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GLOSSARY OF TERMS USED IN THE

EXTRACTIVE INDUSTRIES

EISEI Extractive
Industry
Social
Environmental
Impact

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Abstract

This Extractive Industry (EI) glossary is the first document of its kind which is prepared and published in Khmer and English. It is intended to assist the EISEI network members and others to understand the definitions in the extractive industry and to serve those who are conducting research in the extractive industry and related disciplines.

Cambodia has a geologic environment with the potential to host resources such as bauxite, copper, gold, granite, kaolin, limestone, pagodite, peat, sand and gravel, silica sand, slate, tin, and zinc fertile soil.

In Cambodia the extractive industry sector is new and there are a lot of key terms, many of which are technical. There is a lack of Khmer materials written about the extractive industry since it is a new discipline and this EI glossary of terms was prepared to meet this need. Although the terms contained in this dictionary have not been officially approved, the EISEI secretariat staff believe there is an immediate need for this book which can serve as an interim reference guide. We have future plans to update this glossary every year depending on the extractive industry development context in Cambodia.

The EISEI secretariat staff recognizes that the quality of this book may not be perfect, therefore any comments that can help improve the quality of this book are welcome. Please send comments to EISEI secretariat via e-mail: eiseicoordinator@gmail.com or by mail to Development and Partnership in Action (DPA): #69z, Street 450, Sangkat Toul Tum Pong, Khan Chamcar-morn, Phnom Penh, Cambodia.

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Introduction

Cambodia is a developing country, sustainable development about natural resources is desperately needed for the development of the country. Most people in Cambodia depend on natural resources to support their livelihood. However, over the past decade, rural livelihoods have faced increasing challenges due to rapid decline in resources.

In order to address this issue, especially in the extractive industry sector, NGOs working on the extractive industry formed a network called the Extractive Industry Social and Environmental Impact (EISEI) Network in 2008 to work specifically on the impact from mining activities. The EISEI Network is hosted and facilitated by Development and Partnership in Action (DPA) and is governed by a nine member steering committee, elected by the network members. The current EISEI steering committee includes representatives of CCIM, CPN, DPA, EWMI, ICSO, HA, MVI, NTFP and YRDP.

In recent years, the expansion of mining exploration and operations in Cambodia has increased rapidly so EISEI decided to publish this glossary to increase understanding on extractive industry terms in Khmer.

This glossary of terms for the extractive industry has been written using simple and 'easy to understand' language. The aim of this book is to explain most of the key terms used in the extractive industry including the oil and gas sector, environmental terms and solid minerals industries. It aims to serve as a reference and to be a valuable tool for civil society organizations, EISEI network members organization, students, researchers and policymakers who need these terms simplified for ease of understanding.

This book does not claim to be fully exhaustive. We encourage other members, researchers and stakeholders to further update, simplify and include more terms used in the extractive industry.

A

Abandon: To temporarily or permanently cease production from a well or to cease further drilling operations.

Acid mine drainage: When rock containing sulphur is exposed to air and water (such as that which surrounds deposits of gold, silver and copper), sulphuric acid is produced. This acid dissolves heavy metals found in waste rock and tailings produced during mineral extraction operations. This toxic chemical mixture drains into ground and surface water.

Advocacy: Recommendation, support for, and promotion of policy or other change action. Advocacy may be undertaken by a wide range of civil society and private sector groups, including environmental pressure and other special interest groups, local credit collectives, trade unions, community groups, and companies.

Aquifer: A concentrated amount of underground water found in layers of porous rock.

Alloy: A compound of two or more metals, usually produced by fusion.

Alluvial: This includes any form of mineral deposit, other than carbonaceous deposit, which does not fall within the definition of a 'lode'.

Anthracite: The hardest and most efficient form of coal, having the highest carbon content and lowest water content. (See also "coal.")

Alternative Fuel: Also known as non-conventional or advanced fuels, alternative fuels are any materials or substances that can be used as fuels, other than conventional fuels. Some well known alternative fuels include biodiesel, bio-alcohol (methanol, ethanol, butanol), chemically-stored electricity (batteries and fuel cells), (GreenNH₃) non fossil, hydrogen, non-fossil methane, non-fossil natural gas, vegetable oil, and other biomass sources.

Artisanal Mining: Mining by an individual or group exploiting mineral deposits such as tin and gold using the simplest technology such as manual or portable equipment. Artisanal mining is usually a subsistence activity, often undertaken on a seasonal basis.

Audit: A process of obtaining, verifying, potentially reconciling, and reporting upon information, including in the context of EITI, concerning financial or physical information of relevance to the extractive industries.

B

Barrel: Unit of volume of crude oil in use in the oil industry, especially in the USA and the UK. This dates back to the days of sailing ships when oil was shipped in casks.

Base Metal: A metal that is common and not considered precious or rare; usually shiny solids that conduct heat or electricity and can be formed into sheets. Examples: lead, iron, copper, tin, and zinc.

Bauxite: This sedimentary rock of aluminum ore is used to make aluminium. Bauxite is mined in open pits. The water in the bauxite is then separated from the ore producing a white powder called alumina (or aluminum oxide.) Alumina is made into aluminum and is used in cement, chemicals, face makeup, soda cans, dishwashers, siding for houses, and other aluminum products. Extracting alumina from bauxite is very expensive so bauxite mining is only undertaken on a large scale.

Beneficiation: 1) A variety of processes whereby extracted ore from mining is separated into mineral and gangue, the former suitable for further processing or direct use. 2) The term is also used metaphorically to describe the proportion of the value derived from asset exploitation which stays 'in country' and benefits local communities.

Bio-fuel: A liquid, solid or gas fuel refined in whole or in part from sustainable biological materials, usually plants.

