

# **Government Policy in The Form of Providing Licensed Cadaster Surveyors to Support The Acceleration of Systematic Land Registration in Indonesia**

**MULYADI, Herjon PANGGABEAN, Agus W KUSHENDRATNO, and Deni SANTO, Indonesia**

**Keywords:** Licensed cadaster surveyor, systematic land registration, capacity building, professional practice, Indonesia

## **SUMMARY**

There are about 126 million land parcels in Indonesia. Currently, the Ministry of Agrarian Affairs and Spatial Planning / National Land Agency (BPN) has registered 67 million land parcels. Based on Indonesia's Medium-Term Development Plan, there is a national strategic program to register all land parcels by 2024 through the Complete Systematic Land Registration (PTSL) program. Acceleration has been carried out since 2017. However, BPN experiences a shortage of licensed cadaster surveyors. In addition, the application of competency standards and guidance to improve the quality control of licensed cadaster surveyors still needs to be improved. This paper aims to investigate the program for providing licensed cadaster surveyors to support PTSL. It employs an analysis of progress reports on the supply of licensed cadaster surveyors conducted by BPN. As of December 2019, there are 12,723 private licensed cadaster surveyors and 2,505 civil servant cadaster surveyors. Current monitoring and evaluation of licensed cadaster surveyors in Banten, West Java and Central Java who graduated from vocational education in 2019 shows that 100% of the cadaster surveyors have obtained licenses and 80% work in district land offices. Only a small number of the surveyor work in regional land offices and KJSKB. This paper suggested that improving competency standards, internal coaching by BPN (head office, regional land offices, and district land offices) and external coaching (professional associations and ethics council) will improve the competency standards of licensed cadaster surveyors. Important factors in improving competence and quality control are technical, juridical and administrative, all of which refer to Indonesian National Work Competency Standard (SKKNI Cadaster) and Indonesian National Qualification Framework (KKNI Cadaster). The BPN Human Resources Development Center (PPSDM) can take a role to improve the competency standards of the licensed cadaster surveyor by implementing e-learning based training. PPSDM can also be a center for competency testing, agrarian and spatial technical training, and other land administration training.

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## 1. INTRODUCTION

One of land issues listed in the 2015-2019 National Medium-Term Development Plan in Indonesia is the lack of legal certainty over land rights. Out of 126 million land parcels in Indonesia, 67 million land parcels have been registered (Kushendratno, 2019). Ministry of Agrarian Affair and Spatial Planning/National Land Agency (BPN) wants to complete the registration of the remaining 59 million land parcels by 2024. As shown in Figure 1, the Indonesian government increased the annual land registration target (from 1 million land parcels to 5 million land parcels) in 2017. Furthermore, the target in 2018 and 2019 also increased at 7 million and 9 million land parcels respectfully (BPN, 2020a). BPN established an acceleration program namely Complete Systematic Land Registration (PTSL), a first land registration which is carried out simultaneously for all objects of land registration in the entire territory of the Republic of Indonesia, in one village area or other similar name, which includes collection physical data and juridical data concerning one or several land registration objects for the purpose of land registration (BPN, 2018).

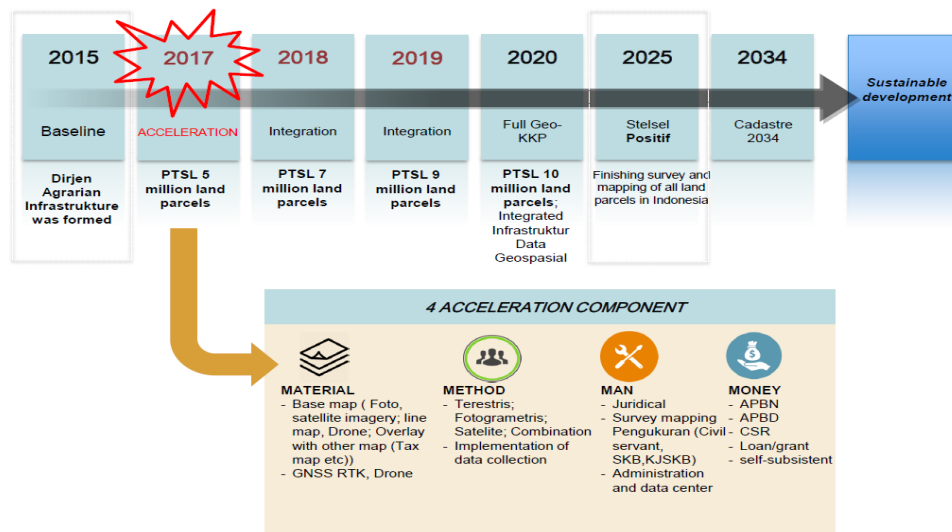


Figure 1. First land registration through PTSL as part of agrarian reform (BPN, 2017)

PTSL implementation requires 4 (four) supporting components, consisting of man, material, method, and money. The Directorate of Base Surveying and Mapping of BPN has an important role in accelerating the implementation of policies related to the preparation man component. It is related to the availability of sufficient human resources (especially cadaster surveyor) in terms of quantity and quality. Moreover, The directorate also has important role regarding the material component. It is related to the availability of supporting infrastructures, e.g. base maps,

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as well as survey and mapping equipment (BPN, 2020a). However, the acceleration of the land registration program in Indonesia is still constrained by the limited number of Human Resources (HR), especially land surveyors. In addition, HR competencies also still need to be improved. The existing cadaster surveyors have not met the ideal conditions in achieving the target of surveying and mapping for PTSL (BPN, 2019a).

