Indian Minerals Yearbook 2019

(Part- II :Metals and Alloys)

58th Edition

GOLD
(ADVANCE RELEASE)

GOVERNMENT OF INDIA
MINISTRY OF MINES
INDIAN BUREAU OF MINES

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8 Gold

Gold in its purest form is a bright, slightly reddish yellow, dense, soft malleable and ductile metal. It is one of the least reactive chemical elements and is solid under standard conditions. Gold often occurs in free elemental (native) form, as nuggets or grains, in rocks, in vein and in alluvial deposits. Gold is dissolved in alkaline solution of cyanide, which are used in mining and electroplating. It dissolves in mercury, forming amalgam alloys, but this is not a chemical reaction. Gold is resistant to corrosion and their chemical reactions and is distinctive in colour.

Gold is a relatively scarce metal in the world and a scarce commodity in India. The domestic demand is mainly met through imports.

RESERVES/RESOURCES

As per NMI data, based on UNFC system, as on 1.4.2015, the total reserves/resources of gold ore in the country have been estimated at 501.84 million tonnes. Out of these, 17.22 million tonnes were placed under Reserves category and the remaining 484.61 million tonnes under Remaining Resources category. The total reserves/resources of gold (primary), in terms of metal stood at 654.74 tonnes. Out of these, 70.09 tonnes were placed under Reserves category and 584.65 tonnes under Remaining Resources category. The resources include placer-type gold ore in Kerala estimated at 26.12 million tonnes containing 5.86 tonnes gold metal.

By States, largest resources in terms of gold ore (primary) are located in Bihar (44%) followed by Rajasthan (25%), Karnataka (21%),West Bengal (3%), Andhra Pradesh (3%) and Jharkhand (2%). The remaining 2% resources of ore are located in Chhattisgarh, Madhya Pradesh, Kerala, Maharashtra and Tamil Nadu. In terms of metal content, Karnataka remained on top followed by Rajasthan, Andhra Pradesh, Bihar, Jharkhand, etc. (Table-1).

EXPLORATION & DEVELOPMENT

The exploration and development details, if any, are covered in the Review on Exploration & Development under "General Reviews".

PRODUCTION & STOCKS

The production of gold ore at 566 thousand tonnes during 2018-19 increased by 3% as compared to that in the previous year. The quantity of ore treated also increased from 573 thousand tonnes to 590 thousand tonnes as compared to the previous year. There were five reporting mines of gold ore in 2018-19.

The average grade of gold ore produced in India during 2018-19 was 3.44 g/t as against 3.37 g/t in 2017-18, whereas, that of gold ore treated was 3.12 g/t in 2018-19 as compared to 2.94 g/t in 2017-18.

Production of primary gold in 2018-19 at 1,664 kg increased by only 1% as compared to that in the previous year.

Karnataka was the leading producer of primary gold accounting for 99% of the total production.The remaining production was reported from Jharkhand (Tables- 2 to 6).

The average daily employment of labour in 2018-19 was 3,188 as against 3,235 in the previous year.

Table – 1:Reserves/Resources of Gold as on 1.04.2015
(By Grades/States)

(In tonnes)

