



Management Response

External Mid-term Evaluation (MTE) and outlook of Renewable Energy Skills Development (RESK) in Indonesia

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Content

1)	Background.....	1
2)	Appreciation of the Report: Structure, Methodology & Process	4
3)	Key Findings and Lessons learnt	4
4)	Shortcomings and other Important Considerations.....	9
5)	Recommendations	10

1) Background

The State Secretariat for Economic Affairs, department of infrastructure financing (SECO-WEIN), acting through the Swiss Cooperation Office in Jakarta (Indonesia) has retained services of the company *KEK CDC* in cooperation with *QED* and *Think Policy*, for the External Review Mission of the **Renewable Energy Skills Development (RESK)** Project, being implemented by *GFA Consulting Group GmbH*. The assignment was realised through a sub-contract within the existing contract by SECO-WEIN with a consortium (Urbaplan/ Enco/ Transitech) for Urban Backstopper Support for Scoping Studies. The authors of the MTE were Mr. Dieter Zürcher (*KEK*), Mr. Bodhiya Wijaya Mulya (*QED*), Ms. Hanna Vanya (*Think Policy*), and Mr. Andhyta F. Utami (*Think Policy*).

The mid-term-evaluation (MTE) contract duration period was from April until August 2024, including a field trip undertaken from 19.05.24 until 31.05.24, covering a total of 35 interviews and 5 focus groups with partners in ministries, training institutes, teachers and graduates were conducted in four purposefully selected institutes: Polytechnics in Jakarta, Bali and Makassar, and a training center in Lombok. Additionally, selected interviews with alumni and employers were conducted. In total, the opinions of 112 people were considered.

The Renewable Energy Skills Development (RESD) project aims to ensure that “renewable energy power plants are better designed, planned, installed, operated, and maintained”. Towards this, the project implements three components:

- 1) Strengthening formal education through a D-4 level programme in solar PV and hydropower for two semesters at five Polytechnics for D-3 electrical, mechanical and civil engineering graduates,
- 2) Providing modular non-formal trainings for solar PV and hydropower in ten training centers, and
- 3) Enhancing the exchange within the RE sector in Indonesia.

The RESD project was designed through 2018-2019 following a feasibility study. The international tender to implement the project was won by GFA Consulting Group, and the project implementation is scheduled from 15th of December 2020 until 15th June 2025 (54 months). The project partners include three Ministries, namely the Ministry of Energy and Mineral Resources (MoEMR), the Ministry of Manpower (MoM) and the Ministry of Education, Culture, Research and Technology (MoECRT).

The goal of project RESD is to enable competent design, planning, installation, operation and maintenance of renewable energy power plants through the availability of qualified staff relevant to labour market needs. Its budget is CHF 6,417 million (SECO's contribution) and comprises of three components:

Development Objective (Impact):

- a) **Overall Project Goal:** Renewable energy plants are better designed, planned, installed, operated, and maintained.

Project Objectives (outcomes):

- b) **Outcome 1:** Formal, multidisciplinary RE specialisation programs at D4 level are in place and produce labour market relevant graduates for the RE sector.
- c) **Outcome 2:** Various training providers offer modular non-formal trainings in accordance with national skill standards providing skills and knowledge upgrading relevant to the RE labour market.
- d) **Outcome 3** Exchange and understanding within the RE sector and with the education sector has led to a higher acceptance and use of RE.

Project Outputs:

- 1) **Output 1.1** Roles and responsibilities with Indonesian partners clarified, established, and approved.
- 2) **Output 1.2** Curriculum for D4 program in RE developed and accredited.
- 3) **Output 1.3** Required equipment procured and commissioning and instructors' training carried out.
- 4) **Output 1.4** Instructional material developed.
- 5) **Output 1.5** Qualification standards and assessment procedures for D4 RE specialization program clarified and implemented.

- 6) **Output 1.6** Capstone Project approach for D4 programs developed and adopted by Polytechnics.
- 7) **Output 1.7** Teachers trained and certified.
- 8) **Output 1.8** Students for D4 RE specialization enrolled and programs launched.
- 9) **Output 1.9** Adequate tracer studies, monitoring and job placement services adopted.
- 10) **Output 1.10** Selected instructional material digitalized

- 11) **Output 2.1** Roles and responsibilities of Project and with Indonesian partners clarified and approved.
- 12) **Output 2.2** Curricula for modular solar PV and hydropower short-courses defined.
- 13) **Output 2.3** Instructional material for modular solar PV and hydropower short courses developed.
- 14) **Output 2.4** Required equipment, commissioning and instructors training defined, equipment procured and commissioning and instructors' training carried out.
- 15) **Output 2.5** Qualification standards and assessment procedures for solar PV and hydropower courses reviewed.
- 16) **Output 2.6** Teacher training needs assessed, training to fill gaps conducted and trainers certified.
- 17) **Output 2.7** Modular RE courses introduced at public and/or private training providers.
- 18) **Output 2.8** Program implementation monitored by Indonesian partner in cooperation with private sector

- 19) **Output 3.1** Web- or other digital platform(s) on Indonesian RE sector (technologies, policies, regulations, government institutions, training options, private sector companies, services, experts, etc.) enhanced.
- 20) **Output 3.2** RE sector conferences organised and/or contributed to.
- 21) **Output 3.3** Awareness campaigns for wider introduction of RE technologies supported with expertise.
- 22) **Output 3.4** National and international training institutions linked.
- 23) **Output 3.5** Training of Ministerial staff.