This paper aims to investigate the program for providing licensed cadaster surveyors to support PTSL in Indonesia. It employs an analysis of progress reports on the supply of licensed cadaster surveyors conducted by BPN in all provinces in Indonesia. A question that arises is what are the competency standard requirements of licensed cadaster surveyors to support the acceleration of systematic land registration in Indonesia?

## **2. METHODS**

This paper presents the results of questionnaires and focus group discussions with officials at BPN responsible for cadaster surveying and mapping. The officials were randomly selected based on their availability and equal distribution of geographic representation. Three focus group discussions were conducted in three provinces (South Sulawesi, West Java, and East Kalimantan) and data collection was conducted in Bahasa Indonesian. The survey was carried out in conjunction with the civil servant and licensed cadaster surveyors training program conducted by the Directorate of Base Surveying and Mapping of the Director-General of Agrarian Infrastructure of the Ministry of BPN in the fiscal year 2019.

The questionnaires and focus group discussions were designed to investigate BPN officials' perceptions of licensed cadaster surveyors and to identify the standard competency that was perceived as needing improvement in support of PTSL in Indonesia. This paper is part of the research that explores the relationship between licensed land surveyors and the acceleration of land registration in Indonesia. Although this paper is focused more on licensed cadaster surveyors, a few aspects of the relationship between Indonesian National Work Competency Standard (SKKNI) cadaster and Indonesian National Qualification Framework (KKNI) cadaster survey are also discussed.

## **3. LICENSED CADASTER SURVEYORS TO SUPPORT PTSL**

### **3.1. Current land administration projects in Indonesia**

The current land administration projects require many cadaster surveyors. They will do surveying and mapping for first land registration (PTSL), land redistribution, land consolidation and land acquisition as shown in Figure 2.

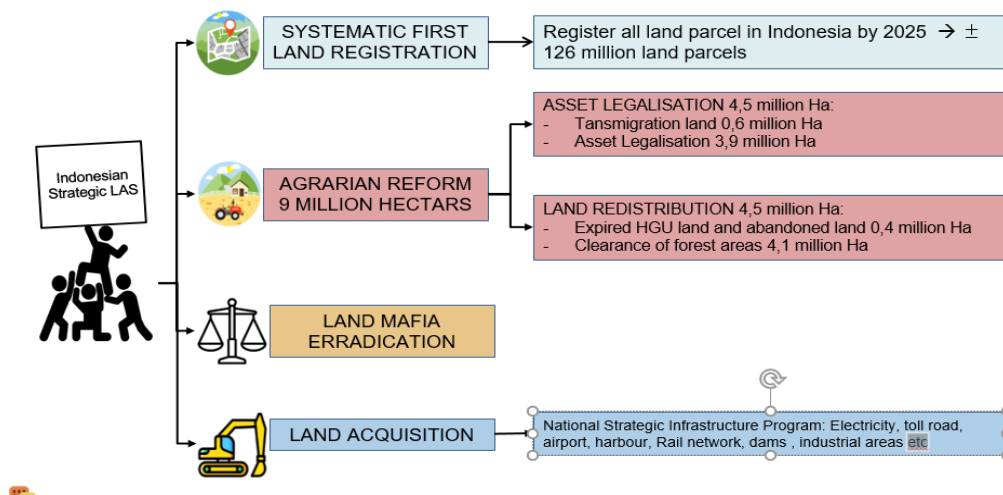


Figure 2. Current land administration projects in Indonesia (BPN, 2017)

The availability of civil servant land surveyors of  $\pm 2,000$  is very insufficient to deliver land registration and other land administration program in Indonesia.

Tabel 1. Number of required cadaster surveyors (Kushendratno, 2019)

Year	The target of land parcel in PTSL	Required cadaster surveyors
2017.	5 million	5,000
2018	7 million	7,000
2019.	9 million	9,000
2020.	10 million	10,000
2021	10 million	10,000
2022	10 million	10,000
2023	10 million	10,000
2024	11 million	11,000

As shown in Tabel 1, the target of PTSL in 2019 is 9 million land parcels. Moreover, there were targets from land redistribution ( $\pm 350,000$  parcels), land consolidation (9,330 parcels), routine land registration (1,200,000 parcels) and world bank (50.000 parcels) (Kushendratno, 2019). It is assumed that 1 (one) land surveyors can survey 1.000 land parcels/year, so BPN needs approximately 10.000 land surveyors (BPN, 2020a). Therefore, BPN needs support in the form of private licensed cadastral surveyors.

