

# Assessment and Status Report on Just Energy Transition in Thailand

**giz**

## Executive Summary

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### Just Energy Transition in Coal Regions



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IKI JET and its JET-CR Platform aim to support and accelerate just energy transitions away from coal to renewable energies and other sustainable economic activities in Colombia, Chile, South Africa, Indonesia, Vietnam, Thailand, and Mongolia.

The **Just Energy Transition in Coal Regions (JET-CR) Knowledge Hub** is an online platform building bridges between experts, policymakers, coal industry, trade unions and civil society organizations. It's a space to bring together different perspectives, share real stories and search for effective tools and solutions.

It aims to particularly amplify the voices of workers and communities dependent on coal showing how knowledge can work in practice. It also turns practice into knowledge by bringing local experience into global conversations and advancing just energy transition expertise.

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# 1. Meaning and impacts of coal mining and coal-based energy generation



**Figure 1.** Key data on Thailand's power and coal sector

Source: Based on own research.

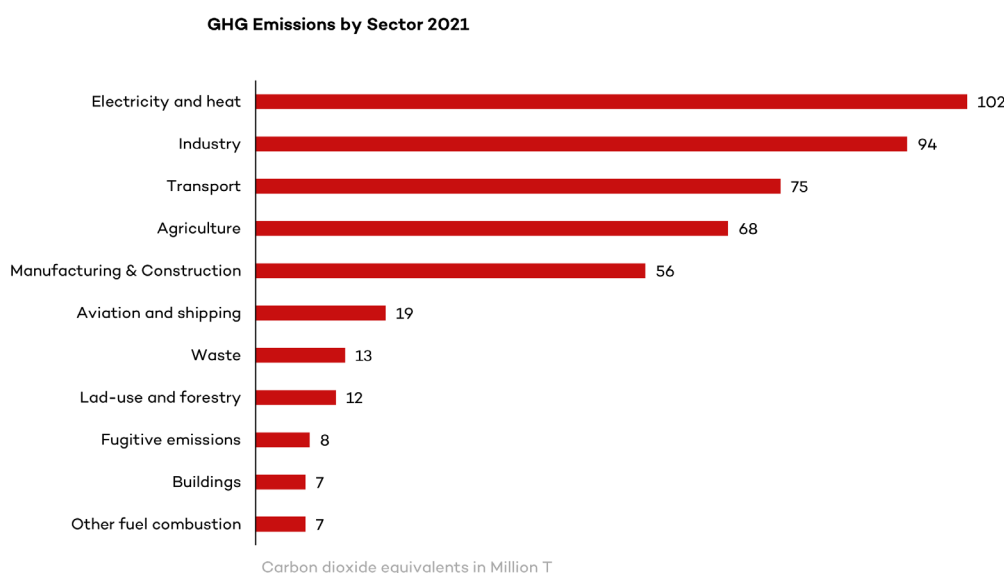
## 1.1 On the national level

Thailand's energy sector is still heavily reliant on fossil fuels, with coal as the second most important energy source after natural gas. In 2022, 30.9 GW (65.4 %) of the 47.2 GW of installed power generation capacity was natural gas, 4.6 GW (9.8 %) was coal, and 10.3 GW (21.8%) renewable energies, including hydropower. Compared to shares of installed power generation capacity of 71.9% for natural gas and 18.1% for coal in 2010, a shift away from fossil fuels is recognisable. From 2010 to 2022, the share of renewable energy in total energy generation excluding imported electricity has increased substantially from 8.75 TWh (5.3%) to 28.4 TWh (13.2%)<sup>1</sup>.

<sup>1</sup> <https://www.eppo.go.th/index.php/en/en-energystatistics/electricity-statistic>

In 2015 - 2021, coal demand was relatively stable, totaling around 37-39 Mt per year. The average coal production was around 16 Mt, showing a decreasing trend in recent years. While coal demand for power generation showed a slight decline of -1.1 % in this period (and is expected to decline further due to the expansion of renewable energies) and accounted for only 53.8% of total coal consumption, coal demand for industry climbed steadily by 4.1% and accounted for the remaining 46.2% of total coal demand. The cement industry is by far the biggest coal consumer in the industry. Total coal demand for power is projected to fall in 2021-2030, reaching 14.3 Mt in 2030 (peak of 25.6 Mt in 2014). In 2021, more than 60% of consumed coal was imported, mainly from Indonesia and total coal imports have increased sixfold from 2000 - 2021, which leads to dependencies for the energy sector and industry.

