

Juridical Review of the Function of Engineer Registration Certificate Based on the Laws of the Republic of Indonesia Number 11 of 2014 Concerning Engineering

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ABSTRACT

Engineering is the activity of using science and technology to advance civilization and improve the welfare of mankind as mandated in the 1945 Constitution of the Republic of Indonesia. Efforts to advance civilization and improve the welfare of mankind are achieved through the implementation of reliable and professional engineering that is able to increase added value, usefulness and results, provide protection to the community, and realize sustainable development that is environmentally friendly. The implementation of engineering requires increasing the mastery and development of science and technology through education, sustainable professional development and research. Accelerating the increase in the number of engineers in line with advanced technological countries, increasing interest in engineering education, and improving the quality of professional engineers. Currently, there is no integrated regulation regarding the implementation of engineering that can provide legal protection and certainty for engineers, engineering users, and engineering users. Every Engineer who will carry out Engineering Practice in Indonesia must have an Engineer Registration Certificate as mandated by Law no. 11 of 2014.

Keywords: Engineer profession, engineer registration letter, engineering law.

INTRODUCTION

Law No. 11 of 2014 concerning Engineering is the main legal basis for the regulation of the engineering profession in Indonesia. One of the key instruments in this law is the Engineer Registration Certificate, which serves as official proof that an engineer has met the standards of competency and qualifications set for practice. However, in its implementation, there are a number of fundamental problems that have emerged, especially related to the quality and consistency of the certification process, weak supervision and law enforcement, and the lack of clear regulation and recognition of the competence of foreign engineers working in Indonesia. This problem has the potential to weaken the effectiveness of the engineer's registration certificate as a quality assurance tool.

The significance of engineer registration certificates is increasingly crucial in the context of infrastructure development and construction engineer registration certificates. The existence of an engineer registration certificate serves as a preventive effort to prevent moral hazards, malpractice, construction accidents, structural damage, and building failures. Thus, an engineer registration certificate not only guarantees individual competence, but also becomes a legal protection instrument that can anticipate potential civil and criminal disputes in construction. This is in line with the purpose of the Engineering Law to provide legal certainty and protect users and users of engineering services.

Juridically, the engineer registration letter has a dual function. On the one hand, an engineer registration certificate serves as an official state recognition of the competence of an engineer who has met the standards. On the other hand, an engineer registration certificate also serves as a tool for supervision and regulation of professional practice, ensuring that practicing engineers have adequate knowledge, skills, and experience. This function leads to increasing professionalism and at the same time protecting the public from irresponsible

practices. Therefore, the mechanism for issuing and updating engineer registration certificates that are valid every five years is a critical point in maintaining the sustainability of the quality of the profession.

The implementation of engineer registration certificates does not run in a vacuum, but is integrated within a broader national regulatory framework, such as the Construction and Manpower Services Law. Complexity arises because the engineering profession involves various stakeholders, ranging from educational institutions that organize the Engineer Professional Program, the Indonesian Engineers Association as the issuer of engineer registration certificates, to government institutions as supervisors. The main challenge is to create synergy and consistency among all these implementing regulations and actors to ensure that the process from education, certification, to registration runs coherently and supervised.

The Indonesian Engineers Association occupies a central and strategic position as a mandatory Engineering Law which is authorized to issue engineer registration certificates. This position places the Indonesian Engineers Association as the forefront of ensuring professional quality. However, this great authority also contains potential problems, such as conflicts of interest in the certification and registration processes managed by the professional organizations themselves. A checks and balances mechanism, including the supervisory role of the Indonesian Council of Engineers and the government, is needed to ensure objectivity, transparency, and accountability in every stage of the issuance of engineer registration certificates

Based on this background, this study aims to conduct an in-depth juridical review of the function of engineer registration certificates. The analysis is focused on examining the extent to which the engineer registration certificate has been implemented in accordance with the mandate of Law No. 11 of 2014, as well as what the legal implications are in ensuring professional, responsible, and sustainable engineering practices. By evaluating the effectiveness of engineer registration certificates as a legal instrument, this research is expected to contribute to identifying regulatory loopholes and offer solutions to strengthen Indonesia's engineer registration system for the realization of safe, quality, and sustainable infrastructure development.

