REPORT

FINAL REPORT

Design report for the performance Evaluation of the Technical Education and Professional Training (TEPT) Activity

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LIST OF ACRONYMS

BTV	Bachillerato Técnico Vocacional (Vocational Technical Baccalaureates)
CCTEVT	Council for the Coordination of Technical Education and Vocational Training
CSAQ	Computerized self-administered questionnaire
FOMILENIO II	Millennium Challenge Fund of El Salvador
GoES	Government of El Salvador
INSAFORP	Instituto Salvadoreño de Formación Profesional (Salvadorian Institute of Professional Training)
IRB	Institutional Review Board
MCC	Millennium Challenge Corporation
M&E	Monitoring and evaluation
MINEDUCYT	Salvadoran Ministry of Education, Science and Technology
MNC	Marco Nacional de Cualificaciones (National Framework of Qualifications)
OJT	On the Job Training
PfG	Partnership for Growth
SETEPLAN	Secretaría Técnica y de Planificación de la Presidencia (President's Technical and Planning Secretariat)
TVET	Technical Vocational Education Training
TEPT	Technical Education Professional Training

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I. INTRODUCTION

El Salvador's economic growth has lagged behind other Central American countries over the past decade. In particular, from 2010 to 2014, El Salvador's gross domestic product (GDP) growth, averaging 2.6 percent, was consistently lower than the GDP average growth for Guatemala (3.5), Honduras (3.5), and Nicaragua (5.3), and below the Latin American average of 3.4 for the same time period.[1] Under the Partnership for Growth (PfG) initiative, a joint U.S.-El Salvador technical team performed a constraints analysis and identified two binding constraints to economic growth in El Salvador: (1) crime and insecurity, and (2) low productivity in the tradable sector (Joint U.S.-GOES technical team 2011). To help overcome these challenges, the Millennium Challenge Corporation (MCC) has partnered with the government of El Salvador (GoES) to promote economic growth through large-scale investments. On September 30, 2014, MCC signed a US$267M Compact with the GoES, aiming to improve the investment climate, strengthen human capital, and reduce the cost of transportation and logistics. Through intensive policy reforms and an integrated set of investments in the human, physical, and institutional capital of El Salvador, MCC and GoES expect the second compact to help set the foundation for lasting economic growth and poverty reduction in the country.

The Human Capital Project is one of three projects under the second compact, and it focuses on improving the quality of education and achieving a better match between the supply of skills and the demands of the labor market as they pertain to the international trade of goods and services in El Salvador. The Human Capital Project consists of two activities: (1) the Education Quality Activity, which is intended to improve the quality of the national education system; and (2) the Technical Vocational Education Training (TVET) System Reform Activity. The TVET System Reform Activity, with funding of nearly $15 million, is intended to strengthen the national TVET governance system and enhance its capacity to harmonize the skills supplied through education and training providers with the skills demanded by the labor market.

MCC contracted with Mathematica to conduct an evaluation of the activities under the Human Capital Project, including the TVET System Reform Activity. Mathematica will conduct a performance evaluation of the TVET System Reform Activity to document its implementation and assess how successful the project was at achieving the intended outcomes. Lessons learned through this performance evaluation will be useful for stakeholders as they continue improving the TVET system, and to inform decisions about the potential expansion of the reform activities to other sectors beyond the sectors focalized by FOMILENIO II.

This report describes Mathematica's design for that performance evaluation. (For the Human Capital Project's evaluation design, see Campuzano, Padilla, and Fernández [2018]). In Chapter II, we give an overview of the TVET System Reform Activity and its program logic, and describe how the implementation of project activities evolved from 2015 through 2018. In Chapter III, we briefly review the existing literature on the effectiveness of vocational training programs in other countries and discuss how this performance evaluation might contribute to the knowledge base on how to strengthen technical and vocational education systems in Central

[1] World Development Indicators. Available at https://data.worldbank.org/indicator/ny.gdp.mktp.kd.zg.

American countries. The review is also designed to identify potential ways to improve transitions into employment. In Chapter IV, we discuss the evaluation design; the key evaluation questions; and our methodological approach, including the data sources, outcomes, and our analysis plan. In Chapter V, we discuss the key limitations and challenges we anticipate in this performance evaluation. Chapter VI covers a number of administrative aspects related to the evaluation, including the evaluation team, the Institutional Review Board (IRB) requirements and protocol for the protection of study participants, data file preparation, dissemination plan, and the evaluation timeline. Finally, in Annex A and B we describe modifications made to the design in response to implementation delays and discuss the rationale for those changes.

II. OVERVIEW OF THE TECHNICAL VOCATIONAL EDUCATION TRAINING SYSTEM REFORM ACTIVITY

In this chapter, we first describe the original plans for the TVET System Reform Activity. Then, we summarize how TVET's implementation has evolved, the program's logic, and the plans for the implementation of this activity.

A. Background of the implementation

The original (September 2015) vision and implementation plan for the TVET Activity involved reforming the TVET system by creating a unique governing body responsible for coordination across the private sector, formal technical education system, and vocational training programs. However, the Ministry of Education (MINED), the Salvadorian Institute of Professional Training (INSAFORP), and the private sector could not reach agreement on a governance model for the TVET system, making it politically infeasible to execute the original plan for the TVET Activity. The activity was consequently redesigned in 2017.

Recognizing the importance of integrating the technical education and vocational training systems and aligning their educational offerings to the needs of the private sector, the Millennium Challenge Fund of El Salvador (FOMILENIO II) redesigned the intervention in coordination with the President's Technical and Planning Secretariat (Secretaría Técnica y de Planificación de la Presidencia, SETEPLAN), MINED, and INSAFORP. FOMILENIO II proposed several options for linking these two systems and aligning them with the private sector's needs. FOMILENIO II revised the plans for TVET Activity to create Sectoral Committees of Technical and Professional Training in key economic sectors, along with a Board of Sectoral Committees and a Coordination Council for Technical Education and Vocational Training, composed of MINED-INSAFORP and representatives of the Sectoral Committee Board. Under the revised plan, these three entities would coordinate their actions to better align the supply of human capital with private sector demand.

B. Updates in the implementation of the TVET Activity

In January of 2018, the four parties signed a letter of agreement to implement the new plans for the TVET System Reform Activity. The main changes of the redesign intervention were:

- The Integrated TVET Governance System Sub-Activity, originally designed to strengthen the government system of the TVET through the creation of a standalone governing body, was replaced with the Integrated Technical Education and Professional Training Systems (TEPT) Sub-Activity. This new Sub-Activity aims to close the gap between the supply and demand of technical education and professional training.
- The Continuous Labor Demand Assessment Sub-Activity, which originally was intended to create a labor market observatory (OML by its initials in Spanish), now would focus on strengthening an already-existing labor market observatory run by the Ministry of Labor.

1. Integrated Technical Education and Professional Training Systems Sub-Activity

The revised implementation plan for this sub-activity encompasses two strategies: (1) capacity building at the individual, organizational, and public policy level; and (2) strengthen the

link between the supply and demand of technical education and professional training[2] through the establishment of mechanisms that facilitate the exchange of information within and between productive sectors[3], and between private and public institutions in all productive sectors. In this report, technical education refers to formal programs under the regulation of the Ministry of Education, such as secondary and postsecondary education. Next, we summarize the approach for both TEPT strategies.

a. Capacity building

The capacity building strategy has two goals: the first is to enable the private and public sector to identify and manage demands for technical education and professional training. The second is to enable public sector stakeholders involved in the design and implementation of education and training programs to respond quickly and efficiently to private sector labor market demands.

In the short term, the capacity building strategy aims to strengthen the capacity of the private sector to identify and influence professional training offerings. The private sector will work with both formal education (secondary and postsecondary technical education) and professional technical training to improve the match between the content of the technical courses or training and the private sector needs. FOMILENIO II will support the design and implementation of technical training programs using a competency-based approach. This approach focuses on sets of observable skills that can be acquired through formal and informal educational or work experiences. In contrast with traditional models of higher education, the competency-based approach focuses on an individual's ability to demonstrate a given skill or show evidence of having achieved a specific level of proficiency, and not on completing course requisites or degree program requirements with fixed durations. The training programs will focus on prioritized job positions that will be identified by each sectoral committee. A core component of this strategy is the design and implementation of a training program for trainers. Further, FOMILENIO II will support the design of the model to certify[4] workers in prioritized positions.

In the medium term, the strategy seeks to strengthen institutional capacities to meet the private sector's demand for technical education and professional training. To that end, FOMILENIO II will support the creation of a Coordination Council for Technical Education and Professional Training (CCTEPT) comprised by the key stakeholders, such as MINEDUCYT, INSAFORP and the private sector. In addition, the CCTEPT and the Sectoral Committee Board will establish regulations, and procedures for the implementation of the competency-based

[2] Professional training refers to education provided outside MINED's regulation. It includes any training program, public or private, designed to teach or improve the technical or practical skills necessary for the performance of productive work. INSAFORP is currently the governing body for such training programs.

[3] Productive sectors refer to the sectors of the economy that contribute to the GDP, and include: (a) the primary sector, characterized by extraction of raw materials (i.e. mining, fishing and agriculture); (b) the secondary or manufacturing sector, characterized by the production of finished goods; and (c) the tertiary or service sector, characterized by intangible goods and services to consumers. To implement the TVET activity, FOMILENIO identified nine productive sectors.

[4] The certification of workers will be conducted through a standardized process in which workers demonstrate the knowledge or skills required for a job position.

model. The goal of this component is to match the industry-specific demands for high demand skills with the technical training offerings and scale the certification by competencies to the national level.

In the long run, this strategy is designed to set the foundation for implementing the National Framework of Qualifications (MNC for its initials in Spanish), which requires the Technical Education and Professional Training systems to establish common guidelines for certification of workers by competencies and accreditation of institutions. The long-term goal is to strengthen the government's capacity to plan and evaluate technical education and professional training offerings.

Table II.1 (below) describes the tasks to be implemented as part of the capacity building strategy.

Table II.1. Description of the tasks in the capacity building strategy

Task	Description
Strengthen the capacity of the private sector to identify and influence professional training offerings	
• Create nine Sectoral Committees of Technical and Professional Training: Plastic, Sugar, Tourism, Poultry, Textiles, Construction, Coffee, Micro-Small and Medium Enterprises (MSME) led by women, and Information Communications Technology (ICT).[a] The ICT sector was created recently.	• The prioritized sectors were selected based on their comparative advantage in foreign trade, potential for promotion and productive diversification, and the ability to generate jobs. • Each sectoral committee will identify the training needs for its respective industry.
• Form one Sectoral Committee Board comprised of members from the sectoral committees.	• The board will consolidate proposals for TEPT programs that require (1) the validation and support of MINEDUCYT, (2) accreditation mechanisms for providers of technical education and vocational training, and (3) workers' certification by competencies for their training level. • The board will also be responsible for creating new sectoral committees.

• Identify prioritized job positions in each sector, and design and implement training programs.	• The sectoral committees will:
	  ○ Identify about three prioritized job positions in each sector
	  ○ Design and implement training programs based on the competencies identified as necessary for each prioritized position (with the programs ultimately serving about 500 workers across all sectors).

• Train technical trainers to teach skills required for prioritized job positions.	• Train two technical trainers under each training program to teach the skills required for the prioritized job positions. • The training program for trainers includes teaching technical aspects as well as didactic skills, so that the participants can become trainers of prospective workers for the prioritized positions.
• Design a model of accreditation and certification by competencies.	• Standardize procedures to implement the model for certification by competencies for both technical education and professional trainees.
Strengthen institutional capacities to meet the private sector's demand for technical education and professional training	

Task	Description
• Create a Coordination Council for Technical Education and Professional Training.	• The Coordination Council will include two representatives of the Sectoral Committee Board, a representative of MINED, and a representative of INSAFORP.
• Establish instruments, regulations, and procedures for the implementation of the competency-based model.	• Match the demands for industry-specific skills with the training offerings, and scale the certification by competencies to the national level.
Strengthen government capacity to plan and evaluate technical education and professional training offerings	
• Support the implementation of the National Framework of Qualifications (MNC for its initials in Spanish).	• FOMILENIO II will support MINED and INSAFORP in the implementation of MNC.
• Support the implementation of information systems for planning, monitoring, and evaluation of TEPT activities	• FOMILENIO II will support the definition of indicators to plan and monitor the TEPT activity.

[a] The ICT sector was added in the first quarter of 2019.

[b] Prioritization of sectors was informed by an analysis of the following sources: (1) policy of promotion, diversification, and productive transformation; (2) the Industrial Policy 2011–2024; (3) XIII Annual National Meeting of Private Enterprises; and (4) the National Commission for Micro and Small Enterprises.

[c] The prioritized job positions and required job competencies were identified through a diagnostic study conducted by a consulting firm.

