Competency Model and Framework: BATAN

Sudi Ariyanto

Center for Education and Training
Email: asudi@batan.go.id

NTC on Sarcon
Jakarta, July 10, 2018
Content

1. Introduction
2. Government Regulation on Capacity Building
3. Capacity Building
4. Policies on Education and Training
5. Recruitment Policy and Practice
1 Introduction
Introduction

Human is the important element for BATAN to implement governmental functions/tasks on research, development, engineering and utilization of nuclear science and technology for the well-being of the people of the nation through the process of Plan, Do, Check, Act (PDCA)

- Safe, Secure, Sustainable
- Continuous improvement
Introduction

• BATAN holds roles of capacity building on institutional and national level, and may contribute to regional and international communities.
2 Government Policy:
- Act No. 5/2014
- GR 11/2017
Government Policy on Capacity Building of Government employees

1. Integrated training for new recruits
2. Provision of Standard of Competence and Personnel Profile
3. The right of personnel for capacity building
4. Planning of Competence Building
5. Implementation of Competence Building
6. Evaluation of Competence Building Implementation
7. Report to Government

UU No. 5/2014; PP 11/2017
GR: Type of Competences

TECHNICAL
- Education
- Function/technical trainings
- Experiences

MANAGERIAL
- Education
- Management training
- Leadership experience

SOCIAL-CULTURAL
- plurality in social-cultural environment
GR: Competences Development

- Mandatory
- Min. 20 lesson-hours annually
- Planned annually by the Institution
GR: Modalities for Competencies Development

Education
- Formal education
- Domestics/Foreign Universities

Training
- Classical: Face to Face
- Non Classical: e-learning, mentoring, distance learning, coaching, etc.
3 Capacity Building
IAEA Capacity Building

BATAN has been developing a comprehensive capacity building program to support national nuclear program in Indonesia based on the IAEA capacity building concept consists of education and training (ET), HRD, NKM, and nuclear network.
Capacity Building Objectives

**Education & Training**
- Building Competences
- Preserving nat. comp. on NST
- Public Outreach

**Human Resources Development**
- Effective Human Capital Management

**Nuclear Knowledge Management**
- Preserving NK
- Preventing NK loss
- Harvesting NK

**Nuclear Network**
- Building competences
- Stakeholders involvement
- Public outreach
- Increasing public support
- Teaching Material sharing
- Expert exchange
Capacity Building Activities of BATAN

E&T External
- PINT
- TC for stakeholders
- Information Sharing
- Public Outreach

E&T Internal
- System Improvement
- Method/Modality diversification
- Infrastructure improvement
- Networking

HRM
- Information system Development
- Talent Management

NKM
- System Enhancement
- Infrastructure development
- Self Assessment

Nuclear Network
- TC IAEA
- ANENT
- ANSN
- NSSC
- FNCA
- ICERR
- Stakeholders
- Foreign Univ.
- Domestic Univ.

www.batan.go.id
ET is also aimed for improving knowledge and capacity of stakeholders that may consist of universities, government agencies or institutions, industries, hospitals, and public.
Capacity Building: ET

- ET incorporates various modalities and deliveries, teaching materials, repository, digital library, network of cooperation as well as learner community.

LiOn
Learning Innovation on Nuclear

Learning Innovation on Nuclear

- Online portal
- Blended Learning
- Full Online Courses

- Active participation
- Active methods

Online Learning

- Smart Room arrangement
- Multi-monitors/medias

Active Learning

- Smart Learning Space

Networking

- Communication forum

Online Library

- Web-based library
- Learning Material storages
- Link to other sites

Learner Community
Diversification of Training Modalities

Training

Classical: Face to Face

Non Classical: e-learning, mentoring, distance learning, coaching, etc.

Blended learning
### Modalities for Training

<table>
<thead>
<tr>
<th>No.</th>
<th>Program</th>
<th>Explicit Knowledge</th>
<th>Tacit Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pendidikan</td>
<td>Training: Internal &amp; External providers</td>
<td>Coaching &amp; Mentoring</td>
</tr>
<tr>
<td>2</td>
<td>Pelatihan Luar BATAN</td>
<td>Workshop: Internal &amp; External</td>
<td>Shadowing</td>
</tr>
<tr>
<td>3</td>
<td>Pelatihan Reguler di BATAN</td>
<td>Seminar</td>
<td>Knowledge Sharing</td>
</tr>
<tr>
<td>4</td>
<td>Seminar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Kursus</td>
<td>Developmental Assignment</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Penataran</td>
<td></td>
<td>Knowledge Sharing</td>
</tr>
<tr>
<td>7</td>
<td>Lokakarya/Workshop Eksternal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Lokakarya/Workshop Internal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Praktik Kerja/Pemagangan Eksternal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Praktik Kerja/Pemagangan Internal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Pelatihan Selingkung</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Penugasan <em>(Developmental Assignment), Coaching &amp; Mentoring, Shadowing</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Knowledge Sharing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Improvement of training IS