LITERATURE REVIEW

This research framework was built to conduct a juridical review of the function of the Engineer Registration Certificate based on Law No. 11 of 2014 concerning Engineering. The fundamental problem behind the research is the existence of crucial issues in the implementation of engineer registration certificates, such as the inconsistent quality of the certification process, weak supervision and law enforcement, and unclear regulation of foreign engineers. This research is significant because the engineer registration certificate is not just an administrative document, but a key legal instrument to ensure the competence, professionalism, and accountability of engineers in national infrastructure development.

A conceptual framework serves as a map or logical structure that guides the entire research process. This framework comes from theoretical synthesis and literature review, which then visualizes the relationship between the concepts or variables being studied, such as between the existence of engineer registration certificates and increased professionalism, competency recognition, and community protection. The goal is to clarify the problem, sharpen the research question, and direct data collection and analysis to stay focused and structured.

While the conceptual framework focuses on variable relationships, the theoretical framework provides a deep philosophical and scientific foundation. This research is based on the Theory of the State of Law (Rechtsstaat) and the concept of the Welfare State, as enshrined in the 1945 Constitution. In this context, law functions not only as a social controller, but also as a means of social engineering (law as a tool of social engineering), a thought carried by Mochtar Kusumaatmadja, which originated from Roscoe Pound.

The State of Law and Consequences for Professional Regulation

As a democratic country of law and welfare, Indonesia is obliged to create regulations that protect the rights of its citizens and promote public welfare. The implementation of the Engineering Law and engineer registration certificates are a manifestation of the state's obligations. The regulation of the engineer profession functions as directive (directing), integrative (unifying), stabilizing (maintaining balance), perfective (perfecting), and corrective (correcting injustice). The Engineer Registration Certificate is present as an instrument to realize these

legal functions in the technical realm of development.

Engineer Registration Certificate as an Instrument of Protection and Quality Improvement

Specifically, the engineer registration letter serves a dual function in the legal system. First, as a tool for state recognition and supervision of the competence of an engineer, which is in line with the principle of legal certainty. Second, as an instrument of protection for the community from malpractice and construction failure. Thus, the engineer registration certificate is a minimum guarantee that practicing engineers have met the standards of knowledge, skills, and ethics, which ultimately leads to improving the quality of engineering services and public trust.

The Central Role of PII and Implementation Challenges

The implementation of the Engineering Law delegates strategic authority to the Indonesian Engineers Association as the sole issuer of engineer registration certificates. The position of the Indonesian Engineers Association as a mandatory law places it as the spearhead of professional quality assurance. However, this large authority contains complex challenges, including potential conflicts of interest, maintaining the consistency and objectivity of certifications, and conducting effective oversight of thousands of scattered engineers. The success of this system depends heavily on the integrity and institutional capacity of the Indonesian Engineers Association.

Legal Sanctions as a Pillar to Support the Effectiveness of Engineer Registration Letters

The effectiveness of the engineer registration letter as a legal instrument is supported by the threat of clear sanctions. The Engineering Law regulates two types of sanctions: administrative sanctions (such as written warnings or temporary suspension of practice) for engineers who practice without an engineer registration certificate, and heavier criminal sanctions in the form of fines of up to billions of rupiah or imprisonment, especially for non-engineers who act as engineers and cause losses. This sanction mechanism is intended to provide a deterrent effect and enforce the rule of law in the professional field.

Integration with the Broader National Regulatory System

The analysis of engineer registration letters cannot be separated from the broader national regulatory ecosystem. Engineer registration certificates are closely related to sectoral laws such as the Construction Services Law and the Manpower Law, as well as various technical implementing regulations in the field of higher education and work competencies. The synergy and harmonization between the Engineering Law and these supporting regulations are the determining factors for success in creating a coherent, quality, and sustainable development national engineering system.

