



MRMR Guidelines in Vale : Qualified Professionals

CRIRSCO Meeting – Brasília – Dec 2015


























































➤ Key dates and events

- ✓ Listed for first time in 1943 on Rio de Janeiro Stock Exchange
- ✓ On BOVESPA in 1968
- ✓ On NYSE and LATIBEX (Madri) in 2000
- ✓ On NYSE Euronext Paris in 2008
- ✓ On HKSE in 2010
- ✓ ***Vale Privatization: 1997***
- ✓ ***Acquisitions: INCO and AMCI Australian coal assets in 2006***
- ✓ ***Moatize***

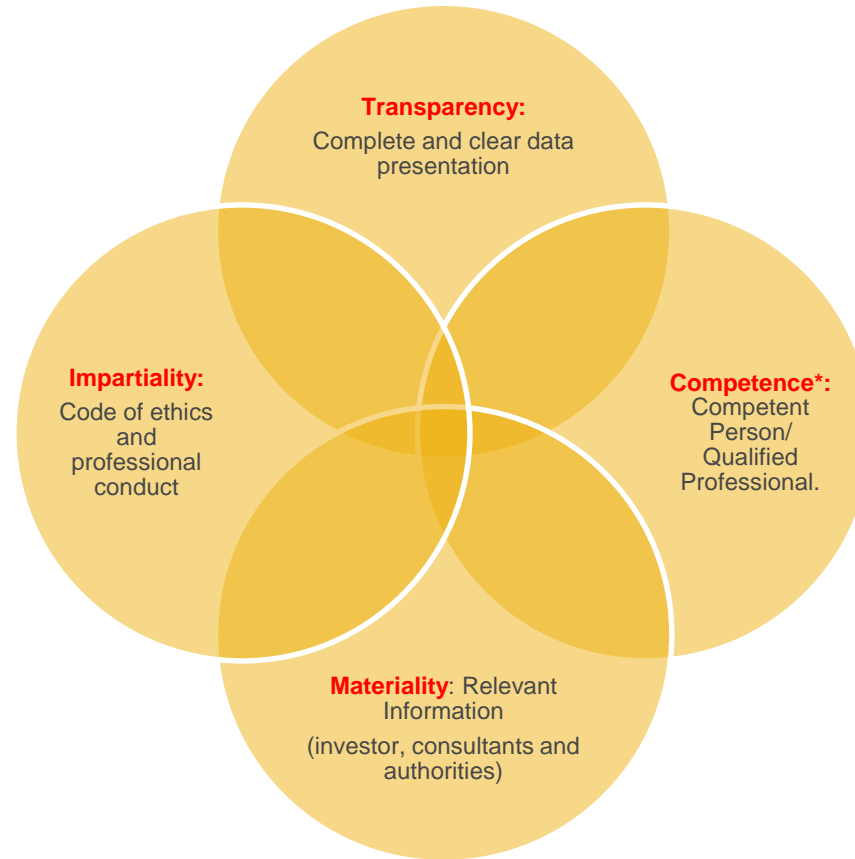
➤ Historical MRMR Governance in Vale

- ✓ Until Privatization: Brazilian and internal standards only;
- ✓ After 1996 and before 2006: all Mineral Reserves were certified every year by independent external auditors. The process was coordinated by a corporate director and there were no internal guides or norms;
- ✓ From 2006 to 2008 the process was decentralized;
- ✓ 2008: the Vale's MRMR Committee was created. The first guideline was published as an operational procedure based on the NI-43.101 and the IG-7. The process was coordinated by the Controlling Department, under the CFO responsibility;
- ✓ 2013: The Committee coordination moved to the Exploration Department and a revision of the MRMR Guide was started;
- ✓ 2014: The Vale Guidelines for Mineral Resources and Mineral Reserves Management were published and became a Global Norm (NFN 001).

