

Polskie Stowarzyszenie Wyceny Złóż Kopalin Polish Association of Mineral Asset Valuators



THE POLISH CODE FOR THE VALUATION OF MINERAL ASSETS





THE POLISH CODE FOR THE VALUATION OF MINERAL ASSETS



2021 Edition

Kraków 2021

Prepared by the POLVAL Committee composed of:

Piotr W. Saługa – Editor Paweł Pietkiewicz Robert Uberman Krystian Pera Krzysztof Szamałek Eugeniusz J. Sobczyk Ryszard Uberman Sławomir Mazurek Wojciech Glapa Wojciech Naworyta in collaboration with Michał Dudek

and with the insight of the following consultants:

Joanna Kulczycka Krzysztof Galos Marek Nieć Alicja Byrska-Rąpała Herbert Wirth

Publisher

POLISH ASSOCIATION OF MINERAL ASSET VALUATORS

GRAPHIC DESIGN, COVER DESIGN, PROOFREADING Barbara Sudoł, Beata Stankiewicz, Emilia Rydzewska-Smaza

TRANSLATION/PREPARATION OF A TRANSLATION IN ENGLISH Grażyna Siwiec

Re-release 2019 © 2021 Polish Association of Mineral Asset Valuators Printed in Poland ISBN 978-83-964171-3-8 eISBN 978-83-964171-4-5

TABLE OF CONTENTS

(A)	THE	NEED FOR A CODE AND ITS SOURCE REFERENCES	- 5
	(A1)	INTRODUCTION	- 5
	(A2)	FOREIGN CODES FOR THE VALUATION OF MINERAL ASSETS	- 7
	(A3)	OWNERSHIP OF DEPOSITS IN POLAND	- 9
	(A4)	OVERVIEW OF WORK CARRIED OUT TO PREPARE THE POLVAL CODE	- 9
	(A5)	VALUATION IN THE TEXT OF THE CODE	10
	(A6)	ORGANISATION OF THE CODE	10
(D)	BASI	C DEFINITIONS	11
(S)	STAN	VDARDS – MANDATORY PRINCIPLES	29
	(S1)	SCOPE OF THE STANDARDS	29
	(S2)	VALUE	29
	(S3)	PRINCIPLES OF THE VALUATION PROCESS	29
	(S4)	QUALIFICATIONS AND RESPONSIBILITIES OF MINERAL ASSET VALUATOR -	30
	(S5)	COMMISSIONING A VALUATION	30
	(S6)	VALUATION	31
	(S7)	RESOURCES AND RESERVES	32
	(S8)	VALUATION REPORT	33
(W)	GUII	DELINES – RECOMMENDED PRINCIPLES	35
	(W1)	VALUATION APPROACHES AND METHODS	35
	(W2)	VALUATION REPORT – RECOMMENDED CONTENT	38
(Z)	THE	CODE OF CONDUCT OF MINERAL ASSET VALUATOR	44
	(Z1)	GENERAL PROVISIONS	44
	(Z2)	INDEPENDENCE OF MINERAL ASSET VALUATOR	45
	(Z3)	QUALIFICATIONS OF MINERAL ASSET VALUATOR	45
	(Z4)	CODE OF ETHICAL CONDUCT OF MINERAL ASSET VALUATOR	45
	(Z5)	ETHICS COMMITTEE	47
Our	missi	on	49
Scop	oe of a	activities	49
	The F	OLVAL Code	50
The	imple	mented projects	50
	Соор	eration with the Polish Federation of Valuers' Associations	50
	EU p	rojects	51
Hist	ory		54

(A) THE NEED FOR A CODE AND ITS SOURCE REFERENCES

(A1) INTRODUCTION

- (A1.01) This *Code* is concerned with the *Valuation of Mineral Assets (MA)*. The first and main *assets* within *MA*, available to the *mining usufructuary*, are *mineral deposits* that are the primary focus of exploration, development, and production activities. Definitions of the terms used in the text as well as the terminology are presented in Section (D).
- (A1.02) *Deposits*, their *resources* and *reserves*, and related other *assets* thereof, are a source of *Value* expressed in money, or a source of exchangeable *Value*, and can represent a particular type of commodity in the market-place.
- (A1.03) *The Mineral Asset Valuation* is a separate area of appraisal practice. The *Value of a mineral deposit* can be determined for various purposes. Most often, this *Value* is estimated for the purpose of:
 - sales transactions,
 - contribution in-kind of mineral property interests to the company,
 - initial pricing of shares being issued by exploration and mining companies,
 - supplementary prospectus information of exploration and mining companies,
 - additional information in the financial statements of exploration and mining companies,
 - supporting property agreements,
 - litigation and administrative proceedings,
 - expropriation compensation,
 - determining the value of public-law liabilities,
 - pursuing claims against insurance companies,
 - determining royalties and concession payments,
 - determining the mining annuity,
 - securing a debt.
- (A1.04) Due to its specific nature, *Mineral Asset Valuation* is a separate area of appraisal practice. A proper *Mineral Asset Valuation* is a highly specialized, multi-stage project. The assessment of the subject *assets* is carried out at various *stages* of exploration, development, and production activities. It requires having broad knowledge and experience in a number of fields – mainly geology, mining, economics, and finance.

NOTE: All terms and concepts defined in section (D) are written in italics in the text of the Code.

- (A1.05) In countries with a developed extractive industry, the rules for valuing *MA* are established in the form of required *Standards* and recommendations *Guidelines*. The so-called *Codes for the Valuation of Mineral Assets* include standardisation of *Valuation* activities and certification of *qualified Experts* in this field. These *Standards* and *Guidelines* set high requirements when it comes to the code of ethical conduct for professionals and the quality of the services they provide. Adherence to the principles and monitoring of their activities are supervised by *Independent* and self-regulatory *professional organisations*.
- (A1.06) Poland lacks comprehensive regulations on *Mineral Asset Valuation*, including the lack of the need for relevant *qualifications*. There are no uniform rules that define in detail the process of *mineral deposit Valuation*, the *qualification* criteria, and the accountability of *an Expert* when it comes to estimating the size and quality of a *mineral resource/reserve* and its *Valuation*. The *Valuation* of a subject *asset* is often carried out by incompetent persons and has an adverse effect on *Valuation* quality and reliability. This situation entails important consequences.
- (A1.07) Polish *Geological and Mining Law* stipulates that the *deposits* of most *minerals* operated in the open pit manner constitute parts of real properties, which means that the *Valuation* of these *deposits* lies within the *Competence* of the property valuers who are often not *qualified* to do so.
- (A1.08) The problem of appropriate *Competence* in *Mineral Asset Valuation* has also been recognised in the community of property valuers. The current (as of January 1, 2017) standard developed with the assistance of practitioners from the Polish Association of Mineral Asset Valuators is the national specialised *Valuation* standard "*Valuation* of Real Properties Containing *Mineral Deposits* Subject to Property Interests" (KSWS). This KSWS recommends, in justified cases, that a property valuer makes use of expertise (opinions) provided by persons or institutions with specialist knowledge.
- (A1.09) This *Code* was created with the intent to ensure that *Mineral Asset Valuation* is carried out by *Independent*, *Competent*, and appropriately *qualified* persons; that the *Valuation Reports* they prepare are reliable, accurate, and *Transparent*; that all *Material* information about the *assets* being valued is *Transparent* and fully disclosed providing the basis for making the right investment decisions. The document includes *Standards* and *Guidelines* that converge with industry best practices and provide assistance in the *professional Valuation* of *Mineral Assets*.
- (A1.10) The final text of this second edition of the *Code* was developed by the POLVAL Committee on the basis of the law as at 31 March 2021.

(A2.01) VALMIN Code

The Australasian *Code for Public Reporting of Technical Assessments and Valuations of Mineral Assets* (the VALMIN Code) is the most well-k-nown *standard* for the *Valuation* of *mineral resources* and *mineral reserves* (the first edition of the document dates back to February 1995, while the latest valid version dates back to 2015). It includes a number of fundamental principles, minimum requirements and recommendations supporting the process of *Valuation*, which are necessary for the preparation of appropriate Public Reports of *Mineral Assets*.

Compliance with the VALMIN Code is mandatory for practitioners preparing Public Reports of *Mineral Assets* in the minerals and petroleum industries, and is required by the Australian Corporations Act. Adherence to the Code is also recommended by a number of bodies and organisations such as the Australian Stock Exchange (ASX) and Australian Securities and Investments Commission (ASIC).

(A2.02) CIMVal Code

The Canadian CIMVal *Code for the Valuation of Mineral Properties* Prepared by the Special Committee of the Canadian Institute of Mining, Metallurgy and Petroleum (the CIMVal Code) was introduced in 2003; the most recent and applicable version is the 2019 edition. The CIMVal philosophy is analogous to the VALMIN Code: it requires that *Valuations* are conducted in a *standardised* manner by appropriately *qualified* individuals (Qualified Valuator (QV) or Qualified Person (QP)) and that full information about the *Valuation* object is disclosed and available.

The CIMVal *Code* provides recommendations for preferred *Valuation Approaches*. It also requires a factual analysis and reasons for choosing a specific approach. All fundamental data regarding a property must be *reported* in accordance with National Instrument 43-101 – *Standards* of Disclosure for Mineral Projects (NI 43-101), introduced in 2001 (last revised 2011) and the CIM Institute's 2014 "Definitions Standards on Mineral Resources and Mineral Reserves". The CIMVal Code recommends that where a *Valuation* of a *Mineral Property* is required under securities laws, the CIMVal *Code* be followed in preparing the *Valuation*.

(A2.03) SAMVAL Code

The South African *Code for the Reporting of Mineral Asset Valuation* (the SAMVAL Code) was drawn up under the auspices of the Southern African Institute of Mining and Metallurgy (SAIMM). The current edition

(2016) was finally approved in October 2018. The SAMVAL Code regulates the *Mineral Asset Valuation*, which is to be carried out by *Competent Mineral Asset Valuators* (CVs). *Petroleum Resource* and *Reserve Valuation* is standardised within the framework of the South African Code for the Reporting of Oil and Gas Resources (The SAMOG Code) adopted in 2015.

(A2.04) SME Valuation Standards

The American *Standards* of the Society for Mining, Metallurgy & Exploration (SME) – "*SME Standards and Guidelines for Valuation of Mineral Properties (including Petroleum)*" – were developed in 2015 (the second, current edition is from 2017). The *Standards* apply to all SME members when it comes to reporting *Mineral Property Valuations* for private and public purposes. The subject *Standards* largely reflect the provisions of the International Mineral Property Valuation Standards Template (IMVAL Template). The document also complies with the Uniform Standards of Professional Appraisal Practice (USPAP) of the US Appraisal Foundation; SME Standards provide a *Valuation* manual supplementary to USPAP.

(A2.05) IMVAL Template

In 2012, in order to standardise international terminology and harmonise *Mineral Asset Valuation Standards*, the International Mineral Valuation Committee (IMVAL) was formed comprising representatives of the VALMIN, CIMVal, SAMVAL committees, and representatives of the US organisations, SME and International Institute of Mineral Appraisers (IIMA). In 2016, IMVAL developed the second edition of the "*International Mineral Property Valuation Standards Template*" (IMVAL Template). This template, which is updated from time to time, harmonises national *codes* or *Standards* concerning the *Valuation* of real property *Mineral Assets (Mineral Property*) of the member countries of the Committee, and represents a consensus of current good practices.

- (A2.05) International Valuation Standards
 - Prior to 2008, *Mineral Property Valuation* practitioners from many countries also worked within the International Valuation Standards Council (IVSC). An Extractive Industries Task Force was active to this end. However, the GN14 *Standards and Guidelines on Mineral Property Valuation* published in the 2005 and 2007 editions of the IVS were removed in subsequent editions. The IVSC considers that a *mineral* occurring within a *real property* is the subject of appraisal activity and therefore the general provisions for the *Valuation* of such properties do not take into account the specific nature of *Mineral Assets*.

(A2.06) The POLVAL *Code* has been prepared on the basis of the principles of the above mentioned *Codes* with account taken of the Polish conditions.