Based on a framework that includes conceptual, theoretical, and analytical aspects, this research will lead to a systematic juridical review. The purpose is to analyze the extent to which the function of the engineer registration certificate has been operationalized in accordance with the ideals of the Engineering Law and the principles of the welfare law state. It is hoped that this study can identify the gap between law in books and law in action, as well as provide recommendations to strengthen the role of engineer registration letters as an important pillar in building engineering professionalism and infrastructure that is safe, reliable, and sustainable.

RESEARCH METHODS

The research uses mixed empirical juridical legal methods. This approach combines normative juridical analysis to examine laws and regulations (such as Law No. 11/2014 and its derivative regulations) as a legal basis, with a sociological empirical approach to observe the implementation of these laws in real practice (law in action). Thus, the research focuses not only on the law as a text, but also on the social reality of its application. This method was chosen to answer questions about the effectiveness, constraints, and social impact of the Engineer Registration Certificate.

Data collection is carried out through two main sources. Secondary data includes primary legal materials (regulations), secondary (books and journals), and tertiary (dictionaries). Primary data was obtained directly

from the field using three techniques: questionnaires distributed to 526 respondents (engineering graduates in Aceh) to measure knowledge and ownership of engineer registration certificates, directed interviews with relevant sources (such as the management of the Indonesian Engineers Association), and document studies on internal organizational data. The sample was taken purposively, namely selecting informants who were considered to be the most knowledgeable about the issue of engineer registration letters and could represent the population.

The collected data were analyzed triangulated by qualitative analysis methods for narrative data (interviews, documents) and descriptive quantitative analysis for questionnaire data (presented in graphs and percentages). Juridical analysis is used to interpret legal provisions. To ensure the validity of the findings, the study applied the criteria of credibility through triangulation of sources, dependability with process audits, confirmability with supporting evidence, and transferability through detailed context descriptions.

The empirical research focuses on the Indonesian Engineers Association community, with specific locations in the Regional Representative Council Indonesian Engineers Association Aceh Province as a primary data source. Overall, the methodology applied is a strong mixed-method approach, combining normative studies and empirical investigations. This combination allows researchers to not only understand the legal basis of engineer registration certificates, but also diagnose gaps between legal theory and practice in the field, resulting in a comprehensive analysis and in-depth answer to the formulation of the problem

RESULTS AND DISCUSSION

The implementation of Law No. 11/2014 is still experiencing weaknesses, especially in socialization and understanding among engineers and the public.

The Engineer Registration Certificate has a central role in: Official recognition of the engineer's competence. Increased professionalism of engineers. Regulating engineering practices to be more responsible. There are obstacles such as lack of human resources, supporting infrastructure, and suboptimal law enforcement.

Nationally, only 35.65% of active engineers (31,799 out of 89,195 people) have an engineer registration certificate. A small number of them have international certifications (ASEAN Eng., APEC Eng., ACPE).

Survey Findings Most (436 people) know the Engineering Law, but only 321 people claim to understand it. The majority (426 people) agree that an engineer registration letter is necessary/mandatory for engineering graduates. However, the ownership of the engineer's own registration certificate is still low (only 211 respondents have). Many respondents (303 people) did not know or did not have an engineer registration certificate. Most (426 people) are aware of sanctions for those who practice without engineer qualifications.

The Central Management Board of the Indonesian Engineers Association consists of 34 Regional Management Boards of the Indonesian Engineers Association with 285 Branch Management Boards. The Regional Management Board of the Indonesian Engineers Association of Aceh Province has 726 members. Members of the Indonesian Engineers Association of Aceh Province consist of 356 people (48.93%) State Civil Apparatus Technical Institutions, 225 members (31.12%) Private Professionals/SOEs, and 145 (19.95%) lecturers/university employees.

