades, with negative growth since the 1990s.¹⁴ Furthermore, the domestic business climate is relatively unsteady and challenging due to macroeconomic instability. This contributes to poor growth and poor employment performance.¹⁵ Although the country managed to reduce poverty by 10% from 1997–2009, these gains were erased by the global financial crisis,¹⁶ and poverty remains high at 19.9% in 2012.¹⁷

Jamaica's economy is dominated by services. In 2015, Wholesale & Retail Trade, Government Services, and Finance and Insurance Services were the highest contributors to GDP. Jamaica is highly exposed to external shocks as a small, open economy, and its good-producing sectors are dominated by international trade patterns that may be antithetical to growth. It remains largely undiversified both in terms of goods exported and its export partners.¹⁸

With the help of multilateral institutions, the Government of Jamaica is enacting a series of reforms to reduce debt and grow the economy. A new Ministry of Economic Growth and Job Creation, headed by the Prime Minister and advised by a high-level economic growth council, is charged with creating a plan to drive economic growth and sustainable development in the country. Jamaica Vision 2030, a long-term national development plan which aims to transform Jamaica into a developed country by 2030, is now in its 8th year of implementation. In addition to reducing public debt, the plan includes goals related to developing world-class education and training and delivery outcomes. Since 2009, the baseline year, Jamaican workers have increased their rates of certification, although tertiary education enrollment has declined, and both levels are below the goals set for 2015. During the past year, Vision 2030 reported a “continued focus on TVET [technical and vocational education and training] and STEM/STEAM [science, technology, engineering, (arts), and mathematics] integration and the alignment of training with market demands, including improving access to labor market information.”¹⁹

Foreign Direct Investment (FDI) in Jamaica is vulnerable to global economic pressures and suffered after the economic crisis of 2008–2009. However, it has been on a steady rise since 2011.²⁰ In recent years, FDI from Latin America and the Caribbean has been increasing, while investment from Europe and North America has decreased.²¹ In 2015, the single largest beneficiary sectors of FDI were tourism, mining, and ICT (Figure 5).²²

¹³ World Bank. 2011.

¹⁴ Kandil, et al.

¹⁵ Inter-American Development Bank (IDB), Private Sector Assessment of Jamaica. 2014. <http://competecaribbean.org/wp-content/uploads/2015/02/2014-Jamaica-Private-Sector-Assessment-Report.pdf>.

¹⁶ Varma, Sona, Ramos Oliveira, Luiz Edgard, Antonio, Matias, Beckerman, Paul E. 2015. Jamaica – Laying the foundations for growth and debt sustainability. Jamaica economic update; no. 2. Washington, DC: World Bank Group. <http://documents.worldbank.org/curated/en/558411474020643292/Jamaica-Laying-the-foundations-for-growth-and-debt-sustainability>.

¹⁷ World Bank, Global Poverty Working Group. <http://data.worldbank.org/indicator/SI.POV.NAHC?locations=JM>.

¹⁸ IDB. 2014.

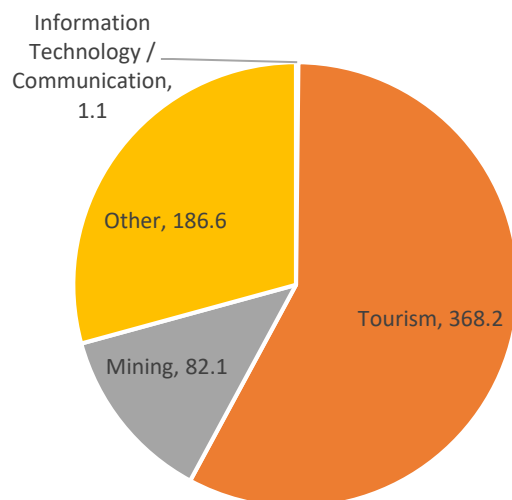
¹⁹ Vision 2030 Jamaica. Update on Vision 2030 Jamaica – National Development Plan and MTF 2015–2018. October 25, 2016. http://www.vision2030.gov.jm/Portals/0/Progress_Reports/Update%20on%20Vision%202030%20Jamaica%202015-2016.pdf.

²⁰ The World Bank. World Development Indicators. 2015. http://databank.worldbank.org/data/views/reports/ReportWidget.aspx?Report_Name=WDI-Jamaica&Id=16c37c68

²¹ UNCTAD. 2014.

²² Bank of Jamaica. 2017.

Figure 5. Foreign Direct Investment, 2015 (US\$ Millions)



Source: Bank of Jamaica, Statistical Digest October-December 2016

EDUCATION CONTEXT

On average, Jamaicans 25 years and older have 9.6 years of schooling, while those now entering the educational system can be expected to complete 13.1 years of schooling.²³ Of the out-of-school population, 15 years and older, 34% have a primary education or less, while 52% have a secondary education, 5% have a university education, and 6% have “other tertiary education.”²⁴ Kingston and Westmoreland parishes are the most educated, with 50–52% of the population having attained at least secondary education, while inhabitants of Trelawny and St. Ann parishes show the least educational attainment, with just 40–42% holding a secondary degree.²⁵

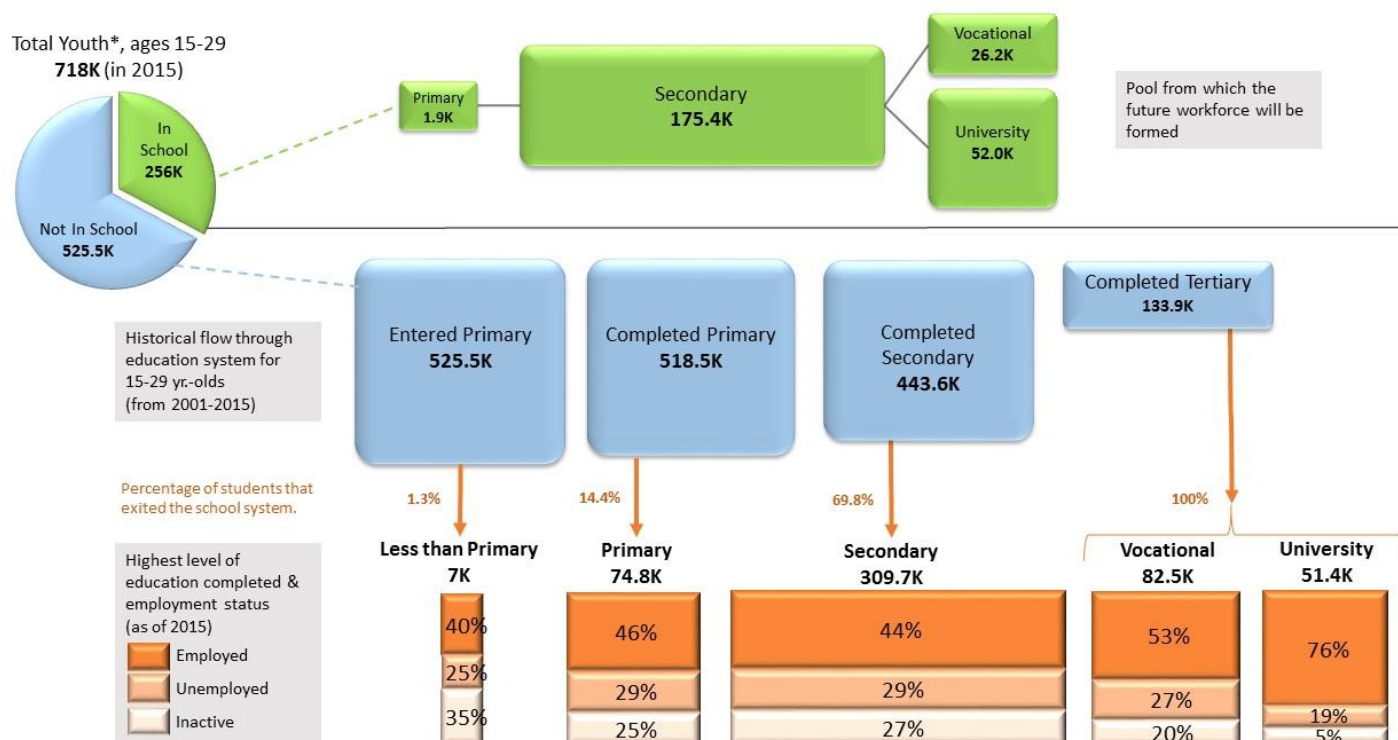
Figure 6 below presents a snapshot of Jamaican youth and their status in education and the labor force. Comparing the total 15+ out-of-school population to out-of-school youth aged 15–29, it is apparent that educational attainment has improved in Jamaica. Of youth who are out of school (orange boxes at bottom), 15.6% have a primary education or less, 58.9% have a secondary education, 15.7% have a vocational education, and 9.8% have a university education. Of the 32.7% of youth aged 15–29 currently in school (green boxes at top), 0.7% are in primary school, 68.5% in secondary school, 10.2% in vocational education, and 20.3% in university.

²³ UNDP Human Development Report 2013, Jamaica Country Profile. <http://hdr.undp.org/sites/default/files/Country-Profiles/JAM.pdf>.

²⁴ STATIN. 2011.

²⁵ Planning Institute of Jamaica, Economic and Social Survey Jamaica 2014.

Figure 6. Jamaica Education Stocks and Flows



*Data source: 2015 International Labour Organization School-to-Work Transition Survey

Source: 2015 International Labor Organization School-to-Work Transition Survey

Note: This is a diagram created by the authors of the report to show a snapshot of the education system and workforce stocks and flows. The diagram serves as one input for the larger labor market analysis, conveying relevant workforce and education information in a compact way. It is not intended to replace a formal analysis of the education system or labor market.

Employment rates are much higher for those with a university education, followed by those with post-secondary vocational training. In 2015, 35% of youth—31% of young men and 39.2% of young women—were neither working nor in school.²⁶ Unemployment rates are highest for those with a primary or secondary education, while those with less than a primary education are the most likely to be inactive. While 64.9% of employed Jamaican youth had qualifications that matched their jobs, slightly more were undereducated (17.7%) compared to overeducated (17.2%) for their positions.²⁷

After interviews with actors in the field, the assessment that educational attainment in Jamaica has increased is slightly complicated by reported high levels of illiteracy across many areas of employment. This was confirmed looking at World Bank data on levels of literacy. While younger generations do have higher literacy levels, the overall workforce has a literacy rate lower than any Caribbean country other than Haiti. This may explain why employment rates are higher for university educated students—to have reached the level of tertiary education, they will have had to clearly demonstrate their literacy, while secondary students do not need to have demonstrated literacy, according to employers, as students can still graduate having failed all of their subjects.

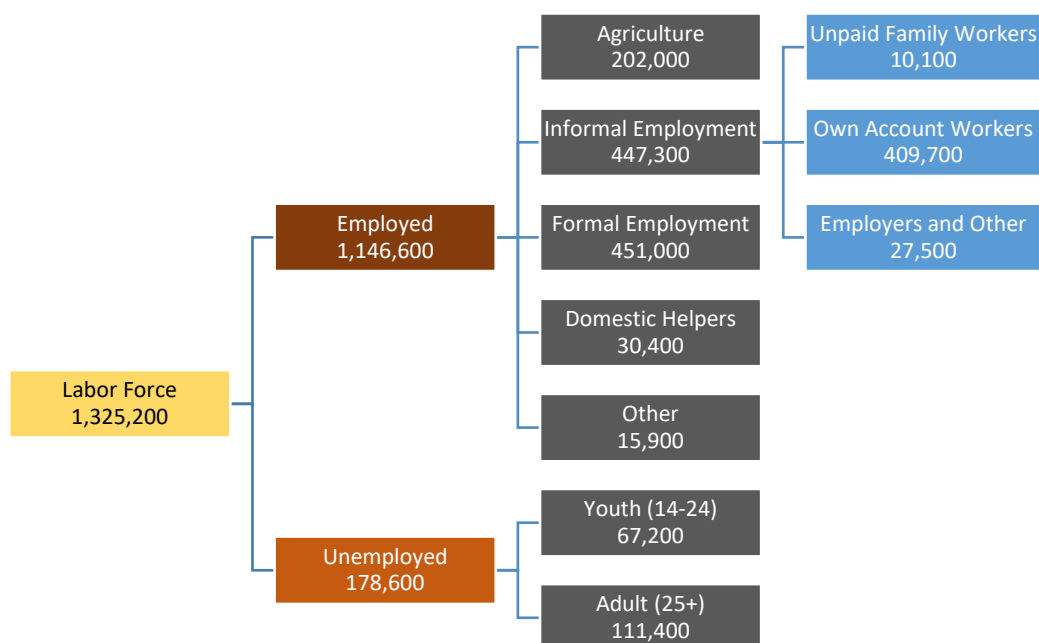
²⁶ International Labour Organization School-to-Work Transition Survey. 2015.

²⁷ Ibid.

LABOR MARKET CONTEXT

Of the 1.2 million labor force, approximately 45% is female. The female labor force participation rate for the population 15+ in Jamaica is 56.1%, while the male labor force participation rate is 70.9%.²⁸

Figure 7. Labor Force and Economic Activity, 2015



Source: STATIN, Jamaica Labor Force Survey 2015

As of July 2016, 12.9% of the labor force is unemployed, and 36.2% of the unemployed are young people aged 14–24. Young people have a much higher unemployment rate than the general population: 33.7% of young women and 26.1% of young men are unemployed, with younger cohorts and rural inhabitants more likely to be unemployed. Of the employed population, nearly half are in informal employment. Young people are particularly likely to be informally employed: only 24.7% of employed youth have formal jobs.²⁹

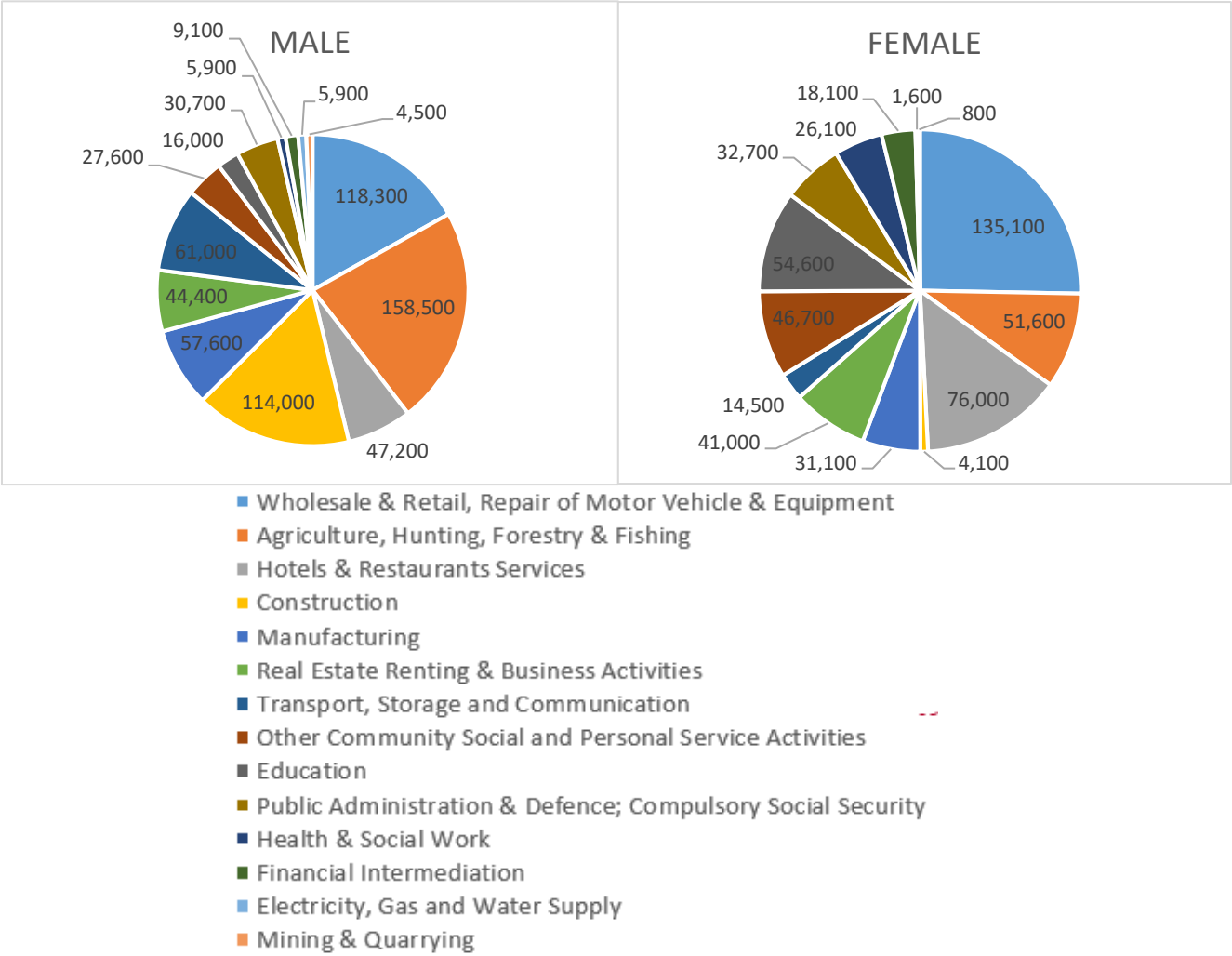
The services sector absorbs the greatest portion of the labor force (85.9% of women and 52% of men), followed by agriculture (8.2% of women and 25.8% of men), and industry (5.9% of women and 22.2% of men). Figure 8 shows employment by detailed sector and sex, indicating that women outnumber men in wholesale and retail trade; hotel and restaurant services; other community social and personal service activities; education; public administration and defense; health and social work; and financial intermediation. The private sector employs

²⁸ World Bank, WDI.

²⁹ ILO, STATIN, and PIOJ, Labour Market Transition of Young Women and Men in Jamaica. 2014.
http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/documents/publication/wcms_250104.pdf.

around 90% of the labor force. Although the public sector is the largest single employer in the country, the government’s commitment to reducing the wage bill means that employment cuts are planned. Approximately 82% of private sector employees work in micro, small, and medium enterprises (MSMEs).³⁰

Figure 8. Employment by Sector and Sex, 2013



Source: STATIN 2013

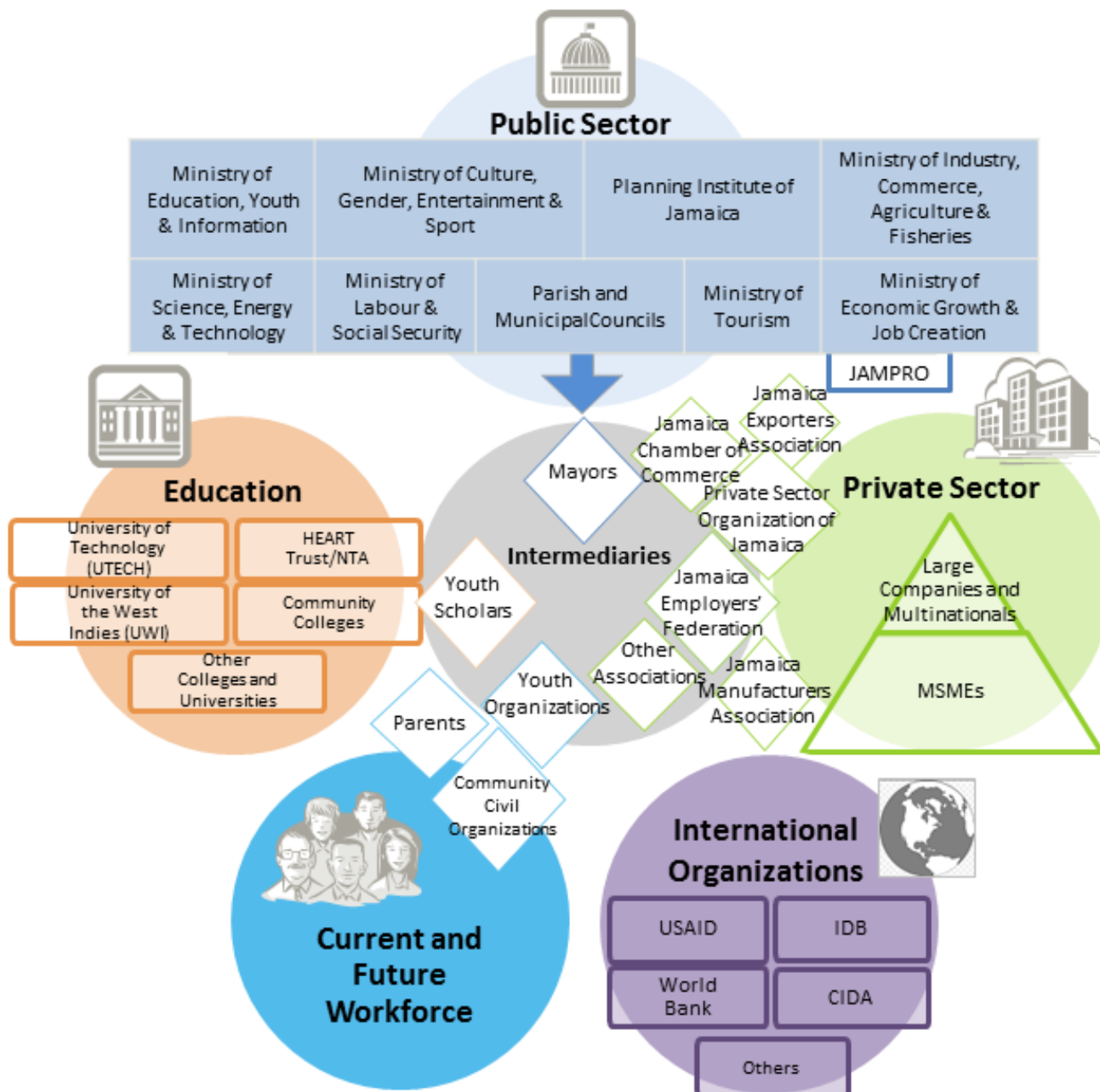
STAKEHOLDER MAPPING

Figure 9 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 Jamaica. It includes actors from the public sector, private sector, civil society organizations, national and international development organizations, 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.