(A3) OWNERSHIP OF DEPOSITS IN POLAND

- (A3.01) According to the Polish *Geological and Mining Law* (2011), *deposits* of hydrocarbons, hard coal, methane occurring as an associated *mineral*, lignite, metal ores (excluding bog iron ores), native metals, radioactive ores, native sulphur, rock salt, sylvinite, potassium-magnesium salt, gypsum and anhydrite, precious stones, rare earth elements, noble gases (irrespective of their place of occurrence), as well as curative water, thermal water and brine are subject to mining rights vested in the State Treasury. Other *mineral deposits* are subject to *real property* interests. The State Treasury also owns rock mass located beyond the boundaries of a *real property*.
- (A3.02) Within the limits prescribed by legal acts, the State Treasury may, to the exclusion of other persons, use *mineral deposits* subject to mining rights and dispose of the right to these *deposits* by establishing a *mining usufruct* (mining lease). The State Treasury's powers in this respect are exercised by the authorities competent to grant concessions. *Mining usufruct* is an element of *Mineral Assets*.
- (A3.03) *Deposits of minerals* not listed in (A3.01) shall be subject to mineral real property interests and cannot be subject to the establishment of a *mining usufruct*.

Those *deposits* are owned by the landowner and may be exploited by the landowner provided that the landowner can obtain a concession for *minerals* extraction. The law does not prohibit market trading in these *assets*.

(A3.04) A specific type of *deposits* is *anthropogenic deposits*, which are manmade accumulations of a *mineral*. These *deposits* may be owned by the *mining usufructuary* or the *holder* (owner) of an *anthropogenic deposit*.

(A4) OVERVIEW OF WORK CARRIED OUT TO PREPARE THE POLVAL CODE

(A4.01) Prior to the development of this *Code*, the Polish mining industry had no *standard* for *Mineral Asset Valuation*. The question of *Mineral Asset Valuation* appeared with the political changes in Poland. The trade in *Mineral Assets* that took place after 1989 and the *concession* requirements resulted in the need to carry out *Mineral Asset Valuations*.

- (A4.02) On October 2, 2006, at the Founder's Meeting in Kraków, the Krakówbased Polish Association of Mineral Asset Valuators was established and registered by the District Court for Kraków-Śródmieście on May 31, 2007 (entry to the National Court Register on June 1, 2007). The adopted Statute of the Association states in §9 point 5 that the Association will pursue its goals by i.a.: "Preparation, modification, and promotion of the *code for the Valuation of Mineral Assets*, including the *Valuation Standards* and *Guidelines* for the *Valuation* of *mineral* and *anthropogenic deposits*".
- (A4.03) The need to develop as soon as possible a *Polish Code for the Valuation* of *Mineral Assets* was recognised at the first meeting of the first Board of the Polish Association of Mineral Asset Valuators on December 8, 2006. It was therefore decided to set up a Special Committee of the Association for the preparation of the POLVAL *Code*. The Committee drafted the first edition of the *Code*, which was finally adopted by the Board of the Polish Association of Mineral Asset Valuators on May 10, 2008.
- (A4.04) Due to the occurrence of many significant changes in the exploration and mining industry as well as in its environment in 2008-2020, on September 22, 2020 the Board of the Polish Association of Mineral Asset Valuators made a decision to amend the *Code* and prepare a new edition. The work of the POLVAL Committee appointed for this task was completed in March 2021; in May the text was adopted by the Board.
- (A5) VALUATION IN THE TEXT OF THE CODE
- (A5.01) "Valuation" in the POLVAL Code means an estimation of the expected Value (understood as monetary equivalent) of Mineral Assets available to a mining usufructuary, as opposed to the term "evaluation" the main purpose of which is to identify the technical and economic efficiency of the assets.
- (A5.02) *Mineral Asset Valuation* consists in determining the *Value* of reported *deposits* depending on the *Commissioning Entity*'s expectations and the purpose of the *Valuation* according to the Polish and/or international *resources* classification systems.

(A6) ORGANISATION OF THE CODE

(A6.01) The Code consists of four parts

- 1) Basic definitions.
- 2) *Standards*, which include general provisions the observance of which is mandatory in *Mineral Asset Valuation*.

- 3) *Guidelines*, which develop and provide comments to the *Standards* (they contain *guidance* and procedures the application of which is not mandatory, but highly recommended in *Mineral Asset Valuation*. Adherence of the *Mineral Asset Valuator (MAV)* to the *Guidelines* of the *Code* is a guarantee of correctness and reliability of the *Valuation*).
- 4) The Code of Ethical Conduct of the *Mineral Asset Valuator* (which comprises a set of principles and ethical standards by which the *MAV* must or should be guided).

(D) BASIC DEFINITIONS

 $MA \rightarrow$ see def. (D.07) MA type I \rightarrow see def. (D.03) MA type II \rightarrow see def. (D.01) MA type III \rightarrow see def. (D.02) MA type IV \rightarrow see def. (D.05) MA type V \rightarrow see def. (D.04)

- (D.01) Advanced Stage Exploration *MA* (*MA* Type II) the entirety of *MA* associated to the area within which the presence of a *mineral deposit* has been identified, the volume of its content has been estimated and the possibility of mining has been established, but no decision has yet been made to proceed with its development. These *assets* relate to *mineral deposits*
 - 1) at an early stage of assessment;
 - 2) the operation of which has been abandoned;
 - 3) the operation of which has been temporarily discontinued;
 - 4) that are *anthropogenic deposits* created as a result of mining, processing, and treatment processes.
- (D.02) Deposit Development *MA* (*MA* Type III) the entirety of *MA* associated to a *mineral deposit* for which the economic viability of mining has been established by means of a *Deposit Development Plan/anthropogenic Deposit Development Plan*, or through a *Feasibility Study.*
- (D.03) Early Stage Exploration *MA* (*MA* Type I) the entirety of *MA* associated to an area within which a *mineral deposit* or an *anthropogenic deposit* may be discovered or documented.
- (D.04) *MA* of a mining plant/an anthropogenic deposit operating plant at defunct property stage (*MA* Type V) *MA* of *a mining plant* or *MA* of *an*

NOTE: Italic print indicates that a term or concept is separately defined in the following section.

anthropogenic deposit operating plant put into liquidation, including also provisions for the costs of *closing* the *mining plant/anthropogenic deposit operating plant*, the costs of mined land reclamation, and the *assets* that define the directions and prospects of further development of the rock mass.

- (D.05) *MA* of a mining plant/an anthropogenic deposit operating plant in production (*MA* Type IV) – the entirety of *MA* associated with a *mining plant*/an *anthropogenic deposit operating plant* in operation.
- (D.06) Current means up-to-date in relation to, and in respect of, the *Valuation date*.
- (D.07) Mineral Assets (MA) mean *mineral deposits, anthropogenic deposits, mineral waste* or parts thereof, and associated therewith:
 - a) intangible assets, and in particular:
 - *Geological Report* of a *mineral deposit* or the right to obtain *geological information*,
 - Public Report of mineral resources and reserves,
 - Deposit Development Plan or Anthropogenic Deposit Development Plan,
 - Scoping Study, Pre-Feasibility Study and/or Feasibility Study of a mineral project,
 - concession documents, permissions, administrative decisions;
 - b) tangible fixed assets (and in particular, within the *mining plant*: mine workings, building structures, and technologically associated processing facilities and equipment);
 - c) other fixed assets;
 - d) current assets (in particular *raw materials* and consumables);
 - e) securities, cash, including funds from special-purpose funds related to exploration, development and mining activities, and in particular funds to cover the costs of *closing a mining plant*/an *anthropogenic deposit operating plant*.
- (D.08) Certificate of Competent Geologist means a document issued by the Board of the Polish Association of Mineral Asset Valuators, certifying a high level of pertinent knowledge, skills and reliability in reporting *mineral resources* and *mineral reserves* in accordance with the Polish and international classification(s). The certificate is awarded by the Board to a candidate member who is a university graduate in geology and/or mining and geology, with relevant experience, and who has successfully passed the examination in front of the Association's Examination Committee.
- (D.09) Certificate of Mineral Asset Valuator means a document issued by the Board of the Polish Association of Mineral Asset Valuators, certifying

a high level of pertinent knowledge and practical skills in the *Valuation* of mineral deposits and anthropogenic deposits. The certificate is awarded by the Board to a candidate *MAV* who is a member of the Association and who has participated in the training process and passed the examination in front of the Association's Examination Committee.

Competent Person (CP) \rightarrow see def. (D.37)

- (D.10) The Committee for Mineral Reserves International Reporting Standards (CRIRSCO) is a key international organisation representing the mining industry on classification and *reporting* of *mineral deposit* estimates, founded in 1994. The CRIRSCO Committee brings together representatives of national organisations from countries with developed mining industries, which are responsible for the creation and development of local *codes for reporting of mineral resources and mineral reserves*.
- (D.11) Modifying Factors in the codes for reporting of mineral resources and mineral reserves under the CRIRSCO system are any considerations that would allow the conversion of mineral resources to mineral reserves. Modifying Factors include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social, and governance and regulatory factors.
- (D.12) Valuation Date, Report Date Valuation Date means the effective date of the Valuation; Report Date means the date upon which the Valuation Report is dated and signed by an MAV. The Valuation Date need not coincide with the Report Date.
- (D.13) Geological Report means a study presenting the exploration results and their interpretation, drawn up in accordance with the requirements of the law in this respect.

Geological Report describing *mineral deposits* or *anthropogenic deposits* shall be prepared in order to determine:

- 1) boundaries of a deposit;
- 2) *mineral resources* and *mineral reserves* accompanied by the assessment of the level of geological knowledge;
- 3) type and quality of a *mineral* or its grade in the *anthropogenic deposit*;
- 4) geological, mining, and environmental conditions of its occurrence.

In the event a *Geological Report* is to serve as the basis for granting a *concession* for the extraction of *minerals*, the degree of geological confidence should make it possible to draw up a *Deposit Development Plan* and a *Mining Plant Closure Plan*.

The *Geological Report* of an *anthropogenic deposit* should have the content and form adapted to the requirements of the provisions on *Geologi*-

cal Reports of *mineral deposits*, and be drawn up by a person authorised to report *mineral deposits*.

- (D.14) Expert means a person assisting the Mineral Asset Valuator, who:
 - is a practitioner with at least five years of experience in the area of:
 a) mining, and/or
 - b) geology, and/or
 - c) geo-engineering, and/or
 - d) geo-physics, and/or
 - e) surveying, and/or
 - f) environmental protection, and/or
 - g) economics and finance;
 - 2) has experience relevant to the type of *MA* being valued.

Development Stage \rightarrow see def. (D.54)

Feasibility Study \rightarrow see def. (D.57)

(D.15) Competent Geologist (CG) means a qualified member of the Polish Association of Mineral Asset Valuators, a Polish citizen, holding a *Certificate of Competent Geologist* confirming a high level of pertinent knowledge, skills and reliability in reporting *mineral resources* and *mineral reserves* under Polish conditions with reference to international *codes for reporting of mineral resources and mineral reserves*.

A *CG* must have demonstrable relevant knowledge and experience in estimating and *reporting mineral resources* and *mineral reserves* for a specific type of *deposit*; knowledge must be supported by at least five years of professional practice over a 15-year period.

- (D.16) Boundaries of a Mineral Deposit mean the *boundaries* of a mineralisation, as defined in the *Geological Report* of a *mineral deposit*, that forms the *deposit* or the *boundaries* of an area with anthropogenic mineral concentration.
- (D.17) Geological Information is obtained as a result of geological work:
 - 1) geological data (results of direct observations and measurements obtained in the course of geological work),
 - 2) samples,
 - 3) the results of processing and interpretation of geological data, and the results of the assays carried out, presented particularly in *Geological Reports* and recorded on computer storage media.

The right to legally specified *geological information* is disposed of by the State Treasury (except in situations specified in the law), represented by the minister responsible for geology or authorities and bodies authorised by that minister.

Geological information understood in an informal way is usually held by the *MA* owner.

- (D.18) Materiality and Material in relation to:
 - 1) the contents and final conclusions of the Valuation Report,
 - 2) any contributing assessments, calculations, and the like that were used in the *Valuation process*,
 - 3) data and information,

means that they have such an effect on the *Value* of *MA* being valued that their inclusion or omission would cause an intended user to draw a materially different conclusion as to that *Value*.