Thailand’s CO<sub>2</sub> emissions have shown an increase during the last decade, ranging from 258 Mt in 2011 to 278.5 Mt in 2020, of which 70.6 Mt (25%) are due to the use of coal. Total GHG emissions have shown an even stronger increase from 361.3 Mt in 2011 to 433.8 Mt in 2020. Considering greenhouse gas emissions as CO<sub>2</sub> equivalents per sector, the electricity & heat sector is responsible for the biggest part of the emissions, followed by industry, transport, and agriculture.<sup>2</sup>



**Figure 2.** Greenhouse gas emissions by sector in Thailand in 2021

Source: Climate Watch, 2023 – with major processing by Our World in Data.

Thailand experiences significant direct climate impacts and indirect effects on society, the economy, and the energy sector and ranks 8th in the 'extreme risk' category for future climate impacts over the next three decades<sup>3</sup>. Based on data from the World Bank’s Climate Knowledge Portal, several key findings highlight the consequences of climate change in Thailand. Rising temperatures have led to increased heatwaves and heat stress, particularly in urban areas, posing detrimental effects on human health, agricultural productivity, and energy consumption.

<sup>2</sup> <https://ourworldindata.org/grapher/ghg-emissions-by-sector?time=latest&country=~THA>

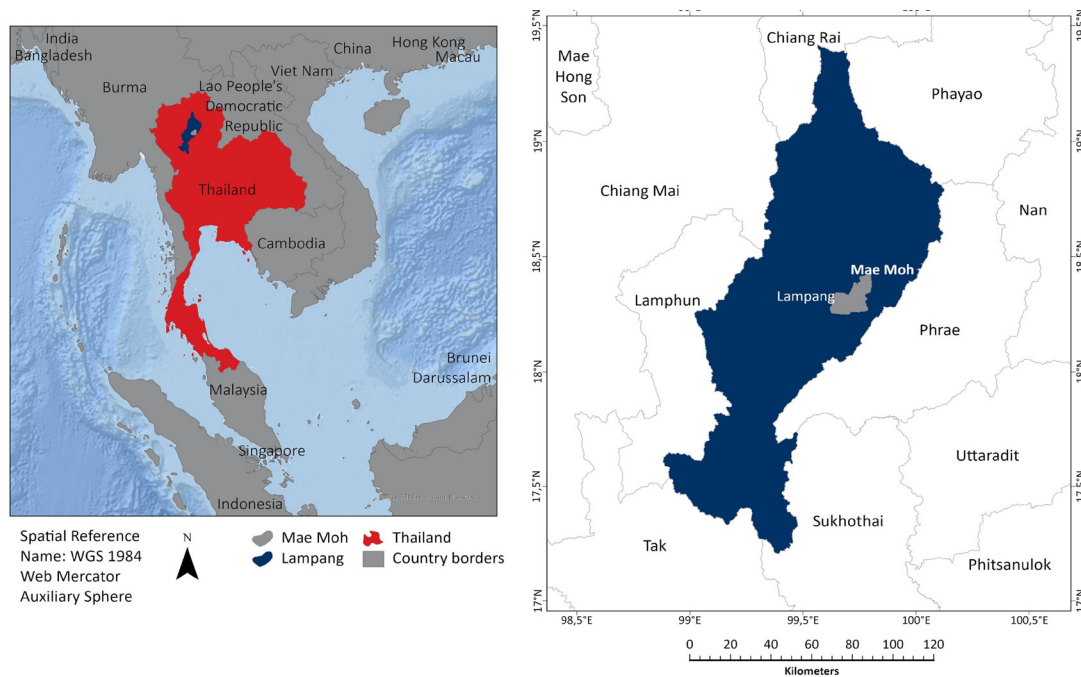
<sup>3</sup> <https://www.germanwatch.org/en/cr/>

The frequency and severity of drought events have also intensified due to climate change, impacting agriculture, water resources, and hydropower generation, resulting in water scarcity, crop failure, and economic losses. The dominant use of fossil fuels (gas and coal) for power generation as well as its use in the industry in Thailand contributes significantly to its GHG emissions, so the reduction of their use is key to climate mitigation as well as to public health security.

