

Mineral resources & reserves



Codelco's extensive mining base is the foundation for our future growth.

Chairmen's statement

President & CEO's review

Organisation

Corporate profile

Divisions

Highlights

Mineral resources & reserves

Exploration

Investment & projects

Innovation & technology

Results & market

People & sustainability

Company network

Financial statements

At Codelco we report the mining asset inventory by differentiating between mineral resources and reserves in accordance with current legislation. In addition, we report geological resources indicating the potential of deposits identified to date.

Geological resources –which are classified as assessed, indicated and inferred resources– are produced by the exploration process and are estimated based on geoscientific models. When these geological resources evidence economic interest with reasonable likelihood of eventual extraction, they are known as mineral resources.

Mineral resources classified as proven and probable constitute the assessed and indicated mineral resources subset that can be extracted according to a technically and economically sustainable mine plan included in the production scenario. In this sense, the process for converting resources into reserves considers the estimation of current operations and projects with pre-feasibility and feasibility engineering levels for each of the divisional production scenarios.

Chairmen's statement

President & CEO's review

Organisation

Corporate profile

Divisions

Highlights

Mineral resources & reserves

Exploration

Investment & projects

Innovation & technology

Results & market

People & sustainability

Company network

Financial statements

Our mining assets are classified based on overall definitions shared by the company's different divisions. Comprehensive and auditable follow-up is provided for the classification process, together with quality control for geological modeling and the estimation process.

On-site geological resources inventory

Division	Assessed resources			Indicated resources			Inferred resources			Geological resources		
	Mining Mt	Cu Grade T %	Fine Cu Mt	Ore Mt	Cu Grade T %	Fine Cu Mt	Ore Mt	Cu Grade T %	Fine Cu Mt	Mining Mt	Cu Grade T %	Fine Cu Mt
Radomiro Tomic	1,395	0.50	7.0	1,699	0.44	7.4	4,250	0.38	16.0	7,344	0.42	30.5
Chuquicamata	2,874	0.66	19.0	1,761	0.52	9.1	9,502	0.37	35.6	14,137	0.45	63.7
Ministro Hales	265	1.07	2.8	374	0.85	3.2	1,250	0.68	8.5	1,889	0.77	14.6
Gabriela Mistral	414	0.36	1.5	84	0.30	0.3	510	0.33	1.7	1,008	0.34	3.4
Salvador	479	0.51	2.4	535	0.42	2.2	2,474	0.42	10.4	3,488	0.43	15.0
Andina	2,826	0.73	20.7	2,348	0.66	15.6	16,572	0.59	97.0	21,745	0.61	133.3
El Teniente	2,816	0.85	23.9	2,796	0.56	15.5	9,713	0.48	46.9	15,325	0.56	86.4
Exploration, business and subsidiaries	161	0.26	0.4	138	0.27	0.4	2,701	0.35	9.6	3,000	0.35	10.4
Total	11,230	0.69	77.8	9,735	0.55	53.7	46,971	0.48	225.6	67,936	0.53	357.2

Note: 0.2% copper cut-off grade.

Inventory of resources in artificial deposits

Division	Mineral Mt	Cu grade T %	Fine Cu Mt
Chuquicamata	1,016	0.25	2.5
Salvador	1,390	0.24	3.3
El Teniente	2,525	0.52	13.2
Total	4,930	0.39	19.0

Geological resources in the 2015 inventory were up 2.6% for fine copper compared to the 2014 inventory. This was due to the updating of geological models and new resource estimates as the result of reconnaissance campaigns. Resources contained in artificial deposits were also up by 7.3% as the result of a stock material and broken material update, which is indicated in the table to the left.

Chairmen's statement

President & CEO's review

Organisation

Corporate profile

Divisions

Highlights

Mineral resources & reserves

Exploration

Investment & projects

Innovation & technology

Results & market

People & sustainability

Company network

Financial statements

The artificial deposits are comprised of the following:

- **Broken material:** resources that have not been extracted, remains following the extraction of sectors exploited by means of underground mining.
- **Stock:** extracted resources that have been heaped in duly identified areas. The product of open pit mine exploitation that depends on cut-off grades for the mine plan (short- and long-term). Tailings and spent leached ore are also reported as artificial deposits in the term stock.

Mineral resources

We annually formulate a Business and Development Plan at Codelco. This plan features short-, medium- and long-term business forecasts.

This is a strategic long-term plan formulated based on mineral resources with economic potential, incorporating geological, metallurgical,

geomechanical, economic, financial, environmental and community factors, as well as other technical-economic factors with their corresponding degrees of reliability.