The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC) \rightarrow see def. (D.21)

- (D.19) Confidence Category means the level of geological knowledge with account taken of the maximum possible error in estimating the *resources* and *reserves* of a *mineral deposit*, indicated by letter and number symbols, as provided for in the relevant provisions of the Polish *Geological and Mining Law*.
- (D.20) Valuation Code means a set of *Standards* and *Guidelines* within a single document to govern the process of commissioning, carrying out *Valuations*, and preparing *Valuation Reports* by *Mineral Asset Valuators* and other professionals.
- (D.21) Code for Reporting of Mineral Resources and Mineral Reserves (mineral reporting standard) means a regulation defining the minimum *Standards*, recommendations and *Guidelines* applicable in a country for public reporting of exploration results, *mineral resources* and *mineral reserves*.

The *Code* creates an obligatory classification of *mineral resources* and *mineral reserves* with reference to the estimates of the quantity and quality of the deposit's *mineral resource*– with account taken of the degree of confidence in respect of geoscientific evidence, and technical, technological, and economic considerations.

The *Code* requires that the documentation on which a *Public Report on Exploration Results, Mineral Resources and Mineral Reserves* is based be prepared and signed by (or under the direction of) (a) *Competent Person*(s).

(D.22) Competence or Competent means an individual who is suitably educated, qualified, experienced and skilled for their work, who has appropriate competence and observes ethical principles that, in a given field, give them the status of authority figure. A *Competent Person* must have the expertise and skills relevant to the subject matter and ensure that these are kept up to date through continuing education and training.

In order to carry out a *Mineral Asset Valuation*, a high level of competence is required in its respective fields. For this reason, appropriate *Experts* must be involved in carrying out the *Valuation*.

- (D.23) Concession means a document confirming the right of a potential *user* to prospect, explore or extract a *mineral* from a *deposit*. It is granted in accordance with the provisions of the Polish *Geological and Mining Law*.
- (D.24) Mineral means a rock, or a component separated from the mineral during mining, or a liquid or gas contained therein, which in its natural form or after processing becomes a *mineral raw material*.
- (D.25) Operating Mine means a *mining plant*/an *anthropogenic deposit operating plant currently* and successively performing extraction and processing of a *mineral*.
- National Valuation Standard Specialised VALUATION OF REAL PROP-(D.26) ERTIES CONTAINING MINERAL DEPOSITS SUBJECT TO REAL PROPERTY INTERESTS - standard of the Polish Federation of Valuers' Associations (PFVA) recommended by the Federation for use by valuers associated in its federated associations as principles of good professional practices and a heritage of the valuers' community in Poland in situations involving the Valuation of real property Mineral Assets subject to a real property interest, and for which it is possible to identify and assess the condition of a mineral for Valuation purposes, relying on a relevant Geological Report on the subject mineral deposit. This standard does not constitute a binding professional standard for valuers within the meaning of the law as it has not been established and announced by the Minister competent for construction, land use planning, and housing by way of a proclamation. The standard is also not binding on Mineral Asset Valuators.
- (D.27) Qualifications mean a set of knowledge and skills required to carry out specific professional tasks (in a selected expertise area).
- (D.28) Closure of a Mining Plant/Closure of an Anthropogenic Deposit Operating Plant means the process of closing excavations, building structures, the reuse of building structures and installations associated with the operations of a plant, as well as the rehabilitation of mined land.
- (D.29) Valuation Method means any legitimate *method* used to determine the *MA Value*.
- (D.30) Anthropogenic Mineral Resources mean deposited on the ground surface accumulations of mineral substances *mineralised waste* result-

ing from extraction and processing of *minerals*, and from transforming *mineral raw materials*.

- (D.31) Undiscovered Petroleum-Initially-In-Place, Undiscovered PIIP') according to the Petroleum Resources Management System (PRMS) mean resources anticipated to exist, which include:
 - 1) *prospective resources* recoverable:
 - low estimate prospective resources,
 - best estimate prospective resources,
 - high estimate prospective resources;
 - 2) undiscovered PIIP unrecoverable.
- (D.32) Mineral Property means a property with a shallow *mineral deposit* beneath the surface, covered by a local land use plan that indicates the use allowing for the exploitation of the *deposit* or, where appropriate, such a use may be assumed for the purpose of *Valuation* on the basis of a municipality's land use plan.
- (D.33) Independence or Independent means that the *MAV* and the experts retained by the *MAV* must fulfil all relevant criteria of *Independence*. In order to comply with this condition, the *MAV*, the *Expert(s)* and their immediate families must not have any financial (or other) relationship with:
 - 1) the Commissioning Entity,
 - 2) the holders (or other related parties) of any right, title, or interest to the *MA* being valued,
 - 3) any of the parties to the transaction where the acquisition of one company by another is being prepared,

and must not:

- 4) own or hold any interest in any of the assets being valued,
- 5) receive any material or immaterial benefit.

The above reservations do not apply to payment for the service provided.

Each *MAV* and each *Expert* are required to disclose all relationships and benefits (present or possible in the future) that could give rise to a suspicion of lack of *Independence*. The *MAV* and the *Expert(s)* should also disclose all instances of their past involvement in work related to the *Valuation* of the subject *MA*.

It is unacceptable to make the amount of the *MAV*'s remuneration or the carrying out of further work dependent on:

- 1) the result of the Valuation, or
- 2) the success or failure of the transaction for which the *Valuation* was required.

- (D.34) Discovered Petroleum-Initially-In-Place, Discovered PIIP (Polish: Odkryte nagromadzenia węglowodorów) – according to the *PRMS* total measured petroleum *resources*, comprising:
 - 1) Reserves (Polish: zasoby wydobywalne) commercial
 - 2) Contingent Resources (Polish: zasoby możliwe do ewentualnej eksploatacji) – sub-commercial:
 - 3) Discovered PIIP Unrecoverable (Polish: *zasoby odkryte PIIP nieodzy-skiwalne*)
- (D.35) Mineral Waste means waste resulting from exploration, development, mining and metallurgical activities.
- (D.36) Professional Organisation, Professional Association means a self-regulatory organisation of *professionals*.
 This *Code* refers this definition to an *Independent*, self-regulatory organisation of *qualified* and *Competent* practitioners in the field of geology, mining or economics, which:
 - 1) has a regular legal status;
 - 2) admits as members individuals with appropriate academic *qualifications*, professional *Competence* and experience;
 - 3) requires its members to comply with the professional *Standards* and ethical principles established by the organisation;
 - 4) has and applies disciplinary powers to hold its members accountable, including the power to suspend or expel a member from the Association/Organisation.
- (D.37) Competent Person (CP) or Qualified Person (QP) means an international minerals industry *Expert* who meets the following conditions:
 - membership of one of the CRIRSCO Recognised *Professional* Organisation (RPO); these organisations have appropriate ethical provisions in their statutes which allow for disciplinary powers, including the power to suspend or expel a member from their ranks,
 - 2) has at least five years of experience in documenting a particular style of *mineralisation* and type of *deposit*, or in reporting of a particular category of *resources* and/or *reserves*.

Polish Geological and Mining Law \rightarrow see def. (D.42)

- (D.38) Mineral Asset Valuation Approach means a method for carrying out a *Mineral Asset Valuation*.
 The three generally accepted *approaches* for carrying out the *Valuation* of *Mineral Assets* are:
 - 1) Income Approach which views the *MA Value* through its ability to generate economic benefits; it encompasses all *methods* that allow for

the analysis of *MA* potential to generate expected free cash flows over a finite time period – the life of a *mineral project*;

- 2) Market Approach (also known as Sales Comparison Analysis) which takes into account the market values of similar assets as the basis of *MA Value*;
- 3) Cost Approach which views Value through the amount of cost that would be incurred to reproduce (reproduction method) or replace (replacement method) the assets being valued with assets of the same utility.
- (D.39) Polish General Valuation Principles (Polish: Powszechne krajowe zasady wyceny, PKZW) are a set of principles and best professional practices (*Valuation Standards*, interpretative notes and temporary interpretative notes) developed by the Polish Federation of Valuers' Associations (PFVA) recommended for use by valuers associated within their federated associations. The above mentioned publications do not constitute professional *Standards* within the meaning of Article 4 point 14 of the Law of 21 August 1997 on real estate management.
- (D.40) Holder (owner) of an Anthropogenic (Man-Made) Deposit means a person holding a right to use an *anthropogenic deposit*.
- (D.41) Holder (owner) of Mineral Waste means a legal or natural person or an unincorporated business entity in possession of *mineral waste*; the owner of the land shall be presumed to be the owner of the waste thereon unless, by virtue of appropriate agreements, *mineral waste* is the subject of separate ownership.
- (D.42) Geological and Mining Law (Polish: PGiG) means current Polish legislation governing exploration, development and mining activities.

Pre-Feasibility Study \rightarrow see def. (D.56)

- (D.43) Petroleum Resources Management System (PRMS) is an international system developed for consistent and reliable definition, classification, estimation, and *reporting* of petroleum *resources* and *reserves*.
- (D.44) Valuation Process means all the activities that an *MAV* must perform in order to arrive at a fair and reliable expected *MA Value*. The process must be as *Transparent*, objective and rigorous as possible using the *Material* information and data available to the *MAV* and the *Experts* retained by the *MAV*. The outcome of any *Valuation* depends on a number of key assumptions that must be made. All assumptions made must be:
 - listed and accurately described,

realistic.

Furthermore, all assumptions made about:

- Material technical and economic factors,

- the risks associated with the assumptions made, and

- the Valuation Methods,
- must be fully explained in the study.
- (D.45) Deposit Development Plan means a study drawn up by an investor applying for a *concession* to extract *minerals* from a *deposit* on the basis of a *Geological Report*, where account is taken of technical and economic conditions and which specifies intentions with regard to:
 - 1) the rational management of the *deposit*;
 - 2) the conduct of exploitation operations in such a way as to limit adverse effects on the environment.

The requirements concerning the content of a *Deposit Development Plan* are regulated by law.

Depending on the level of data detail and accuracy of assessments, a *Deposit Development Plan* corresponds to a *Pre-Feasibility Study* or a *Feasibility Study*.

- (D.46) Professional means the ability of a person with the appropriate education and practice for the work involved to practise a subject matter professionally.
- (D.47) Mineral Project means any investment project carried out in the mining industry, meaning any exploration, development, or production, with the ultimate aim being to extract and process a given *mineral* and sell a *mineral raw material*.

A *mineral project* within the mining of the PRMS is defined broadly in these *Standards*. It is generally understood as an undertaking combining the accumulation of hydrocarbons with a decision-making process involving the allocation of an appropriate budget.

- (D.48) Transparent literally means "clear and easy to understand or recognise". This is to be the nature of the information used for the proper completion of a *Valuation*. In the process of *Mineral Asset Valuation*, this condition includes data relating specifically to:
 - 1) the estimation of *mineral resources* and *mineral reserves*,
 - 2) the conduct of exploitation operations,
 - 3) the processing and/or treatment,
 - 4) the marketability of a *mineral raw material*.

Transparent therefore means that all *Material* data and information used in, or excluded from, the *MA Valuation*, the assumptions made, the *approaches* and *methods* used to carry out the *Valuation*, and the *Valuation* itself, must be detailed and thoroughly explained in the *Valuation Report*, including the justification for the choices made by an *MAV*, and the final conclusions.

Deposit Development Plan \rightarrow see def. (D.45)

- (D.49) Valuation Report means a *Mineral Asset Valuation* report prepared by the *MAV* in accordance with this *Code*.
- (D.50) Public Report on Exploration Results, Mineral Resources and Mineral Reserves means a *report on exploration results, mineral resources and mineral reserves*, prepared by a *Competent Person* (CP), which must be prepared in accordance with an internationally recognised *Code for reporting of mineral resources and mineral reserves* (e.g. *JORC*, PERC, etc.).

Reserves \rightarrow see def. (D.87)(D.87)

Resources \rightarrow see def. (D.76)(D.84)(D.86)

- (D.51) Risk means the impact of uncertainty on achieving objectives. Risk is expressed as a numerical value and is the product of uncertainty and consequence.
- (D.52) Standard means a provision, a general rule, the observance of which is mandatory in *Mineral Asset Valuations*.

Professional Association \rightarrow see def. (D.36)

- (D.53) Losses mean the quantity of a *mineral* the extraction of which was deemed impossible or which was lost due to:
 - 1) adverse geological and mining conditions (non-operational losses),
 - 2) the accepted method of exploitation operations and their conduct (operational losses),

the processing and/or treatment of a mineral (processing losses).