CODE CONVERGENCE

	Australia	Canada	South Africa	UK/W Europe	Chile	USA - SME	USA - SEC	UNFC
Adoption of CRIRSCO-type Standard								
Reporting Standard recognized by National Regulator								
Competent Person Requirement								
Reporting of Mineral Resources allowed								
Inferred Resources allowed in economic studies								
Commodity price process specified by management								
ROPO type reciprocal system								
Level of study required for Mineral Reserves	1	2	3	2	2	1	3	3**
Level of Study	1 Appropriate assessments and studies determined by the Competent Person 2 Pre-feasibility study - Expected (UK/W Europe); Required (Canada/Chile) 3 Feasibility Study for new projects 3** Feasibility Study for Proved Reserves; Pre-feasibility Study for Probable Reserves							
ROPO	Recognised Overseas Professional Organisation							
		Allowed under certain restricted circumstances						

➤ Essential principles for mineral resources and mineral reserves disclosure



For our internal guidelines we added: Consistency

➤ Vale's organization chart and MRMR Committee

CEO						
Ferrous	Base Metals	Coal and Fertilizers	Logistics and Mineral Exploration	Finance and Investor Relations	HRs, H&S, Sustainability and Energy	Capital Projects

MRMR Committee

Responsible for the governance of Vale's Mineral Resources and Mineral Reserves reporting.

The Committee Coordinator, with input from the MRMR Committee Representatives, is accountable and responsible for standardizing and monitoring the MRMR reporting process.



➤ Current members of the Committee

MRMR Committee

Exploration

Member/Coord.: Edson Ribeiro
Technical Support: Celeste Queiroz
Marcelo Vidigal

Ferrous (Iron Ore and Manganese)

Member: Renato Mastrela
Alternate: Lilian Grabellos

Base Metals (Nickel and Copper)

Member: Chris Davis
Alternate: Cassio Diedrich

Fertilizers (Phosphate and Potash)

Member: Arildo Oliveira
Alternate: Marcelo Lopes

Coal

Member: Julian Diaz
Alternate: Eduardo Etchart

Investors Relations

Member Rogerio Nogueira
Alternate: Andrea Gutman

Controlling

Member Marcelo Botelho
Alternate: Murilo Muller

Legal

Member Mariangela Bartz
Alternate: Maria isabel Vieira

Investment Management

Member Luiz Oliveira
Alternate: Odilon Paraense

➤ Competence and Responsibility: a layered system

Committee Representative (CR):

The Committee Representative is a mining professional appointed by the BU's Director (DI) as its representative member of the MRMR Committee. It is the representative's **duty to ensure compliance** with the Global guidelines in their respective Business Unit. It is desirable, but not mandatory, that the Committee's Representative is a Qualified Person (QP).

Qualified Person (QP):

A Qualified Person is a mining professional (engineer or geologist) that has at least five years of experience relevant to the style of mineralization and type of deposit under consideration and specific activity for which is considered and recognized as qualified. A QP must be a member of a recognized professional organization that has an ethic code and professional conduct regulation including disciplinary rules.

Responsible Person (RP):

A Responsible Person is a mining professional with appropriate qualifications and experience to be responsible for the total or partial execution of mineral resource or mineral reserves estimation.

➤ Qualified Person

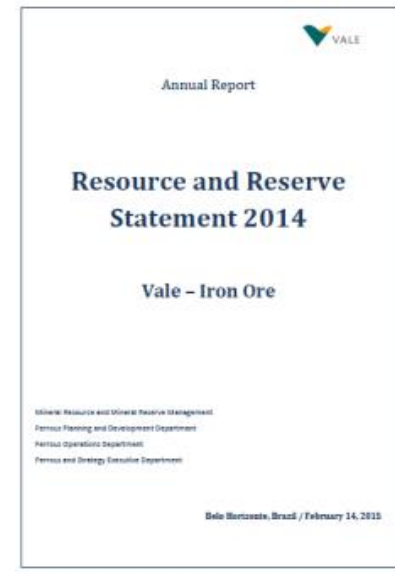
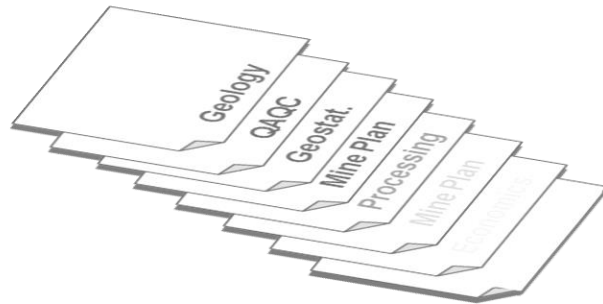
A QP does not need to be an expert in all activities related to the evaluation of resources and reserves, but should have enough knowledge to make a critical analysis of the following items:

- Situation of mining rights and licenses required for the project or operation;
- Quality of geological exploration data and integrity of the geological database;
- Methodology used in geological modeling and resource estimation;
- Criteria used in the resource classification;
- Methodology used in the mine development plan;
- Geotechnical and hydrogeological studies carried out for mine development;
- Cutoff grades and economic parameters used in the benefit function or equivalent;
- Mineral processing tests and main products characteristics;
- Studies of tailing dams and waste piles;
- Level of engineering design that supports the project construction;
- Economic parameters used (hurdle rate, costs, sustaining and growth capex, selling price, etc.)

➤ RPs and QPs

Mineral Resource and Mineral Reserves estimates are prepared by RPs under the guidance of QPs.

The reports are subsequently reviewed and certified by the QPs as input to the annual MRMR statements.



➤ QPs certificates



CERTIFICATE OF QUALIFIED PERSON

To: Vale S.A.

Re: [Mineral Reserve and/or Mineral Resource] Estimates for [name of the deposit] Operations as at December 31, [year]

I, [name of the Qualified Person], do hereby certify that:

1. I am current [Manager/Director/Geologist/ Engineer] and a full time employee of Vale.
2. I graduated with a degree in Geology/Engineering from the University [name of the institution] in [date] and [mention of other titles].
3. I am a member of the [Association of Professional Engineers and Geoscientists and its jurisdiction] since [year].
4. I have worked as a mining professional for a total of [number] years since my graduation from university and I have experience with the mine operations and projects covered in the [name of the deposit or business unit] [Mineral Reserve and/or Mineral Resource] [year] Statement.
5. I am qualified for the role I have played in preparing, supporting or supervising the preparation of [name of the deposit] [Mineral Reserve and/or Mineral Resource] Estimates and I am satisfied that the Statement of those Estimates were prepared by Vale's experienced geologists and engineers and is in accordance with the technical definitions required by the U.S. Securities and Exchange Commission guidelines and [name of recognized Code/Guidelines] standards for [Mineral Reserve and/or Mineral Resource] reporting.
6. I am not aware of any material fact or material change with respect to the subject matter of the [Mineral Reserve and/or Mineral Resource] of Vale S.A. that is not reflected in the Vale's S.A annual statement where the omission to disclose it would make the Annual Reports misleading.

[Date]

[Signature of Qualified Person]

[Print name of Qualified Person]

[Email of the Qualified Person]



To: Vale S.A.

cc:

Re: Mineral Reserve and/or Mineral Resource Estimates for [name of the deposit] Operations as at December 31, [date] (the "Estimates")

I hereby confirm the following in respect of the [name of the deposit] Estimates and the Report:

1. I have reviewed the [name of the deposit] Estimates and the Report.
2. I am satisfied that the sections or applicable subsections of the [name of the deposit] Report referred to in the table below for which I am responsible were prepared in accordance with the SEC-USA guidelines and [name of recognized Code/Guidelines] standards for Mineral Reserve reporting.
3. The undersigned have met with each other to discuss the Estimates and the [name of the deposit] Report and I have not identified any errors or other concerns that would materially affect the Estimates and the [name of the deposit] Report.
4. I am qualified for the role I have played in preparing, supporting or supervising the preparation of the Estimates and the [name of the deposit] Report and I believe that each of the persons reporting to me is qualified to provide the information on which I have relied.
5. I understand that all or portions of the Estimates and the [name of the deposit] Report may be disclosed to the public and are being relied on by Vale S.A., its subsidiaries and third parties.
6. To the best of my knowledge and belief, no events have occurred subsequent to the dates of the [name of the deposit] Report through to the date of this certificate that would require adjustment to the Estimates and the [name of the deposit] Report.