The main purpose of the evaluation was to assess the project implementation and objectives stated in the logframe against the Organisation for Economic Co-operation and Development / Development Assistance Committee (OECD / DAC) criteria, with particular foci on the efficiency of implementation and the stock-taking of achieved results (effectiveness) of the project (RESO, 2023). It was summarized as follows: *“Appraisal of the project against selected OECD DAC criteria, with key foci on Effectiveness and Efficiency, as well as on mid-term systemic and sustainable impacts, including recommendations for future optimisation.”*

This evaluation aimed to assess mid-term systemic and sustainable impacts as well. Key outcomes of the evaluation are recommendations for a) improvements for the finalization of the current project phase, and b) as strategic and technical recommendations for the potential 2nd project phase (as option within the existing RESO contract with GFA). Hence, the evaluation findings shall be used (by SECO) as a base to make evidence-based decisions for potential adjustments to the current project phase and derive recommendations for a potential next phase by learning about success factors as well as challenges within the current phase.

2) Appreciation of the Report: Structure, Methodology & Process

SECO-WEIN would like to thank the evaluation team for its comprehensive and well managed evaluation process. The planning and coordination by the evaluation team with the implementer (GFA), with the responsible national program officer by the Swiss Cooperation Office (SCO) in Jakarta and with SECO-WEIN in headquarters was effective and smooth. Special thanks go to the SCO as well, for logistical support and for coordinating various appointments with Indonesian political partners and stakeholders.

The process on setting up the evaluation's implementation modalities was special to that regard, that it was set up as a sub-contract within an existing service contract (including separate ToR). In this particular case, this constellation proved to be successful and cost-effective. The implementer (GFA) was pro-actively involved throughout the full process and allowed to comment, including the definition of the guiding evaluation questions, the correction cycles of the evaluation report and for input and responses for this management response document. The reasons are that the implementer knows best the project, the modalities being in place for implementation in Indonesia and can thereby use this operational and technical experiences for "reality-checks" of assumptions and recommendations.

SECO-WEIN, SCO and GFA provided comprehensive comments for the draft evaluation report, the correction cycles went smoothly. The report's structure was pre-defined and proved to be useful. The overall length of the first draft report was rather large, partially exceeding the agreed scope, and including repetitions. Based on provided comments, the evaluation team optimised the report according to recommendations concerning foci, size, key aspects, repetition and selected technical details.

Throughout the design phase of the evaluation and for the verification of the evaluation's results, the evaluation expert of SECO-WEQA was involved at certain points of time, which proved to be beneficial for the evaluation process and provided additional orientation, in particular for further focussing on most important evaluation questions and verifying the methodologies. The evaluation has applied a mixed method approach by combining qualitative and quantitative data collection tools, with a focus on qualitative methods. Special attention was given to existing surveys and data from the project and publicly available secondary data to avoid redundancies.

The implementation of this mid-term evaluation (MTE) was delayed due to COVID-19, operational procurement issues to start the actual trainings, further staff changes and diverging priorities with limited resources at SECO. As the project approaches its final year of the current implementation phase, the MTE results shall fine-tune the implementation for the last year of this phase and provide suggestions for a possible next phase.

3) Key Findings and Lessons learnt

The main results achieved are summarized as follows:

The RESD project is on track to strengthen the skills basis of the RE sector in a holistic manner, by integrating relevant public and private stakeholders, throughout curricula development on solar PV and hydropower subjects. The developed curricula for solar PV and hydropower have modernised the teaching approaches, particularly with the addition of new solar lab equipment.

The RESD project has significantly enhanced formal education through the development and implementation of a one-year extension programme focusing on solar photovoltaic (PV) and hydropower subjects at five polytechnics.

By providing comprehensive training to lecturers, developing capstone project guidelines, and procuring necessary lab equipment, the project has ensured that polytechnics offer state-of-the-art and industry-relevant education. This effort is expected to produce around 500 graduates by mid-2025. The inclusion of a capstone approach has equipped students with practical, technical, and soft-skills.

In the non-formal education component, RESD has provided modular training programmes at BPVPs that are tailored to the needs of the RE industry. The project facilitated curriculum revisions and conducted extensive teacher training to ensure high-quality instruction. As a result, the project will produce 300 graduates for solar PV technicians.

Under Component 3, the project enhanced communication and information exchange among RE stakeholders by developing a website for the RE sector.

The RESD project's activities have directly contributed to the programme's outcome by addressing key gaps in education and training for the RE sector. By enhancing formal education, the project has produced graduates who are well-prepared for the labour market, as evidenced by the high satisfaction of employers. The non-formal education has provided workers and job seekers with the necessary skills for solar PV and hydropower installations.

Alternative explanations were tested but discarded, as the project has addressed clear niches with a tangible outcome plausibly linked to the theory of change.

The project aligns with Indonesian and Swiss policy priorities toward achieving the 2030 Agenda and supports the energy transition by enhancing RE knowledge within the ministerial partners, the training institutions and enterprises of the RE ecosystem.

The project setup is adequate given its approach to promote 'Swissness' and establish links with Swiss RE training institutions, with all the partners maintaining their basic commitments. However, the lack of additional contractual arrangements between MoEMR with MoM and MoECRT / polytechnics has potentially negatively affected the timely procurement of micro-hydro lab equipment. Consequently, the practical teaching aids were not fully available in some instances. The coordination of the many stakeholders was done effectively. At the strategic level, the Steering Committee meets once a year. Still, coordination at a more technical level and with the component managers of the training institutes could be enhanced, according to the partners (but was limited by the partners via their availability at the same time).

