


# LELAM-TVET4INCOME: Scientific summary report

**Report****Author(s):**

[McDonald, Patrick](#) ; Bordón Tapia, Paola; Camacho Calvo, Silvia; García Fallas, Jacqueline; Gandonou, Esaïe; Günther, Isabel; Paudel, Prakash Kumar; Parajuli, Mahesh Nath; [Renold, Ursula](#) ; Nouatin, Guy Sourou

**Publication date:**

2024-03

**Permanent link:**

<https://doi.org/10.3929/ethz-b-000673498>

**Rights / license:**

[In Copyright - Non-Commercial Use Permitted](#)

**Originally published in:**

LELAM-TVET4INCOME Working Paper Series 23



# LELAM-TVET4INCOME: Scientific summary report

## Authors

Patrick McDonald  
Paola Bordón Tapia  
Silvia Camacho Calvo  
Jackeline García Fallas  
Esaïe Gandonou  
Isabel Günther  
Prakash Kumar Paudel  
Mahesh Nath Parajuli  
Ursula Renold  
Guy Sourou Nouatin

LELAM-TVET4INCOME Working Paper Series, No. 23, March 2024



Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich



Center for Development and Cooperation

**Contact**

ETH Zürich  
Prof. Dr. Ursula Renold  
Chair of Education Systems  
Department of Management, Technology and Economics  
Stampfenbachstrasse 69  
8092 Zürich

© CES, D-MTEC, ETH Zürich

Financed by:



**Swiss Programme for Research  
on Global Issues for Development**



**Swiss National  
Science Foundation**



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Agency for Development  
and Cooperation SDC

# Contents

1. Introduction .....	4
2. How can we define and measure social institutions of TVET? .....	5
A theoretical framework for evaluating social institution robustness .....	5
An empirical measurement for social institutions robustness in education programs .....	6
3. Measuring youth labor market situations in low and middle-income countries .....	10
Surveys of youth in Benin and Nepal.....	11
Analysis of a pilot apprenticeship in Nepal.....	11
Characterizing TVET Graduates in Costa Rica.....	13
4. Improving linkages between education and employment systems.....	14
A baseline measurement of linkage.....	16
Measuring linkage after several years of the project.....	16
Further study findings.....	18
5. How can the implementation and continuation of systemic changes in TVET be enhanced? .....	19
CEMETS Summer Institute Participation .....	19
Country-level outreach activities.....	20
6. Conclusion .....	22
Continuing the work.....	22
7. Bibliography .....	23

## List of tables

Table 1: Indicators for the YLILI .....	10
Table 2: Regression-based weighting scheme for the EELI Index .....	15
Table 3: Impact of CEMETS participation on key individual and reform case indicators.....	19

## List of figures

Figure 1: Framework for assessing the robustness of social institutions.....	5
Figure 2: Phases and processes (functions) of the Curriculum Value Chain.....	6
Figure 3: Regression-derived weights for the importance of each component to overall robustness ....	7
Figure 4: Importance of each CVC phase for the overall robustness of an education program.....	8
Figure 5: Social Institution robustness indices .....	8
Figure 6: YLILI scope and scores, 2020 or latest available .....	11
Figure 7: Outcomes for the second cohort of the ENSSURE dual-apprenticeship program .....	12
Figure 8: Cost-benefit outcomes for companies participating in the second cohort of the ENSSURE dual apprenticeship project.....	13
Figure 9: Results in the international context .....	16
Figure 10: Change in linkage scores from first to most recent measurement.....	17

# 1. Introduction

Since its inception in 2017, the LELAM-TVET4Income project has been guided by an ambitious research question: *Under what conditions can Technical Vocational Education and Training (TVET) improve the income of the youth?* Within this overarching theme, we have focused on four main research areas:

**Q1:** How can we define and measure social institutions of TVET?

**Q2:** How can we measure the youth labor market situation in low and middle-income countries?

**Q3:** Does improving the linkage between the actors of the education and employment system reduce unemployment, improve gainful employment, job quality, and thus income of the youth?

**Q4:** How can the implementation and continuation of systemic changes in TVET be enhanced?

Looking back on close to seven years of work, we can be satisfied that the project has provided new insights into each of these questions. In this summary report, the activities within each are presented in turn, to highlight the contributions of the project in furthering the cause of quality education and decent work.

## 2. How can we define and measure social institutions of TVET?

The concept of *social institutions* is central to much of sociological theory (Durkheim 1895; Spencer 1929). Social institutions refer to the long-running, predictable patterns of behavior that govern our social interactions and activities (Turner 1997; Miller 2010). They exist to overcome issues or work towards a common goal.

While this conceptualization is well-established, it lacks both a concrete practical application and an understanding of how the strength of a social institution may affect its outcomes. In the LELAM project, we have filled this research gap with both a theoretical framework and a practical application specific to education systems.

### A theoretical framework for evaluating social institution robustness

The first contribution is a theoretical framework for operationalizing institutions, presented in an article by Rageth et al. (2021). They build on previous theoretical literature to develop a framework to assess the robustness of social institutions based on the institutions' quality properties (its function, structure, culture and sanctions), breadth of scope (narrow or broad) and degree of institutionalization (pre-, semi- or full institutionalization). Figure 1 visualizes the framework.

Institutionalization Level		Pre-institutionalization		Semi-institutionalization		Full institutionalization	
		Narrow Scope	Broad Scope	Narrow Scope	Broad Scope	Narrow Scope	Broad Scope
Quality Properties	Function				High quality		
	Structure				Somewhat high quality		
	Culture				Somewhat low quality		
	Sanction				Low quality		

<span style="display:inline-block; width:15px; height:15px; background-color:#800040; border:1px solid #000;"></span>	High quality
<span style="display:inline-block; width:15px; height:15px; background-color:#800080; border:1px solid #000;"></span>	Somewhat high quality
<span style="display:inline-block; width:15px; height:15px; background-color:#C080D0; border:1px solid #000;"></span>	Somewhat low quality
<span style="display:inline-block; width:15px; height:15px; background-color:#F0E0F0; border:1px solid #000;"></span>	Low quality

Figure 1: Framework for assessing the robustness of social institutions (Source: Rageth et al. 2021)

The social institutions framework is especially useful for cross-contextual comparison and analysis. In TVET, education programs and their component processes may differ based on social, geographic or economic context. Nevertheless, since they exist to reach the same common goal, they can be assessed based on the robustness of their social institutions.

## An empirical measurement for social institutions robustness in education programs

With this in mind, we developed an empirical measurement for the robustness of the social institutions of the Curriculum Value Chain (CVC); the processes that make up TVET programs. By measuring the robustness of each process on the CVC (see Figure 2), we can, firstly, identify the most important elements of social institution robustness, and secondly, develop an index for robustness overall.