Dated:

Name:

Title:

Affiliation:

Area of Responsibility/Sections:

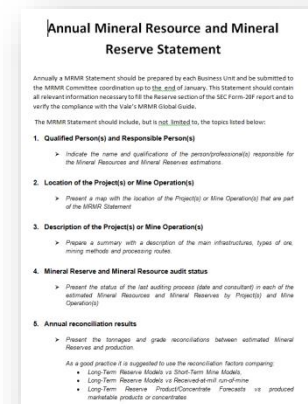
Signature:



➤ MRMR Statement report

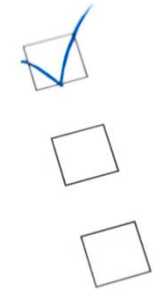
Annually each QP prepares a Mineral Resource and Mineral Reserve statement report including, but not limited to, the following information:

- ✓ Description of the projects /mine operations (location, mining methods, beneficiation process, marketable products and logistics);
- ✓ Status of the legal and environmental permits and licenses and eventual issues;
- ✓ Three year historical prices and exchange rates used for the financial viability test;
- ✓ Indication of the level of studies completed to support the mineral reserves of projects/new operations;
- ✓ Projected exhaustion date for each project or mine operation;
- ✓ The table of stated Mineral Resources as additional to Mineral Reserves;
- ✓ The table of Mineral Reserves, preferably expressed as marketable products or including an indication of respective Metallurgical recoveries;
- ✓ Explanation for changes from previous year MRMR statement;
- ✓ Annual production reconciliation results;
- ✓ Risk Analysis of the stated Mineral Reserves;



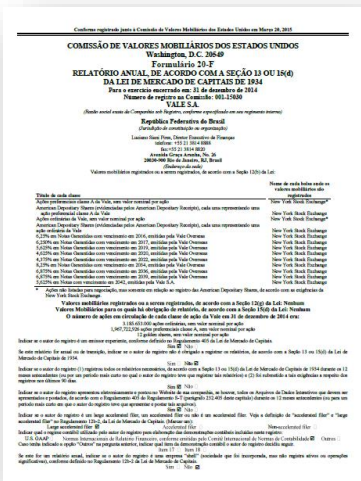
➤ The MRMR Committee validation

The Business Unit Committee Representative (CR) prepares the draft Form 20-F section and forward it to the Committee Coordination team, together with the original MRMR statements and supporting reports.



The Coordination team verifies the MRMR statement compliance with the Global Guidelines. Identified issues will be discussed with the Committee Members prior to approval.

After final revisions, the Coordination informs the Investor Relations Department that the Reserves at Form 20-F were certified and can be signed to be filed with the SEC.



Vale MRMR Dashboard

MRMR ⁽¹⁾	20-F ⁽²⁾	NI43101 ⁽³⁾	SOX ⁽⁴⁾	Deliverables / requirements
●		●		Nomination of the Committee Representatives
●			●	Update in GED the QP letters
●	●	●		Description of projects or mine operations
●	●	●		Status of environmental permits and licenses
●	●	●		Status of Mineral Rights
●				Table of stated MRMR by Mineral Right
●			●	MRMR audit status by each project and mine operation
●				External Audits reports uploaded on GED
●		●		Annual reconciliation results
●	●			Three year historical product price and exchange rates used for the financial viability test
●	●			The level of FEL study completed to support the mineral reserves for new projects
●	●	●		Projected exhaustion date for each project or mine operation
●		●		The table of stated Mineral Resources by project and mine operation and by category
●	●	●		The table of Mineral Reserves by project, mine or mine operation, by category and by total marketable products, product recovery or contained metal.
●	●	●		Explanation of the changes in previous year MRMR statement
●		●		Risk Analysis of the stated Mineral Reserves
●			●	Upload in GED the MRMR Statement

- (1) MRMR Global Guidelines
- (2) Information required by SEC-USA
- (3) information required by NI 43-101
- (4) Item of SOx control: AT1.5 test

➤ In Summary

- ✓ *Vale has developed internal Guidelines aligned with the CRIRSCO principles and the SEC regulations*
- ✓ *The MRMR certification is based on a layered system with strong QP supervision*
- ✓ *The Global MRMR Committee is composed not only by the production areas, but also by key corporate stakeholders (Finance, Legal, Investor Relations and Capital Projects)*
- ✓ *Besides preparing the MRMR sections for the Form 20-F annual report, the Committee is also responsible for updating the Global Guidelines, disseminating best practices and fostering RPs and QPs professional development*

Thank you

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