State/Grade	Reserves				Remaining Resources								Total Resources (A+B)
	Proved	Probable		Total	Feasibility	Pre-feasibility		Measured	Indicated	Inferred	Reconnaissance	Total	
	STD111	STD121	STD122	(A)	STD211	STD221	STD222	STD331	STD332	STD333	STD334	(B)	
All India:Total													
Ore (Primary)	10404349	6401725	422100	17228174	1925669	1303000	1968176	30333248	70136727	233608305	145336333	484611458	501839632
Metal (Primary)	53.41	16.26	0.42	70.09	7.69	3.85	12.1	128.65	143.8	227.44	61.12	584.65	654.74
Ore (Placer)	-	-	-	-	-	-	-	-	2552000	23569000	-	26121000	26121000
Metal (Placer)	-	-	-	-	-	-	-	-	2.29	3.57	-	5.86	5.86
By States													
Andhra Pradesh													
Ore (Primary)	-	3902725	-	3902725	655133	-	889515	291000	55000	6980031	-	8870679	12773404
Metal (Primary)	-	8.49	-	8.49	2.45	-	3.57	1.08	0.17	23.78	-	31.05	39.54
Bihar													
Ore (Primary)	-	-	-	-	-	-	-	-	-	128884860	94000000	222884860	222884860
Metal (Primary)	-	-	-	-	-	-	-	-	-	21.6	16.0	37.6	37.6
Chhattisgarh													
Ore (Primary)	-	-	-	-	-	-	-	-	600000	4241033	-	4841033	4841033
Metal (Primary)	-	-	-	-	-	-	-	-	1.8	3.71	-	5.51	5.51
Jharkhand													
Ore (Primary)	9349	-	-	9349	-	-	-	-	5146952	4203337	767000	10117289	10126638
Metal (Primary)	0.07	-	-	0.07	-	-	-	-	3.61	10.26	0.62	14.49	14.56
Karnataka													
Ore (Primary)	10395000	2499000	4221000	13316100	1270536	1303000	1078661	24979968	8204595	16020324	37673000	90530084	103846184
Metal (Primary)	53.34	7.77	0.42	61.53	5.24	3.85	8.53	120.73	28.67	38.29	43.78	249.09	310.62

(Contd)

Table - 1 (Concld)

Grade/State	Reserves				Remaining Resources								Total Resources
	Proved	Probable		Total	Feasibility	Pre-feasibility		Measured	Indicated	Inferred	Reconnsaissance	Total	
	STD111	STD121	STD122	(A)	STD221	STD221	STD222	STD331	STD332	STD333	STD334	(B)	(A+B)
Kerala													
Ore (Primary)	-	-	-	-	-	-	-	462280	96180	-	-	558460	558460
Metal (Primary)	-	-	-	-	-	-	-	0.17	0.03	-	-	0.2	0.2
Ore (Placer)	-	-	-	-	-	-	-	-	2552000	23569000	-	26121000	26121000
Metal (Placer)	-	-	-	-	-	-	-	-	2.29	3.57	-	5.86	5.86
Madhya Pradesh													
Ore (Primary)	-	-	-	-	-	-	-	-	5841000	1947000	-	7788000	7788000
Metal (Primary)	-	-	-	-	-	-	-	-	6.18	2.22	-	8.4	8.4
Maharashtra													
Ore (Primary)	-	-	-	-	-	-	-	-	-	1517000	-	1517000	1517000
Metal (Primary)	-	-	-	-	-	-	-	-	-	3.55	-	3.55	3.55
Rajasthan													
Ore (Primary)	-	-	-	-	-	-	-	4600000	50193000	69747720	63000	124603720	124603720
Metal (Primary)	-	-	-	-	-	-	-	6.67	103.34	123.03	0.07	233.11	233.11
Tamil Nadu													
Ore (Primary)	-	-	-	-	-	-	-	-	-	67000	-	67000	67000
Metal (Primary)	-	-	-	-	-	-	-	-	-	1	-	1	1
West Bengal													
Ore (Primary)	-	-	-	-	-	-	-	-	-	-	12833333	12833333	12833333
Metal (Primary)	-	-	-	-	-	-	-	-	-	-	0.65	0.65	0.65

Figures rounded off.

Table – 2: Principal Producers of Gold, 2018-19

Name and address of the producer	Location of the mine	
	State	District
The Hutti Gold Mines Co. Ltd, Hutti, Dist. Raichur 584 115 Bengaluru- 560 047, Karnataka.	Karnataka	Raichur
Manmohan Industries (P) Ltd, Shanti Niketan, 286, New Patliputra Colony, Patna - 800 013, Bihar.	Jharkhand	Singhbhum (East)

Table – 3: Production of Gold Ore 2017-18 and 2018-19 (By States)

(In tonnes)

State	2017-18		2018-19 (P)	
	Ore Produced	Avg. Grade (g/t)	Ore Produced	Avg. Grade (g/t)
India	**549683**	**3.37**	**565665**	**3.44**
Jharkhand	4618	2.10	2134	1.48
Karnataka	545065	3.38	563531	3.45

Table – 4: Gold Ore Treated 2017-18 and 2018-19 (By States)

(In tonnes)