Black coal: The most efficient type of coal in that it contains less water than brown coal and thus provides more energy than the same amount of brown coal. (See also coal and brown coal.)

Blasting: A process used to create/clear a large area or break up rock in a short time, by using explosives, usually a mixture of chemicals.

Blowing a Well: Opening a well to let it blow for a short period to free the well tubing or casing of accumulations of water, sand or other deposits.

Borehole: The hole in the earth made by the drill; the uncased drill hole from the surface to the bottom of the well.

Borrow: A large open pit or expansive hole through which minerals are extracted from the earth's surface.

Bottom Hole: The lowest or deepest part of a well.

Brown coal: A kind of coal, also called lignite, that is softer than black coal with lower carbon content and higher water content, making it less efficient than “black coal.” As a fuel, brown coal is the most highly polluting form of coal, producing the highest levels of greenhouse gas emissions. (See also coal.)

C

Cage: The conveyance used to transport men and equipment in a shaft.

Carbon Debt: The overuse, by an individual or state, of the carbon dioxide absorption capacity of the world’s oceans, vegetation and soil.

Coal: A combustible rock of organic origin composed mainly of carbon (50-98 per cent), hydrogen (3-13 per cent) and oxygen, with lesser amounts of nitrogen, sulphur and other elements. Coal was formed by the partial to complete decomposition of vegetation, carbonized under pressure millennium ago. Some water is always present, as are grains of inorganic matter that form an incombustible residue known as ash.

Coal is classified by rank, depending on the amount of carbon present, as represented in its stage of evolution from an initial peat stage to brown coal (or lignite), sub-bituminous coal, bituminous coal and anthracite. Anthracite or anthracitic coal, formed from metamorphic rock, is the hardest coal and contains the most carbon. Bituminous coal is formed from a sedimentary rock.

Sub-bituminous coal, bituminous coal and anthracite are together known as black coal which is a more ideal fuel than brown coal.

Brown coal, also called lignite, is softer than black coal and it has a lower carbon content and higher water content. The fuel value is about 25% that of black coal and it is a relatively soft material which has a heating value of only about one-quarter of that for black coal. As an energy source, coal is highly polluting and emits large amounts of greenhouse gases. Brown coal is worse than black coal in this regard.

Coal Mine: An area of land and all structures, facilities, machinery, tools, equipment, shafts, slopes, tunnels, excavations, and other property, real or personal, placed upon, under, or above the surface of such land by any person, used in extracting coal from its natural deposits in the earth by any

means or method, and the work of preparing the coal so extracted, including coal preparation facilities.

Cobalt: A hard, shiny silver white metal, usually occurring with iron, nickel, silver and copper deposits. Chiefly used in magnetic, high temperature and wear-resistant alloys for things like gas turbines, prosthetics and electric plating. Cobalt salts are used for lithium batteries. Cobalt is also used as a pigment for porcelain enamels and glass colouring.

Compressed Natural Gas (CNG): A natural gas that has been compressed under high pressures typically between 2000 and 3600 psi, held in a container. The gas expands when released as fuel.

Commodity: A raw material (metal) or primary product (food, grains, etc.) which can be bought and sold, usually through “futures” contracts or agreements to buy or sell the material at a fixed price but to be delivered and paid for later.

Concession: In the context of extractive industries, a concession is a grant of access for a defined area and time period that transfers certain rights to hydrocarbons that may be discovered from the host country to a venture. **Concessional Loan:** Loan provided to poorest countries with lower interest rates and longer repayment periods than typical or standard market or multilateral loans, i.e. less than market interest rates and extended grace period. Also known as a “soft loan”.

Construction materials: Materials suitable for construction, many of which are rock or earthen materials, such as granite, basalt, sandstone, laterite, gravel, sand, clay and red earth.

Contractor: In the context of extractive industries, contractors are independent companies providing technical services to extractive industry owners (mining, oil & gas companies) under terms specified in a contract. Partnerships are usually characterized by the contractor’s willingness to explore and exploit a contract area at their financial risk in a venture governed by a production-sharing contract (PSC).

Continuous Mining: Underground mining method using a machine that does the entire extracting job, eliminating the traditional four-step cycle of cutting, drilling, blasting and loading. Materials are extracted across a horizontal plane leaving “pillars” of untouched material to support a “roof” and leaving open areas or “rooms” underground. Most commonly used for flat-lying deposits in a particular rock layer or “stratum.” Also called “bord and pillar” mining.

Conventional Mining: The first fully mechanized underground mining method involving the insertion of explosives in a coal seam, the blasting of the seam, and the removal of the coal onto a conveyor or shuttle car by a loading machine.

Copper: A soft metal with very high thermal and electrical conductivity, used for heat and electronic conductors, and as a building material. It is also a constituent of various metal alloys, a component in ceramic glaze, and a common material for monetary coins.

Corporate Social Responsibility (CSR): The continuing commitment by business to behave ethically and to contribute to economic development while improving the quality of life of the workforce and their families, as well as of the local community and society at large.

Crude Oil: Unrefined petroleum; a naturally occurring, flammable liquid consisting of a complex mixture of hydrocarbons of various molecular weights, and other organic compounds, found in geologic formations beneath the earth's surface.

Cyanide leaching or cyanide heap leaching: An industrial mining process to extract precious metals such as gold from ore. Crushed ore is heaped on pad or base and sprayed with a cyanide solution. The cyanide bonds to the gold while seeping through the heaps. The resulting materials at the bottom of the piles are pumped into a mill for chemical separation. The remaining cyanide is stored in artificially constructed ponds. Contamination of the surrounding environment, particularly surface and ground water, due to cyanide leakage is considered inevitable. (See also "heap leaching.")

