



**NATIONAL COMPETENCY STANDARDS  
FOR  
STONE CRUSHER PLANT OPERATOR  
(NC2)**

**Department of Occupational Standards  
Ministry of Labour and Human Resources  
Thimphu, Bhutan  
(August 2021)**



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## FOREWORD

The Department of Occupational Standards of the Ministry of Labour and Human Resources is pleased to present the National Competency Standards (NCS) for Stone Crusher Plant Operator. The standards represent the fruits of hard work and invaluable experiences gained by the department since its establishment in the latter half of 2003. The main aim of developing NCS is to set up a well-defined nationally recognized Vocational Qualification System that will help set a benchmark for the Technical Vocational Education and Training (TVET) System in our country aligned to international best practices.

NCS is one of the base pillars in the Bhutan Vocational Qualifications Framework (BVQF) and is the first step in its implementation. The NCS are developed and revised to ensure that employees or vocational graduates possess and acquire the desired competencies required by industries and employers. In order to ensure this close match in supply and demand of competencies, NCS have been developed and revised in close consultation and partnership with industry experts and validated by the Technical Advisory Committees of the concerned economic sectors.

A vocational education and training system based on NCS shall ensure that delivered training is of a high quality and relevant to the needs of the labour market. As a result, future TVET graduates will be better equipped to meet the need and expectations of industries and employers. This positive impact on the employability of TVET graduates will enhance the reputation of vocational education and training and make it attractive to school leavers.

I gratefully acknowledge collaboration and the valuable contributions made by experts from industries during the consultation and validation processes of the standards. I look forward for continued engagement and participation of the industry and employers in the development of a quality assured demand driven TVET system and to build competent and productive national workforce that will contribute to the continued socio-economic progress of our country.

Director  
Department of Occupational Standards  
Ministry of Labour and Human Resource

## **Acknowledgement**

**Validation date** : 13 /08/2021

**Date of Review** : 13 /08/2023 (Max. 3 years)

### **Subject experts involved during the consultation workshop:**

1. Ashok Bhujel, Manager, Hi-Tech Pvt. Ltd
2. Mohan Singh Ghalley, Crusher Operator cum Supervisor, Hi-Tech Pvt. Ltd.

### **Development Group (Facilitators):**

1. Karma Loday, Specialist, DOS, MoLHR
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3. Prem Kumar Bhattarai, Program Officer, DOS, MoLHR
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## PACKAGING OF QUALIFICATIONS

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**National Certificate Level 2**

Carryout Operation of Stone Crusher Plant (8112-U2-L2)

Carryout basic maintenance of Stone Crusher Plant (8112-U1-L2)

**ENTRY**

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graph BT; ENTRY[ENTRY] --> B["Carryout basic maintenance of Stone Crusher Plant (8112-U1-L2)"]; B --> A["Carryout Operation of Stone Crusher Plant (8112-U2-L2)"]; A --- NC2["National Certificate Level 2"];
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## OVERVIEW OF NATIONAL COMPETENCY STANDARDS

UNIT TITLE	ELEMENTS OF COMPETENCE
Carryout basic maintenance of Stone Crusher Plant	<ol style="list-style-type: none"><li>1. Perform periodic maintenance</li><li>2. Perform minor maintenance</li></ol>
Carryout Operation of Stone Crusher Plant	<ol style="list-style-type: none"><li>1. Perform pre-operation checks Respond to emergencies</li><li>2. Perform Operation of Stone Crusher Plant</li></ol>

<b>UNIT TITLE</b>	:	Carryout basic maintenance of Stone Crusher Plant
<b>DESCRIPTOR</b>	:	This unit covers the competencies required to carry out basic maintenance of plant following safety procedures at all times
<b>CODE</b>	:	<b>8112-U1-L2</b>
<b>ELEMENTS OF COMPETENCE</b>	<b>OF</b>	<b>PERFORMANCE CRITERIA</b>
1. Perform periodic maintenance		1.1 Use Personal Protective Equipment (PPE) as per the job requirement 1.2 Change oils as per the service manual following standard procedures 1.3 Change/clean gear oil filters as per the job requirement following standard procedures 1.4 Check and repair electrical connections following standard procedure 1.5 Maintain records of periodic maintenance as per the standard procedures