## 1.2 On the regional level

Currently, all of Thailand's coal mining takes place in the Mae Moh area in Lampang province and is operated by the Electricity Generating Authority of Thailand (EGAT). It is located in the northwest of the country, where Thailand's biggest lignite (brown coal) reserves were found. These reserves are projected to be sufficient for sustaining mining activities for 25 years, based on the current and projected mining rate. Mining activities in the Mae Moh basin started back in 1951 and were needed to meet the country's growing electricity demand. The onsite-produced coal is the main fuel for the Mae Moh thermal power plant, which has a capacity of 2,455 MW.

Currently, 47% of the workforce in the Mae Moh area is employed by EGAT and related companies, with 9,000 job positions. The closure of the mine will undoubtedly lead to job losses, primarily in the mining sector. Lampang province is a rural area with a population of ca. 740,000 (in 2019), containing pockets of poverty, particularly among marginalised communities and ethnic minorities such as three indigenous groups - Mlabri, Kaw (Umpi), and Bisu - which face constrained access to education, healthcare, and economic opportunities.



**Figure 3.** Location of Mae Moh coal mine area, Lampang Province, Thailand

Source: developed by Taurus ECO

Lampang region is very vulnerable to negative climate change impacts such as intensified floods and tropical storms, causing displacement, infrastructure damage, and economic losses.

Phasing out coal for energy generation is an important strategy for the implementation of the Paris Climate Agreement. The concept of Just Energy Transition (JET) has been developed to support the necessary complex transition processes, based on a holistic understanding of development and taking into account not only climate and environmental aspects, but also the economic, social, and political dimensions. In addition, it is based on the principles of leaving no one behind, gender equality, and non-discrimination as well as democratic participation.

## 2. Results from the analysis and recommendations for the JET process

In order to prepare the ground for developing fact-based ideas for the support of a coal phase-out and a JET process in Thailand, key areas were analysed. In the following, the major results as well as the conclusions and recommendations deduced from the analysis are presented.

### 2.1 On the national level of Thailand

#### Governance

In 2016, Thailand ratified the Paris Climate Agreement. In the NDCs from 2022, the increased greenhouse gas (GHG) reduction target was raised by 20% to 30% by 2030 compared to the business-as-usual scenario. The conditional target to be achieved with international support was raised from 25% to 40% reduction. Thailand reaffirms its commitment to achieving carbon neutrality by 2050 and net-zero GHG emissions by 2065. Key GHG mitigation measures identified by the government include increasing the proportion of renewable electricity generation, enhancing energy efficiency across all sectors, and adopting emerging technologies like energy storage, hydrogen, and carbon capture, utilisation, and storage (CCUS) to further reduce emissions. Thailand's key strategic instruments which support JET processes are the Power Development Plan (PDP) and Alternative Energy Development Plan (AEDP) guiding renewable energy development, while the Energy Conservation Promotion Law promotes energy efficiency.

Although Thailand has established numerous plans and policies with relevance for a JET<sup>4</sup> and even a Climate Change Master Plan, there is no explicit commitment to fully phase out coal in energy production on the national level and to focus on Just Energy Transition. Nevertheless, the Electricity Generating Authority of Thailand (EGAT) has expressed its intention to phase out coal by 2051 and has decided against constructing new coal power plants beyond 2026. Key government agencies, such as the Ministry of Energy (MOEN), the National Energy and Policy Council (NEPC), and the Energy Regulatory Commission

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<sup>4</sup> e.g. National Energy Plan Framework, Power Development Plan, Smart Grid Development Master Plan, Energy Efficiency Plan, Alternative Energy Development Plan, Sustainable Transport System, and Climate Change Mitigation Plan



(ERC), actively support renewable energy and coal phase-out initiatives. However, decision-making processes in the coal sector in Thailand have been criticised for not being inclusive of all local populations affected by it. The government has been accused of not adequately consulting with local communities and not taking their concerns into account when making decisions on coal projects.