³⁰ IDB. 2014.

Some of the actors are linked to the technical supply and demand for skills in the labor market, while 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. During the development of the Program, additional actors are likely to emerge.

Figure 9. Jamaica Workforce Development System Actors

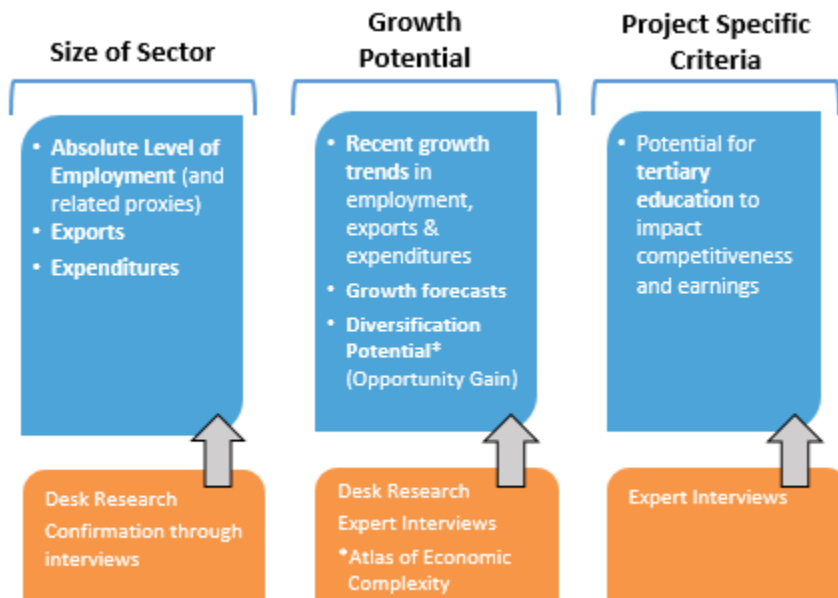


Source: Adapted from Workforce Connections, FHI 360.

SECTOR SELECTION

The sector selection procedure for Jamaica was primarily a qualitative exercise, since published data at the sector level is virtually non-existent. The key selection criteria were the sector's size, potential growth, and the estimated likelihood of the project having an impact on the sector's employment or competitiveness.

Figure 10. Sector Selection Categories and Criteria



Source: FHI 360

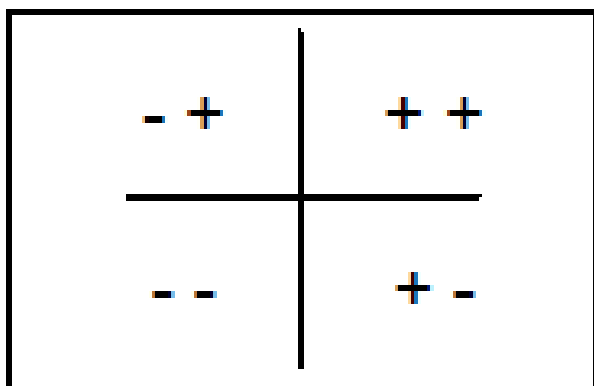
Trade Behavior Analysis

In considering growth potential, both the volume and performance of exports emerged as critical criteria in the selector selection evaluation. 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 the value of exports with patterns of market behavior.

One tool to analyze the dynamic behavior of recent trade is the trade share matrix (an adaptation of the Boston Consulting Group Matrix, or BCG).³¹ 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 Jamaica's exports during that time period. The size of each bubble indicates the value of exports in 2014.

³¹ 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.

Figure 11. Stylized Trade Share Matrix



- A. **Quadrant + +:** indicates (as shown in Figure 11) that both the world market and the country's exports are growing faster than average; this corresponds to the "stars" quadrant in the BCG Matrix.
- B. **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 the BCG Matrix.
- C. **Quadrant - -:** indicates that the world market and the country's exports are growing slower than average (or shrinking); this corresponds to the "challenges" quadrant in the BCG Matrix.
- D. **Quadrant - +:** indicates that the 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 the BCG Matrix.

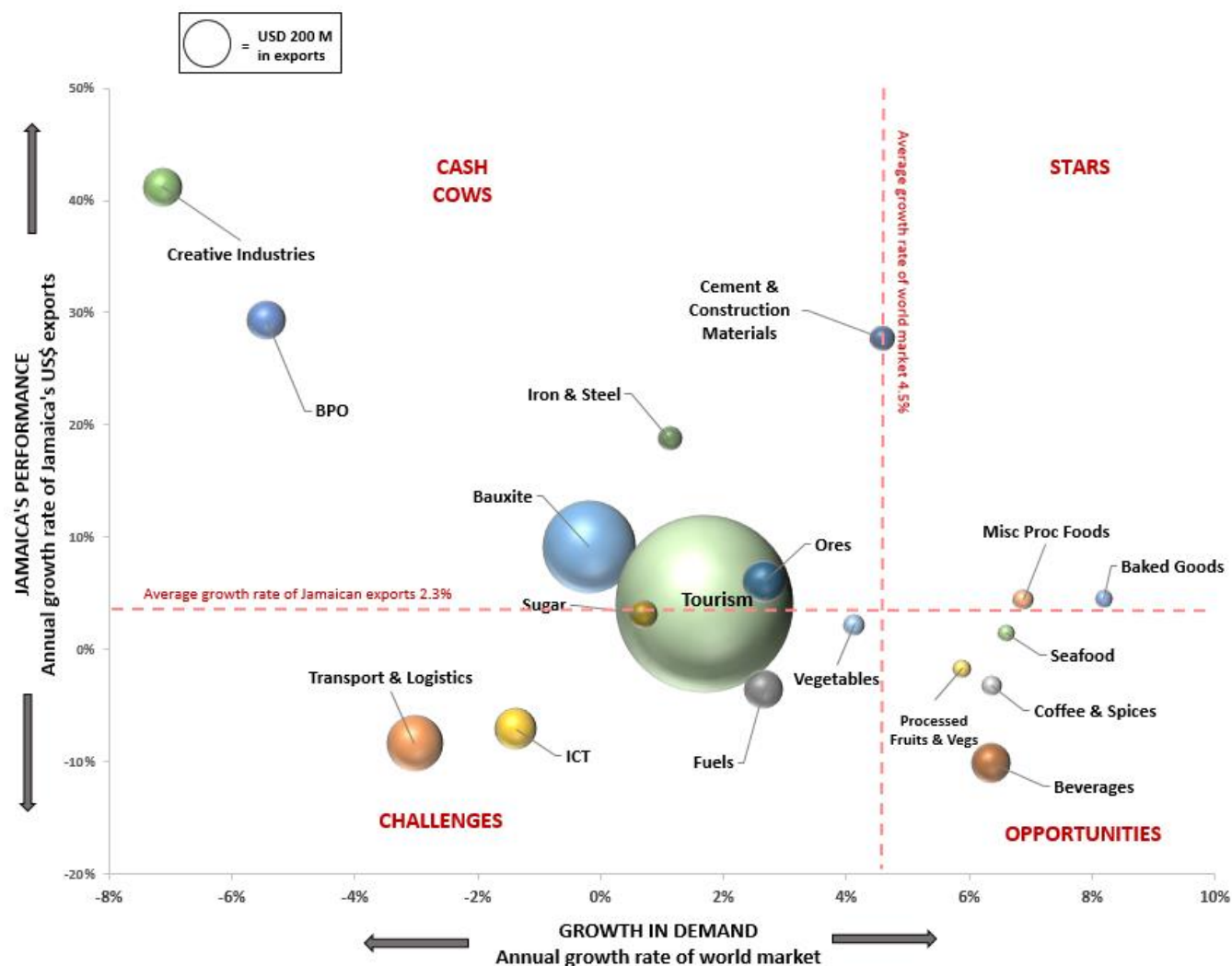
The resulting Jamaica trade share matrix, which describes the top 20 export goods and services,³² outlines the dynamic behavior of trade in Jamaica relative to the world (Figure 12). The annualized growth rates (compounded annual growth rates) cover the period 2010–2014 for commodities, and 2011–2014 for service exports. In order to provide the “relative” context to optimize the four quadrant titles, an extra frame showing the average growth of Jamaica’s exports (parallel to the x-axis) and the average growth of the world market (parallel to the y-axis) has been added with red dotted lines.

- A. Jamaica’s ‘stars’ quadrant, where Jamaica’s growth is above average in markets that are also growing at an above average rate, includes miscellaneous processed foods and baked goods.
- B. The “cash cows” quadrant, indicating where Jamaica’s performance is strong in a relatively weak market, includes creative industry, BPO and tourism services, and products such as bauxite, ores, sugar, iron and steel, vegetables, and cement and construction materials.
- C. The “opportunities” quadrant, where the global market is growing faster than average but Jamaica’s export growth rate is below average, includes seafood, processed vegetables and fruits, coffee and spices, and beverages.

³² These are the top 15 out of 99 products in the Harmonized System (HS) codes at the 2-digit level and the 5 largest exported services as reported by the EBOPS system in UN Comtrade.

- D. Finally, the products found in the “challenges” quadrant, where both the global market and Jamaica’s exports are both growing slower than average, includes fuels, ICT services, and transport & logistics.

Figure 12. Jamaica Trade Share Matrix, 2010–2014



Source: FHI 360 calculations based on export data from MIT Observatory of Economic Complexity & UN Comtrade. For commodities, average growth rates (CAGR) are from data for 2010–2014. For services, growth rates are for 2011–2014.

The most striking aspect of Jamaica’s trade share matrix is the near absence of sectors in the ‘Star’ quadrant. Even the two sectors which appear in that segment, Baked Goods and Miscellaneous Processed Foods, are right on the border, with average export growth rates of 4.5% per year, only slightly above Jamaica’s average growth rate of 2.3% during that period. Apparel (or Garments), which used to represent 33% of commodity exports as recently as 1995, now represents far less than 1% of the value of Jamaica’s exports, too small to show in this figure. In short, export performance overall has been dismal.

On the other hand, it should be kept in mind that the period covered by the trade share matrix—2010–14 for commodities and 2011–14 for services—has been highly unusual, and the general maxim that ‘the past is not a guide to the future’ applies even more so for this post-financial crisis period. In particular, growth rates in the near future for world demand in creative industries, BPO, ICT, tourism, cacao, and processed foods are expected to be significantly higher than the reference period.

Product Diversification and Economic Complexity

Another indicator that can add 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). Some researchers at Harvard University have developed pioneering new methods to utilize these data. Their “product space analysis” examines, across all countries, 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 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.

The product space analysis can serve as a guide to optimizing a country’s future export diversification, using a special mapping of the products’ relationships to one another. This network (as opposed to geographic) map depicts products as closer to one another if growth in their exports is correlated.³³ The structure of this map is the same for all countries. Based on conditional probability analysis of trade flows—the likelihood of a certain event occurring, given that another event has already occurred—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.³⁴ In other words, if an economy is competitive 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 below, each colored bubble on the chart represents a product that Jamaica exports. Colored (as opposed to gray) bubbles have a Revealed Comparative Advantage (RCA) score of 1 or greater.³⁵ This means that Jamaica is already successfully exporting the selected product. The color of the bubble represents the category of export products (e.g., light green for processed food, orange for horticultural products), while the location of the bubbles on the map reflects the degree to which the products are highly linked or sparsely linked in global experience, through the kinds of technology, skill sets, or other factors required to produce them.

Figures Figure 13 and Figure 14 depict an analysis of Jamaica’s product space in 1995 and 2014, respectively.

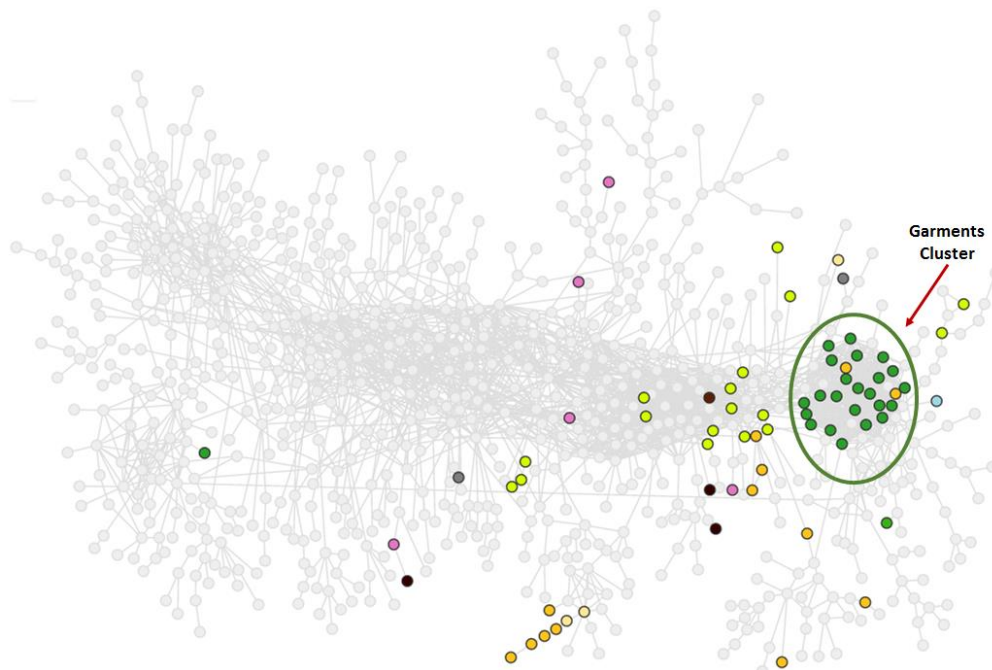
³³ The Atlas of Economic Complexity. Accessed at <http://atlas.cid.harvard.edu/about/glossary/>.

³⁴ DAI. 2010. The World Bank Sector Competitiveness Analysis Tools (SCAT) Reference Guide, 35–36.

³⁵ 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/>.

Figure 14 reflects the degree to which, overall, goods exports have fallen in importance relative to services exports since 1995. The industrial structure has not developed significantly in 20 years, and garment exports have virtually collapsed. Unfortunately, most of Jamaica's existing high volume export products are concentrated in the periphery of the product space, where there are very few growth-inducing spillover effects that would foster economic complexity.

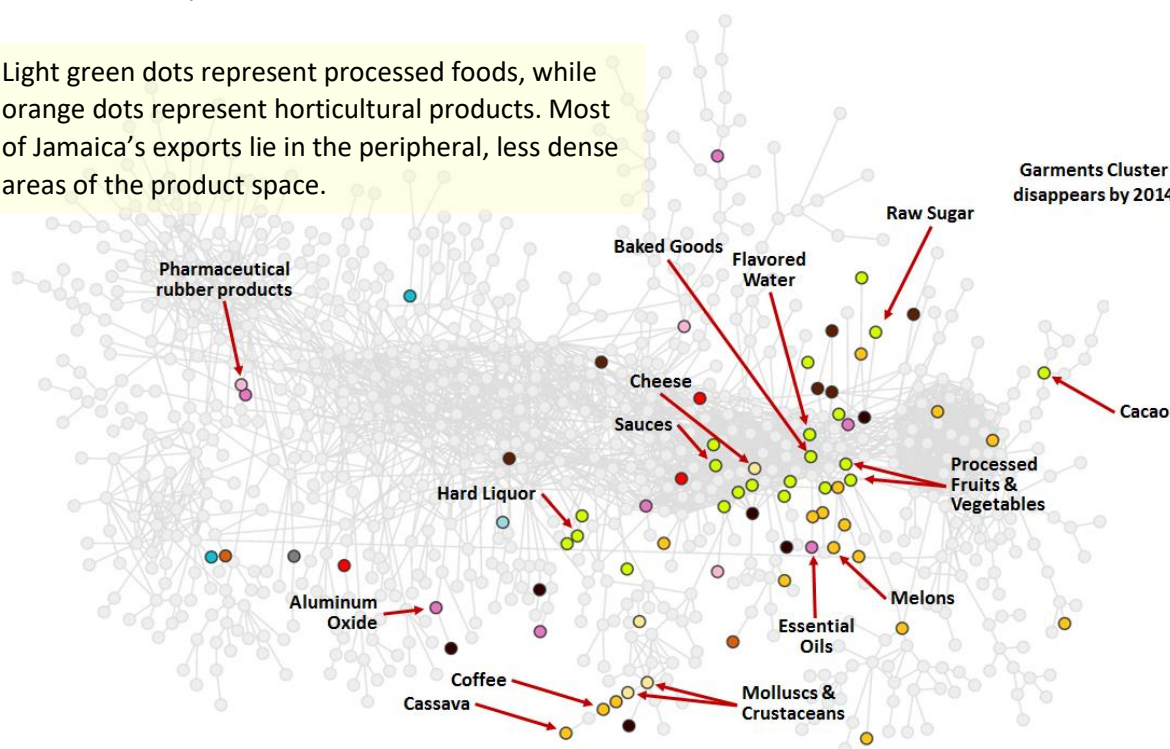
Figure 13. Product Space for Jamaica, 1995



Source: *Atlas of Economic Complexity*, Harvard

Figure 14. Product Space for Jamaica, 2014

Light green dots represent processed foods, while orange dots represent horticultural products. Most of Jamaica's exports lie in the peripheral, less dense areas of the product space.



Source: *Atlas of Economic Complexity*, Harvard

Unlike garments and textiles, food processing and supply chains linked to horticulture and other agricultural products have expanded, with 22 products now having $RCA > 1$ (as opposed to 17 in 1995), increasing their presence in the densely populated central area of the product space. This implies that Jamaica's food processing industry is growing (in other words, that it has a greater share of exports) and that its linkages to other strategic, growth-inducing industries are growing as well.

Hausmann's Strategic Bets

Harvard Professor Ricardo Hausmann has also developed a system for ranking export products based on their likelihood for supporting the objectives of three distinct strategies:

- A. "Jobs, Jobs, Jobs" – the desire to generate as much employment growth as possible, with nearly no weight given to economic growth;
- B. "Strategic Bets" – a strategy based on supporting sectors that are most likely to increase the country's Economic Complexity Indicator (ECI), with attendant beneficial impacts on diversity and growth in value added; and
- C. "Parsimonious Transformation" – a strategy that lies halfway between the two strategies above.

The results of the Hausmann Strategies are shown in Table 2. Agricultural and food processing products dominate six of the top ten product categories according to the "Jobs, Jobs, Jobs" strategy. Among the "Strategic Bets," three categories of agricultural products are still among the top ten, but they belong to three different

categories: Animals and Animal Products, Dairy, and Food Processing. Chemicals, Articles of Iron or Steel, and Machinery may also eventually exhibit higher growth rates and incomes according to the Hausmann analysis.