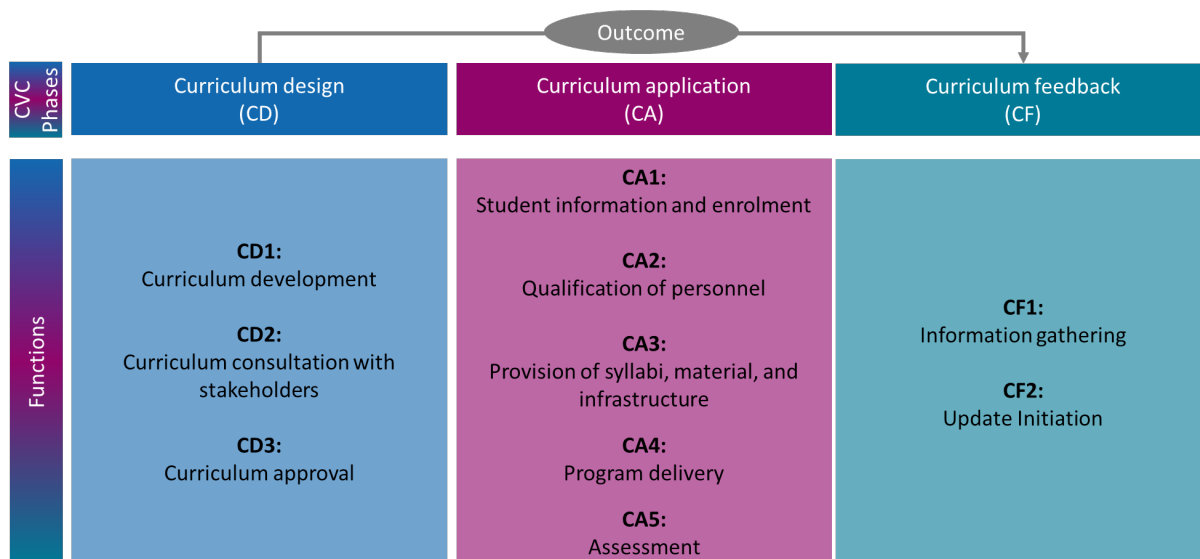


Figure 2: Phases and processes (functions) of the Curriculum Value Chain. (Source: Own depiction)

The empirical analysis unfolded in three steps. First, we piloted a survey in Costa Rica, where we asked education experts a series of questions for each of the CVC processes related to the elements of the social institutions' robustness framework. Experts were also asked for an overall assessment of the robustness of the program and each of the processes, as well as the importance of each of the processes for the robustness overall.

Experts found this initial version of the survey to be too long and difficult to follow. In a second step, we therefore organized focus groups in Benin, Costa Rica, and Nepal, where we invited high-level experts to a focus group, where we explained the social institutions framework and curriculum value chain. Following this, in discussions with the experts, we asked them to validate the existence of the processes in their program, as well as provide a common name for it, in order to make the survey more accessible to the wider group of experts who would form the respondent sample of the survey.

We updated the survey based on these focus groups and allowed experts to only respond to the processes in which they had direct knowledge. The survey was then run in Benin, Costa Rica, and Nepal, between June and December 2022, and again in between June and September 2023 in Switzerland. In total, we collected 283 responses from education and employment experts.

To create an overall social institutions index, we apply a three-step empirical strategy. First, we regressed the robustness scores indicated for each of the framework components on the overall robustness score, to ascertain the statistical importance of each. We then converted these regression coefficients to percentages to create a weighted robustness score for each measure. Finally, using the

weights provided by the respondents on the importance of each of the processes to the program overall, we created an overall robustness index for each of the programs we analyzed.

The results suggest that the **function** and **culture** of social institutions are by far the most important components of robustness, followed by **structure** (see Figure 3). The remaining factors – sanction, scope, and degree of institutionalization – make up less than one-fifth of the importance between them.

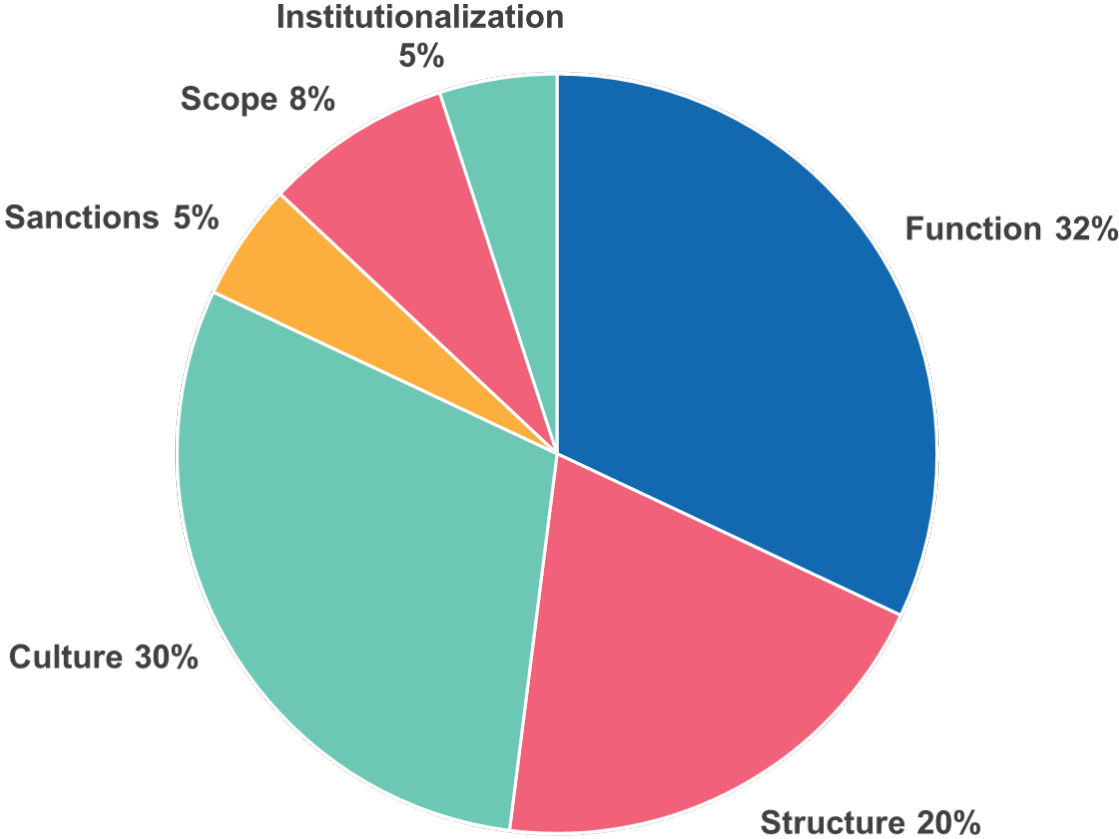


Figure 3: Regression-derived weights for the importance of each component to overall robustness (Source: McDonald et al., forthcoming).

The weighting of the CVC processes suggests that **curriculum application** is the most important phase for the robustness of education programs, followed by curriculum design and feedback. Partially, this is due to the number of processes within each phase – half of all processes are within curriculum application, with only two and three, respectively, in curriculum design and application. Indeed, zooming in on the importance of the individual processes suggests that **curriculum content development** (15%), **curriculum consultation** and **update initiation** (12% each), and **information gathering** (11%) are the most important processes, while from curriculum application, only **program delivery** (11%) is above 10%.



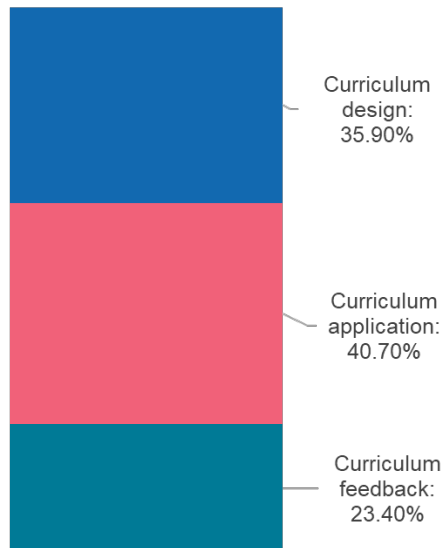


Figure 4: Importance of each CVC phase for the overall robustness of an education program.

Combining these two weightings with the robustness scores indicated by the respondents gives us the overall robustness indices for the four countries illustrated below.