State	2017-18		2018-19 (P)	
	Ore Treated	Avg. Grade (g/t)	Ore Treated	Avg. Grade (g/t)
India	**573308**	**2.94**	**589512**	**3.12**
Jharkhand	4618	2.10	2134	1.48
Karnataka	568690	2.95	587378	3.13

Table – 5:Production of Gold, 2016-17 to 2018-19 (By States)

(Quantity in kg; Value in ₹'000)

State	2016-17		2017-18		2018-19 (P)	
	Quantity	Value	Quantity	Value	Quantity	Value
India	**1595**	**4362410**	**1651**	**4769813**	**1664**	**5241705**
Primary Gold	1595	4362410	1651	4769813	1664	5241705
Jharkhand	15	45424	11	31743	3	7897
Karnataka	1580	4316986	1640	4738070	1661	5233808

Table – 6: Production of Gold, 2017-18 and 2018-19
(By Sectors/States/Districts)

(Quantity in kg; Value in ₹'000)

State/District	No. of mines	2017-18		No. of mines	2018-19 (P)	
		Quantity	Value		Quantity	Value
India	**5**	**1651**	**4769813**	**5**	**1664**	**5241705**
Public Sector	3	1640	4738070	3	1661	5233808
Private Sector	2	11	31743	2	3	7897
Primary Gold	**5**	**1651**	**4769813**	**5**	**1664**	**5241705**
Andhra Pradesh	**1***	**-**	**-**	**1***	**-**	**-**
Kurnool	1*	-	-	1*	-	-
Jharkhand	**1**	**11**	**31743**	**1**	**3**	**7897**
Singhbhum (East)	1	11	31743	1	3	7897
Karnataka	**3**	**1640**	**4738070**	**3**	**1661**	**5233808**
Raichur	3	1640	4738070	3	1661	5233808

** Only Labour reported.*

Gold Bullion

Production of gold bullion in India is reported both in primary and secondary forms and includes gold recovered from imported copper concentrates. The total production of gold bullion during 2018-19 at 12,615 kg increased by about 1% as compared to 12,500 kg in the previous year (Table -7).

Table – 7: Production of Gold Bullion
2016-17 to 2018-19

(Quantity in kg; Value in ₹'000)

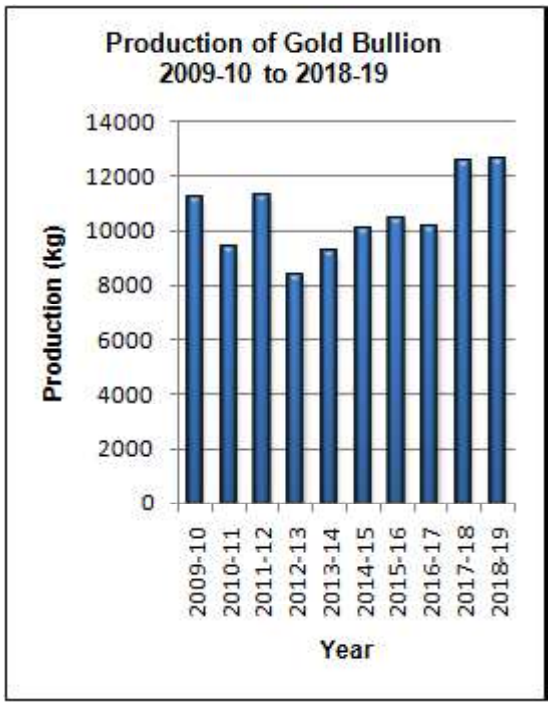
Year	Quantity	Value
2016-17	10082	27339280
2017-18	12500	36018065
2018-19 (P)	12615	39637604

Note: *Includes gold recovered as by-product from copper concentrates by Hindalco Industries Ltd in Gujarat.*

MINING & MILLING

Presently, HGML is the only Public Sector Company producing gold in the country. While in the Private Sector Manmohan Mineral Industries Pvt. Ltd is engaged in mine production of gold at Kunderkocha, in Singhbhum East district, Jharkhand by undeground method of mining. Geomysore Services (India) Pvt. Ltd has been granted a mining lease for gold mining in Kurnool district of Andhra Pradesh. HGML operates mines at Hutti and Hira-Buddini in Raichur district, Karnataka. Sub-level and LDBH stoping methods are used to exploit the gold ore. In the Uti mine, mining was carried out by opencast method till the year 2006 and thereafter by underground method. The ore from this mine is transported to Hutti mine by road for processing at the mills. Underground exploratory mining too is in progress. Several operations at Hira-Buddini old unit, such as, exploratory mine development and deepening and re-equipping of main shaft are in progress. Exploratory mine development using compressed air jackhammer drilling and electrical hoist in the shaft is presently underway. Based on the developmental work and feasibility, the locomotive loaders, wagon drills and other required machinery will be used to increase the ROM.

