



INTERNATIONAL LEAD AND ZINC STUDY GROUP

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STATISTICAL AND FORECASTING COMMITTEE

Seventy-ninth Meeting

Lisbon, Portugal

Thursday 26 September 2024

09:00 to 12:00

ACCURACY OF STUDY GROUP FORECASTS

1. This report is the latest annual assessment by the Statistical and Forecasting Committee of the accuracy of ILZSG's supply and demand forecasts. Forecasts of production and usage for 2023 are compared with actual results as at present held in the Study Group's records. Annual comparisons for 2018-2023 are shown in Annex A.
2. Actual production and usage have been compared with:
 - a) the preliminary forecasts for the year, prepared during the Study Group's October Session of the preceding year;
 - b) the revised forecasts for the year, prepared at the Group's Spring Meeting of the year concerned.
3. Diagrams illustrating the extent of the difference in the forecast of total production and usage compared with actual results are also included (Figures 1 to 6).
4. Any revisions to a country's figures, due to a change in the method of calculation of production and/or usage, have been taken into consideration. Where necessary, in order to allow a meaningful assessment of accuracy to be calculated, comparable adjustments to the corresponding forecasts have been made.
5. The degree of accuracy of the projections produced by the Study Group is dependent primarily on the accuracy of the twice-yearly forecasts received from each Study Group member country. Member countries are therefore requested to take note of the trends shown in this report and, where differences have been identified, to use the relevant information to try to improve future results. This applies in particular to cases where the same error of over or underestimation for a member country has been repeated.
6. The main features of the degree of accuracy achieved in the forecast for 2023 and trends during previous years are summarised in the following pages.