Scoping Study \rightarrow see def. (D.55)

- (D.54) Development Stage means a stage in geological work, comprising a comprehensive geological survey of a *deposit*, together with specific tests carried out in order to precisely determine the quality or grade, and the recovery. In a broad sense, the development stage also includes the progress made in developing the *deposit* and preparing the *resources* for mining.
- (D.55) Scoping Study means an order of magnitude technical and economic study examining, in the case of solid material, the potential economic viability of *mineral resources*. It includes appropriate assessments of realistically assumed *Modifying Factors* together with any other relevant operational factors that are necessary to demonstrate at the time of reporting that progress to a *Pre-Feasibility Study* can be reasonably justified.
- (D.56) Preliminary Feasibility Study, Pre-Feasibility Study means a comprehensive study of a range of options for the technical and economic via-

bility of a *mineral project* and which, in the case of solid material, establishes:

1) a preferred mining method, in the case of underground mining, or

2) the pit configuration, in the case of an open pit,

and determines an effective method of *mineral* processing.

The document shall include an assessment of the economic viability of a *mineral project*, based on reasonable assumptions on the *Modifying Factors*, and the evaluation of any other relevant factors which are sufficient for a *Competent Person*, acting reasonably, to determine if all or part of *mineral resource* may be converted to *mineral reserve* at the time of reporting.

A *Pre-Feasibility Study* is at a lower confidence level than a *Feasibility Study*.

(D.57) Feasibility Study means a comprehensive technical and economic study of the selected development option for a *mineral project*, immediately prior to exploitation operations.

In the case of solid material, it includes appropriately detailed assessments of applicable *Modifying Factors* together with any other relevant operational factors and detailed financial analysis that are necessary to demonstrate, at the time of reporting, that extraction is reasonably justified (economically mineable). The results of the *Feasibility Study* may reasonably serve as the basis for a final decision to proceed with, or finance, the development of the project.

The confidence level of the *Feasibility Study* will be higher than that of a *Pre-Feasibility Study*.

- (D.58) Mineral Raw Material the produce of the exploitation operations of a *deposit*, mined *minerals* destined for use, as well as the useful products of the processing (refining, beneficiation) of a *mineral* and useful tailings.
- (D.59) Estimated Ultimate Recovery (EUR) according to PRMS those quantities of petroleum which are estimated, on a given date, to be potentially recoverable from an accumulation, plus those quantities already produced therefrom.

Valuator \rightarrow see def. (D.60)

(D.60) Mineral Asset Valuator means an individual responsible for the *Valuation* of a *mineral deposit*, with demonstrable relevant knowledge and experience in mining, exploration and mining geology, and economics, supported by at least a five-year practice within a 15-year period, who is an authorised member of the Polish Association of Mineral Asset Valuators, holding the *certificate* of *Mineral Asset Valuator*.

- (D.61) Reasonableness or Reasonable in relation to the *Valuation* of *Mineral Assets* means that the result of a *Valuation* carried out by another appropriately *qualified* and *experienced* competent valuator with access to the same information, making the same assumptions and using the same *methods* would be similar.
 - It is not sufficient for an *MAV* to determine that he or she personally believes the value determined is appropriate. The *MAV* must provide objective facts to support their conclusions. A reasonableness test serves to identify *Valuations* that may be out of step with industry *Standards* or industry norms. The Reasonableness test is an unbiased, objective analysis that seeks to answer the question of whether the *approach* used in the *Valuation* is so reasonable, realistic and logical in its interpretation of the available data that the *Valuation* carried out by another *MAV* with access to the same information would yield a similar result.

The decision to carry out a Reasonableness test is made by the Board of the Polish Association of Mineral Asset Valuators in consultation with the Chairman of the Ethics Committee at the request of the *Commissioning Entity* of the doubtful *Valuation* and at the expense of the latter. $MAV \rightarrow$ see def. (D.60)

- (D.62) Mineral Asset Type means a numerical designation (Roman numerals) or numerical and letter designation of a *mineral asset* classification group in the POLVAL *Code*, depending on the degree of confidence and the progress of geological work (*Development Stage*).
- (D.63) Law on Real Estate Management means current Polish legislation governing real estate management activities.
- (D.64) Waste Law means current Polish legislation governing waste management activities.
- (D.65) Law on Extractive Waste means current Polish legislation governing extractive waste management activities.
- (D.66) Mining Usufructuary means an entrepreneur holding a concession to carry out activities governed by the Polish *Geological and Mining Law*.
 Value → see def. (D.67), (D.68), (D.70)
- (D.67) Mineral Asset Value Other than Market Value or Fundamental Value means all other categories of *Value* that an *MAV* may determine in the *Valuation* process such as economic, fair, investment, accounting, liquidation, or reproduction *Value*. In each such case the *MAV* must clearly indicate that the subject of the *Valuation* was not, or exclusively not, a *market Value*, and state the definition used together with its source

relied upon. The *MAV* must also ensure that the *Commissioning Entity* correctly understands the economic sense of the terminal *Value*, and in particular that it is not identical to the *market Value*.

Value of Mineral Assets \rightarrow see def. (D.67), (D.68), (D.70)

- (D.68) Mineral Asset Fundamental Value (Intrinsic or Real) results from a company or a *mineral project's* ability to generate income. The *fundamental Value* is determined as a result of fundamental analysis, the essence of which is to estimate – irrespective of the nature and needs of the investor or owner – the expected current and future net free cash flows that can be achieved with a given amount of resources (Income Approach to *Valuation*). The *fundamental Value* is used to estimate the *market Value* – it is believed that in a situation of real impartiality and equal expectations of analysts, competition among market participants will cause *fundamental Value* to reach the level of *market Value*.
- (D.69) Value of Geological Information means its price expressed in money or monetary equivalent.

The estimation of the *Value* of *geological information* made available for remuneration, requiring the possession of appropriate *qualifications* to carry out, supervise and direct geological work, depending on the type, form, and purpose of use of *geological information* is, according to the law, carried out by the following methods:

- 1) Calculation of the cost of acquiring *geological information*, expressed in nominal prices of the year of acquisition and revalued to the price level of the year preceding the year in which the estimation was made.
- 2) Calculation of the cost of acquiring *geological information* in accordance with the scope and technologies used in geological work to acquire it, expressed in prices applied for this type of work in the year of performing the estimation.
- 3) Calculation of the cost of acquiring *geological information*, using technologies *currently* applied in geological work and taking into account the requirements to be fulfilled by geological reports, expressed in prices applied for this type of work in the year of performing the estimation.
- 4) Calculation of the flat-rate Value of geological information.

The costs of acquiring *geological information* include expenditures incurred for:

- 1) designing geological work,
- 2) carrying out geological work,
- 3) reporting the outcomes of geological work.

(D.70) Mineral Asset Market Value means its most probable price expressed in money or monetary equivalent, as determined by an *MAV* in accordance with the POLVAL *Code*, following a demand/supply analysis (Market Approach to *Valuation*); the final transaction price is determined through a negotiation between the parties involved.

The numerical figure for the *MA Value* should be selected as the most probable from the range of values determined in the *Valuation* process after taking into account the risks and possible changes in the underlying economic, financial, geological, mining, and technical parameters.

The determination of the *Value* of all rights in rem other than the right to the exclusive use of *MA* shall not form part of the *Valuation* within the meaning of this *Code*.

Mineral Deposit Value \rightarrow see def. (D.67), (D.68), (D.70)

(D.71) Data Verification means a process through which an *MAV*, a *CG* or (an) *expert*(s) they retain verify data provided by the *Commissioning Entity*. The verification purpose is to confirm that the data has been accurately copied from the original source, that it has been generated using correct procedures, and that it is of suitable quality and fit for use.

```
Valuation \rightarrow see def. (D.29), (D.44)
```

```
Pre-Feasibility Study \rightarrow see def. (D.56)
```

- (D.72) Guideline or Guidance means a provision in line with best practices that is not mandatory to follow in *Mineral Asset Valuation*, but is recommended by this *Code*.
- (D.73) Reporting of Mineral Resources and Mineral Reserves means a *Geological Report* the main objective of which is to identify the two main characteristics of a *mineral deposit*:
 - 1) tonnage or volume, and
 - 2) grade or quality.

Resources and *reserves* subject to *Valuation* may be reported in accordance with:

a) for solid material:

- the Polish resources classification system,
- the international resources classification system *CRIRSCO* Standards,
- b) for hydrocarbons:
 - the Polish resources classification system,
 - the international resources classification system *PRMS* Standards.

- (D.74) Mining Plant (MP) within the meaning of the Polish *Geological and Mining Law* is a technically and organisationally separated set of assets used directly for extracting *minerals* from *deposits*, including mine workings, building structures, and processing facilities and installations technologically associated therewith.
- (D.75) Anthropogenic Deposit Operating Plant means a technically and organisationally separate set of means for the extraction of *mineral* accumulations.
- (D.76) Resources/Mineral Resources with Potential for Eventual Economic Extraction (Polish: Zasoby/Zasoby nadające się do ewentualnej eksploatacji kopalin stałych) according to international *codes for reporting of mineral resources and mineral reserves*, estimates of the tonnage of *in situ* mineral, which are based on *geological information* and preliminary technical and economic assessments that justify future prospects for eventual economic extraction.

In order of increasing confidence in respect of geoscientific evidence, the following sub-categories are successively distinguished within the *Resources* category:

- 1) Inferred Resources,
- 2) Indicated Resources,
- 3) Measured Resources.
- (D.77) Resources Supposed Economic (Polish: Zasoby bilansowe) according to the Polish classification system those resources of a *deposit* or part thereof whose natural characteristics are defined by parameters identifying a *deposit* and its *boundaries*, and by conditions of occurrence enabling its exploitation operations.
- (D.78) Reserves (Polish: Zasoby eksploatacyjne) according to the Polish classification system:
 - a) in the case of petroleum *Reserves*,
 - b) in the case of minerals *Economic Resources* (Polish: *zasoby przemy-słowe*) net of losses but including diluting materials.

In the case of *mineral deposits*, the *Economic Resources* are the starting point for the estimation of extractable *Reserves* as defined by international *codes for reporting of mineral resources and mineral reserves* – with reservations regarding the completeness of the factors taken into account for their determination.

(D.79) (In Place) Resources (Polish: Zasoby geologiczne) – according to the Polish classification system the quantity of a mineral evidenced in the deposit. *Mineral Resources* not classified as *Economic Resources* correspond to the *Exploration Results* category of the international system for *reporting of mineral resources and mineral reserves*.

- (D.80) Anthropogenic (Man-Made) Deposit Resources (Polish: Zasoby geologiczne złoża antropogenicznego) – total quantity of mineral substance accumulated in a *deposit* (dump, tank).
- (D.81) Subeconomic Resources (Polish: Zasoby nieprzemysłowe) according to the Polish classification system a part of *Resources Supposed Economic* the extraction of which is not possible in the circumstances specified by a *Deposit Development Plan* for technical, economic or environmental reasons.

In the case of hard coal deposits, in the Australian reporting *Guidelines* the *Subeconomic Resources* correspond to the Inventory Coal category.

- (D.82) Extractable Resources (Polish: Zasoby Operatywne) according to the Polish classification system the *Economic Mineral Resources* (i.e. *Re-sources Supposed Economic* that may be subject to economically viable extraction), net of total extraction *losses*. *Extractable Resources* are the starting point for the estimation of extractable *Reserves* defined in international *codes for reporting of mineral resources and reserves* – with reservations regarding the completeness of
- the factors taken into account for their determination.
 (D.83) Anthropogenic Deposit Mineral Substance Extractable Resources (Polish: Zasoby operatywne substancji mineralnej złoża antropogenicznego) the quantity of (*In Place*) *Resources* that can be subject to economically viable extraction, net of extraction *losses* and processing *losses*.
- (D.84) Petroleum Prospective Resources (Polish: Zasoby potencjalne węglowodorów) – according to the PRMS those quantities of petroleum which are estimated, on a given date, to be potentially recoverable from undiscovered accumulations. They are divided into:
 - 1) Low Estimate Resources,
 - 2) Best Estimate Resources,
 - 3) High Estimate Resources.
- (D.85) Economic Resources (Polish: Zasoby przemysłowe) the part of *Resources Supposed Economic* (or in justified case *Subeconomic, Polish: Zasoby pozabilansowe*) that may be subject to economically viable extraction in the circumstances determined by *Deposit Development Plan*, which is technically and economically optimal while respecting environmental protection requirements.