[d] The accreditation model defines the mechanisms to certify the entities that will participate in the training process. The certification is the standardized process through which workers will demonstrate the appropriate skills or competencies for each training program.

b. Strengthen the link between the supply and demand of technical education and professional training programs

FOMILENIO II will contribute to the definition of the competency profiles for certain technical vocational programs in the formal sector. In El Salvador, upper secondary programs offer two different degree options, a general baccalaureate (grades 10 and 11) and a technical vocational baccalaureate (BTV for its initials in Spanish). The BTV (grades 10 to 12) covers the same content as the general baccalaureate, and in addition, offers training on technical skills for specific sectors.

FOMILENIO II will support the development of sectoral diagnostics to identify the needs of the productive sector, and improve the match between the industries and the training offerings in specified geographic areas. The following are the main tasks for implementing this strategy:

- Identify the prioritized productive sectors in each department and the availability of related technical and professional programs in those geographic areas.
- Design or update three optional modules[5] of the BTVs with input from the Sectoral Committees.
- Establish agreements between companies from the productive sectors and MINED to offer internships for students.

[5] Optional modules are education offerings in technical areas such as accounting, mechanics, or software development.

2. Continuous Labor Demand Assessment Sub-Activity

FOMILENIO II will use two strategies to implement this sub-activity:

- **Establish a monitoring and evaluation (M&E) framework**. FOMILENIO II will define quantitative measures or indicators to inform subsequent decision making on technical education and professional training.
- **Strengthen the labor market observatory, integrating existing efforts to track labor market conditions**. The labor market observatory is a tool for systematizing information and analysis on the labor market in El Salvador. It was launched by the Ministry of Labor and Social Welfare in December 2014. FOMILENIO II will facilitate the consolidation of information systems from institutions such as the Ministry of Labor and Social Welfare, MINED, INSAFORP, and the private sector to strengthen the labor market observatory and its use for planning, monitoring, and evaluation.

In sum, the original conceptualization of the TEPT Activity evolved in response to a range of challenges FOMILENIO II faced with the implementation of the activities that were envisioned originally. This evaluation design accounts for the changes to the intervention described above. However, there were substantial implementation delays and FOMILENIO II updated the medium- and long-term outcomes in October 2019. The implementation delays and modification to the expected outcomes required that we adjusted the evaluation design. Changes to the evaluation design are described in detail in Annex A and B.s

C. Logic model

The TEPT Activity in El Salvador is designed to link activities in the systems of technical education and professional training to the needs of the labor market in order to close the gap between training and employment. To that end, TEPT activities are largely focused on facilitating the exchange of information between the supply side and the demand side, both within and between productive sectors. The planned activities, expected outputs, and short-, medium-, and long-term outcomes are summarized in Figure II.1.

The theory of change behind the implementation of the TEPT Activity states that all its outputs will increase companies' productivity, and thereby improve workers' wages as well as the employability and socioeconomic standing of students and workers who benefit from the TEPT Activity.

1. Activities

As shown in Figure II.1, the TEPT Activity funded by FOMILENIO II aims to strengthen capacity building at the individual, organizational, and public policy level. To that end, this strategy includes (1) creating sectoral committees for technical and educational training, and creating a Sectoral Committee Board to consolidate the demand for professional development in the private sector; (2) offering professional training to workers in the different industrial sectors under the competency-based approach; (3) designing models for certifying workers by competencies and accrediting institutions; (4) creating a Coordination Council of Technical Education and Professional Training to facilitate coordination between public and private organizations involved in technical and professional training, and align the offerings to the skills

demanded in the labor market; and (5) establishing procedures and regulations to strengthen the institutional capacity to meet the private sector's demand for technical education and professional training. Implementation of the TEPT Activity includes the design of a roadmap for creating a national qualifications framework, and the development of an information system for the Coordination Council and other bodies to use in the planning, monitoring, and evaluation of the TEPT Activity.

The TEPT activity also seeks to improve the link between labor demand in the productive sectors with the availability of technical education and vocational training. To achieve this goal, FOMILENIO II plans to: (1) identify the prioritized productive sectors in each department and the availability of related technical and professional programs in those geographic areas; (2) design at least three modules for the Vocational Technical Baccalaureate in coordination with the Sectoral Committees; and (3) establish agreements between companies from the sectors and MINEDUCYT to offer internships for students. These activities are detailed in Table II.1.

2. Short- and medium-term outcomes

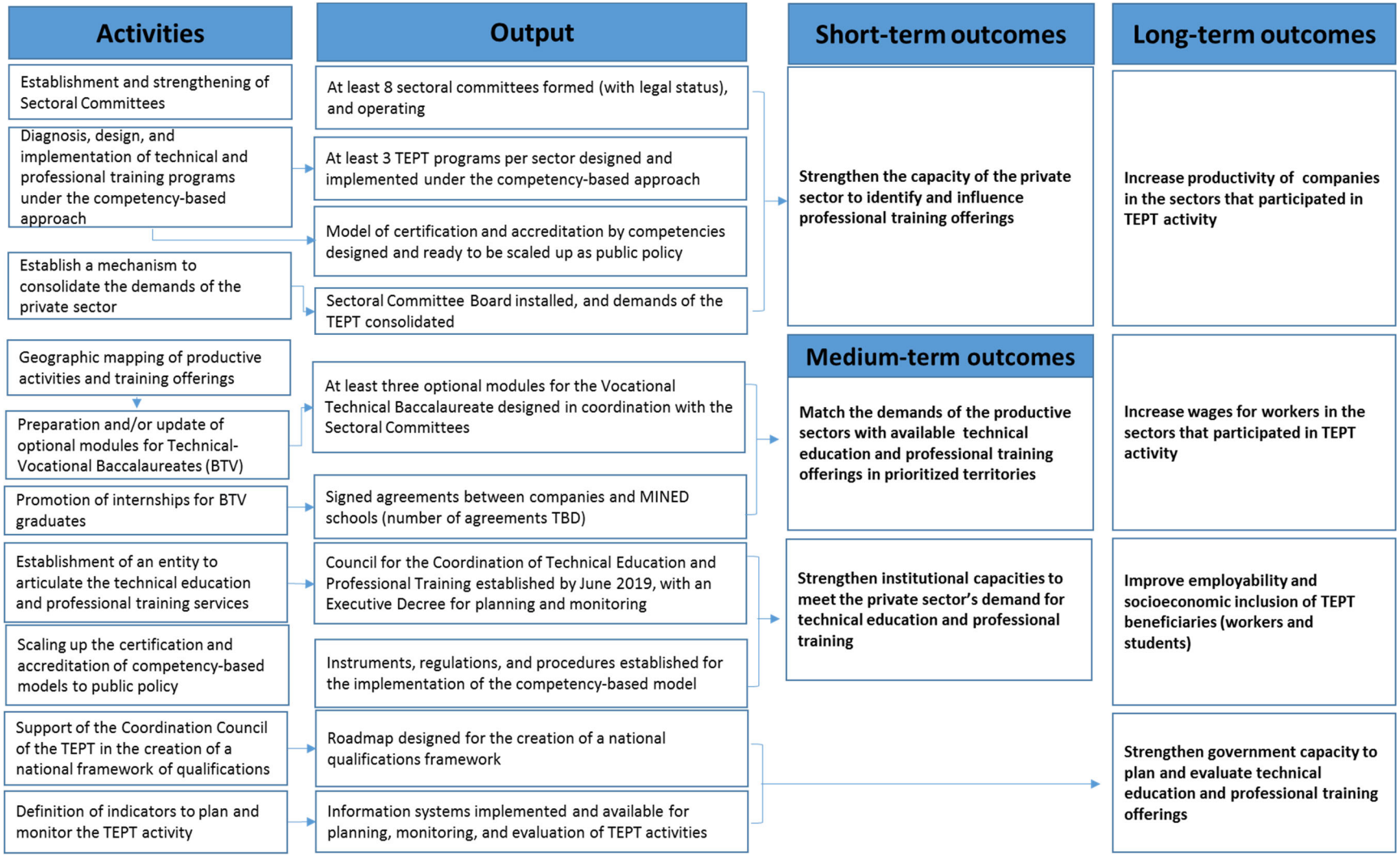
Once the sectoral committees and the Board of Sectoral Committees are in existence, and a model for certification and accreditation has been implemented, the private sector will improve its capacity to identify and influence the professional training that is available to prospective trainees. Designing modules for the Professional Technical Baccalaureate, and creating the Coordination Council of TEPT will also improve the linkage between the demands of the productive sector, and the availability of technical education and vocational training.

3. Long-term outcomes

In the long term, the TEPT Activity is expected to improve the government's capacity to plan and evaluate the offer of technical education and professional training assisted by the MNC and the information system developed for subsequent planning, monitoring, and evaluation. Finally, the improved match between labor demand in the industrial/private sectors and the technical training available to the potential workforce will improve the productivity of companies, and therefore increase workers' wages. It is also expected to improve the employability of students and workers who benefit from the TEPT Activity.

In October 2019, FOMILENIO II modified some of the medium- and long-term outcomes. The revised outcomes now focus on system changes instead of on trainee-level changes (See table A.1 in Annex A). The changes to the medium- and long-term outcomes of interest and the implications of those changes for the evaluation design are summarized in Annex A and B.

Figure II.1 Logic model for the TEPT Activity



Source: Based on the logic model developed by FOMILENIO II. See Annex A and B for revised medium- and long-term outcomes.

D. Implementation plan for the TEPT Activity

As noted, the TEPT Activity was redesigned in 2017, and a new technical note was drafted and approved by MCC in February 2018, after MINED, INSAFORP, SETEPLAN and FOMILENIO II reached an inter-institutional agreement (dated January 2018) establishing the new governance model. This included the creation of Sectoral Committees of Technical and Professional Training, a Sectoral Committee and a Coordination Council with public and private representation. The goal was to install the Sectoral Committee Board and design the Model of Certification and Accreditation by competencies by December 2018; however, the Sectoral Committee Board was not appointed until March 2019. During 2018, FOMILENIO II started the process of strengthening and formalizing sectoral committees, as well as preparing the conditions to begin training programs for the sectors. Starting 2019, FOMILENIO II has been working on the design of at least three TEPT programs for nine sectors. The implementation of the programs is scheduled to roll out gradually, starting with trainings in the plastic sector during the second quarter of 2019. The design of at least three optional modules for BTV are expected to be ready by December 2019. During that same period, the agreements between MINEDUCYT and the companies for the sectors will be signed.

The Coordination Council of Technical Education and Vocational Training will be created by June 2019, and the regulations and procedures for implementing the certification model for workers by competencies and the accreditation of institutions will be gradually set in place. The roadmap for the creation of a National Qualifications Framework, which requires the Technical Education and Professional Training systems to establish common guidelines for certification by competencies and accreditation, is expected to be designed by September 2019. Finally, FOMILENIO II expects to create information systems for planning, monitoring, and evaluating TEPT activities. The goal is to make the system available for the Coordination Council and other entities by September, 2020. Figure II.2 shows the expected completion dates for the main outputs included in the logic model as of March 2019. Further delays to the implementation timeline are discussed in Annex A.

Figure II.2 Timeline for the TEPT Activity

	2018				2019				2020			
Sub-activities	Jan-Mar	Apr-June	Jul-Sept	Oct-Dec	Jan-Mar	Apr-June	Jul-Sept	Oct-Dec	Jan-Mar	Apr-June	Jul-Sept	Oct-Dec
Create at least eight Sectoral Committees[1/]		✕										
Establish the Sectoral Committee Board					✕							
Design the model for certification and accreditation by competencies					✕							
Design at least three TEPT programs per sector					✕							
Implement at least three TEPT programs per sector						✕	✕	✕				
Design at least three optional modules for the Vocational Technical Baccalaureate								✕				
Sign agreements between companies and MINED								✕				
Create the Council for the Coordination of Technical Education and Professional Training						✕						
Establish instruments, regulations and procedures for the implementation of the competency-based model						✕						
Design the roadmap for the creation of a national qualifications framework							✕					
Implement information systems and make them available for planning, monitoring and evaluation of TEPT activities										✕		

[1/] Eight Sectoral Committees of Technical and Professional Training were signed by June 2018. In February 2019, a new agreement was signed with the information, technology and communication (ITC) sector. See Annex A and B for 2020 implementation updates.

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III. LITERATURE REVIEW

The labor market in El Salvador presents a series of long-standing challenges that can keep many workers out of the labor market. These challenges are in part caused by the mismatch between the skills workers have and the skills demanded by the labor market. They include both structural and contextual conditions such as low levels and quality of education, few job opportunities, concentration of employers in metropolitan areas, the country's overall decline in competitiveness, and local hiring practices.

On the demand side, El Salvador's private sector is not finding the right skills in job applicants. A recent study carried out by USAID (2017) revealed findings from a survey of 206 companies in El Salvador that collected information on their hiring practices, hiring challenges, and the most common skill gaps. Between 61 and 82 percent of the companies surveyed across various sectors reported difficulties in recruiting people with necessary technical skills.[6] Common shortcomings that companies found in job seekers included underperformance in arithmetic, literacy, and oral and written communication; and undeveloped work skills like punctuality, teamwork, and ability to follow instructions.