Table 2. Strategic Product Sectors for Jamaica

| Rank | Jobs, Jobs, Jobs | | | Parsimonious Transformation | | | Strategic Bets | | |
|------|------------------------|-------|------|-----------------------------|-------|------|---------------------------|-------|------|
| | Product Group | Score | Fill | Product Group | Score | Fill | Product Group | Score | Fill |
| 1 | Cocoa & Chocolate | 73 | 17% | Cocoa & chocolate | 56 | 17% | Chemicals | 45 | 3% |
| 2 | Horticulture | 64 | 28% | Horticulture | 52 | 28% | Articles of Iron or Steel | 44 | 5% |
| 3 | Sugar | 60 | 50% | Sugar | 51 | 50% | Animals & Animal | 40 | 10% |
| 4 | Other Agriculture | 57 | 16% | Other Agriculture | 49 | 16% | Products | 39 | 1% |
| 5 | Coffee | 57 | 50% | Construction Materials | 49 | 17% | Machinery | 39 | 10% |
| 6 | Construction Materials | 56 | 17% | Coffee | 47 | 50% | Dairy | 39 | 11% |
| 7 | Seafood | 55 | 29% | Chemicals | 47 | 3% | Precious Metals | 39 | 55% |
| 8 | Mineral Products | 52 | 8% | Mineral Products | 46 | 8% | Food Processing | 39 | 7% |
| 9 | Metals | 52 | 7% | Food Processing | 46 | 55% | Plastics & Rubber | 39 | 8% |
| 10 | Iron & Steel | 50 | 3% | Metals | 46 | 7% | Wood Products | 39 | 7% |
| | | | | | | | Tools | 39 | 7% |

Source: FHI 360 Calculations, based on Atlas of Economic Complexity, Harvard University

Based on these analyses, the literature review, and initial interviews, the following short list of candidate sectors was considered: Tourism, Creative Industries, Business Process Outsourcing (BPO), Logistics and Transportation, Garments, ICT, and Agribusiness (broken out into 8 sub-sectors: food processing, dairy, seafood, coffee, cocoa, beverages, sugar, and cassava). The matrix organizes the indicators according to the three categories depicted in Figure 10, with two indicators for Size (employment and level of exports in 2014), four indicators for Future Growth Potential (Jamaican export growth 2010–14, world export growth 2010–14, anticipated future growth in exports, and an economic diversity index), and one Project-Specific Indicator (the sector's potential to be impacted by this project focusing on higher education). This particular structure, with scores on a scale of 1 to 5, allows the qualitative indicators (employment, growth potential, and potential impact) to be merged directly with the remaining quantitative indicators, to reach one single ranking of the sector's attractiveness for this project based on the stated criteria. This is a particularly useful feature in countries like Jamaica, where reliable quantitative indicators at the sector and sub-sector level is seldom available.

The weights allow for rebalancing of the categories according to differing criteria. For example, a sensitivity analysis shows that increasing the weight assigned to Employment size from 15% to 25%—while reducing both the weight assigned to the Economic Diversity Index from 15% to 10% and the Higher Education Impact Potential from 20% to 15%—has a strong impact on the rankings for ICT (which drops from 4th to 7th place), while increasing the ranking of Transportation and Logistics (which jumps up from 9th place to 6th place). However, the impact on other sectors is much less dramatic, and the top three sectors, tourism, food processing, and creative industries, don't change their ranking at all. Thus, the sector selection matrix appears to be fairly robust, despite its use of qualitative estimates where hard data are not available.

Table 3. Jamaica Sector Selection Matrix

| CANDIDATE VALUE CHAINS | CURRENT SIZE | Employment | Exports | GROWTH POTENTIAL | Growth in Jamaica's Exports | Growth in Market Size | 5-YR Export Growth Potential | Economic Diversity Index | OTHER CRITERIA | Higher Education Potential Impact | TOTAL SCORE | RANK |
|--------------------------------------|--------------|------------|---------|------------------|-----------------------------|-----------------------|------------------------------|--------------------------|----------------|-----------------------------------|-------------|-----------|
| <i>Weights ==></i> | 30 | 15 | 15 | 50 | 10 | 15 | 10 | 15 | 20 | 20 | 100 | |
| Tourism | 4.7 | 5 | 5 | 3.3 | 4 | 2 | 3 | 4 | 4.0 | 4 | 77.0 | 1 |
| Food Processing (incl. horticulture) | 4.0 | 4 | 4 | 3.2 | 3 | 3 | 4 | 3 | 4.0 | 4 | 72.2 | 2 |
| Creative Industries | 2.7 | 2 | 3 | 3.5 | 5 | 1 | 5 | 4 | 5.0 | 5 | 71.6 | 3 |
| ICT | 2.8 | 1 | 4 | 3.2 | 2 | 2 | 4 | 5 | 5.0 | 5 | 68.6 | 4 |
| BPO | 2.6 | 2 | 3 | 3.1 | 4 | 1 | 4 | 4 | 4.0 | 4 | 62.4 | 5 |
| Dairy | 2.4 | 3 | 1 | 3.2 | 3 | 4 | 4 | 1 | 4.0 | 4 | 62.2 | 6 |
| Coffee | 2.3 | 2 | 2 | 3.2 | 2 | 4 | 4 | 3 | 4.1 | 4 | 62.0 | 7 |
| Seafood | 2.8 | 4 | 2 | 2.9 | 3 | 4 | 3 | 2 | 4.0 | 4 | 61.7 | 8 |
| Transportation & Logistics | 4.4 | 4 | 4 | 2.0 | 1 | 1 | 3 | 2 | 3.0 | 3 | 58.9 | 9 |
| Cocoa & Chocolate | 1.2 | 1 | 1 | 3.4 | 2 | 3 | 5 | 4 | 4.0 | 4 | 57.5 | 10 |
| Beverages (including juices) | 3.4 | 3 | 4 | 2.3 | 1 | 4 | 2 | 2 | 3.0 | 3 | 55.4 | 11 |
| Sugar | 2.9 | 3 | 3 | 2.7 | 4 | 2 | 2 | 3 | 2.0 | 2 | 52.2 | 12 |
| Cassava | 2.1 | 2 | 2 | 3.0 | 4 | 5 | 3 | 1 | 2.0 | 2 | 50.6 | 13 |
| Apparel | 0.9 | 1 | 1 | 1.6 | 1 | 3 | 1 | 1 | 2.0 | 2 | 29.4 | 14 |

Source: FHI 360 estimates

The sector selection matrix is not a rulebook that must be followed rigidly. It is a tool to organize information from widely divergent sources and degrees of reliability, and to make explicit assumptions about the importance of various criteria. Thus, it should be regarded as a rough guideline for sector selection. If there is a strong push from some quarters to select a sector that appears at the bottom of the ranking, it's a good time to ask whether the criteria need to be adjusted, whether data need to be updated, or whether the 'push' to select that sector is coming from subjective feelings rather than observable facts. But a rigid requirement that the priorities strictly follow the scores is not recommended—some flexibility is optimal.

TOURISM

The tourism sector's direct employment is estimated to be more than 230,000, which represents around 18% of the workforce. Even though it is Jamaica's largest single sector, its growth potential is unclear, with negligible growth since the world financial crisis. Nevertheless, several segments appear to be promising, especially health tourism. Tourism is so important to Jamaica that a high-level commission has been set up to strengthen backward linkages to other sectors of the economy, with special emphasis on agribusiness, logistics, and entertainment.

AGRIBUSINESS

Jamaica's agriculture sector is nearly as large an employer as tourism, although the 'agribusiness' portion, which includes commercial production of horticulture, seafood, and specialty products such as coffee, as well as their processing, is only a fraction of that total employment. Jamaica's agribusiness sector probably has lower growth potential than some other countries in Central America and the Caribbean, mainly due to the challenges for achieving scale economies—even relative to countries such as Honduras and Guatemala. However, some niche sectors such as coffee and sauces have good potential. In certain segments, a sustained effort to improve curricula and applied research in Jamaican universities and vocational training centers could have a significant impact on the competitiveness and employment absorption of this sector.

CREATIVE INDUSTRIES

One of the most distinctive sectors, for which Jamaica has a clear competitive advantage, is music and related entertainment, arts, and design sectors, collectively labeled the Creative Industries Cluster. With reggae music representing a clear brand leader and major revenue generator, other important sub-sectors include film production, culinary arts, graphic design, and digital animation (see Figure 22 for a full picture of the Creative Industries Cluster).

We estimate the current size of this sector to be between 10,000–15,000 full time-equivalent jobs. However, its growth potential is considered high, mainly due to the recent growth of the digital animation segment, as well as the potential for a film production sector to take off. The potential impact of Advance would primarily focus on digital animation, which is small but appears to be in a rapid growth phase. It would also focus on arts management, which could increase the stability and growth potential for all sectors, including music, by improving the quality of intellectual property protection (IP), marketing, and distribution of Jamaican-branded products. Jamaica is in a position to become integrated into the global animation value chain, which is currently concentrated in the Philippines and India. Jamaica's time zone and relative proximity to the United States make it an attractive alternative, if certain capacity constraints can be addressed. In this sense, the digital animation and certain other segments of the creative industries cluster, such as web design, may also be considered a part of the Business Process Outsourcing (BPO) sector, since many of the opportunities facing Jamaica in this sector have a significant outsourcing component. Nevertheless, Jamaica's proven capability to generate its own content, be it in music, film, or sports, is one of the most compelling arguments to strengthen tertiary education in this field.

INFORMATION AND COMMUNICATIONS TECHNOLOGIES (ICT)

The introduction of a Creative Industries sector overlaps with several sub-sectors that are often aggregated into the definition of ICT, such as digital media, games, and web design. ICT also has clear potential in Jamaica, and the sector's overall score in the Sector Selection Matrix is only slightly lower than Creative Industries. However, the decision was made to focus on the more distinctive sector—one in which Jamaica “punches above its weight”—competitive with other creative hubs in South America, such as Buenos Aires and São Paulo within the LAC region. One of the deciding factors between the two was momentum; as shown in the Trade Share Matrix,

the rate of growth of Jamaica's exports in ICT was negative for 2011–2014. However, though world demand was falling for the sector during that period, it is expected to rebound strongly in the coming decade.

BUSINESS PROCESS OUTSOURCING (BPO)

The best estimates of employment in BPO range from 12,000–15,000 jobs, although it appears to be growing quite rapidly. In fact, human resource constraints are the most common complaint encountered during interviews with the private sector. The variety of segments represented is quite diverse, from standard low value-added call centers to sophisticated professional services such as legal, accounting, software, and digital animation.

The clear potential for actors to directly support the sector's growth is considerable—both in terms of raw employment and higher value-added employment—which indicate higher wage employment, especially given the human resource constraint cited by industry leaders. However, since donors such as the World Bank and the Inter-American Development Bank are currently working extensively in this relatively small (though growing) sector, BPO was not selected for further analysis.

TRANSPORTATION AND LOGISTICS

Ultimately, the transportation and logistics sector was not selected as a standalone sector for analysis. The sector is quite large, estimated at 75,000. While there is clearly significant potential in the long term, ultimately the near-term growth potential was estimated to be modest at best. Without infrastructure investments, the potential for Jamaica's logistics sector to be largely externally driven—through maritime traffic via the Panama Canal or in competing with Miami as an air traffic hub—is dubious. To be internally driven, Jamaica again faces the problem of scale—as it seeks to generate sufficient flow of internally generated traffic—from manufacturing, agribusiness, and passenger transport.

A number of efficiencies from improved organization and e-logistics (the use of IT in logistics processes) could be achieved, and a program focusing on tertiary education could be instrumental in stimulating growth across the economy. For this reason, we recommend that the Program keep an eye out for potential logistics applications in all sectors it engages. Accordingly, we note the challenges and opportunities posed by the current state of logistics in Jamaica in each of the sectors explored in-depth in this report. However, as a sector on its own, the information currently available does not suggest that it is the highest and best use of the project's resources.

APPAREL

Twenty-five years ago, Jamaica's exports of apparel indicated a thriving sector. However, losing US business to Mexico after the signing of NAFTA, and rising costs—in part due to internal logistics constraints referenced above relative to regional competitors such as the Dominican Republic, Honduras, and Guatemala—have decimated that industry. Overall, its growth potential, except in niche or boutique segments requiring high fashion input or linked to the entertainment industry, appears to be very limited. Consequently, there is all the more reason that Jamaica find ways to continually upgrade and improve, even in sectors where competitiveness appears to be robust, so as not to fall by the wayside as the apparel industry has done.

VALUE CHAIN ANALYSIS

After sector selection, we used value chain mapping to arrive at the demand for skills by employers. This tool helps implementers and policymakers understand industry structure and dynamics by identifying the

(approximate) number and type of firms and diagramming their roles and relationships.³⁶ A value chain map (see Figure 16 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.³⁷ 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 (where all functions are performed by one firm), whereas others may be partially integrated, and others completely fragmented (where many microenterprises are selling products directly in an open market). Industry structure is directly related to value chain governance—whether power is concentrated in the hands of one firm or many firms, and whether chains are buyer- or supplier-driven. 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 an intervention to impact large numbers of firms and/or workers.

On the other hand, where lead buyers are located overseas (as with the garment industry), 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 both women and men based on observed practice rather than traditional stereotypes.

As part of the study, in addition to the value chain maps, **parallel diagrams** are presented in Figure 17, Figure 20, and Figure 24. These parallel diagrams link technical positions in the value chain with educational programs (existing and non-existent) in Jamaica. They identify existing and non-existent educational programs and technical positions according to the level of education required: a) at the post-secondary, non-tertiary (ISCED 4) education cycle, b) at the short-cycle tertiary technical level (ISCED 5), and c) at the bachelor’s degree level (ISCED 6). Below this description of educational offerings associated with the technical needs by stage in the value chain, the diagram shows a) occupations identified by sector actors and b) those occupations defined by the International Labor Organization’s (ILO) International Standard Classification of Occupations (ISCO).

³⁶ Steen, Cynthia, Magnani, Rich, and Goldmark, Lara. “Competitive Strategies for Agriculture-Related MSEs: From Seeds to Supermarket Shelves.” Washington, DC. 2005. Accessed June 2016.

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

³⁷ Ibid. 10.

The ILO's ISCO is important to understand in the case of Jamaica, as 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.

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, degree programs, 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.

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.³⁸

Indirect Actors

Principal 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.

³⁸ Lundy, Mark. A. “LINK Methodology: Participative Guide for Inclusive Business Models for Small Farmers.” Version 2.0. 2014. Accessed May 2016. <https://cgspace.cgiar.org/handle/10568/49607>.

COLLECTING THE INFORMATION

Secondary Information

This information includes a collection of statistics, studies, documents, desk analysis, and 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 via interviews with actors in the selected sectors. An interview guide³⁹ 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 sector focus of the Program.⁴⁰

Below, we detail each of the selected sectors, beginning with an overview, then discussing key workforce positions, challenges facing the sector, and education and training offerings.

TOURISM

In Jamaica, this sector has been defined over the past century by the “sun and sand” tourism that has made the island a popular destination for North American and European vacationers looking for a relaxing and beautiful place to escape to. Montego Bay, the most popular (particularly among North Americans) of the six resort regions outlined by the Ministry of Tourism, offers five championship golf courses, as well as boutique and luxury all-inclusive hotel packages complete with spa amenities, family activities, water sports, world class dining, and private tours outside of Montego Bay’s resorts.⁴¹ Kingston, nicknamed “the heartbeat of Jamaica,” possesses not only the power of the capital city, but also the musical rhythms of world-famous artists such as Bob Marley, Peter Tosh, and Jimmy Cliff, and was recognized in 2015 as a UNESCO World Heritage “Creative City.”⁴² Other resort regions include Ocho Rios, the South Coast, Negril, and Port Antonio.⁴³ The South Coast and Port Antonio, in particular, complement Jamaica’s luxury tourism offerings marketed toward foreign guests in Ocho Rios and

³⁹ See Annex A, Interview Form.

⁴⁰ A field team in Jamaica conducted interviews with 41 different entities in Kingston, Spanish Town, Runaway Bay, and Montego Bay. See Annex E for full list.

⁴¹ JAMPRO. “Investing in Jamaica 2011.” Kingston, Jamaica. Accessed June 5, 2017. <http://www.developingmarkets.com/sites/default/files/digital-reports/dma-jamaica-report-2011/files/assets/basic-html/toc.html>

⁴² UNESCO. “Kingston: About the Creative City.” Creative Cities Network. Accessed December 16, 2016. <http://en.unesco.org/creative-cities/kingston>

⁴³ The team interviewed the following actors in the tourism sector: Courtyard Marriott; JAMPRO/Tourism and Agribusiness; Tourism Product Development Company; and Pegasus Hotels, Kingston; and Cardiff Training Institute, Runaway Bay. Many of the other interviews (Chamber of Commerce, Edna Manley School for Visual and Performing Arts, JAMPRO, etc.) further informed and supported the tourism sector analysis. Many actors interviewed represented heads of organizations with a national presence who were able to speak to needs and trends outside of Kingston.

Montego Bay with an “off the beaten path” feel for more adventurous travelers, with sleepy beach towns and picturesque bungalows dotting the coastline.

Jamaica’s economic development and employment have been driven by tourism for many years due in part to the aforementioned resort development. The sector’s contribution to GDP was affected by the global recession of 2008–2009 and did not see a positive trajectory until 2012. Since then, it has continued on an upward trend, rising to 5.2% of GDP in 2015.⁴⁴ The World Travel and Tourism Council (WTTC) estimates of direct and indirect (or total) employment provide an understanding of the industry in terms of contribution to employment over the past several years (Table 4).⁴⁵

Table 4. Tourism – Direct & Indirect Contribution to Employment, 2013–2016

| | 2013 | 2014 | 2015 | 2016* |
|---|---------|---------|---------|---------|
| Direct Employment in Tourism | 94,000 | 82,500 | 91,500 | 92,049 |
| % of total employed labor force (direct) | 7.5% | 7.3% | 8% | 8.6% |
| Indirect Employment in Tourism | 311,000 | 277,000 | 306,000 | 309,000 |
| % of total employed labor force (indirect) | 25.5% | 24.7% | 26.6% | 27.5% |
| * WTTC estimate. | | | | |

Source: WTTC 2016

The island’s proximity to the United States and Canada, and the fact that it is an English-speaking country, put it at an advantage in the tourism industry. These factors are large drivers of both direct and indirect employment. However, while Jamaica lags behind other Caribbean nations in terms of percentage of tourists arriving on cruise ships,⁴⁶ Jamaica’s resorts and growing sectors of tourism continue to attract international guests.⁴⁷

⁴⁴ STATIN. “Gross Domestic Product: Value Added by Industry at Constant Prices.” Accessed December 15, 2016. <http://statinja.gov.jm/Statisticsmain.aspx>.

⁴⁵ World Travel and Tourism Council. Benchmarking Travel and Tourism in Jamaica. How Does Travel and Tourism Compare to Other Sectors? November 2013. Accessed December 18, 2016. <http://www.wttc.org/-/media/files/reports/benchmark%20reports/country%20results/jamaica%20benchmarking%202013.pdf>; World Travel and Tourism Council. Tourism and Travel: Economic Impact 2016 Jamaica. Accessed December 18, 2016. <http://www.wttc.org/-/media/files/reports/economic-impact-research/countries-2016/jamaica2016.pdf>

⁴⁶ 43% of Jamaica’s total number of tourists arrive on cruise ships, exceeded by the Bahamas Islands, Cozumel, St. Maarten, the US Virgin Islands, and the Cayman Islands.

⁴⁷ Jamaica Tourist Board. “Annual Travel Statistics 2015.” Accessed December 19, 2016. <http://www.itbonline.org/report-and-statistics/>.

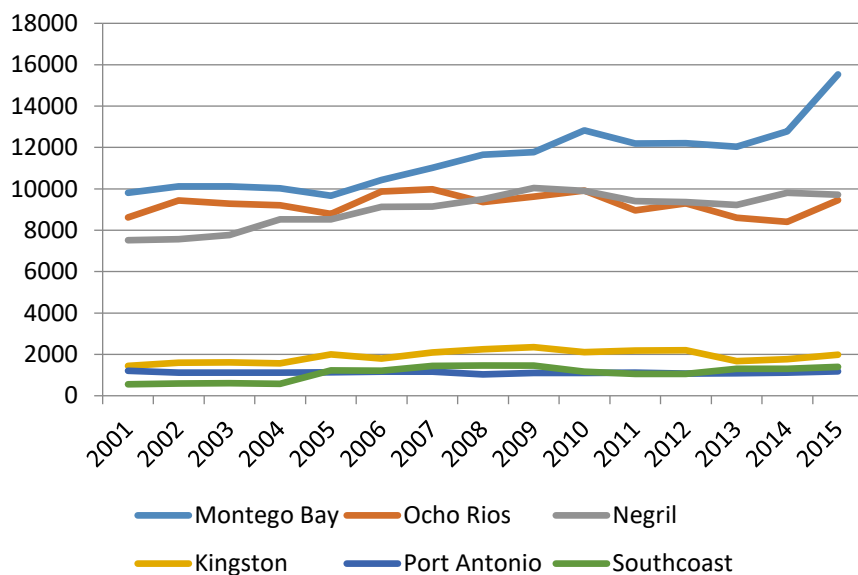
Crime and violence in Jamaica may be one deterrent for those seeking an island experience either via cruise or in-country, and as result, tourists may choose to go elsewhere. However, while homicide numbers in Jamaica are high, actors stated that the perception of violence is actually perpetuated by the cruise industry, and as a repercussion, is damaging not only to the perception of safety in Jamaica for smaller, growing tourism value chains on the island such as ecotourism, health and wellness, and sport tourism, but to the cruise industry itself. While homicide rates in 2013 were estimated to be highest in Kingston, St. James, and St. Catherine parishes, actors interviewed emphasized that homicides are mostly isolated from popular tourist sites, and locals are cautious to ensure the safety of guests.