D

Decommissioning: The closing down and tidying up of a mine after mining has finished. This involves taking away buildings and equipment. Best practice dictates that it also includes safe disposal of all hazardous materials and land reclamation as close as possible to the original condition, as well as long term environmental monitoring.

Deep Mine: A mine more than 900 meters underground.

Deposit: An accumulation of minerals or oil or gas of sufficient size and grade to make it economically viable for extraction for commercial production

Density: The mass or weight of a substance per unit volume.

Deep Water Exploration: The search for petroleum, gas or minerals in which all or part are in water deeper than 200 meters.

Derrick: A large load-bearing support structure holding an oil/gas drilling apparatus over oil/gas holes. A standard derrick looks like a tower with four legs standing at the corners of the substructure and reaching to the crown block. On water, some large derricks are mounted on dedicated vessels, and are often known as “floating derricks.” Also known as a “rig” or “oil rig.”

Development Mining: The underground excavation of non-valuable “waste” rock in order to reach and open up a mineral deposit. It includes shaft sinking, cross-cutting, drifting and raising. Development mining is often necessary for “production mining.”

Dividend: A payment to a partner or shareholder out of the profit of a company as a return on the investment made.

Downstream Sector: One of the three major sectors of oil and gas operations (the others being upstream and mid-stream.) The downstream oil sector mostly refers to the selling and distribution of natural gas and products derived from crude oil but may also incorporate midstream activities, such as processing and transport.

Dredging: The process of excavating materials underwater. Used for excavating sand and mining alluvial mineral deposits, including tin, gold, and diamonds. Also used to deepen ports, harbors, river channels, etc.

Dredge: A large apparatus, operated from the side of a stationary barge (a floating platform), which is dragged along the ground surface underwater, digging or sucking up the earth below and collecting it in the barge.

Drill : (Verb) To make a hole in the ground or rock by means of whatever mechanism. (Noun) A tool used to make a hole.

Drilling Permit: The authorization to drill at a specified location in countries or states where it is required.

Drilling rig: A machine which creates holes (usually called boreholes) and/or shafts in the ground. Drilling rigs may be land-based, called “land rigs” or on water, called “oil platforms” or off-shore oil rigs, if they are on the sea.

E

Economic Evaluation: The summing up of a company's project to determine its profitability or if the project will cost too much to run.

Ecosystem Restoration: The rehabilitation of a mining site to its original ecological structure, function and process.

Effluent: The mixture of oil, gas, water and sand discharged from a well.

EITI (Extractive Industries Transparency Initiative): A global initiative which supports improved governance in resource rich countries through the verification and full publication of company payment and government revenues from oil, gas and mining. EITI is a coalition of governments, companies, civil society groups, investors and international organizations.

EITI Plus Plus, (EITI ++): A reference to a particular type of implementation of the EITI, which can be instituted by an individual country that exceeds the core standards and requirements of the EITI, as defined by EITI Sourcebook, the EITI Validation Guide, and other applicable resources. This is an extension of the EITI process which provides options for channeling revenue streams effectively for national development.

EITI Sourcebook: The EITI sourcebook was produced by the International EITI secretariat and provides guidance about how to become involved in the EITI. It is intended to assist countries wishing to implement the EITI and stakeholders wishing to support implementation.

Environmental Impact Assessment (EIA): An analysis and evaluation of the possible positive or negative impacts, inclusive of natural, social and economic aspects, that a proposed public or private project may have on the environment. The purpose of an EIA is to ensure that decision makers consider environmental impacts when deciding whether to proceed with a project and in designing a project, prior to major decisions and commitments being made.

Environmental Management Plan (EMP): The company's plan on how it will look after the environment during all stages of mining, construction, mining, processing, decommissioning, and rehabilitation.

Exploration: Any method used to search for new oil and gas fields.

Exploration Costs: The amount of money that is spent on doing exploration

work.

Exploration License: A license to explore for oil or gas in a particular area issued to a company by the governing state.

Extractive Industries: Extractive industries include oil, gas, and mining of minerals and metals. It also includes “quarrying,” the mining of construction materials such as sand and stones.

EISEI: The Extractive Industry Social and Environmental Impact (EISEI) Network was created and designed to serve as a national network and EISEI focuses on communalizations, Knowledge –sharing and facilitating dialogue between communities, community organization, government ministry and mining companies on extractive industry with supported and facilitated by Development and Partnership in Action. EISEI is governed by a nine members steering committee, elected by the network members.

F

Factor of Safety: The structural capacity of a system beyond expected or actual loads or the ratio of the ultimate breaking strength of the material to the force exerted against it. If a rope will break under a load of 6000 lbs., and it is carrying a load of 2000 lbs., its factor of safety is 6000 divided by 2000 which equals three.

Fault: A crack in the earth’s crust resulting from the displacement of one side with respect to the other. Evidence of severe earth stresses, earthquakes happen on “fault lines.”

Feasibility Study: A study to evaluate the financial viability, technical and financial risks and robustness of a proposed mining project. In developed countries, feasibility study helps investors to raise capital by proving ore reserves can be exploited for profit.

Fracking: The process of fracturing or cracking rock layers by drilling into rock and then injecting fluids (often hazardous chemicals) at high pressure to increase the extraction rates of oil and gas. It is a highly controversial practice. Environmental and health concerns associated with fracking include the contamination of both ground water and surface or near-surface water, risks to air quality, the migration of gases and hydraulic fracturing chemicals to the surface, the potential mishandling of waste, and impacts to the rock shelf causing seismic events of leading to surface subsidence. Also know as hydrological fracturing.

Fossil fuels: Hydrocarbons, such as oil, gas and coal, extracted from the earth and used to produce energy.

G

Gangue: The commercially valueless earthen material in which ore is found.