These issues particularly affect young people seeking to enter the labor market. In El Salvador, youth unemployment in 2017 stood at 12 percent, 5 percentage points higher than in 2010 (PNUD 2018), and youth (ages 16–29) underemployment reached 61 percent (also above the national average of 59 percent). Further, hourly wages for youth are lower than those of adults— on average, adults earn 77 percent more per hour than youth. This picture is complicated by the increasing trend of skill underutilization in El Salvador. According to PNUD (2013), between 1992 and 2012, the percentage of workers with underutilized skills (or whose skills were at risk of underutilization) increased from less than 5 percent to 13 percent. During a 20-year period there was an 8 percentage point increase in overqualified workers—that is, workers employed in occupations that require lower levels of training than they possess.

Currently, in El Salvador the share of the working-age population (15 to 64) is larger than the share of the population whose age makes them generally too young or too old to work (ages 14 and younger, and 65 and older). This demographic dividend is expected to last until 2033 (USAID 2017), making it particularly important to find ways to close the gap between workers' skills and the skills demanded by the labor market.

In response to this crisis, FOMILENIO II designed two strategies: (1) system wide (people, organizations, and policy environment) capacity building; and (2) coordinating the supply of and demand for technical education and professional training by establishing structures that facilitate the exchange of information within and between economic sectors, and between private and public institutions in all sectors. The program logic expects the project to eventually result in improved labor market outcomes and employment conditions for Salvadoran TEPT graduates—specifically, increased employment, higher wages, and improved work conditions (benefits or non-wage compensation). Outside of El Salvador, a number of impact evaluation studies have

[6] Percent of companies surveyed that reported challenges in recruiting qualified personnel, by sector: 82 percent of the manufacturing sector, 75 percent of the agro-industrial sector, 62 percent of the information and communication technologies sector, and 61 percent of the tourism sector.

examined the relationship between vocational training programs and the listed outcomes. These studies give useful context, and provide information about the extent to which FOMILENIO II's program logic presents plausible causal links between the TEPT activities, the program's outputs and the intended outcomes. See Annex A for a detailed description of modifications to the program logic; specifically, to some medium- and long-term outcomes.

A. Market failures and on-the-job training

The capacity building component of FOMILENIO II's strategy for attacking the mismatch between the skills workers offer and the demands of the labor market includes designing and implementing on-the-job training (OJT) programs for workers based on the competency-based approach. The competency-based approach focuses on what a person can do in the workplace as a result of education and training, relevant work experience, or professional development. This literature review focuses on the market failures that contribute to the worker/market mismatch and on the evidence about returns from OJT programs.

The equity concerns resulting from market failures (the inefficient distribution of goods and services) has motivated public entities to design interventions to improve labor market outcomes. When competition in the labor market is imperfect because many employers are competing for fewer workers, or many workers are competing for the same jobs, both employers and employees have less incentive to invest in skill development. That is, employers might invest less in training workers who can be hired by competitors, and workers are less likely to invest in their own training if employers have the upper hand in the market and can keep wages low (Almeida, Behrman, and Robalino 2012).

Another source of market failure is asymmetry of information on marketable skills. Employers might lack information about the skill set of potential job applicants, compromising their ability to hire candidates with the right skills for the job. Individuals might not know which skills are marketable and what type of training is available or appropriate, and thus not know which kind of training would qualify them for the available employment opportunities (Glick, Huang, and Mejía 2015).

Coordination failures can also prevent an efficient match between workers' skills and job vacancies. For instance, employers might not create high-productivity jobs because they can't find workers with the right skill set for those positions; conversely, workers might not invest in developing the right skills because there are no jobs available to warrant their investment (Almeida et al. 2012).

The existence of these market failures justifies creating public policies that provide or subsidize services that develop job seekers' skills and help them find employment; however, the public sector has its own shortcomings in this area, with the most cited being accountability problems. When the relationship between potential participants in training and the organizations providing services is mediated by government agencies, the organizations offering the training are not directly accountable to the clients or beneficiaries. Moreover, these agencies typically receive budget allocations from central governments that are not based on performance (Glick et al. 2015).

Economist have proposed addressing market failures through a variety of training programs. Some of these programs are financed primarily by governments, and others by the private sector. Programs typically subsidized by governments may include (1) technical and vocational education (TVET) for unemployed individuals, (2) entrepreneurship programs that provide financial and technical support to help individuals start their own businesses, and (3) employment or wage subsidies paid to firms to hire disadvantaged workers. In contrast, OJT programs are frequently offered by private firms to sharpen the skill sets of their workforce to better suit the specific needs of the job; OJT is another avenue to solve skill shortages and mismatches.

A review of the literature on returns from OJT on earnings and productivity outcomes by Almeida and collaborators (2012) reveals that OJT is positively correlated with higher earnings, although results vary widely depending on the country, data set, and estimation method (Table III.1). In general, the challenge in interpreting the findings from studies in this field is that OJT is a choice variable for both firms and workers— firms choose to offer OJT (or not), and workers choose to participate in OJT (or not). Also, choosing to offer or participate in OJT is likely correlated with worker and firm characteristics, which in turn are correlated with labor productivity and wages. Firms and workers that can benefit more from OJTs are more likely to offer and accept training than those who are less likely to benefit. Consequently, studies that look at the effects of such programs are faced with potential biases due to firms deciding to offer the training or not (endogeneity) and workers deciding to participate or not (self-selection). (Almeida, and de Faria 2014).

Two recent studies reveal more evidence that OJTs can be an effective mechanism to shape the skills of the workforce and fill the skill needs of the private sector. The two studies show that OJT participation is linked to gains in both wages and productivity. In one, Almeida and collaborators (2014) explored whether firms' investment in OJT translated into higher wages for the workers in Malaysia and Thailand. They estimated the wage return to OJT in these two countries using propensity score matching to match workers who participated in training with workers who did not, but whose probability of being selected into OJT training was similar to that of trained workers. Their findings showed average wage returns of 7.7 percent for Malaysia and 4.5 percent for Thailand. They also showed that the wage returns to OJT were higher for males than for females in Malaysia, and that for both countries, returns are higher for workers with at least secondary education (Almeida and de Faria 2014).

Similarly, Konings and Vanormelingen (2015) conducted a study using panel data from Belgian firms, which included measures of training such as the proportion of workers who received training; the number of hours they were trained; and the cost of training. The authors measured the impact of training on both wages and productivity at the company level, and estimated production functions controlling for training decisions and unobserved worker ability. Their findings revealed that an increase in the share of trained workers by 10 percentage points was associated with 1.7 to 3.2 percent higher productivity (depending on the specification). However, the increase in productivity did not translate to a comparable increase in wages—the average wage per worker increased only between 1.0 and 1.7 percent in response to the 10 percentage point increase in training.

Collectively, findings from correlational studies and studies that addressed selection and endogeneity issues suggest that OJT programs may have positive effects on earnings and are a potential way for people to acquire sector-relevant skills. Training interventions that involve employers to ensure demand-driven offerings can help prospective workers find employment or raise their incomes (Almeida et al. 2012).

Table III.1. Selected studies examining effects of OJT on wages and productivity

Country	Magnitude of effects	Data methodology
Effects on wages		
United States (Lynch 1992)	OJT: Between 0.20 and 0.36 percent wage increase per week of training Apprenticeship: Between 0.10 and 0.26 percent wage increase per week of training	Interviews with a panel of individuals ages 14–21 in 1979, observed again in 1980 and 1983; data from the National Longitudinal Survey, youth cohort
United States (Bartel 1995)	OJT: Increases in wage growth and a rate of return of about 13 percent	1986–1990 personnel records of a large manufacturing company
United States (Frazis and Loewenstein 2005)	Formal training: Median of 60 hours increases wages between 3 and 4 percent	Panel analysis using data from the National Longitudinal Survey, youth cohort, 1979–2000.
Republic of Korea and Malaysia (Middleton, Ziderman, and Van Adams 1993)	Republic of Korea: 28 percent rate of return Malaysia: 21 percent rate of return	Survey of previous studies (Cohen 1985; Lee 1985)
Kenya and Zambia (Rosholm, Nielsen, and Dabalen 2007)	Formal training: 20 percent wage increase	Matching estimation using cross-sectional data from the Regional Program on Enterprise Development
Malaysia and Thailand (Almeida and Faria 2009)	Malaysia: 5.5 percent wage increase Thailand: 5.1 percent wage increase Returns close to 0 when using matching estimators	Cross-section of matched employer-employee enterprise surveys (World Bank 2002, 2004). Matching Estimators Method (local linear matching)
Effects on productivity		
United States (Barron, Black, and Loewenstein 1989)	10 percent increase in training hours resulted in a 3 percent increase in productivity	Cross-sectional firm survey that collected detailed information on training and wages in 1982. Dataset on productivity growth indicators.
Ireland (Barrett and O'Connell 2001)	Training resulted in 3–4 percent productivity growth	Surveys of nationally representative enterprises in 1993 and 1995
Portugal (Almeida and Carneiro 2009)	Rate of return from training between 6.7 and 8.6 percent	Panel of large manufacturing firms, 1995–1999
Chile, Colombia, Mexico, and Peru (Lopéz-Acevedo and Tan 2011)	Effects of participation by small and medium enterprise (SME) programs on productivity (measured as sales, profits, or output): Chile, between 7 and 9 percent; Colombia, 5 percent; Mexico, between 5 and 6 percent; Peru, between 21 and 26 percent	Panel data of firms participating in SME programs
Ghana, Kenya, and Zimbabwe (Biggs, Shah, and Srivastava 1995)	49 percent increase in output after training	Ordinary least squares estimation from cross-sectional data of the Regional Program on Enterprise Development

Source: Almeida, R., J. Behrman, and D. Robalino. "The Right Skills for the Job? Rethinking Training Policies for Workers." Washington, DC: World Bank, 2012.

B. Considerations for implementation of OJT programs

Programs that help workers develop skills while on the job are critical for economic growth and productivity. As described in page 12, in El Salvador (and in other developing countries), a substantial number of workers enter the labor market without basic skills. OJT can be accomplished through both formal employer-provided training, apprenticeships, internships, and informal processes like "shadowing" a more experienced worker or learning by doing. However, the availability of OJT programs in the developing world remains limited and uneven across sectors. Barriers that deter the private sector from investing in OJT include employee turnover, losing trained workers to competitors, and employers experiencing financial strain. The success of OJT programs needs to consider such barriers (Almeida et al. 2012).

In addition to labor market shortcomings, government issues can reinforce the rationale for OJT programs that link private- and public-sector actors. Two critical characteristics affecting vocational training services are government's lack of accountability and limited information. The lack of accountability is evident when public agencies are not incentivized to provide high quality vocational training to respond to employers' specific skill needs. For instance, budget allocations from central governments to vocational training providers are typically not based on performance. Furthermore, when government providers of vocational training don't have competition from private providers, they have less incentive to deliver high quality training services. The second issue—limited information— results from governments lacking adequate monitoring and evaluation systems to track which programs are working and which are not, and to track the quality or relevance of different training programs for workers in specific sectors. Public-private partnerships in OJT programs may enable private sectors to improve the accountability and information issues discussed above.

The successful design and implementation of programs that seek to compensate for shortcomings in markets, governments, and coordination of the two require a system wide approach that takes into account governance, strategic allocation of incentives and subsidies, and viable financing models (Almeida et al. 2012). The following conditions have been identified as critical to the successful implementation of OJT programs (Almeida et al. 2012; Glick et al. 2015):

- **Engaging the public and private sectors in reforming systems to improve skills development and align it with current and future labor market demands.** Employers should be part of designing and operating skills training programs to ensure demand-driven skills development through OJT programs that respond to the specific needs of the private sector.
- **Having the public and private sectors cooperate in providing training and employment services as a way to compensate for market and government failures.** It is important to allocate resources efficiently, however. The most efficient allocation of resources would be helping companies that face barriers to offering professional development activities.
- **Coordinating funding streams for OJT from the government, private sector, and multilateral donors, and avoiding inefficiencies that result from donors or governments crowding out private investment in OJT.**

- **Establishing institutional arrangements that incentivize firms to invest in OJT and avoid losing trained workers to competitors.** Examples of these arrangements include: (1) offering subsidies to certain private firms that offer OJT; (2) enforcing contracts that require workers to stay at the firm that gave them OJT for a certain period or pay penalties for leaving early, and (3) establishing apprenticeship periods during which firms hire inexperienced low-wage workers while they receive OJT. These mechanisms promote sharing of OJT costs and risks between firms and workers.
- **Improving access to information on market-demanded skills through a National Qualifications Framework that contains guidelines for accreditation and certification of programs and worker competencies.** Accreditation of institutions allows workers to make informed decisions about qualified sites that offer legitimate opportunities for OJT. Similarly, certifications validate the competencies that workers acquire through OJT. Equalizing access to information on marketable skills also requires an integrated approach to knowledge-sharing, and adequate monitoring and evaluation systems.