<p>2. Perform minor maintenance</p>	<p>2.1 Perform basic electrical maintenance as per the job requirement following standard procedures</p> <p>2.2 . Change jaw plates, Cones and Screen Net as per the job requirement following standard procedures</p> <p>2.3 Change/ Repair Conveyor Belts as per the job requirement following standard procedures</p> <p>2.4 Repair Chutes as per the job requirement following standard procedure</p> <p>2.5 Repair the Screen Net as per the job requirement following standard procedures for damages</p>
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<p><b>RANGE STATEMENT</b></p>	
<p><b>Personal protective equipment (PPE) may include but not limited to:</b></p>	
<ul style="list-style-type: none"> <li>• Mask</li> <li>• Goggles</li> <li>• Working dress</li> </ul>	<ul style="list-style-type: none"> <li>• Gloves</li> <li>• Safety shoes</li> </ul>
<p><b>Oils may include but not limited to:</b></p> <ul style="list-style-type: none"> <li>• Gear oil</li> <li>• Hydraulic Oil</li> </ul>	

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Ethics and Integrity</li> <li>• Occupational health and Safety</li> <li>• Basic First Aid</li> <li>• Reading and interpretation of service manual</li> <li>• Record keeping</li> <li>• Types of maintenance</li> <li>• Basic functioning of Stone Crusher plant</li> <li>• Grades of oils and lubricants</li> </ul>	<ul style="list-style-type: none"> <li>• Team Work</li> <li>• Problem Solving</li> <li>• Innovative Thinking</li> <li>• Communication</li> <li>• Time Management</li> <li>• Negotiation</li> <li>• Critical Thinking</li> </ul>

<b>UNIT TITLE</b> :	Carryout Operation of Stone Crusher Plant
<b>DESCRIPTOR</b> :	This unit covers the competencies required to carry out operation of stone crusher plant following safety procedures at all times.
<b>CODE</b> :	<b>8112-U2-L2</b>
<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Perform pre-operation checks	1.1 Use personal protective equipment as per the job requirement  1.2 Check the conveyor belt area and clear the ground below the belts of boulders and other objects as per the job requirement following standard procedures

	<p>1.3 Perform greasing of bearings following standard procedures</p> <p>1.4 Check alignment of conveyor belt and rectify as per the job requirement following standard procedures</p> <p>1.5 Align motor V- belt as per the job requirement following standard procedures</p> <p>1.6 Provide information for entry in Daily Production Report following standard procedures</p> <p>1.7 Check the level of gear oils and top up as per the job requirement following standard procedures</p> <p>1.8 Check for leakages and damages following standard procedures</p> <p>1.9 Report to the concerned personnel in case of major damages following standard procedures</p>
<p>2. Perform Operation of Stone Crusher Plant</p>	<p>2.1 Check the water supply to the conveyor belts to control dust pollution following standard procedures</p> <p>2.2 Assign workers at conveyor belts and Hopper to monitor the functioning of belts &amp; Hoppers and flow of boulders &amp; aggregates following standard procedures</p> <p>2.3 Start the plant following the standard procedures</p> <p>2.4 Load the Hopper with stones/boulders following the standard procedures</p> <p>2.5 Observe and monitor the stone crushing and screening process following the standard</p>

	<p>procedures</p> <p>2.6 Perform shut down of the plant in case of emergency following the standard procedures</p> <p>2.7 Stop the plant operation following the standard procedures</p>
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<b>RANGE STATEMENT</b>	
<b>Personal protective equipment (PPE) may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Mask</li> <li>• Goggles</li> <li>• Working dress</li> </ul>	<ul style="list-style-type: none"> <li>• Gloves</li> <li>• Safety shoes</li> </ul>

<b>UNDERPINNING KNOWLEDGE</b>	<b>UNDERPINNING SKILLS</b>
<ul style="list-style-type: none"> <li>• Ethics and Integrity</li> <li>• Occupational Health and Safety</li> <li>• Basic First Aid</li> <li>• Safety signs and symbols</li> <li>• Aggregates sizes</li> <li>• Pollution control</li> </ul>	<ul style="list-style-type: none"> <li>▪ Team Work</li> <li>▪ Problem Solving</li> <li>▪ Innovative Thinking</li> <li>▪ Communication</li> <li>▪ Time Management</li> <li>▪ Negotiation</li> <li>▪ Critical Thinking</li> </ul>

## **ANNEXURE**

### **A. National Competency Standards (NCS)**

The National Competency Standards specify the skill, knowledge and attitudes applied to a particular occupation. Standards also specify the standards or criteria of performance of a competent worker and the various contexts in which work may take place. Standards provide explicit advice to assessors regarding the skill and knowledge to be demonstrated by candidates seeking formal recognition either following training or through work experience.