Gas: Any fluid, combustible or noncombustible, which is produced in a natural state from the earth and which maintains a gaseous or rarified state at ordinary temperature and pressure conditions.

Gas Cap: The gas that accumulates in the upper portions of a reservoir where the pressure, temperature and fluid characteristics are conducive to free gas. The energy provided by the expansion of the gas cap provides the primary drive mechanism for oil recovery in such circumstances.

Gas Plant or Gas Processing Plant: The facility (i.e. factory) that processes the gas that comes out of the ground through the well. At the gas plant, the water that comes out of the ground with the gas is separated and the gas is compressed (squeezed) so it can be transported by pipeline.

Gasification: Any of various processes by which coal is turned into low, medium and high BTU gas.

Geiger Counter: An instrument used in the search for radioactive minerals, particularly uranium, as it is capable of detecting the rays emanating from such minerals (by means of a Geiger Mueller tube). It registers the frequency or intensity of these rays either visually (by dial or flashing light), audibly (by earphones) or both.

Gemstone or Gem: Usually a piece of mineral which, in cut and polished form, is used for jewelry or ornamental and decorative objects. Their value is derived from the luster, color and other physical properties, as well as rarity. Examples are: rubies, emeralds and sapphires. Although some hard organic materials, such as pearl and amber) and rocks such as lapis lazuli are not minerals, they are still considered gemstones. (Also called precious or semi-precious stones.) Geological Maps: Maps that show the geology of an area of land, including the different rocks, soils and sands that are found there.

Geology: The scientific study of the origin, history, and structure of the earth, including the rocks of which it is composed and the physical, chemical, and biological changes that have been or are affecting it.

Geothermal Power: Power extracted from heat stored in the earth. This geothermal energy originates from the original formation of the planet, from radioactive decay of minerals and from solar energy absorbed at the surface.

Global Warming: The heating up of the atmosphere attributable to greenhouse gas emissions, particularly carbon dioxide, also known as “climate change.”

Gold: A precious yellow metal, highly malleable, and not subject to oxidation or corrosion. Between 80 and 90 percent of newly-mined gold is used by the jewelry and ornamental industries. The remaining amount is used for electroplating, electrical semi-conductors and anti-rheumatic drugs.

Gravity: In geology, “gravity” describes a mineral’s density when comparing its weight to its volume. All minerals have unique specific gravities that can be used to identify them.

Green Energy: Energy produced from renewable natural resources with a high degree of efficiency, little or no environmental impact, and high degree of sustainability. This includes anaerobic digestion, geothermal power, wind power, small-scale hydropower, solar energy, tidal power, and wave power fall. Some biomass may also be included, depending on how it is produced. The incineration of waste may also be included, depending on the method of incineration. (See also “sustainable energy” and “renewable energy.”)

Greenhouse Effect: A warming of the earth and its atmosphere as a result of the thermal trapping of incoming solar radiation by CO₂, water vapor, methane, nitrous oxide, chlorofluorocarbons and other gases, both natural and man-made.

H

Heap leaching: An industrial mining process to extract precious metals, copper, uranium, and other compounds from ore. Crushed ore is heaped on pad or base, and sprayed with a dilute cyanide solution (in the case of gold and precious metals) or dilute sulphuric acid solution, for copper, nickel and uranium ores.

Horizontal Drilling: The process of drilling a well from the surface to a sub-surface location of a target oil or gas reservoir and then drilling sideways through that reservoir to remove the oil or gas. Since most reservoirs are longer horizontally than vertically, more oil/gas can be exploited. Drilling costs,

however, can be as much as 3 times the cost of vertical drilling. Horizontal drilling is often accompanied by a controversial practice call “fracking.” (See fracking)

Hydrocarbon – A family of chemical compounds containing carbon and hydrogen atoms in various combinations, found especially in fossil fuels.

Hydrology: The study of the movement, distribution and quality of water throughout the earth.

I

Igneous Rock: One of the three main rock types (the others being sedimentary and metamorphic rock). Igneous rock is formed by magma (molten or liquid rock, such as from volcanoes) being cooled and becoming solid.

Illegal Mining: A Mining activities that are unlicensed or unregistered or are not operated according to State requirements, where underground mineral resources belong to and are regulated by the State. Illegal mining is characterized by absence of land rights, license, exploration or mineral transportation permit and is small-scale. This does not mean that all artisanal mining is illegal. In some States, artisanal mining co-exists with industrial mining. There is considerable debate around the rights of indigenous communities to practice artisanal mining as may have been their tradition for generations and whether this constitutes “illegal mining.”

International Association of Drilling Contractors (IDAC): A trade association that represents the interests of members of the drilling segment of the oil and gas industry. It offers publications regarding recommended industry practices and training materials.

International Monetary Fund (IMF): The IMF is an international organization of 183 member countries, established to promote international monetary cooperation, exchange stability, and orderly exchange arrangements; to foster economic growth and high levels of employment; and to provide temporary financial assistance to countries to help ease balance of payments adjustment.

Injection Well: Used to inject water or gas in order to maintain a field of pressure or bring it back under pressure.

In-kind Payments: Payments made to a government (e.g. royalty) in the form of the actual commodity (e.g. oil, gas, minerals) instead of cash.

International Accounting Standards: An internationally accepted standard for financial reporting as issued by the International Accounting Standard Board. The application of these standards in each country is a matter for the relevant organization of that country.

Iron: A silvery-white malleable, ductile magnetic heavy metal that readily rusts in moist air and is magnetic or magnetically. It found in most in igneous rocks. The most commonly used metal, iron is a components in the construction of machinery and machine tools, cars, ships hulls, and building structures, as well as for furniture, kitchenware, and office accessories. Iron ore is also utilized in the production of certain type of garments, rubber, paint, insecticides, and animal feed.