The design of FOMILENIO II's OJT intervention incorporates many of the criteria described above, including sector-specific diagnostic studies of high-demand skills, a curricular plan for OJT, and a plan to establish a National Qualifications Framework (which involves the private sector). The proposed performance evaluation will assess the progress toward these goals and help us understand any barriers to achieving them and how the Integrated Technical Education and Professional Training Systems was implemented in practice. Further, the evaluation will seek to fill evidence gaps in the effectiveness of OJT programs by exploring the private sector's role in OJT partnerships, the barriers that keep employers from participating, the perceived benefits of offering and receiving OJT, and the process of identifying sector-specific needs and designing OJT curricula.

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IV. RESEARCH QUESTIONS AND EVALUATION DESIGN

The aims of the performance evaluation are to (1) assess progress toward the short- and medium-term outcomes that the program was designed to achieve and (2) understand and document the implementation of the Technical Education and Professional Training activities (See logic model on page 9). To meet these two overarching aims, the performance evaluation will include a pre-post analysis of program outcomes and an implementation study. In this chapter, we describe our proposed design for the pre-post and implementation studies, the research questions we will aim to answer with each approach, and the data sources we will use for each study. The evaluation design described in this section was modified in response to implementation delays and changes to some of the outcomes of interest. The rationale and specific changes to the methodology and data sources are presented in detail in Annex A and B.

A. Pre-post design

The single group pre-post design consists of obtaining data for the outcomes of interest prior to (or at the beginning of) TEPT training (pre) and the same measure after participation in the TEPT courses (post). The pre-post study will focus on measuring the changes on labor market outcomes, and assessing to what extent work conditions, wages, and employment status improved for those who participated in the TEPT programs.

This design enables us to describe changes in participants' work conditions and wages before and after participating in TEPT programs. However, single group pre–post design without a comparison group does not allow us to identify causal effects of the TEPT trainings on participants' outcomes. Without a comparison group, the pre–post design is unlikely to isolate the effect of TEPT trainings from other factors that may also influence labor market outcomes: changes in work conditions, wages, and employment status over time could be the result of the intervention, but could also be influenced by changes in the national economy or other contextual factors (for example, changes in labor legislation). For that reason, the pre-post study will only focus on the three descriptive research questions:

- Did employee work conditions, benefits or non-wage compensation, change for trainees who participated in the TEPT courses approximately six to nine months after the courses ended?
- Did wages change for trainees who participated TEPT courses (as measured about six to nine months after the courses ended)?
- Did employment status change for trainees who participated TEPT courses (as measured about six to nine months after the courses ended)?

TEPT training will be offered to workers who occupied the prioritized job positions identified in each sector. Therefore, we expect to see changes in employees' work conditions and wages. However, it is unlikely to see changes in employment status because most trainees are expected to be employed, and the study follow-up time is short.

The analysis will rely on data from a trainee-tracer survey. The survey will measure employment conditions, wages, and employment status, before and after having participated in the TEPT training courses. We provide more detail on data sources and describe the tracer survey in Chapter IV. See Annex A and B for recent modifications to the pre-post study.

B. Implementation study

The implementation study will focus on describing all components of the TEPT program and their operation and identifying progress towards short- and medium-term outcomes of the program. We will document how program components were implemented, explore the main facilitators and barriers to the implementation of TEPT sub-activities, and describe the main program outputs of the TEPT System. We will also identify short- and long-term achievements and sustainability efforts related to each TEPT sub-activity. We will examine five main overarching research questions through the implementation study:

- How were the TEPT sub-activities implemented, and what were the major facilitators and barriers to implementation?
- Were some sectors more successful implementing the TEPT activities than others?
- Which outputs were accomplished for each sub-activity, and to what extent did they meet the targets?
- Which short- and long-term outcomes were accomplished for each sub-activity?
- What are the plans for the institutional and financial sustainability of the services offered and the entities created as part of the TEPT activity?

We will split the overarching research questions into sub-questions, and tailor them to the specific activities implemented by FOMILENIO II and the team of consultants responsible for each component of the TEPT sub-activity. In Table IV.1, we present examples of sub-questions for the implementation study which are tailored to key intervention activities. Recent updates to the research questions are shown in Table A.3 (See Annex A).

To answer the implementation research questions, we will interview key stakeholders, review program documents, and perform descriptive statistical analysis of monitoring data gathered by FOMILENIO II. A description of data sources and the analysis plan are presented in Chapter V.

Table IV.1. Research questions and illustrative sub-questions for the implementation study

Implementation evaluation questions and sub-questions
How were the TEPT sub-activities implemented, and what were the major facilitators and barriers to implementation?
We will identify the main barriers to and facilitators of the implementation of:
• Sectoral Committees and Board of Sectoral Committees
• Technical and professional training programs that are competency-based
• Design of optional modules for the Technical Vocational Baccalaureates (link with Activity 1) as well as internships offered
• Council for the Coordination of Technical Education and Professional Training (CCTEPT) and establishment of a national framework of qualifications
Were some sectors more successful implementing the TEPT activities than others?
• We will identify implementation milestones for each sector, and conduct a cross-sector comparison

Implementation evaluation questions and sub-questions
Which outputs were accomplished for each sub-activity, and to what extent did they meet the targets? If they did not meet the targets, why not?
• Were at least eight sectoral technical and professional training committees established and meeting the legal requirements? If not, why not?
• Were at least three TEPT programs per sector implemented that followed the competencies model? If not, why not?
• Did these three TEPT programs address the mismatch between the skills offered in professional training and the skills demanded by the labor market?
• Were at least three optional modules of the BTVs designed in coordination with the Sectoral Committees by December 2019? If not, why not?
• Did these three optional modules of the BTVs address the mismatch between the skills offered in the technical education programs and the skills demanded by the labor market?
• Was the roadmap for the creation of a national qualifications framework finished by September 2019? If not, why not?
• How many programs were created in response to prioritized positions? If none, why?
• How many trained and certified workers are there as of December 2019? How many trained technical instructors are there as of December 2019?
Which short- and long-term outcomes were accomplished for each sub-activity?
• To what extent has the private sector's capacity to identify and influence the available vocational training been strengthened?
• To what extent have the demands of the productive sectors been coordinated with the availability of technical education and vocational training?
• To what extent have the institutional capacities of MINED and INSAFORP been strengthened to meet the demands of technical education and vocational training of the private sector?
• To what extent have the working conditions, wages, and employment status of those who completed TEPT programs changed?
What are the plans for the institutional and financial sustainability of the services offered and the entities created as part of the TEPT activity?
• Which plans or strategies for the institutional and financial sustainability of the services were designed or are in place?
• Is there a sustainability plan for the entities that were created to strengthen institutional capacities to respond to the demands of TEPT training in the private sector?
• Is there a sustainability plan for the national qualifications process of accreditation by competencies?

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V. DATA SOURCES AND ANALYSIS PLAN

This chapter provides an overview of the data sources and methodological approach for the performance evaluation of the Technical Education and Professional Training Systems Activity. This section is organized in two parts. First, we describe the data sources for the pre-post study. Second, we describe the quantitative and qualitative data sources that will help us answer the research questions for the implementation study.

A. Pre-post study

Data sources. The primary data source for the performance evaluation will be the trainee tracer survey. In collaboration with FOMILENIO II, we will field the pre-training tracer survey (baseline) with about 500 participants who are enrolled in TEPT courses, either prior to or within one month of their course initiation. As discussed in Chapter II, TEPT courses will be rolled out starting the second quarter of 2019. Because the timing for the rollout will vary, baseline data collection will take place on a rolling basis and will be aligned with the course rollout plan for the prioritized sectors.

The pre-training tracer survey will measure trainees' sociodemographic characteristics, educational background, work experience, pre-training occupation, pre-training wages, and employee benefits. The survey will also collect detailed trainee contact information, which will help us locate former trainees for the follow-up (post) survey. To maximize response rate at follow-up, we will gather respondents' home address, home phone number, work phone number, cell phone number, email address, and social network contacts. In addition, we will ask respondents to provide contact information for a relative or friend who may be able to reach them in case their primary contact information changes and we are unable to contact them firsthand. Table V.1 summarizes the contents of the baseline and follow-up survey in more detail.

We will collect the follow-up survey six to nine months after the course ends by following a staggered timeline similar to the baseline data collection. The follow-up survey is expected to start in mid-2020 and to extend beyond the compact period. FOMILENIO II will lead the baseline data collection effort during the compact period. Mathematica will procure and lead the post-compact data collection. The follow-up survey will collect data for the same outcome indicators of interest at baseline—that is, current occupation, wages, and employee benefits (the instrument is yet to be developed).

Data collection mode. We designed the baseline instrument for the tracer study and conducted a cognitive pre-test and a feasibility pilot test. The goal of the cognitive pre-test was to assess respondents' comprehension of the questionnaire items, the adequacy of the response format for each item, and the approximate time that respondents would need to complete the instrument. We pre-tested the baseline instrument in November 2018 with a group of 20 trainees at AEROMAN, a training site that provides training to aeronautical technicians and aviation mechanics. AEROMAN is conducting training activities under a separate agreement with FOMILENIO II; therefore, it is not part of the TEPT performance evaluation. This training site

was selected for the baseline instrument pre-test because it is similar to other TEPT training sites, but it is not part of the FOMILENIO II–funded TEPT providers to be evaluated.

Table V.1. Contents of the baseline and follow-up trainee tracer surveys

Domain	Survey contents
Baseline survey	
Demographics and background information	Gender, age, marital status, number of dependents, education level, work experience, main occupation, and sector
Education and training	Educational attainment, previous participation in professional development trainings (duration and training providers)
Employment (including employment conditions) and wages	Current employment status, primary occupation, secondary occupation, average number of hours worked per week, occupational risks, wages, benefits and nonwage compensation
Contact information	Primary and secondary phone number; email address; residential address; social media contact information; name, phone number, and email of a relative or friend
Follow-up survey	
Training receipt	Completion of training; perception of TEPT training on its usefulness to enhance career opportunities, compensation, and work conditions
Education and training	Participation in other professional development trainings since baseline (duration and training providers)
Employment (including employment conditions) and wages	Current employment status, primary occupation, secondary occupation, average number of hours worked per week, occupational risks, wages, benefits and nonwage compensation

Based on the findings from the cognitive pre-test, we made revisions to the baseline instrument. Subsequently, during the first quarter of 2019, we conducted a feasibility pilot test to assess the revised instrument as a computerized self-administered questionnaire (CSAQ) in tablets. We also tested the survey administration procedures and logistics. In addition, the pilot test served to develop FOMILENIO II's guidelines for the data collection. The final baseline instrument will be programmed in the Survey Solutions platform and will be presented to respondents as a CSAQ in tablets owned by FOMILENIO II. Compared to a paper-and-pencil survey administration, the CSAQ will decrease the likelihood of data entry errors and enable FOMILENIO II to complete the baseline data collection effort with a smaller field team. FOMILENIO II's M&E specialist will conduct scheduled visits to the TEPT training sites with the course coordinator and will facilitate the CSAQ with the group of trainees at each site.

We plan to conduct the baseline survey as a CSAQ with groups of enrolled trainees at their training sites and the follow-up survey as an individual, face-to-face, computer-administered questionnaire at respondents' work sites or homes. The follow-up data collection plan will be finalized toward the end of the compact period. Mathematica will procure the data collection with a local firm in advance of the follow-up survey.

FOMILENIO II will upload the completed baseline questionnaires to its internal server and produce the data set for analysis. Mathematica will provide support during the baseline data collection effort and conduct a quality assurance review of the analytic data set. At follow-up, we will likely use the Survey Solutions server to upload and manage the trainee tracer survey.

However, we will develop that process in collaboration with the local data collection firm that will be hired to conduct the survey in 2020.

Analyses. To assess changes in work conditions, wages, and employment status sometime after participants should have completed the TEPT training programs, we will conduct a descriptive analysis of the tracer survey data for trainees in FOMILENIO II–supported courses. We will compare key outcome indicators at baseline and follow-up for each trainee-level outcome and report averages (mean percent change) for the full sample of trainees and also by gender. We will also describe the background trainee characteristics, such as gender, age, and education level. The analysis will include a cross-sector comparison of participant characteristics and implementation milestones. In Table V.2 we present the approach for the pre-post analysis.

