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Australian Alumni Research Grants Round 5

Sharing Workshop

**The Readiness of Cambodia's TVET System for Green
Jobs: Challenges, Opportunities, and Career Prospects
for Young People in Battambang Province**



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**MOUK Mao, Team Leader, Swisscontact Cambodia
YATH Yoeuy, Co-lead, Battambang PDAPP
KHLEY Ul, Co-lead, Swisscontact Cambodia**

1.Introduction

2.Literature review

3.Research Methodology

4.Research Findings

5.Discussions

6.Conclusions

7.Recommendations

References



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Introduction

Problem statement

Fragmented Policy



Policy Implementation is inadequately coordinated

Structural Challenges



Outdated Curricula & Instructor Shortages

Coordination Gaps



Limited efficiency between ministries & private sector

Market Mismatch



Workforce supply has not fulfilled with job market demands (skill mismatch).

Research Objectives



Examine how gender, disability, and rural youth inclusion (GEDSI) are integrated into green skills training.



Identify systemic challenges and strategies to strengthen institutional readiness for the green job sector.



Explore opportunities to enhance youth engagement and readiness for sustainable employment.



Evaluate existing green job policies and their support for skill development within the TVET system.

Main Question: How effectively does the Cambodian TVET system integrate youth into green skills development for sustainable career paths?

- 1 How are GEDSI (Gender, Disability, and Rural Youth) considerations integrated into green skills training?
- 2 What institutional challenges hinder green skills integration and youth access to training?
- 3 What systemic opportunities can be leveraged to improve youth employability in the green sector?
- 4 How do current national policies and strategies support green skills development within TVET?

Study Significance



Disadvantaged group engagement: Providing actionable insights to equip GEDSI groups with skills for green competencies, thereby enhancing their ability to enter and thrive in the growing green economy and access jobs that contribute to environmental sustainability.



TVET Institutes: Strengthening the capacity of training centers to deliver market-responsive green skills programs and strategies to support TVET institutions and young people in responding to the green job market.



Policy makers (governments): Offering evidence-based data to optimize resource allocation, allocate resources more effectively, and establish strategic priorities for sustainable development.



Private sectors: The findings and recommendations of this research will contribute significantly to the private sector by supporting the development of a workforce equipped with green competencies for a green economy.