Directorate of Base Surveying and Mapping has actively collaborated with some stakeholders regarding cadaster surveyor. Table 2 below shows the scheme for providing licensed cadaster surveyors in 2019. Until 2019, 24 (twenty-four) Memorandum of Understandings have been signed between BPN and 3 (three) ministries, 2 (two) institutions, and 20 state and private universities.

Table 2. Scheme for providing licensed cadaster surveyors (BPN, 2020b)

No	Possibility to recruit land surveyors in 2019	Number
1	Cooperation with the Ministry of Manpower (12 Job training centre x 48 person)	576
2	Cooperation with the Ministry of Education (68 vocational High School Geomatica x 20 person)	1.360
3	Cooperation with the Army topographic service (15 location x 5 person)	75
4	Cooperation with local government (2 districts x 40 person)	80
5	Geodesy/Geomatica alumni undergraduate (50 % x 1000 person)	500
6	Diploma 1 graduate of the National Land College	450
Total recruitment plan for land surveyors		3.041

### 3.2. Licensed cadaster surveyors

Minister of Agrarian Affairs and Spatial Planning / Head of the National Land Agency (BPN) appoints and may dismissed Licensed Cadaster Surveyor (SKB). As partner of BPN, SKB consists of the Cadaster Surveyor (SK) and the Assistant Cadaster Surveyor (ASK). Cadaster Surveyors work in the field of cadaster surveying and mapping for land registration and they responsible before the law for the surveying and mapping data generated. A Cadaster Surveyor can supervise the work of a Licensed Surveyor Assistant.

There are two mechanism to carry out cadaster surveying and mapping of PTSL, namely Self-Management and Third Party as shown in Figure 3. Civil servant land surveyors as well as licensed cadaster surveyors (SKB) may implement self-managed work. Third Parties can also carry out surveying and mapping surveys, namely by Licensed Cadaster Survey Service Offices (KJSKB) or Surveying and Mapping company as well as geospatial information company (Corporate Legal Entity) (BPN, 2019b).

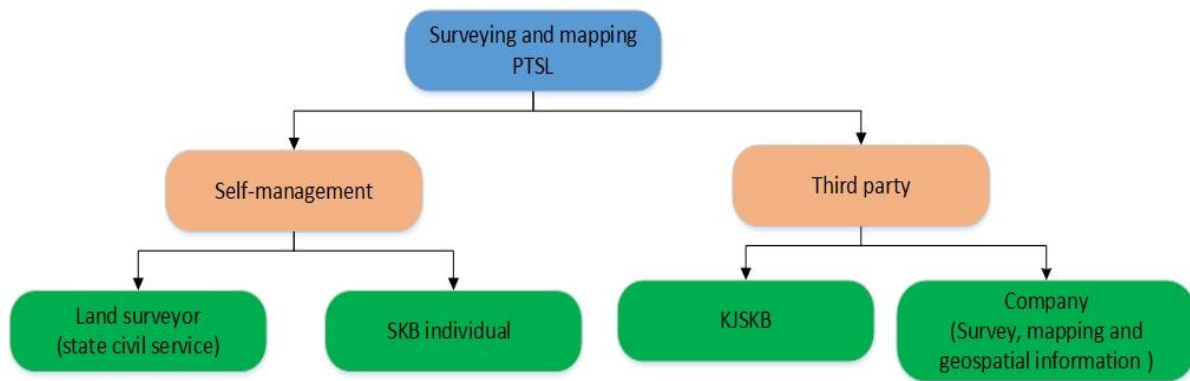


Figure 3. The mechanism for Cadaster surveying and mapping activities (BPN, 2019b)

As shown in Figure 4, there were 12,723 licensed cadaster surveyors (2,209 cadaster surveyors and 10,514 cadaster surveyor assistants), while the civil servant cadaster surveyors are 2,505.

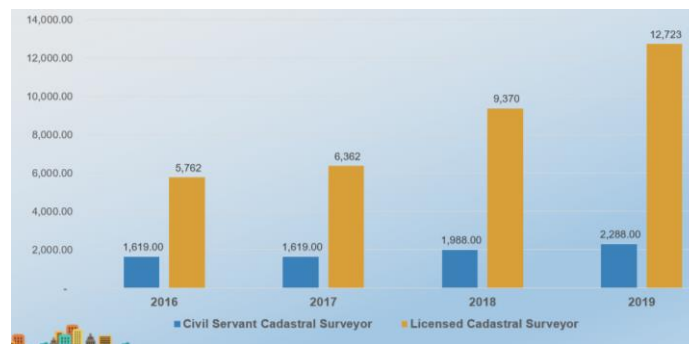


Figure 4. Number of civil servant land surveyor and private licensed cadaster surveyor (Kushendratno, 2019)

By 2019, there are 175 Licensed Cadaster Survey Service Offices (KJSKB) in 26 provinces (Kushendratno, 2019). Monitoring and evaluation of licensed cadaster surveyors in Banten, West Java, and Central Java Provinces (who graduated from vocational education in 2019) shows that 100% of the land surveyors have obtained licenses and 80% work in land offices. Only a small number of cadaster surveyor work in regional land offices and KJSKB (Kushendratno, 2019).

