

## **Improvement of Internationalization in Education and Training in the Vietnam's Coal Industry in International Economic Integration**

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### **Abstract:**

In order for human resources to receive efficiently the modern knowledge from other countries, Vietnam's coal industry needs to have professional teams who can provide high-quality training. The participation of international experts on training human resources can offer professional training courses and advanced programs. Those experts are from countries with advanced mining industry. This participation has an important role in the process of economic integration and sustainable development of Vietnam coal industry. This article will present the status of training facilities and joint training results in domestic and abroad; analyze the constraints of internationalization on training human resources, from which, propose measures to enhance internationalization of training human resources for Vietnam's coal industry in the context of international economic integration.

**Keywords:** Education and training; Vietnam's Coal industry; International economic integration.

### **1. Introduction**

Like most countries depending on natural resources, Vietnam faced with the need for quality workers in the coal industry. Vietnam's coal industry is a shortage of quality labor to meet the need for domestic economy and economic integration to the global economy. The weakness lies in understanding the law, strategic management, and human resource management, ability to make decisions, environmental management, financial management, risk management and international business.

To meet the goal of turning Vietnam into a modern industrialized country by 2030, Vietnam needs to train its workforce to cope with the challenges of international economic integration. The country needs to effectively manage natural resources and protect the environment to ensure sustainable development. Therefore, the article will propose measures to improve the role of international factors in human resource training for Vietnam's coal industry; improve legal understanding, improve foreign language skills and information technology to integrate deeply and sustainably with countries in the region and the world.

### **2. Current situation of internationalization of training human labors for Vietnam's coal industry**

2.1. Educational institutions providing human resources training for Vietnam's coal industry

System training facility for the coal industry workforce Human resources (HR) for mining industry are mainly relying on the system of educational institutions inland and abroad as the following:

*Universities:* University of Mining and Geology; Quang Ninh Industrial University; University of Natural Resources and Environment; Hanoi University of Science and Technology.

*Vocational colleges:* Vietnam Coal and Minerals College; Thai Nguyen Mechanical and Metallurgical College; Phuc Yen Industrial College; Tuy Hoa Industrial College; Industry and Construction College; Vung Tau Petroleum Vocational College

*Staff training school:* School of Business Administration -Vinacomin.

Vietnam's coal industry has been joint training with universities from others countries with developed mining industry, such as Russia, Poland, China (China), Germany, Japan. Universities (University) as: University SLASK - Poland, University of Technology, North China Electric Power University (China), Liaoning Petrochemical University , Polytechnic Kunming University, Liaoning, China; University of Queensland-Australia ICTE; School of Management, Asian Institute of Technology (AIT), the Norwegian Electricity Corporation (NEC), training for projects like JCOAL (Japan), REMA (Germany) .

The coal industry directly manages two training institutions, fostering human resources that are vocational Vietnam Coal and Minerals College, School of Business Administration - Vinacomin.

*The scale of vocational training:* training institutions of Vietnam in coal industry serves about 10,000 students/year, concentrated in the Northeast (Quang Ninh) and the Viet Bac (Thai Nguyen). In addition, the industry has opened a campus in Tay Nguyen (Lam Dong, Dak Nong) to provide human resource training for projects like mining bauxite projects in Tay Nguyen.

*Teachers and trainers:* in total, out of nearly 800 professional teachers: 85 having postgraduate degree; 356 with bachelor degree, 53 people graduated from college; 100% of teachers have pedagogical qualification of level 2 or higher or vocational teacher certification. Teachers who teach practice have at least 2 years of experience working at enterprises.

*Training facilities and back-up service:* in total, have 120 classrooms with an average capacity of 60-80 students per room with enough modern audiovisual equipment. That includes 20 computer rooms, 52 apprenticeship workshops, 05 labs provides PLC programming, 10 practice workshops for mechanical repairing, 05 welding workshops with divided chambers, 08 CNC lathe practice workshops, 02 factories with quality testing of products; 20 laboratories of physic and chemistry.

## *2.2. Collaboration of training at domestic and international level*

Vietnam's coal industry has joint training with universities in countries such as Russia, Poland, China, Germany, and Japan. In the country, the industry also collaborated with some domestic universities like Mining and Geology University, Ha Noi University of Science and Technology, Quang Ninh Industrial University etc. A large number of postgraduate students go for training and professional development that Vietnam's coal industry required. By the end of 2020, the number of graduate students is 939, in which, 34 students going to study abroad. The remaining 905 students are staff involved in domestic study. Undergraduate students, in total, are 191 and of which, 94

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students have graduated; the number of college students are 13, the joint-training program having 67 students completed the program.