### **Conclusions and Recommendations:**

Need for development and integration of a coal phase-out and JET strategy into all relevant strategies and plans as regards energy transition, climate change mitigation and adaptation as well as economic and social development.

As features of the JET strategy, the government should

- Adopt transformative policies and establish targets to prioritise renewable energy over coal and gas.
- Promote the development of community-based regional plans in coal energy regions, ensuring proper closure and ecological regeneration of coal mines, and promoting sustainable and inclusive growth with meaningful inclusion and participation of affected groups, particularly of women and marginalised groups.
- Provide social protection for affected mine and coal power plant workers.
- This should include effective governance practices, participation, transparency, and efficient transition management, with a focus on the Lampang region and affected sectors.

## **Coal and energy sector**

As shown above, Thailand's energy sector is still heavily relying on fossil fuels for power generation (gas and coal accounted for 75% of installed power generation capacity in 2022). The country aims at achieving carbon neutrality by 2050 and net-zero greenhouse gas (GHG) emissions by 2065<sup>5</sup> and after a gradual decrease, the complete phase-out of coal-fired power generation by EGAT is only scheduled for 2051. A building block for this is EGAT's Triple S Strategy, under which EGAT aims i) to reduce its GHG emissions through the expansion of renewable energy and storage systems, ii) to capture CO<sub>2</sub> through reforestation and the use of Carbon Capture, Utilisation, and Storage (CCUS) technology, and iii) to increase public participation in the transformation process through electricity conservation initiatives, promotion of electric vehicles, awareness raising, and other soft measures. The intended goal is EGAT's carbon neutrality by 2050.

The total installed capacity of RE as of 2022 is 10.3 GW (21.8 %), including hydropower. Thailand exhibits promising prospects for generating renewable energy, particularly

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<sup>5</sup> <https://unfccc.int/sites/default/files/NDC/2022-11/Thailand%20nd%20Updated%20NDC.pdf>

through solar sources in the central regions, as evidenced by the solar capacity potential indicated by irradiation intensity.

However, the economically exploitable capacities of solar energy will be influenced by various factors such as terrain and weather conditions, land use and purchase issues, and grid connectivity. Looking towards the long term, the IRENA roadmap of MOE for Thailand projects a total renewable generation capacity increase from 10.3 GW in 2022 to 19.7 GW in 2036, which would correspond to a share of only 32%, in accordance with Thailand's Power Development Plan (PDP). This capacity will comprise various renewable sources, including 3,300 MW from hydropower, 3,000 MW from wind power, 7,400 MW from biomass, and 6,000 MW from solar PV<sup>6</sup>. The regulatory framework of the power sector, which has primarily been designed to support a centralised electricity system, hinders the penetration of decentralised renewable energy sources like solar, wind, and biomass energy. Another critical obstacle that hinders the growth and adoption of RE in Thailand, is the inflexible grid code, which is not designed to support distributed generation characterised by small-scale and intermittent generators like solar energy. Furthermore, the absence of a cost-effective transmission system for solar energy is hampering its large-scale expansion as well as the substantial upfront capital required for related renewable energy projects, specifically for grid infrastructure, grid operation, and the integration of renewable energy.

### **Conclusions and Recommendations:**

At the time of writing, plans to phase out coal-fired power generation only in 2051 and a foreseen RE power capacity share of only 32% in 2036 are quite unambitious and will contribute to continuously high CO<sub>2</sub>-emissions and consequently to sustained negative health impacts. The coal phase-out could be brought forward and the expansion targets for renewable energies could be increased in order to also exploit the country's large RE potential.

The framework conditions (natural conditions, regulatory framework, power market design) could be scrutinised in order to establish adequate policies to strengthen the transition to RE, in particular in regard to

- Analysis of the influence of changing weather conditions on RE capacities.
- Empowerment of the grid system, including the adjustment of grid codes to integrate higher proportions of de-centralised and fluctuating RE into the grid and the establishment of a cost-effective transmission system.
- Development and integration of storage capacities into the power grid.
- Design feed-in tariffs in a way that they stimulate investments without generating more profits than necessary.
- Provision of land policy for establishing RE facilities.