### 3.2.1 Proposed mechanism to recruit licenses cadaster surveyors

As shown in Figure 5, BPN has designed training or short education with a predetermined curriculum within the Ministry. After attending the training, participants will receive a certificate of surveying and mapping. Moreover, internships also implemented in BPN Regional Office or District Land Office. After having surveying and mapping skills and experience, the Head of the Regional Office of the National Land Agency (BPN) or the Head of the Land Office can issue a certificate and recommendation to the person concerned to be able to take the licensing examination in BPN.

Moreover, graduates/alumni of non-geomatics high school and vocational / mapping survey who have surveying and mapping working experiences at the KJSKB or the Company's Legal

Entity can also obtain a work experience certificate signed by the KJSKB Leader or the Company's Legal Entity. Thus, high school or vocational non-geomatics / Mapping Survey graduates who already have training Certificate in Surveying and Mapping in BPN; or internship certificate at BPN Regional Office or Land Office; or certificate of work experience at KJSKB or the Company's Legal Entity can be appointed as a Cadaster Assistant Surveyor after passing the licensing exam in BPN.

Short education/training of surveying and mapping within BPN can be held at the BPN's Office ; Education and Training Center of Ministry of Manpower; National Land College (STPN); or BPN Regional Offices throughout Indonesia.

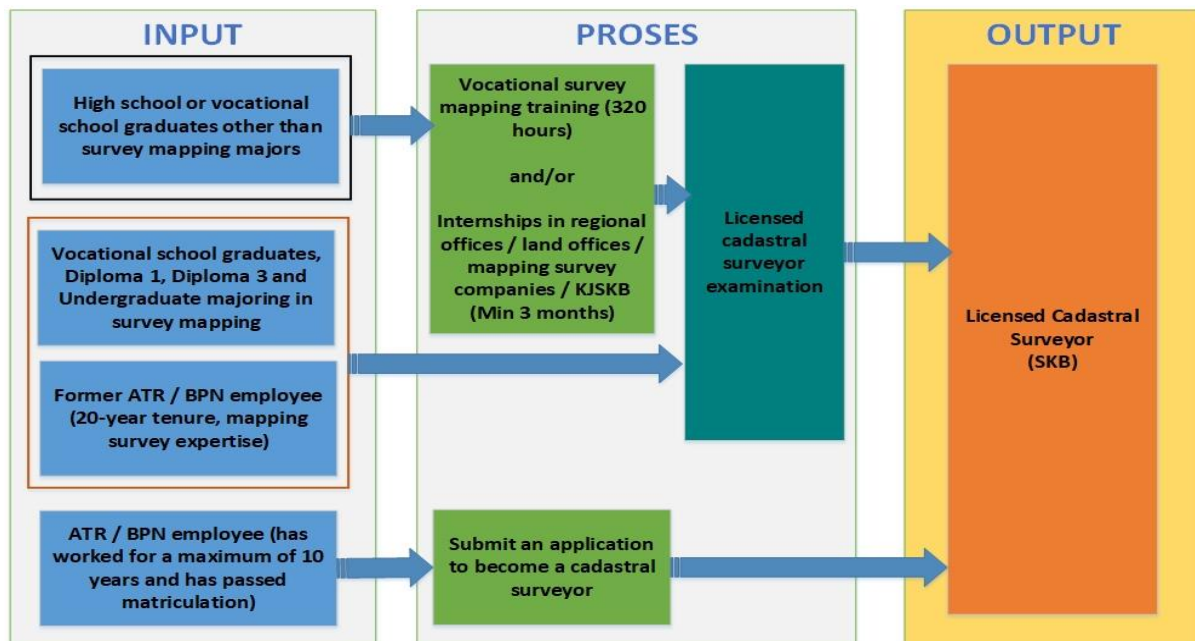


Figure 5. The proposed mechanism to recruit licenses cadaster surveyors (Adopted from BPN, 2020a; Perkasa, 2019)

### 3.3. Education and training to become assistant cadaster surveyor

Due to the lack number of cadaster surveyors, BPN has initiated to recruit thousands of qualified cadaster surveyors. It is important, as the target of PTSL in the coming years will be even higher (10 million land parcels in 2020 and 2021 respectively).