Table V.2. Approach for the pre-post analysis of key outcomes

Evaluation questions	Key outcome indicators	Analytic approach
• Did employee benefits or nonwage compensation change for trainees who completed TEPT courses, approximately six to nine months after completing the courses?	• Nonwage compensation – Affiliation to social security services (health/disability) – Affiliation to pension plan (retirement savings)	**Approach:** Assess whether there was a statistically significant change in the nonwage compensation variables—percentage of workers with affiliation to social security services and percentage of workers with affiliation to pension plan (overall, by gender and by sector). **Planned analyses:**[a] Test the mean difference in the nonwage compensation variables before and after completing TEPT courses using a t-test. We will assess if it's feasible to construct a monetary measure of nonwage compensation that includes other benefits such as vacation allowances and year-end bonuses. These work benefits will be treated as outcomes, not as control variables.
• Did wages change for trainees who completed TEPT courses, approximately six to nine months after completing the courses?	• Wages – Total net annual wage from principal economic activity – Total net annual wage from secondary economic activity	**Approach:** Assess whether there was a statistically significant change in participants' wages after completing the training course (overall, by gender and by sector). **Planned analyses:**[a] Test the mean difference in wages before and after completing TEPT courses by using a t-test on wages and disaggregating by first and secondary wage sources.
• Did employment status change for trainees who completed TEPT courses?	• Employment status – Unemployed – Self-employed – Salaried – Other employment	**Approach:** Assess whether there was a statistically significant change in participants' employment status after completing the training course (overall and by gender). We do not expect to see a significant change in employment status as a result of the training because trainees were already employed before the training. However, this indicator provides context for the interpretation of the indicators below. **Planned analyses:**[a] Test the mean percent change before and after completing TEPT courses for each employment type (individually) by using a t-test.

[a]Significance level set for *p*-values of less than 0.05 for all bidirectional analyses.

B. Implementation study

The implementation study will describe the implementation of program sub-activities, program outputs, short-term program achievements, and plans for sustainability. The study will also identify the main facilitators of and barriers to implementation of the TEPT sub-activities. This component of the performance evaluation will draw primarily on interviews with key stakeholders, a review of program documents, and a descriptive analysis of monitoring data gathered by FOMILENIO II. Below, we present the data sources, mode of data collection, and the plan for analysis.

Data sources and mode of data collection. We will draw on three sources to obtain qualitative and quantitative information on outputs and achievements of the TEPT activity: (1) stakeholder interviews, (2) program monitoring data, and (3) a document review. Next, we describe briefly the type of data we will gather from each source.

1. **Stakeholder interviews.** We will conduct interviews with key stakeholders for the TEPT activity, including members of the sector committees, members of the entities that award accreditation by competencies, staff at the TEPT training centers, staff who oversaw the strategy to strengthen the labor market observatory, and FOMILENIO II staff who oversaw the implementation of TEPT sub-activities. In Table V.3 (below), we present a preliminary list of potential stakeholders for qualitative interviews and focus groups. We will select key informants for each sub-activity strategically and in consultation with MCC and FOMILENIO II.

   We will identify key informants based on their role in the implementation of each TEPT sub-activity, and design semi-structured interview protocols tailored to their role. Across respondents, interview protocols will cover the following four broad topics: (1) overview of implementation of TEPT sub-activities, (2) facilitators of and barriers to implementation, (3) key short-term and long-term achievements for each sub-activity, and (4) institutional and financial sustainability.

   We will conduct two waves of in person interviews, in 2019 and 2020 (depending upon the actual implementation timeline for TEPT sub-activities). In addition, we will keep in close contact with FOMILENIO II to track the progress of the implementation of TEPT sub-activities.

Table V.3. Key respondents for stakeholder interviews

Respondents	Individual or group interviews
FOMILENIO II implementation staff	2
Coordinators or members of the sectoral committees	8
Members of the Sectoral Committee Board.	3
Leaders of training designs or instructors leading the trainings (one per sector)	8
Members of the Council for the Coordination of Technical Education and Vocational Training (MINED, SETEPLAN, INSAFORP, Board of Sectoral Committees)	6
Staff leading the strategy to strengthen the labor market observatory	1

2. **FOMILENIO II monitoring data.** We expect to have access to data on monitoring indicators and targets for the TEPT sub-activities. For example, we will request data on trainee enrollment and graduation rates (overall and by subgroup), the number of new technical education programs, the number of new courses that target the prioritized job positions for each sector, the number and type of training sites per sector, and the number of trainees per job positions and sectors. We will send the request to FOMILENIO II specifying which indicators will be included in the analysis. FOMILENIO II will provide the data set via SharePoint during the last quarter of 2019 and at the end of the compact period in September 2020.
3. **Document review.** We will review documents and progress reports for the TEPT sub-activities. These may include the design report for the accreditation by competencies model, descriptions of the optional modules for BTVs, and progress reports on the sectoral committees. We will conduct a systematic process to extract relevant narrative and output indicator data from these and other similar sources. For example, to understand the background and updates in the implementation of the TEPT activity, we used the technical notes and FOMILENIO II presentations to stakeholders, such as INSAFORP or the sectoral committees.

Analytic approach for quantitative program implementation data. We will conduct a descriptive statistical analysis on monitoring data to summarize the program outputs and understand short-term and long-term program achievements. Table V.4 provides an illustrative list of monitoring indicators and targets that we may include in our quantitative analysis of program implementation data.

Analytic approach for qualitative program implementation data. We will prepare interview and focus group transcripts and conduct thematic analysis in two sequential steps. The first step involves conducting data reduction and mapping transcript segments to the core performance research questions. The second step involves thematic framing—the process of distilling themes and identifying patterns in qualitative data. We will develop a coding framework with a hierarchy of conceptual categories that are linked to the research questions and the program logic model. We will also create thematic memos for data synthesis and interpretation of key findings.

To take advantage of the complementarity that a mixed-methods approach affords, we will integrate findings from descriptive quantitative analysis of monitoring and administrative data with findings from qualitative data sources. We will summarize program outputs and outcomes from FOMILENIO II's administrative records and implementation reports by using data abstraction templates that we will design for this study. We will also create summary tables of qualitative findings from key stakeholder interviews. Then, we will integrate the quantitative and qualitative findings by using triangulation techniques to (1) assess the consistency of the findings across methods and data sources, (2) confirm patterns of findings, and (3) identify potential discrepancies across data sources. Furthermore, information from the qualitative data collection related to barriers and facilitators to program implementation will help us interpret the findings from the quantitative analysis.

Table V.4. Monitoring data of TEPT activity from administrative records

Indicator	Targets
Number of new programs designed in response to specific needs of the sectors	24 (3 per sector) by December 2019
Number of certified technical instructors	54
Document on general model of certification of competencies approved by public and private sectors	By August 1, 2020
Instruments, regulations, and procedures established for the implementation of the general competency model	By June 1, 2019
Number of classroom instructors who complete MCC-supported training focused on instructional quality, as defined by the compact training activity	54
Number of sectoral committees of technical education and vocational training formally established	8
Sectoral Committee Board created	By December 2018
Coordination Council of Technical Education and Professional Training created	By June 1, 2019
Number of optional modules for BTVs vocational technical baccalaureates designed in coordination with sectoral committees in geographical areas where there is a presence of productive sectors intervened by FOMILENIO II	3
Number of agreements signed between companies and educational centers through MINED for student interns who attend vocational technical baccalaureates and have completed at least one optional module designed in coordination with the sectoral committees	To be defined
National qualifications framework is established	By September 1, 2020
Establishment of the TEPT Information Platform (including M&E data and the Observatory of the Labor Market)	By September 1, 2020
Development of a road map for the creation of a national qualifications framework is completed	By September 30, 2019
Design of TEPT information management system to allow for planning, tracking, and evaluating of the TEPT system by the coordinating council and other actors	By June 20, 2020

Source: FOMILENIO II administrative records.

Note: FOMILENIO II is working on the final M&E plan, some of the indicators might change.

Due to substantial implementation delays and changes that FOMILENIO made to medium- and long-term outcomes, we modified the methodology and data sources described in Chapter V. The modifications to the evaluation design and data collection plan are in line with MCC's interest in gathering rich data on the outcomes that are likely to change with the TEPT intervention during the Compact and one year after the Compact closes from the perspective of both the trainees and sector stakeholders. The rationale and specific changes are described in detail in Annex A and B.

C. Limitations and challenges

Our performance evaluation of the TEPT Activity faces some important challenges and limitations:

- **Absence of a rigorous counterfactual in the single group pre-post design.** Our evaluation design is a descriptive performance evaluation. The design doesn't identify a rigorous counterfactual for trainees in FOMILENIO II–supported courses—that is, we won't be able

to determine what the labor market outcomes of these trainees would have been in the absence of FOMILENIO II's TEPT activities.

- **Potential for low response rates in the trainee tracer survey.** Our ability to provide quantitative evidence on trainee outcomes depends upon achieving high response rates on the trainee tracer survey. Low response rates may raise the concern that only certain types of trainees—for example, those with better outcomes—participated in the follow-up survey and therefore drove the findings. To facilitate high response rates in the follow-up survey, we will collect detailed primary contact information on program participants at baseline as well as secondary contact information of another person that could help locate the participant. Mathematica will provide participants' primary and secondary contact information to the firm that will lead the post-compact data collection.
- **Rollout plan in case of delayed implementation.** Delays in implementation will impact the timeline of the performance evaluation. We will coordinate closely with FOMILENIO II to address any changes in the implementation timeline and will adapt the evaluation timeline to incorporate such changes upon approval from MCC.

The modifications to the evaluation design in response to the implementation delays and to the updates that FOMILENIO II made to medium- and long-term outcomes in October 2019 no longer involve risks due to potential low response rates in the trainee tracer survey. However, there are other risks and limitations inherent in the updated methodology and data sources. These risks and limitations are discussed in Annex A and B.

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VI. ADMINISTRATIVE ASPECTS

A. Institutional review board (IRB) requirements

Mathematica requested IRB approval for the TEPT baseline CSAQ to ensure that the planned data collection methods and procedures adhered to the standards for the protection of the rights and welfare of study participants. The expedited IRB review included two baseline data collection activities: (1) the pre-test of the CSAQ with aeronautical technicians and aviation mechanics who were in training (not in the study sample) and (2) the baseline data collection for the TEPT performance evaluation focused on a cohort of trainees enrolled in TEPT courses in various economic sectors (for example, tourism, textiles and apparel, sugar production, farming and poultry, coffee growers, plastics, women-led small businesses, and construction).

We requested IRB approval through the Health Media Labs IRB, as we have done for similar studies. We received approval for both baseline data collection activities on October 8, 2018. Baseline data collection is expected to start in the second quarter of 2019. We plan to request IRB review for the endline data collection in 2020.

B. Preparing data files for access, privacy, and documentation

We plan to prepare de-identified data files, user manuals, and codebooks by using the most recent guidelines developed by MCC. These products may be made available to the public after we write the baseline and final evaluation reports. The public use data files will exclude personal or geographic identifiers that would permit identification of individual respondents or their households. In addition, we will remove or recode variables that introduce reasonable risks of deductive disclosure of the identity of individual participants. We will remove all individual identifiers, including names, addresses, telephone numbers, government-issued identification numbers, and any other similar variables. We will also recode outliers and unique data by using top and bottom coding or replacing affected observations with missing values. If necessary, we will also collapse into less identifiable categories any variables that make an individual highly identifiable as a consequence of geographic or other factors (such as ethnic classifications or languages spoken). These actions are designed to retain the usefulness of the data while preserving the privacy of survey respondents.

C. Dissemination plan

We will work with MCC to increase the visibility of the evaluation by making the findings accessible through several actions:

- We will present key final findings from the evaluation reports. We will present in Washington, D.C., via a web presentation and in El Salvador (in person). The presentations will be targeted to key stakeholders and policymakers, including El Salvador's Ministry of Education. We will inform stakeholders about the impacts, key findings from the implementation process, and lessons learned. The presentations will give stakeholders an opportunity to engage directly with the research team and pose questions about the findings.
- The evaluation reports will present findings in formats that are clear and accessible to nontechnical audiences, and will be made available online.

- We will write an executive summary in Spanish targeted to local stakeholders.

D. Evaluation team roles and responsibilities

Larissa Campuzano, a senior researcher at Mathematica, will be the senior analyst for the impact evaluation of the SI-EITP model. Since 2007, Dr. Campuzano has led all education evaluations under the first compact. She is currently leading the impact evaluation of the Education Quality Activity. Camila Fernández, a senior researcher at Mathematica, will lead the performance evaluation data collection tasks and qualitative analysis. Dr. Fernández has substantial experience implementing surveys and conducting qualitative education research in Latin America. Evan Borkum will be the senior technical adviser for this contract. Dr. Borkum's responsibility will be to provide quality assurance for our deliverables. Ivonne Padilla will support data collection in El Salvador, prepare data sets, create programming files, and produce all statistical output for the quantitative analyses.

In addition, we will provide technical support to FOMILENIO II's M&E staff, who will conduct the baseline data collection for this performance evaluation.

E. Evaluation timeline and reporting schedule

FOMILENIO II expects trainings for the TEPT Activity to be rolled out starting in the second quarter of 2019. The duration of trainings is expected to range from four to nine months depending on the sector. However, the timeline for the implementation of the TEPT courses has not yet been finalized. The timeline for the performance evaluation could change in response to the final implementation schedule; we will modify it as needed.