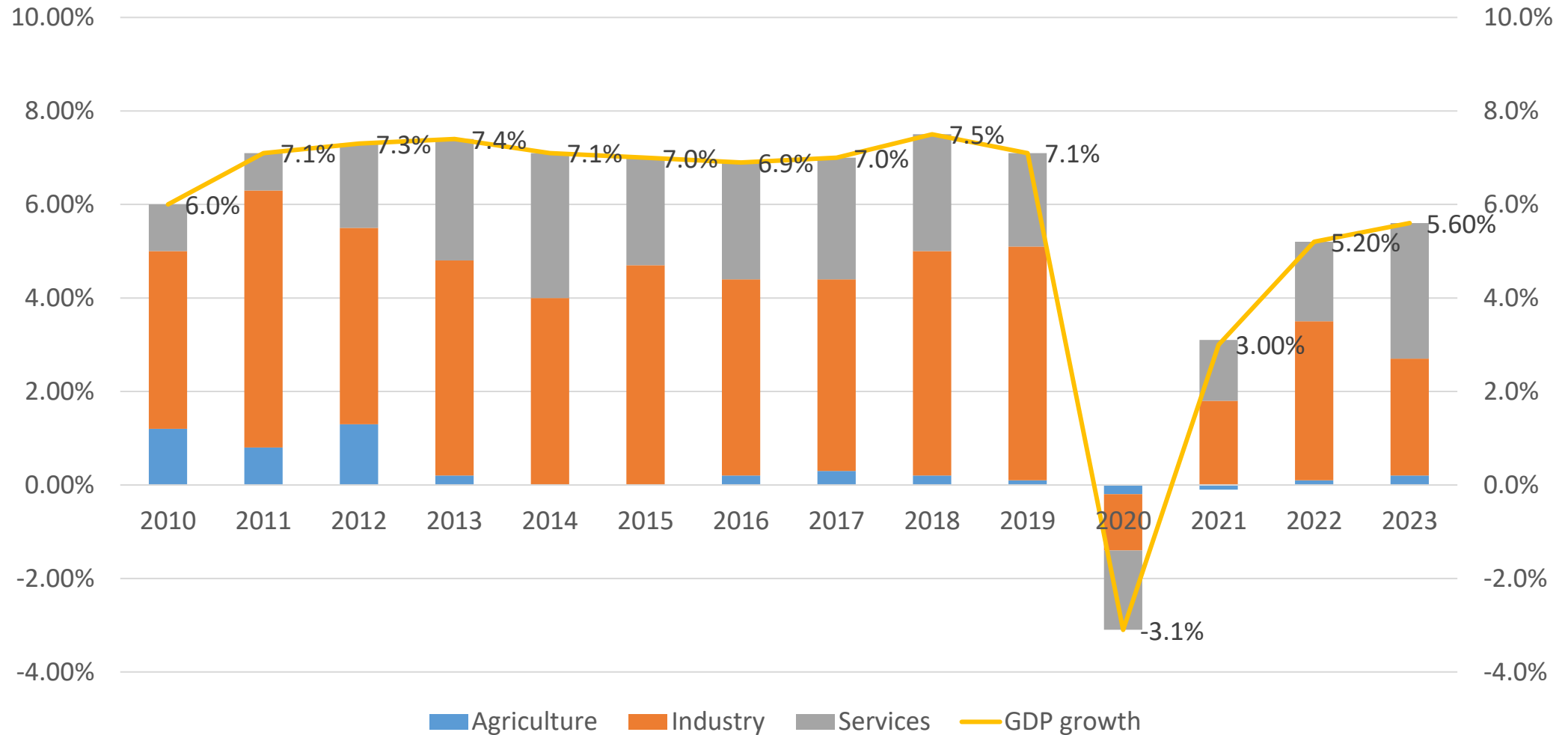


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Literature Reviews

Insights into Cambodia's Current Growth Model

Cambodia's Strong Macroeconomic Performance



RGC top priority is achieving a high-income status by 2050

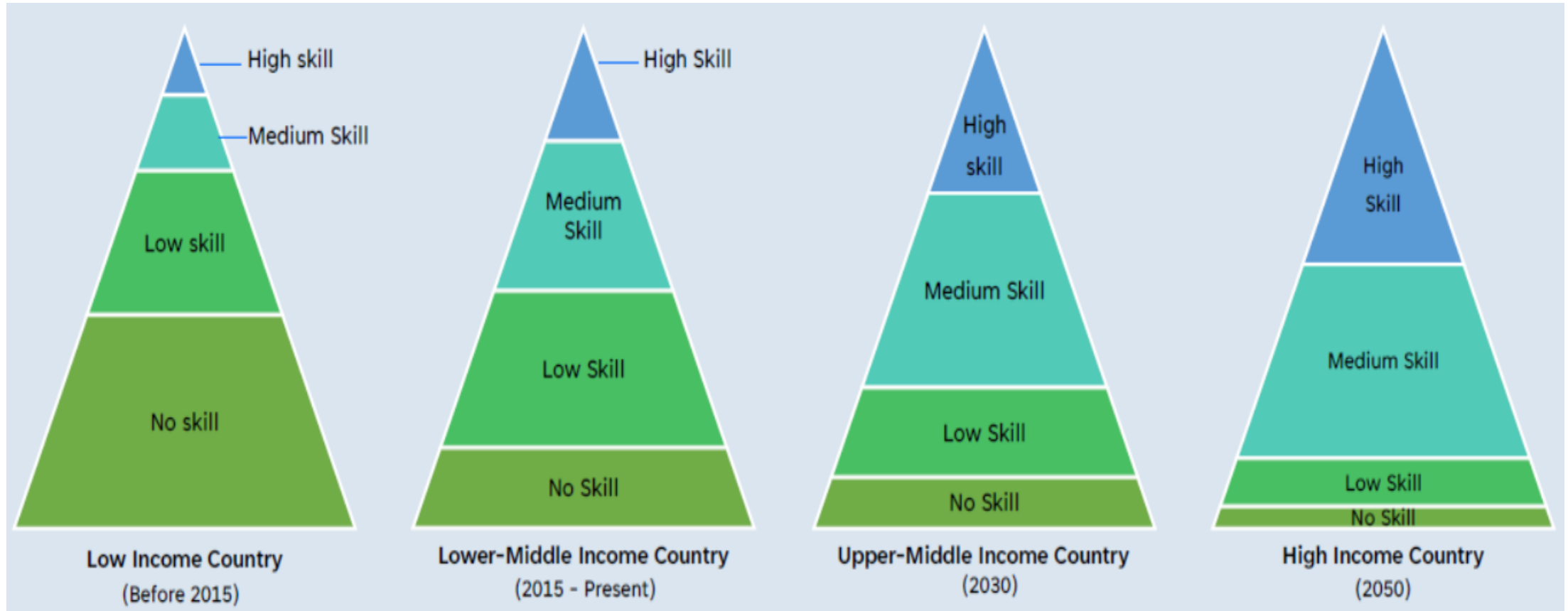


Figure 2: The transition from low-income to high-income country (Reference: MVLT 2024)

Understanding of Cambodia's educational system and green jobs



Cambodia Education and Training System

Stream	General Education	TVET	Higher Education
Government	Ministry of Education, Youth and Sport	Ministry of Labour and Vocational Training	Ministry of Education, Youth and Sport
CQF Level 8		Doctoral degree	Doctoral degree
CQF Level 7		Master's degree (technology or business)	Master's degree
CQF Level 6		Bachelor's degree (technology or business)	Bachelor's degree
CQF Level 5		Higher diploma (technology or business)	
CQF Level 4	Upper Secondary School (Grades 10-12)	TVET Certificate 3	
CQF Level 3		TVET Certificate 2	
CQF Level 2		TVET Certificate 1	
CQF Level 1	Lower Secondary School (Grades 7-9)	Vocational Certificate	

Green Jobs



Environmental Sector Roles

- Employment in roles making production processes are more environmentally-friendly.



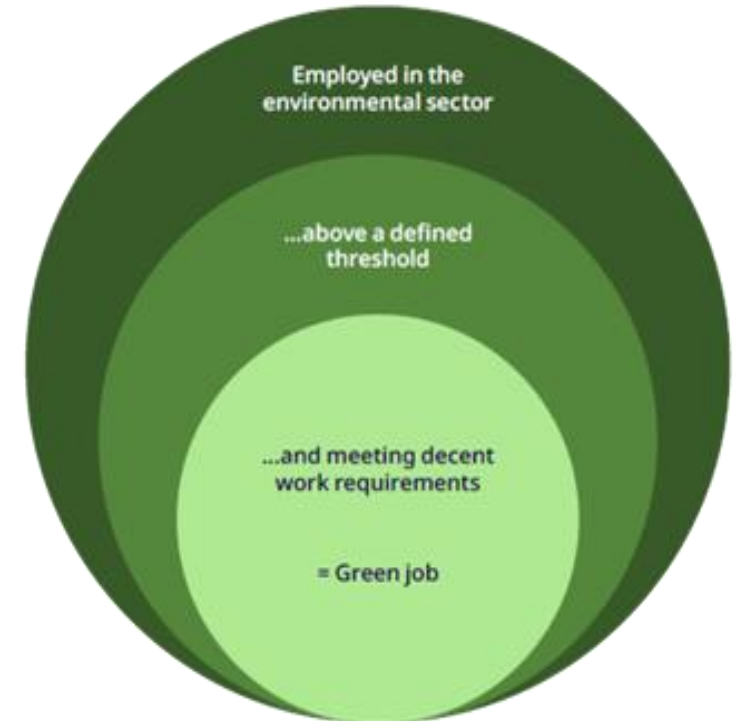
Intensity Threshold

- For two categories in environmental sector, less than and those that spend more than 50 % of their working time in environmental processes.



Decent Work Standards

- ILO Guidelines on Decent Work Indicators



Skills for green jobs



Skills that are important to successfully perform tasks for green jobs and to make any job greener.



The term accounts for both core and technical skills and covers all types of occupations that contribute to the process of greening products, services and processes, not only in environmental activities but also in other sectors

The TVET Decision: Understanding Push and Pull Factors for Enrollment

PUSH FACTORS (Internal & Social Influences)



Personal Interest & Motivation

Enduring preferences for technical topics lead to deeper learning outcomes and self-improvement.



The Circle of Influence

Parents, teachers, and peers provide the essential trust, advice, and financial encouragement required.



Belief in Skill Acquisition

Students enroll because they believe TVET will specifically enhance their technological and vocational capabilities.



Student enrollment in TVET is a result of "Push Factors"- personal and social influences-and "Pull Factors"-institutional features and career benefits.



TVET Enrollment

PULL FACTORS (Institutional & Career Attractions)



Skill-Centric Curriculum

Programs prioritize core technical competencies alongside soft skills like problem-solving and collaboration.



