



# Beyond the pan-european standard for reporting of exploration results, mineral resources and reserves



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## ABSTRACT

The aim of this paper is to analyse in detail the “Pan-European Standard for Reporting of Exploration Results, Mineral Resources and Reserves,” which is commonly known as the PERC Reporting Standard.

This research examines investor presentations, stock exchange announcements, the results of definitive feasibility studies, competent person reports and company reports from three ready-to-go investments in new tungsten mining projects around the world: the Barruecopardo open-cut tungsten project in Salamanca, Spain, the Hemerdon open-cut tungsten and tin project in Devon, United Kingdom, and the Sangdong underground tungsten project in South Korea.

These case studies were selected because the projects are being developed by companies that are listed on European stock exchanges and have already obtained funding (Hemerdon and Barruecopardo) or are in advanced negotiations or have agreed to terms for funding (Sangdong).

The conclusions of this research clearly define the direction in which future mining reporting standards should develop, mainly to address the weaknesses that were found in the results of feasibility studies that are presented to investors about the capital costs, net present value and internal rate of return calculations, sensitivity and uncertainty analyses and forecasted mineral prices, which are crucial for making sound investment decisions.

These conclusions also consider the benefits of coupling the Competent Person's areas of specialization and the reported results with both the required relevant experience in the different fields of expertise and the type of corporate membership, registration or licensure by a recognised professional body.

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## 1. Introduction

The “Pan-European Standard for Reporting of Exploration Results, Mineral Resources and Reserves,” which is known as the PERC Reporting Standard (2013), was developed in 2006 and was first published in 2008. Its main purpose is to develop a standard for public reports, which include information that is given to investors, potential investors and professional advisers about exploration results, mineral resources and mineral reserves. This information includes company reports (annual or quarterly), stock exchange announcements, capital raising presentations, investor presentations, and technical reports that are currently under the scope of the European Securities and Markets Authority regulations for minerals companies (European Securities and Markets Authority, 2013). The PERC Reporting Standard originated in

previous work in the United Kingdom by the Council of the Institute of Mining and Metallurgy (IMM) in 1991, which developed definitions for resources based on the listing rules of the London Stock Exchange (LSE).

The “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves” (JORC Code, 2012), which was developed by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy (Aus IMM), the Australian Institute of Geoscientists, and the Minerals Council of Australia and was first established in February 1989, was immediately incorporated into the listing rules of the Australian Stock Exchange (ASX). This occurred 20 years after the presentation of the infamous Poseidon report to the Adelaide Stock Exchange in 1969 (Hatton and Fardell, 2012) and after many recommendations on public reporting of resources had been issued due to concerns about unacceptable reporting practices. They were also the first to define the core concept of the “competent person” in their first publication in 1972.

The major mining economies around the world followed this example, and the Resources and Reserves Committee of the

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Society for Mining, Metallurgy, and Exploration, Inc. (SME) in the United States of America published “A Guide for Reporting Exploration Information, Resources, and Reserves” in 1992, which was the precursor of “The SME Guide for Reporting Exploration Results, Mineral Resources, and Mineral Reserves” (SME Guide, 2014).

In 1994, an international initiative was developed to standardise market-related definitions for the reporting of mineral resources and reserves. After a meeting at the 15th Council of Mining and Metallurgical Institutions (CMMI) Congress in Sun City, South Africa, a Mineral Definitions Working Group was formed. This working group was called later the “Committee for Mineral Reserves International Reporting Standards” (CRIRSCO) and was made up of representatives from Australia, Canada, South Africa, the United Kingdom and the United States of America. The main objective of forming CRIRSCO was to foster a common understanding of definitions, classifications and the reporting framework for solid minerals.

In 1997, these participants reached an agreement (the Denver Accord) for the definitions of mineral resources and mineral reserves as well as their respective sub-categories. In 1999, CRIRSCO reached an agreement with the United Nations Economic Commission for Europe (UN-ECE) to incorporate the CRIRSCO categories that were common to both systems into the “United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources” (UNFC, 2009). This agreement gave the CRIRSCO definitions international status. There is no conflict between UNFC (2009) and CRIRSCO because the latter provides specifications for the corresponding UNFC (2009) categories (Henley and Allington, 2013).