Economic Resources are the starting point for the estimation of extractable *Resources* defined in international *codes for reporting of mineral resources and reserves*.

(D.86) Petroleum Contingent Resources (Polish: Zasoby węglowodorów możliwe do ewentualnej eksploatacji) – according to the PRMS those quantities of petroleum which are estimated, on a given date, to be potentially recoverable from known accumulations, but which are not currently considered to be commercially recoverable. They are divided into:

- 1) Resources 1C (low estimate),
- 2) Resources 2C (best estimate),
- 3) Resources 3C (high estimate).
- (D.87) Mineral Reserves (Polish: Zasoby wydobywalne kopalin stałych) according to international *codes for reporting of mineral resources and mineral reserves* those parts of *Resources*, or the entirety of *Resources* the extraction and processing of which is possible and economically viable under the present state of technology and current economic conditions. In order of increasing confidence in the *Modifying Factors*, the following sub-categories are distinguished:
 - 1) Probable Reserves (Polish: Zasoby wydobywalne prawdopodobne),

2) Proved Reserves (Polish: Zasoby wydobywalne pewne).

Probable Reserves are converted from *Indicated Resources* or *Measured Resources* while *Proved Reserves* are converted from *Measured Resources*.

Mining Plant (MP) \rightarrow see def. (D.74)

- (D.88) Petroleum Reserves (Polish: Zasoby wydobywalne węglowodorów) according to the PRMS those quantities of petroleum which are anticipated to be commercially recovered from known accumulations from a given date forward. There is an expectation that the accumulation will be developed and placed on production within a reasonable timeframe. *Petroleum Recoverable Reserves* are divided into:
 - 1) Proved Reserves (1P),
 - 2) Proved plus Probable Reserves (2P),
 - 3) Proved plus Probable plus Possible Reserves (3P).
- (D.89) Mineral Deposit Resources quantity (tonnage, volume) of a *mineral* contained in a *deposit*. It is essential to know *deposit resources* in order to:

1) plan mining operations, and

- 2) justify and ensure the economic desirability of mining operations.
- (D.90) A Commissioning Entity means a natural or legal person who commissions a *Mineral Asset Valuation*.
- (D.91) Anthropogenic (Man-Made) Deposit means that part of anthropogenic *mineral resources* that is designated on the basis of surveys and intended for economic use.
- (D.92) Mineral Deposit means such natural accumulation of solid material that there are reasonable prospects for eventual economic extraction.

- (D.93) Mineral Deposit Subject to Real Property Interest a *mineral deposit* that is subject to a real property interest within the meaning of the Polish *Geological and Mining Law* is a *deposit* for which it is possible to identify and assess the condition of the *mineral* for *Valuation* purposes on the basis of *Geological Report*, and the land on which the property is located is covered by a local land use plan which:
 - indicates a use allowing for the production from a *mineral deposit* or, respectively,
 - such a use may be assumed for the *Valuation* on the basis of the municipality's land use plan.

(S) STANDARDS – MANDATORY PRINCIPLES

(S1) SCOPE OF THE STANDARDS

- (S1.01) The *Standards* are limited in scope to the *Valuation* of *Mineral Assets*. They are also applicable to the *Valuation* of companies (and other entities) that hold *Mineral Assets* as part of their business assets, but only in so far as the *Valuation* of those *assets* is concerned.
- (S2) VALUE
- (S2.01) In the text of the *Code*, "*Value*" shall be taken to mean *market Value*. If the concept of *Value* is used in the *Valuation Report* in a different meaning ((D.67), (D.68)), it must be accurately described and this fact must be clearly highlighted by the *MAV* in the *Report*.
- (S2.02) A *Value* takes into account both the current situation and future expectations.
- (S2.03) A *Value* refers to a specific point in time. Comments, opinions about an *MA Value* must be stated as at the *Valuation date*, which must be precisely specified.
- (S3) PRINCIPLES OF THE VALUATION PROCESS
- (S3.01) In carrying out the *Valuation* and preparing the *Valuation Report*, the *MAV* must comply with the following basic principles (see Section (D) of the *Code* for the definitions of these principles):
 - Materiality,
 - Transparency,
 - Independence,

- Competence and Professionalism,

– Reasonableness.

The general principles for carrying out a *Valuation* are discussed in the *Guidelines* (section (W)).

(S3.02) The *MAV*, in consultation with the *Commissioning Entity*, must clearly disclosed in the *Valuation Report*:

1) the purpose(s) of the *Valuation*,

- 2) the intended users of the *Valuation*.
- (S4) QUALIFICATIONS AND RESPONSIBILITIES OF MINERAL ASSET VALUATOR
- (S4.01) The *MAV* is responsible for the overall *Mineral Asset Valuation* process and for the substantive content of the *Valuation Report*. In carrying out the individual work and in preparing the *Report*, the *MAV* may seek assistance from one or more *Experts* or may rely on work previously carried out by those *Experts*.
- (S4.02) The *MAV* is responsible for assuring that the *Experts* they retain are appropriately *qualified*, experienced, and *Independent*.
- (S4.03) The *MAV* and the *Experts* retained by the *MAV* must be *Independent*. There must be clear, full, and plain disclosure of any past, present or anticipated business relationships, direct or indirect, between the *MAV* and the *Experts* retained by the *MAV* and the *Commissioning Entity* or other interested parties that may be relevant to the *MAV*'s (and/or the *Experts*') *Independence*, or a lack thereof.
- (S4.04) The *MAV* must provide in the *Valuation Report* a statement of their *certificate* with an authorisation number, *current* membership of the Polish Association of Mineral Asset Valuators, and certify the content with the stamp of their professional seal.
- (S4.05) The *MAV* shall retain their work file and all supporting data relating to the *Valuation* and to the *Valuation Report* (unless such data and information is made available to the *MAV* only for the completion of the opinion/*Valuation*), for a minimum of five years after the *Report date*, as received.

(S5) COMMISSIONING A VALUATION

The *Commissioning Entity* may refer to a *Valuation* commissioned as having been prepared in accordance with the *Code* if the following conditions are met.

- (S5.01) The MAV must submit to the Commissioning Entity a declaration that he or she is Independent and that he or she is an authorised member of the Polish Association of Mineral Asset Valuators or, if an MAV is a foreign national, that the documents submitted by them are up to date and that they are authorised members of a recognised, Independent and self-regulatory foreign professional organisation.
- (S5.02) The Commissioning Entity and the MAV shall agree, in writing, on the Terms of reference of the Valuation assignment. The terms of reference must be summarized and disclosed in the Valuation Report and must indicate that the Valuation is to be prepared in accordance with the provisions of this Code.
- (S5.03) The Commissioning Entity must make available to the MAV all Material data and information to enable a proper Valuation to be made. The MAV should have access to all complete, accurate and true data and, within reasonable limits, to the Commissioning Entity's records and personnel. If some of the data and information made available to the MAV is confidential, the Commissioning Entity must reserve the degree of confidentiality and the extent to which the data may be publicly disclosed.
- (S5.04) It is the responsibility of the MAV and/or the Experts they retain to verify the data. The results of data verification together with the assessment of the quality and correctness of the data must be disclosed in the Valuation Report.
- (S6) VALUATION
- (S6.01) The MAV has the responsibility to decide which Valuation Approaches and Valuation Methods to use. The choice of the specific approaches and methods used or excluded must be justified and explained by the MAV. The limitations of each *method* must be explained.
- (S6.02) In performing the Valuation, the feasibility and desirability of using the three generally accepted Valuation Approaches of (i) Income, (ii) Market, and (iii) Cost must be considered and discussed. More than one approach should be used in the Valuation of the subject MA. The result of the Valuation should be indicated as the result of that *approach* which is most appropriate to the intended purpose of the Valuation, the market situation, and the facts. This choice should be justified in detail in the Report and cross-referenced to an alternative Va*luation Method* permitted by the *Code*, showing the resulting differences in each of the Valuation Approaches and Methods applied.

comment should be made referring to the details of the assumptions made for each *approach* used. In each case, an analysis of the *risks* and limitations associated with the application of the selected *Mineral Asset Valuation Approach* should be provided.

The choice of a *Valuation Approach* need not be agreed with the *Commissioning Entity*, but the *MAV* should inform the *Commissioning Entity* of the limitations and specifics of the *approaches* used and, where appropriate, agree *Valuation* assumptions so that they correspond to market conditions.

If, due to any specific circumstances, the *MAV* is convinced that it is not possible to use more than one *Valuation Approach*, the *MAV* must justify this position and explain the reasons why the other *approaches* were not used.

- (S6.03) The *MA Valuation* conclusion must be based on the most probable (expected) values and must be presented in a way that reflects the uncertain and risky nature of the *Valuation* process, associated with the specific character of *mineral projects*. The conclusion may be presented either as a single numerical *Value* or as a range of *Values*. A *risk* analysis must be carried out in the *Valuation Report*.
- (S7) RESOURCES AND RESERVES
- (S7.01) The *Valuation* must consider all *Reserves* indicated as the case may be: 1) in the Polish, and/or
 - 2) foreign

systems for reporting of mineral resources and mineral reserves.

- (S7.02) The *Code* requires that when applying *Valuation Methods* in the Income Approach the *MAV* use:
 - 1) in the case of applying the Polish *resources* classification and *reporting* system: the *Extractable Resources* (and/or *Reserves*). In special cases it is acceptable to use (*In Place*) *Resources* of A+B, C₁, C₂, D categories in this *approach*, but it has to be justified, and a risk analysis should be presented.
 - 2) in the case of applying international *resources* classification and *reporting* systems: the *Reserves*.
- (S7.03) The estimation of *Resources* and *Reserves* used in the Income *Approach* must be performed by an *Expert* who is:
 - 1) a state-certified geologist or a *Competent Geologist* in the case of *Resources* and *Reserves* reported according to the Polish *resources* classification system,

2) a Competent Person or a Competent Geologist – in the case of applying an international *resources* classification system.

The *MAV* may use *resource/reserve* estimates provided in a *Geological Report*, a *Deposit Development Plan*, a *Public Report*, a *Pre-Feasibility Study* or a *Feasibility Study*. Where such data are used, the *MAV* or the *Expert(s)* retained by the *MAV* must provide an opinion on the reliability and validity thereof.

- (S7.04) In each *Valuation*, the possible error in the assessment of a *resource/ reserve* resulting from the degree of confidence must be shown.
- (S7.05) Along with the determination of a *resource/reserve*, the *MAV* must provide a characterisation of the quality of a *mineral* or mineral substances in the *anthropogenic deposit*, the mining, processing, metallurgical, economic and financial parameters, and the organisational, technical, and social conditions together with an assessment of the magnitude of possible errors in the estimation thereof.
- (S8) VALUATION REPORT
- (S8.01) The results of a *Valuation* carried out in accordance with the provisions of this *Code* must be shown in the *Valuation Report*. Recommendations setting out the principles for the preparation of a *Valuation Report* and its contents are described in the *Guidelines* (W).
- (S8.02) The *Valuation Report* must show and discuss all *current* data relating to the *Resources* and *Reserves* covered by *Mineral Assets*, and provide documents identifying the condition of the *Resources* and *Reserves*, including in particular:

Extractable Resources (and/or *Reserves*) and (*In Place*) *Resources* – in the case of *Valuation* of *Resources* and *Reserves* reported according to the Polish classification system,

Reserves and other *Resources* – in the case of applying an international resources classification system.

Where more than one *Resource/Reserve* estimate has been made, it is the responsibility of the *MAV* to identify the result that is *Material* to the *Valuation* process. The *MAV* must provide the reasoning and justification for this decision.

- (S8.03) The *Valuation Report* must disclose the results and *dates* of all prior *MA Valuations*, if any, known to the *MAV*, and explain *Material* differences between those *Valuations* and the current *Valuation*.
- (S8.04) The *Valuation Report* must discuss all the principal sources of uncertainties and *risks* associated with *MA*, the *Valuation* assumptions used

and limitations, and explain why the assumptions used are *Material*, *Reasonable*, and appropriate in the circumstances.