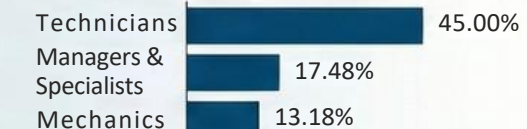
Diverse Program Pathways

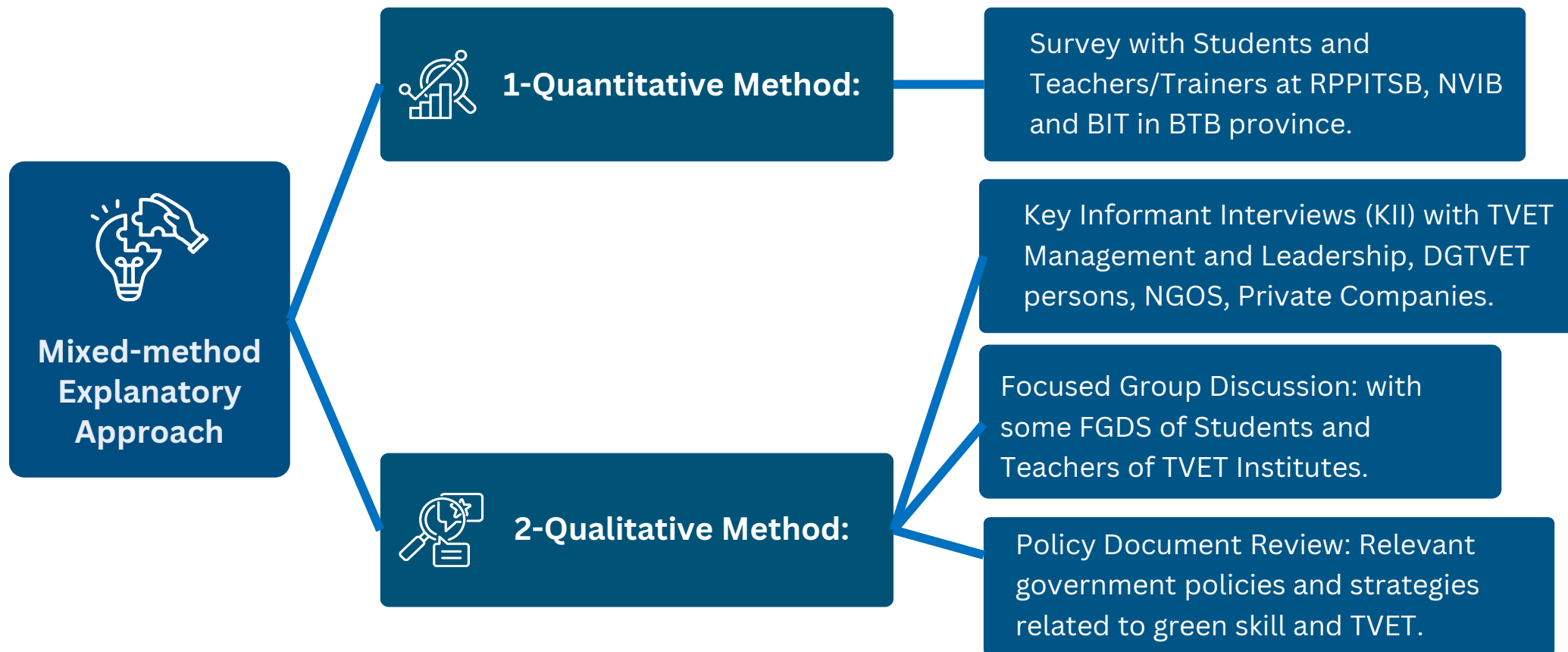
Offering range from short-term certificate courses to long-term doctoral degrees in specialized industrial fields.



High Market Demand

TVET graduates are highly sought after, particularly for technician and specialist roles in industry. Career Path Percentage of Graduates





A report was reviewed by:

- A peer, Dr. Heng Kimkong, Co-Founder & Editor-in-Chief, Cambodia Education Forum (CEF).
- Consultative workshop: to present key research findings, validate results through stakeholder feedback, and identify gaps related to green jobs readiness.

Sampling for Quantitative Method

- Using Stratified Random Sampling Technique
- Survey: # of Samples will be calculated in Confidence level 95% and Margin of Error: 5% <https://www.calculator.net/sample-size-calculator.html>

Students

calculator.net/sample-size-calculator.html?type=1&cl=95&ci=5&pp=50&ps=11579&x=Calculate

Calculator.net FINANCIAL FITNESS & HEALTH

home / math / sample size calculator

Sample Size Calculator

Find Out The Sample Size

This calculator computes the minimum number of necessary samples to meet the desired statistical constraints.

Result

Sample size: **372**

This means 372 or more measurements/surveys are needed to have a confidence level of 95% that the real value is within $\pm 5\%$ of the measured/surveyed value.

Confidence Level: 95%
Margin of Error: 5%
Population Proportion: 50% Use 50% if not sure
Population Size: 11579 Leave blank if unlimited population size.

Calculate **Clear**

Teachers

calculator.net/sample-size-calculator.html?type=1&cl=95&ci=5&pp=50&ps=380&x=Calculate

Calculator.net FINANCIAL FITNESS & HEALTH

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Sample Size Calculator

Find Out The Sample Size

This calculator computes the minimum number of necessary samples to meet the desired statistical constraints.

Result

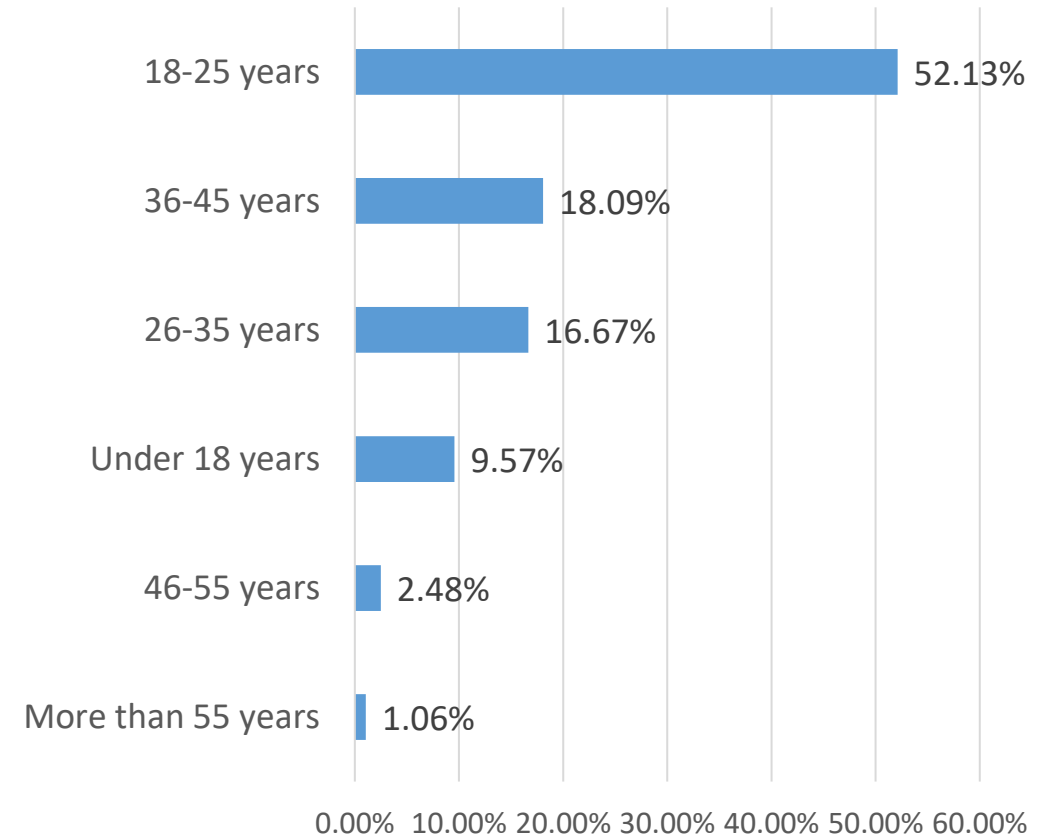
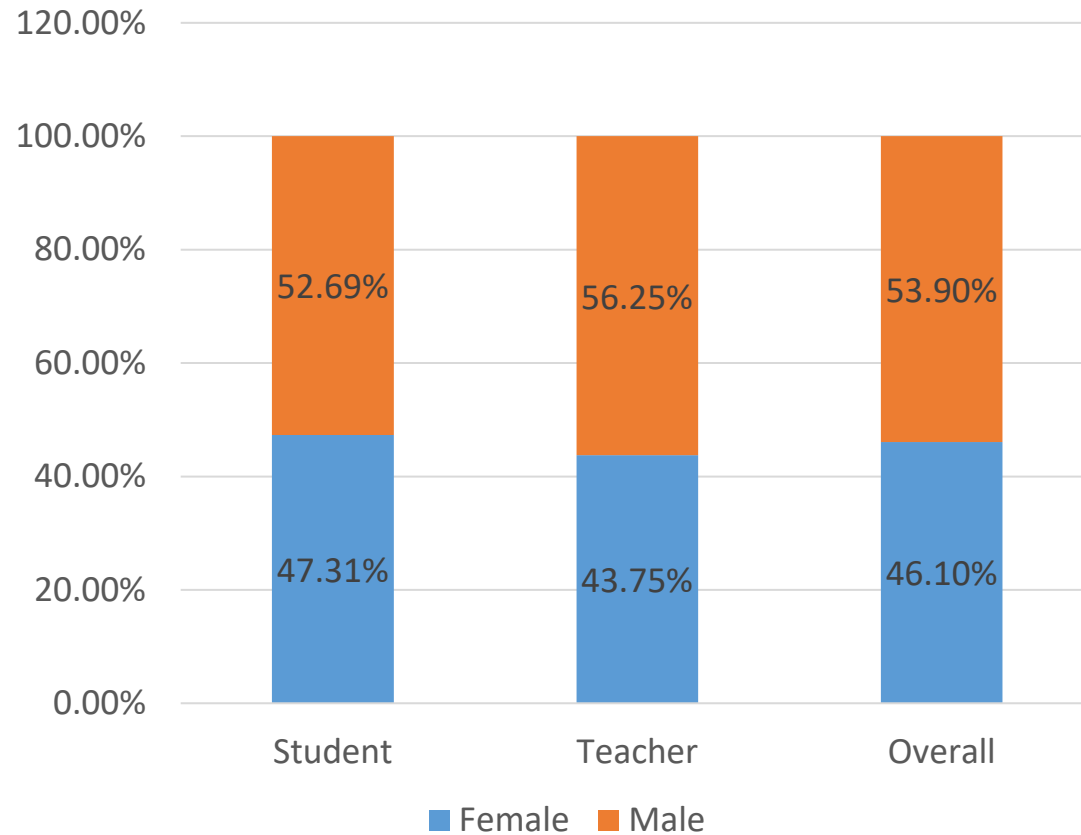
Sample size: **192**