Main findings according to DAC criteria:

Relevance: Relevance of formal and non-formal RE trainings (Components 1 and 2): During interviews, all three partner ministries (MoEMR, MoM, and MoECRT) confirmed the high relevance of developing and upskilling the RE knowledge and skills of the Indonesian labour force. The ambitious targets to achieve net-zero greenhouse gas emissions in Indonesia by 2060, and Bali by 2045, require a major energy transition towards RE, for which the necessary manpower is currently lacking.

The development and implementation of the capstone approach is significant in enhancing practical learning, and to apply knowledge in a real-world client context. This integration was challenging, particularly due to the parallel polytechnic internal thesis requirements in some

areas (Bali, Jakarta, and Makassar), but was approved by the MoECRT and is supported by corresponding regulations. The trainings introduced the lecturers into the project management concept and the manual clarifies the roles of the various stakeholders (lecturers, project coaches, students and clients, RESD, 2024i). The students found the capstone approach highly relevant as it allowed them to get practical insights in RE businesses and fostered cooperative work in multi-disciplinary teams.

The component 3 aims at promoting the exchange of relevant information and experience related to RE with the educational sector. The Indonesian partners considered the events, webinars, and the website information to be very relevant to raise awareness on RE in the educational system and beyond, given the challenges the Indonesian RE sector currently faces.

Further findings for “relevance”:

- The RESD is embedded in SECO’s country development strategy 2021-2024.
- For companies, the practical experience of trainees and their knowledge orientation on industry demands is highly relevant in recruitment procedures.
- The RESD supported the partners in a comprehensive and holistic manner and covered all relevant aspects to produce the outcome and outputs.
- The logical framework presented during the inception phase (RESD, 2021) and the versions slightly adapted over time are relevant and encompass all necessary elements for a TVET programme.
- Frequent updates to the logical framework ensures its relevance (RESD, 2023), but they also make assessment challenging, as targets partially changed.
- The project has a solid monitoring system in place. Internal reviews and tracer studies of graduates and company satisfaction are conducted. The progress reporting is based on the logical framework structure. The reports are well written and of high quality.

Effectiveness: The overall objectives of the project, as defined in the project logframe, have almost been attained. Significant achievements have been made, including the realisation of the RE training programmes by five polytechnics (which is one more than the number targeted) and four BPVPs through DACUM supported curricula development. Both the polytechnics and the BPVPs were working to address identified challenges by continuously improving their training courses with assistance from RESD. Both the polytechnics and the BPVPs were working to address identified challenges by continuously improving their training courses with assistance from RESD.

Efficiency: The RESD project approach provided conceptual inputs (such as the 1-year extension programme or capstone project approach), developed curricula, semester plans and instructional material (Component 2), trained the lecturers, supplied, financed crucial laboratory equipment, developed an RE website and provided various inputs by working with Swiss UAS. The project management and technical assistance costs (incl. the support by the Swiss university partners) absorb a substantial amount of the allocated budget (around 60% of project costs). Staff costs are high because of a full-time expatriate position as a project manager. This is justified as the project concept followed a strong ‘Swissness’ approach for the transfer of Swiss know-how. However, in the longer run, the marginal benefit of such know-how transfer and innovations might be diminishing.

Coherence: The internal coherence within the RESD Project components is strong, as each address distinct yet complementary needs within the framework of the project's objectives. The RESD management actively looks for synergies between these components to ensure a comprehensive approach to workforce development in the RE sector. By addressing both formal and non-formal education needs and enhancing communication and collaboration, the RESD project creates a robust and sustainable training ecosystem for RE.

The external coherence of the RESD project is evident in its alignment with national and international frameworks (as already outlined under the chapter Relevance) and its collaboration with other initiatives and development projects in the RE sector. The project aligns with the Government of Indonesia's (GoI) Energy Roadmap to net-zero Emissions by 2060 and the National Medium-Term Development Plan (RPJMN 2020-2024). These frameworks emphasise the development of renewable energy and the transition towards sustainable energy sources, which are central to the RESD project's objectives.

The project also aligns with SECO's focus on skills development, employment, and sustainability. SECO's support for the development of renewable energy skills aligns with the RESD project's goals of enhancing workforce capabilities and promoting sustainable energy practices.

The project has shown strong external coherence by avoiding duplication and collaborating further with other organisations and programmes. The RESD team is perceived as easy to approach and open to collaboration. There are regular exchanges between other programmes to avoid overlap and detect synergies.

The project has made efforts to promote gender equality, but challenges remain.

Sustainability: The RESD project has demonstrated solid sustainability across various levels of implementation, including government partners, training providers, the private sector, and students. A 'Project Arrangement' between SECO and the MoEMR has been signed and implemented as targeted. However, the co-financing requirement of the partners was not detailed, and the MoECRT and the Ministry of Manpower were not signing partners.

The lack of an additional Memorandum of Understanding (MoU) with the MoECRT and MoM resulted in delays in procuring and financing hydropower lab equipment through their budget lines. This has hampered the training effectiveness for formal and non-formal courses.

Formal D-4 level training (Component 1): Polytechnic directors have expressed satisfaction with the project and unanimously agree to continue integrating renewable energy education into their formal curriculum.

The sustainability of the cooperation with Swiss UAS for the time being is largely secured through RESD financing. The Swiss partners have only very limited possibilities to co-finance contributions to RESD by own means.

Additionally, the high workload of lecturers has limited outreach cooperation with the private sector, particularly regarding solar PV technology, which is rapidly evolving. This rapid evolution, combined with the limited absorption capacity of Training of Trainers (ToT) programmes, risks eroding learning outcomes if not enough RE projects are implemented, as warned by UAS experts. Moreover, the sustainability of acquired skills through the online courses remains a concern.