Table 1. List of Aceh Provincial Engineer Certificate Holders

Code BK	Name BK	IPP			IPM			SHELL			IPP+IPM+IPU		
		Active	Inactive	Total	Active	Inactive	Total	Active	Inactive	Total	Active	Inactive	Total
1	Architectural Engineering	7	0	7	6	2	8	0	0	0	13	2	45
2	Electrical Engineering	8	5	13	15	13	28	6	1	7	29	19	144
3	Engineering Physics	1	0	1	1	3	4	3	0	3	5	3	24
4	Geodesy Techniques	0	0	0	1	0	1	0	0	0	1	0	3
5	Marine and Energy	3	0	3	2	1	3	0	0	0	5	1	18

6	Safety and Railway Engineering	0	0	0	1	0	1	1	0	1	2	0	6
7	Industrial Engineering	0	2	2	12	32	44	6	6	12	18	40	174
8	Chemical Engineering	3	3	6	17	7	24	4	2	6	24	12	108
9	Mechanical Engineering	18	16	34	16	10	26	1	0	1	35	26	183
10	Environmental Engineering	1	1	2	3	0	3	1	0	1	5	1	18
11	Petroleum Engineering	1	0	1	2	0	2	0	0	0	3	0	9
12	Mining Engineering	0	0	0	2	0	2	0	0	0	2	0	6
13	Civil Engineering	36	23	59	160	32	192	28	3	31	224	58	846
14	Materials Engineering	1	0	1	2	0	2	0	0	0	3	0	9
15	Marine	0	12	12	6	9	15	7	3	10	13	24	111
16	Metallurgical Engineering	0	0	0	0	0	0	0	0	0	0	0	0
17	Agriculture	3	1	4	6	0	6	4	0	4	13	1	42
18	Farm	0	0	0	0	2	2	4	1	5	4	3	21
18	Agricultural Industry	0	0	0	2	0	2	3	0	3	5	0	15
20	Informatics Engineering	2	0	2	2	0	2	0	0	0	4	0	12
21	Aerospace	0	0	0	0	0	0	0	0	0	0	0	0
22	Shipping Technology	0	0	0	0	0	0	0	0	0	0	0	0
23	Railways	2	0	2	0	0	0	0	0	0	2	0	6
24	Nuclear Engineering	0	0	0	0	0	0	0	0	0	0	0	0
25	Military Engineering	0	0	0	0	0	0	0	0	0	0	0	0
26	Marine Engineering	0	0	0	2	0	2	0	0	0	2	0	6
27	Biomedical Engineering	0	0	0	0	0	0	0	0	0	0	0	0
Total		86	63	149	258	111	369	68	16	84	412	190	1806

Based on data from the Central Board of the Indonesian Engineers Association, the number of active members throughout Indonesia is 89,195 people. Of the total number of active engineers in Indonesia, there are 31,799 holders of Engineer Registration Certificates, equivalent to 35.65% of all active members. Holders of Engineer Registration Certificates are divided into 3,396 ASEAN Eng. international certificate holders, 699 APEC Eng certificate holders, and 371 ACPE certificate holders.

This research was conducted by interview method and using questionnaires for graduates of bachelor of engineering, bachelor of applied engineering, and bachelor of science, and bachelor of engineering teacher education.

The respondents were 526 people, especially those spread across Aceh Province, both field workers who practice engineering, lecturers, and private employees.

The following are some of the questions asked to respondents and interviews:

- 1) Do you know and read about Law of the Republic of Indonesia No. 11 of 2014 concerning Engineering?;
- 2) Do you understand the Law of the Republic of Indonesia No., 11 of 2014 concerning Engineering.?;
- 3) Have you participated in the Engineer Professional Program Study Program?
- 4) Do you already have a Professional Engineer Certificate/Engineer Registration Certificate?;

- 5) Do you think it is necessary/mandatory for a bachelor's degree in Engineering to have a Professional Engineer Certificate/Engineer Registration Certificate?;
- 6) Did you know that there are administrative sanctions and criminal sanctions for a non-engineer who performs engineer activities according to Law of the Republic of Indonesia No, 11 of 2014 concerning Engineering.?