“Cruise ships are very protected. The entire area is flooded with police officers to protect tourists and courtesy core people to ‘whisk tourists away to a perfect little vacation’ without ever actually experiencing the island. The strong presence of police on the docks sends the message to tourists that they are protected, but also that there’s something they need to be protected from outside of their resort’s walls.”

– Logistics Expert, Kingston

The spread of the idea that Jamaica is an unsafe place for visitors affects the island and the region as a whole, as the Caribbean accounts for 35% of cruise destination activity globally. Jamaica is also seen as having growing potential to tap into the growing Latin America market due to the island’s proximity to Panama as a major layover airport and the increasing activity of Copa Airlines in the Caribbean.⁴⁸ The tourism industry in Jamaica is already experiencing this shift away from historic North American investment. This can be seen in the language requirements in hotels and restaurants, as second language abilities in Spanish, French, Mandarin, and Russian have become more important in areas of high concentration of tourism and resort development such as Montego Bay, Negril, and Ocho Rios.

Figure 15. Direct Employment in the Accommodation Sector by Resort Area



Source: Jamaica Tourist Board 2015

⁴⁸ Jamaica Tourist Board. “Annual Travel Statistics 2015.”

However, actors interviewed in Jamaica expressed varying degrees of discomfort in relation to the near monopoly all-inclusive resorts and international hotel investment have over the Jamaican tourism market, particularly on the west coast. The Jamaican tourism model is largely exclusionary, as the country's high concentration of all-inclusive hotels isolates the vast majority of guests from local markets, restaurants, and other vendors.⁴⁹ "It was a mistake to incentivize these investors for so many years. The government still provides incentives to international all-inclusives, but they [the government] also realize that because the economy is so dependent on tourism, there's a great need to diversify our offerings and support local industries," one interviewee in Kingston noted. The diversification of tourism offerings has become increasingly important in the age of globalization, as new generations demand a more authentic tourist experience. "Visitors want to see more of the 'real Jamaica,' and we can't rely on the products of the past," a trainer in the tourism industry echoed.

As a result of this desire for authenticity across the island, the Planning Institute of Jamaica, along with the Ministry of Tourism and its entities, intend to break away from this model in their strategic plan, *Vision 2030*. The Guiding Goals under *Vision 2030* look to build "an inclusive, world-class, distinctly Jamaican Tourism Sector that is a major contributor to socio-economic and cultural development, with a well-educated, highly skilled, and motivated workforce at all levels within a safe, secure, and sustainably managed environment."⁵⁰ Under the ambitious plan, the government and its entity branches seek to promote emerging areas such as ecotourism, sports tourism, farm tourism, and community tourism. The eastern parishes of St. Thomas, St. Mary, and Portland will be important in terms of ecotourism and farm tourism due in part to the world-renowned (if low-volume) Blue Mountain coffee production. On the South Coast, in parishes like St. Elizabeth, farm and community tourism should see increased number of tourists if the plan is successfully developed and implemented in the coming years. These types of activities are described by the Jamaican Tourist Board as "a safe way for visitors to explore Jamaica safely, to visit village communities, and to enjoy meeting its citizens in their own communities, while conserving the national heritage, protecting the environment, and contributing to an improvement in the quality of life in local communities."⁵¹

Health and wellness tourism is also among these emerging areas being promoted by *Plan 2030*. It strives to promote local culture and values through the island's cultural preference for natural products and herbal medicinal remedies. Groups such as the Treasure Beach Women's Group in the St. Elizabeth parish sell essential oils, handcrafted soaps and lotions, and other natural skin care products made from plants found on the island.⁵² Additionally, the "farm to table" movement, encouraging both Jamaicans and guests to consume what is produced locally, is another rising trend in gastronomy that is contributing to local consciousness. Small producers are capitalizing on this development through sales of organic products and related goods such as natural juices, sauces, and spices, actors in the manufacturing industry noted. The shift in culture and consumption in the tourism industry has the potential to stimulate strong linkages to local Jamaican producers in both agro-processing and agriculture sectors across the island.

KEY POSITIONS AND SKILLS NEEDS

These different tastes and consumption patterns are not only creating new spaces for forward-thinking entrepreneurs looking to develop new products, but are also spurring transformation in restaurants and kitchens,

⁴⁹ World Bank. 2011. Jamaica—Country economic memorandum: Unlocking growth. Report No. 60374-JM.

⁵⁰ HEART Trust/NTA. "Tourism Sector Study." Labour Market Research and Intelligence Department. June 2016. Accessed December 16, 2016. <http://lmip.heart-nta.org/Publications.aspx>.

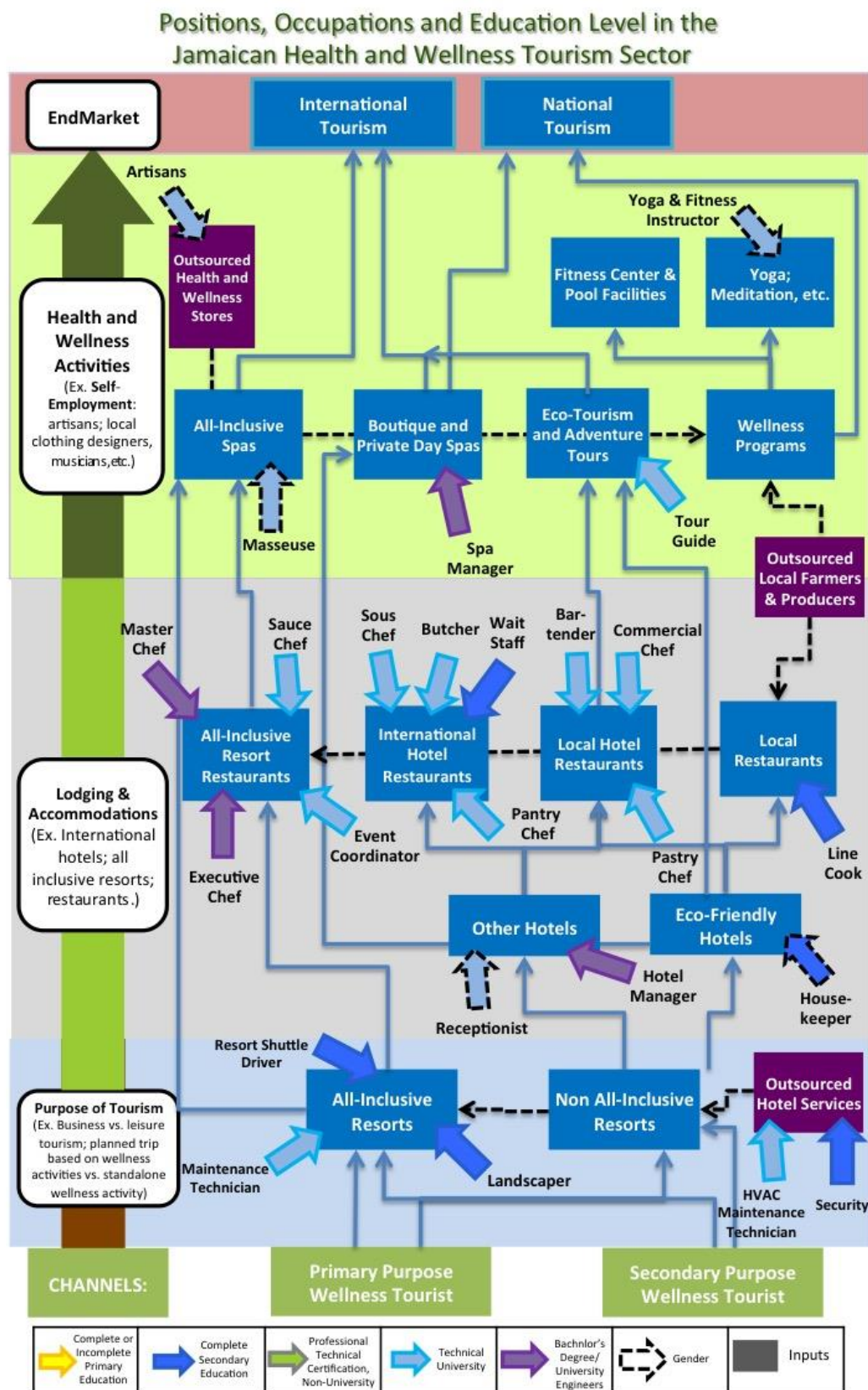
⁵¹ HEART Trust/NTA. "Hotels and Restaurant Services Sector Study." January 2015. Accessed December 19, 2016. <http://lmip.heart-nta.org/Publications.aspx>.

⁵² Treasure Beach Women's Group Benevolent Society. Accessed December 19, 2016. <http://tbwgjamaica.com/?crafts/skin-care>.

changing an appetite for the island's traditional rice and peas into a demand for innovative, fusion-style dishes. Indeed, in the search for authenticity, tourists and Jamaicans alike are redefining what authenticity means through food. Because of the change in culture and consumption, there is a push in the market for healthier foods at the same time. Sector actors noted a future need for “chef technologist,” who would understand how to prepare for guests with diabetes and those who do not eat gluten. Others mentioned the need for more specialization within training programs. For example, sushi sous chefs, as well as a “food stylist” specializing in carved fruits, vegetables, and the presentation of a plate to a guest, were among those mentioned.

Actors in Montego Bay, Runaway Bay, and Kingston stressed the crucial nature of highly skilled executive chefs and supporting staff for the tourism industry to sell both the island's traditional cuisine as well as emerging food trends. Likewise, with the rising popularity of resort and boutique day spas and wellness programs in and out of large tourist centers, comes an increased need for quality and consistent supplies of essential oils, lotions, and soaps, among other health-conscious products. These needs create a greater opportunity for artisan producers and a need to train current and potential employees and stronger ties among industries.

Figure 16. Health and Wellness Tourism Value Chain with Workforce Overlay



Gastronomy

Because of the popularity of Jamaican food around the world due in part to the presence of the diaspora, Jamaica has become known as a food destination for traditional dishes like curry goat, jerk chicken, rice and peas, and ackee and saltfish (Jamaica's national dish, made of a type of fruit and salt cod). As a result, many see chefs as the gatekeepers of the industry and stress the function of the kitchen as an attraction to be experienced firsthand by tourists. Government HEART Trust/National Training Association (NTA) programs are largely responsible for training in the tourism industry for both internationally and locally owned hotels, and an estimated 20% of HEART courses are focused on hospitality. The Cardiff Institute Workforce College, in conjunction with the Cardiff Hotel and Spa in Runaway Bay in St. Ann parish, serves as a full-time training hotel for about 3,000 students annually. The Institute partners with the Culinary Institute of America to provide highly subsidized training for those working as executive or master chefs. A manager in the tourism industry in Kingston noted that many of their staff come from HEART programs, as "the quality of services increases significantly with those with some amount of previous training" in terms of attitude, understanding expectations, and the ability to work the long hours demanded in the 24/7 industry.

However, several actors in the industry complained of a shortage of trained chefs in the labor market, particularly on the executive and master chef level, along with those considered commercial chefs. Much of this challenge is due to the fact that trained chefs, particularly those with the most talent, leave Jamaica for opportunities abroad. "Chefs are prepared for the Jamaican market, but international opportunities and cruise ships snap people up, because no matter how many people we train, people just leave the country," stated one actor. Other times, chefs are "poached" by other hotels and restaurants, and chefs will leave when there is an opportunity for higher salary. This practice gives more power to the international hotels and resorts to retain talent in the industry at large.

In the kitchen, the executive chef is largely responsible for ensuring adequate staffing needs; monitoring health, safety, and sanitation procedures; teaching cooking techniques to other staff members; and coaching/mentoring chefs at all levels. This position requires a great deal of both technical and soft skills to create an effective work environment in a high-paced, stressful, and competitive field. As one manager emphasized, "it takes ingenuity to know how to pull off both a big event and everyday operations. The kitchen must be bullet proof at all times in order to keep a good reputation in the industry."⁵³ Others in the industry noted the challenges in kitchen staff in terms of soft, or socio-emotional skills. Because many of those who participate in HEART training programs start at the age of 17, many must "unlearn" social behaviors, particularly wait staff that interact with guests. While Jamaicans are characterized as "naturally bold" according to one HR manager, "social graces," attention to detail, and customer service skills often need to be reinforced for those working on the floor.

Health and Wellness

Health and wellness tourism is a natural fit for Jamaica's many resort-going tourists and is comprised of various segments that contribute to its success. A key milestone in the segment's timeline has come during the past several years when the Jamaican Spa Association (JSA) and Jamaica Promotions Corporation (JAMPRO) set international standards.⁵⁴ With this standardization, many hotels such as the Cardiff Institute have begun to add spa services to their gamut of activities for guests. However, while the Cardiff Institute plans to begin training in this field in the near future, formal training in this sector has been limited, and is generally undertaken by internal training mechanisms in specific massage therapies at spas like the Half Moon Resort in Montego Bay.⁵⁵ An actor

⁵³ See Appendix III for full list of skills.

⁵⁴ JAMPRO. "Jamaica Spa Association Must Meet International Standards." May 22, 2015. Accessed December 19, 2016. <http://www.jamaicatradeandinvest.org/content/jamaica-spa-association-must-meet-international-standards>.

⁵⁵ JAMPRO. "Investment Opportunities." 2015. Accessed December 19, 2016. <http://www.jamaicatradeandinvest.org/sites/default/files/02%20-%20Investment%20Opportunities.pdf>.

in Kingston working in various spaces in the tourism and creative industries noted that “people are ‘ripe and ready’ for workforce development.”

Secondly, with the increase in spa facilities comes the need for aromatherapy oils, essential oils, and natural lotions and soaps. A government research organization stated that they have seen research, development, and new products in this field in scents such as ginger, peppermint, and lemongrass coming out in recent years as they exist on the island. However, consistent production is challenging due to shortages in the local market of certain input supplies, and the high cost of importing from abroad constrains artisans. Artisan groups such as those in Treasure Beach, St. Catherine, are therefore only able to produce small amounts of products, limiting their profits and their ability to expand their product lines and markets. A bank lender who focuses on micro, small, and medium enterprise (MSME) loans stated that even those who can produce small quantities of goods and generate small profits struggle as they cannot afford to wait for longer-term economic gains. Additionally, for artisans who are looking to export to market their goods, some are limited in terms of adequate storage facilities and uninterrupted energy supplies, as proper storage ensures quality, and certain ingredients have a limited shelf life. Even with the proper facilities, without the guarantee of energy to supply the necessary temperature, many hesitate to make this investment in time, energy, and resources.

Research organizations that contribute to product development and marketing are also limited in similar ways due to a lack of funding, limited infrastructure for research, and a lack of access to certain chemicals and testing materials. However, workshop trainings and events that one research company has held in spa and aromatherapy products have shown that there is an interest from artisans to do more in this space. This increased capacity would require not only access to facilities and technical assistance for research, but also training in marketing, business administration, and sales techniques. In terms of socio-emotional skills, those moving into this space require strong oral and written communication skills, as well as creativity and a desire to learn.

CHALLENGES

While Jamaica may have the potential to become a “logistics hub” for the Caribbean due to its strategic location between North America, South America, and the Panama Canal, internal logistics challenges will hinder its success. “The hub is more than a shipping port, but needs to include rail and road transportation, security, ... technology, infrastructure, etc. All of this is part of what makes logistics work. To make the hub work, it has to become a “center of activity” and involves different networks and supply chains,” suggested one logistics expert. As a result, for purposes of this analysis, we outline key logistics challenges—most of them internal—that impede growth in each of the sectors studied here (tourism, BPO, creative industries, and agribusiness).

“Logistics is about getting the right products, at the right place, at the right time,” a 2013 analysis of logistics in Latin America and the Caribbean suggested.⁵⁶ These parameters are a challenge for farmers in rural areas where roads are not connected to major highways, creating delays in transporting goods to market or to the port for export, thus affecting quality and pricing. One actor attributed the lack of proper and safe roads to political corruption on the municipal and parish level, explaining the investment in local roads and water systems. The limited quality of local goods is attributed to limited water sources and irrigation systems, which impede farmers from selling consistently to restaurants and hotels, forcing those in the tourism industry to look to external markets for basic products.

⁵⁶ American Association of Port Authorities (AAPA). “Infrastructure, Sustainability, and Logistics Challenges in Latin America and the Caribbean.” 2013. Accessed December 28, 2016. <http://aapa.files.cms-plus.com/SeminarPresentations/2013Seminars/13LatinCaribbeanEMC/Edwards,%20Joanne.pdf>.

While much is computerized, logistics needs people who are smart enough to understand how to interact with the computer, not just press a button.

- Logistics Expert, Kingston

Moreover, farmers do not have adequate storage facilities to keep harvested produce fresh before it can be sold to local markets, export markets, or local manufacturers to be used for food processing, and therefore waste much of what is grown. This is, in part, due to the limitation of facilities at distribution centers and the importance of understanding how goods are moved and when. A logistics expert in Kingston stated that:

“[C]omputers run most systems; you can load the vehicle on the system; know where weight should go onto the front vs. the back of the truck based on road and elevation; how to build a route around these challenges, etc. They need to understand procurement. Distributors and ports often end up with too much or too little and keeping consistent supplies of a particular good can be challenging. Part of this is understanding things like weather patterns, how to prepare for monsoon or hurricane season in Jamaica...”

These limitations impact the ability of local food producers to provide the tourism industry with a consistent supply of high-quality goods while minimizing waste.

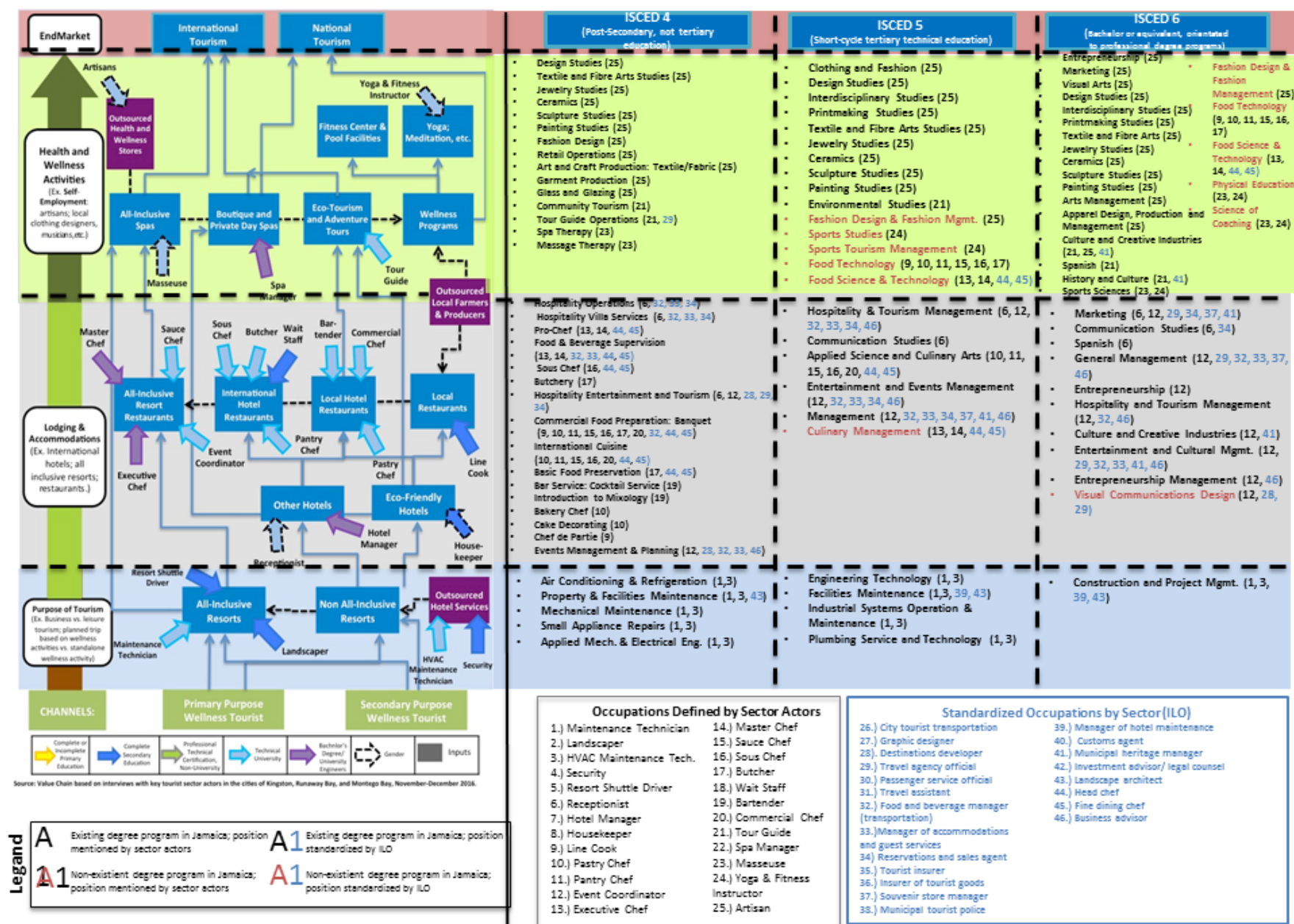
EDUCATION AND TRAINING PROGRAMS

While many actors in the tourism industry agreed that the industry was well served by HEART Trust/NTA, University of the West Indies (UWI), and University of Technology (UTECH) programs, gaps in knowledge between programs and in the specializations that these institutions offer prevent Jamaica from being competitive as a tourism destination in the Caribbean region.