Findings from the TEPT Activity performance evaluation will be summarized in a final evaluation report. We will discuss the schedule for the final report with MCC. We propose conducting the final follow-up survey from September 2020 to February 2021—six to nine months after trainees complete the courses. The follow-up survey may need to be implemented in two or three staggered rounds of data collection, according to the course end dates. The updated design does not require a survey of trainees, but instead will collect qualitative data in 2021 as Annex A describes.

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ANNEX A

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Modifications to the Evaluation Design of the Technical Education and Professional Training (TEPT) Activity

Annex A describes the proposed modifications to the evaluation design of the Technical Education and Professional Training (TEPT) Activity in response to the findings of the first wave of qualitative data collection completed in February 2020 and summarized in the trip report submitted on March 3, 2020 (Campuzano & Padilla, 2020).

This Annex is organized in three sections. In the first section, we summarize the original evaluation design of the TEPT Activity. In the second section, we discuss the evolution of the TEPT Activity, its implementation delays, and the implications for the evaluation plans. We also propose modifications to the research methodology that will enable us to capture learnings from the main components of the TEPT Activity despite those delays. In the third section, we describe in more detail the proposed modifications to the evaluation design and the research questions.

I. Original evaluation design

The original evaluation design for the TEPT Activity was a mixed-methods approach, which included a qualitative and a quantitative component. The qualitative component would focus on the implementation of intervention activities aimed at strengthening TEPT institutional capacity at the system level and improving the TEPT offerings to better fit the labor market needs. The quantitative component would focus on assessing the implementation of TEPT courses and participants' employment-related outcomes like work conditions, wages, etc. Next we describe in more detail the research questions and goals of each component.

The **qualitative component** of the original evaluation design of the TEPT Activity would focus on describing all components of the TEPT Activity, their implementation, and the progress towards short- and medium-term outcomes of the Activity. The five main research questions of the original implementation study were:

1. How were the TEPT sub-activities implemented, and what were the major facilitators and barriers to implementation?
2. Were some sectors more successful implementing the TEPT activities than others?
3. Which outputs were accomplished for each sub-activity, and to what extent did they meet the targets?
4. Which short- and long-term outcomes were accomplished for each sub-activity?
5. What are the plans for the institutional and financial sustainability of the services offered and the entities created as part of the TEPT Activity?

To answer the implementation research questions, we planned to interview key stakeholders, review program documents, and perform descriptive statistical analysis of monitoring data gathered by FOMILENIO II. The original plan was to conduct two waves of in-person interviews, the first in 2019 and the second in 2020. Given the implementation delays described below, the first qualitative data collection was conducted in February 2020, and a second round of data collection is planned for July or August 2020. In the first round of data collection, we

interviewed members of the Sectoral Committees, consultants of the Sectoral Committees, and FOMILENIO II staff. In the second round, we plan to interview members of the Sectoral Committees Board and the Coordination Council for Technical Education and Professional Training (MINED, INSAFORP, and representatives of the Sectoral Committees Board), as well as SETEPLAN and MILENIO II staff.

The **quantitative (pre-post) component** would enable us to describe changes in participants' work conditions and wages before and after participating in TEPT programs, and potential changes in employment (expected in some sectors only). The three descriptive research questions to be answered with trainee survey data for the pre-post component were:

- Did employee work conditions, benefits, or non-wage compensation change for trainees who participated in the TEPT courses approximately six to nine months after the courses ended?
- Did wages change for trainees who participated in TEPT courses (as measured about six to nine months after the courses ended)?
- Did employment status change for trainees who participated in TEPT courses (as measured about six to nine months after the courses ended)?

The plan was to offer TEPT training mainly to workers who were already employed in the prioritized job positions identified in each sector. As a result, the original design assumed we could observe changes in employees' work conditions and wages but not necessarily in employment. However, it was possible for non-employees to participate in the training courses in some sectors—for example, the program in the plastics sector recruited unemployed youth for the first course. Therefore, we included a research question related to employment outcomes, which we expected would be relevant only for some sectors.

The data collection plan for the pre-post component was to collect baseline data at the start of each course and then collect follow-up data six to nine months after courses ended. The baseline data were going to be collected by the monitoring and evaluation staff at FOMILENIO II during the Compact; therefore, the evaluation budget did not allocate funds for baseline data collection. We had envisaged collecting follow-up data after the end of the Compact, by the end of 2020 or early 2021, in one or two rounds. However, given the evolution of the TEPT Activity and the implementation delays we described in the trip report (March 3, 2020), only four sectors may have courses implemented before the end of the Compact, for which FOMILENIO II could collect baseline data.

II. Evolution of the TEPT Activity, implementation delays, and implications for the evaluation design

Evolution of the TEPT Activity. The original conceptualization of the TEPT Activity (originally known as the technical and vocational education and Training [TVET] Activity) has evolved as FOMILENIO II has faced implementation challenges. As described in the evaluation design report (Fernandez et al., March 2019), the original vision and implementation plan for the TVET Activity involved reforming the TEPT system by creating a unique governing body responsible for coordination across the private sector, the formal technical education system, and professional training programs. However, it was politically infeasible to execute the original plan and the TEPT Activity was redesigned in 2017.

Recognizing the importance of integrating the technical education and vocational training systems and aligning their educational offerings with the needs of the private sector, FOMILENIO II revised the plans for the TEPT Activity to create Sectoral Committees of Technical and Professional Training in key economic sectors, along with a Board of Sectoral Committees and a Coordination Council for Technical Education and Professional Training, composed of MINEDUCYT-INSAFORP and representatives of the Sectoral Committee Board. Under the revised plan, these three entities would coordinate their actions to better align the supply of human capital with private sector demand.

The main components[7] of the redesigned TEPT Activity were (1) creating Sectoral Committees for technical and educational training, and creating a Sectoral Committee Board to consolidate the demand for professional development in the private sector; (2) offering professional training to workers in the different industrial sectors under the competency-based approach; (3) designing models for certifying workers by competencies and accrediting institutions; (4) creating a Coordination Council of Technical Education and Professional Training to facilitate coordination between public and private organizations involved in technical and professional training, and align the offerings with the skills demanded in the labor market; (5) establishing procedures and regulations to implement and scale up the certification and accreditation models; (6) designing a roadmap for creating a national qualifications framework; and (7) developing a Matrix of Indicators for the Coordination Council and other bodies to use in planning, monitoring, and evaluating the TEPT Activity.

The evaluation design we proposed for the TEPT Activity (Fernandez et al., 2019) accounted for these changes in the intervention by including a qualitative component that would focus on the activities related to system changes (which includes the seven activities described above) and a pre-post component that would focus on trainee-level outcomes related to the courses implemented (the second activity described above).

In October 2019, after MCC approved the evaluation design for the TEPT Activity, FOMILENIO II developed a workplan for implementing the Activity and updated some of the medium- and long-term outcomes. Table A.1 presents the original outcomes as described in the evaluation design report and the updated outcomes from the October 2019 workplan.

[7] From here on, we refer to the TEPT intervention components as "activities." This is how they are known by stakeholders in El Salvador (to be distinguished from the general TEPT Activity, which is capitalized).

Table A.1. Changes in the outcomes defined for the TEPT Activity

Outcomes	Outcomes in the evaluation design (April 2019)	Outcomes updated in the workplan (October 2019)
Short-term outcomes	Capacities of the private sector strengthened to identify and address professional training needs	Capacities of the private sector strengthened to identify and address professional training needs
Medium-term outcomes	Match the demands of the productive sector with available technical and professional training Institutional capacities strengthened to respond to the demands for technical education and professional training of the private sector	Institutional capacities strengthened to respond to the demands for technical education and professional training of the private sector
Long-term outcomes	Increased productivity of companies in the sectors participating in the TEPT Activity Increased wage for workers in the sectors and improved employability and socioeconomic inclusion of TEPT beneficiaries Improved capacities of government institutions to plan the educational and professional training	Improved capacities of government and private institutions in a PPP to plan the educational and professional training.

As shown in Table A.1, the updated outcomes focus on system changes and not on outcome changes for trainees. The main implication of this change for the evaluation design is that, in order to assess system-level outcomes, we need to collect qualitative data from key stakeholders involved in implementing those activities. Hence, the qualitative component of the evaluation design is essential to assess the updated outcomes.

Implementation delays. As summarized in our trip report (March 3, 2020), FOMILENIO II made progress in implementing the activities under TEPT that aim to improve the link between technical education and professional training and the needs of the private sector. As of February 2020, nine Sectoral Committees have been created, the Sectoral Committees Board has been established but is not yet working in completely independently of FOMILENIO II, and the Coordination Council has just been established. The consulting company Consortium for International Development in Education (CIDE) just started to design the Certification and Accreditation process for TEPT. At the same time, the tender process for the national qualification framework began. We expect that the activities completed by the end of the Compact will set the foundation for a system that improves the link between technical and professional education and the private sector, including the implementation of the national qualification framework. In contrast, full implementation of training courses will not be completed until after the Compact ends. Table A.2 shows the main activities planned for the TEPT Activity according to the October 2019 workplan, the funding to conduct these activities, and the status as of February 2020.

Table A.2. Activities planned for July 2019 to September 2020

Activity	Sub-activity	Amount	Findings from February 2020 data collection
A.1. Establish and strengthen Sectoral Committees	A.1.1. Legalize Sectoral Committees with roadmaps and sustainability plans	$ 711,379	Started, expected to be completed by the end of the Compact.
A.2. Establish a mechanism to consolidate the demands of the private sector	A.2.1. The Board of Committees holds periodic sessions	-	Started, but the Board is not yet functioning completely independently.
	A.2.2. Prepare the Strategic and Operational Plan for the Board of Committees (CI)	$ 20,000	Started, expected to be completed by the end of the Compact.
A.3. Identify priority positions with their respective competency profiles (coffee, MSMEs, and ICT)	A.3.1. Completion of diagnoses for 3 sectors: MSMEs led by women, coffee, and ICT.	$ 104,075	Started, expected to be completed by the end of the Compact.
A.4. Design of training programs for workers	A.4.1. Completion the design of training programs in 6 sectors: plastic, construction, poultry, sugar, textile and clothing, and tourism	$ 1,478,465	Started, 5 sectors have designs of their training programs. Textile sector expects to have the design by the end of the Compact.
	A.4.2. Design of training programs for 3 sectors: MSMEs led by women, coffee, and ICT		Started, expected to be completed by the end of the Compact.
A.5. Training and certification of workers in prioritized positions	A.5.1. Equipment for the implementation of training programs for prioritized positions in 9 sectors	$ 2,416,000	Not started, only 5 sectors have identified the required equipment for the training.
	A.5.2. Implementation of training programs in 6 sectors: sugar, construction, textile and clothing, plastic, tourism, and poultry	$ 1,610,000	Not started, only 4 sectors are likely to start (but not necessarily complete) training courses by the end of the Compact.
	A.5.3. Implementation of training programs in 3 sectors: coffee, ICT, and MSMEs led by women	-*	Not started, expected to start after the end of the Compact.
	A.5.4. Hire two individual consultancies to supervise the implementation of the training programs	$ 50,000	Not started, depends on the progression to implement trainings.
A.6. Training and accreditation of technical instructors	A.6.1. Development of an accreditation course for specialists in the sectors, in coordination with INSAFORP	-	Status unknown.
A.7. Design of accreditation and certification models by competencies	A.7.1. Create a proposal for a general certification model by competencies	$ 450,000	Expected to be completed by the end of the Compact.
A.8. Create or update modules for the Vocational Technical Baccalaureate (BTV)	A.8.1. Create or update modules for the Vocational Technical Baccalaureate (BTV)	$ 150,000	Started, expected to be completed by the end of the Compact.
A.9. Promote internships for BTV graduates	A.9.1. Promote internships for BTV graduates	-	Not started.
A.10. Establish the Council for the Coordination of Technical Education and Professional Training	A.10.1. The Council holds periodic sessions	-	Council installed.
	A.10.2. Hire an individual consultant for the Executive Secretariat of the Coordination Council	$ 50,000	Not started, expected to be completed by the end of the Compact.
A.11. Design the roadmap for the creation of a national qualification framework	A.11.1. Design the roadmap for the creation of a national qualification/n framework	$180,000	Started the tender process, consultancy expected to be completed by the end of the Compact.
A.12. Design a system of indicators for planning, monitoring, and evaluating TEPT activities	A.12.1. Design an information system for planning, monitoring, and evaluating TEPT activities	$ 200,000	Started, expected to be completed by the end of the Compact.

Source: FOMILENIO II workplan (October 2019). *FOMILENIO II does not have plans to commit these funds.

Implications for the evaluation design. Based on FOMILENIO II's most recent updates to the implementation timeline of training courses and on our findings from the February 2020 qualitative data collection, only four of nine sectors will have some courses implemented before

the end of the Compact. In the remaining five sectors, courses will be designed and materials will be purchased by the end of the Compact; however, the full implementation of courses will not be completed until after the Compact ends. Given that only four of nine sectors are likely to start (but not necessarily complete) training courses by the end of the Compact, collecting survey data on the beneficiaries trained during the Compact would provide very limited information on the TEPT Activity results.