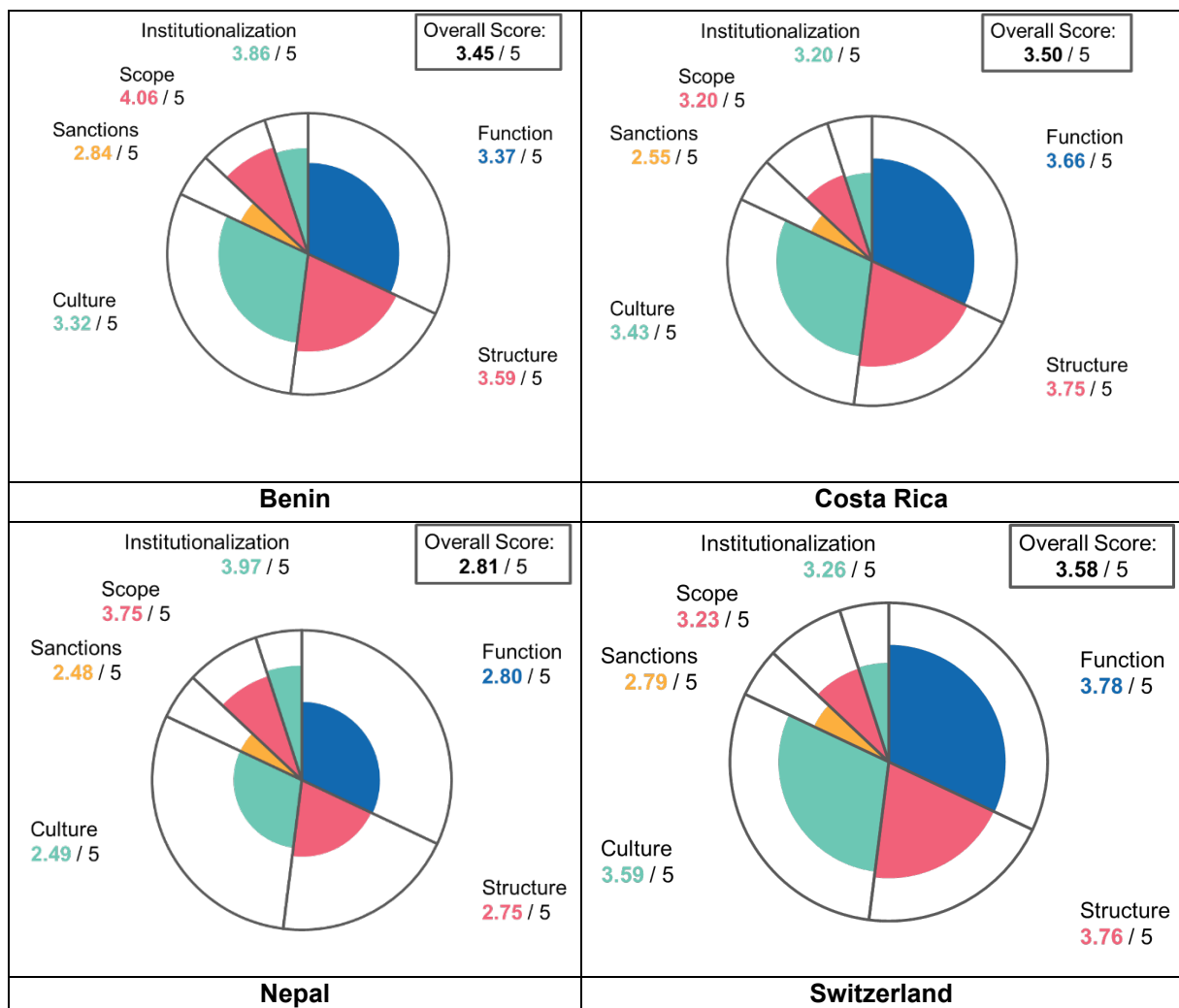


Figure 5: Social Institution robustness indices (Source: McDonald et al., forthcoming).

Three trends stand out in these results. First, three of the four programs (with the exception of Nepal) have relatively high robustness, driven by high scores on function, structure, and culture. Second, high scores on scope and degree of institutionalization, especially in Nepal, are not enough to compensate for the weakness in other elements of social institution robustness. Finally, in all programs, the lowest score is for sanctions, which is in turn the least important element of robustness for the social institution. This seems to be both the least well-defined and understood element of the social institutions framework.

The research so far has brought us a long way – from a framework for a long-standing but contentious concept to an empirical robustness measurement that can be directly applied to education programs. Future steps should involve investigating the links between program robustness and outcomes – our hypothesis that more robust programs lead to better outcomes for students remains to be tested.

These results should nevertheless be treated with caution. Given the large amount of knowledge of the education system required to respond to the questionnaire, the pool of respondents is necessarily limited. Moreover, surprisingly weak results in Switzerland suggest the calibration of the survey may not yet be ideal. In the future, we will pay even more attention to focus groups and the preparation of experts.

#### Under what conditions can Technical Vocational Education and Training (TVET) improve the income of the youth? Intermediary takeaways

- More **robust** social institutions should lead to better outcomes.
- Our **empirical measurement** of the social institutions of TVET shows that the most important elements of robustness are the institution's **function, culture, and structure**.
- **Benin** and **Costa Rica**'s programs show relatively high robustness, while **Nepal's** is less high but above the midpoint. This suggests all programs have the potential to adapt and deliver strong outcomes.

### 3. Measuring youth labor market situations in low and middle-income countries

Providing access to quality labor market conditions is an essential outcome of education programs. In all LELAM countries, we have measured overall youth labor market situations as well as outcomes of specific programs and pathways.

The **youth labor market index for low-income countries** (YLILI) aggregates data on a series of publicly available data indicators to create a comprehensive index of the labor market situation for youth in a given country (Kudrzycki et al. 2021). The YLILI is inspired by the CES Youth Labor Market Index (Kemper 2022), which is in turn borne out of a recognition that measuring youth labor markets simply on unemployment statistics misses a great deal of information on the quality of work and the success of the education system in providing appropriate qualifications.

The YLILI contextualizes the YLMI for lower- and middle-income countries, by using a different set of indicators that reflect the demographic, economic, and political realities in many of these countries: compared to high-income countries, they are generally younger and characterized by more informal labor markets and educational pathways. Each indicator is standardized to a 1-100 score, and an equally weighted arithmetic average is produced. The indicators for the YLILI are outlined in Table 1.

Category	Indicator	Source
Transition smoothness	NEET (Not in Employment, Education or Training) Rate	ILOSTAT
	Working conditions ratio	ILOSTAT
	Skills mismatch ratio	ILOSTAT
Working conditions	Working poverty rate	ILOSTAT
	Underemployment rate	ILOSTAT
	Informal work rate	ILOSTAT
	Elementary occupation rate	ILOSTAT
Education	Secondary schooling rate	DHS Program
	Literacy rate	UNESCO
	Harmonized test scores	World Bank

Table 1: Indicators for the YLILI (Source: Kudrzycki et al., 2021).

An indicative map of YLILI scores can be seen in Figure 6 – while the YLILI covers the 79 countries classified by the World Bank as either lower- or lower-middle income, only 54 of these have enough data to construct an index and are colored in the map. The two LELAM countries classified as lower-middle income, Benin and Nepal, score 58.5 (rank 48) and 70.8 (rank 13) points, respectively.

The YLILI is now available online (<https://nadel.shinyapps.io/yilili/>) for a more detailed analysis of the various indicators and comparisons between countries. Future directions in this area of research should include regular updates of the data, as currently the online tool only contains information until 2020. How youth labor markets in low- and middle-income countries have developed following the pandemic would be a subject of particular interest for the index.