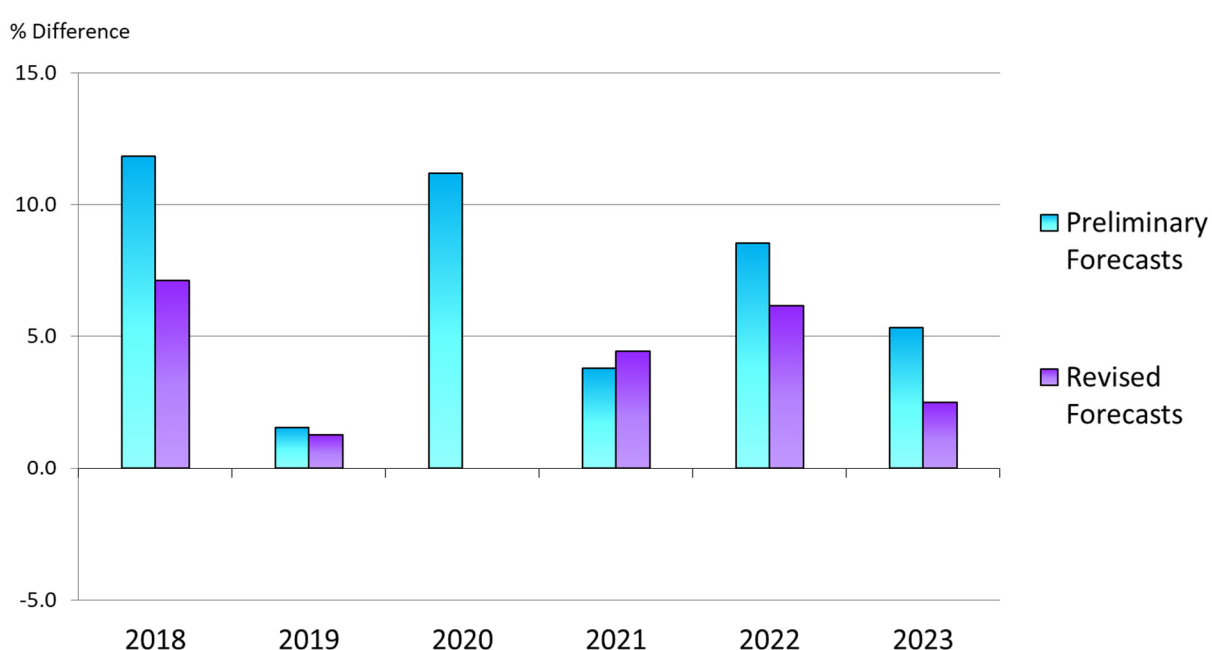
LEAD**Mine Production**

Table 1: Lead Mine Production 2023 - Main Areas of Difference					
000 tonnes	Preliminary Forecast (Oct 2022)	Revised Forecast (Apr 2023)	Actual 2023	Difference (Preliminary – Actual)	Difference (Revised – Actual)
America					
Mexico	288	280	183	105	97
USA	290	270	270	20	0
Asia					
China	2000	1970	1960	40	10
Türkiye	88	64	67	21	-3
Oceania					
Australia	495	473	472	23	1
All Countries	4683	4557	4446	237	111

7. The Group presented its preliminary forecasts of lead mine production for 2023 at its meetings in October 2022. Overall, these overstated production by 5.3%, mainly as a consequence of overestimations for Mexico and, to a lesser extent, Australia, China, Türkiye and the United States.

8. The extent of the difference fell to 2.5% in the revised forecasts published by the Group in April 2023. This was primarily due to downward revisions to predictions in all of the countries previously mentioned.

Figure 1: Lead Mine Production % Difference 2018-2023



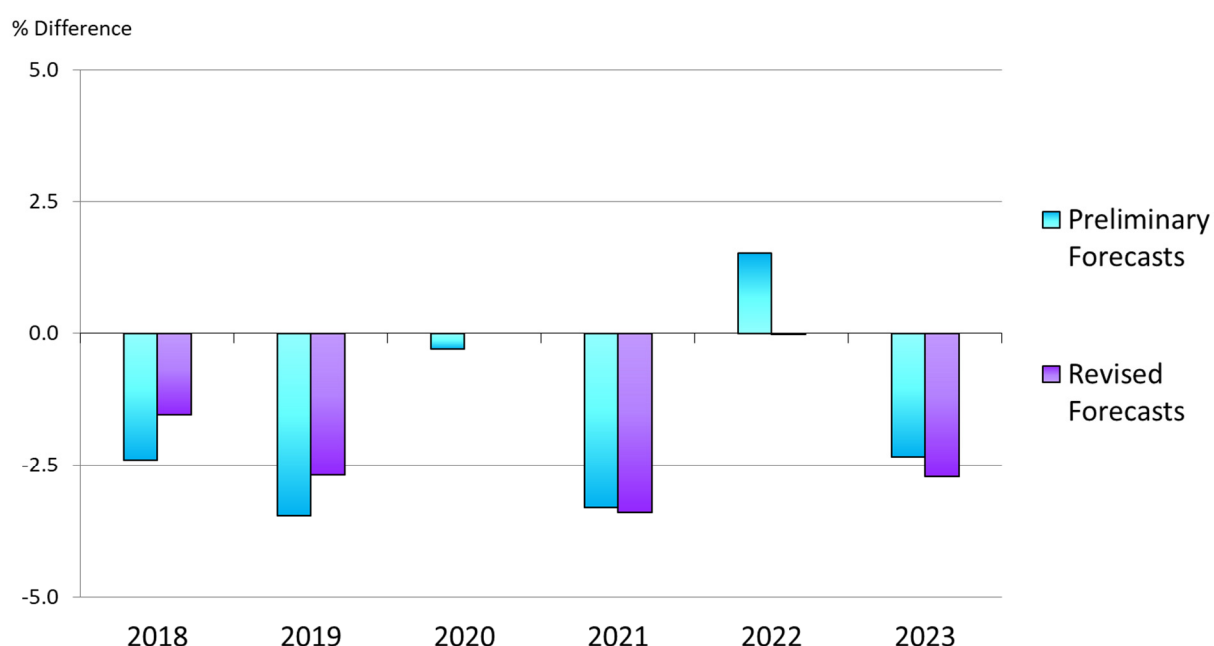
Metal Production

Table 2: Lead Metal Production 2023 – Main Areas of Difference					
000 tonnes	Preliminary Forecast (Oct 2022)	Revised Forecast (Apr 2023)	Actual 2023	Difference (Preliminary – Actual)	Difference (Revised – Actual)
Europe					
Bulgaria	106	79	80	26	-1
Germany	325	325	310	15	15
Italy	46	45	66	-20	-21
Russian Fed.	180	170	150	30	20
United Kingdom	317	310	285	32	25
America					
USA	950	950	1019	-69	-69
Asia					
China	5230	5260	5687	-457	-427
Japan	301	296	279	22	17
All Countries	12945	12894	13255	-310	-361

