# Organizational Learning, Building and Sustaining Core Competencies:

# Knowledge Management Initiatives on Inspection and Regulatory Enforcement in BAPETEN Indonesia

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**Abstract**

Regulatory inspection and law enforcement are one of core competencies of the Indonesia Nuclear Energy Regulatory Agency (BAPETEN). Knowledge Management (KM) initiatives are based on strategic planning of BAPETEN. KM in BAPETEN is in early stage, it is realized since 2015-2016, although its elements have been stayed along since 18 years in service. Its architecture & performance informationare: to conduct risk based inspection for medical,industrial,and research facilities; to plan, monitor and evaluation of effective inspection, including SOPs;to utilize inspectors for safety-security of radiation sources along with coordination with related stakeholders;enforcingthe safety and security facilities report tousers;to optimise reliable data communication, processing and information technology (B@LIS); to perform regulatory enforcement along with other related stakeholders. Process of KM through SECI model. Technical knowledge for inspectors are based on IAEA-TECDOC-1526 plus supporting knowledge. With KM, innovation products can easily be used, because they are documented, distributed in KM portal & knowledge sharing in BAPETEN website, B@LIS database and others. Our challenge is that KM initiatives still need a tremendous effort,not only internally,but also externally,especially in coordination and collaboration. Information accesses bring about not only positive but also negative impacts. Innovations that happens in regulatory inspection and law enforcement in BAPETEN are planned innovations, sustained, and sistematically performed.

**Keywords:**BAPETEN, knowledge management initiatives, regulatory inspection and law enforcement, B@LIS

1. **Organizational Context**

BAPETEN is the only nuclear energy regulatory body in Indonesia. Based on Act Number 10 of 1997[1], BAPETEN is empowered to perform rulemaking, licensing and regulatory inspection (also law enforcement). BAPETEN has role and function to carry out regulatory inspection and law enforcement for radiation facilities and radiation sources in Indonesia. They consist of medical, industrial, and research facilities that utilize ionizing radiation sources, such as diagnostic radiology, radiotherapy, nuclear medicine, radiation logging, radiation gauging, irradiators, industrial radiography, etc. These role and function are core competencies of the Agency. It is our obligation to maintain and sustain them for the shake of best performance of regulatory system.

All of the KM activities in BAPETEN refer from the BAPETEN KM Guidebook which content of KM Blueprint & KM Road Map for 5 year (2015 – 2019), develop from the result of KM Readiness survey of BAPETEN[2]. KM in BAPETEN is in early stage, it is realized in 2015-2016, although its elements have been stayed along since 18 years in service. There are 2 (two) big issues to drive knowledge management (KM) initiative, not only external but also internal factors. The number of our clients or users are 3,314 licensees distributed in 35 provinces accross the country, with 12,465 licences[3]. After 18 years in service, BAPETEN experiences knowledge gaps among senior and junior inspectors. These lead also to start knowledge management initiative since 2015-2016.

In relation to knowledge management, authors would like to explain and analyse the innovation products which have to be preserved in regulatory inspection and law enforcement activities. Authors hope that these initiatives can also benefits to individual and organisation, users including radiation protection officers, patients also general public. Because, one of nuclear regulatory goal as state in the Act that is to ensure safety and health of workers, public, and environmental protection.

1. **Objectives**

To overview on knowledge management initiatives of regulatory inspection and law enforcement on radiation facilities and radiation sources in BAPETEN Indonesia.

1. **Description of the KM Initiatives**
	1. **Direction of Policy and Strategic**

In order to achieve strategic targets, vision and mission of BAPETEN in period of 2014-2019, it has been established strategic policy as the steps for arranging performance indicators.Based on this, the architecture and perfomance information of program and activities in inspection and regulatory enforcement for radiation facilities and activities are as follow[3]:

1. to conduct risk graded approach based inspection for medical, industrial, and research facilities;
2. to enhance planning, monitoring and evaluation of efective inspection, including developing procedures and working instructions;
3. to utilize human resources inspectors for safety and security of radiation sources optimally along with coordination to related stakeholders;
4. enforcing in place, the safety and security facilities report toward all users;
5. to utilize reliable data communication, processing and information technology (B@LIS);
6. to perform regulatory enforcement along coordination with other related stakeholders, such as police departments, attorney office and justice office.