In order to understand these gaps in knowledge and educational opportunities, and the effect on productivity and quality in the tourism industry in Jamaica, the below parallel diagram has been developed. The diagram in Figure 17, building off of the value chain map, can be used as a bridge between technical occupations considered by sector actors as contributing a particular value in the service industry (see value chain, left) and an understanding of the current offering (and lack thereof) of technical programs in Jamaica (see adjoined parallel diagram, right). Gathering and analyzing information in this format explains where universities and technical institutions currently prioritize their educational offerings and, as a result, how technical positions function within the limitations of the private sector.

Figure 17. Health and Wellness Tourism Parallel Diagram

Position, Occupation, and Education Level in the Health and Wellness Tourism Sector vs. Existing/Non-Existent Educational Programs in Jamaica



Specifically, the diagram illustrates the following:

- A. Positions, Occupations, and Educational Levels in the Health and Wellness Tourism Value Chain vs. Existing/Nonexistent Degree Programs in Jamaica:** Aligning the value chain by industry function with the accompanying parallel diagram allows for an understanding of how demand for current (existing) and potential (non-existent in Jamaica) technical positions are matched to the supply of educational programming. This diagram is intended to create a dialogue between universities and the private sector. The black lettering and corresponding numbers in the parallel diagram indicate existing technical programs and corresponding positions in the value chain. It is important to note here that due to the wide offering of programs for all positions within the value chain (technical and non-technical), only those considered by actors to require technical education are highlighted within the parallel diagram. While this may limit understanding of demand for non-technical positions, it allows us to better highlight key technical education pathways for the needs of the Program. A full list of programs for all occupations can be found in Annex D. The educational programs in red lettering are offered in Trinidad and Tobago—one of Jamaica's largest competitors across several of the industries selected, with similar socioeconomic conditions—but not offered in Jamaica. These programs might add competitive value to the tourism industry if considered in the Jamaican context.
- B. Occupations Defined by Sector Actors:** These are the existing technical positions identified by sector actors during interviews and considered to add value and quality to the tourism industry.
- C. Standardized Occupations by Sector (ILO)⁵⁷:** The addition of these standardized occupations provides an understanding of international standards for technical functions within a given sector. These positions were not specifically mentioned by interviewed sector actors—because the tourism industry in Jamaica either functions without the named position or the functions exist as part of the responsibilities of another position based on the size and capacity of a given business. However, sector actors may lose a certain amount of quality, efficiency, or expertise by not employing a certain technical position, and through an international understanding of technical positions in a given sector, actors can compare and consider the value added of new or updated technical occupations to meet the needs of an industry. This added value may include a specific focus on technology, customer service, language and cultural understanding, thus increasing productivity and competitiveness in the region.

This analysis reveals that there may be an additional need to 1) supplement educational offerings in fashion design and fashion management for artisans in the tourism industry; 2) create a sports studies, physical education, science of coaching, or sports tourism management program for fitness and wellness instructors; and 3) supplement culinary courses with a greater understanding of food science and technology. These types of programs and the corresponding skills and knowledge are those that actors identified as future needs, meaning that the industry knows where it is headed, but has not developed the curricula and training to be competitive in these areas.

⁵⁷ International Labour Organization. <http://www.ilo.org/public/english/bureau/stat/isco/>.

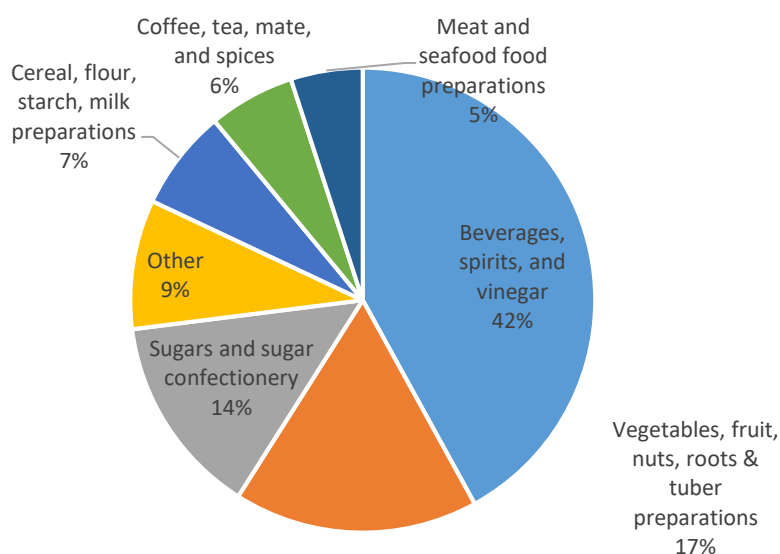
AGRO-PROCESSING

Jamaica's agro-processing sector bridges agriculture and manufacturing, and is capitalizing on the growth in global demand for processed foods, driving economic and employment opportunities in the country.

The Jamaican agricultural sector, which produces traditional staples like sugar, bananas, cocoa, and coffee, represented 6.8% of GDP in 2012.⁵⁸ While production of traditional export crops increased 34.4% from 2013–2014,⁵⁹ shocks due to weather and climate change make the sector's returns inconsistent. Further, changes in demand and trade laws have made the global market increasingly competitive for Jamaica's commodity products.

In contrast, in the last decade, Jamaica's agro-processing sector has become an increasingly important contributor to the country's economic performance and employment. The sector has grown in strength alongside global demand for processed foods and numerous other trends in the global market.⁶⁰ For Jamaica, these products include spices and rubs, sauces, processed fruits and vegetables, and beverages such as coffee, juice, and alcohols.

Figure 18. Jamaica's Agro-processing/Agribusiness Exports, 2013



Source: Jamaica's National Export Strategy 2015–2019

⁵⁸ JAMPRO Trade and Investment Jamaica. "Agri Business Sector Profile." 2017. <http://www.jamaicatradeandinvest.org/investment/sectors/agriculture/sector-profile>

⁵⁹ Planning Institute of Jamaica. "Medium Term Socio-Economic Policy Framework 2015–2018: Achieving Inclusive Growth and Sustainable Development." Government of Jamaica, National Development Plan Vision 2030 Jamaica. 2015.

⁶⁰ Ministry of Industry, Investment and Commerce. "National Export Strategy." Section on Agro-processing. September 2009. Accessed June 7, 2017. http://www.jamaicatradeandinvest.org/nes/documents/export_strategy.pdf

Current trends indicate that by 2050, global caloric demand will have grown by 70%.⁶¹ Consumption trends have shifted from western countries like the United States and United Kingdom—on which Jamaica has been largely dependent—to eastern nations like China, and the rapid advance of communications technology has transformed how global consumers access information about unique foods and dietary trends that often feature niche food products. These trends have not gone unnoticed in Jamaica; agro-processing has been identified as a priority sector in the country's 2015–2019 National Export Strategy (NES) and aligned under a subsector of agriculture in Jamaica's Vision 2030.

Jamaica's efforts to develop its agro-processing sector have met with some success, though the country faces key challenges. Certain subsectors of Jamaican agro-processing are well placed to benefit from increasing global demand. Illustrating this point, in Figure 12, vegetables are already seen as a 'cash cow' segment—but although stable for the past 8 years, the segment is small in volume, and could sink towards challenges if not properly supported. In contrast, other agro-processing segments—coffee and spices, beverages, processed vegetables and fruits—are all located in the 'opportunities' quadrant, indicating that with a little support, they may become even greater drivers of economic growth and job creation. Already this can be seen in the fact that employment in the sector has more than doubled in six years, as companies in the industry have grown.⁶²

Another strength, identified by Jamaica's NES, is that agro-processing is somewhat geographically agnostic, allowing the industry to develop not only in urban hubs but also to "promote decentralized growth and generate non-farm activities in rural areas such as handling, packaging, processing, transporting, and marketing of food and agricultural products, particularly in cottage industries."⁶³ This means there is a great breadth of opportunities for agro-processing hubs to develop throughout the country.

As shown in the value chain diagram (Figure 19. Agro-Processing Value Chain with Workforce Overlay) we have identified three main types of actors in the agro-food industry:

- A. Subsistence farmers, who are generally informal (not registered), and often illiterate;
- B. Non-subsistence producers focused mainly on the domestic market, who operate in the formal sector; and
- C. Export-oriented farmers and producers, who are by necessity formal sector entities with the capacity to obtain the necessary export certifications.

These three channels each comprise a unique set of actors, each with different goals and degrees of integration in the market system. Each also possesses distinct educational needs, though there are areas of overlap given the broad reaching nature of some of the challenges they face. Within and across these three, the difference in standards in terms of product quality is significant due to varying levels of access to finance and marketing know-how between the domestic farmers and the export-oriented farmers. Fortunately, there is a very helpful 'middle step' available in Jamaica, in that hotels are such a significant proportion of demand that they actually constitute a 4th category, which is in essence the higher end of the middle, domestic farmer category. A farmer or food processor who can successfully meet the standards of three and four-star hotels is effectively contributing to import substitution. And the scope for such import substitution is enormous: the Jamaica Tourism Linkages Council estimates that 3- and 4-star hotels in Jamaica import roughly 85% of their food, while similar quality hotels in the Dominican Republic only import 15% of their food. Thus, successfully selling one's product to higher end

⁶¹ Ministry of Industry, Investment and Commerce. "Jamaica's National Export Strategy 2015–2019." August 2015. 66.

⁶² Employment rose from 11,000 jobs in 2007 to 26,000 jobs in 2012. "Manufacturing: Agro-processing and Furniture Making." HEART Trust - Labor Market Research and Intelligence Department. 2014.

⁶³ "Jamaica's National Export Strategy 2015–2019." August 2015. 61.

Jamaican hotels is an intermediate step to exportation. This also saves foreign exchange as much as direct exports.

Jamaica recognizes the importance of a skilled workforce in meeting the aim of growing the agro-processing sector, yet faces skills challenges it must overcome if the sector is to continue to grow. The latest National Export Strategy notes, “if the new opportunities for development are to be seized...it is the human value added that creates competitive advantage.” While Jamaica has skilled workers in agriculture and manufacturing, specific skills that support processing are missing. In one survey, out of 26,000 direct and indirect agro-processing workers, representing 89.3% of those employed in the industry in Jamaica, 14,000 workers were reported to be untrained.⁶⁴ New technologies and processing approaches have also increased the demand for certain skills and led to positions being phased out. Finally, Jamaican agro-processors are struggling to meet the quality standards set by international markets and ensure companies are certified to these standards. Without them, Jamaica’s products are not able to reach the quality demanded in a growing number of international markets.

KEY POSITIONS AND SKILLS NEEDS

Per numerous actors in the Jamaican agro-processing sector, employee skills are an important piece for supporting the growth of the sector, but it is complicated by a raft of issues that affect how individuals are able to find employment. The complexity of these challenges creates a target-rich environment in which to provide support, yet also complicates the situation as the interconnectivity of the different actors and their need for skills and abilities means that addressing these challenges will require a multi-pronged approach.

In the agro-food processing industry, employers report that many training institutions are inadequate for creating well-rounded students—that is, many students receive trainings that give them a skill in only one area, leaving the employer to provide additional necessary trainings internally. As a result, employers select students based on one general skill, and train from there. One employer reported, for example, that engineers are needed for their technical mechanical knowledge, but lack any knowledge relevant to manufacturing in general or applied concepts like lean manufacturing. In another instance, an employer is paying for a production supervisor with an engineering degree to go back and get an MBA to develop more business-oriented skills.

For lower-level employees, such as operators in pre-processing, labeling and packaging, and warehousing, employers report they’re lucky if jobseekers have completed high school. One senior executive noted that many applicants are illiterate because high schools in Jamaica allow students to graduate having completed, but not passed, their courses. This low standard is extremely problematic as basic factory signs about operation and safety require the ability to read. In addition, many of the internal trainings, or external certifications for employee ability, require literacy. Employers report being ill-equipped to take on the role of teaching this basic skill, though they do work with trainers or certain providers to allow students, where possible, to take tests orally. One employer gave the example of needing to ensure a certain percentage of employees had first aid training. However, of the 50 or so employees that could be considered for the role of workshop medic, only 12 had the adequate level of literacy to study the first aid literature to take and pass the exam.

Food safety is a key component of the agro-processing industry as it protects consumers and allows processing companies, when officially certified, to access international markets—such as the United States and European Union—with higher food safety standards. While food safety skills are integrated at every stage of food processing, the overall training environment is inadequate to meet the demand for this set of skills, employers

⁶⁴ These included Butchers, Fishmongers, Truck Drivers, Hand Packers, and other Manufacturing Labourers. “Manufacturing: Agro-processing and Furniture Making.” HEART Trust – Labor Market Research and Intelligence Department. 2014.

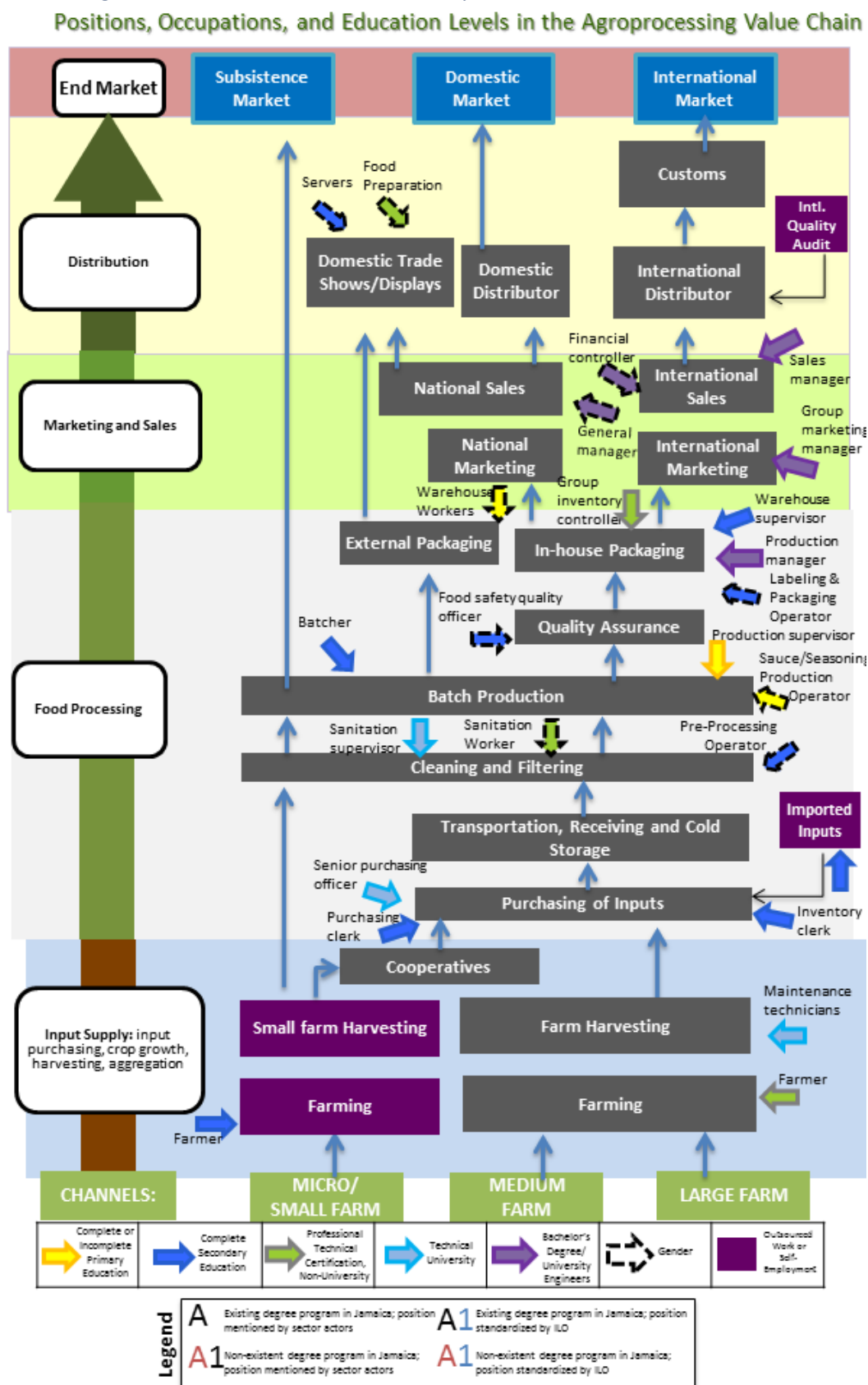
report. The Ministry of Health does offer a food safety training that consists of a one hour video, and issues a food handler's permit, which requires a test to be taken every year, regardless of level of experience.

As employers must provide this training internally to have appropriately qualified staff, retaining talent becomes particularly important. One employer noted that employee turnover in agro-processing for sauces and rubs was only 5% annually, but that poaching of their skilled staff was a risk. As a result, more senior roles are often filled by promoting from within the company. Employees who do start out with an adequate level of basic education can rise to upper management positions in the company.

The roles that are more frequently hired from outside are accounting and back office roles and lab technicians. These specialized roles require a higher level of technical ability, but not necessarily a degree specific to the agro-processing industry. For example, one senior lab technician noted she received a master's degree in bio-engineering rather than a degree specialized in food science as it gave her the skills for her current role, but was not so specialized as to restrict her job opportunities.

Senior leaders of companies in the agro-food processing sector also said that they themselves lack skills that could help improve their companies and drive growth in the sector. These skills include proficiency in business process, marketing, and exporting to markets like the United States. While these leaders noted they had overcome these challenges through experimentation, failure, adaptation, and perseverance, future industry leaders, youth who are in school today could greatly benefit from learning these skills as they start out.

Figure 19. Agro-Processing Value Chain with Workforce Overlay



CHALLENGES

In the agro-processing and horticulture sectors, the challenges are inter-woven and often self-reinforcing.

A central challenge noted by almost all actors across both industries is the perception of both youth and adults of agriculture as a shameful, boring, un-innovative, or stigmatizing industry. There is a wide perception of farmers as ‘small old men with machetes,’ which is borne out by demographic statistics. According to the Rural Agricultural Development Authority (RADA), on average, farmers are in their 60s, and only a small portion of farmers are between 16 and 25 years of age. The perception amongst young people is that farming is only an option if you’ve failed at other professions. This challenge is multiplied by parents who are themselves farmers, who accept this perception, and exert all their influence to ensure their children go into non-agricultural fields, such as law or medicine.

For many who go into agriculture and horticulture, it is often by default, with little to no effort exerted on skill building, improving practices, or innovation. As one producer who relies on numerous local farmers stated, “farming is casual—farmers just throw seeds into the ground, and that’s it.” The result is that crops can be poorly managed, grown inefficiently, or grown in non-sustainable ways that strip the soil of nutrients or damage the plant itself, making future crops untenable. Farmers who lack literacy skills, or systems to manage their crop development, can prove problematic for the downstream producers reliant on crops.

