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Hierarchies of Occupational Classification Systems in South Africa

Classification of Occupations in Terms of High, Medium, and Low Skill Levels

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Centre for Researching Education and Labour, University of the Witwatersrand



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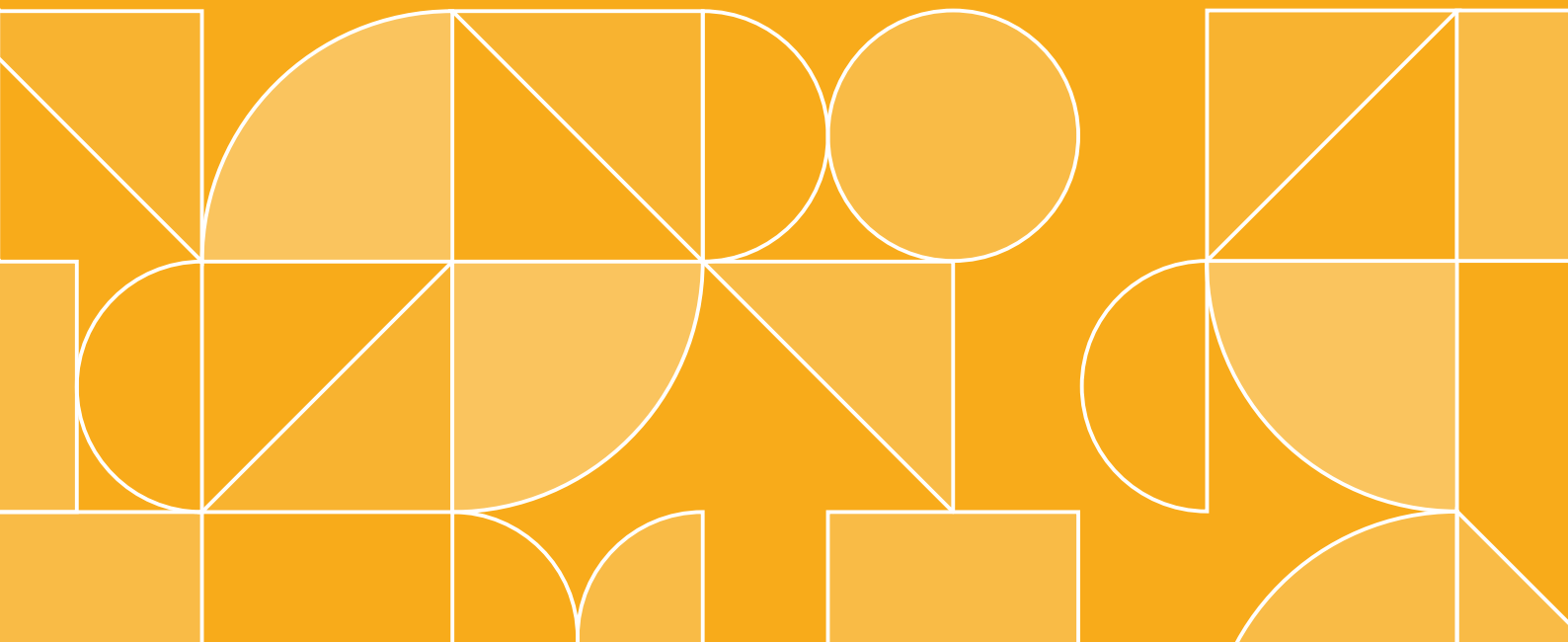
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Acronyms and Abbreviations

ACRONYM/ABBREVIATION	TERM/DEFINITION
DHET	Department of Higher Education and Training
ILO	International Labour Organization
ISCO	International Standard Classification of Occupations
ISCO-08	International Standard Classification of Occupations 2008
ISCO-88	International Standard Classification of Occupations 1988
NCO-2015	National Classification of Occupations-2015
NOS	National Occupational Standards
NSDS	National Skills Development Strategy
NSQF	National Skills Qualifications Framework
NQF	National Qualifications Framework
OFO	Organising Framework for Occupations
O*NET	Occupational Information Network
QP NOS	Qualification Pack National Occupational Standard
SASCO	South African Standard Classification of Occupations
SETAs	Sector Education and Training Authorities
SOC	Standard Occupational Classification (India)
SOC 2018	Standard Occupational Classification 2018 (US)
Stats SA	Statistics South Africa
SVP	Specific vocational preparation

PART 1

Introduction



1.1 Context

This report highlights hierarchies in occupational classification systems in South Africa in terms of high, medium, and low skills. The main purpose of occupational classification systems is to categorise jobs and occupations into standardised groups based on the nature of the work performed. According to the International Labour Organization (ILO) (2012) and the U.S. Bureau of Labor Statistics (2018), these systems have multiple functions, primarily organising labour market data by classifying jobs. Occupational classification systems allow governments, employers, and researchers to track employment trends, wages, and job availability across different sectors. They also facilitate job matching by providing clear definitions and distinctions between different occupations, thereby matching job seekers with appropriate roles.

Another function of these systems is to assist governments and organisations in policy development with economic planning, workforce development, and educational planning to understand which sectors need more skilled workers. Furthermore, occupational classification systems allow for international comparability, making it easier to compare standardised classifications with job statistics across countries, especially in global labour markets.

Finally, these systems attempt to align educational programmes with workforce needs, ensuring that the skills being taught match industry demands. Examples of such systems include the International Standard Classification of Occupations (ISCO) and the Standard Occupational Classification (SOC). These key uses of occupational classification systems make it significant for one to consider how they are understood and utilised in the South African context.

In South Africa, one of the intended functions of occupational classification systems is to provide a framework in which jobs can be classified for “identification, articulation, reporting, and monitoring of skills supply and demand” (DHET, 2017). Three occupational classification systems are relevant in the South African context:

1. The International Standard Classification of Occupations 2008 (ISCO-08)
2. The South African Standard Classification of Occupations (SASCO)
3. The Organising Framework for Occupations (OFO)

The main objective of this report is to provide a clearer understanding of the utilisation of these occupational systems in South Africa and to explore the consequences of their use on how skills are anticipated in the country. The research thus elicits two crucial questions:

1. How are occupations currently classified into high/advanced, medium/intermediate, and low/elementary skill levels, nationally and internationally?
2. What are the implications of using the hierarchical classification of occupations for South Africa’s skills anticipation systems?

The report will first provide a brief overview of the three occupational classification systems used in South Africa, then define the concept of skill and its importance in classification systems. This discussion is followed by a deep dive into how occupations are classified using the three systems and an analysis thereof. Next, three case studies are presented to show how these systems are used in other countries, using India, the United Kingdom, and the United States of America as examples. Finally, the report concludes by answering the two main research questions and providing final remarks.

1.2 Introducing the Occupational Classification Systems Used in South Africa

The ISCO-08 is the latest version of the ILO's occupational classification system, developed to categorise and classify jobs based on tasks and duties. The ISCO-08's main purpose includes providing a model for the development of national occupational classifications and serving as a basis for the international reporting, comparison, and exchange of statistical and administrative information about occupations (ILO, 2012). The two South African occupational classification systems, the SASCO and the OFO, were both adapted from and draw heavily upon the ISCO-08 in their design. Therefore, much of the logic and rationale that frames the construction of a hierarchy in skill levels is similar across the three systems.

The SASCO is the original South African classification system for occupations, and it was designed to classify occupations to assist in the country's labour market analysis, workforce planning, and employment statistics. The system enables the categorisation of jobs for statistical purposes such as employment surveys, census data, and statistical analysis of the South African workforce. It aids job seekers and employers in understanding job classifications and career paths and helps align educational programmes with labour market needs to ensure that skills development meets industry demands. The SASCO aligns closely with the ISCO-08 framework in terms of its structure.

The purpose of the SASCO was firstly to provide a national framework for identifying occupations, which will be useful to compilers and to users of occupational information. Secondly, to provide a basis for international occupational comparability. The first edition of the SASCO was published in 1986, resulting from an initiative by the National Manpower Commission and undertaken by the Institute of Manpower Research in collaboration with various government departments including Statistics South Africa (Stats SA) (then known as the Central Statistical Service), among others. This edition was updated in 2011 as a result of collaborative work between Stats SA, several government departments, private organisations, and other stakeholders, and was necessitated by structural changes in the South African labour market. The second edition of the SASCO was based on the 1988 ISCO (ISCO-88) and is still used today (Stats SA, 2014).

On the other hand, the OFO is a key tool used by the South African Department of Higher Education and Training (DHET) and the Department of Employment and Labour to classify and organise occupations in a structured manner. It serves as the foundation for skills development planning and workforce analysis. The OFO is designed to identify, classify, and describe occupations based on the tasks and skills required. It provides a standardised framework that supports the identification of skills gaps and facilitates skills development initiatives across industries.

The OFO is primarily used by the Sector Education and Training Authorities (SETAs) and other stakeholders to identify key skills gaps in various industries and to guide the development of targeted training programmes, ensuring that the workforce has the appropriate skills for various occupations. It is intended to help employers, policymakers, and training institutions understand labour market trends and plan for future skills needs. Furthermore, the OFO is anticipated to play a significant role in ensuring that qualifications and training curricula are aligned with the specific requirements of occupations in the labour market. Finally, the framework is also expected to be used by employers and job seekers to clearly define job roles and responsibilities.

The OFO supports South Africa's National Skills Development Strategy (NSDS) by providing a consistent and flexible tool from which to map occupations and develop qualifications. The framework is regarded as an instrumental mechanism in tracking and addressing skills shortages, fostering employment opportunities, and improving alignment between workforce capabilities and employer needs. Ramsarup (2020) notes that the OFO was developed in 2004 in response to a concern among policymakers that the SASCO did not provide the level of detail needed for skills planning.

1.3 Defining and Understanding Skill

The occupational classification systems discussed in this report use the concept of 'skill' as a central means of defining and classifying occupations into their various groups. The hierarchical structure of these systems is not technically a ranking based on skill but rather a description of the categorisation of occupations into consecutively larger groups—from individual jobs to unit groups, to minor groups, to sub-major groups, to major groups. However, this process does lead to a structure that can be (mis)interpreted as a ranking, rather than a classification. A closer look at the conceptual arena suggests that there are varied and sometimes contradictory understandings of the nature of skill (Warhurst et al., 2017). Buchanan et al. (2017) note that skill is simultaneously a "narrow and blunt concept"; it is used to address issues in productivity and efficiency while being a wider, murkier concept that masks a range of disciplinary, social, and historical understandings and operational and analytical definitions.

Bryson (2017) argues that in the issue of defining skill, we are often not referring to the same thing, even though the same word is used to name it. What makes defining skill an exercise that is far from unanimous is that these disciplinary perspectives are not so much "perspectival" as they are "ontological" (Fenwick, 2010). In other words, the problem is not that the same object is being defined in different ways and approaches but that different objects are being defined using the same name (Bryson, 2017). Bryson argues that each disciplinary perspective on 'skill' examines only part of the full nature of skill, and to analyse (and operationalise) from only one or a few of these perspectives results in a limited view of skill, which leads to policy that may be ineffective or even harmful.

She argues that there are three main cross-disciplinary perspectives on skill, and these perspectives can be further subdivided into disciplinary clusters (Bryson, 2017, p. 19):

- The first perspective focuses on approaches that can be categorised broadly as falling under the **political economy** of skill. These approaches tend to dominate in economics, political science, sociology, and industrial relations. Within these perspectives of skill, Bryson identifies a division in terms of how skill is understood between the disciplines. In economics, skill is viewed as an economic resource, an input, an independent variable, and as technical, firm-specific, or general. The other disciplines understand skill as an individual and social or collective resource, as a dependent variable, and as being in the job.
- The second broad perspective of skill is as an **organisational resource**, and this view tends to dominate in fields such as organisation studies and human resource management. In this perspective, skill is understood as being in both the person and the job.
- Finally, the **learning theory** perspective on skill dominates the fields of psychology and education. This perspective views skill as an individual attribute or competency, as the product or output of a learning process, as an independent variable, and as being located in the person.

These descriptions of skill provide a foundation with which to understand its link to occupational classification systems.

The definition of skill used by the ISCO is “the ability to carry out tasks within a particular job” (ILO, 2012). While this straightforward definition is useful in the context of an occupational classification framework, understanding skills in real-world contexts is more complex. Tilly (1988) explains:

As a historical concept, skill is a thundercloud: solid and bounded when seen from a distance, vaporous and full of shocks close up. The common-sense notion—that “skill” denotes a hierarchy of objective individual traits—will not stand up to historical scrutiny.

Or as indicated in the 2010 National Strategic Skills Audit for England (Davis, 2010, p. 9):

[S]kills can be difficult to define and measure at an aggregate level since they are socially constructed, intangible and unobservable. Research uses several different measures to assess the quantity, level and content of skills possessed and deployed in the workplace.