Qualitative data collected thus far only provide information on the activities implemented up to February 2020, which do not include the full range of activities that TEPT had planned. The perspective of the Sectoral Committees will be incomplete if we only rely on the data collected during the February 2020 trip. We could expand the scope of the second round of data collection in July or August of 2020 to include interviews with the Sectoral Committees. However, as mentioned above, most sectors will have not implemented the courses by then. In addition, some of the courses that will be implemented may have to be shortened to be completed before the Compact ends or may be piloted in a different population than originally intended. As a result, relying only on qualitative data collected during the Compact's timeframe will limit our ability to draw reliable conclusions on the implementation of all the activities planned under TEPT.

Potential changes to the evaluation design. We have considered two alternative changes to the evaluation design to mitigate the consequences of the evolution of the TEPT Activity and the implementation delays on the evaluation: (1) make no modifications to the research methodology and add more rounds of trainee survey data collection, or (2) change the research methodology from mixed methods to a fully qualitative approach and replace the pre-post trainee survey with a qualitative data collection effort after the Compact ends. Next we describe these options in further detail.

1. *Making no modifications to the design and adding more rounds of trainee survey data collection*. A potential solution that would allow us to include in the pre-post component the sectors/courses that are facing the longest delays would be to conduct additional rounds of baseline and follow-up data collection of the trainee survey. To do this, we would need to hire a data collection firm to collect baseline data on trainees for the courses that start after the Compact ends. Given the wide range of course start dates and course lengths, it is also likely that we would need to conduct at least one more follow-up data collection round than originally planned.

   The advantage of this approach is that it would enable us to answer the research questions as originally proposed and for most sectors. However, this approach has three disadvantages. First, it would require additional resources and would increase the cost of the evaluation. Second, it is unlikely that we will identify changes in work conditions or wages within six to nine months of course completion. This timeframe was selected in coordination with MCC and FOMILENIO because changes on key outcomes could occur in this period and data collection could be collected in a cost-efficient way, considering that courses have different start dates. However, findings from the first round of qualitative data collected in 2020 suggest that stakeholders do not expect those changes to occur within that time span. Instead, they expect to observe changes in trainees' knowledge and skills over this period, which would only translate into improvements in work conditions and wages (and thereby job satisfaction) in the long run. These risks were discussed extensively with FOMILENIO

II and MCC when designing the pre-post study, and the most up-to-date information available on the implementation timeline for TEPT activities supports the likelihood of the risks we identified initially. Third, the pre-post option would not allow us to assess two critical aspects of the intervention: (1) the results of the TEPT activities focused on strengthening institutional capacity at the systems level; and (2) improvements in the alignment of TEPT offerings with labor market needs. These two critical aspects will be assessed through the qualitative data approach detailed below.

2. *Changing the research methodology from mixed methods to a full qualitative approach and replacing the trainee survey with additional qualitative data collection.* This alternative consists of reframing the research questions that were initially planned to be answered through the pre-post study and using a qualitative approach to answer them. The qualitative approach would allow us to assess whether the sectors implemented the courses, how the courses were implemented, and what perceived benefits these courses had for trainees and firms. This would be a budget-neutral modification, as we would use the resources budgeted for the pre-post survey to conduct an additional round of qualitative data collection after the Compact ends.

   The additional round of qualitative data collection would also allow us to assess the sustainability of key activities, such as the establishment of the Sectoral Committees, the Board of Committees, and the Coordination Council, as well as to collect information on whether the sectors were able to implement the courses after the end of the Compact and how they used the equipment purchased by FOMILENIO II. In addition, using a qualitative approach would enable us to collect information on trainees' perceived benefits from program participation, like potential changes in work responsibilities and tasks, perceived improvements in occupational performance, work conditions, etc. The disadvantage of this approach is that we would not have quantitative data for a representative sample of trainees on wages, employment, and job conditions. However, we could collect qualitative data for a small purposive sample on perceived changes in income, employment, and job conditions.

III. Recommended changes to the evaluation design of the TEPT Activity

We recommend the second option, changing the research methodology to a full qualitative evaluation and replacing the trainee survey with qualitative data collection. Overall, with the evolution of the TEPT Activity and the insights we have gained about its implementation through the first round of data collection, the limitations of focusing on income and employment outcomes from a trainee tracer survey have become clear. Specifically, because it is not feasible to collect quantitative measures on trainees' knowledge or improved skillsets in a trainee tracer survey, that survey would not add much value to the evaluation goals. Given the additional cost and limited usefulness of the tracer survey, we suggest MCC should reconsider investing in it. Instead, those funds could be used to focus on the completion and sustainability of activities related to establishing the TEPT system, which is where FOMILENIO has invested more time and resources. Under this option, we still propose to collect qualitative information about trainees' perceived benefits from program participation. The proposed data collection would be of greater use to the evaluation goals and would remain within the current evaluation budget.

In the additional round of qualitative data collection proposed, we will conduct interviews with members of the Sectoral Committees, Board of Sectoral Committees, and Coordination Council (INSAFORP and MINEDUCYT), and conduct focus groups with trainees. This round of data collection would take place in 2021, allowing enough time for the sectors to implement the courses and enabling us to assess the sustainability of the committees formed during the Compact.

These changes would allow us to provide information on whether and how all the courses designed under the TEPT Activity were implemented, whether and how the committees established as part of the TEPT Activity functioned after the Compact ended. Also, they will enable us to assess progress made towards the establishment of the National Qualifications Framework after the Compact closure. Without the third round of qualitative data collection proposed, we would not be able to assess how the courses in the nine sectors were implemented or whether the investments of the TEPT Activity in establishing the committees were sustained. Because the consultancy for the Road Map for the National Qualifications Framework is in the design phase, re-visiting this activity after the Compact ends will allow us to assess the results of this investment after the Qualifications Framework is moved from the design to the implementation phase.

The qualitative approach would also include conducting focus groups or interviews with trainees who complete the courses by the time of the third round of data collection to assess trainees' perceptions of impacts on their employment, income, job conditions, and technical knowledge. Collecting these data would enable us to learn about the benefits perceived by trainees, which was a key goal of the pre-post component. To that end, we would rely on a purposeful sample of trainees from a range of sectors for which courses have been completed by the time of data collection. We would also aim to include a mix of trainees who are employed and not employed.

In Table A.3, we present the proposed modifications to the original research questions and the rationale for the changes.

Table A.3. Modifications to the original research questions and rationale

Original and modified questions	Rationale for change and notes on data collection
Implementation study	
1. How were the TEPT sub-activities implemented, and what were the major facilitators and barriers to implementation? Modified to: How were the TEPT sub-activities that aimed to strengthen institutional capacities to meet the private sector's demand for technical education and professional training implemented, and what were the major facilitators and barriers to implementation?	• Rephrased the question to focus on the narrower range of activities that established a new model to link the demands of the productive sector with the available technical education and vocational training. We also added questions to focus on other activities.
New question: 2. How were the TEPT training programs designed and what were the major facilitators and barriers?	• Question added to understand better the design of the training courses. • Some information on the design of training programs was collected in February 2020 and we plan to collect additional information in July or August 2020.

Original and modified questions	Rationale for change and notes on data collection
New question: 3. How were the TEPT training programs implemented and what were the major facilitators and barriers to the implementation?	• Question added to understand the implementation of the training courses and, most importantly, variations in implementation. Given that most of the courses will not be implemented during the Compact, it is important to understand whether and how the courses were implemented by the sectors. This will also provide information on the suitability of program after the Compact ends. • This question requires a second round of group interviews with the members of the Sectoral Committees to be conducted after the Compact ends.
4. Were some sectors more successful in implementing the TEPT activities than others?	• No modifications were suggested for this question.
5. Which outputs were accomplished for each sub-activity, and to what extent did they meet the targets? If they did not meet the targets, why not?	• No modifications were suggested for this question. • As originally planned, we will answer this question using administrative data from FOMILENIO II
6. Which short- and long-term outcomes were accomplished for each sub-activity? Modified to: 6. How were the capacities of the private sector strengthened to identify and address professional training needs?	• Separated from original question 6 to assess the short-term expected outcome defined in the workplan (October 2019) • This question requires additional qualitative data collection, a second round of group interviews with the members of the Sectoral Committees after the Compact ends.
6. Which short- and long-term outcomes were accomplished for each sub-activity? Modified to: 7. How were the institutional capacities strengthened to respond to the demands for technical education and professional training in the private sector?	• Separated from original question 6 to assess the medium-term expected outcome defined in the workplan (October 2019) • This question requires additional qualitative data collection, a second round of group interviews with the members of the Sectoral Committees after the Compact ends.
6. Which short- and long-term outcomes were accomplished for each sub-activity? Modified to: 8. In what ways did the capacities of government institutions to plan the educational and professional training improve?	• Separated from original question 6 to assess the long-term expected outcome defined in the workplan (October 2019) • This question requires additional qualitative data collection, interviews with the council after the Compact ends.
9. What are the plans for the institutional and financial sustainability of the services offered and the entities created as part of the TEPT Activity?	• No modifications were suggested for this question. • Due to implementation delays obtaining this question requires an additional round of qualitative data collection after the Compact ends, a second round of group interviews with the members of the Sectoral Committees after the Compact ends.
Pre-post study	
1. Did employee work conditions, benefits, or non-wage compensation change for trainees who participated in the TEPT courses approximately six to nine months after the courses ended? Modified to: 1. What were the perceived changes in technical knowledge or skills of trainees who participated in TEPT courses? 2. What were the perceived changes in the work conditions, benefits, or non-wage compensation for trainees who participated in TEPT courses?	• We propose to change the research methodology to answer these questions. Instead of gathering data through the pre-post survey, we will use administrative data and collect in-depth qualitative information on the same topics from focus groups with trainees in key sectors to obtain information related to trainees' work conditions, income, or employment status. • Implementation delays have changed the timeline of the courses and the target population. • Given changes in implementation, the survey for the pre-post study would no longer provide the type and quality of data we originally expected: ○ Only 4 (out of 9) sectors expected to begin courses in 2020
2. Did wages change for trainees who participated in TEPT courses (as measured about six to nine months after the courses ended)? Modified to:	

Original and modified questions	Rationale for change and notes on data collection
2. What were the perceived changes in income for trainees who participated in TEPT courses? 3. Did employment status change for trainees who participated in TEPT courses (as measured about six to nine months after the courses ended)? Modified to: 3. Was there a change in employment status after participating in the TEPT courses?	○ Some courses were shortened ○ A couple of courses will not be implemented with the intended population

In sum, the proposed changes to the evaluation design and data collection plan are in line with MCC's interest in gathering rich data on the outcomes that are likely to change with the TEPT intervention during the Compact and one year after the Compact closes, from the perspective of both the trainees and sector stakeholders. While a qualitative-only approach has potential limitations in terms of representativeness and generalizability, the advantages of this approach outweigh its limitations. In particular, this approach would yield rich and useful learnings about implementation and perceived benefits of the intervention. At the same time, it would prevent MCC from investing significant resources in several rounds of follow-up trainee surveys that would be unlikely to capture changes in the indicators of interest to MCC (i.e., wages and employment, and job conditions), given the design and timing of the activities under implementation. Furthermore, it would provide MCC with information on the perceived benefits of this program to the private sector, which would not be possible by conducting only a trainee survey. Finally, our recommended approach will not require additional resources.

IV. Revisions in response to MCC's comments

As part of the review process, MCC provided comments to our proposed modifications and we answered each comment (See Annex B).

There were two common themes in MCCs comments. The first was the need to clarify how the evaluation could provide information on employment and skills formation in the absence of a trainee survey. The second theme was how the evaluation planned to triangulate information to understand the contributions of the TEPT activity to employment and skill formation outcomes. Below we explain how we plan to address these two concerns, including other sources of data that we plan to collect in addition to the focus groups with members of the sectoral committees and trainees. We also discuss how we will triangulate the data sources to obtain information on employment, skills formation, and the alignment of the new skills with the private sector needs.

As discussed in the Evaluation Design Report for Activity 2, we will obtain monitoring data for the courses implemented. With collaboration from FOMILENIO II, we will request that the training centers for each sector collect and provide us with:

- **Monitoring data on course take up and completion**. We will request monitoring data from training centers, including the number of students enrolled in the courses, the number of students that complete the courses, the number of students that are certified (if certification is offered), and other relevant monitoring information.
- **Trainees' employment status**. We will also request information on trainees' employment status at the beginning and at the end of the curse.

- **The competencies that trainees mastered during the courses**. If the training centers use any form of assessment to track trainees' mastery of the competencies for each course (for example a checklist, observation protocol or any assessment form), we will request that they send us those assessments forms. We expect that the availability of data on trainees' s skills will vary by sector and, in cases where it is available, it will be collected directly by the training centers.

We are coordinating with FOMILENIO II to formalize the request that the training centers collect this data. However, the availability or reliability of the data at this point remains uncertain.