J

Joint: A divisional plane or surface that divides a rock and along which there has been no visible movement parallel to the plane or surface.

K

Kick-off:

1. To bring a well into production; used most often when gas is injected into a gas lift well to start production. 2. In work-over operations, to swab a well to restore it to production. 3. To change the direction of the wellbore from the vertical, as in directional drilling.

L

Land Rig: An oil drilling platform located on dry land.

Landscape: The shape of the land e.g. hills, mountains, flood plains, desert, valleys, lakes.

Landslide: A geological phenomenon which includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. The primary driving force of a landslide is gravity combined with slope instability and some kind of trigger, such as blasting or construction vibrations, releasing a flood of earth. Also called "land slips," landslides are like avalanches of mud or earth.

Liquid Petroleum Gas (LPG): An alternative fuel type to traditional gas. LPG consists of propane, propylene, butane, and butylenes in various mixtures.

Liming: An industrial process used to reduce acidic content of mine tailings and stabilize overall contamination of the surrounding environment.

Lode: A valuable deposit of mineral ore trapped within a crack in a rock formation or as an embedded layer within a rock formation

Lubes (lubricants): Denser, more viscous refined products such as motor oil, bearing grease or machine oil.

M

Memorandum of Understanding (MOU): A document describing a bilateral or multilateral agreement between parties expressing an agreement of will between the parties, indicating an intended common line of action.

Metal: A solid material that is typically hard, shiny, malleable, fusible, and ductile with good electrical and thermal conductivity.

Metallurgy: A domain of materials science that studies the physical and chemical behaviour of metallic elements and their compounds. It is also the technology of metals; the way in which science is applied to their practical use.

Metallic Minerals: Minerals which contain metals, such as gold, iron, lead, copper or others, in concentrated forms. Metallic minerals must be broken apart and chemically processed to extract the useful metal from the mineral.

Metamorphic rock: One of the three main rock types (the others being igneous and sedimentary.) Metamorphic rock is formed from pre-existing solid rocks by mineralogical, structural and chemical changes in response to extreme changes in temperature, pressure and shearing stress. Examples are quartz, marble and slate, all of which are mined for various purposes.

Midstream Sector: One of the three major sectors of oil and gas operations (the others being upstream and downstream.) Midstream the processing, storage and transportation of oil and gas. Midstream activities are sometimes integrated into the downstream sector.

Mine tailings: After desired minerals are removed from a mining area, the remaining ground rock waste, or tailings, are left in piles. Containing residues of heavy metals and processing chemicals, tailings contaminate surrounding

air, water and land.

Miner: One who is engaged in the business or occupation of extracting ore, coal, precious substances or other natural materials from the earth's crust.

Mineral: An inorganic compound occurring naturally in the earth's crust with a distinctive set of physical properties and a definite chemical composition.

Mineral Deposit: The concentrated, natural occurrence of one or more minerals. Mineral deposits can form within any kind of rock and consist of any type of mineral.

Mineral Exploration: Mineral exploration or prospecting is the act of searching a terrain to discover unknown deposits of mineral ores, oil or gas.

Mineral Exploitation: Mining operations related to the technical and economic utilisation of mineral resources including mine development, extraction, treatment, processing and beneficiation of mineral resources as well as activities necessary or related to the marketing of such mineral resources.

Mineral Reserves: The resources which are known to be economically feasible for extraction. Reserves can be either proven reserves or probable reserves. Proven reserves means that geological activities have actually confirmed the quantities of a specific mineral while probable reserves implies that geological activities and inventory indicate the existence of a mineral but its quantity has not been accurately determined. (Also called "reserves.")

Mining: The extraction of valuable minerals or other geological materials from the earth, usually from an ore body, vein or coal seam. Mining in a wider sense comprises extraction of any non-renewable resources such as the ores of gold and tin, sand and rock, petroleum and even water.

Mining Engineer: A person qualified by education, training, and experience in mining engineering. A trained engineer is proficient in the science, economics and arts of mineral location, extraction, concentration and sale and is knowledgeable about the administrative and financial problems of practical importance for profitable mining.

Mining Lease: A contract to work a particular mine and extract mineral or other deposits under specified conditions. Also known as a mineral lease.

Mining Operations: Work carried out in the course of mineral exploitation including exploration, extraction, beneficiation and processing..

Mining Permit or License: Official recognition or permission to mine a mineral deposit. It gives a miner the legal right to extract a mineral.

Ministry of Environment (MoE): In Cambodia, this is the ministry responsible for environmental protection. This includes drafting law, implementing and enforcing laws related to the environment and assessing EIA reports.

Ministry of Mines, Industry and Energy (MIME): In Cambodia, this is the ministry responsible for issues related to mining. This includes drafting law, implementing and enforcing laws related to mining, approving and issuing mining licenses and monitoring mining operations.

Mother (or source) rock: The host rock in which a mineral is found. For oil, this is sedimentary rock deposited together with organic matters transforming over time into hydrocarbons (gas and oil.) Also called “parent rock”.

Mountain-top removal: A controversial form of surface-mining, using explosives to blast away the tops of mountains to get to the minerals or rock underneath. Most commonly associated with coal mining. Mountain-top removal has significant environmental impacts, including deforestation, loss of biodiversity, destruction of headwater streams and risks to human and animal health from water and airborne toxins and corrosive dust. Few of these impacts can be mitigated.

N

Natural Gas: Petroleum in gaseous form consisting of light hydrocarbons often found in association with oil. Methane is the dominant component.

Nickel: A silvery, hard, ductile, ferromagnetic metal used in alloys, such as stainless steel. Nickel is also used to produce magnets and monetary coins. Nickel sulphide, derived from nickel, is used for electroplating and rechargeable batteries.