Covers all personnel
Improvement of training IS

Covers all Working Units

<table>
<thead>
<tr>
<th>Kode</th>
<th>Unit Kerja</th>
<th>Jumlah Pegawai</th>
<th>Jumlah Pegawai Telah Memenuhi Amanah ASN</th>
<th>Prosen</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>KA.BATAN</td>
<td>1</td>
<td>1</td>
<td>100,0%</td>
</tr>
<tr>
<td>10</td>
<td>SEKUT</td>
<td>1</td>
<td>1</td>
<td>100,0%</td>
</tr>
<tr>
<td>11</td>
<td>BP</td>
<td>38</td>
<td>9</td>
<td>23,7%</td>
</tr>
<tr>
<td>12</td>
<td>BSDMO</td>
<td>47</td>
<td>11</td>
<td>23,4%</td>
</tr>
<tr>
<td>13</td>
<td>BU</td>
<td>111</td>
<td>27</td>
<td>24,3%</td>
</tr>
<tr>
<td>14</td>
<td>BHHK</td>
<td>37</td>
<td>33</td>
<td>88,2%</td>
</tr>
<tr>
<td>20</td>
<td>Dop.SATN</td>
<td>1</td>
<td>1</td>
<td>100,0%</td>
</tr>
<tr>
<td>21</td>
<td>PSTBM</td>
<td>119</td>
<td>39</td>
<td>32,8%</td>
</tr>
<tr>
<td>22</td>
<td>PSTNT</td>
<td>137</td>
<td>64</td>
<td>46,7%</td>
</tr>
<tr>
<td>23</td>
<td>PSTA</td>
<td>205</td>
<td>87</td>
<td>42,4%</td>
</tr>
<tr>
<td>24</td>
<td>PTKMR</td>
<td>144</td>
<td>36</td>
<td>25,0%</td>
</tr>
<tr>
<td>25</td>
<td>PAIR</td>
<td>236</td>
<td>48</td>
<td>20,3%</td>
</tr>
</tbody>
</table>
Moodle-based LMS

- e-learning training & material collection
- possible linked to the IAEA e-Learning facility
Technology: Integration of IS

- **E&T**
  - Improved personnel
  - Expert Training

- **HRM** (HR Planning, Recruitment, TMS, HRD, Retirement)
  - Certified personnel
  - Certification
  - Knowledge
  - Job information requirements
  - Experts
  - Advisory
  - Training
  - Training Materials, etc

- **NKM**
  - Network
  - Experts
  - Advisory
  - Training
  - Training Materials, etc

**Note:**
- TMS: Talent Management System
- HRD: Human Resources Development

**Certification**
- Improved personnel
- Knowledge
- Job information requirements
- Experts
- Advisory
- Training
- Training Materials, etc

**Knowledge**
- Job information requirements
- Experts
- Advisory
- Training
- Training Materials, etc

**Network**
- Experts
- Advisory
- Training
- Training Materials, etc
4 Policies of E&T
Education Policy

- Priority of education is set for
  - Implementation of national program
  - Critical Knowledge

- Thesis research contributes to fulfill the needs of BATAN

- Research may be implemented in BATAN facilities

- Submit papers/thesis to e-repository during study/after graduation

- Utilizing various financing schemes
Training Policy

every personnel who works in nuclear research, development, engineering and application should be provided with adequate training in certain level of competence.

• SAT is used for training process/cycle,
• training program is prepared for all employees and all competences,
• grading model is used to set priority,
• modalities of classical and non-classical are blended,
• utilizing IT,
• utilizing network with partners.
<table>
<thead>
<tr>
<th>Elements</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Program</td>
<td>5</td>
</tr>
<tr>
<td>Required for Certification of Personnel</td>
<td>5</td>
</tr>
<tr>
<td>International Cooperation</td>
<td>4</td>
</tr>
<tr>
<td>Potential Loss of Knowledge</td>
<td>4</td>
</tr>
<tr>
<td>Program of BATAN</td>
<td>4</td>
</tr>
<tr>
<td>Program of Technical Centers</td>
<td>3</td>
</tr>
<tr>
<td>Program for Dissemination/Outreach</td>
<td>2</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
</tr>
</tbody>
</table>
5

Recruitment Policy and Practice
Continuum of Competence Building

Recruitment Policy

4 years
New Recruits

Employees

5 years
Pre Retirement
Recruitment Policy

Government Program for New Recruitment

Batlan

Retirement

N_{out} > N_{in}

Transfer from other Govt. institutions

Note:
1. Government moratorium for new recruitment
2. Centralized process for new recruitment
Practice of Recruitment

Establish Need
- Quantity
- Position

Submit Need to Govt

Selection by Govt
- Administrative Screening
- Basic Competency Examination
- Advanced Competency Examination
- Psychological Test
- Medical Examination

Staff Provided by Govt

Human Reliability assessment for Baseline Profiling
Competences Quadrant

1. Regulatory framework for Competences Building
   - Compliance to regulation

BATAN Management System

- 1. Legal, regulatory and organizational basis
  - 1.1 Legal basis
  - 1.2...
  - 1.4...