**3.2. KM Process**

KM initiatives on inspection and enforcement activities can be described using KM model (SECI for Socialization, Externalization, Combination, Internalization) which considers a spiralling knowledge process interaction between explicit knowledge and tacit knowledge[[4]](file:///C%3A%5CUsers%5CI%20fell%20Free%5CDocuments%5CBeta%5C2016%5CIAEA%202015-2016%5CConference%20on%20Knowledge%20Management_7-11Nov2016%5CKnowledgeManajemen%5CKnowledge%20management%20-%20Wikipedia%2C%20the%20free%20encyclopedia.htm#cite_note-38Nonaka-33) as indicated in Figure 1. In this model, knowledge follows a cycle in which implicit knowledge is 'extracted' to become explicit knowledge, and explicit knowledge is 're-internalized' into implicit knowledge.



Figure 1 :The Knowledge Spiral as described by Nonaka& Takeuchi[[4]](file:///C%3A%5CUsers%5CI%20fell%20Free%5CDocuments%5CBeta%5C2016%5CIAEA%202015-2016%5CConference%20on%20Knowledge%20Management_7-11Nov2016%5CKnowledgeManajemen%5CKnowledge%20management%20-%20Wikipedia%2C%20the%20free%20encyclopedia.htm#cite_note-38Nonaka-33).

A simple idea, combined with creative process, resulting an extraordinary inovation. Inovation is a result of the process. Simple method of inovation through Observe, Imitate, Modify (OIM) or enhance previous model to create value added. Systematic process of innovations usually through:

* Preparation and problem identification;
* Establish objectives of innovation, identify the problems and challenges to achieve goals;
* Finding as many as ideas (divergence), then incubate them;
* Produce innovations and implement them.

**3.3. KM Tools**:

Collaborative environments such as communities of practice or the use of social computing tools can be used for both knowledge creation and transfer [5]. With KM, an organization can identify what knowledge needed to produce innovation for smart team. Because innovation process needs collaboration. With KM, innovation products can easily be used, because they are documented and distributed in KM portal & knowledge are shared in BAPETEN intranet and website. Table 1 shows identification of KM initiatives based on activities and output in regulatory inspection and law enforcement.

Table 1.Identification of KM Initiatives based on Activities and Outputs

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Activity** | **Output/Target/****Performance Indicator** | **KM Initiatives,** **Task, Event** |
|  | a.To conduct risk graded approach based inspection for medical, industrial, and research facilities | Coverage of inspection to 1100 users across the country in 2016; 3300 users in 2017-2019 | * Guidelines of performing inspection for medical, industrial, and research facilities
* Standard Operational Procedure for preparation, conduct and monitoring of inspection follow-up.
* Electronic filing system (ELFIS)
* Inspection information system for medical, industrial, and research facilities, integrated with lisencing information system
* e-Inspection (online users self-assessment, which they can input data in BAPETEN website)
 |
| b.Tacit knowledge transfer from senior to junior inspectors to do inspection and enforcement c.Composition of team building | To enhance competence of 39 junior inspectors and 22 trainee inspectors | * Conducting inspection together among seniors, juniors and trainee inspectors
* Organizing event for Inspector Coordination Meeting for sharing knowledge and experience (twice a year)
* To supervise junior and trainee inspectors for regeneration issue.
 |
|  | Development of Inspection System  | Evaluating and monitoring the inspection follow-up.(Inspection follow-up documents evaluated 100%) | * Guidelines for evaluating and monitoring the inspection follow-up
* Information system for evaluating and monitoring the inspection follow-up
* e-Valuation of BAPETEN Safety & Security Awards
* e-Users Radiation Safety Report
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| SOP and Inspector Valuation Team | Finalize and enforce the SOP/Guidelines for Inspector Valuation Team |
|  | Regulatory enforcement in medical, industrial, and research facilities. | Regulatory enforcement documents and reports. * 18 facilities had been brought to justice in 2012-2015
* 8 facilities being brought to justice in 2015-2016.
 | * Guidelines / SOP for regulatory enforcement in medical, industrial, and research facilities.
* Storytelling and online regulatory enforcement report for sharing knowledge.
* Information system for regulatory enforcement in medical, industrial, and research facilities integrated to licensing information system
 |
| To enhance/refresh 74 inspectors’ understanding regarding regulation of radiation facilities and activities | * Focus Group Discussion of Nuclear Regulation in BAPETEN
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Knowledge Management is mastering the information and knowledge environment and working knowledge: how organizations manage what they know. To conduct risk based inspection means that radiation facilities and activities of the users are divided into high, medium and low risk. These risk categories will determine the period of inspection. Low risk facilities such as radio diagnostic interventional, and gauging inspected every 3-4 year. High risk such as radiotherapy, nuclear medicine, and industrial radiography inspected every year. KM in inspection, BAPETEN established guidelines, SOPs, decision support system (DSS, i.e. integrated inspection-licensing information system, electronic filing system (ELFIS), and e-inspection).