**Table 1.** Results of joint training at the country and international level

Units: People

| No       | Level of training, name of institutions to the end of 2020                | Majors  | Number of current students | Number of Completed | Number of uncompleted |
|----------|---|---|----------------------------|---------------------|-----------------------|
| <b>A</b> | <b>Graduates</b> (Joint Training with foreign countries)                  |   | 34                         | 22                  | 12                    |
| 1        | Doctorate   | Mining  | 13                         | 9                   | 4                     |
| 2        | Master  | Mining  | 21                         | 13                  | 8                     |
| <b>B</b> | <b>Undergraduates</b>   |   | <b>191</b>                 | <b>94</b>           | <b>97</b>             |
| 1        | SLASK University of Poland (2016-2020)                                    | Mining  | 12                         | 12                  |                       |
| 2        | University of Technology Liaoning - China (2016-2020)                     | Mining  | 20                         | 12                  | 8                     |
| 3        | North China Electric Power University and China (2016-2020)               | Electricity   | 120                        | 70                  | 50                    |
| 4        | Liaoning Petrochemical University-China (2016-2020)                       | Petroleum   | 14                         |                     | 14                    |
| 5        | Polytechnic University Kunming-China (2016-2020)                          | Metallurgical   | 25                         |                     | 25                    |
| <b>C</b> | <b>College</b>  |   | <b>13</b>                  |                     | <b>13</b>             |
| 1        | College of Metallurgy Kunming - China (2016-2020)                         | Metallurgical   | 9                          |                     | 9                     |
| <b>D</b> | <b>Program 1 + 2 and 3 + 1</b>  |   | <b>67</b>                  | <b>67</b>           |                       |
| 1        | University of Technology Liaoning -CHINA (Program 3 + 1: 2016-2020)       | Mining  | 17                         | 17                  |                       |
| 2        | Kunming University of Technology- CHINA (1 + 2 program from 2016 to 2020) | Metallurgical   | 50                         | 50                  |                       |
| <b>E</b> | <b>Joint Training with foreign countries</b>                              |   | <b>180</b>                 | <b>172</b>          | <b>8</b>              |
| 1        | University of Technology Liaoning -China (2020)                           | Refresher training of vocational teachers specialized tunneling | 50                         | 50                  |                       |
| 2        | College of Metallurgy Kunming - China (2020)                              | Refresher training of vocational teachers of metallurgy         | 50                         | 50                  |                       |

|          |   |   |     |     |   |
|----------|---|---|-----|-----|---|
| 3        | University of Technology Liaoning -China (2020)   | Refresher training of vocational teachers specialized mining  | 50  | 50  |   |
| 4        | University of Technology Liaoning -CHINA (2020)   | Refresher training of vocational teachers specialized electromechanical mines                               | 50  | 50  |   |
| 5        | University of Queensland-Australia ICTE (2020)  | Advanced English language training for senior officers of Vinacomin   | 25  | 25  |   |
| 6        | School of Management, Asian Institute of Technology (AIT), the Norwegian Electricity Corporation (NEC) (2016-2020)                            | MBA for executives (IEMBA) energy management sector   | 30  | 22  | 8 |
| <b>F</b> | <b>Training for projects JCOAL (Japan), REMA (Germany)</b>  |   |     |     |   |
| 1        | Training in Japan Project “Capacity building of coal production in the coal-producing countries” from 2011 to 2020                            | Refresher training courses Management Engineer, CN mining mechanized tunneling, exploration, rescue, safety | 697 | 697 |   |
| 2        | The cooperation program between environmental VINACOMIN-RAME (Germany)  | Training classes: management systems, environment in Germany  | 155 | 155 |   |
| 3        | The cooperation program between Hanoi University of Mining and Geology with Science Applications -Great George Agricola, Bochum, Germany 2020 | Training course on risk management in mining operations   | 30  | 30  |   |

*(Source: TKV, Report on the work of training 2016-2020 period and orientations towards 2025)*

Trainees who are participating in the course of the project like JCOAL (Japan), REMA (Germany) 2016-2020 bulk include 697. After professional training, the personnel capability has been raised remarkably, synthesizing specialized knowledge and training in accordance with new way of thinking, especially scientific and industrial working style, learning from discipline of Japanese labors and from those advanced countries.