In order to update and improve the classification of mineral resources, Codelco conducts drilling campaigns that provide additional information. This information allows us to robustly execute the different engineering stages at profile, pre-feasibility and feasibility levels. The process requires a series of specific activities that are identified in the corporate strategic agenda and are classified by scheduling, planning and budgeting over time. The division with the least resources has an estimated exploitation term of 12 years, while the megadeposits have exploitation terms of over 70 years in some cases.

Our corporate mineral resources inventory consolidates information about all divisions using final excavation casing material volume for open pit mines and underground mine ore volume at variable cut-off grades determined by the mine plans.



Codelco's megadeposits have estimated an exploitation term of 70 years.

Chairmen's statement

President & CEO's review

Organisation

Corporate profile

Divisions

Highlights

Mineral resources & reserves

Exploration

Investment & projects

Innovation & technology

Results & market

People & sustainability

Company network

Financial statements

On-site mining resources inventory

Division	Assessed resources			Indicated resources			Inferred resources			Geological resources		
	Ore Mt	Cu Grade T %	Fine Cu Mt	Ore Mt	Cu Grade T %	Fine Cu Mt	Ore Mt	Cu Grade T %	Fine Cu Mt	Mining Mt	Cu Grade T %	Fine Cu Mt
Radomiro Tomic	1,310	0.50	6.6	1,294	0.45	5.9	1,210	0.43	5.2	3,814	0.46	17.6
Chuquicamata	729	0.85	6.2	653	0.70	4.6	320	0.68	2.2	1,702	0.76	13.0
Ministro Hales	174	1.15	2.0	54	1.06	0.6	688	0.89	6.1	916	0.95	8.7
Gabriela Mistral	391	0.36	1.4	70	0.30	0.2	6	0.25	0.0	468	0.35	1.6
Salvador	212	0.64	1.3	119	0.50	0.6	313	0.23	0.7	644	0.41	2.7
Andina	1,587	0.85	13.5	1,083	0.81	8.7	1,949	0.80	15.6	4,618	0.82	37.8
El Teniente	1,415	0.98	13.9	703	0.82	5.8	1,894	0.75	14.2	4,013	0.84	33.9
Total	5,818	0.77	45.0	3,976	0.66	26.3	6,381	0.69	44.0	16,174	0.71	115.3

Resource inventory in artificial deposits

Division	Ore Mt	Cu grade T %	Fine Cu Mt
Radomiro Tomic	24	0.32	0.1
Chuquicamata	328	0.29	1.0
Ministro Hales	37	0.54	0.2
Salvador	236	0.60	1.4
Andina	215	0.72	1.6
El Teniente	481	0.55	2.6
Total	1,321	0.52	6.8

Note: At variable cut-off grade depending on the mine plan.

Total Codelco mineral resources

Division	Mineral Mt	Ley CuT %	Cu fino Mt
Mineral resources Codelco	17,495	0.70	122.2
Anglo American Sur (20%)	1,744	0.61	10.7
Inca de Oro (34%)	156	0.41	0.6
El Abra (49%)	956	0.44	4.3
Resources subtotal, stakes in other companies	2,857	0.55	15.6
Total for Codelco	20,352	0.68	137.7

Note: Codelco's stake in other companies includes the following deposits: Los Bronces, El Soldado, El Abra and Inca de Oro. Mineral reserves are included in mineral resources. Information source: Anglo American Sur, Freeport McMoran and Panaust (2014 Annual Report).

Chairmen's statement

President & CEO's review

Organisation

Corporate profile

Divisions

Highlights

Mineral resources & reserves

Exploration

Investment & projects

Innovation & technology

Results & market

People & sustainability

Company network

Financial statements

Mining resources in the 2016 Business and Development Plan were down by 2.9 million tonnes of fine copper compared to the 2015 Plan. This was due to annual consumption, project reformulation and/or updating and ongoing revision of mining plans. One example is the reformulation of the Salvador Division Inca Pit Project, which obtained a plan with less mining resources as the consequence of investment plan optimization.

The inventory incorporates approximately 16 million tonnes of fine copper into resources, considering Codelco's stake in Anglo American Sur, Inca de Oro and El Abra, amounting to a total 138 million tonnes of fine copper.

Mining reserves

Our mining reserves were determined in accordance with the code formulated by the Mining Resources and Reserves Competency Qualification Committee created by Law N° 20,235. These mining reserves are the result of long-term mine planning, exclusively considering assessed and indicated reserves from projects whose pre-feasibility or feasibility study has been completed. Inferred resources in the economic casing for pits and underground mines are considered waste rock for the purpose of economic evaluations.

A detailed list of Codelco mining reserves as of 2015 is published in the Public Resources and Reserves Report issued by each division.



Codelco's fine copper geological resources for the 2015 inventory were up 2.6% compared to 2014.