9. The preliminary forecasts for refined lead metal production put forward by the Group in October 2022 under-estimated global output by -2.3%, mainly due to overly pessimistic predictions for China and the United States that were partially balanced by overstatements for Bulgaria, Japan, the Russian Federation and the United Kingdom.

10. Despite a more accurate prediction a for China, the extent of the difference rose marginally to -2.7% in the revised forecasts, mainly as consequence of a reduction in the overstatements of the predictions for the countries previously mentioned.

Figure 2: Lead Metal Production % Difference 2018-2023



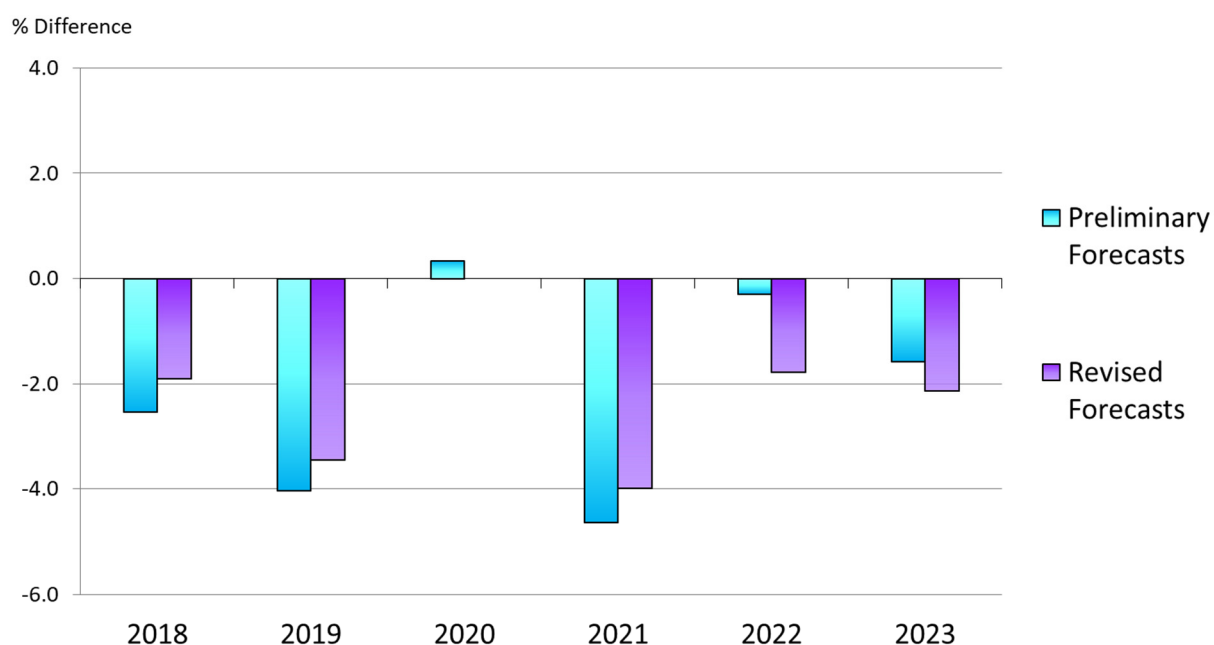
Metal Usage

Table 3: Lead Metal Usage 2023 - Main Areas of Difference					
000 tonnes	Preliminary Forecast (Oct 2022)	Revised Forecast (Apr 2023)	Actual 2023	Difference (Preliminary – Actual)	Difference (Revised – Actual)
Europe					
Italy	152	169	191	-39	-22
Poland	170	158	189	-19	-31
Russian Fed.	88	98	133	-45	-35
America					
USA	1630	1600	1525	105	75
Asia					
China	5125	5140	5460	-335	-320
Iran	55	55	105	-50	-50
Korea, Rep of	670	640	579	91	61
All Countries	12949	12876	13154	-206	-279

11. In the preliminary forecasts for refined lead metal usage, understatements for countries including China, Iran, Italy, Poland and the Russian Federation were partially balanced by underestimations for the Republic of Korea and the United States, resulting in an overall difference from the actual figure of -1.6%.