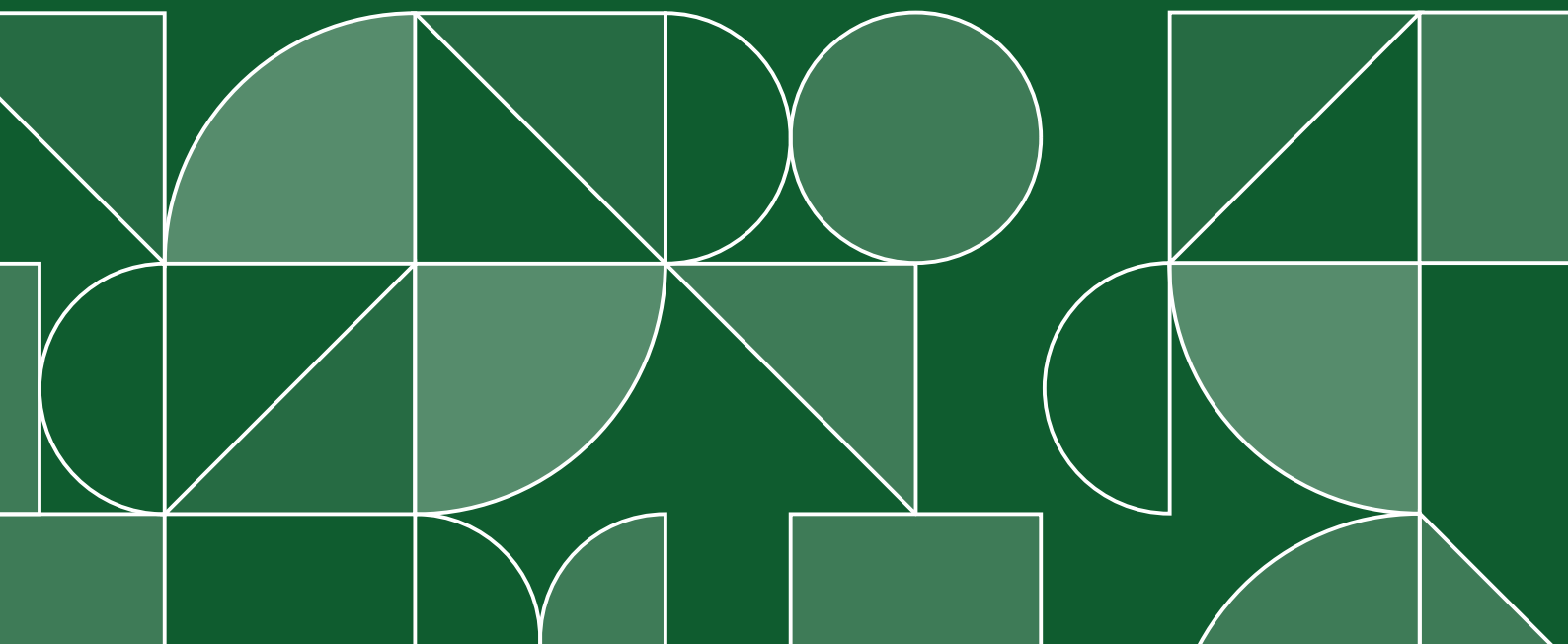
These observations highlight that while there may be an assumption within policy debates that ‘skill’ is universally and uniformly understood and that there is agreement among stakeholders about what exactly it is and what it constitutes, in reality, skill is a much more complex concept. Green (2013, p. 21) adds:

It might seem strange, to any newcomer to the topic, that ‘skill’ is at once held to be a pivotal object for modern social and economic life, while also a concept with no consensus as to what exactly it refers to.

This section emphasises that skill is an intricate and multifaceted concept that lacks a single, universally accepted definition, making it challenging to use consistently across occupational classification systems. Different disciplines—such as economics, sociology, human resources, and education—have varied, sometimes conflicting, understandings of what skill entails. Such diversity in perspectives complicates policymaking and classification, as each approach only captures part of the broader concept of skill, leading to potentially limited or ineffective outcomes when viewed through a single lens.

PART 2

**The
International
Standard
Classification
of Occupations**



In this section, the function and nature of the specialisation, hierarchical structure, and occupational groups of the ISCO-08 are outlined.

The ISCO-08 is a four-level classification system that “allows all jobs in the world to be classified into 436-unit groups” and is designed to use data generated from surveys, censuses, and administrative records (ILO, 2012). The ISCO-08 is guided by the following definitions:

- **Job:** A set of tasks or duties performed by one person for employment or self-employment.
- **Occupation:** A set of jobs sharing similar main tasks.
- **Skill:** The ability to carry out tasks within a particular job.

The hierarchical structure of the ISCO-08 is based on the aggregation of occupations into consecutively larger groups according to similarities in the tasks and duties that specific jobs entail, along with the skill levels and skill specialisations necessary to competently perform these tasks and duties (ILO, 2012).

Unit groups are the most detailed level of the classification structure. The 436 unit groups of the system are aggregated into 130 minor groups, 43 sub-major groups, and 10 major groups based on similarities in terms of the skill levels and skill specialisations required for the jobs. This structure is constructed using a system of numeric codes. Each major group is denoted by a one-digit code, and each sub-major group is denoted by a two-digit code comprising the major group code plus one digit. The same convention applies to minor groups (three digits) and unit groups (four digits), with codes comprising the higher level code plus an additional digit in each case (ILO, 2012). This system is illustrated in Table 1.

TABLE 1: Code conventions in the ISCO-08

GROUP	CODE	DESCRIPTION
Major group	5	Services and sales workers
Sub-major group	51	Personal services workers
Minor group	511	Travel attendants, conductors, and guides
Unit groups	5111	Travel attendants and travel stewards
	5112	Transport conductors
	5113	Travel guides

Source: ILO (2012)

2.1 Skill Level and Specialisation in the ISCO-08

Skill level is a function of the “complexity and range of tasks and duties” that are performed in an occupation, and it is measured through (ILO, 2012):

- The nature of work in a particular occupation relative to the characteristic tasks and duties within the same skill level.
- The level of formal education required to competently perform the tasks within a particular job.
- The amount of previous experience and/or on-the-job training required to competently complete tasks.

The emphasis on the tasks and duties involved in specific occupations as the core determinant of skill level rather than a particular formal educational qualification is important because it facilitates the international

comparability of occupations. In the previous version of the ISCO from 1988 (ISCO-88), users noted that the formal educational qualifications required for the same occupations differed substantially between countries, even though the content of the occupations was the same (Stats SA, 2014).

Skill specialisation is defined by (ILO, 2012):

- The field of knowledge required.
- The tools and machinery used.
- The materials worked on or with.
- The kinds of product or service produced for a particular occupation.

Within each of the 10 major groups, skill specialisation is the primary basis for arranging occupations into unit groups, minor groups, and sub-major groups (ILO, 2012).

2.2 Skill Levels

The ISCO-08 includes four skill levels. Occupations at **skill level 1** typically involve the performance of simple, routine physical or manual tasks and may require physical strength and endurance. Some level of literacy or numeracy may be called for but should not form a major component of the job. Some occupations at skill level 1 may necessitate completion of the first stage of basic education and possibly a short period of on-the-job training (ILO, 2012).

Skill level 2 occupations generally involve tasks such as operating machinery and electronic equipment, driving vehicles, maintenance and repair of electrical and mechanical equipment, and the manipulation, ordering, and storage of information. These occupations are likely to call for more advanced levels of literacy and numeracy and good communication skills. These occupations generally require completion of at least the first stage of secondary education, but they may also necessitate completion of the second stage of secondary education and extensive on-the-job training (ILO, 2012).

Occupations at **skill level 3** involve the performance of complex technical and practical tasks that require extensive knowledge of a particular field. These occupations generally need a high level of literacy and numeracy, including the ability to understand complex written material, prepare factual reports, and communicate verbally in difficult circumstances. These occupations usually require knowledge and skills obtained through one–three years of post-secondary education, and in some cases may call for extensive relevant work experience and on-the-job training (ILO, 2012).

Finally, occupations at **skill level 4** usually involve the performance of tasks that require complex problem-solving, decision-making, and creativity, based on extensive theoretical and factual knowledge of a particular field. These occupations call for extended levels of literacy and numeracy and excellent interpersonal communication skills. The knowledge and skills needed for these occupations usually entail study at higher educational institutions for three–six years, leading to the award of a first degree or higher qualification. In some cases, extensive experience or on-the-job training may substitute formal education or may be required in addition to it (ILO, 2012).

2.3 Occupational Groups

Skill level in the ISCO-08 is primarily applied at the major level of the classification framework, highlighting the nature of work performed in a specific category, rather than the education and training necessary for competent performance of particular jobs (ILO, 2012). Skill specialisation plays a more important role in classifying occupations within each major group, at the levels of sub-major, minor, and unit groups (ILO, 2012). Table 2 shows the classification of the major occupation groups according to their dimensions of skill.

TABLE 2: Major groups and skill levels in the ISCO-08

MAJOR GROUPS	SKILL LEVEL
1. Managers	3 + 4
2. Professionals	4
3. Technicians and associate professionals	3
4. Clerical support workers	2
5. Services and sales workers	2
6. Skilled agricultural, forestry, and fishery workers	2
7. Craft and related trades workers	2
8. Plant and machine operators, and assemblers	1
9. Elementary occupations	1
0. Military occupations	1 + 2 + 4

Source: ILO (2012)

As shown in Table 2, most of the ISCO-08 major groups contain occupations at only one of the four skill levels, except for group 1: 'Managers' and group 0: 'Military occupations'.

2.4 Low, Medium, and High Skills

Stats SA generally uses three categories of skill in its reports on the South African labour force:

1. Low-skilled (or low skill)
2. Semi-skilled (or medium skill)
3. Skilled (or high skill)

Stats SA includes elementary and domestic workers in its low-skilled category, which corresponds to skill level 1 of the ISCO-08 (Stats SA, 2014).

Semi-skilled occupations include clerical support workers; services and sales workers; skilled agricultural, forestry, and fishery workers; craft and related trades workers; and plant and machine operators and assemblers (Stats SA, 2014). These occupations also correspond to level 1 of the ISCO-08.

Skilled occupations include managers, professionals, and technicians, and correspond to skill levels 3 and 4 of the ISCO-08 (Stats SA, 2014). A peculiar major group 'armed forces occupations' encapsulates occupations that can be seen as allocable to all three skill categories since they are considered to fall under skill levels 1, 2, and 4 of the ISCO-08.

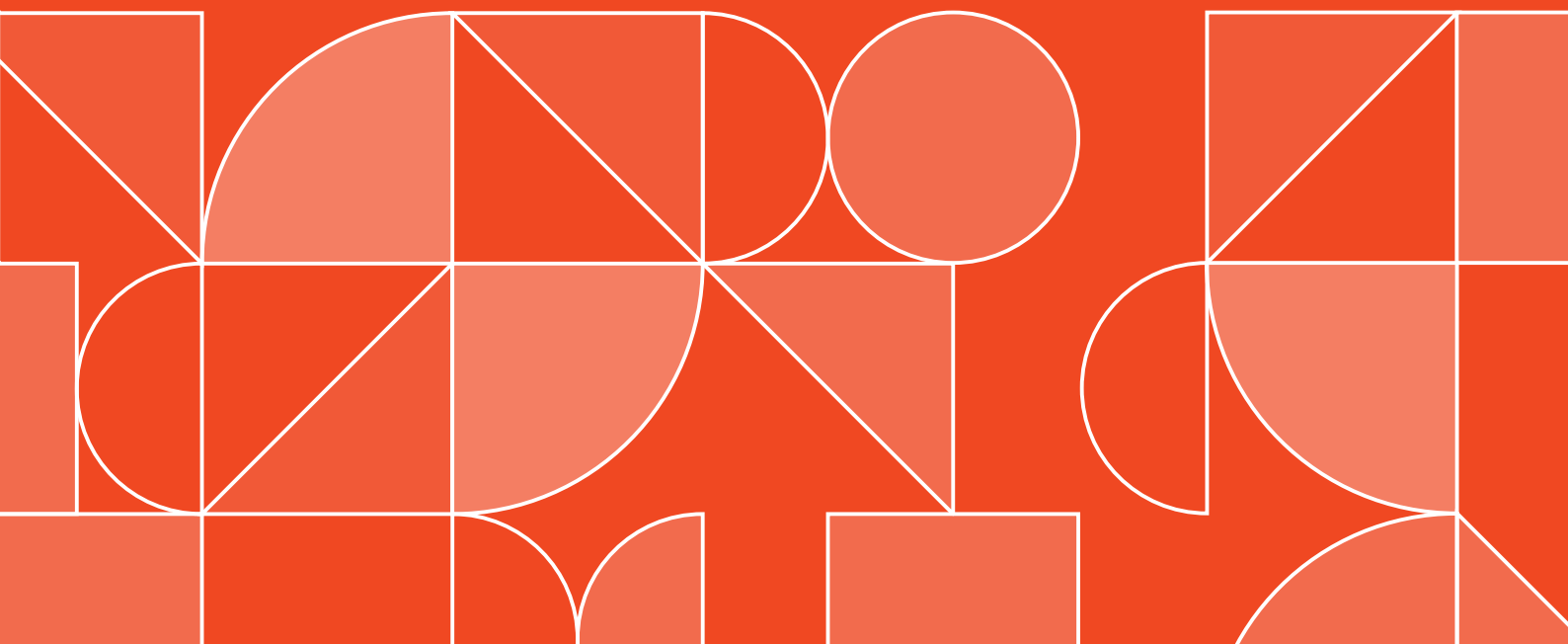
2.5 Strengths of the ISCO-08

The purpose of the ISCO-08 as a general guiding framework for occupational classification means that its main features can be viewed either as strengths or weaknesses, depending on the specific perspectives and aims of its use. As illustrated by the following examples, the ISCO-08 is primarily useful for macro-level analysis and comparisons but may require adaptation to enable it to be used effectively in national contexts:

- The ISCO-8 provides a valuable framework for generating largescale occupational data for statistical and national human resource purposes across diverse local landscapes.
- It allows international comparisons of employment across variables such as gender, occupational health and safety, and immigration.
- The ISCO-8's international comparability makes it possible for countries without occupational classification systems to use it for their purposes, while also enabling the comparison of skills dynamics across different jurisdictions and regions.
- The focus on job titles and tasks provides enough information per occupation to be useful for developing national occupational data.