Non-formal RE trainings (Component 2): the sustainability of the informal training courses offered by the BPVPs looks promising. A critical aspect of ensuring the long-term sustainability of the training is securing the maintenance of the equipment by the training centers. Maintaining this equipment in good working condition is crucial for continuously delivering high-quality training.

The RESD project has implemented several strategic measures to ensure the durability of results. One of the key measures involves anchoring activities in the partner context by establishing robust vertical agreements with various stakeholders, which are crucial for the project's continuity. In this regard, it has secured seven vertical agreements to guarantee continuity and sustained benefits beyond the project's lifespan.

Impact: The RESD project has set two goal indicators to measure its impact, namely securing jobs for graduates in the RE sector and that employers are finding adequately trained labour.

The first indicator is the percentage of formal and non-formal graduates who secure adequate jobs in the Indonesian renewable energy (RE) sector. Tracer studies were conducted by the training institutions for the polytechnics and the BPVPs in the spring of 2024. There are some reservations regarding the tracer study methodology used to determine the outcomes and impacts of the RESD project.

Lessons learnt:

1. Context

- The energy transition to enhance the ratio of RE in the energy mix is more complex and time-consuming than anticipated. E.g., frequently changing PLN regulations regarding solar PV limits the rapid expansion of RE investments in the Java-Bali corridor.
- Potential for RE development is more conducive in remote areas of the archipelago, where solar PV is an economical alternative to diesel generators. However, many installation and O&M services are provided by RE companies from Java.
- Despite the rather unfavorable RE regulations, the installed solar PV capacity has significantly increased in the last two years and is expected to continue growing, not only in off-grid locations but also across various sub-sectors, such as big hotels and companies with sustainability goals. In contrast, hydropower development has been more inconsistent, heavily reliant on larger or big projects. The last two years have seen a drop in installed hydropower capacity. Other RE sources, like wind, play a niche role, while geothermal and bioenergy are covered by special programmes.

2. RESD Project

- The intensive training of instructors in pedagogical and technical RE fields (solar PV and hydropower) as well as the intensive cooperation with Swiss UAS were important to develop relevant curriculum and to anchor the D-4 level and non-formal training programmes at the polytechnics and BPVPs.
- The sequenced approach, combined with the integration of relevant stakeholders, including the private sector, resulted in the training programmes being sustainably anchored.
- The substantial efforts invested in the capstone approach (fostering practical project-based learning) is well embedded in the project-based learning approach of MoECRT and fosters linkages to the private sector, although the potential is not yet fully used.

- Teachers are already heavily burdened by the existing routine teaching and research activities. The various D-4 course modalities applied in Bali (face-to-face, hybrid and online) add to the complexity. The challenges were addressed with a lot of creativity to make the best of the situations and demands.
- Integrating three Ministries and promoting multi-disciplinary approaches with the D-4 level extension programme has allowed to make systemic change in the TVET sector, with spillovers to other training programmes of the involved polytechnics (and in some cases participants from other polytechnics).
- The open communication with other projects has enabled to establish good relations with other development actors mutually benefitting the promotion of RE skills.
- A comparison of original and recent risks in project implementations reveals that some risks have reduced over time. The motivation of the partners in Component 1 (polytechnics) and Component 3 (MoEMR) was higher than originally anticipated. Similarly, the risk of lack of interest from Swiss UAS and instructors was mitigated, thanks to the project's proactive communication approach and delivery of reliable services. However, new risks emerged, particularly regarding the procurement of hydro lab equipment due to financing issues. The lack of additional contractual arrangements has not facilitated this.
- There was a dilemma on content: while graduates expressed interest in a broader introduction to RE topics, including other RE sources such as wind, geothermal, and biomass, this would result in a further dilution of technical contents. Furthermore, this broader knowledge might not improve technical and practical skills sufficiently and hence would not enhance employability, especially of D-4 level graduates.

4) Shortcomings and other Important Considerations

Indonesia is still very early on its energy transition path. Although mid- and longer-term targets for expanding RE installations are ambitious, these still play a minor role in the energy mix. There remaining structural market distortions (regulations, direct and indirect fossil fuel subsidies, electricity production overcapacities from coal-fired power plants, etc.) potentially limit the rapid expansion of electricity production from RE sources. Further regulatory improvements and incentives will be needed to meet the Indonesian strategic goal to reduce carbon emissions to net-zero by 2060.

The RESD project is on track to strengthen the skills basis of the RE sector in a holistic manner, by integrating relevant public and private stakeholders, and throughout curricula development on solar PV and hydropower subjects. The developed curricula for solar PV and hydropower have modernised the teaching approaches, particularly as well by the addition of new solar lab equipment.



5) Recommendations

RECOMMENDATIONS	MANAGEMENT RESPONSE			RESPONSIBILITY	TIMING
<u>Phase 1</u>					
A - Overall					
Recommendation Overall 1 Support the MoECRT (polytechnics) in preparing course notes for teachers of the D-4 level extension programme: Course notes are important and helpful as supporting teaching tools for the instructors, and also allow for maintaining similar standards and learning outcomes across the polytechnics.	Fully agree	Partially agree	Not agree		
	<u>Response</u> Renewable energies technologically are a rather swiftly developing subject. Handing out ready-made course notes to instructors bares the risk of complacency with the material available, potentially resulting in teaching which is “the older the more out of date” as the course notes are at risk not to be updated. In general, course notes possibly should be developed by the teachers at the Polytechnics. The exception was in the late 1980s and early 1990s, when the Indonesian-Swiss Polytechnic Project developed the course notes and handed them out to the first-generation teachers. Such handouts are to some extent still in use today, 35 years later, and have never been updated since, which might be ok for some (basic technical) topics in, for example, mechanical engineering, where except for the digitalization of the machinery not much has changed, but renewable energies as relatively young technologies going through a rapid development, which might suffer of such a static approach. Alternatively, combined with a regular and obligatory updating cycle, initially prepared course notes might be kept up-to-date.				
	<u>Measures</u>				