12. The extent of the difference increased to -2.1% in the revised forecasts published by the Group in April 2023. This was primarily a consequence of the combination of reductions in the overstatements of the predictions for the Republic of Korea and the United States with an amplified underestimation in the Polish forecast.

Figure 3: Lead Metal Usage % Difference 2018-2023



Supply/Demand Balance

Table 4: Lead Metal Balance 2023							
000 tonnes	Preliminary Forecast (Oct 2022)	Revised Forecast (Apr 2023)	Actual 2023	Difference (Preliminary – Actual)		Difference (Revised – Actual)	
					%		%
Mine Production	4683	4557	4446	237	5.3	111	2.5
Metal Production	12945	12894	13255	-310	-2.3	-361	-2.7
Metal Usage	12949	12876	13154	-206	-1.6	-279	-2.1
Metal Balance	-4	18	101				

13. In the preliminary forecasts, the Group anticipated that the World market for refined lead metal would be nearly balanced in 2023. In the revised forecast, a surplus of 18kt was estimated. According to data in the Group's latest monthly Statistical Bulletin, the global lead market recorded a surplus of 101kt. This difference was primarily due to the fact that the underestimations for metal output surpassed those for metal usage in both the preliminary and revised predictions.

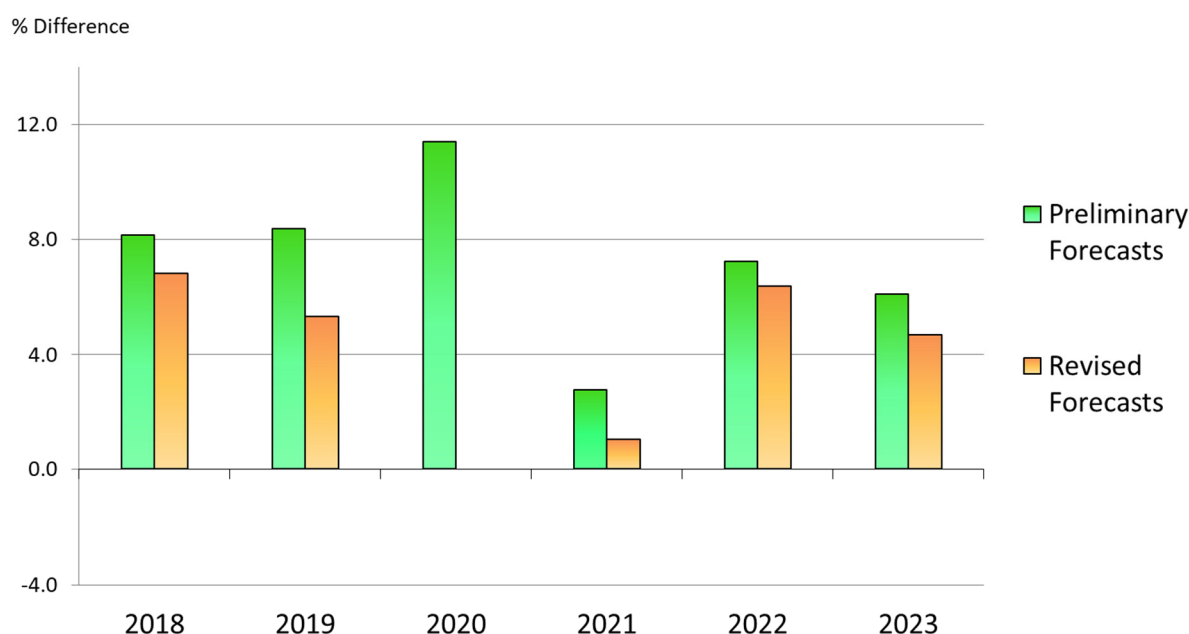
ZINC**Mine Production**

Table 5: Zinc Mine Production 2023 – Main Areas of Difference					
000 tonnes	Preliminary Forecast (Oct 2022)	Revised Forecast (Apr 2023)	Actual 2023	Difference (Preliminary – Actual)	Difference (Revised – Actual)
Europe					
Ireland	124	121	53	71	68
Portugal	268	228	184	84	44
America					
Mexico	790	770	584	206	186
Asia					
China	4150	4100	4060	90	40
Tajikistan	94	88	45	49	43
Oceania					
Australia	1328	1379	1094	234	285
All Countries	12986	12813	12238	748	575