PART 3

South African Approaches to Classifying Occupations



3.1 The South African Standard Classification of Occupations

The SASCO is the original South African system for classifying occupations. Based on the ISCO-88, the SASCO is skills-based, coded, and serves as a systematic basis for the classification of data on occupations. It is designed to be used for data obtained through sources such as the population census, records on marriages and divorces and causes of death, and Stats SA's Quarterly Labour Force Survey (Lehlola, 2012, p. 1).

The SASCO is primarily used by Stats SA, and its main objectives include (Lehlola, 2012, p. 1):

- Providing a framework for the development of national occupational classifications.
- Providing a framework for analysing occupations in the South African labour market.
- Taking account of development and changes within various occupations.
- Providing sound occupational statistics that can be compared to those produced by other agencies according to the ISCO.

In terms of structure, the SASCO is made up of 9 major groups, 41 sub-major groups, 131 minor groups, and 451 unit groups, with no category for individual occupations. Major group 0: 'Armed forces' was moved to sub-major group 54 in SASCO 2011 "because of problems experienced with the code 0" (Lehlola, 2012).

The framework uses essentially the same definition of skill as the ISCO-08, including the two sub-concepts of 'skill level' and 'skill specialisation'. Skill is defined as "the ability to carry out duties and tasks of a specific job" (Lehlola, 2012, p. 3).

The SASCO describes skill level in a slightly different manner as "a function of the complexity and range of tasks and duties to be performed in an occupation" (instead of in a job) (Lehlola, 2012, p. 3). Skill level is similarly operationally measured by considering one or more of the following:

- The nature of the work performed in an occupation, concerning the characteristic tasks and duties defined for each SASCO 2011 skill level.
- The level of formal education, defined in terms of the 1997 International Standard Classification of Education, required for competent performance of the tasks and duties involved.
- The amount of informal on-the-job training and/or previous experience in a related occupation required for competent performance of these tasks and duties.

Skill specialisation is defined by the field of knowledge required, the tools and machinery used, the materials worked on, and the kinds of good and service produced (Lehlola, 2012, p. 3).

3.2 The Organising Framework for Occupations

The OFO is also closely aligned with the ISCO-08 and was developed to provide a system with which to classify all jobs in South Africa in terms of occupations (DHET, 2017). It is the DHET's main tool for identifying, reporting, and monitoring skills demand and supply in South Africa. The process of developing the OFO was initiated because the original version of the SASCO from 1986 did not contain

the level of detail necessary to support skills planning. The OFO was initially based on the Australian and New Zealand Standard Classification of Occupations because this framework more accurately reflected South Africa's occupational environment and included occupations and occupational descriptors. Subsequently, the DHET decided to align the OFO to the structure of the ISCO-08 to create a standardised framework and to facilitate international comparability (DHET, 2017).

The OFO is made up of 9 major groups, 39 sub-major groups, 125 minor groups, and 440 unit groups. Importantly, the OFO includes 1,507 occupations—the kind of detail that is lacking from the SASCO (DHET, 2017). Like the SASCO, the OFO uses virtually the same definition of skill as the ISCO-08. The OFO's definition of skill level is also fundamentally similar to the ISCO-08's. The OFO sees skill level as relating to the complexity and range of tasks and duties to be performed in a particular job, with the level of a skill being dependent on (DHET, 2017):

- The nature of the work performed, which includes the complexity and range of the work in an occupation concerning the characteristic tasks and duties identified.
- The level of formal education required for competent performance of the tasks and duties of the job.
- The amount of on-the-job training or experience required for competent performance of the tasks and duties.

Skill specialisation in the OFO is also defined similarly to the ISCO-08's—in terms of field of knowledge, tools and machinery used, materials worked on, and types of good and service produced. The major occupation groups defined by the OFO are shown in Table 3.

TABLE 3: Major groups and skill levels in the OFO

MAJOR GROUPS	SKILL LEVEL
1. Managers, senior officials, and legislators	3 + 4
2. Professionals	4
3. Technicians and associate professionals	3
4. Clerks	2
5. Service and sales workers	2
6. Skilled agricultural, craft, and related trade workers	2
7. Plant and machine operators and assemblers	2
8. Elementary occupations	1
0. Military occupations	1 + 4

Source: DHET (2017)

These major groups are very similar to those of the ISCO-08, with only three distinctions:

- The ISCO-08 separates major group 2 of the OFO: 'Professionals' into two major groups, with group 6 being 'Skilled agricultural, forestry, and fishery workers' and group 7 being 'Craft and related trades workers'.
- Major group 7: 'Plant and machine operators and assemblers' is at skill level 2 in the OFO, while the same category is at skill level 2 in the ISCO-08 but in major group 8.
- Major group 0: 'Military occupations' of the OFO includes skills at levels 1, 2, and 4 of the ISCO-08.

Ramsarup (2020) explains that an important innovation in the OFO is the development of an occupational mapping tool that supports employers, the SETAs, and other stakeholders to map jobs to occupations. This is a significant progression because it is intended to "allow more accurate occupational

data to be provided to the SETAs to assist with skills planning processes” in order to create a mechanism for articulating labour market demand (Ramsarup, 2020).

This is premised on the understanding that if the education sector is unable to understand the nature and extent of demand for skills in the labour market, it cannot provide the right skills to meet this demand timeously (Ramsarup, 2020). The OFO has therefore been described by many policymakers as an important means of linking the education sector to the world of work. The occupational mapping tool also provides an alternative data source to the one used in the SASCO, which relies on surveys and other forms of population-level data to assess the occupational landscape in South Africa (Stats SA, 2014).

3.3 Low, Medium, and High Skills in the SASCO and the OFO

The SASCO and the OFO are both adapted from the ISCO-08, and their major groups are similarly delineated according to skill level, albeit with slight variations, as shown in Table 4 below.

TABLE 4: Major groups and skill levels in the SASCO 2011 and the OFO

SASCO 2011	SKILL LEVEL	OFO	SKILL LEVEL
1. Managers	3 + 4	1. Managers, senior officials, and legislators	3 + 4
2. Professionals	4	2. Professionals	4
3. Technicians and associate professionals	3	3. Technicians and associate professionals	3
4. Clerical support workers	2	4. Clerks	2
5. Service and sales workers 542 – Armed forces occupations	2 1 + 2 + 4	5. Service and sales workers	2
6. Skilled agricultural, forestry, and fishery workers	2	6. Skilled agricultural, craft, and related trade workers	2
7. Craft and related trades workers	2	7. Plant and machine operators and assemblers	2
8. Plant and machine operators, and assemblers	2	8. Elementary occupations	1
9. Elementary occupations	1	0. Military occupations	1 + 4

In terms of classifying occupations according to low, medium, and high skill levels, the same categorisation discussed regarding the ISCO-08 can generally be applied to both the SASCO and the OFO. Occupations at skill level 1 should be considered a low skill. A medium skill level includes those occupations corresponding to skill level 2 of the SASCO and the OFO, while occupations at a high skill level are classified at skill levels 3 and 4.

The two systems are generally similar in this regard, with the exception being that the SASCO includes some level 2 occupations under its ‘armed forces occupations’ category in addition to skill levels 1 and 4, while the OFO only appropriates skill levels 1 and 4 to the ‘military occupations’ category.

Both the SASCO and the OFO use educational attainment as the basis for translating the four framework-based skill levels into low, medium, and high skills—or ‘entry, intermediate, and high’ as used in the NSDS (DHET, 2017). In practice, however, the SASCO and the OFO differ in how they do this.

The SASCO does not explicitly link its skill levels to the three categories used in the NSDS and in Stats SA’s reporting; however, it classifies educational attainment as follows (Stats SA, 2014):

- Skill level 1: Grades R–6
- Skill level 2: Grade 9–12 (or a diploma at level 4 of the National Qualifications Framework (NQF))
- Skill level 3: Qualifications at NQF Level 5
- Skill level 4: Qualifications at NQF Levels 6–8

On the other hand, the OFO *does* explicitly include the NSDS classification of ‘entry, intermediate, and high’ skill levels in its translation of the occupational skill levels, as shown in Table 5 below.

TABLE 5: OFO major groups according to skill, NSDS, and NQF levels

NSDS	NQF Level	Skill Level	OFO Major Groups			
HIGH	10 ↑ 7	4	2 Professionals			
	INTERMEDIATE			6	3	3 Technicians and Associate Professionals
5		2	4 Clerical Support Workers			
				4	1	8 Elementary Occupations
3		1	8 Elementary Occupations			
	ENTRY			2	1	8 Elementary Occupations
1		1	8 Elementary Occupations			

While broadly similar to the classification of educational attainment and translation used in the SASCO, the OFO differs in that it stipulates (DHET, 2017):

- Skill level 1: NSDS entry level, and NQF Levels 1–2
- Skill level 2: NSDS entry–intermediate levels, and NQF Levels 3–5
- Skill level 3: NSDS intermediate level, and NQF Level 6
- Skill level 4: NSDS high level, and NQF Levels 7–10

3.4 Consistency and Standardisation between the SASCO and the OFO

The existence and implementation of two separate systems of occupational classification in South Africa may lead to confusion in the planning, research, and investment efforts of government departments and agencies. This situation arose from the fact that the initial version of the SASCO, based on the ISCO-88, did not provide a sufficient level of detail to support skills forecasting and planning, leading the DHET to develop the OFO (DHET, 2017). However, the update of the SASCO in 2011 meant that both classification systems were based on the latest ISCO-08 (Stats SA, 2014). Apart from some variations in the structure of major groups, the key difference between the SASCO and the OFO is that the latter includes details of individual occupation levels, while the SASCO remains limited to the level of unit groups (Stats SA, 2014; DHET, 2017).

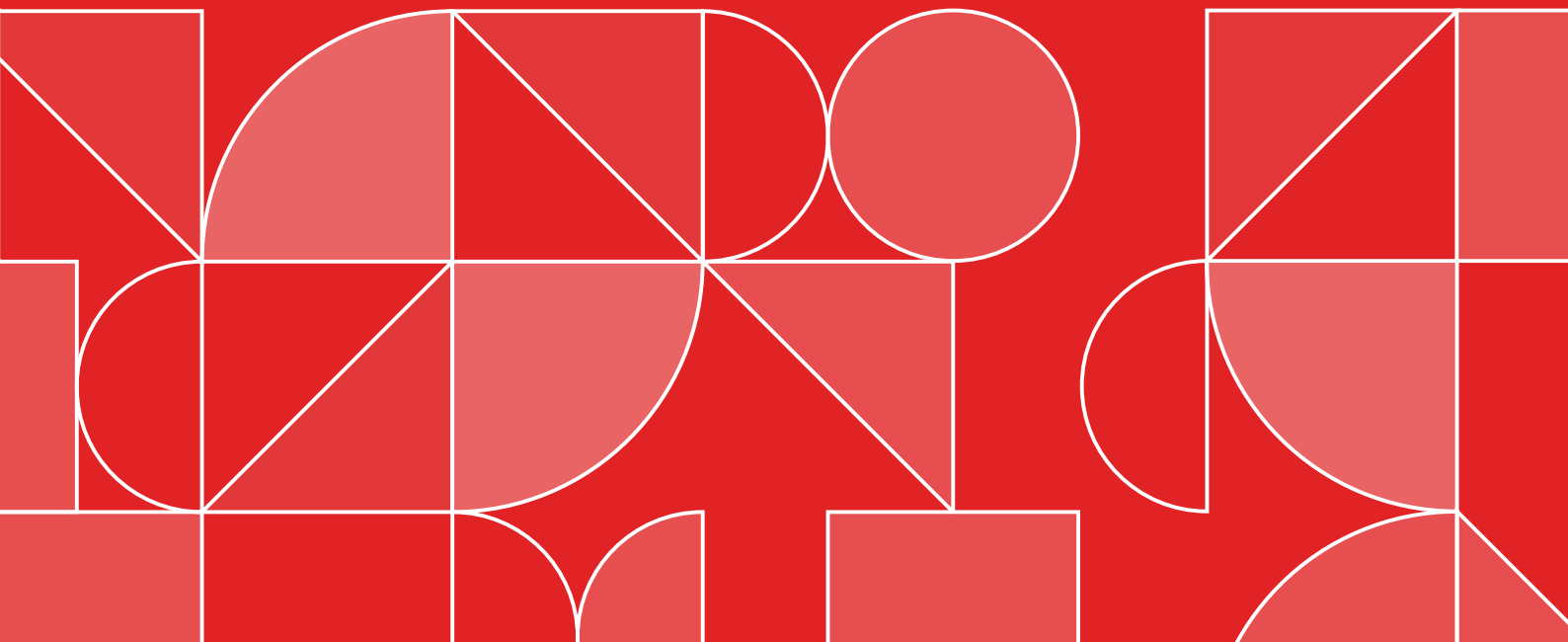
The two systems are so substantially different that the use of the SASCO by Stats SA may limit the usefulness of the agency's statistical publications for departments and organisations tasked with skills planning. At the very least, the concurrent use of two systems introduces the need for an additional process of translation between them and increases the likelihood of inaccuracies in skills planning processes. Finally, while the OFO includes a greater level of detail than the SASCO, the structure of the occupational groups in the SASCO is more closely aligned with the ISCO-08 and is likely to be more relevant for international comparisons.