<sup>6</sup> [https://www.irena.org/-/media/files/irena/agency/publication/2017/nov/irena\\_outlook\\_thailand\\_2017.pdf](https://www.irena.org/-/media/files/irena/agency/publication/2017/nov/irena_outlook_thailand_2017.pdf)

- Push ahead with the phasing out of subsidies for fossil fuels.

The government should establish financial incentives in the form of investment subsidies and soft loans for potential investors of RE projects.

## Society

Thailand has achieved notable human development levels and possesses the second-largest economy in Southeast Asia. Its economic growth is driven by robust manufacturing, agriculture, and tourism sectors. It has made substantial progress in reducing poverty over the years. The poverty rate declined from 67.2% in 1986 to 6.8% in 2020. However, challenges persist, particularly in addressing pockets of extreme poverty and income disparities between different regions and population groups. The country has made notable strides in promoting gender equality, improving education and healthcare systems, and strengthening social protection programmes. However, challenges remain in ensuring equal access to justice, protecting the rights of marginalised groups, and tackling issues related to freedom of expression and assembly.

The narratives around coal in Thailand vary, with some emphasising its economic benefits and role in driving growth and meeting energy demand, while others focus on the negative environmental and social impacts such as air pollution, deforestation, and climate change. Traditionally, the dominant narrative in Thailand has focussed on the economic benefits of coal, highlighting its affordability and energy security advantages. In recent years, however, a new narrative has emerged that remains marginal for the time being. It emphasises the need to prioritise renewable energy sources and reduce the dependence on coal in order to address environmental and health concerns.

This perception is largely influenced by the negative consequences experienced due to the operation of Mae Moh's lignite thermal power plants, which have caused significant environmental impacts such as land degradation, deforestation, air pollution, as well as health deterioration. Consequently, there has been strong public opposition to coal-fired power plants in Thailand. The proposed coal-fired power plant in Krabi (in the South of Thailand) faced strong opposition from locals, the situation in Mae Moh is similar. The proactive efforts from civil society, including women and marginalized groups, played a crucial role in mobilizing opposition and ultimately preventing the construction of the coal-fired power plant in Krabi. The population seems to become more and more reluctant to coal power plants. The concept of a just transition of the coal sector in Thailand has gained some traction in recent years, aiming to address the social and economic implications for affected communities and workers during the transition away from coal. This is also reflected by the government and has led to the energy sources transformation in EGAT's Triple S Strategy to achieve carbon neutrality by 2050.

### **Conclusions and Recommendations:**

Amongst the competing narratives on coal, the ones on coal phase-out and just energy transition need backing. A JET process can build upon on a certain reluctance against coal mining and coal power although the predominant narrative is still rather pro-coal. Activities for fostering the awareness of the need and the benefits of a JET narrative could be strengthened, and stakeholders in favour of a JET process could be supported and empowered.

As regards topics of the JET narrative, the country's commitment to economic development, poverty reduction, and environmental objectives could be taken into account and built upon. In particular, human rights challenges for marginalised communities and indigenous groups, affecting their access to a healthy environment, land, resources, and cultural identity deserve particular attention. The dialogue with political institutions in charge of energy policy and regional development of the coal regions could be strengthened..

The participation of local communities, including women and marginalized groups, in the development of regional plans for sustainable and inclusive growth could be facilitated.

## **Economy and Employment**

The mining sector does not play a critical role in Thailand's economy (2.55% of GDP, 2018), national coal production is declining, domestic coal produced is not an export product, and projections for the country's coal demand also show a downward trend, which will also be associated with a decline in the workforce in this sector (see Part A). On the other hand, the RE sector in Thailand employs more and more people. According to ILO estimations, more than 17,000 employees were working directly in RE in 2016, and there is potential for quick growth as well as for the generation of indirect jobs in the area of installation and maintenance. However, the lack of differentiated and disaggregated publicly accessible employment data, including the energy sector, specifically in renewables and the coal industry, remains a barrier to managing the change in the labour market. It hampers effective planning and decision-making regarding job transition, skills development, and social dialogue initiatives.