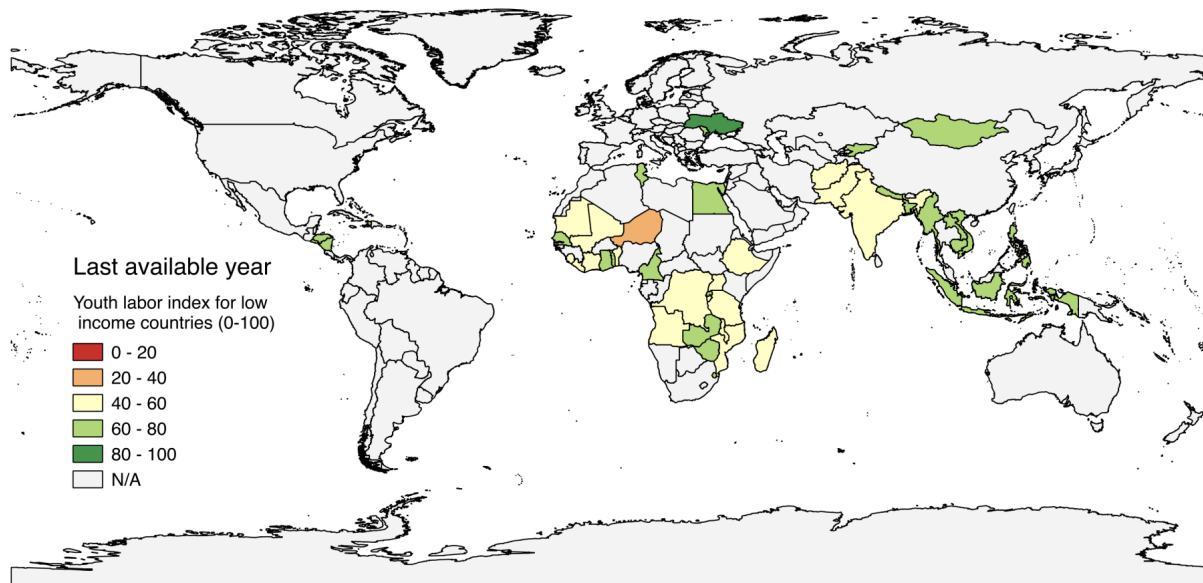


Figure 6: YLILI scope and scores, 2020 or latest available. (Source: Kurdrzycki et al., 2021).

## Surveys of youth in Benin and Nepal

The LELAM project has instigated **panel surveys of youth** in areas of Benin (since 2019) and Nepal (since 2023). In both cases, approximately 1500 youth from main metropolitan centers are surveyed on their education, work situations, and career perspectives.

**Benin's** youth survey includes 629 apprentices from the Certificate of Professional Qualification (*Certificat de Qualification Professionnelle – CQP*) and Certificate of Occupational Qualification (*Certificat de Qualification aux Métiers – CQM*) programs, alongside 920 further youth between 15-19 in three districts in the south of the country. Several notable trends are shown: half of youth have completed their transition to the labor market by age 24, and 90% by age 29. Those who complete general education have a later, but faster, transition to the labor market than those who participate in TVET. This comparatively late labor market transition, and slow transitions for TVET graduates especially, suggests skills mismatches that should be further investigated by future research (Kurdrzycki et al. 2020).

In **Nepal**, a first round of the youth survey was undertaken in 2023 with 1500 youth aged between 21-30, in three economically important cities. Findings from this first round show that the factors that are most closely associated with labor market success – in terms of the likelihood of a salary above the legal minimum wage – are being male, with higher education, some TVET education, and self-employment, amongst others. Likewise, the results of the survey also suggest that graduates from private education providers have better employment prospects, and men are more likely to pursue TVET. These findings especially make a strong case for more active interventions encouraging female participation in TVET (Parajuli et al., forthcoming). Nepal's youth survey is complemented by a study of **skills mismatch** in the Nepali construction industry. Results here show that employees' and employers' reported perceptions of the skills required for the occupation differed greatly. This is evidence of the necessity of TVET curricular reform in Nepal (Parajuli et al., forthcoming).

## Analysis of a pilot apprenticeship in Nepal

Switzerland has been supporting a pilot project in a **dual apprenticeship program** in Nepal since 2018. The LELAM project has been charged with analyzing the outcomes of this program from the point of

view of both participants and companies. This program – the ENSSURE 24-month dual apprenticeship program – is supported by NGO Swisscontact and the SDC.

A small **first cohort** of students began the program between July and September 2018, in mechanical and electrical engineering. A **second cohort** of close to 1000 youth began a year later, in a selection of training areas expanded to include hotel management, information technology, and automotive engineering. Importantly for research purposes, entry to this cohort was based on a **random selection**, allowing causal analysis of participant outcomes of this program. Due to COVID-19, completion of this program was delayed by over a year, nevertheless, we are able to present preliminary analyses. A final round of surveys will begin soon to track the education and labor market situation of this cohort approximately 18 months after completion of the program.

Concerning the **companies**, we undertook a **cost-benefit analysis** to analyze whether or not the companies participating in this new program for Nepal were able to make their participation pay off during the program, or if it was rather a long-term investment in skilled labor. To do so, we survey companies on the various **costs** associated with participation – apprentice salaries, training costs, and other incurred costs, as well as the **productive value** of their apprentices. We use these to calculate a projected net cost or benefit of participating for the median company, as well as for small and large companies, and companies in manufacturing or services sectors.

Figure 7 shows the intermediary results for participants in the second cohort of the program. Compared to applicants who did not participate in the program, we see that they are more likely to be in work and less likely to be in activity. These trends are especially notable for women, which is an important outcome given the findings of Nepal’s youth survey.

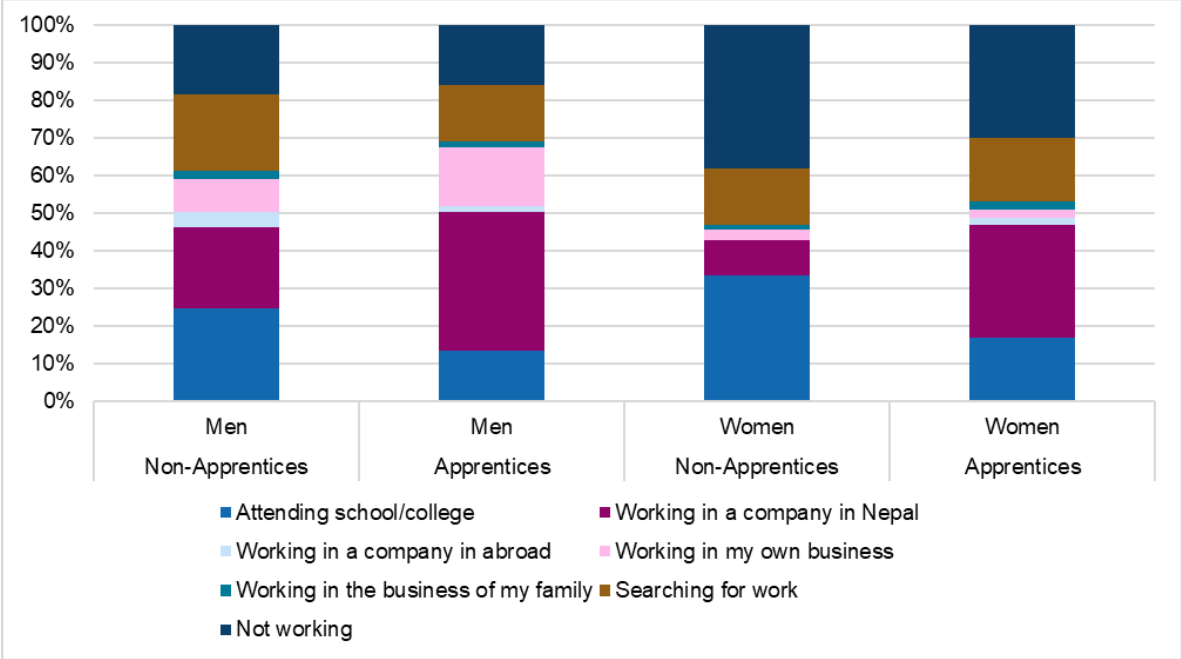


Figure 7: Outcomes for the second cohort of the ENSSURE dual-apprenticeship program. (Source: own depiction; Bolli et al., forthcoming)