Ideally, there should be *one* occupational classification system in use across all relevant agencies and departments to facilitate planning and communication processes and to reduce the potential for inaccuracies and confusion in skills planning. A process for merging the OFO and the SASCO should be considered and discussed. One potential path forward would be for the group structure of the SASCO to be retained, since it more closely matches the ISCO-08's, while including the additional occupation level detail from the OFO to the new merged framework.

The exact problem with code 0 that Stats SA reportedly experiences should also be addressed since it seems strange that the agency would be uniquely unable to use a code that is used internationally. Moreover, creating a sub-group under 'service and sales workers' for 'military occupations' adds a further level of confusion to the stated goal of using the framework to support the international comparability of occupational data.

PART 4

An Analysis of Occupational Classification Systems



The understanding of skill that is used in the ISCO-08, the SASCO, and the OFO most closely aligns with the political economy perspective on skill outlined by Bryson (2017). Within this broader perspective, the ISCO-08 and the two South African systems derived from it coincide with a sociological understanding of skill. In this view, skill is seen as being located in the job rather than in the person, as being a result of the nature or structure of work in a particular society, and as a dependent variable influenced by a range of social, cultural, political, and economic factors. Importantly, in the context of skill hierarchies, a sociological perspective enables an examination of the ways that society defines particular jobs as high-skilled or low-skilled, and the social and professional hierarchies that develop as a result of these socially constructed definitions (Bryson, 2017).

Another sociological aspect of these three occupational classification systems is their positivist stance towards skill: viewing skill as something that can be measured quantitatively. Although a positivist view of skill is likely a necessary prerequisite to any attempt to create a skills-based classification of occupations, Attewell (1990) identifies two key issues that need resolution in using this approach.

The first challenge is that it is necessary to decide whether skill should be treated as a measurable attribute of persons or of jobs. As previously noted, the ISCO-based systems fundamentally treat skill as an attribute of jobs or occupations. The second challenge, which is important in the context of occupational classification, is the need to find a means of making diverse and qualitatively different skills comparable, or commensurate, with each other (Attewell, 1990). This is a critical challenge for occupational classification processes because a quantitative measure of skill that has a high level of reliability and validity in the context of positivist methodological norms may not meaningfully reflect the variety of qualitatively different skills that comprise a single occupation.

For example, operationalising skills in a way that allows a precise quantitative measure may lead to definitions of skills that are too simplified to be useful in real-world contexts. Alternatively, a range of varied skills or tasks might be classified in terms of a single uniform measure, but this may lead to an overly abstract measure of skill that also lacks real-world applicability (Attewell, 1990).

The ISCO-08, the SASCO, and the OFO adopt a pragmatic approach to these challenges by classifying occupations in terms of their tasks and functions. These elements can then be assigned a skill level based on the educational and experiential requirements necessary for an individual to be able to perform them competently. This does not entirely solve the problem of making qualitatively different skills commensurate and comparable, but because the main goal of these occupational classification systems is to provide both a means of comparing occupational data and a framework for research and decision-making, it is a reasonable compromise that finds a balance between overly narrow and excessively abstract constructions of skill.

In this vein, the ILO (2012, p. 14) also differentiates between generic and specific skills. Although this distinction is not strongly articulated in the ISCO-08, it is important because it provides a degree of nuance that has implications for the training systems feeding into different occupations. Specific skills are skills that apply to a particular occupational group, while generic skills are those that are applicable across a wide variety of groups. The example provided by the ILO (2012) describes the possibility of an insurance representative whose occupation is classified at skill level 3 needing a higher level of interpersonal communication skills than a software developer whose occupation is classified at skill level 4. Occupation-specific skills are therefore more relevant for classifying occupations at particular skill levels than generic skills.

4.1 Skill Level and Specialisation in the ISCO-08, the SASCO, and the OFO

The three occupational frameworks use the same broad definition of skill as the ability to competently carry out the tasks and duties of a given job or occupation. In these systems, skill consists of two dimensions: skill level and skill specialisation.

Skill level is based on the requirements necessary to competently perform a set of tasks or functions related to specific occupations. It is an attribute of a job or occupation, and not of the individual. The ILO (2012) notes that the concept of skill level is applied mainly at the level of major groups in the ISCO-08. Operationally, skill level is measured by considering one or more of the nature of the work performed in an occupation according to the characteristic tasks and duties defined for each skill level, the level of formal education required for competent performance of these tasks and duties, and the amount of informal training and/or previous experience in related occupations required for competent performance of these tasks and duties.

Functionally, the ILO (2012) notes that because the skill level is primarily applied to the framework at the level of the major group, more emphasis is placed on the nature of the work performed in an occupation than on the educational, training, and experiential requirements. This means that understandings of skill level relate mainly to the complexity and range of tasks to be performed in an occupation, with occupations classified at skill levels 1 and 2 involving fewer complex tasks and, frequently, a greater level of physical work than those classified at skill levels 3 and 4.

Skill specialisation is primarily used as a means of classifying occupations at the levels of the unit group, minor group, and sub-major group based on the field of knowledge required, the tools and machinery used, the materials worked on or with, and the kinds of good and service produced.

International Approaches to Classifying Occupations



The following section reflects on how occupational hierarchies are expressed in three international cases—India, the United Kingdom, and the United States of America—and how qualification frameworks and occupational classification systems relate to each other. The report then discusses the insights emerging from the analysis of the systems used in South Africa and in the global case studies. What follows thereafter is a consideration of the implications of these frameworks when reviewing the South African labour market and how these hierarchies are given expression.

5.1 Case Study: India

This case study presents an overview of India’s occupational classification system: the National Classification of Occupations-2015 (NCO-2015), and focuses specifically on how the system is structured hierarchically. Like the South African SASCO and OFO, the NCO-2015 is based on the ISCO-08. According to Agrawal et al. (2014, p. 2), the NCO-2015 “describes the duties, skills, competencies and aptitudes required for an occupation in the Indian labour market”.

India’s National Skills Qualifications Framework (NSQF) and its National Occupational Standards (NOS) were also used to guide the updating of the earlier version, the NCO-2004, and to create the framework for the NCO-2015. As a result, the NCO-2015 includes the skill levels needed for occupations linked to the NSQF levels. Reference to the relevant Qualification Packs National Qualification Standards is included as the last two digits of the NCO-2015 code.

The NCO-2015 uses an eight-digit code. At the broadest level of categorisation, the first-digit level, there are major groups termed ‘divisions’. Thereafter are ‘sub-divisions’, which are equivalent to the sub-major groups in the ISCO-08 terminology. These are followed by ‘groups’ then ‘families’. The last grouping is ‘occupations’, which are represented by the first two-digit level after the decimal. There are 10 divisions, 30 sub-divisions, 116 groups, 439 families, and 2,945 occupations in the NCO-2015. The final two digits after the decimal indicate whether there is a Qualification Pack National Occupational Standard (QP NOS) available for the occupation.

The NOSs specify the standard of performance, knowledge, and understanding when carrying out a particular activity in the workplace. Each NOS defines one key function in a job role. For example, for a sales associate, one of the NOSs would be ‘To help customers choose right products’. Qualification packs are a set of NOSs, aligned to a job role, that would be available for every job role in each industry. These drive the creation of curricula and assessments. These job roles would be at various proficiency levels and aligned to the NSQF. An example would be a qualification pack for a sales associate (Department of Technical Education Training and Skill Development (n.d.)).

TABLE 6: Coding structure of the NCO-2015

CODING STRUCTURE OF THE NCO-2015	REPRESENTATION	CORRESPONDING MAPPING TO THE ISCO-08
The first digit	Division	Major group
The first two digits	Sub-division	Sub-major group
The first three digits	Group	Minor group
The first four digits	Family	Unit group
The first two digits after the decimal	Occupation	

Source: Ministry of Labour and Employment (2015)

Similar to the ISCO-08, the NCO-2015 uses the concepts of skill level and skill specialisation as organising classifications. For the NCO-2015, skill level is defined as a “function that describes the range of the tasks and duties involved” while skill specialisation “shows the field of knowledge required, the tools and machinery used, the materials worked on, and the kinds of goods and services produced” (Ministry of Labour and Employment, 2015).

The NCO-2015, as with the ISCO-08, links its major groups (‘divisions’) to four skill levels (except for the first division) as indicated in Table 7 below.

TABLE 7: Divisions and skill levels in the NCO-2015

DIVISIONS	TITLE	SKILL LEVEL
1	Legislators, senior officials, and managers	Not defined
2	Professionals	IV
3	Associate professionals	III
4	Clerks	II
5	Service workers and shop and market sales workers	II
6	Skilled agricultural and fishery workers	II
7	Craft and related trades workers	II
8	Plant and machine operators and assemblers	II
9	Elementary occupations	I

Source: Ministry of Labour and Employment (2015)

Note:

The concept of skill level was not applied in the case of legislators, senior officials, and managers (Division 1) since the skills required for executing the tasks and duties of these occupations varied to such an extent that it was not feasible to link them with any of the four broad skill levels.

The NOC-2015 indicates that the skill level of occupations is determined by using information about the required qualifications and experience, as well as the “average job description of the occupation to see whether the job requirement was of administrative, managerial, supervisory nature or a subordinate/ repetitive nature in the Indian context” (Ministry of Labour and Employment, 2015).

For the NCO-2015, educational requirements are not linked to a qualification type or schooling level per se, but rather to the amount of time spent in formal education. The Indian Ministry of Labour and Employment (2015) explains that “the nature of work performed has been given more emphasis than the formal education in determining the skill level of the occupation”. Table 8 below shows the definitions and educational requirements for each of the four skill levels used in the NCO-2015.

TABLE 8: Educational requirements and skill levels in the NCO-2015

SKILL LEVEL	SKILL DEFINITION	ISCO-08 EDUCATIONAL REQUIREMENTS	NCO-2015 EDUCATIONAL REQUIREMENTS
I	Typically involves the performance of simple and routine physical or manual tasks.	Primary education	Up to 10 years of formal education and/or informal skills
II	Typically involves the performance of tasks such as operating machinery and electronic equipment, driving vehicles, maintenance and repair of electrical and mechanical equipment, and manipulation, ordering, and storage of information.	Secondary education	11–13 years of formal education
III	Typically involves the performance of complex technical and practical tasks that require an extensive body of factual, technical, and procedural knowledge in a specialised field.	First university degree	14–15 years of formal education
IV	Typically involves the performance of tasks that require complex problem-solving, decision-making, and creativity based on an extensive body of theoretical and factual knowledge in a specialised field.	Postgraduate university degree	More than 15 years of formal education

Source: Adapted from Ministry of Labour and Employment (2015)

The concept of skill level in the NCO-2015 hierarchy is based on the tasks performed and the amount of time spent in education:

- Skill level I: Elementary skills. Describes routine tasks involving manual labour that needs minimal education.
- Skill level II: Intermediate skills. Requires 11–13 years in formal education, which approximates the end of secondary school, although this could include time spent in formal vocational training. Most of the divisions in the NCO-2015 are linked to this level.
- Skill levels III and IV: Advanced skills. Involve complex tasks and require specialised knowledge in the field resulting from more than 14 years of formal education.

It is interesting to note that no mention is made of knowledge required for skill levels I and II, but “specialised knowledge” is introduced at levels III and IV.