- (S8.05) The *Valuation Report* must be signed by the *MAV* and all *Experts* retained by the *MAV*, respectively.
- (S8.06) The Valuation Report must contain the following information:
 - 1) certificates confirming the qualifications, as specified in definition (D.60), of the *MAV* and of all *Experts* retained by the *MAV*,
 - 2) statement of *Independence* of the *MAV* and of the *Experts* retained by the *MAV*,
 - 3) statement by the *MAV* and/or by the *Experts* retained by the *MAV* that the correctness and reliability of the data used in the *Valuation process* have been verified,
 - 4) statement by the *MAV* that the *Valuation* complies with the *Standards* of this *Code* in its entirety,
 - 5) statement by the *MAV* regarding the extent to which the *Valuation* is consistent with the recommendations of the *Guidelines*.

Such statement must disclose and explain the reasons for any inconsistencies or deviations from the *Guidelines*.

If a *Valuation Report* does not contain any of these statements, or any statement is incomplete or qualified in any way, the *Valuation* shall be deemed not to comply with the requirements of this *Code*.

- (S8.07) The *MAV* or the *Expert(s)* retained by the *MAV* are required to undertake a site visit, in particular if such a visit is likely to reveal information or data *Material* to the *Report*. In such a case, the *Report* must include:
 - 1) the date of the site visit,
 - 2) the name(s) of the person(s) who undertook the site visit,
 - 3) the scope of the inspection.
- (S8.08) The *Valuation Report* must include an introduction and a summary. It must contain the following sections:
 - 1) Summary.
 - 2) Purpose, Subject, and Scope of Valuation.
 - 3) Compliance with the Polish law, *Standards* and *Guidelines* of the POLVAL *Code*.
 - 4) Deposit Development Status.
 - 5) Legal Status of Mineral Assets.
 - 6) Documentation in Place.
 - 7) *Deposit Resources* and *Reserves*.
 - 8) *Deposit* Development.
 - 9) Characteristics of the Production Process.
 - 10) Mine Closure Conditions.

- 11) Capital Expenditure.
- 12) Operating Costs.
- 13) Market Analysis.
- 14) Environmental and Social Considerations.
- 15) Key Assumptions, Sources of Uncertainty and Types of Risk.
- 16) Valuation Approaches and Methods.
- 17) Valuation Process and Conclusions. MA Estimated Value.
- 18) References.
- 19) Statements Required.

(W) GUIDELINES - RECOMMENDED PRINCIPLES

These *Guidelines* include recommendations to ensure that an effective and fair *Mineral Asset Valuation* is performed. Compliance by the *MAV* with the *Guidelines* is not mandatory but is recommended by this *Code*.

(W1) VALUATION APPROACHES AND METHODS

- (W1.01) The choice of a *Valuation Approach* is determined by the degree of confidence and the progress of exploration, development and mining work, as well as by the purpose of the *Valuation* as defined by the *Commissioning Entity*. This *Code* recommends that the *MAV* determines the type of *Mineral Assets* according to the following classification:
 - 1) *type I* early stage exploration *MA*,
 - 2) type II advanced stage exploration MA (MA at a Scoping Study stage),
 - 3) *type III deposit* development *MA* (*Mineral Assets* at a *Pre-Feasibility Study* and *Feasibility Study* stage),
 - 4) *type IV MA* of a *Mining Plant* or *MA* of an *anthropogenic deposit operating plant* in production (*Mineral Assets* at production stage at the operating mining company stage),
 - 5) *type V MA* of a *Mining Plant* at the *deposit* resource exhaustion stage (*Mineral Assets* in the course of *liquidation* or at the rock mass management post-production stage).
- (W1.02) Table W1.02 shows which *approaches* are generally considered appropriate to carry out the *Valuation* for each of the *Mineral Asset* types listed above.
- (W1.03) The POLVAL *Code* recommends its own hierarchy of *Valuation Methods* based on best practices. This hierarchy is set out in Table W1.03, which shows the *Valuation Approaches* and *Methods* recommended by the POLVAL *Code*, depending on the *Mineral Asset type*.

	Deposit Development Stage									
Valuation Approach	early stage exploration	advanced stage exploration	development properties	production properties	defunct properties					
	MA type I	MA type II	MA type III	MA type IV	MA type V					
Income	No	In some cases	Yes	Yes	In some cases					
Market	Yes	Yes	Yes	Yes	In some cases					
Cost	Yes	In some cases	No	No	Yes					

 Tabela W1.02.

 Valuation Approaches recommended by the Code for different MA types

The corresponding letters stand for:

- A method most recommended by the Code, generally used,
- B method recommended by the Code, relatively widely used,
- C method accepted by the *Code* recommended in some situations, rarely used, not understood by all,
- N method not accepted by the Code.
- (W1.06) When applying the Indicator *Method*, the *MAV* must take into account the fact that they refer to businesses/companies. If *Mineral Assets* being valued do not have this legal form, it is necessary, first of all, to make sure that differences on this account can be taken into account by way of reliable adjustments. In Polish conditions, the application of the Indicator *Method*, due to the relatively small number of listed exploration and mining companies, should be carried out with particular caution.
- (W1.07) When valuing a *Mineral Asset* of Type V, the *MAV* must first determine whether there are *Assets* in this phase that meet the *MA* definition. These may include, for example, a *deposit* of a non-exploited or unutilised associated *mineral*, a coexisting *deposit*, an *anthropogenic deposit*, an organised part of a mining company comprising a trained workforce, machinery and equipment that may economically be used in another location, etc. The *MAV* shall, unless otherwise authorised, carry out the *Valuation* in respect of the identified *MA*.

Valuation Approaches and Methods recommended by the POLVAL Code – depending on the MA type Table W1.03.

MA type V		В	В	N	N	Α	N	N	N	С	В	В	N	В	
MA type IV	roperties	IVC	N	N	А	Ν	В	Ν	N	N	С	В	В	С	С
	dormant p	IVB	A* (N)	В	C* (A)	N	В	N	N	N	N	С	N	N	Z
	operating IVA		A* (N)	Α	C* (A)	B	B	Ν	N	N	N	N	N	c	С
MA type III		A* (N)	Α	C* (A)	В	В	Z	N	N	Z	N	N	С	С	
MA type II		z	N	С	В	Α	С	В	В	С	В	N	В	В	
MA type I		z	N	С	В	Α	С	В	В	С	В	N	В	В	
Valuation Method		Discounted Cash Flow (DCF)	Net capitalisation	Real Options Analysis (ROA)	Indicator	Comparable Transactions	Statistical	Geoscience Factor (Kilburn)	Multiple of past exploration expenditure	Book value	Adjusted Net Asset	Liquidation	Reproduction	Replacement	
Valuation Approach			Income			Market					Cost				

Acronyms:

DCF - Discounted Cash Flow analysis.

ROA – Real Options Analysis.

IVB - MA with prospects for an early, economically viable resumption of operations.

IVC – MA with no hope for an early, economically viable resumption of production.

* In cases where NPVs obtained from a DCF analysis are negative, the ROA method is the MOST RECOMMENDED by the Code.

(W2) VALUATION REPORT – RECOMMENDED CONTENT

- (W2.1) The *Valuation Report* should consist of technical and economic information and analyses carried out in the course of the *Valuation*.
- (W2.2) The scope of the Valuation Report given below should be considered as a checklist to be taken into account by the MAV in carrying out the Valuation. This checklist is intended to serve solely as an aid to the MAV in preparing the Valuation Report. It is not necessary to consider all of the items listed below – the choice is at the MAV's discretion and is dependent on the specifics of the MA being valued. The level of detail provided on particular items is also at the MAV's discretion and is generally related to the MA type.
 - 1) Summary
 - Purpose, subject, and scope of *Valuation* description of the *MA* being valued, location, *deposit boundaries* and its legal status, legal status of the real properties; *concessions*;
 - Deposit development status;
 - (In Place) Resources, Resources Supposed Economic, Economic Resources, Extractable Resources (and/or Reserves) together with an assessment of the accuracy of their estimation; potential for documenting new Resources and Reserves,
 - and
 - Resources and Reserves reported in accordance with international resources classification systems;
 - Deposit development, production process and closure conditions;
 - Capital expenditure and operating costs;
 - Key assumptions, sources of uncertainty and types of *risk*;
 - Valuation Approaches and Methods;
 - Valuation process and conclusions. MA estimated Value;
 - Possible exemptions from the principles of the Code.
 - 2) Purpose, Subject, and Scope of Valuation
 - Formal and legal basis; brief description of the engagement letter and Terms of reference; scope of work.
 - Brief description of the *Commissioning Entity*; specification of all other parties to whom the *Valuation* results will be made available; identification of the holder of *MA* being valued and of the payer of the contract.
 - Purpose of the Valuation and its intended use.
 - Scope of *Valuation* (which *MA*, range, what is excluded from the *Valuation*, etc.).

- Brief description of the *MA* being valued with the specification of its *type*.
- Material dates: Valuation Date, Report Date.
- Statements of *Independence* (or non-*Independence*) of the *MAV* and the *Experts* retained by the *MAV*.
- Statement of the type of *Value* being determined.
- Alternatively, definitions of other terms used in the *Report*, if a specific meaning is given.
- Definition of the scope of work being carried out.
- Sources of factual data; description of the steps taken to ensure the reliability of information taken as certain; description of the *data verification* method used.
- Statement of any disclaimers that apply to the data, in particular if they relate to *Material* data taken into account for the *Valuation*.
- Indication of the sources underlying the methodology.
- 3) Compliance with Polish law, *Standards* and *Guidelines* of the POLVAL *Code*
 - Statement that the *Valuation* has been carried out in accordance with the *Code Standards* and the applicable legal provisions.
 - Where the *Valuation* deviates from the *Guidelines*, disclosure and justification of such deviations.
- 4) Deposit Development Status
 - Location of the subject *MA*, accessibility to the *deposit* and infrastructure.
 - Description of the location of the *MA* being valued, including a description of the site and a map.
 - Distances to major population centres and a brief description of how the *MA* can be reached.
 - Availability of essential infrastructure and utilities such as roads, railways, ports, airports, power lines, water, pipelines, labour, materials and services, including in particular:
 - installation of utility lines on the property,
 - access to technical infrastructure facilities,
 - current condition of the infrastructure,
 - possibility of transport by rail/road/river, other,
 - transport constraints due to the condition of roads,
 - transport constraints due to the capacity of nodes and rail routes.
 - Other relevant local issues: social, geographical, environmental factors and the like.
 - Description of all existing workings.

- Maps on an appropriate scale, covering the region and the immediate surroundings, and showing the *deposit* and mining area *boundaries*. The use of existing maps (e.g. geological and economic, sosiecology-related maps, etc.) is recommended.
- 5) Legal status of *Mineral Assets*
 - The subject *MA* title and the owner's interest in the property, including the rights to the *deposit*, the site, and the obligations that must be met to retain the property rights; expiry dates of *mining usufruct* rights, expiry dates of *concessions* and other rights, claims encumbering the subject *MA*, etc.
 - Any applicable agreements related to *MA* being valued, such as forward and option contracts, joint ventures, farm-ins, *royalties*, back-in rights, payments, and the like, which have been taken into account in the *Valuation*.
 - The status of the subject *MA* at the *Valuation Date* including the determination of working hours, surface rights, surface water and groundwater rights, the attitude of the local community to *mineral projects* in the intended area, local people land claims, any legal issues, environmental and permitting issues, and the impact these may have on the future of *mineral projects* connected with the subject *MA*.
- 6) Documentation in Place
 - Deposit Geological Reports (with supplements).
 - Deposit Development Plans (with supplements).
 - Mine Operation Plans.
 - Mining Plant Closure Fund.
 - Environmental Impact Reports.
 - Other documents related to the subject *MA* (e.g. *Public Reports* prepared in compliance with *CRIRSCO* principles, and expert Reports).
 - Scoping Studies.
 - Pre-Feasibility Studies.
 - Feasibility Studies.
- 7) Deposit Resources and Reserves
 - (In Place) Resources, Resources Supposed Economic, Economic Resources, Extractable Resources (and/or Reserves) at the Valuation date, and – as appropriate:
 - *Resources* and *Reserves* reported in accordance with an international resources classification and *reporting* system.
 - Richness of a mineral *deposit*, if necessary, depending on the selected *Valuation Method*.

