POLICY DIALOGUES

Advancing green jobs and skills in response to the renewable energy development in Ninh Thuan

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SUMMARY

- Workers in Ninh Thuan's wind and solar sectors benefit from safe conditions and competitive pay, meeting green job standards.
- While the demand for unskilled labor in renewable energy projects has declined, the need for high skilled workers is on the rise.
- Vocational colleges currently lack programs to meet this demand: investment is needed to modernize training and ensure a skilled workforce.
- The shift to renewable energy brings new opportunities for jobs and economic growth. However, it can also pose challenges for farming households living near wind and solar projects—particularly for middle-aged and older workers.

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Key words Skills development, Jobs, Renewable energies, Vocational Education and Training

Geography Viet Nam, Southeast Asia

Themes Energy transition

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CONTEXT & MOTIVATION

Ninh Thuan is emerging as a renewable energy (RE) hub, with 57 solar and wind projects generating 3,750 MW—over 90% of its power and 20% of the province's annual budget. It also contributes a fifth of Vietnam's total RE output. By 2026, new projects (554 MW wind, 224 MW solar) are planned, driving demand for skilled workers. To meet this need, Ninh Thuan is working to attract qualified professionals and expand workforce training programs.

However, developing human resources for the RE sector faces key challenges. As a new field, many students are unaware of RE career opportunities, and the sole vocational college lacks RE-focused training. This leads to a shortage of skilled labor, reliance on costly foreign experts, and persistent industry-training gaps. This case study[1] explores how Ninh Thuan can build a stronger RE workforce by aligning stakeholder roles, capacity, and policy.

METHODS

The study reviews the legal and policy documents on RE and employment in Ninh Thuan and Vietnam.

A qualitative survey (Sept. 2024) assessed the roles and needs of key stakeholders (enterprises, vocational teachers, workers, students, and state management agencies).

The Jobs and Economic Development Impact (JEDI) model is used to estimate the economic impacts of constructing and operating wind and solar power plants in the province.

RESULTS

Unskilled labor demand in the RE industry has been decreasing, recruitment is geared towards high skilled workers.

From 2018 to 2020, solar and wind projects mainly employed unskilled and middle-skilled workers for construction and installation. Since operations began in 2021, RE companies have significantly reduced local hiring: initially cutting unskilled labor positions, and now employing only 3 to 5 skilled workers annually on average for power management roles, reducing reliance on local unskilled labor. Labor contracts, working hours, and social insurance are fully compliant with legal standards.

For technical roles, employers prioritize candidates aged 23–35 with university or college degrees in technology-related fields, along with experience and soft skills to minimize training needs. Most technical staff are foreign experts or workers from other provinces, while locals are typically hired for non-technical positions. To enhance operational efficiency, most RE companies outsource services like security and maintenance, and rely on external specialists for major repairs, keeping full-time staff numbers low.

Training for the renewable energy industry in Ninh Thuan needs to strengthen links with enterprises.

Although students in some RE related field, such as electrical engineering, electronics, and mechanics, are well equipped to enter the operational environment, the number of training schools in Ninh Thuan able to offer RE program is very limited, which does not allow a collaboration on a unified, industry-relevant curriculum.

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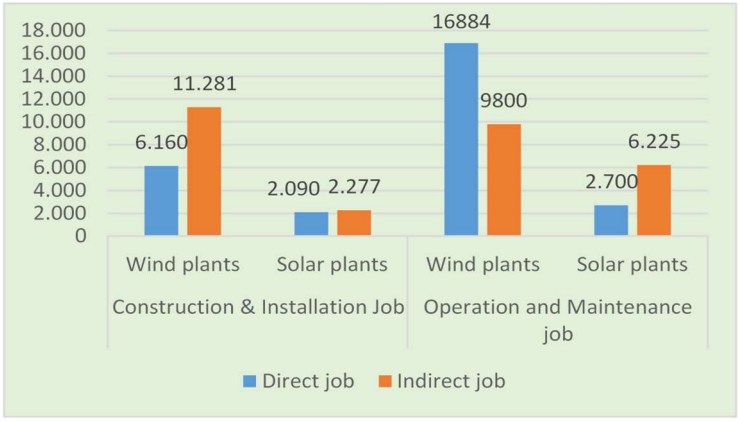
Figure 1: Estimated Number of Direct and Indirect Jobs in Wind and Solar Power Plants in Ninh Thuan by 2030 (Unit: Job/year)



Source: Authors' own compilation

Indeed, students of these program acquire real-world RE operational practices and valuable exposure, thanks to tied interactions with enterprises. According to industry representatives, the existing training programs fulfil about 50-70% of the skills and knowledge needed by the RE sector.