5.2 Case Study: The United Kingdom

This case study presents an overview of the United Kingdom’s (UK) occupational classification system: the Standard Occupational Classification (SOC), and focuses specifically on how the system is structured hierarchically. Before 2020, the UK used the Standard Occupational Classification 2010, a framework for classifying occupations based on skill level and content. The previous version was from 2000 (SOC 2000), which had been revised from an earlier version in 1990 (SOC 90) (Office for National Statistics, 2020). Like

South Africa and India’s frameworks, the SOC is aligned with the ISCO-08. The Office for National Statistics (2020) explains:

The object to be classified using the Standard Occupational Classification (SOC) is the concept of a “job”. Defined as a set of tasks or duties to be carried out by one person, the notion of a job represents a basic element in the employment relationship. Jobs are usually structured by employers (or by the worker in the case of self-employment) and others, including professional bodies, employer and/or worker organisations and governments, may regulate their definition. Jobs are recognised primarily by the associated job title.

Similar to the ISCO-08, the SOC further classifies jobs into groups by using the concepts of skill level and skill specialisation (Office for National Statistics, 2020). Skill level relates to the length of time it takes to become competent in a job, both in terms of formal education and training and the experience required. The SOC has four skill levels, starting at level 1, which requires a general education, and moving up to level 4, which requires a degree or equivalent period of relevant work experience. Skill specialisation refers to the field of knowledge required to competently conduct the tasks for a job and is used to differentiate between groups of occupations at each skill level, per the table below.

TABLE 9: Sub-major groups and skill levels in the SOC 2020

SKILL LEVEL	SUB-MAJOR GROUPS
Level 4	<ul style="list-style-type: none"> 11. Corporate managers and directors 21. Science, research, engineering, and technology professionals 22. Health professionals 23. Teaching and other educational professionals 24. Business, media, and public service professionals
Level 3	<ul style="list-style-type: none"> 12. Other managers and proprietors 31. Science, engineering, and technology associate professionals 32. Health and social care associate professionals 33. Protective service occupations 34. Culture, media, and sports occupations 35. Business and public service associate professionals 51. Skilled agricultural and related trades 52. Skilled metal, electrical, and electronic trades 53. Skilled construction and building trades 54. Textiles, printing, and other skilled trades
Level 2	<ul style="list-style-type: none"> 41. Administrative occupations 42. Secretarial and related occupations 61. Caring personal service occupations 62. Leisure, travel, and related personal service occupations 63. Community and civil enforcement occupations 71. Sales occupations 72. Customer service occupations 81. Process, plant, and machine operatives 82. Transport and mobile machine drivers and operatives
Level 1	<ul style="list-style-type: none"> 91. Elementary trades and related occupations 92. Elementary administration and service occupations

Source: Office for National Statistics (2020)

To further align the SOC to the ISCO-08, the SOC uses similar criteria to the ISCO-08's to divide occupational categories into unit groups. The SOC has nine major groups, "defined in terms of the general nature of the qualifications, training and experience associated with competent performance of tasks in the occupations classified within each major group" (Office for National Statistics, 2020). These groups are indicated in Table 10 below.

TABLE 10: General nature of qualifications, training, and experience for occupations in SOC 2020 major groups

MAJOR GROUP	GENERAL NATURE OF QUALIFICATIONS, TRAINING, AND EXPERIENCE FOR OCCUPATIONS IN THE MAJOR GROUP
1. Managers, directors and senior officials	A significant amount of knowledge and experience of the production processes and service requirements associated with the efficient functioning of organisations and businesses.
2. Professional occupations	A degree or equivalent qualification, with some occupations requiring postgraduate qualifications and/or a formal period of experience-related training.
3. Associate professional occupations	An associated high-level vocational qualification, often involves a substantial period of full-time training or further study. Some additional task-related training is usually provided through a formal period of induction.
4. Administrative and secretarial occupations	A good standard of general education. Certain occupations will require further additional vocational training to a well-defined standard (e.g., office skills).
5. Skilled trades occupations	A substantial period of training is often provided using a work-based training programme.
6. Caring, leisure and other service occupations	A good standard of general education. Certain occupations will require further additional vocational training, often provided through a work-based training programme.
7. Sales and customer service occupations	A general education and a programme of work-based training related to sales procedures. Some occupations require additional specific technical knowledge but are included in this major group because the primary task involves selling.
8. Process, plant and machine operatives	The knowledge and experience necessary to operate vehicles and other mobile and stationary machinery, to operate and monitor industrial plants and equipment, to assemble products from parts according to strict rules and procedures and subject assembled parts to routine tests. Most occupations in this major group will specify a minimum standard of competence for associated tasks and will have a related period of formal training.
9. Elementary occupations	Occupations classified at this level will usually require a minimum general level of education (i.e., that which is acquired by the end of the period of compulsory education). Some occupations at this level will also have short periods of work-related training in areas such as health and safety, food hygiene, and customer service requirements.

Source: Office for National Statistics (2020)

The unit group descriptions also contain references to the typical entry requirements and qualifications for the jobs, including references to the relevant national vocational qualifications required.

Based on the above, it appears that the hierarchy in the SOC is similar to that of the ISCO-08. It is primarily organised on the concept of skill, but competence in performing tasks and the education and training required to perform the jobs are also used to differentiate major groups.

Skill level creates the following vertical classes of occupations:

- Skill level 1: Elementary skills. Requires only a general education and possibly a short period of work-related training.
- Skill level 2 (and to some extent skill level 3): Intermediate skills. Requires what is referred to as a “good standard” of general education and a longer period of work-related training or experience.
- Skill level 3: Intermediate–advanced. Requires post-compulsory education at a sub-degree level or an extended period of vocational training, and a “significant period” of work experience.
- Skill level 4 (and the upper range of skill level 3): Advanced skills. Requires a tertiary degree or equivalent relevant work experience, and encompasses professionals and high-level managerial occupations.

The hierarchical structure of the SOC, therefore, seems to be based on skill level, which is defined both in terms of educational qualifications and training and the amount of workplace experience.

5.3 Case Study: The United States of America

This case study presents an overview of the United States of America’s (US) occupational classification system: the Standard Occupational Classification 2018 (SOC 2018), and focuses specifically on how the system is structured hierarchically. The SOC 2018 is operationalised through the Occupational Information Network (O*NET). When used together, the system is referred to as the O*NET-SOC 2019 taxonomy. Gregory et al. (2019, p. 4) explain:

The O*NET system was designed to adapt to changes in the world of work. With the alignment of the O*NET-SOC 2019 taxonomy to the 2018 SOC, the correspondence between the O*NET system and the world of work strengthens and allows the O*NET Program to continue to meet the needs of its customers.

As a standalone system, the SOC 2018 is only used for statistical purposes and classifies occupations at four levels based on their job duties: major group, minor group, broad occupation, and detailed occupation. According to the U.S. Bureau of Labor Statistics (2017a, p. 1), “Occupations are classified based on work performed and, in some cases, on the skills, education and/or training needed to perform the work.”

The bureau (2017c, p. 7) clearly states that the SOC 2018 is not intended to rank occupations by any particular indicator of status. However, when the framework was incorporated into the O*NET, a classification system was used to indicate a hierarchy in occupations. The O*NET “classifies occupations into 1 of 5 ‘Job Zones,’ based on data regarding the levels of education, experience, and training needed for work in an occupation, ranging from ‘little or no’ to ‘extensive’ preparation” (U.S. Bureau of Labor Statistics, 2017c, p. 7).

O*NET job zones are primarily based on education level, using data from persons currently working in the job and from occupational experts. Related work experience and on-the-job training may be considered, along with where the occupations lie on the career ladder within an organisation.

The original tool that guided the development of the job zone system was the concept of ‘specific vocational preparation’ (SVP), which came from the US’s older occupational classification system, the Dictionary of Occupational Titles. SVP is defined as “the amount of lapsed time required by a typical worker to learn the techniques, acquire the information, and develop the facility needed for average performance in a specific job-worker situation” (O*NET OnLine, n.d.). There are nine SVP levels based on time:

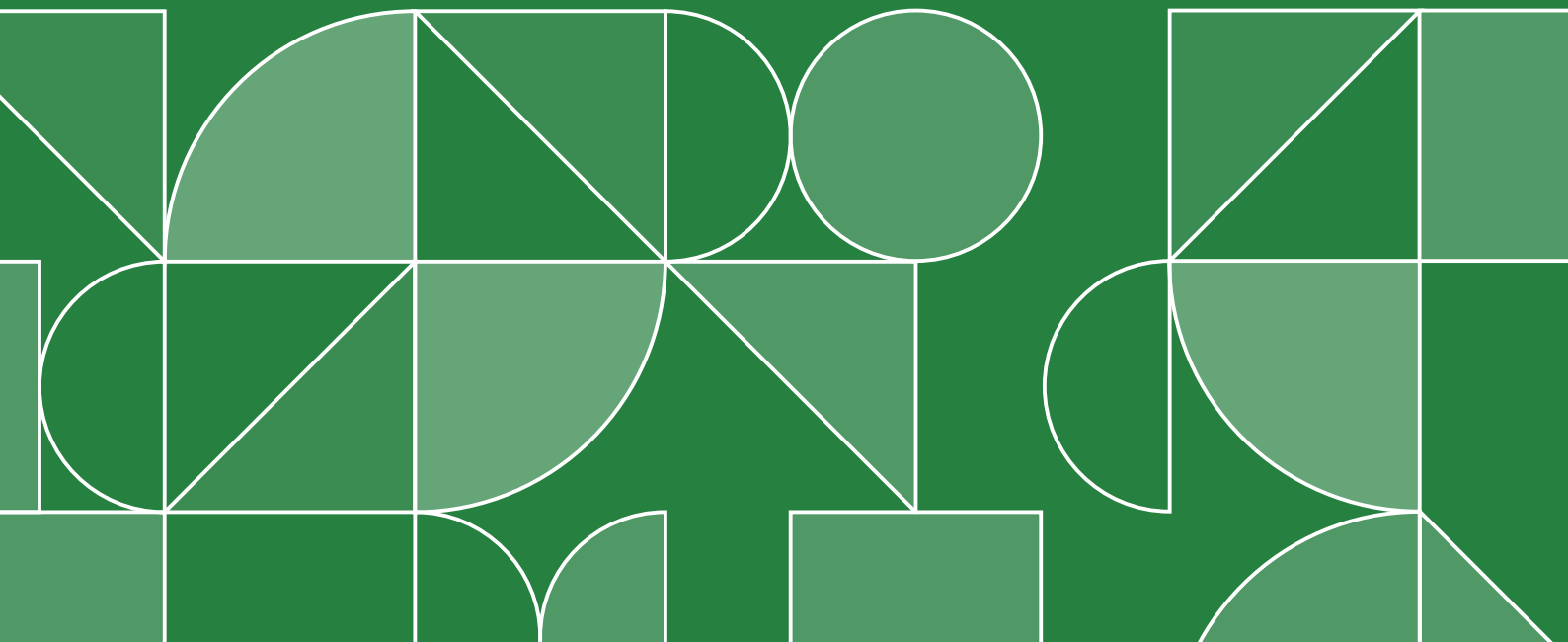
- SVP level 1: Short demonstration only
- SVP level 2: Anything beyond a short demonstration, up to and including one month
- SVP level 3: Over one month, up to and including three months
- SVP level 4: Over three months, up to and including six months
- SVP level 5: Over six months, up to and including one year
- SVP level 6: Over one year, up to and including two years
- SVP level 7: Over two years, up to and including four years
- SVP level 8: Over four years, up to and including ten years
- SVP level 9: Over ten years

Each of the five job zones in the O*NET is linked to SVP levels. Each job zone provides information on overall experience, job training, and the education required, and gives examples of the jobs in that zone. Detailed job zone descriptions are included in Annexure B.

The following skill levels are deduced from looking at the descriptions:

- Job zone 1 ‘Little or no preparation needed’: Elementary skills. Linked to the first four levels of SVP.
- Job zone 2 ‘Some preparation needed’: Elementary skills. Linked to SVP levels 1–5. Includes reference to a short period of post-school education.
- Job zone 3 ‘Medium preparation needed’: Elementary skills. Linked to SVP level 6. The education requirement indicates that some vocational training may be required but also possibly an associate degree, which is below a bachelor’s degree in the US education system.
- Job zone 4 ‘Considerable preparation needed’: Advanced skills. Indicates SVP level 7. Requires several years of vocational training and a bachelor’s degree.
- Job zone 5 ‘Extensive preparation needed’: Advanced skills. Indicates SVP level 8 and above. Requires several years of vocational training and a higher degree such as a master’s or doctoral degree.

Conclusion



This report provides great insights into the use and implications of occupational classification systems in South Africa. It highlights how high, medium, and low skills are categorised for jobs and occupations into standardised groups based on the nature of the work performed and how this can be compared to international cases. The report concludes by answering the two main research questions.