#### **Purpose of National Competency Standards**

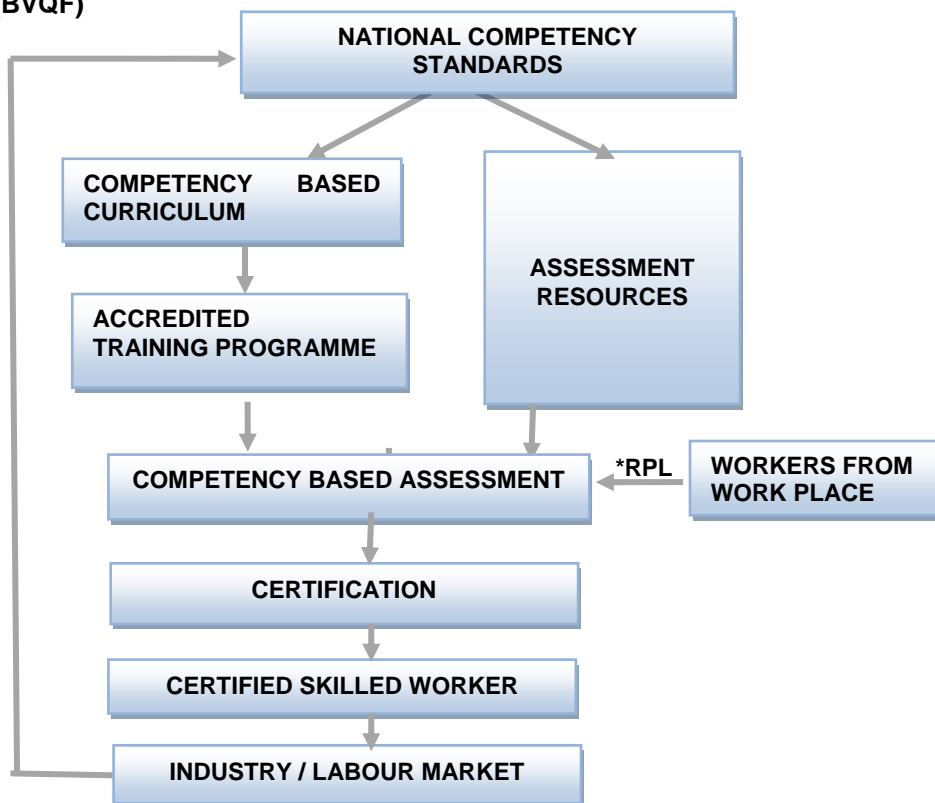
National Competency Standards serve a number of purposes including:

- Providing advice to curriculum developers about the competencies to be included in curriculum.
- Providing specifications to assessment resource developers about the competencies within an occupation to be demonstrated by candidates.
- Providing advice to industry/employers about job functions, which in turn can be used for the development of job descriptions, performance appraisal systems and work flow analysis.

## B. Bhutan Vocational Qualifications Framework (BVQF)

Bhutan Vocational Qualifications Framework is an agreed system of Assessing, Certifying and Monitoring nationally recognized qualifications for all learning in the TVET sector against national competency standards, in training institutions, in the workplace, in schools or anywhere where learning takes place.

### Components of the Bhutan Vocational Qualifications Framework (BVQF)



\* RPL = Recognition of Prior Learning

## BVQF Levels

The Bhutan Vocational Qualifications Framework has three levels classified based on the competency of the skilled workers. The three levels are:

- National Certificate Level 3 (NC III)
- National Certificate Level 2 (NC II)
- National Certificate Level 1 (NC I)

## BVQF Level Descriptors

The qualification levels are decided based on level descriptors. The detail of the qualification level descriptor is as follows:

### National Certificate Level 1 (Semi Skilled)

<b>Carry out processes that:</b>	<b>Learning demand:</b>	<b>Responsibilities which are applied:</b>
<ul style="list-style-type: none"><li>• Are narrow in range.</li><li>• Are established and familiar.</li><li>• Offer a clear choice of routine responses.</li><li>• Involve some prioritizing of tasks from known solutions.</li></ul>	<ul style="list-style-type: none"><li>• Basic operational knowledge and skill.</li><li>• Utilization of basic available information.</li><li>• Known solutions to familiar problems.</li><li>• Little generation of new ideas.</li></ul>	<ul style="list-style-type: none"><li>• In directed activity.</li><li>• Under general supervision and quality control.</li><li>• With some responsibility for quantity and quality.</li><li>• With no responsibility for guiding others.</li></ul>

### National Certificate Level 2 (Craftsman)

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none"> <li>• Require a range of well-developed skills.</li> <li>• Offer a significant choice of procedures requiring prioritization.</li> <li>• Are employed within a range of familiar context.</li> </ul>	<ul style="list-style-type: none"> <li>• Some relevant theoretical knowledge.</li> <li>• Interpretation of available information.</li> <li>• Discretion and judgments.</li> <li>• A range of known responses to familiar problems</li> </ul>	<ul style="list-style-type: none"> <li>• In directed activity with some autonomy.</li> <li>• Under general supervision and quality checking.</li> <li>• With significant responsibility for the quantity and quality of output.</li> <li>• With some possible responsibility for the output of others.</li> </ul>