Based on interviews with respondents, the following results were obtained:

Table 2 Results of interviews and questionnaire preparation

Question Items	Answer	Number of Respondents	Percentage (%)
Do you know and read about Law of the Republic of Indonesia No. 11 of 2014 concerning Engineering?	Yes	436 people	82.89%
	Not	67 people	12.74%
	Don't Know	23 people	4.37%
Do you understand Law of the Republic of Indonesia No. 11 of 2014 concerning Engineering?	Yes	321 people	61.03%
	Not	59 people	11.22%
	Don't Know	146 people	27.76%
Have you participated in the Engineer Professional Program Study Program (PSPPI)?	Yes	429 people	81.56%
	Not	45 people	8.56%
	Don't Know	52 people	9.89%
Do you already have a Professional Engineer Certificate/Engineer Registration Certificate?	Yes	211 people	40.11%
	Not	12 people	2.28%
	Don't Know	303 people	57.60%
Do you think it is necessary/mandatory for an Engineering graduate to have a Professional Engineer Certificate /Engineer Registration Certificate?	Yes	426 people	80.99%
	Not	29 people	5.51%
	Don't Know	71 people	13.50%
Did you know that there are administrative and criminal sanctions for non-engineers who carry out engineer activities according to the law?	Yes	426 people	80.99%
	Not	46 people	8.75%
	Don't Know	54 people	10.27%

Table 2. The above results show that legal awareness is high, understanding is moderate: most (82.89%) know the law, but only 61.03% admit to understanding it. Higher Professional Education Participation: The majority (81.56%) have participated in Professional Engineering Study Program. Certificate Ownership Gap: There is a large gap between educational participation and the possession of an engineer's registration certificate. Only 40.11% own it, and as many as 57.60% don't even know the status of ownership. This is a critical finding. Support and Awareness of Strong Sanctions: The majority (80.99%) agree that the engineer registration letter is necessary/mandatory and knows that there are sanctions for violators

DISCUSSION

From the display of the graphs presented above, it can be seen that there are still many graduates of bachelor of engineering, bachelor of applied engineering, and bachelor of science, and bachelor of engineering teacher education who do not have a Professional Certificate/Diploma or have not participated in the Education of the Professional Engineer Program and do not have a Professional Engineer Certificate and Engineer Registration Certificate which is mandatory for professionals to practice engineering. This is because the comprehensive implementation of Law of the Republic of Indonesia Number 11 of 2014 concerning Engineering. In addition, obtaining a Professional Engineer Certificate and an Engineer Registration Certificate requires a relatively expensive fee. Law enforcement against violators of Law of the Republic of Indonesia Number 11 of 2014 concerning Engineering has not gone well. The socialization of Law of the Republic of Indonesia Number 11 of 2014 concerning Engineering has not been carried out massively. This is what graduates of bachelor of engineering, bachelor of applied engineering, and bachelor of science, and bachelor of engineering teacher education are reluctant to have a Professional Engineer Certificate and Engineer Registration Certificate. This is also because sanctions have not yet taken effect, both administrative sanctions and criminal sanctions firmly.

CONCLUSION

Based on the results of data analysis and discussion, several conclusions can be drawn as follows:

1) The Engineer Registration Certificate has a strategic function in the development of engineering practices in Indonesia. First, the engineer registration certificate functions as a formal recognition of competence, namely as written evidence issued by the Indonesian Engineers Association stating that an engineer already has a valid Competency Certificate. Second, the engineer registration certificate plays a role in increasing professionalism by ensuring that the engineer has adequate knowledge, skills, and experience. Third, the engineer registration certificate also serves to regulate engineering practices so that they can run more orderly, responsibly, and professionally. Fourth, the engineer registration certificate indirectly provides protection to the public from the potential for unprofessional or irresponsible engineering practices.

2) Based on these functions, an engineer registration letter also provides several significant benefits. Socially, engineer registration certificates can increase public trust in the engineering profession and the engineering services provided. In terms of service quality, the engineer registration certificate encourages the improvement of the quality of engineering services by ensuring that the engineers who carry out the work have met the set competency standards. On the internal side of the profession, the engineer registration certificate also contributes to the continuous improvement of the professionalism of engineers by ensuring that engineers retain and develop the knowledge and skills necessary in carrying out their profession.

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