Although reliable employment data could be obtained from a tracer survey; as agreed during the meeting with MCC, the resources available for data collection are better spent on expanding the qualitative study. Hence, we will collect qualitative and monitoring data instead of the tracer survey to obtain information on employment and skill improvement. Instead of conducting the trainee survey data, we plan to triangulate monitoring data from training centers and qualitative data obtained from the sectoral committees and from trainees to explore possible changes in trainees' skills and employment. In focus groups and interviews with sectoral committees and trainees, we will explore two topics of great interest to MCC, and of high relevance to the performance evaluation: (1) If/how the skills have improved, if/how trainees' workload has changed, if/how trainees' occupation/jobs have changed, etc.; and (2) If trainees have found new employment, have better occupations, or the extent to which their employment conditions have changed.

References

Fernandez, Camila, I. Padilla, and L. Campuzano. Design report for the performance Evaluation of the Technical Education and Professional Training (TEPT) Activity in El Salvador, Mathematica Policy Research, April 2019. Available at https://data.mcc.gov/evaluations/index.php/catalog/245/download/1239.

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ANNEX B

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Responses to feedback from MCC and FOMILENIO II on modifications to the design

Reviewer Name/ Institution	Comment	Evaluator responses
MCC/ Evaluation PM	Please include description of how the evaluation will assess how the new TVET system addresses demand for skills in the market (do we see any growth in the program, i.e. new firms joining the sector committees, new firms sending employees, employees using new skills, other measures?)	The evaluation will use qualitative data obtained from the focus groups with the members of the sectorial committees to indirectly assess how the new TVET system addresses the demand for skills in the market The interview protocols will include questions to explore • if new sectors have joined the board, • if firms that were not participating in the first round of training have expressed interest in participating, • if firms in each committee represent all the areas of the sectors • in what ways are firms interested in participating, for example sending their employees, or hiring trained people, etc. • if a certification model has been implemented. Regarding employees using new skills, we can get some information from self-reports from the focus groups with former trainees. In addition, to triangulate this information, we will also ask during the focus groups with committee members how they have assessed if trainees are using new skills.
	Please include monitoring data that will be used to help understand the reach and impact of the new TVET system (number of training centers created, # of students that enroll in and # of students that receive certification from the trainings, student-level change in knowledge and/or skills; etc.)	We are still exploring which entity will be responsible for providing us the administrative data related to the courses after the courses end. Our understanding is that most sectoral committees will create a training center, so we plan to request the administrative data from the centers. Also, we plan to request information from the sectorial committees on outputs/outcomes related to the training centers and courses, including: • Has the sector created a training center? • Is the training center operating? • How many courses has the sector implemented? • If a training center is operating, we will request the following data from them: • How many students have enrolled in the courses? • How many students completed the courses? • Do the courses offer certification? If they do, how many students have obtained the certification? Who provides the certification and how? Regarding student-level change in knowledge or skills, it is unlikely that the centers would have data on trainees' skill level before training. If the training centers use a checklist or rubric to assess if trainees have the

Reviewer Name/ Institution	Comment	Evaluator responses
		competencies necessary to obtain a certificate at the end of the course, then we could request such data. If available, that data would allow us to measure the percent of trainees that completed the certification and that obtained required competencies. However, at this point, we do not know if the training centers would have this information.
	Please include documentation of how firms were chosen to participate in the program.	During the round of interviews at the close of compact, we will ask FOMILENIO II and the sectorial committees about how the firms were chosen to participate in the program. Then, in our follow-up interviews after the compact ends, we will ask if more firms are participating, if they have changed their selection process, and if more sectors are participating.
MCC Evaluation Lead	I want to emphatically highlight that giving up on the outcomes of employment and firm productivity is not the same as giving up on the quantitative attribution of these outcomes. I am supportive of giving up on the quantitative attribution efforts, but I worry (and therefore would like to highlight to MPR's team) that by leaving behind or minimizing those efforts that MPR's team may simply cut off the whole right hand side of the program logic (or the bottom of Table A.1 in the memo) and say "we can't say anything at all about whether we think this program actually helps align the TVET system in these sectors more directly with private sector needs (ie. we can't detect 'gaps' in the labor market), we can't say whether beneficiaries' individual productivity and/or employment prospects look to be improved by these programs, we can't say anything about whether firms may be made more productive by these investments, etc. All we can say is that the programs happened as planned (or not) and that the people in the courses were happy with these courses (or not)." Of course, I trust that's not what they would do, but having seen evaluation reports in TVET that effectively do just that, this is the main alarm bell ringing in my head on this type of program/evaluation.	In this context, in which the program plans to train people that are already employed, employment status will not be a reliable indicator of the success of the training or whether the program is providing the skills needed by the firms. This is the reason why we have prioritized interviewing members of the sectoral committees who can provide their perception on whether the training has provided the technical capabilities the firms needed. In other words, given the characteristics of the program, we expect that the richer and more reliable data source to understand whether the training is aligned with their needs are qualitative interviews with sectoral committees—they are the bridge between the firms and the TVET activities. In addition, with FOMILENIO's support, we can request that the training centers collect as part of information on trainees' employment status prior to course enrollment, employer/employment site, and occupation. We recommend these questions are included in the course intake/enrollment forms provided by the training centers. Similarly, we plan to request the training centers to provide us information on whether the trainees were employed at the end of the course. However, the availability of that data depends on each training center, and we will not be able to verify the reliability of such data (if available). One of the goals of the evaluation is to understand in what ways the private sector benefited from the TVET activities, including the courses. We will design qualitative protocols (for focus groups with the sectoral committee) to explore how the TVET activities that were implemented contributed to the private sector/firms, and if/how they helped solve the skills gap. The interviews with the sectoral committee will not be focused on trainees' course satisfaction.
	In other words, while not being able to conduct quantitative attribution certainly dampens the degree of certainty they can ascribe to their evaluation's	We plan to triangulate information on improvement of skills from at least two sources: the perspective of the sectorial committee and the perspective of the trainees. We plan to collect qualitative data from both stakeholders to understand if/how the skills have improved, if/how

Reviewer Name/ Institution	Comment	Evaluator responses
	eventual findings, I would encourage them to think carefully and creatively about how they can begin to triangulate signs that some of the key outcomes are or are not being achieved. This is admittedly a qualitative process, and will be based on professional judgment and interpretations rather than subtracting two means or estimating a beta coefficient, but my key assertion here is that if we're going to proceed with an evaluation with little chance to get to relevant quantitative estimations of outcomes of interest, we need to be prepared for messy triangulations.	trainees' workload has changed, if/how trainees' occupation/jobs have changed, etc. We plan to obtain qualitative information about employment from the interviews and focus groups with the sectoral committees and the trainees to assess if newly trained people have found new employment, have better occupations, etc. In addition, as mentioned above, we will request monitoring data from the training centers regarding employment of the trained students. The availability and quality of the data is yet to be determined. Reliable employment data could be obtained from a tracer survey; however, as agreed during the meeting with MCC, the resources available for data collection are better spent on expanding the qualitative study. Hence, we will collect qualitative and monitoring data instead of the tracer to obtain information on employment and skill improvement.
MCC Evaluation Lead *(continued)*	Also, I'd encourage the MPR team to review the recently published principles into practice paper, but below I've dropped a couple of my recent slides (not in the paper) that unpack a couple of the thought processes behind this, ie. measurement and attribution are messy, and further, even that which is measurable is a proxy at best, and the two things we'd like to see most (individual and firm productivity) are quite difficult to measure.	Regarding firm productivity, during the meeting with MCC, we agreed that (in this case) there was no reliable way of measuring productivity. The perception of the members of the sectorial committees and of the trainees on how the skills gained through the courses have helped them will be informative. However, we do not think this should be interpreted as a proxy for firm productivity. We will not have access to information on the proxies listed in the slide, for example employee turnover or firm growth. Instead, we could ask the firms and trainees questions related to performance and turnover, including: • If they have replaced untrained staff with trained staff/ before and after training • If they perceive a difference in performance between trained and untrained staff/ before and after training
	I agree with the memo's assertion, that the "limitations of focusing on income and employment outcomes from a trainee tracer survey have become clear", but to clarify that the key to that sentence is "from a trainee tracer survey." In other words, given the current status of the program, the tracer survey may give us limited mileage to answer our evaluation questions about income and employment, but that these outcomes (along with triangulation of evidence on productivity and suggestive gaps in the labor market) should still be a key part of the overall evaluation strategy.	During the meeting with MCC, we reached consensus that, in this case, the trainee tracer survey is not the best instrument to obtain information on employment and income. Above, we have explained how we plan to triangulate other sources of information to get at the perceived benefits of the skills trainees attained through the implementation of courses. We will also request monitoring data on employment status to triangulate that with qualitative information on employment from focus groups with the sectoral committees and trainees.

Reviewer Name/ Institution	Comment	Evaluator responses
MCC Evaluation Lead *(continued)*	I understand that given the changes to TEPT it may not make sense to conduct a full tracer study. However, I don't think dropping the entire student survey makes sense. We have to be able to collect some data on student employment if that was the objective on the activity. In talking with the EMC it seems like a suitable middle ground might be to assess some of the labor market outcomes, without spending too much money. In addition, could MPR explore using administrative data for employment outcomes to save on cost. I'd like MPR to think about these options and propose that to the EMC.	A key point is that employment is not the main objective of this Activity and this was one of the main reasons to propose changes to the evaluation plan. According to the implementation plans of this Activity, increasing employment is not one of the main objectives. As we have mentioned above, their approach consists of training people that are currently employed, so employment status is not an outcome that is expected to change. Stakeholders consistently reported this was the case during our qualitative data collection in February. FOMILENIO and MCC staff in charge of the implementation of this Activity have confirmed that the goal of the program is to create a system that would enable better alignment between the provision of training and the needs of the private sector. Increasing employment and income in the short term are not intended program aims. They have been very supportive of the proposed evaluation changes that emphasize qualitative assessments on the creation and functioning of the system rather than on employment of trainees. However, because, we understand the interest of MCC in obtaining some employment information, we propose to request monitoring data from the training centers. We will request the training centers to collect employment data at the beginning and at the end of the courses. We will formalize this request through FOMILENIO in order to increase the likelihood that the training centers provide us this information next year. However, we cannot ensure the data will be available, or verify its reliability if we are able to obtain it from the training centers.
MCC Gender and Social Inclusion	What benefits did the TEPT have on women participating in its sub-activities? What challenges did women participating in the different TEPT sub-activities encounter and how can these be improved? Women participated in all the sectors, in different degrees, and it would be interesting to learn more about their experiences.	We will provide information by gender on the monitoring indicators we plan to collect from the training centers such as number of students enrolled in the courses, number of students that completed the courses, number of students certified. During the focus groups with the sectorial committees and with trainees we can also assess how women have participated in the training, their challenges, and experiences.
FOMILENIO II M&E Lead	En lo particular el memo explica muy bien las fases que ha pasado la actividad y el nuevo enfoque de la evaluación, dando mayor peso a un análisis cualitativo. A mi parecer la tarea pendiente es concretizar que pasará después de FOMILENO II, respecto a la entidad apoyará en la recolección de datos estructurados de monitoreo (indicadores) sobre demanda laboral, etc. Comprendo que ha medida madure el proceso organizativo de los comités y del Consejo de Coordinación de la ETFP, se tendrá más claridad que	We also are interested in determining who will be the entity responsible for providing us the monitoring data after the compact ends. We have started conversations with FOMILENIO's M&E team as well as the implementation lead to formally request the monitoring data from the training centers.

Reviewer Name/ Institution	Comment	Evaluator responses
	entidad podrá pasar dichos datos al GOES, datos que también ustedes puedan requerir como evaluadores, al margen que Mathematica levante datos cualitativos.	
FOMILENIO II Activity 2, Implementation, Lead	El modelo del TEPT no está pensado para personas, es un sistema para que instituciones de gobierno y el sector privado se coordinen y tomen mejores decisiones sobre las necesidades del mercado laboral y la oferta de formación. Eventualmente, al mejorar la coordinación mejorará el empleo en el largo plazo pero es muy pronto para incluir una medición de empleo en la evaluación. En relación al memo de propuesta de modificación al modelo de evaluación de la actividad 2, quiero decirles que estoy totalmente de acuerdo en centrarse en una metodología cualitativa, ya que las cantidades de personas que van a recibir la formación van a ser mínimas, sobre todo debido a que por la emergencia es casi imposible que se ejecuten las carreras en el tiempo de FOMILENIO II, y porque además recibir esta capacitación no creemos que tenga un impacto en mejorar inmediatamente las condiciones laborales de los participantes.	These comments support our suggested change of emphasis to focus on the implementation and functioning of the system (sectoral committees, board, and coordination council) rather than on trainee outcomes at least in the short to medium term. As the comment mentions, given the further delays that COVID-19 has caused it is very likely that not even the 4 courses that FOMILENIO had planned to implement during the compact will be implemented.

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