#### 3.3.1 Training Survey and Mapping through Vocational Program

The need for 3,000 SKB per year cannot be fulfilled by the National Land College (STPN) which only graduates 400 SKB candidates per year (BPN, 2020a). Therefore, recruitment of cadaster surveyor candidate by BPN is carried out in collaboration with several agencies, including The Ministry of Manpower (through the Center for Vocational Training), the Ministry of Education and Culture (through the Vocational High School majoring in Geomatics), and State and Private Universities that have geodetic studies programs or geomatics. In addition, the Coordinating Ministry for Economic Affairs initiated a vocational program to provide non-civil servant land surveyors at BPN through surveying and mapping training.

The Directorate of Base Surveying and Mapping organized the vocational training program as stated on the Decree of the Minister of Agrarian Affairs and Spatial Planning / Head of BPN Number: 144 / KEP-4.1 / II / 2018 dated February 21, 2018. The main aim is to encourage the fulfillment of the quality and quantity requirements of the surveyors in the context of accelerating land registration. It provides the opportunity for the private sector or the community to actively participate in surveying and mapping activities as a Cadaster Assistant Surveyor (ASK), especially those who come from Non-Geomatics Vocational High Schools and Vocational High Schools (BPN, 2019a).

The curriculum and training modules for surveying and mapping of vocational program, as well as the Training of Trainers (TOT), were prepared by the Directorate of Base Surveying and Mapping, The BPN Human Resource Development Center (PPSDM), the National Land College (STPN), and related technical directorates. The activity output consists of 11 (eleven) Survey and Mapping Field Training Modules, and 6 (six) TOT Modules (BPN, 2020a).

The BPN Human Resources Development Center (PPSDM) can take a role to improve the competency standards of the licensed cadaster surveyor by implementing e-learning based training. PPSDM can also be a center for competency testing, agrarian and spatial technical training, and other land administration training.

### **3.4 License for cadaster surveyor**

License is the delegation of authority granted by the Minister of Agrarian Affairs and Spatial Planning (BPN) to the Cadaster Surveyor and Assistant Cadaster Surveyor to assist BPN in organizing the acceleration of land registration (Kushendratno, 2019). The process of license services (given by Directorate of Base Surveying and Mapping) consists of examination activities, appointment through a Ministerial Decree and inauguration in each Provincial Regional Office of BPN (BPN, 2020). License is given to prospective Licensed Cadaster Surveyor (SKB), both Cadaster Surveyors (SK) and Licensed Surveyor Assistants (ASK), who want to get the authority to carry out cadaster survey work by taking a licensing examination held at the Provincial BPN Regional Office (BPN, 2020a).

Granting of the license has been done massively since 2017 (Kushendratno, 2019). SKB license exam participants have a background in geodetic or geomatics disciplines obtained through various education (colleges and vocational study programs of geodesy or geomatics) as well as training (vocational training, Ministry of Manpower and Regional Government cooperation). Nationally, the number of SKB up to the end of 2019 is 12,723 surveyors: consisting of 2,209 SK and 10,514 ASK (BPN, 2020a).

### **3.5. The competency standard requirements of licensed cadaster surveyors**

#### **3.5.1. Indonesian National Work Competency Standard (SKKNI) cadaster**

Competency certification proves the cadaster surveyor's competency. It requires competency standards in its implementation (Kushendratno, 2019). The work competency standards of cadaster cover aspects of knowledge, skills and / or expertise as well as work attitudes that are relevant to the implementation of the duties and conditions of the position, hereinafter referred to as Indonesian National Work Competency Standard (SKKNI) (MoM, 2019). Definition of work competency in SKKNI is adopted from Indonesia labor Law (GOI, 2003).



Cadaster Surveyors who have competency certificates based on the SKKNI cadaster should be able to carry out the objectives of cadaster surveying and mapping job. There are indicators under certain conditions to be considered: able and willing to do a job, according to the specified volume and dimensions, meet quality standards, completing work in a specified time (MoM, 2019).

The results of the cadaster surveying and mapping are the absolute personal responsibility of each Cadaster Surveyor. This indicator is important to ensure the quality of the cadaster surveyor, namely clear, straightforward, and measurable (to measure labor productivity) (MoM, 2019). The preparation of the SKKNI has commenced in April 2019 with the issuance of the Decree of the Minister of Agrarian Affairs and Spatial Planning / Head of the National Land Agency Number 351 / Sk-300.PU.04.01 / IV / 2019 concerning the Determination of the Implementation Team for the Preparation of National Work Competency Standards (SKKNI) Cadaster (MoM, 2019). The SKKNI cadaster drafting team consists of the standards committee, formulation team, and verification team.

The SKKNI cadaster is stipulated by Decree of the Minister of Manpower Number 295 of 2019 dated October 10, 2019 (MoM, 2019). As shown in Figure 6, there are 47 competency units in SKKNI cadaster as basis and reference for competency-based management and development of cadaster surveyors (MoM, 2019).

The implementation of SKKNI will require:

a. Development of cadaster competency-based training

Cadaster Competency Base Training (CBT) is training in which the objectives, qualifications, contents, processes and assessments and recommendations refer to and are oriented to the SKKNI Cadaster. BPN will use the SKKNI Cadaster to prepare the curriculum and syllabus, training modules, training methods, criteria and assessment materials, as well as other similar uses.

b. Development of cadaster competency certification

Cadaster competency certification is the process of awarding cadaster competency certificates. The SKKNI Cadaster is the reference for the systematic, objective, accountable, measure and traceable certification.