14. The Group's preliminary forecasts over-estimated global zinc mine production by 6.1%. This was mainly a consequence of overly optimistic predictions for Australia and Mexico, where a prolonged strike at the large Penasquito mine impacted the country's output. Production in China, Tajikistan, Ireland and Portugal was also overestimated, with Irish and Portuguese output impacted by the unforeseen suspension of the Tara and Aljustrel mines respectively in the second half of the year.

15. In the revised predictions published in April 2023, the overall global forecasts differed from the actual figure by 4.7%. This was primarily due to downward revisions to predicted output in all of the countries previously mentioned, with the exception of Australia that amplified the difference to the actual figure.

Figure 4: Zinc Mine Production % Difference 2018-2023



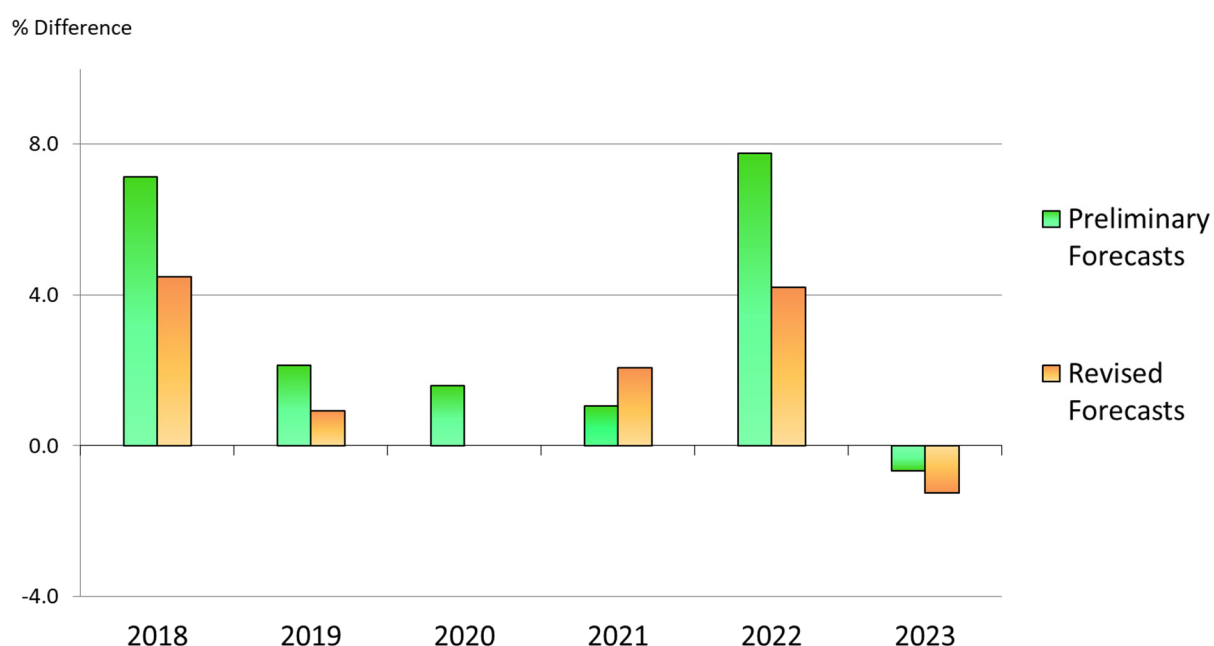
Metal Production

Table 6: Zinc Metal Production 2023 – Main Areas of Difference					
000 tonnes	Preliminary Forecast (Oct 2022)	Revised Forecast (Apr 2023)	Actual 2023	Difference (Preliminary – Actual)	Difference (Revised – Actual)
Europe					
Germany	90	87	0	90	87
Netherlands	134	240	239	-105	1
Spain	480	506	520	-40	-14
America					
Canada	578	500	504	74	-4
Asia					
China	6600	6610	6850	-250	-240
Japan	530	507	485	45	22
Oceania					
Australia	485	404	467	18	-63
All Countries	13836	13756	13933	-97	-177