Chairmen's statement

President & CEO's review

Organisation

Corporate profile

Divisions

Highlights

Mineral resources & reserves

Exploration

Investment & projects

Innovation & technology

Results & market

People & sustainability

Company network

Financial statements

2015 ore reserves inventory and Codelco's stake in other companies

Division	Proven reserves			Probable reserves			Total reserves		
	Ore Mt	Cu Grade T %	Fine Cu Grade Mt	Ore Mt	Cu Grade T %	Fine Cu Grade Mt	Ore Mt	Cu Grade T %	Fine Cu Grade Mt
Radomiro Tomic	819	0.52	4.2	1,356	0.49	6.6	2,174	0.50	10.9
Chuquicamata	699	0.86	6.0	702	0.60	4.2	1,401	0.73	10.2
Ministro Hales	184	1.05	1.9	55	1.04	0.6	239	1.05	2.5
Gabriela Mistral	363	0.36	1.3	67	0.29	0.2	430	0.35	1.5
Salvador	27	0.66	0.2	25	0.49	0.1	53	0.57	0.3
Andina	749	0.78	5.8	237	0.65	1.5	986	0.75	7.4
El Teniente	782	1.06	8.3	901	0.74	6.6	1,683	0.89	15.0
Reserves at Codelco divisions	3,623	0.77	27.8	3,343	0.59	19.9	6,966	0.69	47.7
Anglo American Sur (20%)							430	0.52	2.2
El Abra (49%)							218	0.46	1.0
Stake in other companies							647	0.50	3.2
Total for Codelco							7,613	0.67	51.0

Nota: Codelco's stake in other companies includes the following deposits: Los Bronces, El Soldado and El Abra. Information source: 2014 Annual Reports for Anglo American Sur and Freeport McMoran.

Nota: Reserves are calculated using the cut-off grade for the respective mine plan.

Ore reserves dropped by 5.5 million tonnes of fine copper (3.6 tonnes excluding consumption during 2015). The main variations are:

- **North Operations:** an additional 3.4 million tonnes, mainly due to updating the geological model for the Chuquicamata Underground Project and the new oxide resources model at the Radomiro Tomic Division.
- **Central South Operations:** 8.8 million tonnes less, due to the consumption of annual reserves while redefining the Andina Division Expansion 244 project, only reporting reserves with continuity projects (the alternative expansion project is currently in the pre-feasibility study stage.)

Chairmen's statement

President & CEO's review

Organisation

Corporate profile

Divisions

Highlights

Mineral resources & reserves

Exploration

Investment & projects

Innovation & technology

Results & market

People & sustainability

Company network

Financial statements

The mineral reserves inventory incorporates 3.2 million tonnes of fine copper that corresponds to Codelco's stake in SCM, El Abra and Anglo American Sur, amounting to a total 51 million tonnes of fine copper from mineral reserves.

Competent persons

The following persons completed and/or reviewed, depending on their sphere of responsibility (divisional or corporate), and signed the Public Resources and Reserves Reports that comprise the basis for information used to formulate the respective Codelco inventory.

These competent persons are registered and updated in the Mining Resources and Reserves Competency Qualification Commission List. We wish to highlight that, in accordance with best practices, competent persons not directly employed by Codelco have been incorporated for certification at some divisions in this year's report.

Law N° 20,235 of the Chilean Republic regulates the concept of competent persons and creates the Mining Resources and Reserves Qualification Commission.

This commission is a member of the Committee for Mineral Reserves International Reporting Standards (CRIRSCO), which brings together organizations from Australia (JORC), Canada (Instrument 43-101), South Africa (SAMREC), the United States (Society of Mining Engineers), Europe (PanEuropean Code), and Russia (NAEN). These organizations abide by shared international regulations for the purpose of reporting exploration prospects and mining resources and reserves.

List Number	Competent Person	Organization
0093	Manuel Mansilla Orellana	Mining Resources Division
0099	Patricio Zúñiga Rojas	
0084	Felipe Celhay Schoelermann	El Teniente Division
0198	Daniel Bustamante Valdés	
0254	Michel Galeb Nicolas	Andina Division
0128	Raúl Contreras Guzmán	TetraTech
0089	Angelo Aguilar Catalano	Exploration Division
0057	Juan Pablo Gonzalez Toledo	GeoMine Associates
0203	Claudio Nicolás Vargas	Gabriela Mistral Division
0098	Rafael Valenzuela Briceño	
0200	Alejandro Dagnino Espinoza	Ministro Hales Division
0197	Victorino Moyano Escobar	Ministro Hales Division
0050	Rodrigo Riquelme Tapia	Geoinnova Consultores
0192	Raúl Cancino González	Radomiro Tomic Division
0206	Sebastián de la Fuente Alfaro	
0257	Renato Valdés Romo	Chuquicamata Division
0252	Juan Carlos Peña Pérez	

Note: The competent persons certification date is February 2016.