The function of competency certification is to ensure and maintain competence in accordance with SKKNI. The SKKNI is the reference to implement competency assessment objectives and materials, determining the competency assessment method, the graduation criteria and the certification scheme.

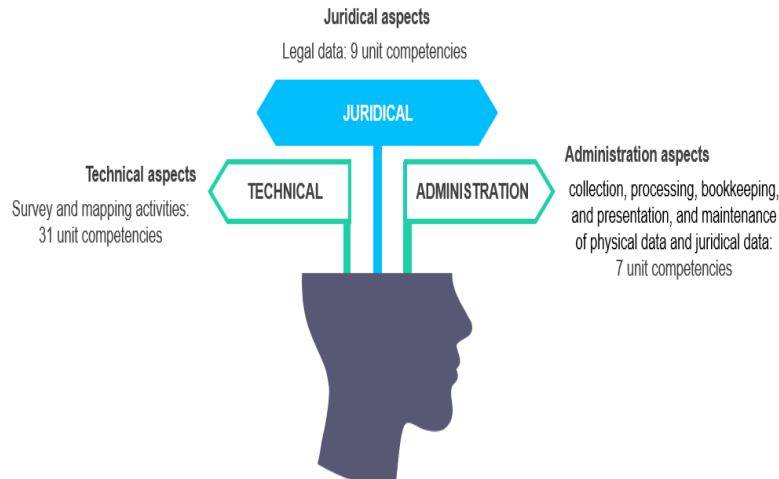


Figure 6. Unit competencies in SKKNI Cadaster (Adopted from Perkasa, 2019)

### 3.5.2. Indonesian national Qualification Framework (KKNI) cadaster

As discussed in section 3.5.1, the national reference in the preparation of national qualification levels, the implementation of professional education and training, competency tests and professional certification is SKKNI Cadaster.

Currently, The Minister of Agrarian and Spatial Planning / Head of the National Land Agency (BPN) establishes the Indonesian National Qualification Framework (KKNI) for the Cadaster Survey in 2020 as shown in Figure 7 below.

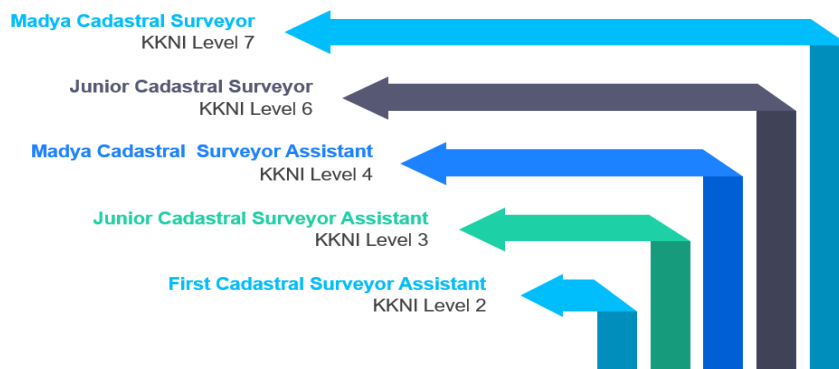


Figure 7. KKNI Cadaster (Adopted from Perkasa, 2019)

KKNI cadaster consist of 5 level/grade, starting from assistant surveyor cadaster pratama (level 2/lowest) to cadaster surveyor madya (level 5/highest). KKNI is a framework of competency qualification grade that can equalize and integrate: education and work training, as well as work experience in the context of providing recognition of work competencies in accordance with the work structure in various sectors (MoEC, 2014).

### 3.5. Questionnaire and FGD Results

#### 3.5.1. Licensed land surveyors questionnaire survey

Analysis of the questionnaire survey in 2019 shows that 53% of BPN employees (158 out of 298) stated that their land offices lack of Assistant Cadaster Surveyors (ASK). The majority of employees (60%) suggested to increase the number of ASK through vocational education. According to them, mentoring (97%) as well as technical guidance to ASK who graduate from vocational education is needed (93%).

The Figure 8 below shows that the majority (above 50%) of assistant cadaster surveyors in land office have average capability in 6 (six) categories: operating survey tools, preparing work maps, depicting survey data and operating land information systems at the land office (Geo-KKP).