This means 192 or more measurements/surveys are needed to have a confidence level of 95% that the real value is within $\pm 5\%$ of the measured/surveyed value.

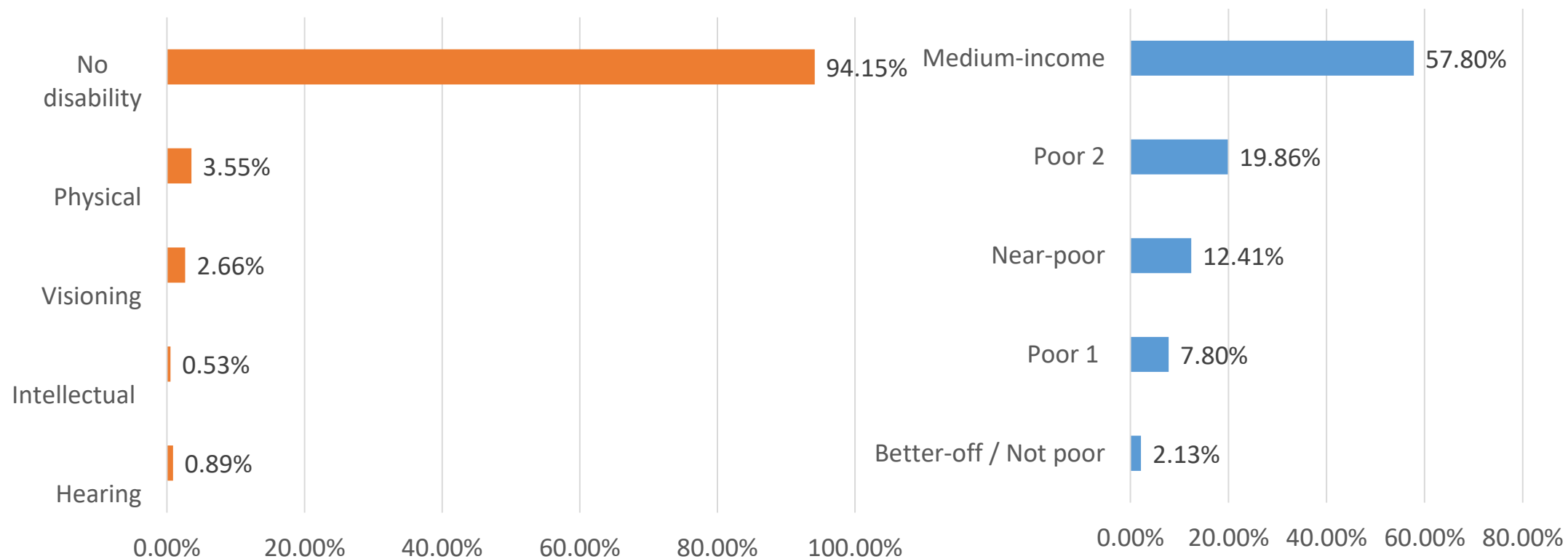
Confidence Level: 95%
Margin of Error: 5%
Population Proportion: 50% Use 50% if not sure
Population Size: 380 Leave blank if unlimited population size.

Calculate **Clear**

Respondent By Genders and Age



Respondent By Disabilities and Economic Status





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Research Findings

Q1: How are GEDSI considerations integrated into green skill training?

BARRIERS & SOLUTIONS FOR FEMALE TVET

Top 5 Enrollment Barriers (Quantitative)

	Awareness Gap	64.01%
	Facility Limits	51.06%
	Social Pressure	39.89%
	Safety & Transit	39.89%
	Job Uncertainty	35.28%

Voice of the Stakeholders (Qualitative)



Men's Work: Courses viewed as labor-intensive.



Parental Mindset: Families prefer office-based roles.



Education Barrier: Parent's' limited background



Role Model Deficit: Lack of female figures.

Strategic Roadmap: Solutions for Female Enrollment

Top-Rated Strategies



Scholarships &
Stipends:
79.7%



Successful Role
Models:
79.7%



Graduate
Ambassadors:
76.6%

Voices from the Focus Groups

TVET programmes are not only for men but equally for women; thus, awareness-raising, counseling and ongoing support are crucial strategies to attract more female students to enroll



Students



Teachers

To attract more female students to TVET, a key strategy is to showcase successful women graduates with decent jobs. Their stories can be used in community awareness and counseling to help women feel more confident and comfortable in choosing and completing TVET programmes successfully

Main barriers for people with disabilities in participating in TVET (n=564)

- **Physical accessibility:** Lack of assistive tools or training equipment (63.48%), inaccessible physical infrastructures (ex: stairs, narrow pathways..ect) (44.68%) and limited inclusive teaching materials (44.33%).
- **Information accessibility:** Limited career guidance for people with disabilities (30.67%).