Research question 1 sought to understand: How are occupations currently classified into high/advanced, medium/intermediate, and low/elementary skill levels, nationally and internationally? From the findings, we note that the occupational classification systems currently in use in South Africa, the SASCO and the OFO, include the four skill levels defined in the ILO's ISCO-08. These two systems classify skill based on the nature of work performed, the level of formal education required to perform this work, and the amount of informal training or experience required to perform this work. The SASCO does not explicitly translate its four skill levels into high, medium, and low categories. However, based on Stats SA publications, it is possible to conclude that SASCO skill level 1 might be understood as pertaining to low skills, level 2 to medium skills, and levels 3 and 4 to high skills.

On the other hand, the OFO does provide explicit guidance in translating its four skill levels into the 'entry, intermediate, and high' categories stipulated in the NSDS, based on the educational attainment required to competently perform the tasks involved. In the OFO, skill level 1 is considered entry (low-skilled) level, and skill level 2 includes both entry and intermediate (medium-skilled) occupations. OFO skill level 3 is classified as intermediate, while skill level 4 is considered high-skilled (DHET, 2017).

There are effectively two hierarchies at work in the occupational classification systems used in South Africa. The fundamental hierarchical structure derived from the ISCO-08 relates to the system of classification from individual occupations to unit groups, to minor groups, to sub-major groups, through to major groups. This hierarchy is based on grouping occupations based on the tasks and duties that comprise them.

Skill is defined as the ability to carry out these tasks and duties, and skill level is a function of the relative complexity of the tasks and duties within an occupation. This leads to a de facto hierarchy that develops based on skill levels. While this skill-based hierarchy is not a definite purpose of the occupational classification systems, it becomes important in attempting to use these systems for skills planning because of the need to direct investments in education systems into appropriate institutions and educational structures.

Other countries' occupational classification systems, such as India and the UK's discussed in the case studies, are also founded on and draw their hierarchical structure from the ISCO-08. Both India and the UK make use of four skill levels, based on tasks and the time spent in education. Skill level creates the vertical hierarchy of the system and can be used to determine whether an occupation is at an elementary, intermediate, or advanced skill level. In contrast, the hierarchy in the occupational classification system used in the US is linked to job zones, which are based on a vocational readiness indicator that relates to the period required for a typical worker to be prepared to enter that occupation.

Although these three international systems differ, it does appear that the period spent in education and training and/or in gaining experience in the field is the key determinant for the hierarchical structure of the occupational classification systems. India and the UK have both implemented some form of a national qualifications framework that provides structure and hierarchy to their qualifications (including vocational qualifications).

Both countries make use of level descriptors to differentiate between levels and to indicate increasing levels of difficulty. However, their descriptions of knowledge and skill (and for India, responsibility as well) are not always easy to quantify as the adjectives used tend to be quite vague—for example, the distinction between ‘narrow’ and ‘wide-ranging’, or ‘basic’ and ‘advanced’ is not spelled out in the descriptions.

The US’s education system, by comparison, does not make use of any form of national qualification framework, and the hierarchical structure of its qualifications is based on the duration of the qualification in question. While this is more easily quantifiable, it may not take into consideration the differences between qualifications that may have the same duration but do not necessarily entail the same level of difficulty.

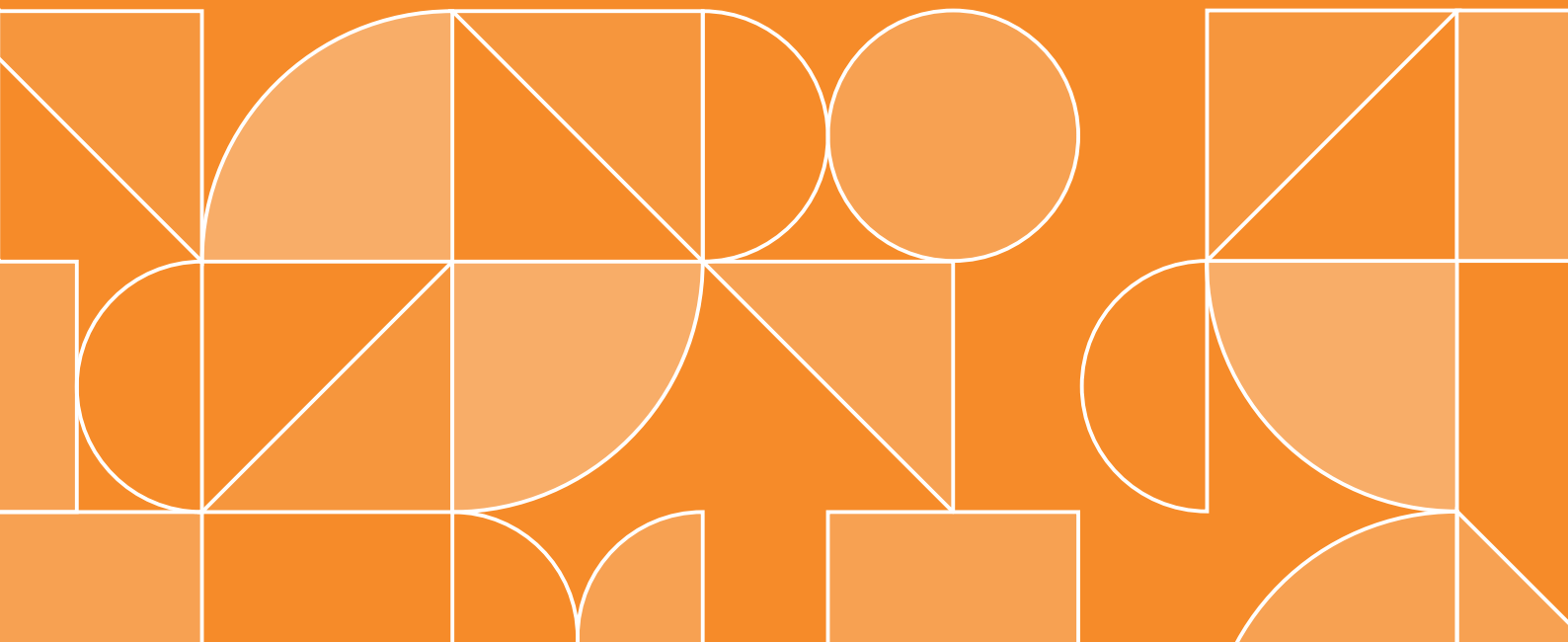
Research question 2 wanted to establish: What are the implications of using the hierarchical classification of occupations for South Africa’s skills anticipation systems? The findings reveal that the use of ISCO-08-based occupational classification systems in South Africa provides a means of assessing the composition of the labour market in terms of the sectors and industries in which people are employed. As such, this data provides an important component of a skills anticipation system.

The OFO, in particular, offers a useful means of assessing skills needs through an occupational mapping tool (Ramsarup, 2020). However, effective skills anticipation requires the integration of occupational classification systems into planning processes across education policy as well as industrial policy. In this context, it may be challenging to have two systems operating in parallel (i.e., the SASCO and the OFO), and it may be necessary to either merge the two systems into a coherent whole or to choose one system that will be used in the country.

Finally, the report recommends that *one* occupational classification system be employed across all relevant agencies and government departments to facilitate planning and communication processes and to reduce the potential for inaccuracies and confusion in skills planning. A process for merging the OFO and the SASCO should be considered and discussed. One option would be for the group structure of the SASCO to be retained, since it more closely matches the ISCO-08’s and is likely to be more relevant for international comparability, while including the added occupation level detail from the OFO to the new merged framework.

PART 7

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7.1 Overarching References

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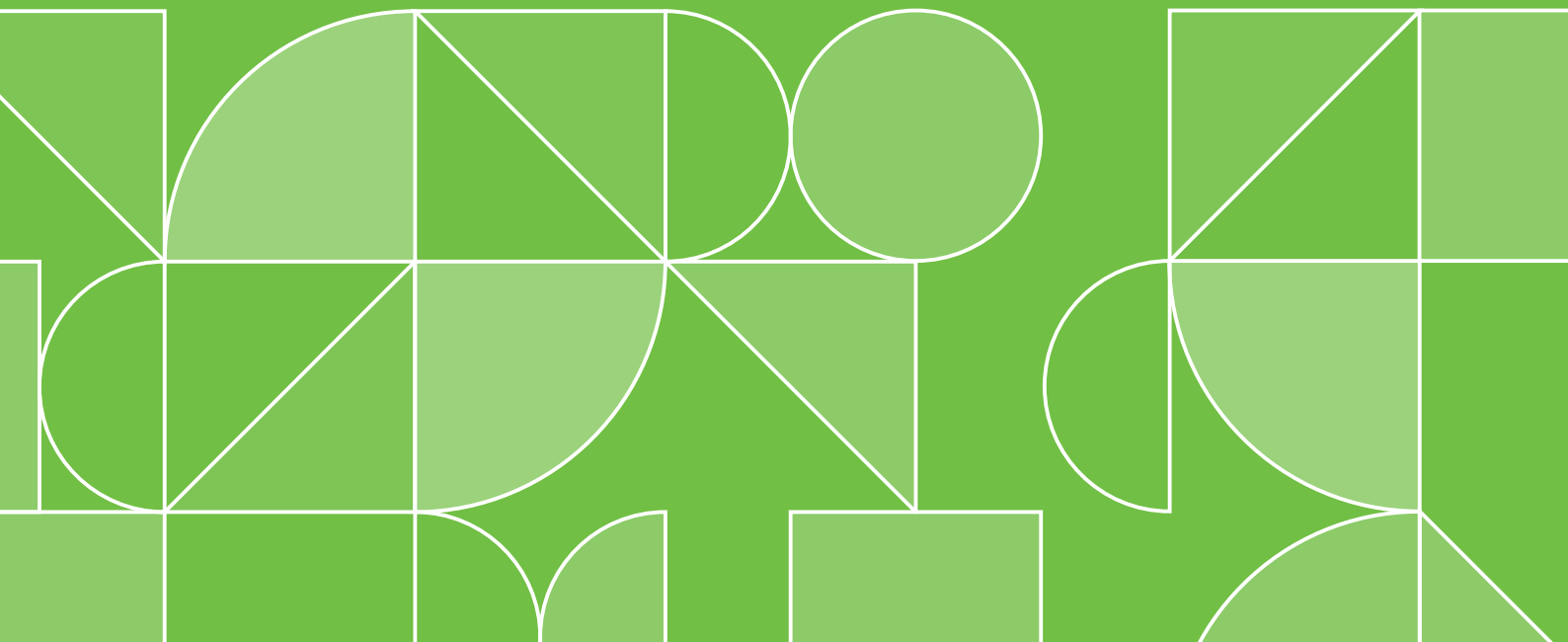
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Annexures



Annexure A: Countries by occupational qualification systems

Group 1: Australia, Bangladesh, Botswana, Germany, Hong Kong (SAR China), and India

	AUSTRALIA	BANGLADESH	BOTSWANA	GERMANY	HONG KONG (SAR CHINA)	INDIA
OCCUPATIONAL CLASSIFICATION SYSTEM						
NAME	Australian and New Zealand Standard Classification of Occupations (ANZSCO)	Bangladesh Standard Classification of Occupations (BSCO)	Botswana Standard Classification of Occupations (BOSCO), 2008	German Classification of Occupations 2010 (KldB-2010)	International Labour Organization's International Standard Classification of Occupations 2008 (ISCO-08)	National Classification of Occupations-2015 (NCO-2015)
STATED PURPOSE	Labour market intelligence: Comparability of data between Australia and New Zealand.	Labour market intelligence: Classifying and aggregating occupational information and identifying priority occupations.	No clear purpose indicated, but appears to have been designed as purely statistical and for international comparability.	Labour market intelligence utilised for a wide range of purposes.	National labour market intelligence tool.	Functions as a repository for labour market intelligence including maintaining standards in occupational, international comparability, and statistics.
ENACTED PURPOSE	Labour market intelligence	Occupational classification during the Labour Force Surveys, but also informed the development of the National Training and Vocational Qualifications Framework (NTVQF).	Does not appear to be widely used as there is also another tool, the Labour Market Observatory (LMO), which was intended to play a critical role in monitoring changes in labour market trends and to produce information on occupations in demand.	The Federal Employment Agency uses the Dokumentations-kennziffer, derived from the KldB-2010, for job placements. However, it is only a considered a supplementary tool.	Labour market intelligence	Labour market intelligence