Non-associated gas: A natural gas found in a natural reservoir that does not contain crude oil.

Non-metallic minerals: Minerals that do not contain metals, having value for industrial and construction purposes. These include phosphate, silica sand, clay, dolomite, graphite, fluorite and zircon.

Non-renewable energies: Fossil fuels such as gasoline, coal, natural gas and

diesel which can only be extracted and not replenished. A kind of non-renewable resource.

Non-renewable resource: A resource which cannot be produced, re-grown, regenerated or re-used on a scale which can sustain its consumption rate. These resources exist in a fixed amount, they can only be extracted and cannot be replenished them. They include fossil fuels such as oil, coal, natural gas and minerals, such as copper, phosphorous, etc. Non-renewable resources cannot be sustained indefinitely.

O

Offshore Well: Oil fields and facilities constructed at sea.

Oil: A simple or complex liquid mixture of hydrocarbons that can be refined to yield gasoline, kerosene, diesel fuel and various other products.

Oil and Gas Fields: A field or vast reservoir that contains both oil and natural gas, inclusive of the full amount of not just the recoverable reserves.

Oilfield: The surface area overlying an oil reservoir or reservoirs. The term usually includes not only the surface area, but also the reservoir, the wells and the production equipment.

Oil Refinery: The facilities for processing crude oil into useable oils and other products.

Oil Reserves: Quantities of oil estimated to be available in particular oil fields or in a territory or country and recoverable based on known technologies and access.

Oil Terminal: A depot or station where oil is loaded. Also known as oil station, oil depot, pumping station or booster station.

Oil Well: A well from which oil is obtained.

Oil Exploration License (OEL): A license that entitles the licensee to the non-exclusive right to explore for petroleum within a specified area for which no other prospecting licenses or mining leases have been made.

Oil Mine Lease (OML): An agreement granting a company the legal right to develop and produce hydrocarbons discovered in a specified area for a specified period of time.

Oil Prospecting Lease: An agreement granting a company the legal right to explore for hydrocarbons over a particular area for a specified time period.

Onshore Well: An oil or gas well located within land boundaries of a country.

Open-pit mining: A method by which minerals, found close to the surface, are extracted by using cutting into the earth from the surface. Open pit mines can often cover a very big area.

Open-pit mine or open-cast mine: A kind of surface mining in which rocks or minerals are extracted from the earth through an open pit or a big hole (also called a "borrow.") Open-pit mining requires the removal of great amounts of earth over vast expanses of land, with devastating consequences for surrounding ecosystems.

Ore reserves: The amount and grade of ore that a company calculates can be extracted. Amounts are classified as 'possible', 'probable' and 'proven' reserves according to data available.

Overburden: The surface soil that must be moved away to get at coal seams and mineral deposits

P

Paraffin: A white, odourless, tasteless, chemically inert, waxy substance derived from distilling petroleum; a crystalline, flammable substance composed of saturated hydrocarbons.

Permeability: A measure of the ability of a porous material (often a rock or unconsolidated material) to allow fluids to pass through it. Rocks may have holes or void spaces in them (pores) allowing fluids to flow, meaning the rock is permeable. If these holes do not connect, the flow of fluid can be drastically reduced, meaning the rock is less permeable or even impermeable (meaning there is no flow at all.)

Permit: As it pertains to mining, a document issued by a regulatory agency giving approval for mining operations to take place.

Petrochemicals: Chemicals such as ethylene, propylene and benzene derived from petroleum. They are often manufactured as part of the refining process.

Petroleum: An inflammable oily liquid varying in colour from yellow to black,

consisting of widely varying hydrocarbons, found in sedimentary strata of the earths' crust.

Petroleum Fuels: Gasoline and diesel fuels.

Phytotoxicity test: The assessment of toxic chemicals found in the soil, such as those released into the environment by mineral extraction and smelting processes.

Pipeline Gas: Gas under sufficient pressure to enter the high-pressure gas lines of a purchaser; gas sufficiently dry so that liquid hydrocarbons - natural gasoline, butane, and other gas liquids usually present in natural gas - will not condense or drop out in the transmission lines.

Platinum: A precious silver-white non-corroding ductile and malleable heavy metallic element used in car emission control devices and engines, electronics and catalysts (particularly for the production of petroleum) and in chemical ware and apparatus. It is also a common component in ships, steel piers and pipelines and in dental and jewelry alloys.

Porosity: A measure of the relative volume of void space in rock to the total rock volume. These spaces or pores are where oil and gas accumulate; therefore, a formation containing a high percentage of porosity can contain more hydrocarbons.

Poverty Reduction Strategy (PRS): Nationally-formulated strategy to reduce poverty. These aim to ensure broad stakeholder participation in formulating strategies, improve coordination among development partners and focus on combined resources of the international community to achieve poverty reduction goals.

Precious Metal: A rare, naturally occurring metallic chemical element of high economic value. Precious metals are less reactive than most elements, have high lustre, are softer or more ductile and have higher melting points than other metals. Historically, precious metals have served as currency or currency standards. They are now important commodities and investments, serving as market standards. Gold, silver and platinum are examples of precious metals.

Production Well: A well (drilled hole in the earth) used to bring up oil or gas from underground. .

Prospect: Underground area in which geologists think there is a chance of finding oil.

Prospecting and Exploration: Researching, mapping and appraising an area's geology, using geophysical and geochemical methods to determine the amount and quality of mineral or oil/gas reserves. This includes drilling, surveying, sampling, analysis, testing and determining feasibility parameters.

Proven Reserves: Oil, gas or ore which has been located and is recoverable but is not yet extracted.