- Possibilities and costs of increasing the degree of confidence in respect of geoscientific evidence.
- 8) Deposit Development
 - The ways a *deposit* is to be developed.
 - In place and/or planned development workings.
 - Timetable and timing of the *deposit* development.
- 9) Characteristics of the Production Process
 - Exploitation modes, methods and systems, volume of mine-run production.
 - Processing methods; particle sizing/dilution; processing efficiency and production capabilities; volumes of production of commercial grades.
 - In the case of metal ore deposits, additionally:
 - Data relating to their beneficiation and utilisation in the metallurgical process, in particular characterisation of:
 - ore beneficiation potential,
 - ore and concentrate collection and quality control methods together with assessment of the representativeness of sampling.
 - Volume of *waste* generated and how it is managed.
 - Determination of the operational period.
- 10) Closure Conditions
 - *Closure* financial and technical plan (timetable, costs, and *closure* timing), including the possibility to recover machinery and equipment and other business assets creating residual *Value*.
 - Reclamation work carried out prior to *closure*.
 - Responsibilities after *closure*.
 - Means of financial provision for future *closure* (Mining Plant *Closure* Fund).
 - Analysis of the direction of reclamation indicated in the relevant legal acts and determination of the rationality and possibility of its change.
 - Analysis and selection of the optimal development direction for the property and the rock mass after exhaustion of the *deposit resources* in relation to the residual *Value*.
- 11) Capital Expenditure
 - Capital expenditure on intangible assets.
 - Capital expenditure on *deposit* development.
 - Capital expenditure on machinery and equipment.
 - Capital expenditure schedule.
 - Estimation of working capital and forecast of its changes.

- Scope of equity and credit financing; cost of credit.
- 12) Operating Costs
 - Expected/implemented operating costs of production (signed contracts, volume of taxes, royalties, waste disposal costs, and other).
 - Forecast of the operating costs.
- 13) Market Analysis
 - Identification of products (*raw materials*) that can be recovered from the exploitation of the *deposit*.
 - Identification of potential markets with substitutes; demand analysis.
 - Identification of competition (current and potential) for the products from *deposit* exploitation.
 - Discussion of economic situation of the industry and its development prospects.
 - Discussion of long-term price forecasts for the *raw material/s* produced.
 - Determination of product sales volume.
 - Forecast of interest rates (risk-free rate) and inflation, and as required exchange rates.

14) Environmental and Social Considerations

Basic conclusions drawn from existing administrative decisions and environmental impact studies (in completed *Reports*, etc.); in case of their absence or incompleteness:

- The environmental standards that have to be met, and the permits needed to carry out work in the area falling within the subject *MA*.
- The impact of environmental constraints on the exploration, development, and production in the area.
- The impact of the project on the environment.
- The key environmental issues to be addressed; proposals for their resolution.
- 15) Key Assumptions, Sources of Uncertainty and Types of Risk
 - All assumptions *Material* for the *Valuation process*, limitations that affect the analyses carried out, the conclusions and opinions upon which the *Valuation* was based, including, but not limited to, in the case of DCF analysis:
 - the selection of the cost of equity (risk-adjusted discount rate, RADR),
 - the method of calculating cash flows (current dollars constant dollars, FCFE FCFF *approach*),

- the method of depreciating fixed assets,
- consideration of changes in working capital.
- All *Material* sources of uncertainty and types of *risk* associated with the *MA* being valued, including in particular the following *risk* factors:
 - geological,
 - economic and financial,
 - technical,
 - environmental,
 - country risk,
 - other factors Material to the Valuation.
- Plans to mitigate risk.
- 16) Valuation Approaches and Methods
 - Results of prior *Valuations* carried out on the subject *MA*: the conclusions and the *approaches* and *methods* used therein, if made available to the *MAV*.
 - Possible application of various Valuation Approaches and why each approach was utilised or not.
 - Applicability of the methods selected for the Valuation process.
 - Description of *methods* selected.
- 17) Valuation Process and Conclusions. MA Estimated Value
 - A summary of the *Valuation* results obtained across the *approaches* and *methods* used; analysis and explanation of any differences.
 - The Valuation conclusion expressed as the expected Value recommended by the MAV or as a range of Values. Determination of the level of certainty or the weighting of particular Valuation sub-results used to determine it.
 - Where a single numerical (expected) *Value* is required as the final result, discussion of the rationale used to select this *Value* within the stated range.
 - Presentation of *risk* analysis (e.g. sensitivity analysis, scenario analysis, Bayesian analysis, Monte Carlo, and the like).
- 18) References
 - A detailed list of all sources of information and data cited in the *Valuation Report*.
- 19) Statements required
 - Basic requirements:
 - Identity of the MAV and the MAV Certificate number.
 - A list of all *Experts* involved in the *Valuation process* and their *qualifications* with evidence of the required *qualifications*.

- Additional requirements:
 - Assignment of responsibility for each Section of the *Valuation Report* to a specific *Expert*.
 - Statement of *Independence* of the *MAV* and of each *Expert* and that all data and information *Material* to the *Valuation* have been taken into account.
 - Statement that the *Valuation Report* has been prepared consistently with the *Standards* of this *Code*.
 - Statement regarding the extent to which the *Valuation* is consistent with the recommendations of the *Guidelines*.
 - Statement of whether or not a site visit to the subject *MA* has been undertaken, with a record of the site visit, or the reasons for its omission.
 - Records of agreements made, as appropriate.

(Z) THE CODE OF CONDUCT OF MINERAL ASSET VALUATOR

(Z1) GENERAL PROVISIONS

- (Z1.01) The *MAV Code* of Conduct is an integral part of the *Polish Code for the Valuation of Mineral Assets* the POLVAL *Code*.
- (Z1.02) The Mineral Asset Valuator (MAV) is a professional in the Valuation of mineral deposits, anthropogenic deposits and other MA; the MAV is authorised to carry out the Valuation of the aforementioned assets, and is:
 - a) Valuators, and holds a valid MAV Certificate, or
 - b) a non-national who holds a foreign qualification in the *Valuation* of *Mineral Assets* and has had it verified and approved by the Board of the Polish Association of Mineral Asset Valuators, and is an active member of a recognised, *Independent* and self-regulatory foreign *professional organisation*.
- (Z1.03) Ethical rules governing the conduct of the *MAV* and applicable to all members of the Polish Association of Mineral Asset Valuators also apply to an *MAV* who is a foreign national (with the exception of paragraph (E5)).
- (Z1.04) Ethical rules apply to the *MAV* both when acting on their own account and when acting within institutions and businesses.
- (Z1.05) Failure to comply with the ethical rules disqualifies both the *MAV* and candidate *MAV*.
- (Z1.06) Conduct by the *MAV* or candidate *MAV* that goes against these rules and demeans them in public opinion, or undermines confidence in their *Valuation* activities, constitutes a breach of ethical standards.

(Z2) INDEPENDENCE OF MINERAL ASSET VALUATOR

- (Z2.01) The *MAV* must be objective and *Independent*. The conditions for *Independence* are set out in (D.33), (S4.02) and (S4.03).
- (Z2.02) Each *MAV* shall disclose all relationships that could affect their *Independence* and give rise to a suspicion of non-*Independence* and of the benefits they might receive from the *Commissioning Entity*, or from any of the stakeholders. The *MAV* should also transparently and fully disclose all instances of their past involvement in work related to the *Valuation* of the subject *MA*.
- (Z2.03) The *MAV* should ensure that they are able to withdraw immediately from their contract with the *Commissioning Entity* if any reason impedes the *MAV*'s *Independence* or could give rise to a serious suspicion of such dependence.
- (Z3) QUALIFICATIONS OF MINERAL ASSET VALUATOR
- (Z3.01) The *MAV* shall carry out *Valuation* activities to the best of their knowledge and with the care appropriate to such activities. The requirements for the *MAV's Competence* and *qualifications* are referred to in (D.22), (D.27), (D.36), (D.37), and (D.60).
- (Z2.02) The conduct of the *MAV* acting as a person of public trust shall be characterised by honesty, integrity, accuracy, impartiality and *professionalism*.
- (Z3.03) *Mineral Asset Valuation* is a complex undertaking. The *MAV* is obliged to continuously improve their professional knowledge and to ensure that the latest scientific and practical developments are used in their *Valuation* activities. The *MAV* should not undertake any activity which would go beyond their knowledge and *Competence*.
- (Z3.04) The *MAV* may retain (an) *Expert(s)* as required by definition (D.14), but must verify the *Experts' Independence* as required by (D.33), (S4.02) and (S4.03), their *qualifications*, and ensure that they are members of an *Independent*, self-regulatory *professional organisation*.
- (Z4) CODE OF ETHICAL CONDUCT OF MINERAL ASSET VALUATOR
- (Z4.01) The *MAV* is obliged to comply with the laws of the Republic of Poland and with the principles of the POLVAL *Code for the Valuation of Mineral Assets*.
- (Z4.02) The *MAV* shall act so as to represent the *Mineral Asset Valuators*' community with dignity vis-à-vis other persons, institutions or communi-

ties in accordance with their skills and high professional and ethical standards.

- (Z4.03) The *MAV* or candidate *MAV* is obliged to comply with social norms, respect the *MAV*'s or candidate *MAV*'s dignity and honour, and to observe the rules of polite social behaviour.
- (Z4.04) The *MAV* or candidate *MAV* is obliged to refrain from any statements, actions or behaviours which could jeopardise the good reputation of the work of *Mineral Asset Valuators* and of the Polish Association of Mineral Asset Valuators. This rule does not apply to an *MAV* who is a foreign national.
- (Z4.05) Relations between *MAVs* shall be characterised by camaraderie, mutual loyalty and co-operation, in particular when it comes to sharing their knowledge and expertise with a candidate *MAV*. This rule does not apply to an *MAV* who is a foreign national.
- (Z4.06) The *MAV* shall not review or provide an opinion on the *Valuation Report* prepared by another *MAV*. This shall not apply to assessments or opinions where such activities are carried out:
 - 1) in proceedings conducted by the Polish Association of Mineral Asset Valuators,
 - 2) at the request of a court or other judicial authority or, in the case of *deposits* owned by the State Treasury, at the request of a competent State administrative authority acting on behalf of the State Treasury.
- (Z4.07) The *MAV* shall not, in order to obtain a contract, refer to any informal and undisclosed relationships in the bodies of the Polish Association of Mineral Asset Valuators, or to any connections with local or national authorities.
- (Z4.08) The interests of the *Commissioning Entity* shall take precedence for the *MAV* over personal interests and those of third parties.
- (Z4.09) The *MAV* is bound by the principle of confidentiality and shall not disclose to third parties the information provided with in the course of *Valuation*. This obligation shall continue to apply to the *MAV* after the cessation of their activities, unless the *MAV* has been released from this obligation by a court or other competent authority, or by the *Commissioning Entity*.

Nor may the MAV use such information in their own interest.

(Z4.10) The *MAV* shall refrain from acts constituting unfair competition, unfair promotion or advertising. In particular, if another *MAV* negotiates a fee for the performance of certain activities, an *MAV* who becomes aware of this fact must not offer a lower price for the same services.

- (Z4.11) The content of the *MAV's* promotional and advertising material and the manner in which the material is presented must be in accordance with the principles of good practice and must not diminish in public opinion the quality of the services offered by other *MAVs* or harm them in any way.
- (Z5) ETHICS COMMITTEE
- (Z5.01) Compliance with these principles is supervised by the Ethics Committee of the Polish Association of Mineral Asset Valuators.
- (Z5.02) The tasks of the Ethics Committee shall include:
 - 1) settling disputes between *MAVs* concerning the activities of the Association, and dealing with complaints and requests from third parties,
 - 2) requesting the revocation of membership,
 - 3) pronouncing its opinion on applications for membership of the Association,
 - 4) giving its opinion concerning the carrying out of *Reasonableness* tests according to the requirements. (D.61).
- (Z5.03) The Ethics Committee may request that an *MAV* be expelled from the Polish Association of Mineral Asset Valuators or object to the admission of a candidate *MAV* if the person has:
 - 1) membership fee arrears of more than 12 months,
 - 2) been involved in any activity that is or may be harmful to the Association,
 - 3) breached other provisions of these Principles,
 - 4) informed the Board of the existence of specific ethical problems.
- (Z5.04) The provisions of Section (Z5) do not apply to *MAVs* who are foreign nationals and are subject to the ethics regulations of the organisation to which they belong.