RECOMMENDATIONS	MANAGEMENT RESPONSE			RESPONSIBILITY	TIMING
<u>Phase 1</u>					
	Instead of providing ready-made course notes, the teachers’ skills in the development of course notes and the cooperation between teachers of various schools should be fostered, so teachers are ready to further develop and update the instructional material and adjust it to the latest technological developments, potentially in exchange with private sector representatives in need for respective graduates. This might be done by optimizing the existing platforms and instruments: (1) workshops for instructional material development and (2) teacher trainings.			GFA RESD team	Remainder of Phase 1 and into Phase 2.
Recommendation Overall 2 Collaborate more intensively with companies in the job-market service providers: Entrusting the MoEMR with maintaining the job market portal may not be effective in the long run, as they lack incentives to provide a comprehensive service. The project could explore and establish collaborations with established job-market service providers, such as Glints, Jobstreet, Karir.com, and LinkedIn, to manage job vacancies.	Fully agree	<u>Partially agree</u>	Not agree		
	<u>Response</u> PPSDM KEBTKE's recent renewal of the Renewable Energy Indonesia (REI) domain subscription in August 2024 demonstrates their continued commitment to the job-market platform. While potential collaboration with job-market service providers could streamline job vacancy updates, the REI website offers a broader range of valuable information beyond just job postings, including details on renewable energy technologies, industry stakeholders, and educational & training institutions. To ensure PPSDM KEBTKE retains ownership and engagement, any collaboration with external parties must be undertaken with their explicit consent and support, with clearly defined roles and responsibilities from the outset.				
	<u>Measures</u> Identify potential job-market service providers, then present and discuss potential collaboration opportunities with PPSDM KEBTKE, outlining roles, responsibilities, and scope of services for job-service provider. If support can be secured from PPSDM KEBTKE, assist in finalizing the collaboration agreement with the chosen provider and facilitate lasting and sustainable implementation as needed to ensure a smooth transition and successful collaboration.			GFA RESD team	Action taken in Q3-Q4 2024; monitoring and coaching into Phase 2.

RECOMMENDATIONS	MANAGEMENT RESPONSE			RESPONSIBILITY	TIMING
<u>Phase 1</u>					
Recommendation Overall 3 Follow-up with D-4 level non-graduates of batch 1: There is a risk of delays in completion or dropping out of the program. 16% of students did not complete their studies after two semesters, partly because of delays in finishing the capstone project. As this is a relatively high number, the reasons for the delays should be analysed.	Fully agree	Partially agree	Not agree		
	<u>Response</u> A relatively high percentage of students completing their studies late by 6 to 12 months is common in Indonesia. The non-completion rate of 1 st intake students, which has been 14-16% by end-2023, has reduced to 6% by end-August 2024, whereof 5% are dropouts and 1% is continuing studies. In comparison, in Switzerland, the rate of successful students at polytechnical schools is 74%, while around 23% drop the studies and 3% take longer than 5 years for graduation.				
	<u>Measures</u> The GFA's RESD team proposes not to take further project action in the matter, as a 6% dropout rate is acceptable and common in Indonesia and the Polytechnics do have their measures in place to deal with students completing studies late.			NA	NA
Recommendation Overall 4 Review the experience with online courses from the Polytechnic in Bali: While the D-4 level curricula was designed for face-to-face teaching, the Bali Polytechnic offers primarily online courses. Operating different course modalities is challenging for the teachers and could	Fully agree	Partially agree	Not agree		
	<u>Response</u> Polytechnic Bali's online courses are indeed managed in a way that does not allow to produce high quality training, as the in-person training in workshops and laboratories is significantly below the definitions in the curriculum.				
	<u>Measures</u> The RESD project team has already taken action in July 2024, discussing the approach towards hybrid training (online mixed with in-person practical training) with all 5 Polytechnics, and stated clearly, that			GFA RESD Team	Action taken in July 2024 Monitoring of next intake

RECOMMENDATIONS	MANAGEMENT RESPONSE			RESPONSIBILITY	TIMING
<u>Phase 1</u>					
also affect the learning outcome as the practical part / capstone project is virtual.	Polytechnics not achieving at least 50% in-person practical training will not be eligible for further assistance. The schedule of the 2 classes with hybrid training at Polytechnic Bali will be changed for the 2023-2024 school year and all future trainings starting 2024 will be closely monitored.				starting in September 2024. To be considered in phase 2.
Recommendation Overall 5 Validate the real need for having more frequent Steering Committee meetings or whether alternative platforms fulfil this need: Several partners have expressed their concerns over the relevance of Steering Committee meetings. As the RESD project only facilitates such meetings with the ministerial partners, SECO should decide whether to increase the frequency or having more technical online exchange meetings or technical meeting with medium and lower level government official in	Fully agree	Partially agree	Not agree		
	<u>Response</u> SECO does not provide “technical” meetings with technical input for the political partners, but SECO is engaged in meetings of “strategic” and “political” relevance. The operational implementation of the project RESD is performed by the implementing agency (GFA). So “steering committee meetings” have to be separated from “technical meetings on the operational level”. More frequent Steering Committee (SC) meetings seem not to be feasible, as it is already with the yearly schedule quite demanding to assemble all the high-ranking government people. The scheduling and frequency of “steering committee meetings” is solely limited by the availability of the Indonesian political counterparts. Furthermore, there are typically not that many strategic decisions to be taken, that more than one meeting a year would be required. Meetings with the SCO are however held more often, in which strategic aspects are being discussed on demand when need arises. In difference, the “technical meetings” of the Project Implementation Unit (PIU) can be held more frequently, probably at least two times a year and on demand, as there are more operational and technical aspects to be discussed than strategic issues, and the participants of those meetings, being of lower rank, are easier to be assembled.				