Q

Quality Control: The act of consistent testing of all products to make sure they meet specified quality standards.

Quarry: (Noun) A type of open-air pit mine from which rock or minerals are extracted.

Quarries: Generally used for extracting construction materials, such as sand gravel and stone. The facilities for processing the stones (such as gravel crushers) are often located at the same sites, (Quarry: Verb) To obtain stone or earthen materials from an open-air pit by cutting, digging, or blasting.

R

Radioactive Substance: Any material that emits radiation. Uranium and plutonium are typical examples of radioactive substances.

Recovery Factor: The percentage of petroleum or other mineral resources originally contained in a field which can be recovered through extraction.

Real Estate Investment Trusts (REITs): A financial trust or association that invests in a variety of real estate. REITs are managed by one or more trustees, like a mutual fund, and trade like a stock.

Refinery: A processing plant (i.e. factory) where crude oil is separated and transformed into marketable products.

Refining: The process of converting crude oil into usable fuel products.

Renewable Energies: Energy coming from natural resources which is replenished or re-generated naturally. This includes sunlight, wind, rain, tides and geothermal heat. On a limited scale, bio-mass and bio-fuels, which can be replenished naturally, may be considered renewable. However, if their production depletes resources (such as soil) in a way that is cannot be sustained

for the long-term, they may not be renewable. Energy from mega-dams may be renewable but may not be considered a “green” energy because of environmental costs and sometimes even green-house gases associated with them.

Renewable Resources: Natural resources that can be renewed or replenished since they are not used up. This includes living organisms used by people for a wide or purposes (food, medicine, fiber, fuel, etc.) replaced by natural processes and replenished over time. Renewable resources are part of our natural environment and form our eco-system. They are sustainable only if they can be replenished faster than they are used. Some renewable resources are endangered by industrial development and high rates of consumption and growth.

Reserves: Those quantities of hydrocarbons or minerals which are anticipated to be commercially recovered from known accumulations.

Reservoir: A porous, permeable sedimentary rock formation containing quantities of oil and/or gas enclosed or surrounded by layers of less-permeable or impervious rock forming a structural trap.

Rig: A derrick, with its engine house, used for boring, and afterwards pumping, an oil well. The term refers to the derrick itself. (See also “derrick.”)

S

Sample: Small quantity of rock removed, often by coring, for analysis.

Sediments: Deposits of particles of variable sizes, coming either from the erosion of old rocks or from activities (shellfish shells or other). With time, the sediments become sedimentary rock.

Sedimentary Basin: Terrain consisting of superposed layers of rock formed from the deposition of sediment over vast tracts of ocean or lake beds, over the course of geological eras.

Sedimentary Rock: Sedimentary rock is one of the three main rock groups (the others being igneous and metamorphic rocks.) Although sedimentary rocks make up only 5% of the earth’s rock, they cover 75% of the earth’s surface. Almost all ground water and hydrocarbons deposits are found in sedimentary rock. Sand and gravel come from sedimentary rock.

There are three main types of sedimentary rocks, each formed a different way.

1. **Plastic rocks:** Rocks formed by the erosion or weathering of other rock into "sediments" (small particles) and their re-deposition and accumulation in another place. Examples: Sandstone and shale.
2. **Organic sedimentary rocks:** Rocks formed from the remains of large amounts of plants and animals, buried and pressed under rock sediments; some transformed to carbon. Examples: Limestone and coal.
3. **Chemical sedimentary rocks:** Rocks formed from chemical processes occurring naturally. The most common of these processes is "precipitation" through which minerals are dissolved from a body of water and accumulate as a solid on the sea or lake bottom. Example: Gypsum (also called "Epsom salts")

Selective Mining: A process through which relatively high-grade mine products are obtained. This usually entails the use of an expensive stopping system and high exploration and development costs in searching for and developing the separate bunches, stringers, lenses and bands of ore.

Separation: The first stage in refining, consisting in separating the different hydrocarbons present in the crude oil depending on their respective boiling ranges..

Service Contract Typically, these are agreements between the government of a developing oil-producing country or its national company, oil company or "Contractor" (usually foreign-owned) , whereby the Contractor undertakes to carry out on behalf of the government or its national oil company, exploration, development and, at the option of the government or its national oil company, production operations within the contract areas specified in the agreements.

Shaft: A long, narrow excavated vertical or inclined hole for the purpose of opening and servicing a mine. It is usually equipped with a hoist at the top which lowers and raises a conveyance for handling men and material.

Shaft Mine: An underground mine in which the main entry or access is by means of a vertical shaft.

Silicosis: Incurable lung disease caused by repeated exposure to toxic particles of silica in the air and characterized by the growth of lumps and scar tissue in the lungs.

Silver: A lustrous white, ductile, malleable metal, having the highest thermal

and electrical conductivity of all metals. Considered a precious metal, it is an important commodity and investment. Silver is used for jewellery and other ornamental uses, tableware and coinage. It is also widely used for photographic development, dental and soldering alloys, electrical devices, printed circuits, specialized optics, clothing production and control rods in nuclear reactors.

Sinkhole: A naturally-occurring hole or depression in the land surface caused by the dissolution and collapse of an underground cavern roof. It generally occurs in limestone regions, influenced by the rise and fall of ground water. Sinkholes may also occur on decommissioned or abandoned mining sites as a result of subsidence or the collapse of underground mine shafts.

Smelter: A factory for smelting a metal from its ore.

Smelt: To melt or fuse (ores) in order to separate the metallic constituents.

Smelting Furnace: A furnace – high-degree oven - in which ores are smelted or reduced.

Social responsibility: The obligation of the government, the private sector, and civil society, to make decisions and take actions that will enhance the welfare and interests of society as a whole.

Stakeholders (in extractive industries): Members of the government, civil society and private sector affected by extractive industries.