### **Conclusions and Recommendations:**

The potential for viable alternative economic diversification and development paths in the context of a JET process could be explored in more detail, taking into account the views of stakeholders.

Engaging the private sector through partnerships, initiatives, and clear benchmarks is crucial for accelerating investment in renewable energy and facilitating the phase-out of coal power plants. This can be achieved by promoting private-public partnerships, creating favorable investment conditions, providing incentives, and streamlining regulatory processes to attract private sector participation.

Needs for social protection of affected workers in coal mines and power plants as well

as for reskilling and job placement should be examined thoroughly. Based on the results, support schemes are to be developed.

Need to carry out extensive data surveys and analysis regarding employment figures within the energy sector in order to make a comprehensive assessment of the employment impacts of a JET.

## 2.2 On the regional level of the Lampang region

The phased-out use of coal in the Lampang region by 2051 – for mining as well as for power generation - is key to Thailand’s target to achieve net-zero carbon emissions by 2065.

### Coal and energy

The Mae Moh coal basin in Lampang province, located in the northwest of Thailand, is the last operating coal mining area of the country and is the largest source of lignite (brown coal) in Thailand. Mining started in 1955 and over the years, an area of approximately 13,000 hectares was covered. In line with Thailand's goal to reduce the capacity of coal-fired power plants, as stated in the draft PDP 2022, domestic lignite production is expected to gradually decrease from 2021 to 2030. In 2021, 14,2 Mt have been produced and by 2030, it is projected to reach around 6,0 Mt aligned with the future capacity of the Mae Moh Coal power plant. The majority of lignite produced from the Mae Moh mine is used to fuel the nearby Mae Moh thermal power plant operated by EGAT.

As of 2021, the capacity of the Mae Moh power plant is 2,455 MW, it is the largest thermal power plant in the country. It provides 50% of electricity to the north, 30% to the central region, and 20% to the northeast. According to the PDP, by the year 2025, there is a target to decrease the capacity by around 50%, bringing it down to 1,255 MW. Ultimately, the plan aims for a complete phase-out of coal power generation, with zero capacity by the year 2051. Nevertheless, four new coal-fired power generators are foreseen in the Lampang district. The Thai cabinet has already granted approval for the first two plants, which will have a combined capacity of 660 MW. Construction for these plants is scheduled to begin this year, and they are expected to operate from 2026 to 2050. These plants will be integrated into the existing coal-powered generators at the Mae Moh power plant. Concerning coal phase-out plans on the regional level, there is the Mae Moh closing plan, which sets a goal of phasing-out coal-based power generation by 2050. The plan encompasses various initiatives, including investments in renewable energy infrastructure, particularly in solar power, battery technologies, and pumped hydro storage in the Mae Moh area.

Thailand’s northern region has abundant potential for RE expansions, especially for solar PV, which is a clear strength that could drive the JET process. According to the Mae Moh Green Model roadmap, the area is to be developed into an RE generation hub, with a capacity of approximately 5,405 MW coming from solar farms, biomass plants, and pumped storage. On

the other hand, there are weaknesses that hinder the exploitation of this strength, namely the non-capable power grid and the uncomprehensive regulatory framework for the expansion and grid integration of higher RE shares.

### **Conclusions and Recommendations:**

Develop a comprehensive plan or expand the Mae Moh closing plan for the closure of the EGAT Mae Moh Coal mine to ecological regeneration through land rehabilitation, reforestation, and ecosystem restoration. If necessary, with collaboration among environmental experts, local communities, and government agencies to ensure effective implementation.

Improvement of framework conditions (natural conditions, regulatory framework, power market design) for a JET process on the national level is crucial for progressing in Lampang; see for details recommendations in the energy/coal section on a national level.

Expanding the exploitation of the Lampang region's enormous potential for photovoltaics and biomass as sources of renewable energy.