RECOMMENDATIONS <u>Phase 1</u>	MANAGEMENT RESPONSE	RESPONSIBILITY	TIMING
between the Steering Committee meetings.	<u>Measures</u> The RESD team suggests not to take further action on SC meetings. The RESD team suggests discussing and suggesting with the chair of the PIU to intensify operational meetings, as the project team is providing secretarial services to the PIU.	NA GFA RESD team	NA Discussing with PIU in September 2024; to be considered in phase 2.

RECOMMENDATIONS	MANAGEMENT RESPONSE			RESPONSIBILITY	TIMING
<u>Phase 2</u>					
B – Strategic for potential Phase 2					
Recommendation Overall 1 Continue to support energy transition towards RE, although the demand is at an early stage: RE energy installations, and especially solar PV systems in all combinations will have to receive an important role in the future to achieve net-zero greenhouse gas emissions. The demand for skilled labour is evident to implement this transition.	Fully agree	Partially agree	Not agree		
	<u>Response</u> There is indeed a good and realistic chance, that the demand for labor with technical education and experience in solar PV, and to a lesser extent in hydropower, will be increasing rather sharply in near future, since the government of Indonesia recently i) clarified the quota system for rooftop solar, ii) dropped the local content requirement in solar PV for international investments, and iii) shows willingness to reform and consolidate the existing monopoly structures within the electricity sector in production and distribution. On the strategic level, increased ambitions (and international commitments) for increased climate mitigation will (theoretically) increase the need for RE experts.				
	<u>Measures</u> First of all, this recommendation would simply be fulfilled e.g. by a 2 nd project phase being decided on by SECO-WEIN and SCO. To address the increasing needs for engineering staff with solar PV experience, the GFA RESD team suggests adding 5 more Polytechnics to the project, which would be running a new curriculum which focuses on solar PV, solar-diesel hybrid and intensifies the training in battery storage technology but does not address hydropower. This approach should be addressing the need for bigger numbers of engineering graduates in solar PV and with intensifying battery technology training, the latest developments in terms of rooftop solar and the future needs for grid storage should be able to be covered. On the other hand, SECO-WEIN suggest and takes into consideration a different approach, adding further Polytechnics and adding geothermal			SECO-WEIN, SCO GFA RESD team	To be discussed and defined during the design of Phase 2.

RECOMMENDATIONS	MANAGEMENT RESPONSE			RESPONSIBILITY	TIMING
Phase 2					
	energy as a potentially new renewable energy technology for Indonesia, with unlimited potential and up to now only little dissemination. The final, technical orientation of a 2 nd project phase will be discussed between respective stakeholders and partners throughout project development.				
Recommendation Overall 2 Establish clear contractual agreements for all partner contributions: This is necessary, as the lack of additional agreements that specify contribution modalities with the MoECRT and MoM has hampered the timely procurement and maintenance of hydro-power lab equipment, which is necessary for the practical trainings both at polytechnics and BPVPs.	Fully agree	Partially agree	Not agree		
	<u>Response</u> There is a good contractual understanding between SECO/ SCO, the MoECRT and the MoM plus GFA as implementer and facilitator. However, an additional formal, written agreement, signed by SECO and the two additional Indonesian partners (besides MoEMR) was missing. Although MoECRT and MoM have been mentioned in an MoU with MoEMR, the missing additional document made it difficult for the Indonesian partner ministries to allocate funds for their project obligations (which were agreed on within the project agreement), e.g. for investments (partner contributions) into laboratory equipment and operational costs, such as tickets and accommodation during the attendance of project organized training. An acknowledgement of the Swiss and Indonesian RESD cooperation with MoECRT and MoM in the phase 2 amendments to the MoU and/or Project Arrangement and at least the signing of the documents by the additional 2 ministries would address the issue, if the government of Indonesia will be willing to sign such and commit to their project contribution.				
	<u>Measures</u>				To be discussed and defined during

RECOMMENDATIONS	MANAGEMENT RESPONSE			RESPONSIBILITY	TIMING
<u>Phase 2</u>					
	SECO will further investigate on the partners willingness and ability to provide their committed financial contributions to the cooperation project. SECO and SCO will evaluate potential signing options and modalities, in particular the mentioning of MoECRT and MoM in the political clearance and respective documents and ensure that they are signed and acknowledged by all Indonesian ministries.			SECO / SCO SECO / SCO	the design of Phase 2 and respective negotiations with the Indonesian partner Ministries.
Recommendation Overall 3 The methodology of tracer studies should be reviewed to better grasp impact: The first tracer study – implemented by the training organisations – might have had some biases and overstating the number of graduates working in the RE sector based on a re-analysis of data. Another option is to implement separate assessment to measure program’s outcome and impact in more rigid methodology and minimize biases.	Fully agree	<u>Partially agree</u>	Not agree		
	<u>Response</u> As common in vocational education worldwide, tracer studies are a way to collect management and course improvement information in an efficient and effective manner. At the same time, the project team did not have the intention to produce academic research or fully accurate and verified data. The existing RESD tracer study by GFA is based on questionnaires being defined by the Indonesian Ministry of Education and should thereby not divert too much from that (governmental) definition by political partners. This said, the questions being asked while interviewing graduates and their employers can certainly be sharpened to fill in gaps which were not entirely covered in the first tracer study.				
	<u>Measures</u> Both questionnaires will be revised and, where necessary, optimised for the second round and further implementation of this methodology.			GFA RESD team	Revision in December 2024, 2 nd tracer study 1 st quarter 2025