The number of students trained by level are gathered in Table 2 shows the number of students participated in short courses on demand largely accounted for (68.06%), followed by the percentage

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of students universities accounted 14.74%, while the proportion of the amount of students college account for only 0.69%. Study shows that focus on the education levels of highly qualified and trained according to the needs of the TKV, not serious about trades training in secondary level colleges.

**Table 2.** Structure of training by qualification and profession towards 2020

(Source: Vinacomin, Report on training work in the 2016-2020 period, and vision to 2025)

| No | Content  | 2015-2016      | 2016-2017      | 2017-2018      | 2018-2019      | 2019-2020      |
|----|--|----------------|----------------|----------------|----------------|----------------|
|    | <b>Plus (1 + 2)</b>  | <b>167.472</b> | <b>169.303</b> | <b>294.937</b> | <b>448.647</b> | <b>241.302</b> |
| 1  | Costs of joint training and studying abroad students         | 18.703         | 15.698         | 99.202         | 30.854         | 120.651        |
| 2  | The cost for the training and retraining of staff and worker | 148.769        | 153.605        | 195.735        | 417.793        | 109.389        |
| 3  | Cost for training and retraining of staff                    | 14.203         | 7.777          | 15.848         | 14.518         | 12.536         |

**Table 3:** Implementation of training (HRM) funds of Vietnam coal industry 2016-2020

Unit: million dong

| No | Qualifications, educational sector | Number of participants, People | The rate; % |
|----|------------------------------------|--------------------------------|-------------|
| 1  | Doctor                             | 13                             | 1,001       |
| 2  | Masters                            | 21                             | 1,62        |
| 3  | University                         | 191                            | 14,74       |
|    | Of which: Mining Sector.           | 49                             | 3,78        |
|    | Metallurgy industry                | 75                             | 5,79        |
|    | Coal Chemical Industry             | 14                             | 1,08        |
|    | Electricity Industry               | 120                            | 9,26        |
| 4  | College                            | 9                              | 0,69        |
| 5  | Training and retraining of topics  | 180                            | 13,89       |
| 6  | Short courses on demand            | 882                            | 68,06       |
|    | <b>The sum</b>                     | <b>1296</b>                    | <b>100</b>  |

(Source: Vinacomin, Report on training work in the 2016-2020 period, and vision to 2025)

Costs associated training and study abroad for students in 2015 was 18 billion, in 2020 increased to 30 billion; the average cost 11% compared to the total cost of training human resources for the coal

industry; it showed a sizeable investment from the State in the development of human resources with a high level of Vietnam's coal industry.

*\* Some limitations of internationalization of training human resources for Vietnam's coal industry*

Investing in sending students to college, university or graduate programs abroad approximately required 1 million Euros in 2017 and nearly 3 million Euros in 2025, according to the human resources development of Vinacomin. However, Vinacomin has many different portfolios, as the economy is facing tough challenges, the human resources training of Vinacomin has to cut its budget and workload thereby directly affecting wages, bonus. Therefore, it also affects the contribution of human resources for Vietnam's coal industry.

Language skills of employees of coal industry are very limited. It is a barrier to gain knowledge of science and technology from modern mining technology abroad. Vinacomin is cooperating with other countries with developed mining industry, such as Germany, Russia, Poland, Canada, Japan and China. However, these countries are less likely to use English as the common language, while the languages of those countries are not popular at schools in Vietnam.

The shortage of skilled labors makes it difficult for Vinacomin to develop in the knowledge economy. At the present, the knowledge level of legal regulations, strategic management, human resource management, management skills, decision-making abilities, financial management, risk management and international business are essential; it is especially true in the period of AEC establishment and signing trade agreements like (TPP). The Vietnam's coal industry is facing many challenges in the coming period.

To achieve the strategic goals of human resource development in the country, including human resources development for Vietnam's coal industry up to 2025, it is important to clear the limitations of labor training activities. The role of international factors involved outsourcing human resource training for Vietnam's coal industry in the context of international economic integration becomes even more essential.

### **3. Solutions to strengthen internationalization of human resources training for Vietnam's coal industry**

*First, improve results and rationalizing the structure level, international training fields*

Enterprises should actively seek scholarships of foreign universities and then send trainees, students with the high achievement students to foreign universities. Those got training after graduation will be working under management of enterprises of Vietnam's coal industry.

Strengthening collaborations with the universities associated with the coal industry in foreign countries like China, Poland, Russia, Germany, USA, and UK is to send their staff to get training. Training should be at all levels such as undergraduate, graduate, post-graduate. Enterprises also can invite experts in training teachers, managers according to the enterprise 'need.