## **Society and Governance**

Lampang has the same pro-and-con-narratives about coal as on the national level. Several key actors have emerged as active supporters of JET including EGAT, the Lampang regional government, academic institutions, and civil society, who actively advocate for JET and align their efforts to support its objectives. However, national stakeholders such as the Energy Policy and Planning Office (EPPO), the Energy Regulatory Commission (ERC), and big mining companies have opposed positions towards JET. They aim to prolong the operation of existing coal facilities and even propose the addition of four new coal-fired power generators to the grid. In general, the understanding of just energy transition in Lampang remains low. This lack of awareness extends to the workers and unions in the region.

Lampang District exhibits a diverse demographic makeup, characterised by a blend of ethnic groups including the Thai majority and various hill tribes such as the Karen, Hmong, and Lahu. Lampang District contains pockets of poverty, particularly among marginalised communities and ethnic minorities such as three indigenous groups, the Mlabri, Kaw (Umpi), and Bisu, which face constrained access to education, healthcare, and economic opportunities. Coal mining activities contribute to environmental degradation, encompassing air and water pollution, adversely affecting the health and well-being of local communities. Consequently, conflicts have arisen within the context of coal mining, involving mining companies, local communities, and indigenous groups. These conflicts often revolve around contentious issues such as land rights, displacement, and environmental concerns. Human rights violations have emerged, encompassing the infringement of the right to a healthy environment, land and natural resources, and cultural identity. Various actors contribute to these violations, including

mining companies, government agencies responsible for mining licenses and oversight, and law enforcement agencies engaged in maintaining order during conflicts (Worldbank, 2022)<sup>7</sup>.

In the context of the Mae Moh coal mine in Lampang, local communities and stakeholders who bear the direct impacts of the coal mine, have often been excluded from participating in the decision-making processes. Up to 30,000 people have been displaced during the construction of the power plant. In Lampang, there has been a lack of inclusivity in decision-making between EGAT and the local community. GIZ observations indicate that this conflict has led to decisions that do not adequately consider the social, economic, and environmental impacts on the local populations. Grassroots activism and community empowerment hold great importance within the Mae Moh coal mine context. Local communities have united through civil associations, community spokespersons, and NGOs to voice their concerns and demands. Consequently, the exclusion of the local community has generated feelings of powerlessness, frustration, and distrust among those affected. In addition, concerns have arisen regarding corrupt, clientelistic, and patronage-based structures and practices in relation to the JET processes in Thailand, including the Mae Moh coal mine.

The primary instrument relevant for JET at the regional level is the Mae Moh Green Model Road Map (see below), which considers the key driving forces of the Mae Moh Green Model. The Thai government has established The Power Development Fund to alleviate the impacts of coal mining and burning on local communities. Managed by EGAT and ERC, the fund covers 790 entities across 77 provinces in Thailand, including the Mae Moh Power Development Fund, the country's largest, serving 5 subdistricts in the Mae Moh district. Funding criteria involve 50,000 baht per megawatt annually during construction, with an additional consideration of 2 satangs per unit of electricity generated during coal operation. It provides more than three hundred million baht annually for the local community in Mae Moh. However, challenges such as transparency issues, lack of success indicators, and mismanagement by appointed committees have hindered the fund's effectiveness over the past decade, failing to deliver tangible benefits to the local community.

### **Conclusions and Recommendations:**

The implementation of mechanisms that promote meaningful community participation is crucial. Initiatives such as public consultations, community engagement forums, and the establishment of platforms for dialogue between decision-makers and affected communities can facilitate this. By actively incorporating the voices of the local populations, policies related to the coal sector can be shaped to adequately consider their concerns and interests.

Need for a dialogue with government and regional authorities as well as private

<sup>7</sup> World Bank Climate Change Knowledge Portal. Home. (n.d.). <https://climateknowledgeportal.worldbank.org/>

companies on how to avoid future infringements of human rights such as access to land and natural resources, a healthy environment, and cultural identity, in particular as regards marginalised communities and indigenous groups.

Need for more transparent deliberations and decision-making processes as regards JET, in particular as regards to interests of stakeholders and flows of money.