Key challenges	Student #	Teacher #	Total	Student (%)	Teacher (%)	Overall (%)
Inaccessible physical infrastructure (e.g., stairs, narrow pathways)	176	76	252	47.31%	39.58%	44.68%
Lack of assistive tools or accessible training equipment	233	125	358	62.63%	65.10%	63.48%
Limited inclusive teaching materials or methods	192	58	250	51.61%	30.21%	44.33%
Negative attitudes or lack of awareness among staff/students	25	17	42	6.72%	8.85%	7.45%
Limited career guidance for persons with disabilities	129	44	173	34.68%	22.92%	30.67%
Lack of tailored training courses for different types of disabilities	155	77	232	41.67%	40.10%	41.13%
Limited policy or institutional support for inclusion	27	19	46	7.26%	9.90%	8.16%
Absence of disability-inclusive communication channels	39	6	45	10.48%	3.13%	7.98%

Supported accessibility for people with disabilities in TVET institutes (n=192)

- **Staff behaviour:** Staff trained to use respectful and inclusive languages (72.17%), use positive and supportive body language (61.35%) and awareness campaigns about disability inclusions (49.47%).
- **Physical accessibility:** accessible toilet facilities (45.75%), Handrails added to staircases (42.2%) and accessible classroom and dormitory entrances (42.02%).
- **Information accessibility:** disability-friendly enrollment support (73.76%) and use of IEC materials (49.64%)

A-Staff Behavior	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Staff trained to use respectful and inclusive language	3.90%	2.84%	18.97%	56.38%	17.91%	100%
Awareness campaigns about disability inclusion	5.50%	12.06%	32.98%	41.31%	8.16%	100%
Use of positive and supportive body language	7.98%	7.98%	22.70%	50.53%	10.82%	100%
B-Physical Accessibility						
Wheelchair ramps installed	29.79%	18.44%	10.99%	29.08%	11.70%	100%
Handrails added to staircases	25.00%	18.44%	14.36%	30.14%	12.06%	100%
Accessible classroom and dormitory entrances	23.94%	14.72%	19.33%	31.91%	10.11%	100%
Accessible toilet facilities	25.53%	14.72%	14.01%	35.11%	10.64%	100%
Concrete walkways for easy mobility	21.45%	17.38%	19.86%	29.96%	11.35%	100%
C-Information Accessibility						
Use of accessible Information, Education, and Communication (IEC) materials	7.80%	14.54%	28.37%	40.07%	9.57%	100%
Priority registration for students with disabilities	2.84%	5.67%	20.74%	55.85%	14.89%	100%
Disability-friendly enrollment support	1.95%	3.90%	20.39%	53.90%	19.86%	100%

Key barriers to green jobs for youth

Top 03 barriers:

- Limited knowledge of green skills (66.13%)
- Lack of awareness about available programmes (49.46%)
- Limited green curricula in TVET programmes (45.16%)

Barriers	# Student	% Student	N
Limited knowledge of green skills	246	66.13%	372
Lack of awareness about available programmes	184	49.46%	372
Limited green curricula in TVET programmes	168	45.16%	372
Limited access to training in my area	132	35.48%	372
Lack of role models in green careers	113	30.38%	372
Cost of training or transportation	101	27.15%	372

Strategies for encouraging youth participation in green jobs

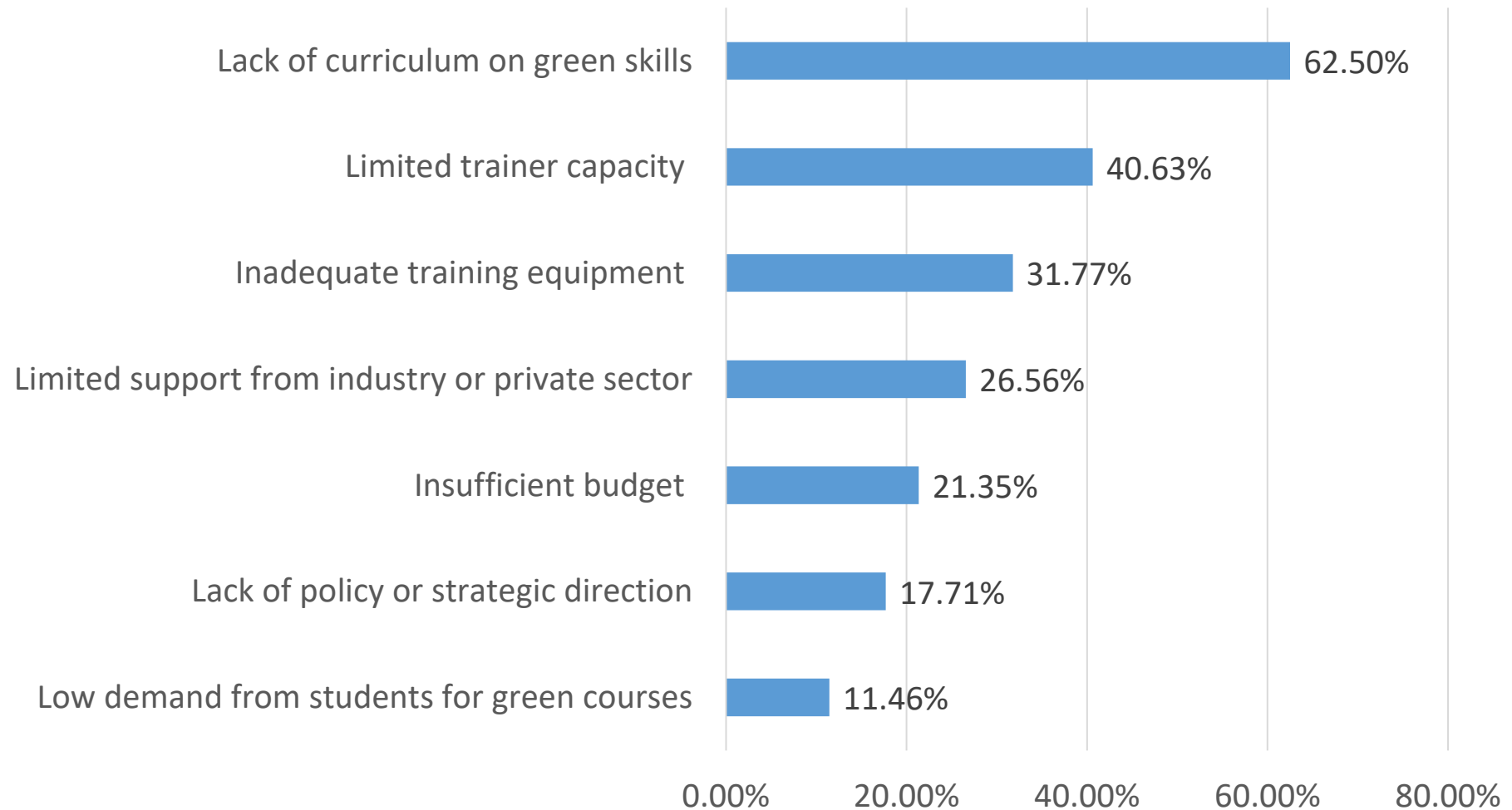
Top 03 strategies for youth participation in green jobs:

- Partnership with private sector (NGO and companies) (100%)
- Integrate potential green skills into existing training programs (91.66%) and
- Cooperate with existing community development project (87.23%)

Strategies	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total
Partnership with private sectors (NGO and companies)	0.00%	0.00%	0.00%	89.74%	10.26%	100.00%
Deliver flexible or remote training formats	5.73%	5.21%	10.42%	70.31%	8.33%	100.00%
Create bridging/foundation programs for disadvantaged youth	0.00%	11.46%	1.56%	69.27%	17.71%	100.00%
Offering green skill programs through community learning centers (Greening TVETs in all levels...ect)	0.00%	9.90%	31.25%	40.63%	18.23%	100.00%
Integrate potential green skills into existing training programs	2.60%	2.08%	3.65%	45.31%	46.35%	100.00%
Community-based awareness programs (social media and physically)	5.79%	12.11%	6.84%	63.16%	12.11%	100.00%
Cooperate with existing community development projects	0.00%	0.00%	12.77%	63.83%	23.40%	100.00%

Q2: What institutional challenges hinder green skills integration and youth access to training?