BAPETEN currently has 13 senior inspectors, 39 junior inspectors, and 22 trainee inspectors. There are competencies gaps among seniors and juniors. Gaps among seniors and juniors can be minimize through tacit knowledge transfer from senior to junior inspectors to do inspection dan enforcement as well as composition of team building are essential in KM. KM initiatives are organizing event for Inspector Coordination Meeting for sharing knowledge and experience (twice a year), also to supervise junior and trainee inspectors for regeneration issue. The target is to enhance competence of 39 junior inspectors and 22 trainee inspectors. KM activities are recorded in documents, reports, in the BAPETEN intranet, B@lis (BAPETEN Licensing and Inspection System) and website.

KM initiatives in development of inspection system are availability of procedures and guidelines related to evaluating and monitoring the inspection follow-up, information system as DSS for e-Valuation of BAPETEN Safety & Security Awards and e-Users Radiation Safety Report.

Regulatory enforcement is important for BAPETEN. KM aspects in regulatory enforcement are documents and reports related to it. They are documents and reports of 18 facilities that had been brought to justice in 2012-2015 and 8 facilities which being brought to justice in 2015-2016. These KM aspects of this activity are to develop Guidelines / SOPs for regulatory enforcement in medical, industrial, and research facilities, also storytelling and online regulatory enforcement report for sharing knowledge. For DSS purposes, BAPETEN will build information system for regulatory enforcement in medical, industrial, and research facilities integrated to licensing information system. Another thing considered to be done is to enhance/refresh 74 inspectors’ knowledge and understanding regarding regulation of radiation facilities and activities. In this case, it will be arranged Focus Group Discussion of Nuclear Regulation in BAPETEN.

Inspectors are also to be provided with technical knowledge based on IAEA-TECDOC 1526[6], page 9, Qualification and Training of inspection personnel), plus knowledge of:

|  |  |
| --- | --- |
| * Investigation
* Dicipline
* Interview skill
* Efective communication
* Regulatory enforcement process
* Prosecution
 | * Observation
* Inspection management
* Risk management
* Management of conflict
* Self-assessment & independent assessment
* Internalisation of organisation in performing inspection
 |

1. **Major challenges and achievements**

We are on the early stage of the KM process. On the first stage, KM initiatives need a tremendous effort, not only internally, but also externally. We should address them carefully, especially in a matter of coordination for collaboration. We believe that impacts of the KM activity or process, can be perceived as positive or negative by stakeholders. Positive sides are that we can access information containing KM and share it, learn what are the organisations up to. Negative side is there will arise information security issue, considering that if the information is sensitive to other entities. Another negative impact, there is a bigger concern of illegal duplicating of ideas; although which is also bring about a good impact to others.

1. **Lesson learned**

Innovations are parts of knowledge management. KM initiatives can yield impressive benefits to individuals and organizations if they are purposeful, concrete, and action-orientated. Innovations that happen in BAPETEN, especially in inspection and regulatory enforcement are planned innovations, sustained, and sistematically performed. BAPETEN provides BAPETEN intranet and website, B@LIS database, and Electronic Filing System (ELFIS) for KM purposes. Knowledge management is something that BAPETEN should consider to be done for maintaning and enhancing the level of performance of regulatory body, in Indonesia. In this case, BAPETEN should take the role to be the main agent and proactively takes part of knowledge management activities.

1. **Additional Information**
2. BAPETEN website [www.bapeten.go.id](http://www.bapeten.go.id)
3. B@LIS Inspection<http://www.bapeten.net/insp2013/index.php?modul=insp2013>
4. B@LIS Online <http://balis.bapeten.go.id/frontend/web/>
5. Distribution map of users and licences across the country: [www.bapeten.go.id/peta](http://www.bapeten.go.id/peta)
6. Example of Regulatory Enforcement can be found at:

<https://www.google.com/url?q=http://putusan.mahkamahagung.go.id/putusan/downloadpdf/414181b40a610c342a36e4da5ac6c3f4/pdf&sa=U&ved=0ahUKEwjlvbWHh4rLAhUMT44KHbAlCygQFggEMAA&client=internal-uds-cse&usg=AFQjCNEk35cxoRdHu9NS6d5WCjoeyQlpQg>

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