RECOMMENDATIONS	MANAGEMENT RESPONSE			RESPONSIBILITY	TIMING
Phase 2					
Recommendation Overall 4 Promote women participation in the formal and non-formal training programs and embed gender equality subjects in the training: The RE sector offers good framework conditions for women employment and the current level of female participants in D-4 level is still below the proportion of female students in STEM subjects at tertiary level. Such efforts could include targeted outreach, gender target indicators (for example 25-30%), mentorship support and addressing the issue in ToT workshops and intensified show-casing success stories in different media channels.	Fully agree	Partially agree	Not agree		
	<u>Response</u> The primary objective of the training program is to equip participants with essential technical skills and knowledge for the renewable energy sector. Equal access is ensured by GFA for both female and male students in all programs. Female participation is already actively promoted through various initiatives, including gender sensitivity trainings for teachers and promotion staff, social media initiatives, female student testimonials on the REI website, and balanced representation during promotional events organized by RESD. However, further including gender and inclusion aspects in projects is an overarching goal of SECO's country strategies. Additional ambitions for e.g. increased numbers of female students, need to be taken into consideration.				
	<u>Measures</u> 1. Review and evaluation if equal access for both female and male participants is still fully ensured. This should be revised continuously. 2. Existing measures to promote female participation will be continued, incorporating recommendations from the RESD Gender Study conducted by GFA.			GFA RESD team SECO / SCO	To be discussed and defined during the design of Phase 2 and continuously in implementation.

Recommendation Overall 5 Explore the potential to develop energy efficiency / green building curriculum for D-4 level training: As RE development in Indonesia may not take off soon, and covering other RE sources by Switzerland appear not to have a high priority from the partners, a new phase or new project could support polytechnics in covering energy efficiency and green building aspects. The potential in improving air conditioning (AC) in commercial buildings is very high as they consume 63% of its electricity for AC (IESR, 2024). This approach would provide a broader scope of training that addresses immediate energy needs while still promoting sustainability.	Fully agree	Partially agree	Not agree		
	<u>Response</u> Promoting and teaching technical energy efficiency measures and methods for validating its cost-efficiency could indeed have a significant impact on Indonesia's public and private building sector, as well as on the industry. One point to be considered is that the development of a respective program might address only a relatively small labor market, which should be verified. Potentially, such a new or modified program might be applied with one or two Polytechnics only, as not to over-saturate the labor market.				
	<u>Measures</u> The initial guidance and decision to potentially embed energy efficiency within the project's approach lies with SECO. In case decided positively, the RESD project could address such a new development in Phase 2 of the project. The RESD project will in any case continue underlining the importance of energy efficiency as a transversal theme in its programs.			SECO GFA RESD team	By end-2024 Phase 2 of RESD.

Recommendation Overall 6	Fully agree	Partially agree	Not agree		
Equip a next logframe with tangible indicators and target values and use it as a strategic tool: Equipping the indicators with target values, preferably with baseline data, would ease monitoring and evaluation. The logframe should not be used as a planning instrument and being updated too frequently.	<u>Response</u> The existing logframe is full of tangible indicators, not only for the SECO financed part, but as well for the partners' contributions, and baseline data are provided where logically applicable. The elaboration of a fully-fledged baseline, founded on (theoretically) robust and verified data, might generate excessive expenditures, which is why a compromise between data accuracy and adequate monitoring efforts should be found and decided on by SECO. The current logframe is seen as the most important strategic tool for all cooperation partners and beneficiaries and has proven to be very useful. The logframe was updated two times, as a reaction on changing framework conditions with the partners. Keeping some limited flexibility as well in the logframe, while staying overall ambitious, is important to be able to react on certain changes within the cooperation system and within the envisaged (education) sector. The project's environment is very dynamic and keeping a logframe fully static over a period of up to 5 years increases implementation risks on the operational level. Within implementation on the ground, indicative targets need frequent "reality-checks" in order to be adjusted due to a potentially constantly changing environment. The logframe should be adjusted accordingly with the consent the Steering Committee. From our perspective, this recommendation seems not be feasible, we should stay flexible, pragmatic and realistic, being able to react on external factors and recent developments.				
	<u>Measures</u> The GFA RESD team suggests a continuation along the same line as in phase 1, be it at the way the logframe is formulated as well as the updating of the logframe in cases where targets do change.			NA	NA

Recommendation Overall 7	Fully agree	Partially agree	Not agree		
Develop specific inception courses for the formal (D-4 level) and informal training specifically designed for participants with little or no background in (electrical) engineering: An inception course or preliminary sessions integrated into the curriculum would provide a more tailored and supportive training approach, bringing all participants to a similar level of understanding. Addressing this gap is essential (especially for the BPVPs) to ensure that all trainees can keep pace with the programme and successfully graduate on time.	<u>Response</u> Polytechnics: The Polytechnics are having a so-called “matriculation” course in place, which was developed in cooperation with the Swiss UAS. Depending on what engineering background students come from, the matriculation course, held during the summer semester, before the start of the main course, is filling in the gaps of their knowledge. Students with civil background are thought most lessons in electrical engineering, those with mechanical background somewhat less. Not all Polytechnics have, however, carried out matriculation courses at the same level of intensity. BPVPs: The course is designed under the assumption that trainees do not have knowledge in electrical engineering. It can however be demanding to teach the students the necessary electrical basics, before having to focus on renewable energy-related subjects. There are two potential pathways for improvement: i) to develop another specific preparatory course for the basics of electrical engineering, or ii) to limit the access to the trainings to people who already have experience in the electrical sector. Option i) seems more realistic as for option ii) there would not be sufficient people fulfilling the criteria.				
	<u>Measures</u> Polytechnics: The GFA RESD team proposes to intensify the monitoring to ensure that the matriculation courses are being implemented as defined in the curriculum. Further development of matriculation courses seems, however, not necessary, but this might be further verified. BPVPs: The GFA RESD team proposes to develop a preparatory course with a main focus on the basics of electrical engineering and add the preparatory course for all participants which have no prior experience in the electrical sector.			GFA RESD team	Development in the early stages of phase 2.