### National Certificate Level 3 (Master craftsman)

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none"> <li>• Requires a wide range of technical or scholastic skills.</li> <li>• Offer a considerable choice of procedures requiring prioritization to achieve optimum outcomes.</li> <li>• Are employed in a variety of familiar and unfamiliar</li> </ul>	<ul style="list-style-type: none"> <li>• A broad knowledge base which incorporates some theoretical concepts.</li> <li>• Analytical interpretation of information.</li> <li>• Informed judgment.</li> <li>• A range of sometimes innovative responses to concrete but often</li> </ul>	<ul style="list-style-type: none"> <li>• In self-directed activity.</li> <li>• Under broad guidance and evaluation.</li> <li>• With complete responsibility for quantity and quality of output.</li> <li>• With possible responsibility for the output of others.</li> </ul>



contexts.	unfamiliar problems.	
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## **CODING USED FOR NATIONAL COMPETENCY STANDARDS**

The coding and classification system developed in Bhutan is logical, easy to use, and also aligned with international best practises. The Bhutanese coding and classification system is based on the International Standard Classification of Occupations, 2008 (ISCO-08) developed by the International Labour Organisation (ILO).

The coding of the National Competency Standards forms the basis of the identification code for the Vocational Education and Training Management Information System (VET – MIS) both in terms of economic sector identification and that of the individual standard.

### **Coding the individual National Competency Standards**

Coding the individual National Competency standard has a multiple purpose:

- to identify the level,
- to identify to which module the standard belongs,
- to identify in which order the standard is clustered within that module.

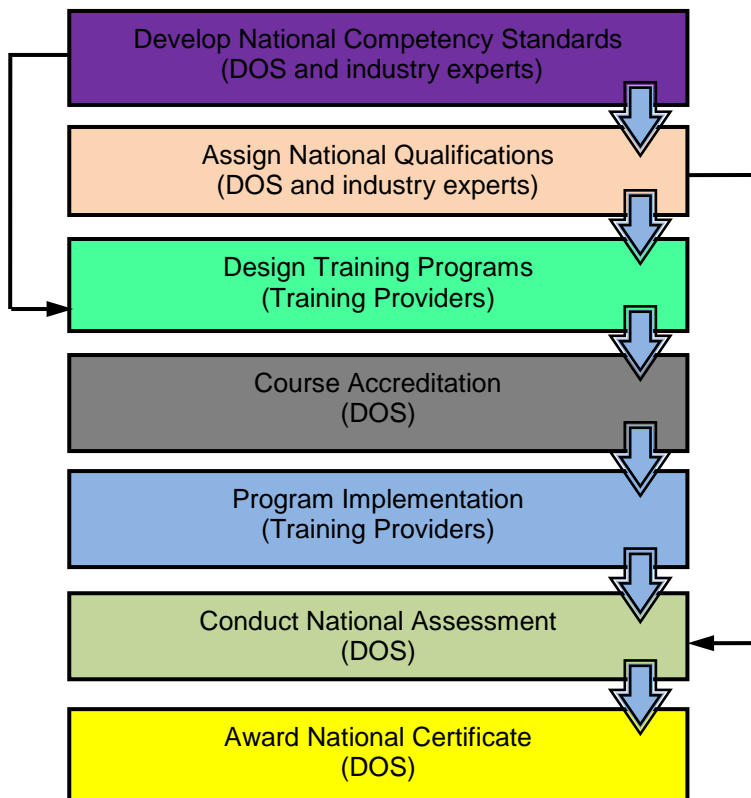
A job can include a number of competencies described in the national competency standards.

However, in order to follow a logical order, only national competency standards related to each other and following a logical sequence in terms of training delivery, from the simple to the complex, are clustered into a module. Some standards are so complex that they need to stand alone.

To illustrate with an example, the ILO assigns the code 8332 to the occupation of driving and related trades. Therefore, in the Bhutan's context, the occupation driver has been assigned the code 8332 in the

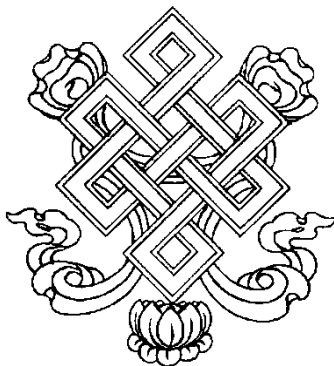
National Coding System. The first unit is assigned the code U1. Levels are assigned the code L and follow a logical progression from the National Certificate Level 1 (NC I) to the National Certificate Level 3 (NC III). Therefore the National Certificate Level 1 is assigned the code L1.

### Implementation and operational procedures for National Competency Standards (NCS)



**Key:**

MoLHR – Ministry of Labour and Human Resources  
DOS – Department of Occupational Standards



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