As global standards for food traceability have grown stricter, producers and farmers are required to keep closer track of sources of a crop, and their planting, fertilizing, and pesticide cycles. This issue of traceability must be detailed at the processing plant level and will soon be pushed to farmers as well. One producer has partially overcome this challenge by keeping the records for farmers on their plant’s premises and requires them to fill the documents out when they drop their crop off. However, when the updated FDA and USDA rules come online in the next year or two, and farmers themselves will be required to keep detailed written documentation of their planting practices, many farmers will be frozen out of international markets. In turn, this will further constrain how productive agro-food processing plants can be, limited by a lack of key agricultural inputs.

In addition to being perceived as a backwards or stigmatizing industry, Jamaica’s agriculture and agro-food production is also one regulated by existing institutional practices, and thus is slow to respond to market demand, particularly for locally grown products that would free the sector from import dependence. As mentioned above, the Dominican Republic imports far less of the food products used by its hotels than Jamaica. In addition to challenges noted above relating to product quality and farmer ability, training institutions and government are slow to adapt to the rise of agricultural goods that have a potential to be lucrative or valuable to agro-food production. While the country has been able to increase the production of goods like Irish potatoes that used to be imported, many other products which could be grown in Jamaica, such as mushrooms or strawberries, are also in high demand and are currently being imported. Farmers who are experimenting with these new products need additional institutional support, yet receive none from existing training institutions. In fact, many institutions rely on these first movers to build their own knowledge about the skills and techniques needed to grow these new high-value crops.

Coordination problems between government, farmers, and the private sector also are challenges. By constraining or regulating the export of certain crops, the government places constraints or reverse incentives on the production and use of a product. For example, key inputs to certain sauces and rubs, such as pimento berries, are almost entirely exported by Jamaica’s government. As a result, agro-food processors must rely on importing pimento berries from other countries, like Mexico, increasing their cost. Another example is the tight control of government over coffee. While this ensures coffee is more expensive, it also ensures less effort is put into expanding Jamaica’s coffee industry and helping develop its productivity.

A central challenge of addressing youth skill levels is the combination of low literacy levels and fewer qualified teachers. Jamaica's literacy levels are the second lowest in the Caribbean, only higher than those of Haiti.⁶⁵ As noted above, employers report low literacy as extremely challenging, as they require employees have a basic literacy in order to build their skill levels. If an employee can't read, employers will struggle to train them and will find it nearly impossible to certify them in crucial skills relevant to their jobs. Low literacy and poor teaching skills create a vicious cycle. Students who graduate without literacy skills will struggle to help their children learn to read, increasing the likelihood that their children will grow up in a home with fewer opportunities. Teachers who graduate without passing their courses go on to teach lower quality courses affecting students throughout their careers.

Finally, small growers face a classic logistics conundrum. If each grower is producing a different quality product (e.g., some conventional, some premium, some gourmet, some organic, etc.), trucks collecting the produce have a choice between aggregating the output—therefore bringing the price down to the lowest common denominator—or hauling very small loads, the high cost of which will nullify much of the price differential from producing a premium product. Thus, the first step in addressing the logistics challenge is to find ways to convince farmers to agree on a niche and adopt the same standard to bring the cost of transportation down.

Jamaica's roads are notoriously poor, with high mountains and heavy rainfall contributing to deterioration of surfaces which causes delays and accidents and necessitates use of smaller vehicles, all of which contribute to higher costs per ton. A new highway from Kingston to Ocho Rios provides an improved option. If a higher quality truck network can be extended throughout the island, average transportation costs and travel times should fall.

Another challenge in Jamaica's logistics chain is exports by sea. For most shippers, the cost of delay in making a port call in Jamaica (with its older ports) cannot be justified by the value of additional cargo.

All of these challenges make air shipment the most attractive route for fresh goods. With the exception of bananas, for which reasonable tradeoffs have been found, only canned and otherwise shelf stable products go by sea.

EDUCATION AND TRAINING PROGRAMS

Educational institutions can play a key role in improving operations and opportunities for agro-food processing industries, however the complexity of challenges faced by the sectors will require them to undertake a multi-pronged approach.

Today, Jamaican firms rely on students that come from a range of institutions, from formal academic university programs, degree-granting technical programs, and short technical courses, to secondary and even primary programs that focus on agricultural capacity-building.

The primary tertiary programs for agriculture are Northern Caribbean University, University of Technology, and the College of Agriculture Science and Education (CASE). These institutions offer varying courses on agricultural practice and business, but are largely academic and theory-focused, as opposed to practicum-based. Community college programs include Knox Community College and Montego Bay Community College, located in Clarendon Parish and Saint James Parish respectively, both of which offer agriculture-focused programs. According to one representative of the Inter-American Institute for Cooperation on Agriculture (IICA), these programs are becoming more popular as a means of outreach to rural students interested in agriculture. Finally, the key technical and

⁶⁵ World Bank. "DataBank – World Development Indicators." Accessed on March 26, 2017.
<http://databank.worldbank.org/data/reports.aspx?source=2&series=SE.ADT.LITR.ZS&country=>

vocational program for agriculture and agribusiness is the Ebony Park HEART Academy in Clarendon, Jamaica. This program, according to its general director, takes a more practical learning approach, with 30% of students' time focused on theory and 70% on hands-on learning.

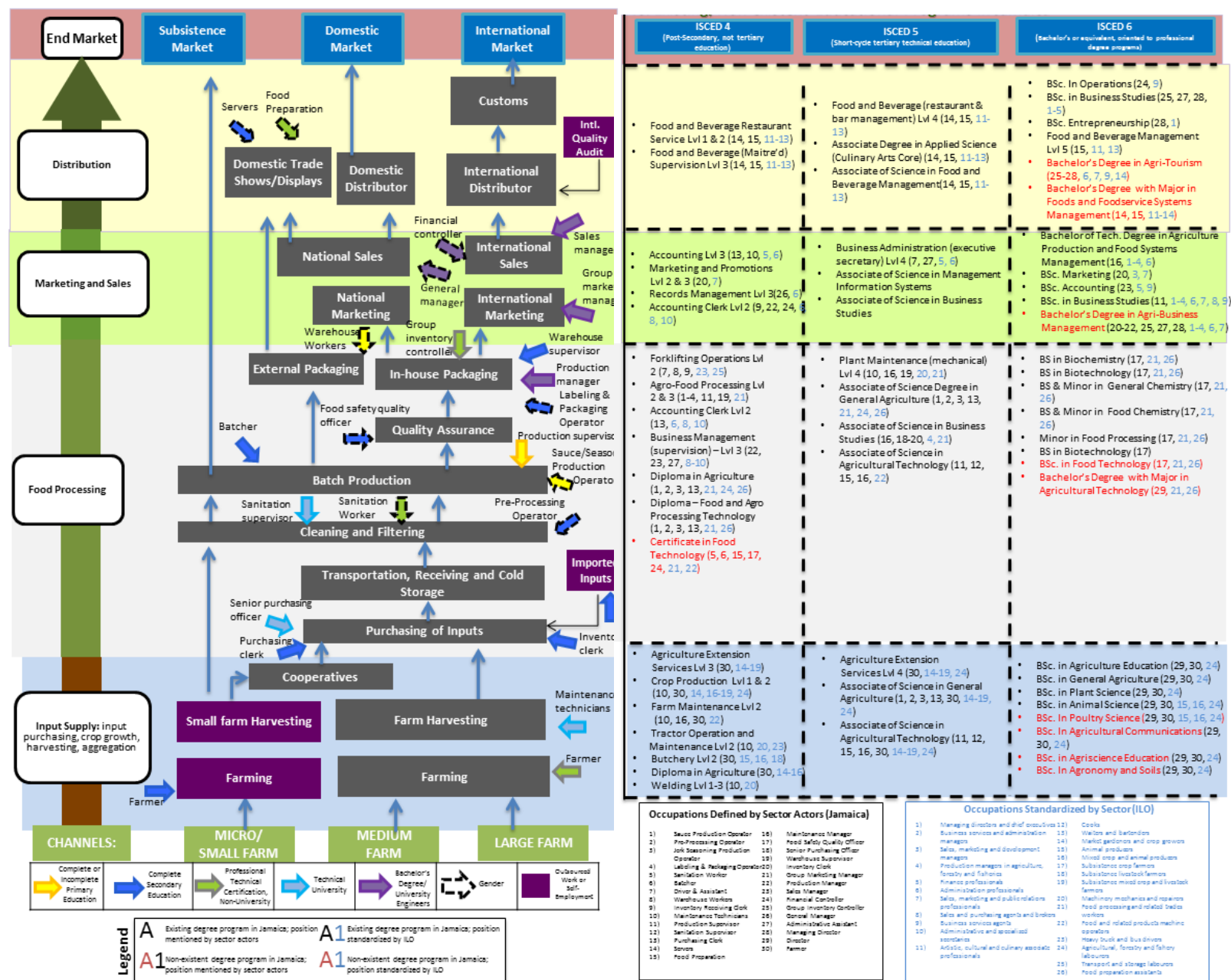
In addition, high school and non-degree learning opportunities are available. Two key agriculture-focused high schools are Elim and Knockalva Agricultural Schools, in Hannover Parish and Elim District, St. Elizabeth Parish, respectively. RADA uses field agents to improve farmer capacity, instructing from the field. The Ministry of Agriculture also oversees the 4-H Club, which has a broad reach amongst schools, providing after-school agricultural learning opportunities for youth. In some schools, the 4-H Club has implemented a school garden program for students to grow vegetables to supplement school lunches, selling the remainder in the community.

Of the tertiary and technical and vocational programs offered in Jamaica, two key areas were frequently cited as needing change. First, both actors in the agro-food value chain and participants in the Advance Launch event noted that institutions like Northern Caribbean University, University of Technology, and CASE, use a pedagogy that is top-down and focused on dictating information to students, killing students' passion for agriculture, emphasizing the static nature of the industry, and undermining innovation. This approach appears to extend beyond teaching, to the processes of curriculum design and course development. Both IICA and employers reported that academic programs are slow to adapt to the needs of the market or show a poor understanding of what expertise the market needs. In contrast, Ebony Park HEART has a department dedicated to building its understanding of market demand. The school's research arm creates updated reports on in-demand skills and job vacancies, informing which courses it should offer, expand, or cut.

Second, all farms highlighted that their student quality would improve with more hands-on training and fewer academic elements of agriculture. This is particularly true at CASE, where both first-person observation and accounts of farmers highlighted that teachers tended to 'not want to get their boots dirty.' Moreover, this problem was exacerbated upon graduation, as CASE alumni tend to go into RADA or return to CASE to find work teaching without first-hand experience working in the field of agriculture.

Every producer in the field highlighted the importance of applied learning. Several described the potential value that could come from hosting visiting graduate students in knowledge exchange programs with tertiary or TVET institutions, who could provide outsider perspective and valuable technical skills. Producers interviewed also stated unequivocally that there is great value in students learning from farmers and producers, themselves, through guided and structured internships or apprenticeships. It was noted that with a little support to the host farmer or producer, they could heavily increase a student's understanding that farming can be a modern innovative industry with numerous opportunities open to a new generation of farmers. This experience was noted as particularly important for agro-food producers that might be points of contact for cross-industry partnerships. For example, agro-food strategies could intersect with the tourism or health and wellness sectors. An actor proposed hosting a high-profile Jamaica-focused cooking week for international chefs and connecting the event with young food technology or cooking students to expose them to international cuisine.

Figure 20. Agro-Processing Parallel Diagram



CREATIVE INDUSTRIES

While data on the creative industries is limited, JAMPRO estimated in 2010 that the creative industries contributed 5% to GDP in Jamaica, an estimated \$15–20 million USD in revenues.⁶⁶ In 2011, JAMPRO's projects supported the creation of over 1,600 jobs for those across the creative industries.

The creative industries as a whole are deeply embedded in the cultural identity of Jamaicans, and as a result, have become a driving force of economic development by creating links between creative segments, and to external industries such as tourism and BPO. Many of these industries have been transformed in recent years with an increased emphasis and reliance on technologies. This is happening in part because of the instantaneous and global nature of consumption of many cultural goods.

The creative spirit alive in many Jamaicans has given the country's creative cluster a comparative advantage, as outlined below:

- A. **Jamaica as a Creative Hub:** Music is perhaps Jamaica's most famous export thanks to Jamaican artists such as kings of reggae Bob Marley, Peter Tosh, and Jimmy Cliff. As a result, Kingston was recognized in 2015 as a UNESCO World Heritage "Creative City."⁶⁷ One interviewee described the potential of the creative industries in Jamaica as a "sleeping giant that needs to be better incentivized and supported by the government," particularly for entrepreneurs.
- B. **Jamaica as a Tourist Hub:** "Music, people, food, Bob Marley: this is what drives people to Jamaica," expressed one interviewee in Kingston. Tourists who come to Jamaica for an "authentic experience" often consume traditional goods such as rice and peas, curry chicken, and jerk, and once they understand the value of the products, they generate new demand in external markets. This link is challenged by the power of resorts as many guests staying in all-inclusive resorts never leave their hotel compounds to see and taste this authenticity. Likewise, dance and music groups, choreographers, and event coordinators often perform in tourist areas and draw crowds of visitors. However, actors in the industry stated that with the growing number of investors from Latin America, China, and Russia, performers are often brought in from external countries to balance cultural offerings to international guests' tastes.
- C. **Jamaicans Abroad:** While Jamaica's diaspora in many ways has created a "brain drain" for talented and educated people in the national labor market, Jamaicans who do move abroad often begin to demand and sell Jamaican food, sauces, spices, artisan personal care products, etc. in foreign countries, thus opening new markets. This demand for traditional Jamaican flavors is mimicked in the creative industries—as popular forms of music and dance such as dancehall have become increasingly popular abroad—thus drawing more people to the island for an original experience. In the animation industry, however, talent often moves to places like South Korea, Canada, China, Japan, and the United States where there are more opportunities.
- D. **Language and Location:** Jamaica has an advantage as an English-speaking country in the same or nearby time zones as both North and South America. Ease of communication and proximity make

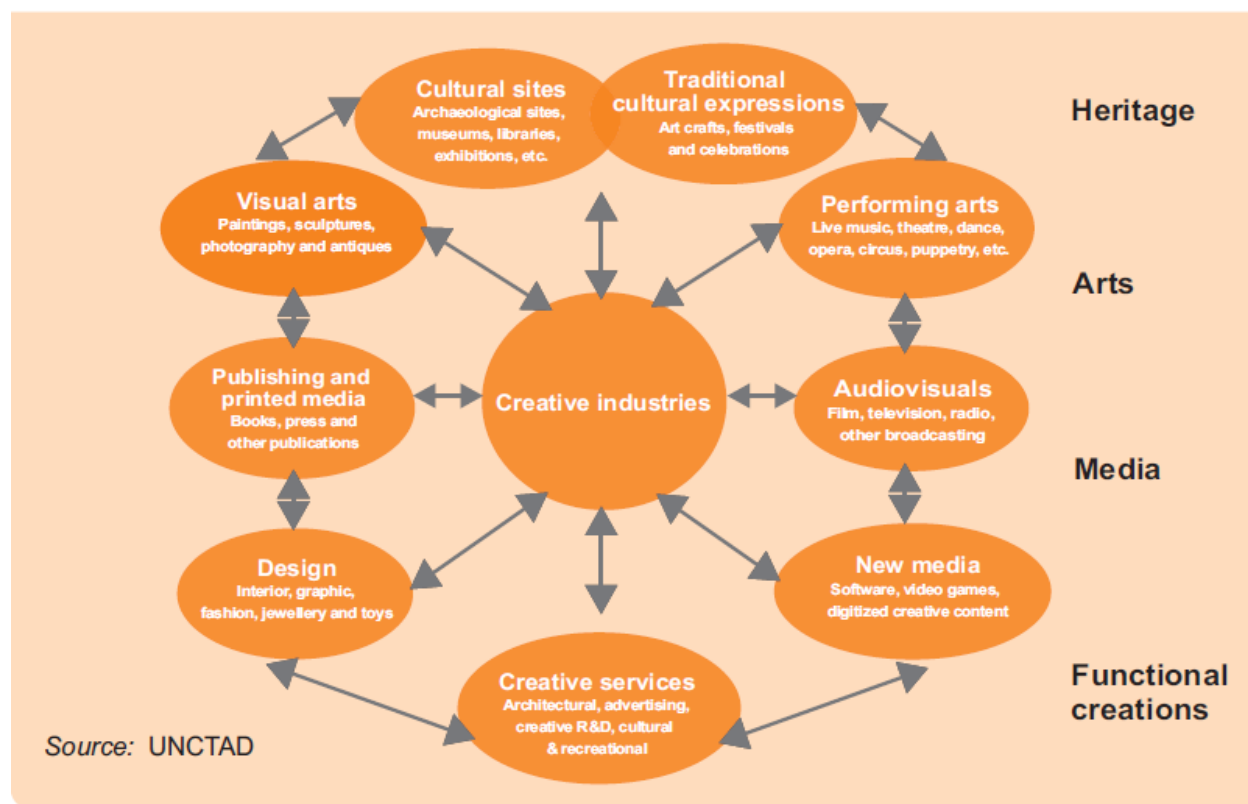
⁶⁶ JAMPRO. "Creative Industries Sector Profile." Accessed December 21, 2016. <http://www.jamaicatradeandinvest.org/investment/sectors/creative-industries/sector-profile>.

⁶⁷ UNESCO. "Kingston: About the Creative City." Creative Cities Network. Accessed December 16, 2016. <http://en.unesco.org/creative-cities/kingston>.

it easier for firms in the Western hemisphere looking to outsource animation to do business, as opposed to sending work to India or the Philippines, where culture, time, and language can create communication barriers. The proximity of Jamaica, the third-largest island in the Caribbean, to the United States has reinforced shared cultures between the two nations, particularly as the world becomes more global and tourists continue to arrive from Jamaica's northern neighbor.

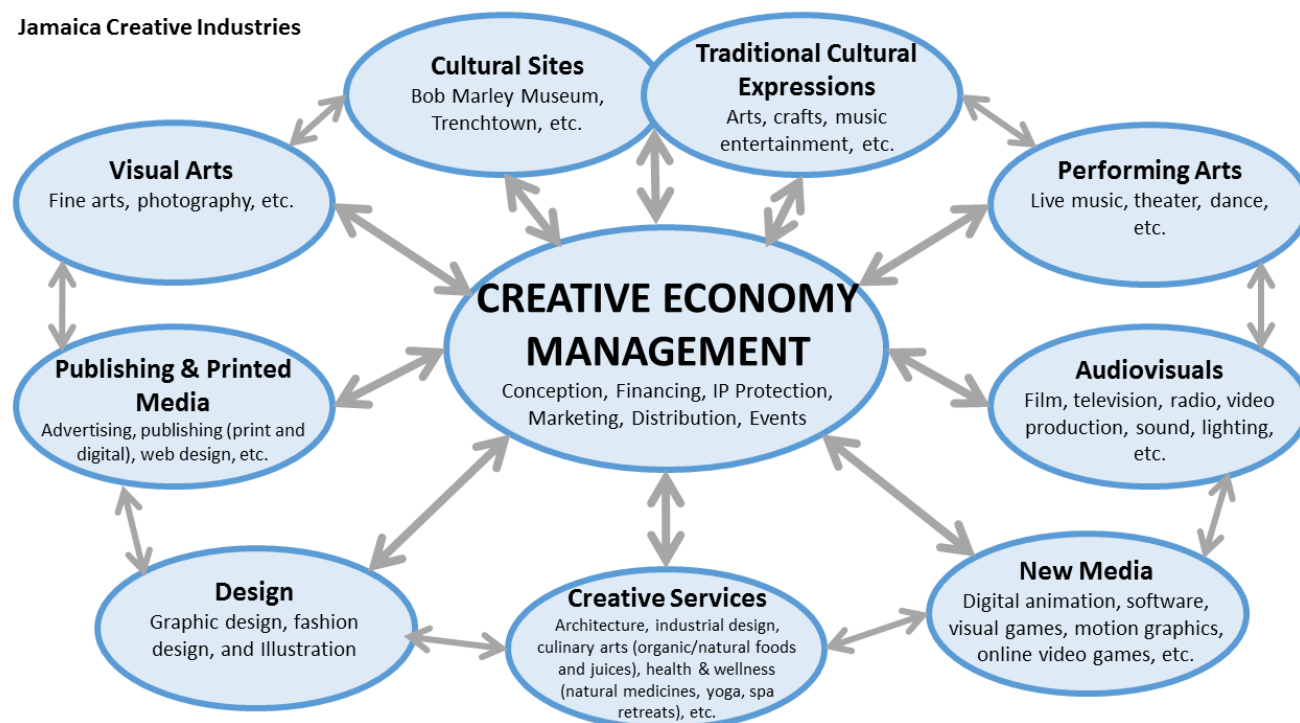
Animation is a particular subsector of the creative industries that this report focuses on due to its relatively rapid growth. This segment can best be understood as part of a cluster ecosystem as illustrated in the figures below. Figure 21 shows the concept of a creative industry ecosystem developed by the United Nations Conference on Trade and Development (UNCTAD), while Figure 22 presents the ecosystem adapted to the Jamaican context.