Nevertheless, most companies have not yet formed formal partnerships with universities and training institutions, limiting collaboration on curriculum development. This highlights the need to strengthen and expand training programs and internships to better prepare vocational students for industry demands.

Little opportunity in terms of job and income generating for local household.

Assessments of households near renewable energy plants show limited perceived benefits in jobs, income, or local development, though improved power supply is valued. Few locals work in wind power despite good pay and stability. About 28.9% reported negative impacts like land loss, livestock harm, and noise, pushing many—especially youth—to seek jobs elsewhere.

Interest in vocational training is relatively low (16.9%), with many unsure of its economic value. Key barriers include limited awareness (8.5%) and low educational qualifications (21.3%). A majority of respondents (71%) expressed the need for job placement support after training, and 21% identified financial assistance as essential for securing employment.

Forecast of employment in the RE industry in Ninh Thuan

The JEDI model is used to forecast employment impacts across 2 phases: (i) construction and installation (C&I), and (ii) operation and maintenance (O&M) by 2030 (see Fig. 1).

For onshore wind projects with a total capacity of 554 MW, construction is expected to generate about 6,160 direct jobs, with nearly twice as many indirect jobs. Over the 28-year operational phase, the projects would sustain around 603 direct and 350 indirect jobs annually—equivalent to 16,884 direct and 9,800 indirect job-years. Induced jobs from increased local spending are estimated to be 2.5 times higher than direct jobs during this phase.

For solar power projects, construction is expected to generate approximately 2,090 direct job-years, with the number of indirect jobs being slightly higher. Assuming a minimum operational lifespan of 15 years for a solar power plant, the number of O&M jobs — already converted to the

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same unit as C&I jobs (jobs per year) — is estimated at around 2,700 direct jobs and 6,225 indirect jobs. Additionally, the number of induced jobs, resulting from increased local demand, is estimated to be 3 to 4 times higher than the number of direct jobs.

The estimated earnings from direct jobs by 2030 are higher than those from indirect jobs in both the wind and solar sectors. Monthly earnings (in USD) during the C&I phase are projected to range from $700 to $750, while those in the O&M phase are expected to range from $750 to $800. These projected earnings are slightly higher compared to the current average net income ($570–$590). However, note that these estimates do not incorporate an inflation adjustment over the past five years.

RECOMMENDATIONS

- The province should prioritize investment in local vocational college to equip modern facilities, with the foundation of practical and experimental equipment for basic and intensive training, to develop a highly skilled local labor force for solar and wind energy include onshore wind power.
- Enhance partnerships between vocational training institutions and enterprises by (1) co-developing short-term training programs (3–6 months) focused on practical skills on renewable energy, updated soft skills and English curricula, and on cutting-edge technologies; (2) also offering extended internships to better align students' skills with the RE sector demands.
- Create opportunities for domestic experts to attend international training and research programs to reduce reliance on foreign suppliers and ensure continuous knowledge advancement.
- Strengthen local workforce engagement in RE job by developing targeted employment programs tailored to local household needs, with a focus on providing maintenance services and support activities. Provide financial or social assistance or low-interest loans for local job seekers transition to new types of work, or support agricultural innovation to mitigate income loss.
- Providing incentives for technology providers when participating in training such as: providing tax incentives, financial support or incentive policies for technology providers to participate in training programs, technology transfer and skill improvement for domestic engineers.

[1] Pham, Nguyen & Hoang (2025). Mapping labour and training capacity to strengthen human resources in the renewable energy industry for Ninh Thuan province, AFD Research Paper No.**371**.

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