	AUSTRALIA	BANGLADESH	BOTSWANA	GERMANY	HONG KONG (SAR CHINA)	INDIA
INTERNATIONAL BASIS	None indicated	Based on the ISCO-08	Based on the ISCO-08	Not directly linked to ISCO-08 although provision is made for comparative analysis.	Adopted the ISCO-08 without any modification for its own context.	Based on the ISCO-08
IDENTIFICATION OF PRIORITY OCCUPATIONS	The Australian Government Department of Education, Skills and Employment consults with industry skills councils to develop occupational qualifications, which are then recorded on the Australian Qualifications Framework (AQF). The Australian Bureau of Statistics uses the information from the qualifications listed on the AQF to update the ANZSCO occupation classifications.	The BSCO is used to categorise priority occupations, which are identified by the industry skills councils and reflected in each specific council's report for its sector.	Priority occupations are identified in line with the priorities outlined in the government's Vision 2036, the National Development Plan, and long-term strategies of different economic sectors. The Human Resource Development Council (HRDC) publishes the top occupations in high demand, together with a sectoral breakdown on the criteria for prioritisation. The LMO was intended to produce information on priority occupations, based on changing labour market trends. It was not clear, however, if this was actually happening.	The term 'priority occupations' does not appear to be used. Despite this, it seems that they are identified through a negotiated and continuous process with all social partners. The Institute for Employment Research conducts a yearly Job Vacancy Survey that provides information to the Federal Employment Agency on all vacant positions, and this gives an indication of demand for occupations.	The ISCO-08 is not used to identify priority qualifications. It appears that the Industry Training Advisory Committees (ITACs) or Cross-Industry Training Advisory Committees (CITACs) may be involved in the identification of priority occupations through their engagement with the development of Specification of Competency Standards (SCS) for their sectors.	The NOC-2015 is not used to identify priority occupations. The Ministry of Labour and Employment, through the National Skill Development Corporation (NSDC), works with industry, represented by the Sector Skills Councils (SSCs), to determine skills gaps and shortages in each sector.
OCCUPATIONAL QUALIFICATIONS						
QUALIFICATION FRAMEWORK	Australian Qualifications Framework (AQF)	National Training and Vocational Qualifications Framework (NTVQF)	National Credit and Qualifications Framework Botswana National Vocational Qualifications Framework (BNVQF)	Deutsche Qualifikationsrahmen für lebenslanges Lernen (DQR) (although not regulatory—see note below)	Hong Kong Qualifications Framework (HKQF)	National Skills Qualification Framework (NSQF) National Vocational Education Qualification Framework (NVEQF)

	AUSTRALIA	BANGLADESH	BOTSWANA	GERMANY	HONG KONG (SAR CHINA)	INDIA
IF NONE, HOW ARE OCCUPATIONAL QUALIFICATIONS MANAGED?	N/A	N/A	N/A	Although the DQR is in place, vocational education and training (VET) in Germany is still based on the dual system. There are clearly defined training standards, and training qualifications are recognised throughout the country. The DQR is used for transparency and orientation in the VET system but it is not regulatory.	N/A	N/A
RELATIONSHIP						
IS THERE A RELATIONSHIP BETWEEN THE OCCUPATIONAL CLASSIFICATION SYSTEM AND OCCUPATIONAL QUALIFICATIONS?	No	Yes	No	No	No	Yes but limited—the NOC-2015 is linked to the NVEQF through the National Occupational Standards (NOS) developed for every occupation classified, and which form the basis of occupational qualifications.



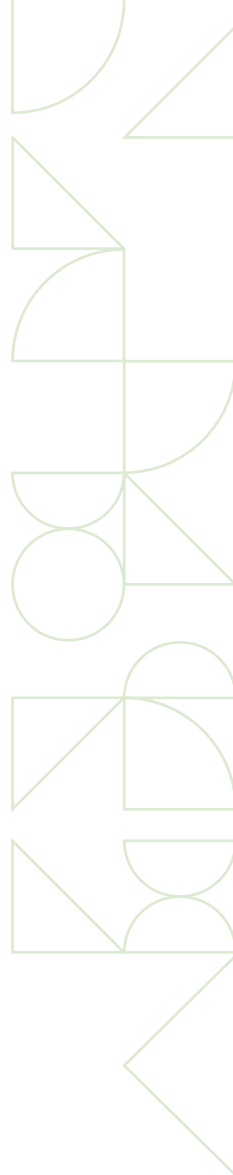
	AUSTRALIA	BANGLADESH	BOTSWANA	GERMANY	HONG KONG (SAR CHINA)	INDIA
<p>IF NOT, WHAT ARE THEY USING?</p>	<p>Developing bodies, such as industry skills councils, create training packages that are then used to develop accredited courses. Accredited courses are, however, required to provide the ANZSCO occupational reference on the application form.</p>	<p>N/A</p>	<p>The BNVOF allows industry and training providers to collaborate in the development of qualifications. Priority occupations are drawn from industry and government strategies and policies.</p>	<p>Regional standards are issued by the various chambers according to the requests of the regional labour market. The various chambers' tripartite training committees are responsible for making decisions on these. Employers and trade unions are seen as the main stakeholders of the dual system and are the drivers of the National Occupational Standards (NOS). The federal government is unlikely to proceed with an NOS without agreement from the social partners. NOS are developed and issued by a combination of the federal government (represented by the Ministry of Education and Science), social partners, and the Federal Institute for Vocational Education and Training.</p>	<p>ITACs and CITACs are established by industries with the assistance of the Education Bureau and serve to identify skills gaps as well as develop occupational qualifications.</p>	<p>The SSCs work in partnership with the NSDC to identify skills gaps and develop occupational qualifications.</p>

	AUSTRALIA	BANGLADESH	BOTSWANA	GERMANY	HONG KONG (SAR CHINA)	INDIA
INFORMATION FLOW	Bottom up: ANZSCO is updated to report on developments in the AQF.	Top down: The BSCO informed the development of the NTVQF to match the BSCO and to respond to occupational and industrial skills needs.	The BOSCO-2008 occupation codes are used to indicate occupations that are considered in demand. However, there is no further indication of information flow between the BOSCO and the BNVEQF.	Bottom up: Employers and trade unions feed information on occupations to their associations on a federal level.	The HKQF and the ISCO-08 exist independently. The HKQF is more dominant in the Hong Kong education and labour markets. Due to the lack of context-specific modifications of ISCO-08 for the Hong Kong context, it is not possible for the HKQF to even influence the occupations classified by the ISCO-08.	Bottom up: The NOS developed by the SSCs are mapped on all occupations classified by the NOC-2015. The NOC is updated to report developments in the NVEQF.
HOW DOES SIGNALLING TAKE PLACE?	The ANZSCO does not signal demand. Demand is based on industry requirements.	The BSCO signals demand for occupational qualifications by categorising priority occupations. The industry skills councils identify the priority sectors and occupations and produce reports indicating these skills shortages. They then work with the Bangladesh Technical Education Board (BTEB) to develop the standard competencies (skills, sets of knowledge, and attitudes) required to perform tasks in identified occupations.	Signalling is done by the HRDC as it is responsible for publishing the document with the criteria for prioritising occupations, as well as the list of top occupations in demand. The LMO was meant to be a tool that was continually updated with the changing labour market trends in order to provide the latest information on priority occupations, but not all occupations are currently listed on the website and it is not clear whether it is actually being used as intended.	Signalling occurs at industry level through the involvement of state, employer, and labour representatives in an ongoing process of determining which occupations are in demand. Occupations in demand can differ between regional labour markets as there are still distinct differences between the regions.	ISCO-08 is not used to signal demand. The ITACs and CITACs identify the skills gaps in their sectors, using sector or industry surveys, and develop qualifications accordingly.	There is no indication of the NCO-2015 being used for skills planning or determining skills in demand. Signalling is done by the SSCs, which develop a sectoral framework for each sector, used to conduct skills audits and to signal demand for new occupational qualifications.



CURRICULUM DESIGN AND DEVELOPMENT DRIVERS	AUSTRALIA	BANGLADESH	BOTSWANA	GERMANY	HONG KONG (SAR CHINA)	INDIA
	<p>The Australian Government Department of Education, Skills and Employment, in consultation with the states and territories, is responsible for the AQF. Curriculum is developed through a national consultation process involving industry representatives and other VET stakeholders. Industry participates closely in setting the national training agenda for schools and VET/higher education institutions through 'developing bodies' such as industry skills councils, and qualifications are designed to meet the skills needs of industry first.</p>	<p>The Directorate of Technical Education is responsible for skill standards (with the support of the BTEB), establishing training curricula, and facilitating the implementation of the qualifications framework. The BTEB identifies experts from the industry skills councils and they are linked with curriculum developers who lead the teams. Curriculum is developed and aligned closely to the national competency standards accepted by industry.</p>	<p>The Department of Technical and Vocational Education and Training is responsible for the planning and implementation of all institutional-based vocational programmes. Limited information was available on how curricula are designed and developed.</p>	<p>Curriculum design and development is done in consultation with all social partners. However, the responsibility for curriculum design rests strongly with VET college lecturers and the master artisans/technicians responsible for workplace teaching and learning.</p>	<p>The Hong Kong Council for Accreditation of Academic and Vocational Qualifications accredits qualifications. ITACs and CITACs play a leading role in the implementation of the HKQF and in the development of Specification of Competency Standards, which are industry- or sector-specific competency standards that can be grouped to form a qualification at a particular level on the HKQF.</p>	<p>One of the functions of the SSCs is to develop skill competency standards and qualifications that form NOS. These are bundled into 'qualification packs' that include all elements of the occupational qualification, which is then registered on the NVEQF.</p>

NOTES	AUSTRALIA	BANGLADESH	BOTSWANA	GERMANY	HONG KONG (SAR CHINA)	INDIA
			<p>Limited information was available electronically on the BOSCO and on the BNVQF. Botswana has attempted to create a system that seems similar to the Occupational Information Network (O*Net) on the LMO website, but it is unclear how this relates to the BOSCO and it has no apparent influence on the BNVQF. It is also incomplete as not all occupations are listed.</p>	<p>Germany is currently implementing the German Qualifications Framework for Lifelong Learning (or the DQR). However, it is a non-regulatory framework and is still in the process of being integrated into the policies of different sectors of the education system.</p>		



Group 2: Japan, Mexico, South Korea, Uganda, United Kingdom, and United States of America

	JAPAN	MEXICO	SOUTH KOREA	UGANDA	UNITED KINGDOM (UK)	UNITED STATES OF AMERICA (US)
OCCUPATIONAL CLASSIFICATION SYSTEM						
NAME	Japan Standard Occupational Classification (JSOC)	Sistema Nacional de Clasificación de Ocupaciones (SINCO)	Korean Standard Classifications of Occupations (KSCO) Korean Employment Classification of Occupations (KECO)	ISCO-08 A second occupational classification has been designed by the Directorate of Industrial Training (DIT) but only has 70 occupations listed.	Standard Occupational Classification (SOC) system	Standard Occupational Classification (SOC) system
STATED PURPOSE	To classify occupations based on job similarities and to systematically arrange occupations for statistical purposes.	To reflect the occupational structure and for international comparability.	To compile official statistics and classify jobs into occupational categories. The KECO aims to help people access and utilise information on occupations. KECO was revised to reflect labour market dynamics.	ISCO-08 is used as a framework for the Uganda Bureau of Statistics' statistical data and administrative purposes.	To classify workers by their occupations, classification of jobs, career information, and statistical analysis for qualification development and labour market intelligence.	To classify workers and jobs into occupational categories, with the aim of collecting, calculating, analysing, and disseminating data.
ENACTED PURPOSE	Labour market intelligence, particularly the dissemination of statistics.	Used in the development of the National System of Competency Standards (NSCS).	Labour market intelligence. However, the KECO is also used to provide job placement services, and the occupational classification system is used as a basis for the development of National Competency Standards (NCS).	Limited statistical data and administrative purposes.	As per the stated purpose. However, it is also used for locating qualifications available in the UK and by awarding organisations for labour market intelligence.	Federal agencies use the SOC system to collect occupational data. The Occupational Information Network (O*NET) was developed as a primary source of occupational information and is based on the SOC. State and local labour market specialists in public workforce development offices frequently link O*NET data to SOC data.

	JAPAN	MEXICO	SOUTH KOREA	UGANDA	UNITED KINGDOM (UK)	UNITED STATES OF AMERICA (US)
INTERNATIONAL BASIS	Generally aligned with the ISCO. However, the original Japanese system appears to predate the ISCO. The contents of individual jobs in Japan are not as clear as in Europe and the US, which makes implementation of international occupational classifications problematic.	Developed based on the ISCO-08.	The KSCO is based on the ISCO-08. The KEKO complements the KSCO, is based on the ISCO, and is modelled after the US's Standard Occupational Classification.	Uganda does not have an occupational classification system that is specific to its labour market. It uses the ISCO-08 as well as a second, smaller classification based on the Ugandan Vocational Qualifications Framework, which was developed based on ISCO-08.	The SOC is based on the ISCO-08.	None indicated, although there are some similarities to the ISCO occupational classification system. The SOC is a task-based classification system.
IDENTIFICATION OF PRIORITY OCCUPATIONS	The JSOC is used to identify priority occupations through the labour force surveys conducted by the Statistics Bureau and the Director-General for Policy Planning (Statistical Standards) of Japan.	The SINCO does not appear to be involved in identifying priority occupations. Priority occupations are identified through market research conducted by Colegio Nacional de Educación Profesional Técnica (CONALEP) and other institutions.	The KEKO reflects labour market dynamics, and the occupational classification system is used to identify priority sectors and occupations.	The Uganda Vocational Qualifications Framework (UVQF) was used by the DIT to develop an occupational classification framework with 70 occupations listed. However, although the DIT states that its mandate is to use labour market intelligence to develop qualifications, it is not clear whether the 70 occupations are considered priority occupations.	The SOC is used for identifying priority occupations. The UK has a labour market intelligence gathering process, which includes gathering information and intelligence about future skills demand to inform skills planning.	O*NET, based on the SOC, is used to identify priority occupations. O*NET gathers information using surveys and interviews to pinpoint skills shortages, and rates occupations to find out which jobs are in demand.