Institutional challenges to integrate green skills into TVET



Teacher Perspective: Key Success Factors

The qualitative findings from the FGDs further reinforced these strategies

45.31% of Upskills & Reskills



Capacity Building:
TOT & Equipment

51.04% Job-Market Survey



Policy & Curriculum
Alignment with Green Skills

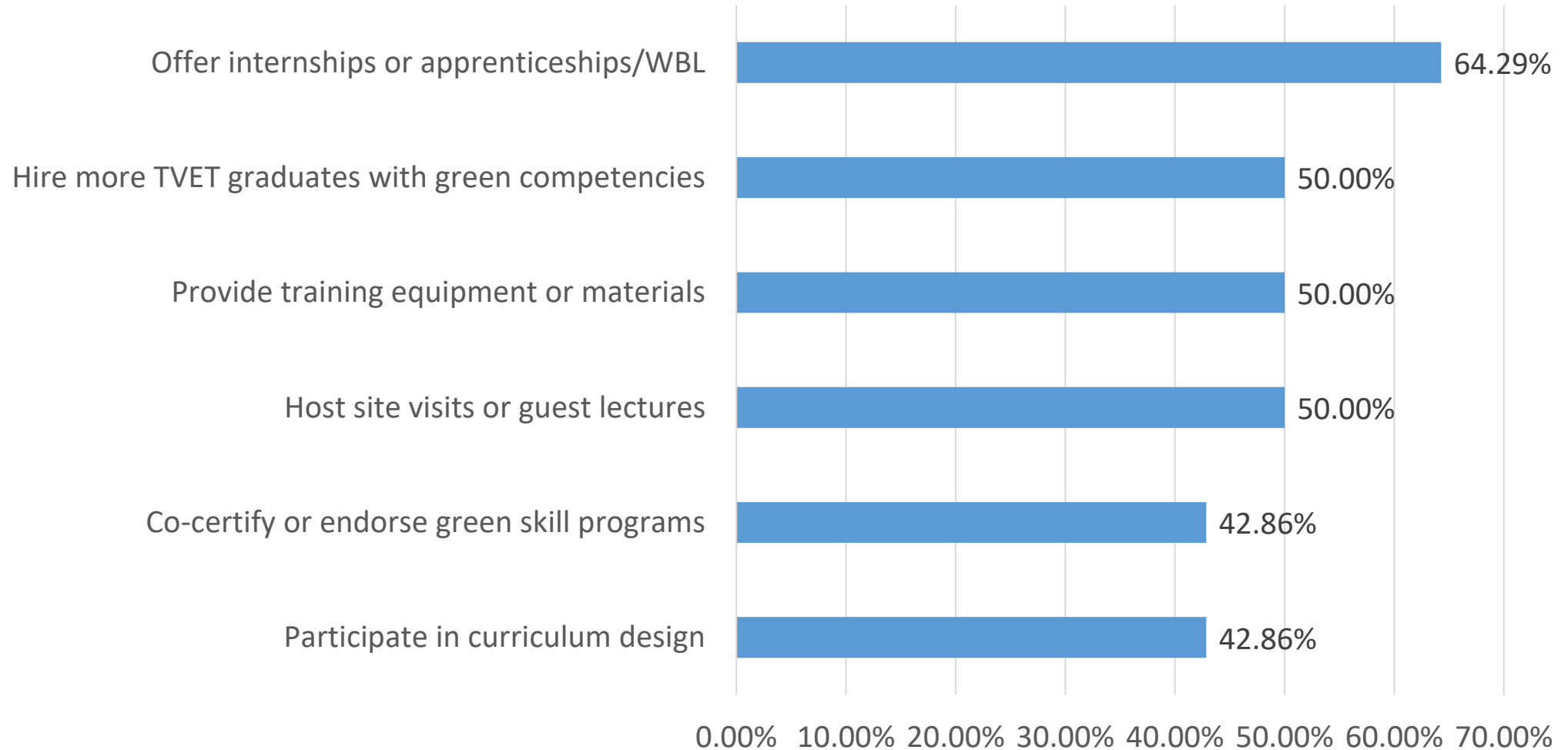
39.58% PPP Support



Funding & Private
Sector Collaboration

Q3: What systemic opportunities can be leveraged to improve youth employability in the green sector?

Private Sector engagement in supporting green skills



High-Demand Green Programs

Top 3 Emerging courses that offer new employment opportunities for young people

74.47%



Solar Energy:
Renewable
Trends

61.88%



Waste Management &
Recycling Technologies

55.67%



EV-Related Courses:
Clean Transport

Teacher FGD : Enhancing Program Attractiveness

The Teachers suggested that institutions should focus on:



Hands-on & Practical Training: Focus on practical workshops and "hands-on" activities directly related to technical green skills.



Resource & Exposure: Prioritize sufficient training equipment, exchange visits, and internships to provide real-world experience.



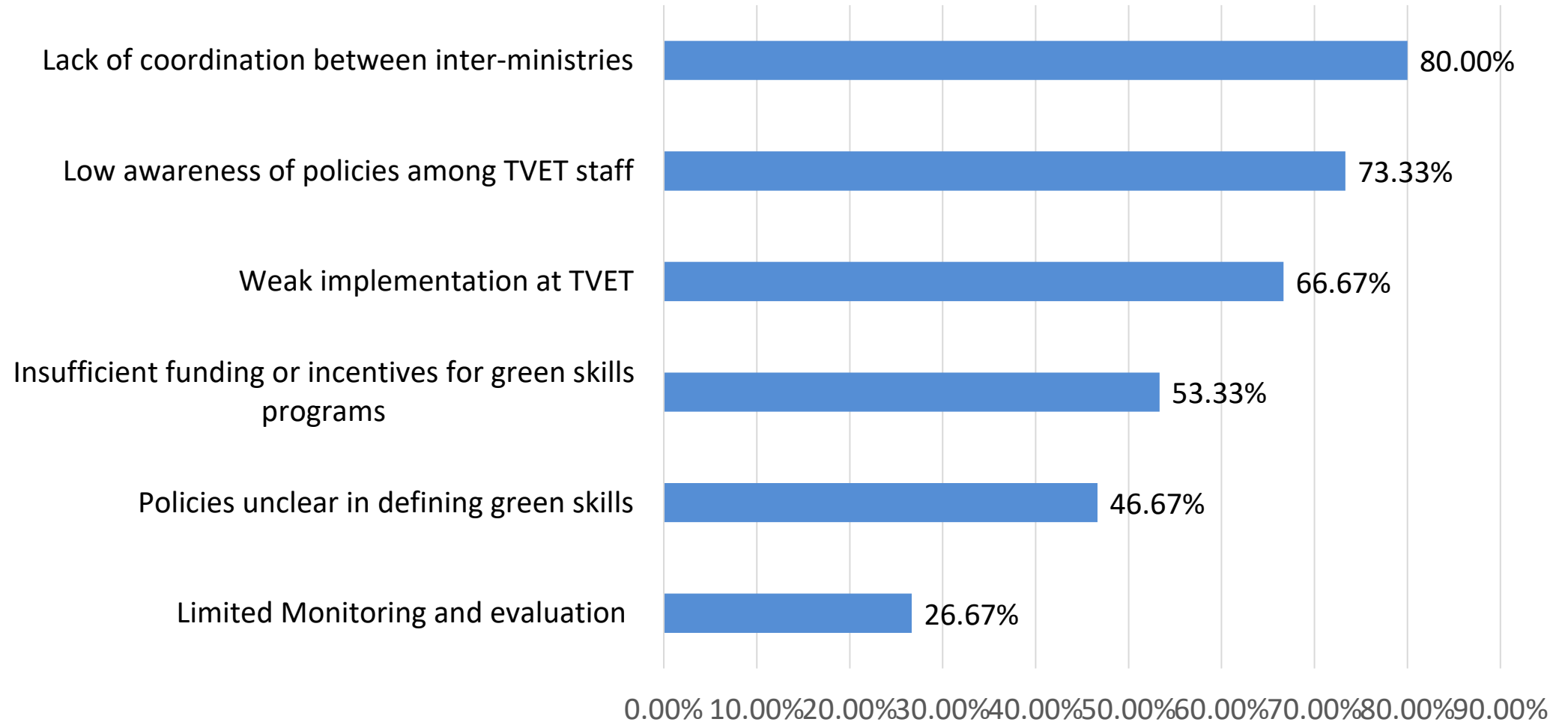
Market & Access Alignment: Align curricula with labor market needs while ensuring training locations are convenient for youth.