## **Economy and Employment**

In the Mae Moh area, coal is of huge importance to the regional economy, providing 9,000 job positions and accounting for 18.1% of the GRDP of Lampang province. The transition from coal mining and gradually from coal-based energy generation in Mae Moh presents an opportunity to attract investments in renewable energy projects, sustainable agriculture and industries, eco-tourism, and infrastructure development, leading to the creation of new jobs. The shift from coal to renewable energy is driven by global commitments to reduce greenhouse gas emissions and combat climate change, but also by cost decreases and increasing competitiveness of RE. The closure of the Mae Moh coal mine raises concerns about potential job losses, particularly among employees of the state-owned enterprise. Resistance to restructuring and privatisation reflects worries about unemployment, job security, and loss of benefits.

For Lampang, planning for phasing out coal mining and power generation has already led to concrete approaches such as the Mae Moh Green model roadmap and the Mae Moh smart city project. Key components of the Mae Moh Green model include job training programmes to equip affected workers with the necessary skills for new industries, support programs for small businesses to develop sustainable ventures aligned with clean energy goals, community development efforts focusing on infrastructure improvement and social well-being, and social safety nets to provide the necessary support to those most affected during the transition period. The approach is underpinned by some small-scale pilot projects in the areas of job placement services, women empowerment, and financial support to the most affected groups. However, it presently lacks a systematic implementation plan, a long-term perspective, and adequate financial resources that would allow for a proper scaling-up of required activities. EGAT has proposed those approaches, but although they are technically interesting and in principle eligible for a JET process, they have been developed without the participation of the affected groups, civil society, regional government, private investors, and other regional stakeholders. Meanwhile, activities for better inclusion of regional stakeholders such as the First Mae Moh Foresight Workshop as well as an initiative led by the Mae Moh Development Association to establish a financial support programme and set up job placement services have taken place.

The exploration of alternative viable economic development paths in Lampang is underway, for example, the Mae Moh Green Model and the first pilot project. The coal mining and energy sectors in Lampang Province have a pool of skilled workers with experience in the energy industry who can be upskilled and trained for new roles in emerging green sectors. For establishing a broad transformative development vision, a comprehensive and participatory approach is required. The above-mentioned first Mae Moh Foresight Workshop, organised



by The Office of National Higher Education Science Research and Innovation Policy Council (NXPO) in collaboration with the APEC Center for Technology Foresight (APEC CTF) and EGAT, serves as a platform for representatives from the affected employees, relevant stakeholders, and government agencies to engage in meaningful dialogue and decision-making. This workshop has been instrumental in discussing and developing plans for training and skills development programmes, such as providing vocational courses in renewable energy technologies or supporting entrepreneurship in sustainable industries.

Thailand is committed to core labour standards and labour-related human rights such as non-discrimination in occupation and employment, the promotion of freedom of association, the right to collective bargaining, adequate wages, working hours, occupational health and safety, and maternity leave. Delayed case law proves that there are deficits in law enforcement in Lampang. Further, an estimated two-thirds of all coal workers are informal workers who are assumed not to have the same rights as the formal workers.

### **Conclusions and Recommendations:**

Need for revising JET-related development models like the Mae Moh green model and further developing it into a community-based action plan

- on the basis of a broad regional participation of all relevant stakeholders
- by assigning a leading role to the regional Energy Regulatory Commission (ERC)
- by taking a long-term perspective and establishing a systematic implementation plan
- by providing adequate financial resources which would allow for a proper scaling-up of required activities
- key regional authorities and stakeholders (such as the Governor's office in Lampang Province, ERC Lampang Province, EGAT Mae Moh, and the Provincial Administration Organisation) should organise the future participatory JET process in Lampang by taking into account key strategies and development plans ( e.g. Provincial Energy Development Plan, Local Climate Action Plan)

Explore the situation of the coal workers in regard to labour standards and labour-related human rights in Lampang and develop specific measures, policies, and enforcement mechanisms in place to address labor rights issues where necessary.

Assess the effectiveness and coverage of existing instruments in Mae Moh, identify any gaps, and address them through policy reforms, resource allocation, and collaborative efforts.

Need for support of affected groups in order to strengthen their capacities in the articulation of their views and interests and to enhance their awareness and knowledge about the concept of just transition in Lampang.

Establish comprehensive social protection measures to support affected workers during the coal mine closure process. This includes providing financial assistance, retraining programs, access to healthcare services, and the creation of green and decent jobs.

**Just Energy Transition in Coal Regions**