Following this agreement, Australia released updated versions of the JORC Code (2012) in 1999 and in 2012. Updates of the codes and guidelines from other countries were subsequently released, while new codes were developed. Thus, CRIRSCO acts as a core code and guideline for reporting standards.

In 2000, the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) developed the “CIM Definition Standards on Mineral Resources and Mineral Reserves” (CIM Definition Standards, 2014), which are incorporated into the “National Instrument 43-101: Standards of Disclosure for Mineral Projects” (NI 43-101, 2011). In addition, the South African Mineral Resource Committee,

under the auspices of the Southern African Institute of Mining and Metallurgy, developed the “South African Code for Reporting of Mineral Resources and Mineral Reserves” in 2000 (SAMREC Code, 2007).

In 2006, CRIRSCO published the first edition of the “International Reporting Template for Exploration Results, Mineral Resources and Mineral Reserves” (CRIRSCO, 2013), which was modelled on the standards of its member countries. The latest version (2013) incorporates CRIRSCO Standard Definitions that were published in 2012 (CRIRSCO, 2012). Fig. 1 shows the reporting items and their relationships within the CRIRSCO template.

In 2007, Chile approved the “Code for the Certification of Exploration Prospects, Mineral Resources and Reserves” (Instituto de Ingenieros de Minas de Chile, 2007), and Russia issued the “Code for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves” in 2011 (NAEN Code, 2011).

## 2. Public reporting

One of the value chain challenges that was described by the Strategic Implementation Plan for the European Innovation Partnership on Raw Materials (European Commission, 2013) is the heterogeneity of the terminology and reporting standards about raw materials in all of the member states, which has a large impact on the reliability and comparability of data at the European level and makes exploration and extraction activities more difficult within the European Union.

In this study, we analyse the adequacy and consistency of the terminology according to the standard objectives and current practices within the European Union to determine their weaknesses and to propose improvements that may contribute to a better understanding and development of the European mining sector. We use three tungsten mining projects as case studies, all of which plan to start in 2015–2016 and belong to companies that are listed on European stock exchanges. These projects were studied in detail by Suárez Sánchez et al. (2015) and include:

- The Barruecopardo Open-Cut Tungsten Project in Western Spain, which is 100% owned by Ormonde Mining Plc (until 2015, when 70% was sold to Oaktree Capital Management). Ormonde

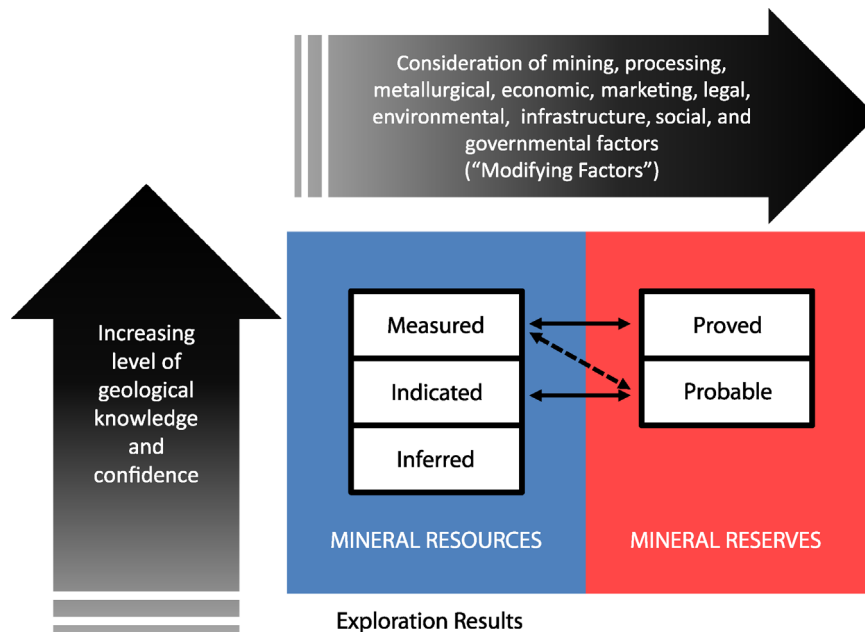


Fig. 1. The CRIRSCO standard classification, which is now used by all reporting standards that are aligned with CRIRSCO. Source: adapted from CRIRSCO (2013).

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