Figure 8 shows the outcomes of participating in the program for the median company. Here, we observe a **large net benefit** of participation. This is largely due to the fact that while apprentice wages and training costs are not extremely high, these same apprentices make a significant productive contribution during their training time. For a company participating in the program, there is a substantial payoff to participating, as well as an opportunity to prepare the skilled workforce they require to grow in the future.

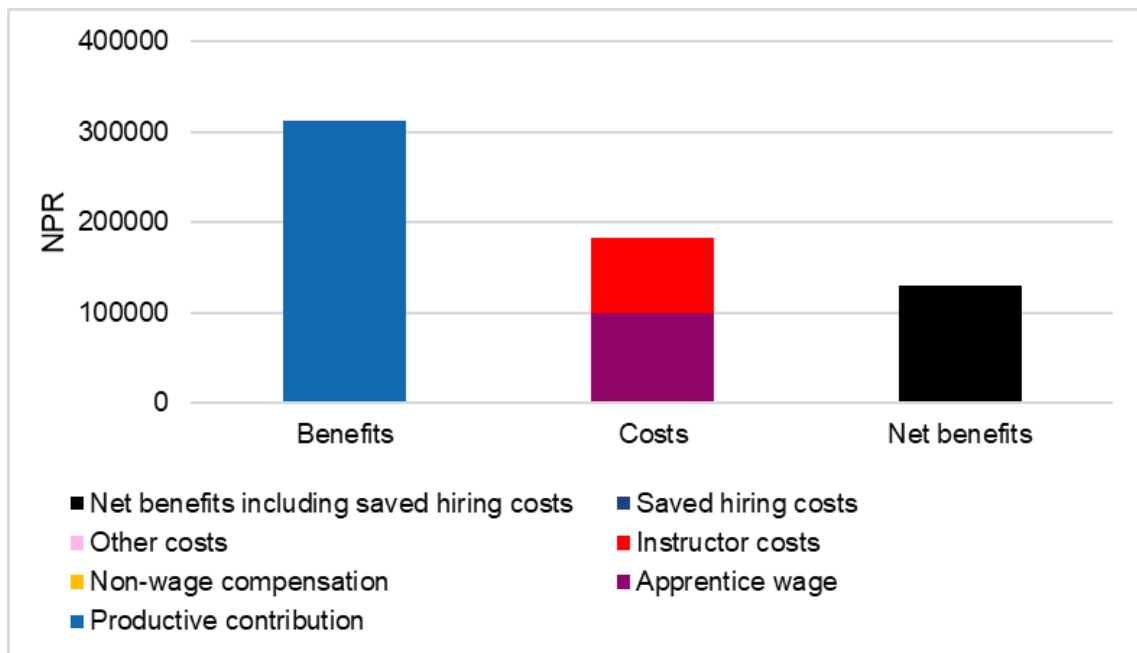


Figure 8: Cost-benefit outcomes for companies participating in the second cohort of the ENSSURE dual apprenticeship project. (Source: own depiction; Bolli et al., forthcoming)

### Characterizing TVET Graduates in Costa Rica

A new study undertaken in Costa Rica seeks to provide an overview of the typical demographics and pathways of TVET graduates, using the National Household Survey between 2014-2020. While the analysis is still underway, some preliminary findings can be shared: the population of TVET participants is concentrated in urban areas in the Central region of the country, and the typical participant has either completed academic high school or has some sort of lower-level technical training. Contrary to Nepal, TVET participation is relatively evenly split between men and women, but similarly to Nepal, a TVET qualification leads to a higher likelihood of employment. A large proportion of Costa Rican TVET participants are in informal programs, including a little over a third in programs offered by the National Apprenticeship Institute (INA), which is a well-established provider of TVET but does not offer formal degrees. Given the high rate of participation in these programs and the positive outcomes for graduates, formalizing INA programs may provide an effective avenue for raising the rates of TVET education and labor market outcomes in the country.

#### Under what conditions can Technical Vocational Education and Training (TVET) improve the income of the youth? Intermediary takeaways

- The **Youth Labor Market Index for Low-Income Countries (YLILI)** allows a comprehensive analysis of youth labor markets.
- **Youth surveys** in Benin and Nepal show the benefit of TVET programs, but room for improvement, especially for women in Nepal and school-based VET graduates in Nepal.
- Analysis of the pilot **24-month dual apprenticeship program in Nepal** shows **positive labor market outcomes** for graduates and **net benefits** for participating companies.

## 4. Improving linkages between education and employment systems

The **linkage between education and employment actors** is a critical element of successful VET programs (Bolli et al. 2021). The LELAM project has surveyed experts in all four countries several times (the second survey in Chile is underway at the time of publication) to establish the level of linkage between these two groups using the Education-Employment Linkage Index (**EELI**; Bolli et al. 2017).

The EELI is calculated as a regression-based weighted average of responses given by experts to a questionnaire concerning the level of employer activity in education programs. It does so using the **phases, processes, and functions** of the Curriculum Value Chain (CVC) – similar to the empirical analysis of Social Institutions, but with a slightly different set of functions, reflecting the areas in which linkage is possible and desirable for student outcomes. Table 1 shows the phases, processes, features, and their respective weights.

	Phase	Process	Feature
<b>Index Score</b>	<b>100%</b>		
<b>Design</b>	<b>42%</b>		
Qualification Standards		16%	
<i>Standards: Involvement</i>			16%
<i>Standards: Decision Power</i>			0%
Examination Design		12%	
<i>Examination: Involvement</i>			12%
<i>Examination: Decision Power</i>			0%
Involvement Quality		14%	
<i>Career vs Occupation vs Job</i>			0%
<i>Firms vs Employer Associations</i>			4%
<i>Represented Firm Share</i>			0%
<i>Legal Def. of Involvement</i>			10%
<b>Application</b>	<b>34%</b>		
Learning Place		13%	
<i>Classroom vs Workplace Share</i>			13%
<i>Legal Def. of Share</i>			0%
Workplace Training Regulation		9%	
<i>Work Contract</i>			2%
<i>Curriculum: Existence</i>			0%
<i>Curriculum: Implementation</i>			7%
<i>Workplace Trainer Requirements</i>			0%
Cost Sharing		2%	
<i>Classroom Education Costs</i>			2%
<i>Workplace Training Costs</i>			0%
Equipment Provision		0%	
<i>Equipment Provision &amp; Quality</i>			0%
Classroom Education Provision		3%	
<i>Classroom Education Provision</i>			3%
Examination		8%	
<i>Practical Share of Examination</i>			0%
<i>Examination: Location &amp; Supervision</i>			0%
<i>Examination: Employer Expert</i>			8%
<b>Updating</b>	<b>24%</b>		
Information Gathering		1%	
<i>Employer Surveys</i>			1%
<i>Labor Force Surveys</i>			1%
Update Timing		23%	
<i>Update Involvement</i>			16%
<i>Legal Def. Update Involvement</i>			7%

Table 2: Regression-based weighting scheme for the EELI Index (Source: Caves et al., 2021)



### A baseline measurement of linkage

A first EELI measurement was taken in all four countries in 2019 (see Caves et al. 2021 for more details). In this original measure, **Chile, Costa Rica, and Nepal** all sat **below** the global average, while **Benin** was slightly **above** (see Figure 9). We posited in this case that the advantage of Benin’s program came from the approach of taking an existing informal program, run by employers, and adding formal certification to it. The other three countries take the opposite approach – taking a government-run program and adding a formal qualification. Based on the survey results, we argue that this approach is less efficient and effective than Benin’s bottom-up strategy. Nevertheless, depending on the political and social context, it may be the only way to increase linkage in education programs.