16. Overly pessimistic predictions for China the Netherlands and Spain were partially balanced by overstatements for Canada, Japan and Germany, where the Nordenham smelter remained suspended during 2023. This resulted in a limited under-estimation of -0.7% in the preliminary forecasts for global zinc metal production.

17. The extent of the difference increased to -1.3% in the revised forecasts. This was mainly a consequence of an overly pessimistic prediction for Australia.

Figure 5: Zinc Metal Production % Difference 2018-2023



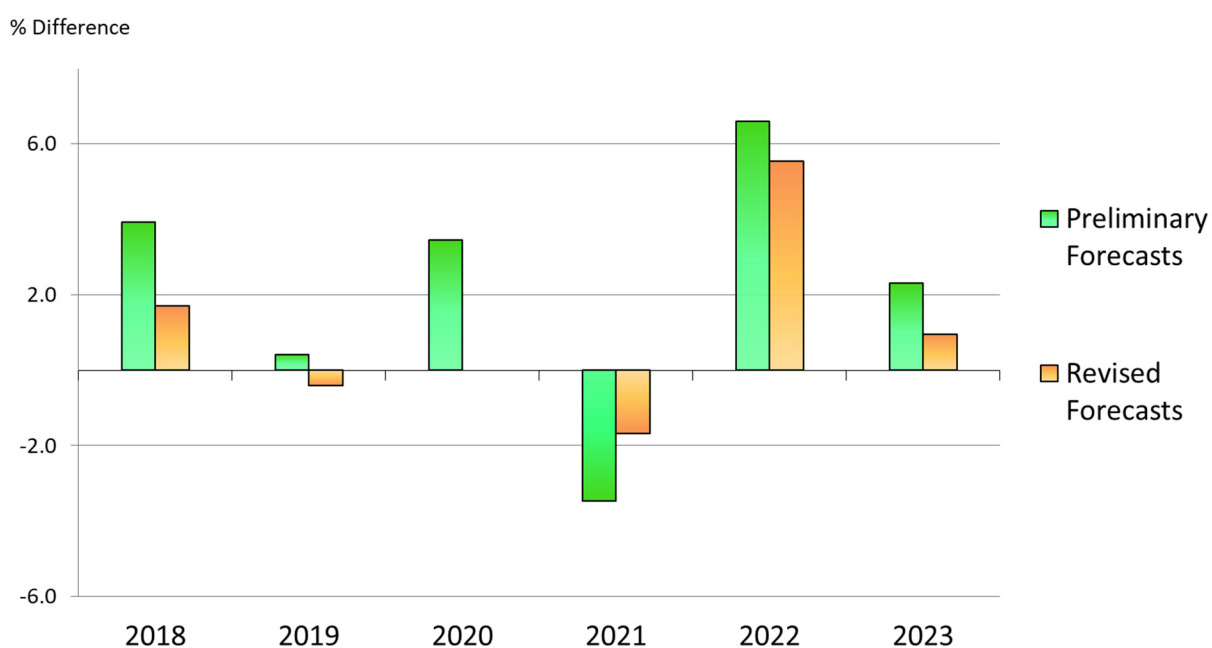
Metal Usage

Table 7: Zinc Metal Usage 2023 - Main Areas of Difference					
000 tonnes	Preliminary Forecast (Oct 2022)	Revised Forecast (Apr 2023)	Actual 2023	Difference (Preliminary – Actual)	Difference (Revised – Actual)
Europe					
France	180	178	125	55	53
Germany	375	380	337	38	43
Slovak Rep	52	52	27	31	25
Africa					
South Africa	86	77	55	31	22
America					
United States	940	960	911	29	49
Asia					
Japan	423	374	344	79	30
Korea, Rep of	469	458	394	75	64
Taiwan (China)	234	196	132	106	64
All Countries	13935	13750	13619	316	131

18. The Group's preliminary forecasts over-estimated global demand for refined zinc metal by 2.3%. This was mainly a consequence of overly optimistic predictions for France, Germany, Japan, the Republic of Korea, Taiwan (China) and the United States.