	JAPAN	MEXICO	SOUTH KOREA	UGANDA	UNITED KINGDOM (UK)	UNITED STATES OF AMERICA (US)
OCCUPATIONAL QUALIFICATIONS						
QUALIFICATION FRAMEWORK	N/A	Marco Mexicano de Cualificaciones	National Qualifications Framework (NQF) under development Technical Qualifications Framework	UVQF	Regulated Qualifications Framework (RQF) for England and Northern Ireland Scottish Credit and Qualifications Framework (SCQF) Credit and Qualifications Framework for Wales (CQFW)	N/A
IF NOT, HOW ARE OCCUPATIONAL QUALIFICATIONS MANAGED?	There are official national licenses for certain occupations. These are awarded by bodies that are accredited by the government ministries. Most schools for vocational and practical skills education are privately run but the curricula are controlled by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT). The National Institute for Academic Degrees and Quality Enhancement of Higher Education examines candidates for graduation after TVET institutions apply for approval to offer certifications.	N/A	N/A	N/A	N/A	The federal government has no direct governance of state and local education. Responsibility rests with each individual state to create a legislative framework. Local educational agencies have the primary responsibility for governance of TVET.

	JAPAN	MEXICO	SOUTH KOREA	UGANDA	UNITED KINGDOM (UK)	UNITED STATES OF AMERICA (US)
RELATIONSHIP						
IS THERE A RELATIONSHIP BETWEEN THE OCCUPATIONAL CLASSIFICATION SYSTEM AND OCCUPATIONAL QUALIFICATIONS?	No	Yes but limited—NSCS, based on the SINCO, is used for the development of certain occupational qualifications.	Yes	No	Yes	Potentially through O*NET
IF NOT, WHAT ARE THEY USING?	Japan uses an employer-led model whereby decisions on vocational qualifications and skills required are decided by individual employers.	N/A	N/A	It is unclear what is being used for labour market intelligence and to signal demand for new occupational qualifications, although the DIT states that occupational competencies identified in the labour market are used to develop competence-based curricula for the qualifications.	N/A	N/A
INFORMATION FLOW	There is no flow of information between the JSOC and occupational qualifications in either direction.	Top down: Occupational qualifications are developed based on the competencies in the SINCO.	Top down: The occupational classification system is used to identify broad industry areas for the development of the NQF, as well as priority fields in VET for the development of NCS.	Bottom up: Uganda developed the existing 70 occupations based on the UVQF. The DIT occupational classification system, therefore, follows the UVQF, which is then the occupation originator.	Top down: Awarding organisations use labour market intelligence from the SOC to make decisions on new qualifications.	O*NET provides occupational information that includes details of skills and knowledge requirements for occupations. However, it is not immediately evident if this is used in occupational qualification development.



	JAPAN	MEXICO	SOUTH KOREA	UGANDA	UNITED KINGDOM (UK)	UNITED STATES OF AMERICA (US)
<p>HOW DOES SIGNALLING TAKE PLACE?</p>	<p>The Ministry of Health, Labour and Welfare (MHLW) and the MEXT share responsibility for the provision and supervision of skills demand. This system is not well-coordinated however, and most signalling occurs between schools and employers to ensure company-specific skills needs are met.</p>	<p>It is not clear how, or if, the SINCO signals demand for new occupational qualifications. It is reported that VET qualifications are not regularly updated, have limited recognition in the labour market, and that there are only weak links between the VET system and participating employers. Although some VET qualifications have been developed as a result of demand from industry, and the introduction of the dual system was motivated by the development of key sectors of the labour market, most existing VET qualifications are not aligned to the realities of the labour market.</p> <p>CONALEP and the Centres for Industrial Technical Education and for Research and Advanced Studies of the Instituto Politécnico Nacional belong to a group of institutions supported by the federal government and help to gather information on the labour market for use in developing competencies and occupational qualifications.</p>	<p>The occupational classification system signals demand for new qualifications. Qualifications are developed based on labour skills demand. The KECO was specifically revised to meet the future skills demand. Qualifications are developed by first identifying the competencies required by the industry and then using them to develop new qualifications.</p>	<p>It is not clear how signalling takes place between the occupational classification system and the UVQF. The DIT occupational qualification system may have been based on the market analysis conducted for the development on the UVQF. The ISCO-08 also does not appear to signal demand for occupational qualifications in Uganda's labour market as it has not been contextualised.</p>	<p>The SOC includes occupational and skills analyses, which results in an understanding of skills gaps and the aligning of the supply of and demand for occupations and skills in the labour market. Signalling for the changing demand for skills is done by indicating the changing distribution of skills that are being used in employment. Qualifications are developed and delivered to meet government policy requirements and the changing skills requirements in response to labour market demands.</p>	<p>The O*NET model may provide a certain degree of signalling between the SOC and occupational qualifications. One of the aims of O*NET was to gather information on skills shortages and feed that information into related government initiatives. However, as O*NET was not originally designed for research, the validity and accuracy of the data may be questionable. Each state has its own TVET objectives depending on the regional labour needs.</p>

CURRICULUM DESIGN AND DEVELOPMENT DRIVERS	JAPAN	MEXICO	SOUTH KOREA	UGANDA	UNITED KINGDOM (UK)	UNITED STATES OF AMERICA (US)
	<p>The JSOC is not used for curriculum design or development. A vocational ability development measures system was developed by the MHLW. This system is used as a guideline for capacity development and provides a scale for skills acquired nationally. MHLW and the Japan Vocational Ability Development Association have also developed the Vocational Capability Evaluation Standards to organise knowledge and skills that are needed in the labour market and to categorise competencies required for occupational standards.</p> <p>Firms have long-standing relationships with schools to ensure that their skills needs are met.</p>	<p>To respond to skills needs, a dual system based on the German model was implemented. However, this was not widely adopted due to the limited capacity of companies. Content for the dual system occupations was developed by CONALEP, although training institutions can create their own content if it is certified by the Secretariate of Public Education.</p> <p>For other VET qualifications, curricula are designed by CONALEP and certification is awarded by the secretariate. Curricula are designed based on the NSCS, which were developed by the Consejo Nacional de Normalización y Certificación de Competencias Laborales. Curricula are, however, not designed centrally, and decentralised institutions have a high level of independence in setting their curricula.</p>	<p>The occupational classification system is used to design and develop curricula. South Korea has identified broad industry areas to develop into the NQF, while priority fields in the VET system have been identified for the development of NCS. The Human Resource Development of South Korea, part of the Ministry of Employment and Labour, together with industry skills councils, develop the NCS. The NCS are the basis of occupational qualifications.</p> <p>The VET system was modified to align with German dual system and includes industry in the design of competency-based curricula. Institutions can also develop their own curricula, which must be certified by the government. Assessments are conducted against the NCS.</p>	<p>The DIT's occupational classification system is not used for curriculum design and development. The UVQF is used to design and develop curricula for the programmes offered at vocational colleges. However, some programmes, for example some engineering programmes at universities, are allowed to develop their own curricula and are then quality assured by the DIT.</p> <p>For institutions using the older BTVET system, curriculum design and development is coordinated by the Industrial Training Council, which forms part of the DIT, in collaboration with training centres and other industry stakeholders.</p>	<p>Awarding organisations are responsible for the development of new qualifications. They are required to follow the requirements laid down by the Office of Qualifications and Examinations Regulation (Ofqual) and to consult qualifications users to ensure that there is support for the qualification.</p> <p>Awarding organisations make use of NOS linked to an SOC code for the development of a vocational qualification.</p>	<p>There is no indication that O*NET or the SOC are used to design or develop curricula. TVET programmes are aligned according to National Career Clusters. Institutions have the primary responsibility for developing and implementing postsecondary standards. These standards are developed and enforced with reference to policies administered by state agencies, accrediting agencies' requirements, expectations of professional associations and employers, and the practices of other institutions.</p> <p>In-company training is a significant proportion of TVET and is provided by companies without any link to external government agencies or education institutions.</p>



	JAPAN	MEXICO	SOUTH KOREA	UGANDA	UNITED KINGDOM (UK)	UNITED STATES OF AMERICA (US)
<p>NOTES</p> <p>The Japanese education and training system is characterised by a combination of on-the-job-training and off-the-job-training. Vocational education is not a requirement for new employees. At a later stage as training is required, it is done within the company.</p> <p>An attempt was made to implement a Japanese dual system based on the German model; it does not, however, appear to have been particularly successful. This is suggested to be due to the lack of the historical tradition associated with the dual system, as well as the well-defined occupational categories required as a basis for the system.</p>		<p>South Korea has a career information system called KNOW that provides diverse career information. It is also available online as KNOW On-Line. It includes information on occupational job competencies required for various job categories as well as other occupational information.</p>	<p>According to the UNESCO Institute for Lifelong Learning, Uganda lacks a systematic labour market intelligence system, and this is one of the contributing factors to its TVET system being unresponsive to the needs of industry or skills demand (Singh & Duvekot, 2013).</p>	<p>Within the UK, there are slightly different education and training systems (as evidenced by the multiple qualification frameworks) for England and each of the devolved administrations of Northern Ireland, Scotland, and Wales.</p>		

Annexure B: Job Zone Descriptions

Job Zone One: Little or No Preparation Needed

- Overall Experience** No previous work-related skill, knowledge, or experience is needed for these occupations. For example, a person can become a cashier even if he/she has never worked before.
- Job Training** Employees in these occupations need anywhere from a few days to a few months of training. Usually, an experienced worker could show you how to do the job.
- Job Zone Examples** These occupations involve following instructions and helping others. Examples include taxi drivers, amusement and recreation attendants, counter and rental clerks, cashiers, and waiters/waitresses.
- SVP Range** (Below 4.0)
- Education** These occupations may require a high school diploma or GED certificate. Some may require a formal training course to obtain a license.

Job Zone Two: Some Preparation Needed

- Overall Experience** Some previous work-related skill, knowledge, or experience may be helpful in these occupations, but usually is not needed. For example, a teller might benefit from experience working directly with the public, but an inexperienced person could still learn to be a teller with little difficulty.
- Job Training** Employees in these occupations need anywhere from a few months to one year of working with experienced employees.
- Job Zone Examples** These occupations often involve using your knowledge and skills to help others. Examples include sheet metal workers, forest fire fighters, customer service representatives, pharmacy technicians, salespersons (retail), and tellers.
- SVP Range** (4.0 to < 6.0)
- Education** These occupations usually require a high school diploma and may require some vocational training or job-related course work. In some cases, an associate's or bachelor's degree could be needed.

Job Zone Three: Medium Preparation Needed

- Overall Experience** Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.
- Job Training** Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.

Job Zone These occupations usually involve using communication and organizational skills to coordinate, supervise, manage, or train others to accomplish goals. Examples include funeral directors, electricians, forest and conservation technicians, legal secretaries, interviewers, and insurance sales agents.

SVP Range (6.0 to < 7.0)

Education Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.

Job Zone Four: Considerable Preparation Needed

Overall Experience A minimum of two to four years of work-related skill, knowledge, or experience is needed for these occupations. For example, an accountant must complete four years of college and work for several years in accounting to be considered qualified.

Job Training Employees in these occupations usually need several years of work-related experience, on-the-job training, and/or vocational training.

Job Zone Examples Many of these occupations involve coordinating, supervising, managing, or training others. Examples include accountants, human resource managers, computer programmers, teachers, chemists, and police detectives.

SVP Range (7.0 to < 8.0)

Education Most of these occupations require a four-year bachelor's degree, but some do not.

Job Zone Five: Extensive Preparation Needed

Overall Experience Extensive skill, knowledge, and experience are needed for these occupations. Many require more than five years of experience. For example, surgeons must complete four years of college and an additional five to seven years of specialized medical training to be able to do their job.

Job Training Employees may need some on-the-job training, but most of these occupations assume that the person will already have the required skills, knowledge, work-related experience, and/or training.

Job Zone Examples These occupations often involve coordinating, training, supervising, or managing the activities of others to accomplish goals. Very advanced communication and organizational skills are required. Examples include librarians, lawyers, aerospace engineers, physicists, school psychologists, and surgeons.

SVP Range (8.0 and above)

Education A bachelor's degree is the minimum formal education required for these occupations. However, many also require graduate school. For example, they may require a master's degree, and some require a Ph.D., M.D., or J.D. (law degree).



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