Community-Based Promotion: Utilize community-based training and promotion to increase the relevance and visibility of green programs.

Q4: How do current national policies and strategies support green skills development within TVET?

Gaps in policy implementation



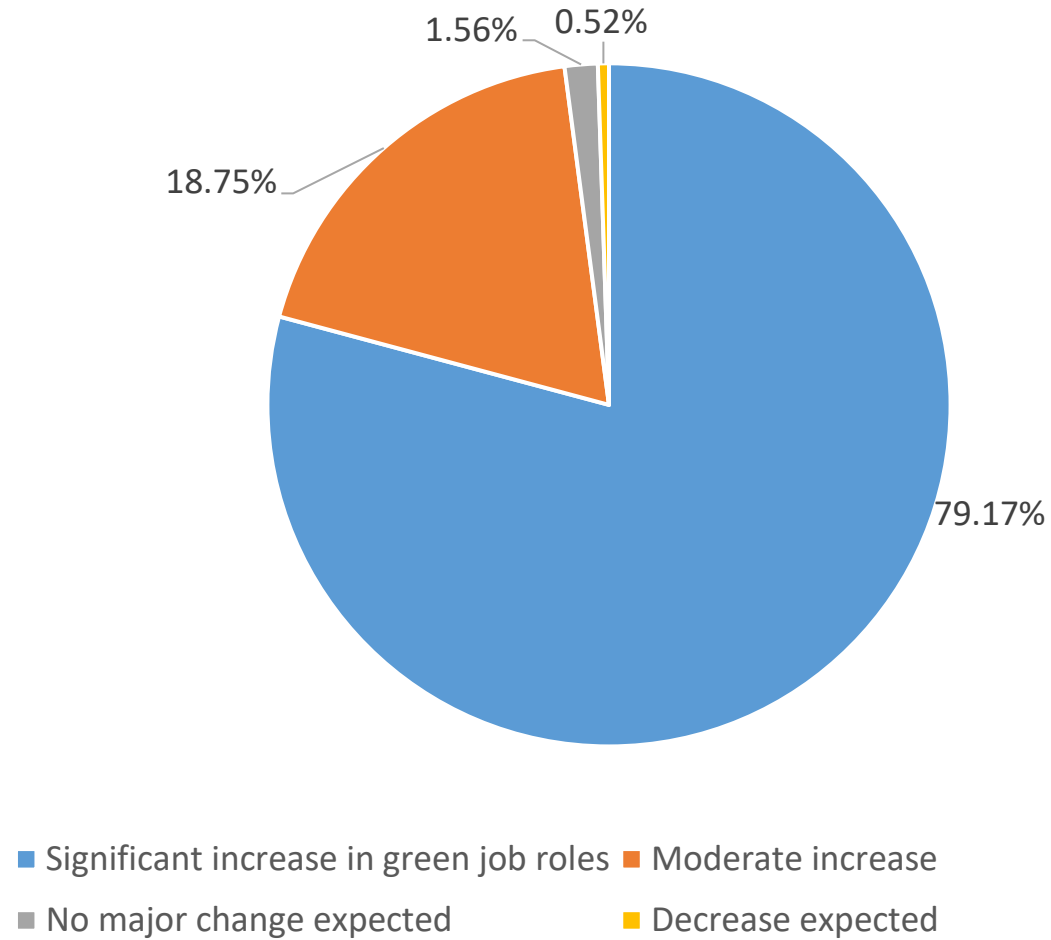
Coordination mechanisms for policy implementation

Coordination mechanism for policy implementation:

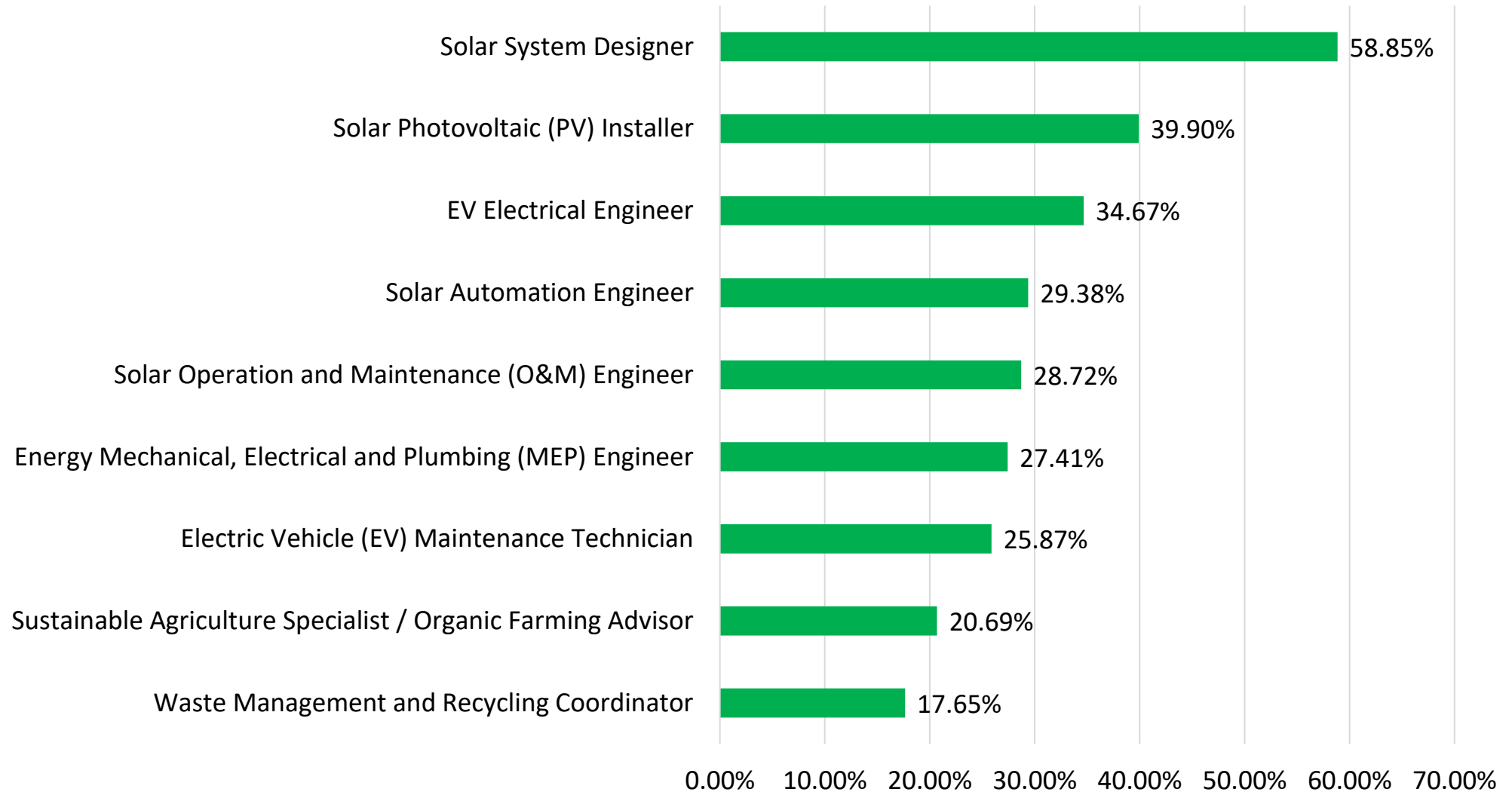
Establish inter-ministerial working group (93.33%), develop national competency standards for green jobs (93.33%), and Offer incentives to TVETs that introduce green skills (93.33%) and improve on policy monitoring and evaluation (86.67%).