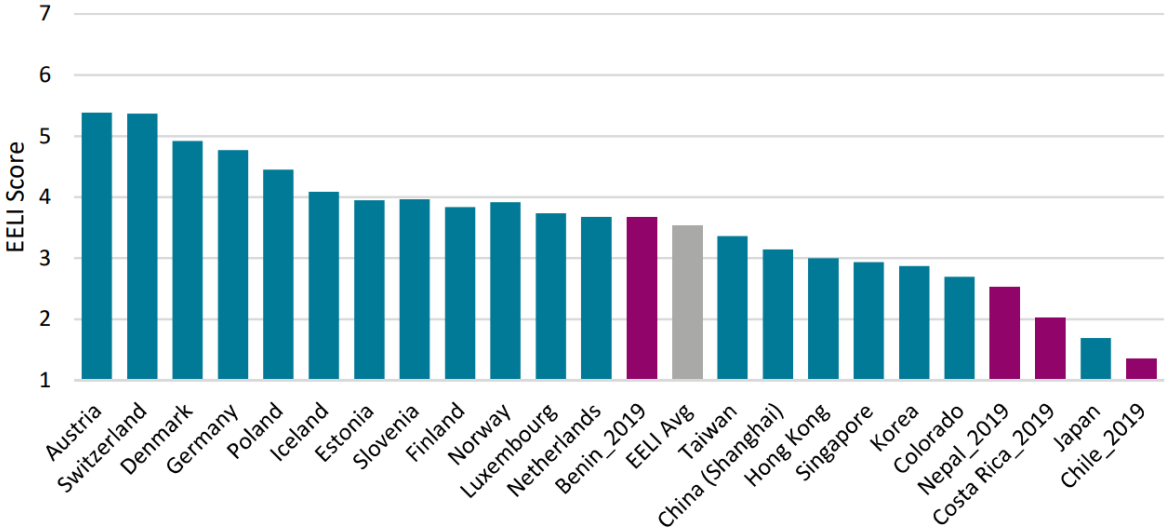


Figure 9: Results in the international context. (Source: Caves et al., 2021, p. 10)

### Measuring linkage after several years of the project

What, then, is the impact of several years of LELAM project interventions on linkage? In all countries, we see an **increase**, as shown in Figure 10. This suggests that increasing linkage in government-run programs is not impossible, but due to starting from a lower base, does make it more difficult to reach adequate levels.

The **magnitude of the increase varies** across the three countries, from 0.7 points in Benin (equivalent to a 10% increase on the 7-point scale) to 0.54 points in Nepal and 0.2 points in Costa Rica. This suggests that participation in the LELAM project and related outreach interventions (see next section) has had similar impacts in each of the countries. Benin’s somewhat larger change may also stem from the fact that the second EELI measurement was taken a little over a year later than in Nepal and Costa Rica.

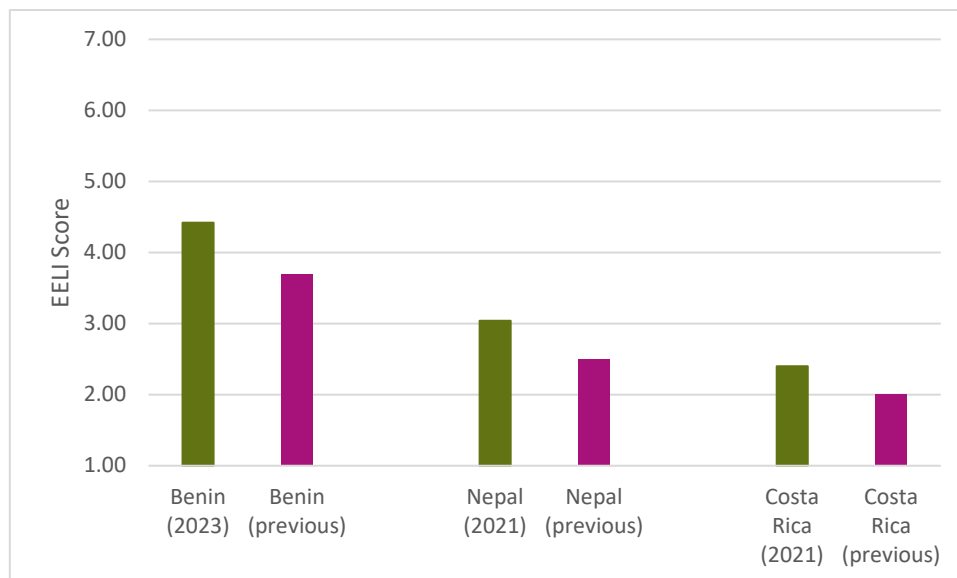


Figure 10: Change in linkage scores from first to most recent measurement (Source: own depiction)

Further analysis of the components of the index suggests that these improvements are driven by a focus on different areas in different countries. In **Benin**, a large change in Curriculum Design (+0.9 points) is combined with a moderate change in Curriculum Application (+0.7 points) but only limited movement in Curriculum Updating (+ 0.4 points). The legal definition of employer involvement and the presence of work contracts, both showed significant improvement, suggesting a higher awareness or understanding of the legal framework surrounding linkage. Conversely, Benin took a small step backward in information gathering, with results indicating a decline in the presence of employer and labor force surveys – in a context where a great deal of data collection is face-to-face, this effect may be expected during a period still affected by pandemic-related movement restrictions.

**Nepal's** improved score is largely the result of a substantial increase in the Curriculum Updating phase (+1.47 points), notably in update timing – itself the most important single element in the index, accounting for 23% of the weighted calculation. This suggests that the linkage in updating curriculum, and how this is legally defined, has improved greatly in Nepal across the period between the two surveys. This improvement is enough to compensate for only very small changes in Curriculum Design (+0.1 points) and Curriculum Updating (+0.3 points). Indeed, in these two phases, there is some evidence to suggest that decision-making power, the quality of employer involvement, employer implication in workplace training regulation, and cost-sharing arrangements have all gone backward across the period between surveys. This finding is useful evidence to underscore the importance of ensuring improvement occurring across the Curriculum Value Chain, especially in light of the empirical evidence showing that linkage plays such an important role in ensuring positive labor market outcomes for graduates.

**Costa Rica's** mild improvement is characterized by relatively similar magnitudes in all three phases: +0.3 points in Curriculum Design, +0.2 points in Curriculum Application, and +0.1 points in Curriculum Updating. This can, in turn, be broken down into relatively substantial improvements in Qualification Standards and Workplace Training Regulation, with little movement elsewhere, and a small shift backward in the Learning Place Process – this, again, may have been affected by a period during the pandemic where workplace learning was only partially possible. Aside from this exception, Costa Rica

is an example of slow but steady progress on most fronts, albeit from a low base meaning its reform journey may be longer than the other countries.