Polish Association of Mineral Asset Valuators – short info

Our mission

The mission of the Polish Association of Mineral Asset Valuators is to educate, integrate and activate Mineral Asset Valuators and Competent Geologists, increase their qualifications and knowledge, promote and monitor ethical standards, and cooperate with state authorities, local governments, economic and social organizations for the protection of the environment.

The Polish Association of Mineral Asset Valuators was established to ensure that the Mineral Asset Valuation is carried out by Competent, appropriately qualified individuals so that the resulting Reports will be reliable, thorough, understandable, transparent, and include all the information required when making investment decisions.

Scope of activities

- 1.* Reports on mineral resources and anthropogenic deposits exploration.
- 2.* Valuations of mineral deposits and anthropogenic deposits based on the Polish Code for the Valuation of Mineral Assets POLVAL.
- 3. Education on determining deposit resources and valuation of mineral deposits and anthropogenic deposits.
- 4. Organizing conferences, seminars, workshops, and participation in domestic and international meetings of specialists in the field of mineral resources exploration and valuation.
- 5. Participation in national and international projects focused on the exploration of assets, valuation of deposits, and mineral resources management.
- 6. Granting Competent Geologist and Mineral Asset Valuator Certificates; applying for the Eurogeologist title (a professional title created by the European Federation of Geologists).

Points marked with an asterisk (*) indicate services provided by properly qualified Association Members – Mineral Asset Valuators. Their list can be found at www.polval.org.pl.

The POLVAL Code

The POLVAL Code was created in 2008 to address the lack of legislation governing the process of Mineral Asset Valuation and specifying what qualifications the individual carrying out the task is required to possess. The main goal of the Code was to make the Valuation Reports:

- reliable,
- accurate,
- professional,
- transparent,
- a source of all relevant information about the assets being valued.

The Code takes the form of a uniform standard for the valuation of geological and mining assets, presenting the valuation process and requirements regarding the content of the valuation reports in a clear, consistent, and step-by-step manner; special emphasis is placed on the independence, qualifications, and competences of Mineral Asset Valuators (MAV). The main objective of the POLVAL Code is to regulate and standardize the valuation of deposits in Poland.

The POLVAL Code is a creative synthesis of foreign valuation standards that have been effectively implemented. The POLVAL Code regulated the process of more than one hundred valuations of geological and mining assets, which served as the basis for investment decisions, bank loans, and even court judgments.

Long-term practice of continuous POLVAL application laid ground for its update edition in 2021 which takes int account:

- 1) recommendations from valuation prepared by MAVs,
- 2) changes implemented in recent versions of Australian VALMIN Code and Canadian CIMVAL Code,
- 3) necessity to enable carrying out valuations based on other than Polish classifications of mineral resources (like PERC/JORC),
- 4) needs resulting from developments in Circular Economy concept,
- 5) results of cooperation with the Polish Federation of Valuers' Associations.

The implemented projects

Cooperation with the Polish Federation of Valuers' Associations

Within the framework of cooperation with the Polish Federation of Valuers' Associations a group of experts nominated by both organizations has developed an extended and updated version of the V.7 standard "Standard for the valuation of real estate with mineral deposits". The aim of the work was to take into account the knowledge and experience of professionals and scientists from both organi-

zations in order to provide interested parties with a reliable methodological platform, allowing for the valuation and interpretation of the results of such real estate. The mineral deposits owned by State, which have to be valuated separately, as well as some other geological and mining assets categories, were excluded.

The above mentioned standard was approved at a meeting of the National Council of the Polish Federation of Valuers' Associations on 12 December 2016 and included into the General National Principles of Valuation under the name: "Standard for the valuation of real estate with mineral deposits" and recommended for use from January 1, 2017.

The Polish Association of Mineral Asset Valuators received The Award of the Minister of Environmental Protection of the first degree for: "The development and implementation of principles for the valuation of mineral deposits in Poland as an example of the application of geology in the investment processes. Standard for the valuation of real estate with mineral deposits".

EU projects

1. The INTRAW project (International Raw Materials Observatory)

The INTRAW project has been set up to map best practices and develop new cooperation opportunities related to raw materials between the EU and other technologically advanced countries, such as Australia, Canada, Japan, South Africa and the United States. The Observatory will be a permanent international body that will remain operational after the end of the project. The Observatory will not only continuously monitor cooperation possibilities but will also actively promote these via the establishment of dedicated bilateral and multilateral funding schemes and incentives for raw materials cooperation between the EU and technologically advanced countries outside the EU.

Project duration: January 2015-March 2018.

The tasks of the Polish Association of Mineral Asset Valuators in the project: - Dissemination of the project results at the national level.

For more information, visit: www.intraw.eu.

2. The KINDRA project (Knowledge Inventory for Hydrogeology Research) The main objectives of the project include the assessment of existing groundwater-related practical and scientific knowledge and the development of a uniform EU-harmonised categorization approach/terminology for reporting groundwater research. This requires the EU-wide assessment of existing practical and scientific knowledge on hydrogeology research and innovation in Europe. The database of groundwater research results will take into account activities, projects, programmes, and future research gaps (challenges) in the groundwater field. The ultimate goal is to improve the management of groundwater resources in the European Union in accordance with the Water Framework Directive and the Groundwater Directive by creating a publicly available and updated database on hydrogeological research in Europe.

Project duration: January 2015–March 2018.

The tasks of the Polish Association of Mineral Asset Valuators in the project:

- The collection of publicly available domestic hydrogeological data according to the guidelines of the consortium leader.
- The organization of hydrogeological workshops on the KINDRA project.
- Dissemination of the project results at the national level.

For more information, visit: www.kindraproject.eu.

3. The CHPM2030 project (Combined Heat, Power and Metal extraction from ultra-deep ore bodies)

The CHPM2030 Project aims to develop a novel and potentially disruptive technology solution that can help satisfy the European needs for energy and strategic metals in a single interlinked process. Working at the frontiers of geothermal resources development, minerals extraction and electro-metallurgy the project aims at converting ultra-deep metallic mineral formations into an "orebody-Enhanced Geothermal Systems (EGS)" that will serve as a basis for the development of a new type of facility for "Combined Heat, Power and Metal extraction" (CHPM). In the planned technology, metal-bearing geological formations will be manipulated to allow the co-production of energy and metals.

Project duration: January 2016–June 2019.

The tasks of the Polish Association of Mineral Asset Valuators in the project:

- The collection of publicly available domestic data on drilling, geophysical and geochemical exploration, etc. concerning the potential of deep ore mineralization and national geothermal potential.
- The evaluation of the available data in the field of ore-bearing formations and geothermal potential in terms of the potential use of CHPM technology.
- Dissemination of the project results at the national level.

For more information, visit: www.chpm2030.eu.

4. The UNEXMIN project (An Autonomous Underwater Explorer for Flooded Mines)

The project is aimed at developing a novel robotic system for the autonomous exploration and mapping of flooded mines. The main objective is to develop a fully autonomous multi-platform Robotic Explorer for 3D mine mapping on flooded and deep mines, otherwise inaccessible, in Europe. This can possibly open new exploration scenarios so that strategic decisions on the re-opening of Europe's abandoned mines, many of which may still contain critical raw materials, could be supported by actualized data. The multi-robot platform will be tested and validated in real-life conditions in four European mine test sites.

Project duration: February 2016-October 2019.

The tasks of the Polish Association of Mineral Asset Valuators in the project:

- The collection of publicly available domestic data on the domestic flooded mining excavations with a depth of over 50 m, which could potentially be used as test sites for the multi-robotic platform.
- Dissemination of the project results at the national level. For more information, visit: www.unexmin.eu.

5. The INTERMIN project (International Network On Raw Materials Training Centres)

The project is aimed at creating a self-sustainable long-term lasting international network of training centres for professionals in the field of mineral resources. The network will map skills and knowledge in the EU and the third countries, identify key knowledge gaps and emerging needs, develop roadmap for improving skills and knowledge, as well as establish common training programmes in the raw materials sectors.

Project duration: January 2018-March 2021.

The tasks of the Polish Association of Mineral Asset Valuators in the project:

- Participation in the preparation of project work packages:
 - International mapping of training programs in the field of mineral resources;
 - The knowledge of the raw materials sector, knowledge gaps, and the emerging needs to increase knowledge in this area;
 - The improved training programmes.
- Organization of one of the project consortium's working meetings.
- Dissemination of the project results at the national level.

For more information, visit: www.interminproject.org.

6. The INFACT project (Innovative, Non-invasive and Fully Acceptable Exploration Technologies)

The project is aimed at developing innovative technologies that are more acceptable to society and invigorate the exploration industry, unlocking unrealized potential. The project will develop innovative geophysical and remote sensing technologies (less invasive than classical exploration methods) that promise to penetrate new depths and reach new sensitivities.

Project duration: November 2017-October 2020.

The tasks of the Polish Association of Mineral Asset Valuators in the project:

- The development of a list of potential project stakeholders.
- Translation of an online survey on the major thematic areas of the project and surveying national project stakeholders.

- The collection of data on the main national sources of information on exploratory work.
- Dissemination of the project results at the national level.

For more information, visit: www.infactproject.eu.

History

The question of Mineral Asset Valuation, related to transactions on mineral assets, emerged following the political transformation of Poland in the early 1990s. Mineral Asset Valuation and documentation of mineral deposits are considered as specialized, multistage processes. They require extensive knowledge and experience covering a number of areas - mainly the geology, mining and economics; therefore, they should be performed by properly prepared, trained, and experienced specialists. The difficulty of valuation stems from the specifics of geological and mining projects. Mining investment projects are characterized by a range of unique features, including: mineral deposits (the main source of income), reclamation, and rehabilitation of the mining area. For various reasons, Polish law has established the principle that deposits of energy minerals, ore minerals, industrial minerals, and some other minerals are covered by the mining ownership (owned by State Treasury). The law does not permit to cede the ownership of such Mineral Assets onto a third party. Within the bounds specified by Acts, the State Treasury, with the exclusion of other persons, can benefit from the subject of mining properties or dispose of it's rights of property exclusively by establishing the mining usufruct. The State Treasury's rights are exercised by the competent authorities responsible for granting concessions.

In turn, mineral deposits not covered by mining property belong to the owner of the real estate. Exploration permits and mining legal concessions may be transferred to third parties (e.g. transfer of ownership of the immovable property). The entrepreneur must apply for a concession for mineral exploitation. This involves far-reaching consequences in the context of valuation allowances. The only persons authorized to valuate deposits are real estate appraisers (property valuers); in fact, they often do not possess appropriate Qualifications to competently carry out this task. Thus, the obtained valuation results sometimes significantly differ from the actual values.

Currently in Poland there are no laws regulating the aspects of Mineral Asset Valuation process, including the requirements for relevant qualifications. At present, European Valuation Standards state that valuation of deposits (Mineral Asset Valuation) is a fundamentally separate issue from real estate valuation, suggesting that in the case a real estate valuator does not have specific knowledge and skills allowing for a competent valuation of deposits, he/he should refuse to undertake such an order or seek assistance from a specialist in the field.

Both the Polish mining industry and financial market need specialists dealing with the valuation of mineral deposits and resources exploration. Specialists in Mineral Asset Valuation, scattered across various companies and institutions, have for years lacked an independent, self-governing organization that would be involved in training and monitoring the level of knowledge of its members. To address this issue, on June 12, 2006, a meeting of the initiative group of the Polish Association of Mineral Asset Valuators was held in Zakopane. The first general meeting of the Association was held on October 2, 2006 in Kraków. The Association was registered by the District Court for Kraków-Śródmieście in Kraków (XI Commercial Division of the National Court Register) on May 31, 2007. The Association was entered into the National Court Register under number 0000281978. On May 10, 2008, the Polish Code for the Valuation of Mineral Assets (The POLVAL Code) was established; in addition, the first list of Mineral Asset Valuators was published. On September 5, 2013, at the Extraordinary General Meeting of the Association, a resolution was adopted to change the status of the Association in order to expand the scope of activities to include issues related to the mineral deposits' exploration. On May 31, 2014, the the Polish Association of Mineral Asset Valuators is the member of the European Federation of Geologists. Thanks to this, once the Association member complies with the procedural requirements, he may apply to the EFG for the Eurogeologist title; the application needs to be presented by the Association.

Currently, the Association has more than 40 members, including 18 Mineral Asset Valuators and 6 Competent Geologists.