Supports	Neutral	Agree	Strongly Agree	Total
Include specific targets for green skills in TVET policies	20.00%	53.33%	26.67%	100%
Establish inter-ministerial working groups (MLVT, MoE, MoEYS, MME, etc.)	6.67%	73.33%	20.00%	100%
Improve on policy monitoring and evaluation	13.33%	66.67%	20.00%	100%
Increase budget allocations to green TVET programs	13.33%	60.00%	26.67%	100%
Develop national competency standards for green jobs	6.67%	60.00%	33.33%	100%
Offer incentives to TVETs that introduce green skills	6.67%	40.00%	53.33%	100%

Perceptions on the prospect of green jobs in the future



Outlooks for green jobs in the next five years (Year 2030)





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Discussion part

Theme 1: GEDSI integration in green TVET Programs

Q1: How are GEDSI considerations integrated into green skill training?

The findings show that GEDSI considerations are present at policy discourse level but less visible in operational strategies within TVET institutions.

Most female students concentrated in soft vocational skills while technical green skills are not suitable for women

Learners with disabilities are facing significant physical, behavior and information barriers.

Aligned with the UNESCO-UNEVOC (2020) report globally technical fields are struggling with gendered stratifications.

Green transition leaves vulnerable groups behind unless “occupational stereotyping” is addressed

Aligned with UNESCO-UNEVOC (2021) TVET for Disadvantaged youth, moving for the whole institutional approach is important to ensure the greening efforts include physical and pedagogical accessibility

Theme 2: Institutional and access barriers to green skills development

Q2: What institutional challenges hinder green skills integration and youth access to training?

Multiple institutional and system constraint:

- Limited financial resources for modern green equipment and training infrastructure
- Insufficient instructor capacity in renewable and sustainable technologies
- Weak industry partnerships in emerging green sectors
- Absence of standardized green competency standards

Youth barriers:

- Financial hardship, limited awareness of green career pathways, perceived labor market uncertainty in green sectors, and geographic disparities between urban-based training centers and rural communities.

Findings are consistent with:

- Universal challenge is a capacity gap emphasized that pace of environmental policy often exceed the pace of educational reforms based on the ILO (2019) study, Skills for a Greener Future.
- Compared to Vietnam and the Philippines, Cambodia is facing a more fragmentation issue of different green initiatives.

Theme 3: Leveraging opportunities for inclusive green employability

Q3: What systemic opportunities can be leveraged to improve youth employability in the green sector?

Despite constraints, there is higher interest of youth in solar energy and EV maintenance.

Public-private partnerships (PPPs) are viewed by majority of stakeholders as the most effective approach to guarantee training responding market demands.

Aligned with ADB (2023), Preparing the workforce or the low-Carbon Economy identified renewable energy as the leading sector for job creation in Southeast Asia.

65% of the population age under 30 offers a strategic advantage. Governments can turn this youth population into a competitive workforce for the green economy of EV, like successful model in Asean countries.

Globally, 16.6 million people in 2024 worked in the renewable energy with solar PV as the largest segment (over 7 million workers) based on (IRENA & ILO 2024)

Renewable energy jobs potentially exceed 30 million by 2030 under energy transition scenarios (IRENA & ILO, 2026)



Overall, these findings emphasized that green energy and renewable technology such as solar energy and EV are likely to provide the most opportunities for skilled workers in Cambodia, mirroring global trends in green job growth.

Theme 4: Alignment with green job policies with TVET development

Q4: How do current national policies and strategies support green skills development within TVET?

Cambodia offers a supportive policy foundation, but it has a clear implementation gaps reflected in not yet fully in training standards or budget allocations.

National frameworks emphasize green growth, sustainable development, and skills modernization; however, explicit integration of green competencies into TVET standards is still evolving.



Cambodia's explicit policy link between "Green" and "Digital" transformation is a international modern approach; however, the World Bank (2025) assessment of TVET institutes highlighted that the system remains largely supply-driven. To meet international standard, Cambodia have to embed "Green Work Directions "into the National Qualification Framework (NQF).

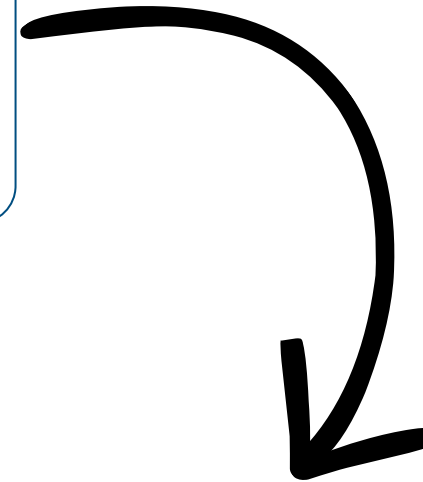
Conclusion

Cambodia's TVET system is positioned within a favorable policy environment for green transition

Despite these gaps, the report is optimistic for the future, with majority of respondents anticipating a significant increase in green job opportunities over the next five years, particularly for Renewable Energy (Solar), Energy Efficiency, EV, and Waste Management sectors.



However, enhanced institutional capacity, inclusive strategies, and structured policy implementation are necessary to ensure that women, persons with disabilities, and rural youth are equitably prepared for sustainable career opportunities.





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Recommendations

Recommendations

Strategic Proposal for Enhancing Inclusive Green Jobs



Strengthening awareness of TVET and green skills among disadvantaged groups is essential.



Enhancing Inclusive infrastructure and learning environments by all relevant stakeholders.



Providing Financial support mechanisms for disadvantaged learners, particularly female students.



Strengthening and sustaining Public-private partnerships to enhance the relevance and employability outcomes of TVET graduates.



Enhancing Capacity of TVET teachers and trainers in green technologies to meet emerging labour market demands.



Reinforcing green policy implementation to bridge the gap between national strategy and institutional delivery.



Aligning policy frameworks closely with labour market needs to support inclusive green skills development in TVET system.

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Research team



Survey with teachers and students at TVET institutes in BTB



Thanks you!!!