### Further study findings

Further research in both Benin and Nepal has provided additional context to EELI findings from the surveys. Benin's team undertook a study of the **perceived ability** of both the accredited apprenticeship programs, the CQP and CQM, and school-based TVET; to prepare youth for the labor market. In all cases, their interview subjects noted that **existing programs are inadequate** for preparing the skills required to transition well to work, although the apprenticeship programs fare better, particularly in preparing for family- or community-based occupations. This study concludes that TVET public policy in Benin needs to be more geared towards ensuring a better level of coordination and cooperation between TVET programs and economic actors.

Nepal's study takes a slightly different approach, focusing instead on the **financial allocation and priority** of TVET at the local (*palika*) level in Gandaki, one of Nepal's seven provinces. Here, the research found that **very little funding is allocated** to TVET at the local level. This, in turn, makes it difficult for palikas to run more than short-term programs with poor outlooks for participants. In the absence of funding or political will to make TVET a priority, linkage suffers from both an education side – with authorities unwilling or unable to improve programs to a level where they may serve economic outcomes – and from an employer perspective, who see no good reason for their investment or involvement in a short term program of questionable quality that will not provide the skills they need. The lesson, here, then is that program quality is a vital preexisting element to ensure the success of strategies that seek to improve linkage.

The almost seven years of the LELAM project have shown linkage in the TVET programs in the partner countries to be at varying levels, but that in all cases it has improved. Further work in this area should continue to identify program shortcomings that need to be addressed to make them attractive for employer partnerships and focus on the important linkage processes and functions where progress has stagnated, or, in some cases, receded. Studies as piloted in Benin and Nepal may be useful in identifying hindering factors in increasing linkage in these areas.

It is important to underline the relationship between EELI and strengthening the robustness of the social institutions of TVET: Linking education and employment actors across the educational processes of the CVC represents the most critical element for stakeholder cooperation. The EELI is a diagnostic tool for this cooperation, and, based on its findings, we may recommend measures for improvement. Sustained collaboration through improvement and reform measures serves to develop more robust social institutions, which in turn better serve youth and drive improved outcomes. Involving **reform leaders** – the subject of the next chapter – is therefore crucial.

#### Under what conditions can Technical Vocational Education and Training (TVET) improve the income of the youth? Intermediary takeaways

- **Linkage** between employment and education actors is a critical element to the success of TVET programs preparing youth for the workforce.
- The **Education-Employment Linkage Index** (EELI) scores of the LELAM partner countries have improved across the project period but to varying degrees.
- In education-driven systems, more needs to be done to convince **employers** of the **benefits of collaboration**.

## 5. How can the implementation and continuation of systemic changes in TVET be enhanced?

The LELAM project has, throughout its duration, supported the implementation of systemic change both through providing access to regular summer institute participation for key stakeholders and policymakers and reform leaders from the four partner countries, but also through organizing and participating in country-specific events that support reforms and highlight success cases. Our main intention was to stimulate social institutions throughout the project.

### CEMETS Summer Institute Participation

From 2018 until 2023, the LELAM project provided opportunities for the important actors in the TVET systems of the partner countries to the **CEMETS Summer Institute**. CEMETS; the Center on Economics and Management of Education and Training Systems, runs an annual summer institute where reform leaders from across the world come together to present their reform cases, receive coaching from renowned international TVET experts, and support one another by identifying cross-contextual issues and sharing success stories. Participants also have the opportunity to visit training workplaces and benefit from sessions with TVET leaders from industry and government in Switzerland. In 2020, 2021, and 2022, the institute was held online due to COVID restrictions. While this had the disadvantage of not allowing for the interaction and site visits of the standard CEMETS, it expanded access to the institute to a wider group. A further advantage of the virtual program was that countries could watch the video lectures with subtitles in their languages. In total, LELAM has supported the participation of 113 experts from the four partner countries.

In 2021, we undertook an analysis of the impact of CEMETS participation overall on institute alumni (see Caves and Lueling 2021 for more information). This showed that on a series of indicators, participation increased willingness to carry out necessary reforms and built the requisite knowledge for doing so. We replicated this analysis in a 2021 policy brief on a smaller sample of LELAM participants (Zubovic et al. 2021). The main results are shown in Table 2.

Key Indicators	Before CEMETS	Immediately after CEMETS (short-term)	At time of the 2020 survey (medium-term)
<b>Individual Output</b>			
Average knowledge of VET programs	3.08	4.24 (Change: +1.16)	4.72 (Change: +0.5)
Average knowledge of education systems	3.72	4.52 (Change: +0.8)	4.8 (Change: +0.28)
Average readiness to lead education system reforms	3.24	4.16 (Change: +0.92)	4.56 (Change: +0.4)
<b>Reform Case Output</b>			
Average strength of the reform case	2.88	3.96 (Change: +1.08)	3.96 (Change: 0.0)
Average for the case having the right goals	3.16	4.2 (Change: +1.04)	4.17 (Change: -0.03)

Table 3: Impact of CEMETS participation on key individual and reform case indicators (Source: Zubovic et al. 2021)

LELAM participants in CEMETS had a moderate level of knowledge of VET programs, and education systems, and readiness to lead reforms before their participation in the institute. The strength and appropriateness of their reform goals were slightly lower. Participation in the institute leads to **substantial** and **sustainable** improvement on all these indicators – an increase of between 0.8 and 1.2 points on the 5-point scale immediately after the program holds stable, or even continues improving in the medium term. These results are strong evidence that participation in the institute increases the capacity of reform leaders and strengthens their reform cases. Whether this translates to effective reforms should be further investigated by future research.

## Country-level outreach activities

The LELAM partner countries have also used the project to leverage opportunities to interact with key actors and stakeholders who may instigate or lead reforms. **Benin** has used their experiences in CEMETS to initiate a **TVET week**, an annual event bringing together employers, school representatives, and ministry officials to discuss issues in the TVET system and propose a way forward for systemic reforms. The first of these events took place in November 2023 in the presence of the LELAM Switzerland team and attracted interest from both the relevant ministers and local media. Additionally, Benin utilized a project visit in 2018 to arrange a television special and round-table on TVET in the country, further raising awareness of TVET with relevant actors, as well as an international TVET conference. Translating this awareness-raising into action remains a critical issue in the complex Benin context, where marrying improved TVET opportunities with an overwhelmingly informal economy is a challenge.

**Chile's** political changes during the project period have dampened progress on reform implementation, with government changes ushering in new priorities in education. Nevertheless, the LELAM project has assisted in building momentum towards more widespread dual education programs. The project provided INACAP, one of Chile's largest education providers, active mainly in vocational education, with ongoing coaching and support as they seek to introduce a **pilot dual apprenticeship project** in a low-income region of Santiago. Overcoming doubts and concerns from the private sector, especially small and medium businesses, is one of the main hurdles in this process.

In **Costa Rica**, the project team participated in a systematic analysis of the TVET system of the country, in order to build political advocacy towards reform. Thanks to several CEMETS alumni who later became government ministers, the University of Costa Rica (our PI of the project in the INIE team) is the leading party in the new **TVET Observatory**, the role of which is to provide up-to-date analysis of the TVET system, ensure that this information is publicly available, and encourage interaction and coordination between key actors. Costa Rica has also organized several meetings and congresses throughout the project, beginning with a TVET forum held on the occasion of a LELAM project visit in 2018, and culminating in a congress bringing together TVET researchers, ministry and INA officials, and school principals in San Jose in 2023, with the participation of LELAM Switzerland members. Finally, planning is underway for a **Master's program in TVET**, ensuring the capacity of the next generation of reform leaders in the country.