Strip Mining or Surface Mining: A kind of mining wherein minerals are excavated from the surface after first removing a long strip of overlying soil and rock (the overburden). It is most commonly used to mine coal or tar sand. Strip mining is only practical when the ore body to be excavated is relatively near the surface. Strip mines tend to be large and environmentally destructive, with heavy impacts on topography, vegetation, biodiversity and water resources. When not reclaimed, surface mines result in large areas of infertile waste rock.

Squeezing a Well: A technique whereby cement is used to seal-off a section of a well bore where a leak or incursion of water or gas has occurred;

Subsidence: The gradual sinking, or sometimes abrupt collapse, of the rock and soil layers, such as into an underground mine or along a riverbank or shoreline. Subsidence can be naturally occurring or related to human activity such as dredging and underground excavation. Structures and surface features above the subsidence area can be affected.

T

Tailings Ponds /Dam: The artificial dams and ponds constructed to store the toxic liquefied wastes and contaminated water left over from ore processing at a mine site. Heavy metals contained in the tailings often leach from the storage area into the surrounding soil and watershed systems.

Tar Sands or Oil Sands: An unconventional petroleum deposit, in the form of bitumin or “tar,” in sand. The petroleum is dense and extremely viscous or “sticky” and difficult to remove from the sand. Until recently, the mining of tar sands was considered too difficult, costly and environmentally destructive to undertake. With high demand for oil and decreasing supply, tar sands are now being mined for oil at great environmental cost. The largest of these operations is in Canada. There is a worldwide movement against the mining of tar sands.

Terminal: A land-based facility which receives and stores crude oil and other products from offshore oil production.

Therm: A unit of heat equivalent to 100, 000 BTU (British Thermal Unit.)

Thorium: A silvery-white radioactive metal extracted from monazite (reddish-brown phosphate containing rare earth minerals). It is used in magnesium alloys for aircraft engines, electrical wire coating, in nuclear reactors and as a nuclear fuel. It is also used to determine the age of fossils. It may be added to glass and ceramics for heat resistant properties.

Titanium: A strong, low-density, highly corrosion-resistant, lustrous white metal, occurring widely in igneous rocks. As an alloy, titanium is used for air and spacecraft, naval ships, missiles, submarines, aquariums and desalination plant components. It is also used in metallic sporting goods, sculptures and surgical implants. As a pigment, it is used in paints, paper, toothpaste, plastics and sunscreens.

Title: Documentation proving ownership of land; may also refer to exclusive rights to do specific work in a specific area, e.g. a mining exploration title.

Title Holder: A company or other entity that holds documentation of ownership or other rights.

Transparency: The condition of being open and candid; a mechanism which promotes accountability through timely, accurate and comprehensive public disclosure of information related to outcomes and decisions by govern-

ment agencies and extractive companies. The principle of transparency goes beyond the provision of basic facts and figures and also includes the mechanisms and processes used to make decisions

Ton: A short or net ton is equal to 2,000 pounds; a long or British ton is 2,240 pounds; a metric ton is approximately 2,205 pounds.

U

Unassociated Gas: Natural gas occurring alone, not in solution or as free gas with oil or condensate.

Underground Mine: A kind of mine where by minerals are accessed by shafts, removed mechanically from several hundred feet underground and transferred to the earth's surface by shuttle car or conveyor. Also known as a "deep" mine.

Underground mining: Digging into the ground and making tunnels and shafts for taking out minerals. Sometimes underground mining can occur very deep under the ground.

Upstream: One of the three major sectors of oil and gas operations (the others being mid-stream and downstream.) The upstream sector focuses on prospecting and production and includes searching for potential underground or underwater oil and gas fields, drilling exploratory wells and subsequently operating the wells that recover and bring the crude oil and/or raw natural gas to the surface. (See also midstream and downstream.)

V

Vein: A distinct sheet-like body of crystallized minerals within a rock. Veins form when mineral constituents are carried by water within the rock mass and are deposited through precipitation. The result is a concentrated occurrence of a particular ore with more or less regular development in length, width and height. When a vein contains metals, it is called a lode. (See also "lode.")

Vent: Gas safety exhaust system to avoid dangerous excess pressures building up, such as in a mine.

Viscosity: The ability of a liquid to flow at a given temperature.

Volatility: The ability of a liquid to evaporate.

W

Well: A hole drilled underground for oil exploration and operation. By extension, it is any apparatus used for this purpose.

Well Mining: An excavation process that involves digging a well and making a tin bracket where wheels are used to draw sand out of the well.

Wildcat: An oil or natural-gas well drilled speculatively in an area not known to be productive.

World Trade Organization (WTO): Formed in 1995, the WTO is a multilateral trading organization designed to supervise and liberalize international trade. The organization deals with regulation of trade between participating countries; it provides a framework for negotiating and formalizing trade agreements and a dispute resolution process aimed at enforcing participants' adherence to WTO agreements which are signed by representatives of member governments and ratified by their parliaments. The WTO has 153 members, representing more than 97% of total world trade and is based in Geneva, Switzerland.

Z

Zircon: A very common, hard brown-to-colorless mineral which, when heated, cut, and polished, forms a brilliant blue-white gem. Zircon is used as a refractory and as a faux gem stone as well as being used in decorative ceramics.

References:

1. International Woman and Mining Network/Red International Mujeres Y Minería (RIMM), March 2010, Woman Form Mining Affected Communities Speak Out Defending Land, Life and Dignity, in India.
2. Glossary of Terms Used in THE NIGERIAN EXTRACTIVE INDUSTRIES, Coalition for Change, 2010.
3. Ministry of Environment, Dictionary of Environmental Terms, Phnom Penh 1998



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