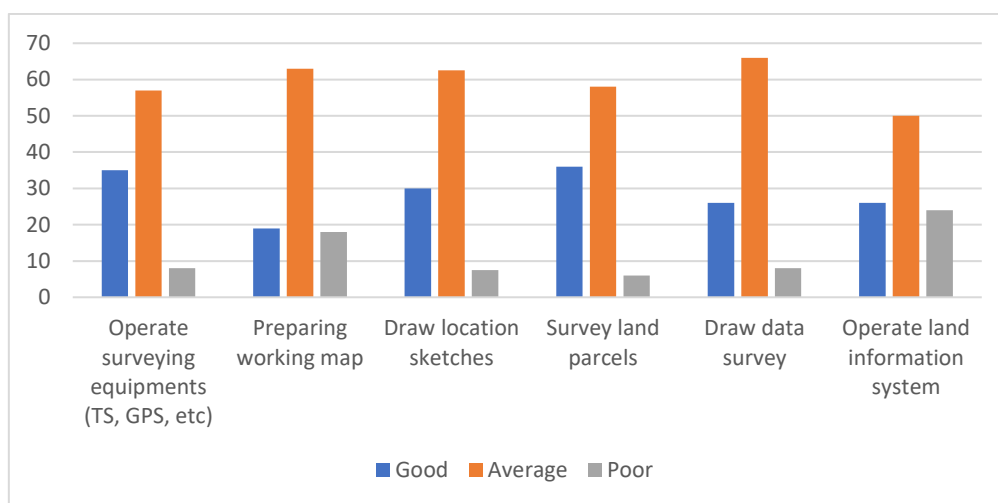


Figure 8. Required skill by assistant land surveyors in the land office

The majority of BPN's employees (89%) stated that the ASK should obey the rules and discipline that apply in the land office. It is important to work together as a team (97%) and the ability to follow the Standard Operating Procedure (90%).

Figure 9 shows the results from the question: "What are the obstacles encountered in the use of ASK vocational graduates in the land office?" It is identified that there are 3 (three) main problems namely lack skill (32%), lack of adaptation (20%) and lack of discipline (18%).

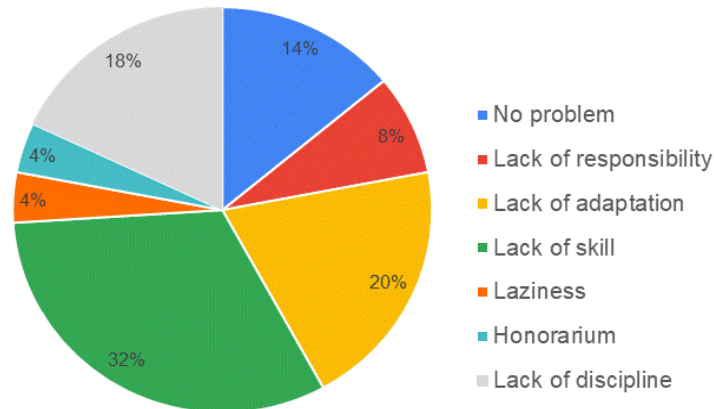


Figure 9. Problems in utilizing licensed surveyors who graduates from vocational education

During FGDs, it is suggested that in order to overcome the challenges, the majority (79%) of BPN employees suggested special mentoring for assistant land surveyors, updating juridical/legal knowledge as well as surveying/mapping skills.

The employees also suggested several improvements towards the continuation of vocational education. Most employees (78%) suggested an increase in the quality of vocational education implementation (duration, participant selection, education curriculum, practicum facilities). In addition, further training needs to be added, coupled with a continuous process of monitoring and evaluation of ASK performance.

In the FGDs, respondents suggest a guidance for cadastral surveyors. Head of the Sub-directorate of Basic Mapping and Guiding Surveyors provides guidance for conducting monitoring, evaluation, and reporting on surveyor guidance in accordance with Minister of BPN Regulation No. 8/2015. Moreover, in the BPN Regional Office, guidance is carried out by the head of the land infrastructure sector: in the form of coordination and coaching to the technical team, surveyors, and thematic mapping officers at the Land Office in the region in accordance with Minister of BPN Regulation No. 38 of 2016. In addition, the head of the land infrastructure section at the land office also carries out training for technical personnel, surveyors, and thematic mapping officers in accordance with Ministerial Regulation No. 38 of 2016.

No less important is external coaching. The first is coaching by professional associations, which is evaluating the performance of members of the association. The second is coaching by the ethics council. It can give verbal or written reprimands to licensed cadaster surveyors suspected of having committed violations code of ethics..

#### 4. DISCUSSION AND CONCLUSION

This paper investigated the program for providing licensed cadaster surveyors to support PTSL in Indonesia. There are 12,723 licensed cadaster surveyors and 2,505 government cadaster surveyors. In addition, there 175 Licensed Cadaster Survey Service Office (KJSKB) in 26 provinces. This illustrates that for private and government cadaster surveyors in Indonesia,

optimizing cadaster surveyors to support national strategic programs in the land sector under agrarian reform programs (PTSL, land redistribution, land consolidation, transmigration, and land acquisition) are key concerns. A key element of this concern is the need for competency standards and a qualification framework for the cadastral surveyor profession in Indonesia

Monitoring and evaluation of assistant cadaster surveyors (who graduated from vocational education in 2019) in Banten, West Java, and Central Java Provinces shows that 100% of the land surveyors have obtained licenses and 80% work in land offices. Only a small number of cadaster surveyor work in regional land offices and KJSKB. A key issue for BPN policy is to ensure that the existence of licensed cadaster surveyor, which has the technical competence of surveying, and mapping, legal and administrative knowledge, to contribute towards the acceleration of the land registration program.