**Nepal** has been active in outreach and implementation activities since the beginning of the project. Kathmandu University has implemented a **Master in TVET** program, which since 2018 has had an annual cohort of around 15 students – nearly 90 graduates are now active in the TVET sector in Nepal, accompanying reforms and directing pilot projects. This level of knowledge has the potential to be a driving force behind the invigoration of TVET reforms and programs more generally in the country. Nepal

has also organized two **international conferences**, in 2019 and 2023, which have brought together both academics and policymakers – over 300 in all from two dozen countries – to discuss challenges and issues in reforming and maintaining the TVET system and program quality. Finally, Nepal’s team has organized a **National TVET seminar** covering reform initiatives and the future of vocational education. With over 100 participants from government, education, industry, academia, and development partners, the event was successful in enhancing awareness of challenges and issues in TVET. As with Benin, translating this awareness into concrete action is a critical next step that Nepal is well on the way to making.

Such activities contribute significantly to stimulating the robustness of social institutions. The importance of institutionalized communication for the sustainability of reforms is often underestimated. The project’s focus on stakeholder interaction and outreach is therefore built on enhancing institutional robustness, improving linkage, and raising awareness of the youth labor market situation in the four project countries, bringing the research of the first three research questions full circle.

Under what conditions can Technical Vocational Education and Training (TVET) improve the income of the youth? Intermediary takeaways

- The LELAM project has supported **over 100 participants** in annual CEMETS institutes.
- Participation in CEMETS has been shown to **improve knowledge of TVET** and **increase willingness to lead reform**. The reform cases themselves become **stronger and more focused**.
- Partner countries have used the LELAM project as an opportunity to **increase awareness** of TVET and **build networks** of willing reformers through events, institutional arrangements, and education opportunities for the next generation of TVET leaders.

## 6. Conclusion

The LELAM-TVET4Income project has seven years of research, outreach, and implementation activities to be proud of. Based on our research priorities and achievements, we can point to the following four key outcomes of the project:

**A clear framework of social institutions**, and an **empirical application** specifically for TVET programs. This allows us to **better understand the functions of TVET programs**, compare them across contexts, and use them as a platform for future research on the link between program robustness and outcomes.

**A catalog of data on employment outcomes for youth**. This covers both a **macro perspective**, with the Youth Labor Index for Low-Income Countries (YLILI) providing an online web tool giving insight into the labor market situation, both qualitatively and quantitatively, for a large set of low- and middle-income countries. It also covers the **micro perspective**, with **youth surveys** in Benin and Nepal tracking the education-employment pathways of a group of youth in detail, and **experimental evidence** of the impact of a dual TVET pilot project in Nepal.

**An exploration of linkage** in key TVET programs in all four countries, including a follow-up survey in three of four. These surveys indicate **varying baselines of linkage**, with an advantage for **employer-led programs** that have had a formal qualification added. Follow-up surveys suggest **the interventions in the project** have led to an **improvement in linkage scores**, although it is not yet clear if these improvements will be sustainable.

**Implementation and outreach activities** that translate **research findings into reality** for the four countries. This has been underpinned by **annual participation in CEMETS reform institutes**, and further supported by **activities organised by the partner countries for local stakeholders**. In Nepal, this has been complemented by a **Master's program** to build the capacity of the next generation of TVET reform leaders, an innovation that is also in planning in Costa Rica.

### Continuing the work

The outcomes of the project have made clear that **more work is needed** to continue the momentum of the project activities. In two of the four countries, follow-up projects are already underway: in **Nepal**, CES and KUSOED have formed a consortium for the **Backstopping and Learning for the Quality project**, providing research, monitoring and evaluation, and capacity building through a tailor-made CEMETS iLAB for Nepal. This venture is a part of a large reform project of the Nepali TVET system supported by SDC. In Chile, a project funded by the Chilean Science Foundation will investigate the **causes and consequences of skills mismatch**.

In the final two countries, planning is underway to secure follow-up projects. In Benin, CES and the Benin project team are negotiating a project with the Agency for Technical Education and Development, financed by the World Bank, to **monitor the labor and education situation in the country and continue outreach activities**. Finally, in Costa Rica, a project has been submitted with the SNSF to continue studying the **labor market situation of youth and the impact of INA apprenticeship programs**, together with INIE and INA.

## 7. Bibliography

- Bolli, T., McDonald, P., Renold, U., & Sharma, A. (2024). Net Benefits of Dual VET-Apprenticeship: An Analysis of Costs and Benefits in the Dual VET-Apprenticeship Programme in Nepal. *LELAM Working Papers*, forthcoming.
- Bolli, T., McDonald, P., Renold, U., & Sharma, A. (2024). Causal analysis of students outcomes in the Dual VET-Apprenticeship Programme in Nepal. *LELAM Working Papers*, forthcoming.
- Bolli, T., Oswald-Egg, M. E., & Rageth, L. (2021). Meet the need—The role of vocational education and training for the youth labour market. *Kyklos*, 74(3), 321-348.
- Caves, K. M., Ghisletta, A., Kemper, J. M., McDonald, P., & Renold, U. (2021). Meeting in the middle: TVET programs' education–Employment linkage at different stages of development. *Social Sciences*, 10(6), 220.
- Caves, K., & Lueling, S. (2021). Research and the real world: Analyzing the short-and long-term impact of knowledge transfer. *Research Evaluation*, 30(3), 393-404.
- Durkheim, E. (1895/1982). *The rules of sociological method and selected texts on sociology and its method* (W. D. Halls, trans.). Free Press.
- Kemper, J. M. (2022). CES Youth Labor Market Index: Technical Report. *CES Studies*, 25.
- Kudrzycki, B., Günther, I., Chogou, S. K., & Bankolé, R. (2020). The Working Lives of 1250 Urban Youth in Benin. *LELAM Working Papers*, 14.
- Kudrzycki, B., Günther, I., & Lefoll, E. (2020). Youth Labor Market Index for Low Income Countries. *LELAM Working Papers*, 13.
- Miller, S. (2010). *The moral foundations of social institutions: A philosophical study*. Cambridge University Press.
- McDonald, P., Bolli, T., Caves, K.M., & Renold U. (2024). What makes Social Institutions of Vocational Education Systems Robust? *CES Working Papers*, forthcoming.
- Parajuli, M.N., Bhattarai, P.C., Gautam, S., Paudel, P.K., Bhandari, U., & Gupta, A. (2024). Youth Income and Associated Factors in Nepal: Insights from the 2022 Youth Survey. *LELAM Working Papers*, forthcoming
- Parajuli, M.N., Bhattarai, P.C., Gautam, S., Paudel, P.K., Sharma, A., & Bhurtel, A. (2024). Skills Gap: Exploring Education-to-Employment Transitions in Nepal's Construction Industry. *LELAM Working Papers*, forthcoming.
- Rageth, L., Caves, K. M., & Renold, U. (2021). Operationalizing institutions: a theoretical framework and methodological approach for assessing the robustness of social institutions. *International Review of Sociology*, 31(3), 507-535.
- Spencer, H. (1929). *The principles of sociology*. Appleton.
- Turner, J. H. (1997). *The institutional order: Economy, kinship, religion, polity, law, and education in evolutionary and comparative perspective*. Longman.
- Zubovic, A., Caves, K.C., & McDonald, P. (2021). CEMETS impact evaluation in developing countries. *LELAM Policy Briefs*, N.N.



**Contact**

ETH Zürich  
Prof. Dr. Ursula Renold  
Chair of Education Systems  
Department of Management, Technology and Economics  
Stampfenbachstrasse 69  
8092 Zürich

© CES, D-MTEC, ETH Zürich