Recommendation Component 1 Consider extending the D-4 course by additional modules (adding thematic depth): Strong feedback from both students and alumni indicated a desire for deeper knowledge in renewable energy (RE) as they are eager to learn more. The project should add thematic modules to the D-4 course. This extension would allow for additional thematic depth and more time for finishing capstone projects or engaging in practical work.	Fully agree	Partially agree	Not agree		
	<u>Response</u> The tracer study showed clearly that the employers of graduates are highly satisfied with the skills and knowledge of the graduates. Therefore, the GFA RESD team and its partners do not see the necessity to change the training program duration and content as drastically at this time. Small adjustments to the curriculum have already been done after industry feedback in the tracer study and the discussions with the industry in a workshop in the 1 st semester of 2024. In addition, we need to be aware that we are in a development process and all participants will sharpen their part over time. Introducing additional modules (adding thematic depth) will potentially disturb and prolong the process. Another aspect is that the compilation of technical content for a course always is a compromise between available time (for the module, for the course, for graduation) and the level of detail of the taught content for a specific degree. Additional modules and thematic depth might as well lead to less available time for capstone projects and engaging in practical work.				
	<u>Measures</u> The RESD team suggests not to take additional measures after the recent revision of the curriculum.			NA	NA
Recommendation Component 2 Support the BPVPs in linking graduates with the private sector: The improved absorption of trainees by companies is	Fully agree	Partially agree	Not agree		
	<u>Response</u> RESD is already forging stronger connections between BPVPs and renewable energy companies, going beyond standard practices. This includes facilitating industry guest lectures and site visits (never before conducted by BPVPs in any of their training programs), actively sharing job vacancies through social media and REI website and providing				

important to enhance the success and cost-effectiveness of these trainings.	direct contact information for renewable energy companies. In-depth discussions with BPVP teachers and staff revealed that the majority of graduates prefer to remain in their local areas. Therefore, exploring opportunities to connect graduates with their local markets, in addition to the existing focus on the broader market in Java, could be useful.				
	<u>Measures</u> Establishing connections with local renewable energy companies could enhance employment prospects for graduates preferring to stay local. However, this might require another project component with significant additional activities and resources for the nine BPVP locations. Such a (job) market development approach, extending significantly beyond RESD's TVET focus, could be considered an optional enhancement to the existing program, contingent on resource availability.			GFA RESD team (contingent on budget availability)	To be decided and defined during the design of Phase 2.
Recommendation Component 3 Support MoEMR in policy development regarding Indonesia's human resources needs for RE development: To strengthen the dynamics towards energy transition, the MoEMR should be supported in their policy level work by contribution more intensive to the bi-annual Human Resources Summit, or by establishing a labour market observatory for the	Fully agree	Partially agree	<u>Not agree</u>		
	<u>Response</u> SECO's intention for this project was to specifically support the integration of RE in formal and informal education. RESD was not designed as a classical energy project, aiming to address the overall governmental policy level for their energy transition, but as an approach for TVET. A project that interacts mainly on the policy level, from our perspective requires a different project setup and approach. The national energy transition (and especially the potential consolidation of the monopolist PLN) is a very complex and long-term task, where larger donors (such as the EU, Germany, France, USAID, IFIs, etc.) already set up large projects (e.g. related to JET-P), that fully aim to facilitate changes on the policy level, including the increase of RE. With the limited resources of RESD and while aiming on TVET, this project should not start to directly engage in the complex donor coordination (in the energy sector) and on the (high-level) policy level. This is a strategic decision and it follows the idea of a focused and cost-effective engagement.				

RE sector, together with other donors.	In addition, the core responsibility for human resource development in renewable energy is rather with MoECRT than with MoEMR. MoEMR does short courses in preparation to certify staff working in the electrical (and other) sectors than developing and training the human resources for the RE sector – with exception of PEM AKAMIGAS, where training to prepare engineers for the RE sector is being carried out. Furthermore, MoEMR does not have authority over MoECRT and/or MoM to make policy in human resource development. A policy development component added to the RESD project would therefore have to work not with one, but with three ministries. Until now, the RESD project has reacted on individual demands by discussing issues with SECO and in case of consent, providing individual input (e.g. on carbon trading or as input for conferences). This approach respects the position of the project as a technical support project and still allows (strategical and policy-relevant) input on demand.		
	<u>Measures</u> For above reasons, SECO and GFA suggest not to work systematically on policy development (within this RESD project constellation), except on case-by-case demand of the three partnering ministries and with specific consent of SECO. An overall donor coordination role and constant work on the policy level should not be added to this successful project design.	NA	NA

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Bern,

Dagmar Vogel
Head of Infrastructure Financing Department (SECO-WEIN)

Martin Neussel
Program Manager Infrastructure Financing Department (SECO-WEIN)