BPN has designed vocational training or short education to recruit assistant land surveyors. Graduates/alumni of non-geomatics high school and vocational / mapping survey who have surveying and mapping working experiences at the KJSKB or the Company's Legal Entity can also obtain a work experience certificate signed by the KJSKB Leader or the Company's Legal Entity. Thus, high school or vocational non-geomatics / Mapping Survey graduates who already have training Certificate in Surveying and Mapping in BPN; or internship certificate at BPN Regional Office or Land Office; or certificate of work experience at KJSKB or the Company's Legal Entity can be appointed as a cadaster assistant surveyor after passing the licensing exam in BPN. Licensing is the delegation of authority granted by the Ministry of Agrarian Affairs/BPN to assist BPN in organising the acceleration of land registration

This paper suggested that improving competency standards, internal coaching (by ATR/BPN head office, ATR / BPN regional land offices, and ATR/BPN district land offices) and external coaching (professional associations and ethics council) would improve the competency standards of Cadaster surveyors. Based on Indonesia National Work Competency Standard (SKKNI) cadaster, the competency standard including 47-competency unit: 47 technical competencies, 9 juridical competencies and 7 administrative / governance / managerial competencies.

Currently, BPN is planning to establish the Indonesia National Qualification Framework (KKNI) cadaster survey. It is a framework of competency qualification grade (5 level of qualification) for cadaster surveyors and it provides recognition of work experiences, training/education in accordance with their work structure. SKKNI and KKNI are the base for cadaster's competency certification. It is the activity of a professional certification body in determining that a person meets the certification requirements, which include registration, assessment, certification decisions, and maintenance of certification, recertification, and use of certificates or logos or markers.

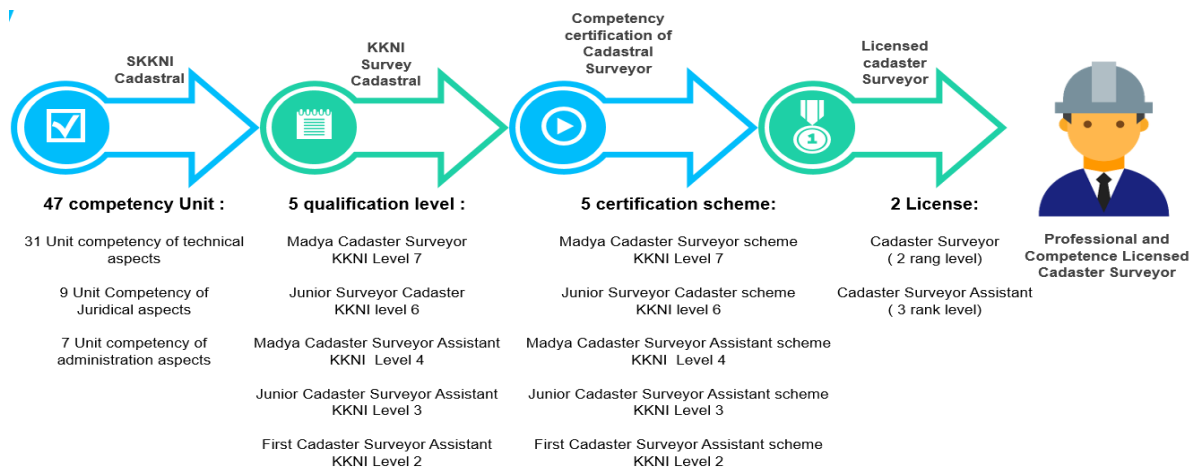


Figure 10. Milestone of professional and competence licensed cadaster surveyor (Adopted from MoM, 2019; Perkasa, 2019)

As shown in Figure 10, the cadaster survey certification plan is carried out in several stages, namely the establishment of the SKKNI, the establishment and determination of the KKNi, the socialization and technical guidance for cadaster surveyors, the preparation of the Professional Certification Institution (schemes, assessors, and competency test sites), competency certification trials, evaluation of certification trials, and certification implementation. The BPN Human Resources Development Center (PPSDM) can take a role to improve the competency standards of the licensed cadaster surveyor by implementing e-learning based training. PPSDM can also be a center for competency testing, agrarian and spatial technical training, and other land administration training.

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Government Policy in the Form of Providing Licensed Cadastral Surveyors to Support the Acceleration of Systemic Land Registration in Indonesia (10549)

Mulyadi Mulyadi, Herjon C M Panggabean, R Agus Wahyudi Kushendratno and Deni Santo (Indonesia)

FIG Working Week 2020

Smart surveyors for land and water management

Amsterdam, the Netherlands, 10–14 May 2020

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