- 3.1 Enforcement
- 3.2 Development of regulations and guides

BATAN Knowledge Taxonomy

- 2. Technical disciplines
  - 2.1 Basic science and technology
  - 2.2 Applied science and technology
  - 2.3 Specialized science and technology

- 4. Personal and interpersonal effectiveness
  - 4.1 Analytical thinking and problem solving
  - 4.2 Personal effectiveness and self-management
  - 4.3 Communication
  - 4.4 Team work
  - 4.5 Managerial competences and leadership
  - 4.6 Safety Culture

BATAN Values

Social-Cultural Competence
1. Isotope and Radiation
2. Nuclear Fuel Cycle
3. Engineering of Nuclear Devices and Facilities
4. Nuclear Reactor
5. Nuclear Safety and Security
6. Management
SARCoN Step-Based Approach

Step 1: Regulatory functions

Step 2: Specific tasks

Step 3: Required KSAs

Step 4: Existing personnel KSAs

Step 5: Competence gap analysis

Step 6: Training & Development, Reorganization, Recruitment or Outsourcing

Step 7: Periodic Review

Institutional functions
SARCoN Step-Based Approach

**Process 1**
Developing competence profiles

- Regulatory functions
- Specific tasks
- Competence profiles

**Institutional functions**

**Process 2**
Competence gap analysis

- Existing competences
- Competence profiles

- Competence gap analysis
- Training & Development, Reorganization, Recruitment or Outsourcing

**Process 3**
Periodic review

Periodic Review
Institutional Gap Analysis

- Identification of critical knowledge and of potential of knowledge loss and development of mitigation program

- Implement self-assessment
  - addressed four fundamental questions (NAMA):
    - What is needed? (Need),
    - What is available and adequate to meet the needs? (Availability),
    - What is missing or needs improvement in order to meet the needs? (Missing/gaps), and
    - What actions are needed? (Actions).

- Priority: TC on knowledge with potential loss
## Sample of Assessment Results for Research Reactors Personnel

<table>
<thead>
<tr>
<th>RR</th>
<th>Critical Knowledge</th>
<th>Potential Knowledge Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Reactor core physics (Neutronik and Thermohydraulic Analysis), Radiation safety, Radiometric analysis, Process of radioisotopes (extraction of Tc-99m, Iodium-131, P-32, Br-82 etc.), Marked-substances production, Radiochemistry, Radiometric analysis, Treatment of TRIGA Instrumentation and Control Systems, Calculation of fuel burn-up</td>
<td>Calculation of reactor fuel burn-up, Neutron flux measurement, NDT for ageing management, Analysis and development of Neutronic and thermohydraulics, Nuclear Instrumentation</td>
</tr>
<tr>
<td>B</td>
<td>Reactor physics, Neutronic R &amp; D, Reactor dosimetry, Core management, Reactor safety, Instrumentation and control, Reactor system technology, Operation and maintenance and utilization of reactor, Reactor technology, Reactor instrumentation and control.</td>
<td>Reactor Physics, Neutronic R &amp; D, Reactor Dosimetry, Core Management, Reactor Safety, Instrumentation and Control, Reactor System Technology, Operation and Maintenance, and Utilization of Reactor</td>
</tr>
<tr>
<td>C</td>
<td>Accounting of nuclear materials and reactor irradiation services, Electrical, Mechanical, Instrumentation and reactor control, Waste control of reactor facilities, and Safety of reactor operations</td>
<td>Radioactive waste control of reactor facilities, Pre and post irradiation services</td>
</tr>
</tbody>
</table>
Actions for Preventing or mitigating potential loss of knowledge

- Training program is focused on the subjects of knowledge with potential loss.
- Knowledge capture program of personnel 5 years before retirement
- Knowledge sharing program by personnel 2-3 years before retirement
- Managing coaching and mentoring on the subjects of knowledge with potential loss.
- Utilization of knowledge network with the IAEA, and other partners.
Terima Kasih

BADAN TENAGA NUKLIR NASIONAL

Jl. Kuningan Barat, Mampang Prapatan Jakarta, 12710
(021) 525 1109 | Fax. (021) 525 1110
humas@batan.go.id