Continue to strengthen cooperation in expanding the forms of training with universities like Liaoning Technology University, Liaoning Petrochemical University, North China Electric Power University, Kunming Metallurgy College and the like. The coal industry in collaboration with the educational

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institutions can send students to study at levels like undergraduate, master and doctorate. The training and retraining of teachers and staff under subjects such as Mines and Mineral Mining, Metallurgy, Electricity, Coal Gasification is the demand for human resources of Vietnam's coal industry.

Continue the collaboration with the Center for Japanese Coal Energy to conduct the project "Building capacity of the country's coal industry coal production". It means management staff and workers can be sent on training in Japan under this project; effectively implement cooperation agreements with Environmental Association (RAME- Germany) and the Norwegian Electricity Association (NEC) in the mining postgraduate education of environment and energy management.

*Second, the frequent deployment of language training, soft skills development for workers*

The coal industry should organize training courses for foreign language for all officers and employees, especially the staff according to the needs and standards of appointment and promotion of staff of Vietnam's coal industry mainly English, French, Russian, Chinese, German.

Vietnam's coal industry should organize training courses, training of soft skills knowledge to all officers and employees, especially for leaders, managers, professional staffs. The content of training and retraining, including legal documents, teamwork skills, skills training for new staff, problem solving and decision making skills, effective time management, engineering negotiation, contract negotiation skills, presentation skills, reporting skills; organizational skills and executive conferences.

*Third, improve the efficiency of training cooperation with international organizations*

For training in universities and colleges, there is a need to improve the curriculum, lecture, structured training system for the development of human resources and technical education development in Southeast Asia and the ASEAN University Network (AUN-SEED) [3]. Human Resource Development Group (HRDWG) under the administration of the cooperative organization and under the leadership of the organization of technical and economic cooperation in Pacific Asia with educational programs, labor and resource development [4]

The mission of this group is to share knowledge, experience, and skills to strengthen human resource development and sustainable development. HRDWG implement their training programs through three networks: first, the network of building capability (CBN); second, the training network (EDNET); third, the network of labor and social protection (LSPN). The other cooperation may be mentioned as World Mining Congress (WMC), the organization of international cooperation of Japan (JICA), and other non-governmental organizations are essential too. Moreover, in Vietnam's coal industry, the support of the professor in mining (SOMP) is very important in the exchange of experiences and transfer of technology [5]. However, professors in mining Vietnam have been currently not engaged much with the activities of this organization.

The developing countries need to implement the reintegration program to support professional training after their return home. For example, the program of repatriation of German experts was conducted by the Center for International Migration and Development (CIM) [6] of the Ministry of Cooperation and the Federal Economic Development (BMZ). CIM is also operated by the German

organization as international development cooperation and GIZ International Services Initial (ZAV); affiliated organizations introduce German federal employment. Currently the organization has 16 partners in Europe, Asia, Africa, and Latin America.

#### **4. Recommendations to enhance internationalization of human resources training for Vietnam's coal industry**

##### *4.1. For State and Government*

Construction, additional adjustment of policies related to salaries, insurance and allowances, health care are appropriate to encourage skilled workers, particularly skilled, technical workforce, and engineers in metallurgical engineers, mineral fields. It is creating a favorable working environment. There should be policies to encourage housing benefits and welfare to workers work in the long term.

Develop and enact the policies that promote learning, foster the students learning and training in foreign countries, especially the heavy labor job which is dangerous, hazardous as mining, manufacturing chemicals, manufacturing explosives, mineral processing, mining electric motor.

There should be policies to support the training facility for enterprises in enhancing infrastructure, technical, compiling textbooks, and international cooperation to ensure the fairness of the budget allocations regime between schools inside and outside the enterprise.

Review and adjust vocational training tuition, especially for particular occupations; the wage policies, social benefits; number of students each class, as well as requirements on equipment, standardization of teaching aids.

##### *4.2. Recommendations for Vietnam coal industry, and Vinacomin*

Vinacomin is focal organization of training and retraining, especially in human resources management for the under units. It is done through the training base of the Group and the training institutions in the country and cooperation joint training with other foreign training institutions.

Adjust the training regulations, policies to suit the scene, create the most favorable conditions for students to study to achieve high achievements. Vinacomin needs additional policies to attract trained practitioners who get training from foreign institutions to work for Vinacomin and keep loyal with the enterprises.

To add to mechanism of reward to create criteria to perform training missions, fostering development of human resources, particularly pay more interest to the course content, international training programs. It gives official direction for management to attract and train professional staffs and professionals and technical workers in order to encourage enterprises to care for the training and retraining of human resources development.

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