Figure 21. UNCTAD classification of creative industries



Much of the knowledge and skills in the creative industries are transferable, as they are related to technologies and skills associated with graphic design, marketing, advertising, and publishing. The below cluster illustrates animation's relationship to the BPO sector. Currently, the majority of employment potential in animation actually resides in business process outsourcing as a part of the production process. The challenges discussed later in this section—such as intellectual property issues—currently impede those in the sector from producing original content, limiting animation's potential to become an industry in its own right.

Figure 22. Jamaica Creative Industries Map



Source: FHI 360, adapted from UNCTAD

In 2013, the World Bank, the Caribbean Development Bank (CDB), JAMPRO, and the Canadian High Commission brought together more than 800 individuals from the animation industry in Jamaica and abroad for “Kingstown,” a two-day conference of industry leaders, universities, private studios, freelancers, and students. The aim of the conference was to draw attention to the potential that the organizers and sponsors of the event saw for Jamaica to become an animation outsourcing country, similar to how the animation industry has grown in the Philippines, India, and China.⁶⁸ Jamaica’s labor pool, filled with raw, creative talent, and growing business process outsourcing (BPO) giants responded enthusiastically, understanding that these skill-intensive offerings would increase revenues for BPO firms, and high-skilled jobs could increase salaries for Jamaica’s youth population. An expert in the animation industry noted that an entry level salary in animation outsourcing would be between \$500 and \$700 USD a month, where those working in lower-skilled call center jobs may earn half of that amount.

Since this event, training institutions and universities such as HEART Trust/NTA, Edna Manley College for the Visual and Performing Arts, University of Technology (UTECH), and community colleges, among others, have created more formal programs for those interested in growing in this space. Additionally, “Kingstown” introduced the Canadian animation software “Toonboom Animation” to the Jamaican market, providing training and making the software more available to a market where access was previously more limited. Leaders in the animation industry stated that the BPO/ animation outsourcing space was an “easier place to start the drive in the animation

⁶⁸ Tschang, Feichin, Ted, and Goldstein, Andrea. Production and Political Economy in the Animation Industry: Why Insourcing and Outsourcing Occur. 2004. DRUID Summer Conference, Elsinore, Denmark, June 14–16 2004. 1–21. Research Collection, Lee Kong Chian School of Business.

industry because of the barriers of intellectual property protections. Without these protections, a greater industry will be hindered to become a full animation country.”

It was from the launch of “Kingstoon” that the animation industry became a part of the greater “creative industry” in Jamaica. Jamaica’s Plan 2030 has defined creative industries as “the creation, production, and commercialization of contents which are intangible and cultural in nature.” These are typically protected by copyright, may take the form of goods or services, and include specific activities and trades such as film production, fashion design, visual arts, advertising, publishing, and animation.⁶⁹ Specifically for animation, it is important to note the breadth of activities and projects that require animation, including but not limited to:

- A. Computer animation
- B. Video games
- C. Music videos
- D. Commercials
- E. Mobile applications
- F. Military uses
- G. Mining & geology
- H. Educational materials
- I. Television, movies, and growing markets on platforms such as YouTube, Vimeo, Hulu, Netflix, etc.

National efforts in the animation space have contributed to the size of the global animation industry, estimated at \$222 billion USD in 2013. Major markets for studios and artists creating their own content include the United States, Canada, Japan, China, France, Britain, Korea, and Germany. Most segments in the animation industry are growing at a rate of 7% annually.⁷⁰

ANIMATION: KEY POSITIONS AND SKILLS NEEDS

Obtaining the necessary skills and knowledge in the animation sector is challenging due not only to the poor quality of teacher training, but also due to the cost and availability of quality hardware and software. Many of those who participate in a formal program do not have access to the technology necessary to practice once they finish the Program. Even for students in training programs, technology labs are not available around the clock due to the high cost of security, limiting the amount of time students can practice as they have to balance other professional and personal obligations. Moreover, many freelancers and smaller studios face a lack of access to credit from banks, preventing investment in necessary infrastructure. This is due in part to the difficulties of monetizing intellectual property in the creative industries.

Interviewees noted that programs within universities and training institutions are not long enough to master the full set of skills necessary to be successful in the animation industry. One interviewee working in the creative industries noted that “institutions need to be built for the future and very practical and entrepreneurial,” similar to the soft and technical skills demanded by the evolving industry. One animator suggested that, in order to achieve this within the constraints of a program, more focus should be placed on the use of software itself rather than the theories of animation to be able to master the technical skills required by a software program.

In addition to being entrepreneurial, interviewees stated that animators need a strong work ethic and communication skills. “Animation is flexible in terms of employment which can be helpful and can be harmful. For

⁶⁹ HEART Trust/NTA. “Creative Economy: Creative Industry Study 2013.” Accessed December 22, 2016. <http://lmip.heart-nta.org/Publications.aspx>.

⁷⁰ HEART Trust/NTA. “The Animation Industry: Sketching Out a Promising Future.” Kingston, Jamaica. March 2014. Accessed December 15, 2016. <http://lmip.heart-nta.org/Publications.aspx>.

example, if an animator has a problem completing a project and they keep it to themselves and hope no one notices instead of speaking openly about it to employers, this could harm the overall delivery of a finished product,” stressed one leader in the animation industry. Freelancers, in particular, have to have sharp communication skills, or they will not succeed. Those interviewed said that this is more of a problem for novice freelancers, as those who lack these skills will not be able to survive financially in the industry.

Additionally, animators noted the importance of being prompt and having an awareness of timeliness and delivery requirements while working on a project. This practice is important because animators do not work in isolation on projects, and one animator’s work will impact the content and value of the work of someone else who is responsible for a different stage in the animation process. Teamwork and collaboration here are key to produce quality work.

Table 5 highlights the technical skills and knowledge and soft skills described by actors. See Annex C for a full list of skills by sector and occupation.

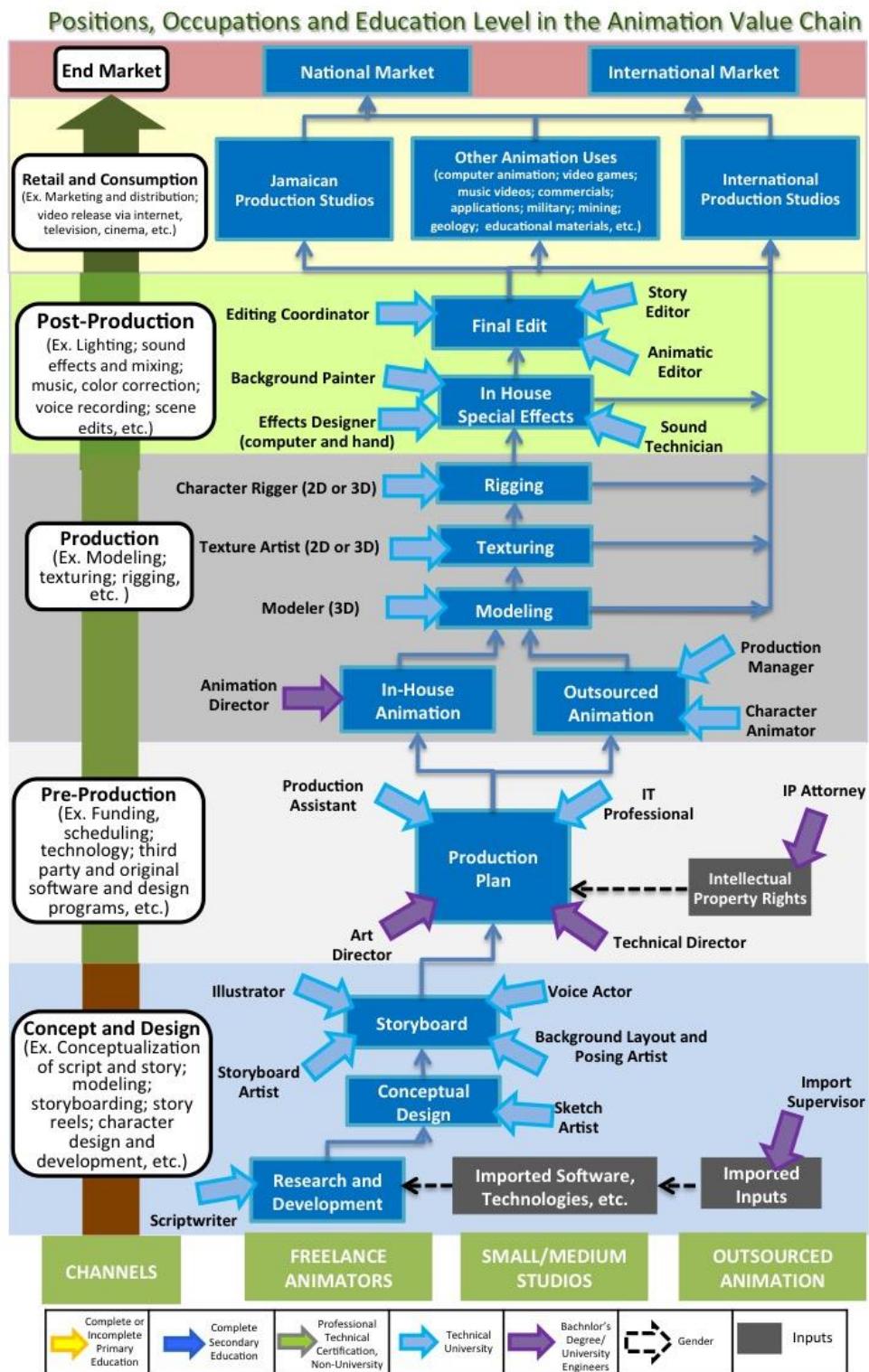
Table 5. Highlighted Technical and Soft Skills in the Animation Value Chain⁷¹

| Position | Technical Skills & Knowledge | Soft Skills |
|---------------------------|---|---|
| Production Manager | <ul style="list-style-type: none"> A. Management of timelines for production from start to finish B. Management of relationship between client and studio C. Management of human resources and expectations D. Understanding of the entire pre-production and production process E. Manage cost models, resources, and final product | <ul style="list-style-type: none"> A. Effective communication skills B. Problem solving C. Strong work ethic D. Punctual E. Ability to “play to team members’ strengths” |
| Modeler (2D or 3D) | <ul style="list-style-type: none"> A. Understanding of the entire pre-production and production process B. Strong drawing skills C. Understanding of anatomy D. | <ul style="list-style-type: none"> A. Collaborative B. Creative C. Strong work ethic D. Punctual E. Ability to work within a set timeline and deliver a product |
| Effects Designer | <ul style="list-style-type: none"> A. Understanding of timing, motion, space, scale B. Planning and executing of scenes C. Use of green screens and other appropriate tools and techniques | <ul style="list-style-type: none"> F. Attention to detail G. Ability to work independently and as part of a team |

In comparison to the other sectors analyzed in this assessment, women were not described as having a comparative advantage or participating at higher rates in any one occupation. This is due to the gender imbalance in the technologies field at large, and in the animation sector in particular. Figure 23 below shows the animation value chain with workforce overlay.

⁷¹ See Annex C: Skills by Sector for a complete review of technical and soft skills in the animation sector.

Figure 23. Animation Value Chain with Workforce Overlay



CHALLENGES

Despite Jamaica's unique creative environment, the country faces many challenges as it looks to grow the animation space, both within the industry and with policies and surrounding government structure. For example, several actors noted that since Kingstons in 2013, the government has had a tendency to push sectors like animation without fully understanding the infrastructure and systems necessary for the industry to thrive. As a result, the industry faces several challenges that will be important to overcome in order to move from a country of animation outsourcers to a country of original animators. These challenges are outlined below:

Intellectual Property

The predominant challenge in animation and the greater creative industries are constraints in intellectual property (IP) rights and protections. While many in the animation space want to move beyond outsourcing the production of other studios' ideas into creating their own added voice and value in the animation space, animators are limited in how and where they market original content based on IP protections. Without IP protections, industry interviewees noted that a lot of work is either exported or stolen from Jamaican artists (animators and those in other areas of the creative industries) because the government has not done enough to protect Jamaican artists. The lack of IP protections has an additional negative ramification in that it becomes difficult to monetize original content. Artists, without knowing the value of their own work, will undersell their work based on economic need. Others will leave the country for locations where they will be able to ensure the protection and value of their content.

"Jamaica is where I wanted to be, but growth in the industry is slow. The right thing to do is go away and help the country from abroad and come back eventually."

- Animator, Kingston

Further, the weak IP structure in the country does not encourage formality or registration with JAMPRO or the Ministry of Culture, Gender, Entertainment, and Sport. Registration with these entities is important for animators because JAMPRO can help animators bring in technologies from abroad if an individual is registered. However, many hesitate to register their work with the government because of a fear of formalization, extra taxation, etc. JAMPRO, however, asserted that these fears were unfounded, as the entity actually provides tax breaks for those working in the creative industries. This cycle of informality perpetuates the lack of information on the industry, and as a result, decreases potential domestic and foreign investment in animation and other creative industries.

Lack of Transparency

Currently, two of the four larger studios in Jamaica do production work for international giants in the United States, Canada, Caribbean, and Europe such as Disney, Nickelodeon, and Cartoon Network, among others. Employment in animation—and specifically for those who work in outsourcing production—is difficult to quantify as many who work in the sector are self-employed and informally work as freelancers. Several other actors attributed the lack of information about employment in animation to the lack of trust between the private sector and the government. "Studios are

"Studios are careful not to divulge their numbers to the government, when really this hinders their potential for growth. External investors won't sign big projects if they don't know the size and structure of the labor force."

– Animation Expert

careful not to divulge their numbers to the government, when really this hinders their potential for growth. External investors won't sign big projects if they don't know the size and structure of the labor force," one expert stated. As a result, the struggle that many studios face is finding the capital to sustain themselves and retain jobs. Several larger studios may have the infrastructure to have around 30 animators but maintain only twelve as full-time staff. "This is a chicken and egg problem where studios are stuck with a base amount of animators. They need greater

capital to sustain more animators over a longer period of time, but can't attain greater capital because they don't have the animators," suggested one animation expert. JAMPRO echoed this sentiment, saying that the government is not capturing the kind of labor force and project size data from studios that they need to draw attention to the animation space for increased international investment.

Teacher Training

Training formal animators in teaching methodology is a challenge that the industry at large has not managed to overcome. Several studios which operate largely based on internal training programs avoid this, as they have trained animators inside of their business to teach a limited number of students a certain skill or specific program. However, entities such as HEART Trust/NTA must cast a wide net in order to train larger numbers of students in animation. Many programs at the tertiary level—not exclusive to HEART Trust/NTA—instead use those with an IT background as teachers. Similarly, these individuals have also contributed to curriculum development without a formal understanding of the sector itself. As a result, one actor described this process as “students teaching students.” Programs in rural areas suffer more, as those trained in IT rotate through rural training facilities, spending a week in each place as a travelling teacher. Additionally, those who did participate in HEART and other programs as teachers noted the low pay associated with the position, emphasizing that they could not afford to take on a large role with little financial incentive.

Arts Management

Those working in the animation space doing studio work, outsourced work, or freelance work noted the lack of strong management to be able to navigate some of the aforementioned roadblocks in the sector. This has several facets:

- A. **Lack of entrepreneurial skills for freelancers:** There is a need for more entrepreneurial skills (e.g., networking, marketing, self-management) to be integrated into programs as animators often have to navigate between work in studios, supplementary freelance work, and space for professional development (e.g., software, new technology).
- B. **Lack of understanding between higher-level management and animators:** Production managers who monitor the timeline and deliverables of projects complained that higher management who tend to lack an animation background do not understand the time or resources necessary to take on a project. As a result, upper management will sign contracts without knowing how many animators will be working on the project, how long they will be working on a project, or whether they have the knowledge or expertise to do so. This lack of understanding can negatively affect the reputation of a studio. Because studios do not have the capacity to house large teams of full-time staff due to fluctuations in funding and projects, freelancers are often called upon to fill in some of these needs. Freelancers may not have the same level or quality of training that a project requires, thus affecting the productivity and the ability of studios to complete contracts and maintain a good reputation in the field. Inconsistency and lack of professional opportunities in Jamaica cause many to emigrate.
- C. **Arts management as a general need:** Actors and animators in the creative industries identified a general need for a more formalized arts management system (i.e., business management, accounting, social media and marketing, and understanding of IP and the benefits of formalization). Currently, those working in these spaces have little formal training and are often friends or relatives of artists or musicians. One government official commented, “hustling isn't enough. Students in arts programs need entrepreneurial and other skills, education,, because regardless of where they go, they will need certain skills to take them there.” Lack of formal

training in this area has led to an under-formalization of the industry, which in many instances may cause undue financial strains on artists and animators.

Logistics

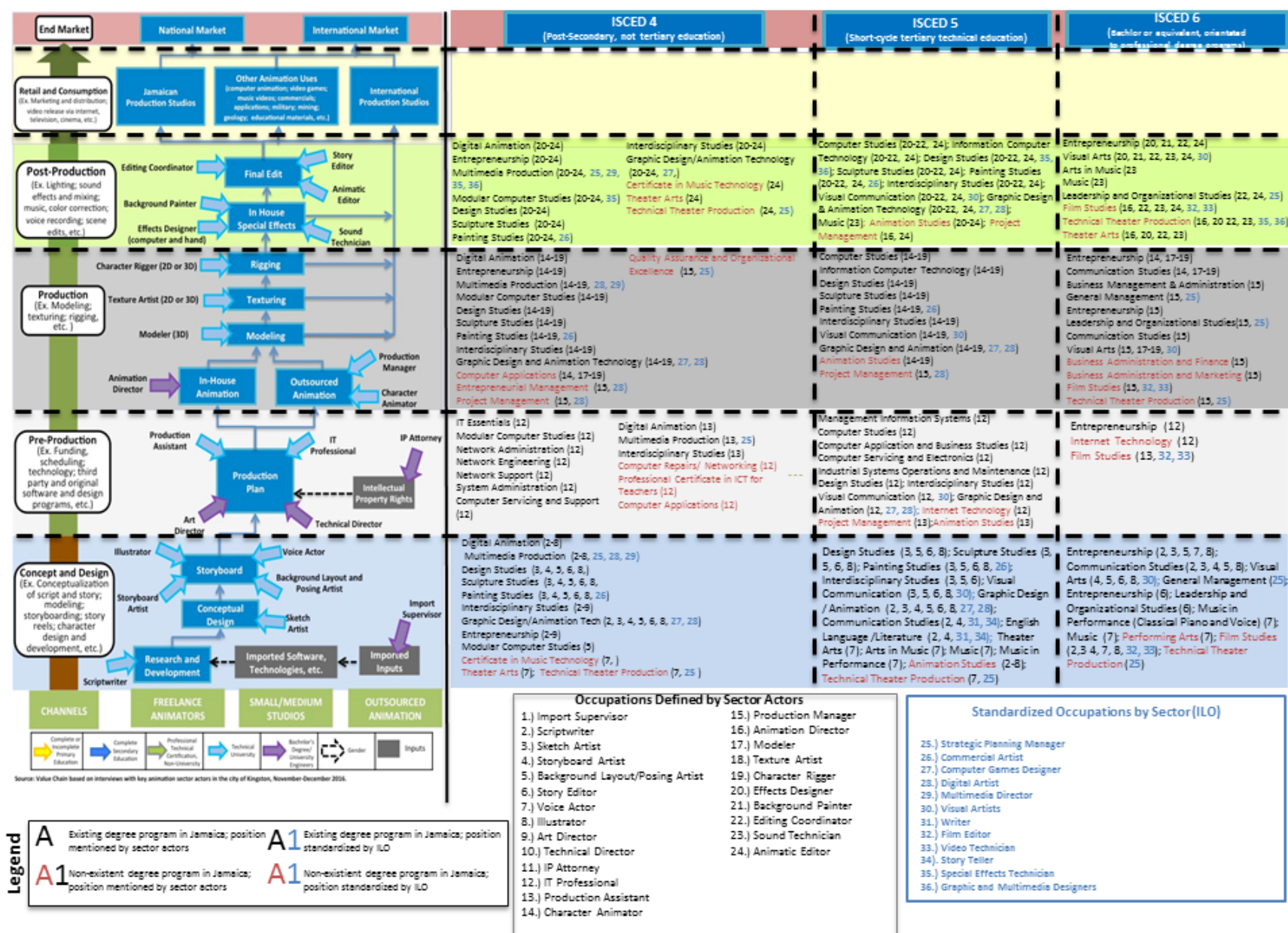
One large logistic concern in the area of animation is the inconsistency of tariffs applied to incoming goods and products at the port. Actors noted that port customs workers who do not understand the uses of various types of production technology such as drawing tablets will charge tariffs instead for flat screen televisions. While this does not happen consistently, and goods are often imported tax-free as they are production goods, freelancers and other small or medium-sized firms find the lack of consistency in import taxes a barrier to accessing this technology. Moreover, local distributors are carrying fewer high quality goods because of the cost. This forces freelance and self-employed animators to import goods themselves or go to external markets and carry technology back with them.