In the revised forecasts put forward by the Group in April 2023 the degree of overstatement fell to a limited 1% primarily as a result of more accurate predictions for all of the countries previously mentioned with the exception of Germany and the United States.

Figure 6: Zinc Metal Usage % Difference 2018-2023



Supply/Demand Balance

Table 8: Zinc Metal Balance 2023							
000 tonnes	Preliminary Forecast (Oct 2022)	Revised Forecast (Apr 2023)	Actual 2023	Difference (Preliminary – Actual)		Difference (Revised – Actual)	
					%		%
Mine Production	12986	12813	12238	748	6.1	575	4.7
Metal Production	13836	13756	13933	-97	-0.7	-177	-1.3
Metal Usage	13935	13750	13619	316	2.3	131	1.0
Metal Balance	-99	6	314				

19. In the preliminary forecast put forward by the Group in October 2022, the Group predicted that there would be a deficit in the World refined zinc metal market in 2023. This was revised to a small surplus in April 2023. According to data in the Group's latest monthly Statistical Bulletin, the global zinc market recorded a surplus of 314kt. The main reason for the variation was the combination of an underestimation of metal output with an over optimistic forecast for global usage.

ANNEX A**SUMMARY: GLOBAL PRODUCTION AND USAGE**

	Forecasts		Actual	Variation - Forecasts:Actual			
	Preliminary	Revised		Preliminary Forecasts		Revised Forecasts	
				000 tonnes	%	000 tonnes	%
LEAD							
Mine Production							
2018	5114	4898	4573	541	11.8	325	7.1
2019	4768	4754	4695	73	1.6	59	1.3
2020	4942		4445	497	11.2		
2021	4719	4748	4546	173	3.8	202	4.4
2022	4814	4709	4436	378	8.5	273	6.2
2023	4683	4557	4446	237	5.3	111	2.5
Metal Production							
2018	12347	12455	12651	-304	-2.4	-196	-1.5
2019	12426	12524	12872	-446	-3.5	-348	-2.7
2020	12515		12552	-37	-0.3		
2021	12588	12576	13019	-431	-3.3	-443	-3.4
2022	12996	12799	12801	195	1.5	-2	0.0
2023	12945	12894	13255	-310	-2.3	-361	-2.7
Metal Usage							
2018	12381	12461	12701	-320	-2.5	-240	-1.9
2019	12328	12405	12847	-519	-4.0	-442	-3.4
2020	12434		12392	42	0.3		
2021	12356	12440	12956	-600	-4.6	-516	-4.0
2022	12928	12738	12967	-39	-0.3	-229	-1.8
2023	12949	12876	13154	-206	-1.6	-279	-2.1
ZINC							
Mine Production							
2018	13784	13616	12745	1039	8.2	871	6.8
2019	13870	13480	12799	1071	8.4	681	5.3
2020	13638		12244	1394	11.4		
2021	13143	12924	12787	356	2.8	137	1.1
2022	13389	13283	12486	903	7.2	797	6.4
2023	12986	12813	12238	748	6.1	575	4.7
Metal Production							
2018	14122	13772	13182	940	7.1	590	4.5
2019	13871	13708	13582	289	2.1	126	0.9
2020	14043		13823	220	1.6		
2021	14086	14228	13939	147	1.1	289	2.1
2022	14449	13971	13408	1041	7.8	563	4.2
2023	13836	13756	13933	-97	-0.7	-177	-1.3
Metal Usage							
2018	14291	13985	13751	540	3.9	234	1.7
2019	13889	13775	13830	59	0.4	-55	-0.4
2020	13807		13345	462	3.5		
2021	13574	13826	14061	-487	-3.5	-235	-1.7
2022	14352	14210	13462	890	6.6	748	5.6
2023	13935	13750	13619	316	2.3	131	1.0