ANIMATION: EDUCATION AND TRAINING PROGRAMS

Currently, the qualified labor pool in this industry are individuals with four to six CSEC subjects (Caribbean Secondary Education Certificates), including language and math, and those who have completed levels one or two of HEART Trust/NTA's courses of study. Recently, BPO companies have been asked to participate and contribute to the curricula and training of such institutions such as HEART Trust/NTA program, as well as community colleges across the island. This has allowed firms to address skill constraints they see in job seekers and trainees, thus strengthening the relationship between the private sector and post-secondary and tertiary technical institutions.

Figure 24. Animation Value Chain Parallel Diagram

Position, Occupation, and Education Level in the Animation Sector vs. Existing/Non-Existent Educational Programs in Jamaica



CONCLUSIONS

Jamaica faces several challenges with respect to employment of young people. It is one of the slowest-growing developing countries in the world. The country is highly exposed to external shocks—as seen in the effects of the 2008–2009 global economic crisis—which stunted growth and erased recent gains in poverty reduction.

Employment is dominated by the services sector, while Jamaica's goods exports and partners are not very diversified. Women's labor force participation—although relatively high for the Caribbean—is low, and unemployment remains high, with women and youth considerably more likely to be unemployed than other groups.

Despite these challenges, Jamaica is well-placed to make progress in this area. Jamaica's low level of growth is due in part to low labor productivity, an issue that can be addressed in part through better human capital development. The country is at an intermediate stage of demographic transition, meaning that the birth rate has slowed. Educational attainment has risen in recent decades. Importantly, the government has committed to an ambitious plan to transform Jamaica into a developed country by 2030. Finally, several sectors and value chains—some small and emerging, some larger and more established—show promising potential to grow and provide good jobs for young Jamaicans. In this report, we have selected several of these promising sectors and analyzed the challenges that firms in these sectors face in finding the skilled workers that they need, as well as the opportunities that this demand presents for the tertiary technical education sector.

TOURISM

As visitors increasingly demand to see a more authentic side of Jamaica, emerging areas such as ecotourism, health and wellness tourism, sports tourism, farm tourism, and community tourism are becoming more important. As a result, there is a potential need for training for artisans who sell goods to tourists in areas such as fashion design and management, as well as for sports studies and sports tourism management to train health and wellness instructors and manage businesses. Meanwhile, restaurants are responding to the demand for innovative cuisine and healthier options, requiring skilled executive chefs and supporting staff with knowledge of food science and technology and more specialized training (e.g., sushi preparation and “food styling”). Chefs must have a mix of high-level technical, soft, and managerial skills in order to run a successful kitchen. Furthermore, a reported shortage of trained chefs is exacerbated by emigration. For kitchen staff, socio-emotional skills, attention to detail, and customer service skills are key.

Health and wellness tourism has also raised the demand for consistent supplies of quality products such as essential oils, lotions, and soaps, indirectly increasing the need for trained artisans to produce these goods, as well as for product research, marketing, business administration, and sales techniques.

AGRIBUSINESS

Agribusiness, and specifically the area of agro-processing, has potential to create job opportunities for Jamaica's youth, particularly if the broad challenges it faces can be overcome. Agriculture has always been a part of Jamaica's economic identity, and the country possesses the infrastructure and products to fill demand domestically, and meet a growing international demand for unique foreign foods. However, challenges related to low-quality instruction and scarcity of teachers in rural areas; a perception that agriculture-related activities are antiquated and require little skill; and a lack of key knowledge regarding how to innovate and develop market linkages, mean that the industry's potential is not being fully realized. Skills related to starting, building, and running a business and accessing the resources and knowledge to grow in domestic and international markets are lacking for many who want to enter the industry as well as existing entrepreneurs. For agro-processors that have already shown their market value and need to obtain or maintain international certification standards, basic literacy to overcome rural education gaps, and higher technical abilities—such as those required for quality

testing—are important. As a result, there is a potential need for upgrading technical tertiary programs in agricultural business, entrepreneurship, management, and communications and for establishing programs relating to food quality testing and food science.

CREATIVE INDUSTRIES

The animation subsector is one of the quickest-growing of Jamaica's creative industries, a cluster which is deeply embedded in the national identity. However, poor teacher training and lack of access to hardware and software hamper efforts to build knowledge and skills in animation. As individuals working in the sector are often freelancing, they must be entrepreneurial and have a strong work ethic and communications skills. However, teamwork skills are also key as animation work is largely collaborative. Overall in the sector, arts management skills are lacking, both for individuals and for those working within larger organizations. In addition to the programs mentioned as needed in the BPO sector, there is a potential need for tertiary level technical training programs in animation studies and technical theater production.

Highlighting these emerging or growth sectors can inform the Program, guide the selection of institutions, and help us to reach youth and guide them in career selection and areas of study, increasing our understanding of the specific functional and skills needs of businesses in these sectors in Jamaica. Although the sectors explored here appear to show potential economic growth, as the economy changes, investments materialize, and new information becomes available, the analysis will need to be updated. Furthermore, the assessment is far from exhaustive, as there are other promising value chains and sectors beyond the ones analyzed here.

We hope that this assessment will also serve to help technical training institutions and local stakeholders become familiar with value chain maps and learn how to develop and analyze them, further empowering them to build local capacity for analysis and action reaching 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.

Most importantly, in order for educational institutions to better address the needs of these businesses, they must talk to them—and in many sectors, this is not occurring in a systematic way. Of course, where they do exist, connections between academia and the private sector can always be strengthened. We hope that this assessment can provide a common starting point that all parties can use to improve the technical education system's ability to better respond and adapt to the needs of employers.

ANNEXES

ANNEX A. JAMAICA INTERVIEW GUIDE FOR SECTOR ACTORS

Value Chain and Skill Interview Guide

KEY: (D) Director ♦ (M) Manager ♦ (HRM) Human Resource Manager ♦ (E) Expert

A. Description of Business

1. Can you provide a brief description of your business, size of business, how many years in operation; where you operate in the country and/or internationally; how many people you employ, etc.? **(D)***
2. Looking at the sample value chain, where and how do you operate within the value chain? **(D)**

B. Principal Products:

1. What goods or services does your company produce and/or provide? **(D, M)**
2. Are your goods or services principally designed to serve the local market (on the parish level), national market, or export market? If export, please explain where and how a good is exported, what other actors are involved, etc. **(D)***
3. How do you market existing and new products (social media, direct sales to existing customers, other forms of advertising, etc.)? **(D)***

C. Structure of Value Chain:

1. Based on the size of your business, can you describe the production (or service) process from imported and input supplies to the time of delivery of the finished product or service to end market? **(D, M)**

Specifically,

1. What local input and/or imported supplies are necessary for production/to provide your service? **(D, M)**
2. How do you obtain these materials/goods? (A distributor, or direct sales, etc.)? **(D, M)**
3. Once producer obtains input/imported goods, what is the production process like? **(D, M)**
4. Are there intermediaries or cooperatives that manage production at more advanced stages of the value chain? **(D, M)**
5. Are there other important actors such as wholesale distributors, exporters, local retailers, etc. that you interact with based on the size and market of your production? (Ex. SME may be more likely to sell to local retailer, whereas a large business may focus more on export markets). **(D, M)**
6. Do you have any contracted workers that provide part time work, such as maintenance, cleaning, food services, etc., or are all your employees full time? **(D, M, HRM)**
7. Are there external service providers at any stage of the value chain that also provide an important service such as maintenance technicians, transportation and logistics services, etc.? At what stage of the process do they exist? **(D, M)**
8. What are the principal limitations that affect productivity in your business and throughout the value chain? This can include human capital (knowledge, technical and “soft” or socio-emotional skills, attitudes) of workers; cost of energy; business environment; lack of access to necessary or more advanced technology; accessibility of input goods/maintenance technicians, etc. **(D, M, E)**
 - a. Where are these limitations most pronounced and why? **(D, M, E)**
 - b. How are these limitations addressed by the firm and/or by the industry? Where are there possible solutions? **(D, M, E)**
9. Looking at the sample value chain and based on our conversation, does the flow of production,

actors included, and relationships among them as illustrated (show sample) make sense? Do you have additional suggestions that would help us better understand this sector's value chain? **D, M)**

D. Structure and Competencies of the Labor Force:

1. What are the critical positions within your business that guarantee success (of the production process/service delivery, if applicable)? **(D, M, HRM, E)**
2. Fill in chart answering the following questions:

- a. Are there competitive advantages of hiring employees with technical education? **(D, M, E)**
- b. What are the top competencies (knowledge, skills (socio-emotional or soft skills), attitudes) required for these positions in the value chain? **(M, HRM, E)**

| What is the name of the position? | Number of People Working in this position? | Where does the position function within the value chain? | What is the level of education required? (primary [complete or incomplete], secondary [complete or incomplete], technical certification/not university, technical professional/university [2–3 years], Bachelor's degree, Master's degree) | How many people working in these positions have a technical background? | Are women working in this position? |
|-----------------------------------|--|--|---|---|-------------------------------------|
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- c. What are the limitations of competencies that you see in employees that work in these positions, specifically those responsible for technical functions? **(M, HRM, E)**

| Name of Position | Knowledge | Skill | Attitude |
|------------------|-----------|-------|----------|
| | | | |
| | | | |
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| | | | |

E. Recruitment:

1. How do you manage the process of recruiting and hiring new employees? **(M, HRM)**
2. What obstacles do you encounter in the recruitment and hiring process? **(M, HRM)**
3. What are the characteristics or criteria that qualify a person to be hired within your firm/organization? **(M, HRM)**
4. Do you have problems finding appropriately qualified employees? Explain. **(M, HRM)**
5. Once an employee is hired, specifically those in technical roles, do you require internal training processes or orientation type programs? How long does internal training take and why? **(M, HRM)**
6. What is the focus of internal training? Technical or “socio-emotional”/soft skills training? **(M, HRM)**
7. If training is to compensate for weaknesses in knowledge/skills/attitude of personnel, what efforts take place on the industry level to compensate for these labor force/human capital weaknesses? Are the universities involved? **(D, M, HRM)**

F. Technical Education:

1. Thinking about the positions that require technical education at a university...Where do your employees come from (universities or other companies that have a technical university education)? Is there a reason for this? **(M, HRM)**
2. From your perspective, what are the strongest educational institutions that serve your business/industry? Why? **(M, HRM, E)**
3. What are some of the challenges/limitations of these workers? (knowledge, socio-emotional skills, attitudes, etc.). **(M, HRM)**
4. What interaction do you have with technical training institutions, technical universities, etc.? (Include internships, career fairs, direct recruitment, etc.) **(M, HRM)**

G. In the Future...

1. What technical positions and skills do you think will be demanded by your business and/or the sector in the future? Is this in the short, medium, or long term? **(D, M, E)**
2. How will your industry have to adapt to new technologies? **(D, M, E)**
3. How do you feel about your future business operations based on current economic/social conditions? **(D, E)**

H. To End...

1. Do you have any additional comments; or is there something else we should consider? **(D, M, DHR, E)**
2. Are there other actors/businesses/associations that we should speak with that may provide additional information? Could we use your name when making appointments? **(D, M, DHR, E)**
3. Can you recommend any experts in the sector that can provide additional information? **(D, M, DHR, E)**

ANNEX B. STRATEGIES FOR JAMAICA

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

- A. “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 Jamaica is already a strong exporter, and a lower value on spillover effects and product sophistication,
- B. Parsimonious Transformation – a judicious midpoint between the two extremes, and
- C. 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. Agricultural and food processing products dominate six of the top ten product categories in the “Jobs, Jobs, Jobs” strategy, while in the “Strategic Bets” strategy, three categories of agricultural products are still among the top ten, but they are three different categories: animals and animal products, dairy, and food processing. Chemicals, articles of iron or steel, and machinery are other sectors for which the Hausmann analysis suggests higher growth rates and incomes would eventually ensue.

Table: Strategic Product Sectors for Jamaica

| Rank | Jobs, Jobs, Jobs | | | Parsimonious Transformation | | | Strategic Bets | | |
|------|------------------------|-------|------|-----------------------------|-------|------|---------------------------|-------|------|
| | Product Group | Score | Fill | Product Group | Score | Fill | Product Group | Score | Fill |
| 1 | Cocoa & Chocolate | 73 | 17% | Cocoa & Chocolate | 56 | 17% | Chemicals | 45 | 3% |
| 2 | Horticulture | 64 | 28% | Horticulture | 52 | 28% | Articles of Iron or Steel | 44 | 5% |
| 3 | Sugar | 60 | 50% | Sugar | 51 | 50% | Animals & Animal Products | 40 | 10% |
| 4 | Other Agriculture | 57 | 16% | Other Agriculture | 49 | 16% | Machinery | 39 | 1% |
| 5 | Coffee | 57 | 50% | Construction Materials | 49 | 17% | Dairy | 39 | 10% |
| 6 | Construction Materials | 56 | 17% | Coffee | 47 | 50% | Precious Metals | 39 | 11% |
| 7 | Seafood | 55 | 29% | Chemicals | 47 | 3% | Food Processing | 39 | 55% |
| 8 | Mineral Products | 52 | 8% | Mineral Products | 46 | 8% | Plastics & Rubber | 39 | 7% |
| 9 | Metals | 52 | 7% | Food Processing | 46 | 55% | Wood Products | 39 | 8% |
| 10 | Iron & Steel | 50 | 3% | Metals | 46 | 7% | Tools | 39 | 7% |

Source: FHI360 Calculations, based on Atlas of Economic Complexity, Harvard University

METHODOLOGY

The scores are calculated as the weighted average, for all four-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:

| STRATEGIES | | | |
|-----------------|------------------|-------------------------|----------------|
| INDICATOR | 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 Jobs, Jobs, Jobs 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 C. INTERVIEW LIST

| Name | Position | Organization | Sector | Location |
|---------------------|---------------------------------|--|------------------------------|--|
| Pauline Smith | CEO | Association of Mushroom Producers/Network of Women for Food Security | Agriculture | George North, Manchester Parish, Jamaica |
| Robin Lumsden | CEO | Belcour Preserve | Agro-processing | Belcour, Irish Town, St. Andrew |
| Winston Stona | CEO | Busha Browne's | Agro-processing | Kingston, Jamaica |
| Deborah Garbutt | Operations Manager | Busha Browne's | Agro-processing | Walkerswood Plant, St. Ann Parish, Jamaica |
| Ibrahim Ajagunna | Director, Academics Profile | Caribbean Maritime Institute | Education (Logistics) | Kingston, Jamaica |
| Derrick Deslandes | Interim President | College of Agriculture Science and Education (CASE) | Education (Agriculture) | Portland, Jamaica |
| Dr. Beverley Morgan | Head Consultant | Competitiveness Council | Creative Economy | Kingston, Jamaica |
| Marsha Norman | Human Resource Manager | Courtyard Marriott, Kingston | Tourism | Kingston, Jamaica |
| Lorna Green | Chairman and CEO | Digital Transtec Limited; Reel Rock Animation | Creative Economy | Kingston, Jamaica |
| Kerry-Ann Henry | Director of the School of Dance | Edna Manly College of the Performing Arts | Education (Creative Economy) | Kingston, Jamaica |

| | | | | |
|------------------------|--|---------------------------------------|-------------------------------|--------------------------------------|
| Tyrone Wilson | President and CEO | eMedia Interactive Group | Creative Economy | Kingston, Jamaica |
| Zinzi Samuels | Creative Director | eMedia Interactive Group | Creative Economy | Kingston, Jamaica |
| Christopher Brown (CB) | Farmer | Farm | Agriculture | Mandeville, Manchester, Jamaica |
| Angela Edwards | Farmer/Entrepreneur | Farm/Hemp seed oil soap company | Agriculture & Agro-processing | Mandeville, Manchester, Jamaica |
| Marie Williams | Farmer/Entrepreneur | Farm/Chocolate Expressions | Agriculture & Agro-processing | Mandeville, Manchester, Jamaica |
| Renee Rice | Farmer/Entrepreneur | Farm/REAL Farm | Agriculture & Agro-processing | Mandeville, Manchester, Jamaica |
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| Robert Green | Director/Principal | HEART Ebony Park | Education (Agriculture) | Toll Gate, Clarendon Parish, Jamaica |
| Ms. Sonia Lynch | Training Manager | HEART Training | Education (Tourism) | Kingston, Jamaica |
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| Kevin Jackson | President | Jamaica Animation Nation Network | Animation | Kingston, Jamaica |
| Coretta Singer | Chairman | Jamaica Animation Nation Network | Animation | Kingston, Jamaica |
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| Mellisa Leslie | Assistant to Trevor Fearon/ Trade Desk Assistant | Jamaica Chamber of Commerce | Business Association | Kingston, Jamaica |
| Brenda Cuthbert | Chief Executive Officer | Jamaica Employers' Federation | Business Association | Kingston, Jamaica |
| Kingsley Carter | Farmer | Jamaica Organic Agricultural Movement | Agriculture | Bernard Lodge, St. Catherine Parish, Jamaica |
| Charles Douglass | Executive Director | Jamaica Productivity Centre | Government | Kingston, Jamaica |
| Tamar Nelson | Senior Director, Head of the Technical Assistance Services Unit | Jamaica Productivity Centre | Government | Kingston, Jamaica |
| Claude Duncan | Vice President | JAMPRO | Government | Kingston, Jamaica |
| Carol Straw | Manager, Tourism and Agro-business | JAMPRO | Tourism | Kingston, Jamaica |
| Renee Robinson | Film Commissioner/Manager Creative Industries | JAMPRO | Government | Kingston, Jamaica |

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| Errol Alliman | Expert | Logistics Management | Logistics | Kingston, Jamaica |
| Simone McKenzie-Mair | Director of Research and Analysis | Ministry of Labor and Social Security | Government | Kingston, Jamaica |
| Robert Reid | Animation Specialist | Ministry of Science, Energy and Technology | Government | Kingston, Jamaica |
| Trevor Forrest | Senior Advisor | Ministry of Science, Energy and Technology, Government of Jamaica | Government | Kingston, Jamaica |
| Anonymous | 4 Animators (anonymous) | Misc. | Creative Industries | Kingston, Jamaica |
| Gloria Henry | Assistant VP, Operations and Customer Relations | Montego Bay Free Zone Company Limited | Logistics (BPO) | Montego Bay, Jamaica |
| Sharon Power | Chief Officer, Strategic Planning and Research, Risk Management Unit | National Export-Import Bank of Jamaica | Finance | Kingston, Jamaica |
| Alrick Soukie | Night Manager | Pegasus Hotel Group | Tourism | Kingston, Jamaica |
| Steven George Kerr | Manager, Human & Community Development Unit | Planning Institute of Jamaica | Government | Kingston, Jamaica |
| Deidra Innis Coy | Labor Market Analyst | Planning Institute of Jamaica | Government | Kingston, Jamaica |
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| Edmond Marsh | Vice President, Business Development | Port Authority of Jamaica | Logistics (BPO) | Kingston, Jamaica |
| Dennis Chung | Chief Executive Officer | Private Sector Organization of Jamaica | Business Association | Kingston, Jamaica |
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| Mark Lee | Extension Officer | Rural Agricultural Development Authority (RADA) | Government | Mandeville, Manchester, Jamaica |
| Kerry Ann Curtis | Manager, Information Services | Scientific Research Council | Research/Manufacturing | Kingston, Jamaica |
| Cliff Riley | Executive Director | Scientific Research Council | Agriculture | Kingston, Jamaica |
| Veviene Wallace | Executive Administrative Assistant to Odetta Rockhead-Kerr | Sutherland Global | BPO | Kingston, Jamaica |
| Odetta Rockhead-Kerr | Country Head/Associate Vice President | Sutherland Global | BPO | Kingston, Jamaica |

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| Deanne Keating-Campbell | Product Quality Director | Tourist Product Development Company | Tourism | Kingston, Jamaica |
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