The new ore processing plant based on modern technology (SAG and Ball Mill) with a capacity of 2000 TPD has been operational at Hutti underground gold mine since 2010. At the Hutti Mineral Treatment Plant, the r.o.m. of -8" size is crushed. The final product from crushing plant, i.e. -10 mm size is stored in a 1,500 tonnes capacity fine ore bin for subsequent treatment, i.e., grinding. The Milling/Grinding process of gold ore employs two distinct grinding techniques. The first technique involves grinding done in two stages, i.e., primary grinding followed



by secondary grinding for adequate comminution. The processes involve one primary mill and three tube mills which constitute one stream of grinding in which pebbles and smaller size balls are used as composite grinding media.

There are two such streams and strake tables for collection of coarse gold as concentrate for this circuit. In the second technique, grinding is done by four ball mills of different sizes and each of them is an independent circuit in which large size balls are used as grinding media. In these circuits, Knelson concentrator is used to collect coarse gold as concentrate. In all the milling techniques, cyclones are in closed circuit with the mills so as to get the required sizes (80% passing 75 micron) for the subsequent treatment process.

The concentrate collected from both the techniques is upgraded on James Table. The upgraded concentrates are roasted, magneted and finally smelted into bullion buttons.

All the cyclone overflow, i.e., finely ground ore in the form of slurry from the two streams of first technique and 4 streams of second technique join together in a distributor box from which finely ground ore slurry is fed to High Rate Thickener for thickening purpose. The thickened pulp (60% solid w/w) thus obtained from thickeners is subjected to cyanidation process in which cyanide accessible gold in slurry makes complexes with cyanide in presence of oxygen and dissolves in solution at high pH. To increase the oxygen potential of slurry, H_2O_2 is added in addition to compressed air. The cyanidation or leaching process is carried out in a series of mechanically agitated agitators of different sizes.

The cyanide leached pulp is then fed to two Carbon-in Pulp (CIP) plants. The CIP plants are of 1,000 tpd size each and are parallel in circuit. The objective of CIP plant is to absorb the dissolved gold in activated carbon from the solution.

The gold-loaded carbon is removed from the CIP plant periodically, subjected to acid and alkaline wash and then eluted in four elution columns with 1.0% NaOH and 0.1% NaCN solution at 95 ^{0}C for a period of 60 hours. The solution is then passed through four electrowinning cells in which gold is deposited on steel wool cathodes. The gold loaded steel wool cathodes are manually removed periodically, subjected to acid digestion, drying and smelting to obtain bullion buttons. The bullion buttons thus obtained from table concentrate and steel wool are cast into bullion bars weighing 4 to 11 kg and then despatched for sales.

In the past, gold was produced by the Central Government undertaking, namely, BGML. BGML earlier mined and processed the ore from Chigargunta reef in Chittoor district, Andhra Pradesh; Mysore Mines of Kolar Gold Fields in Karnataka; and Yeppamana mine in Anantapur district, Andhra Pradesh. All activities of BGML were stopped and BGML was closed w.e.f. 1.3.2001 under Section 25 (O) of the Industrial Disputes Act, 1947 in terms of Ministry of Labour, Government of India's Order dated 29.1.2001.

Gold is sometimes recovered from the pregnant (Simple gold - bearing solution) solutions by adding zinc to form soluble zinc cyanide and precipitate of gold & silver. The pregnant solution can also be passed through activated carbon which absorbs dissolved gold. Gold from either process is cast into bars, bullion and dore (when it contains silver), which must be further refined to remove impurities, such as, mercury, arsenic and copper. Some ores cannot be treated by cyanide processing as gold in them is in small inclusions or even by solid solutions in minerals, such as, pyrite. This gold is generally

recovered by roasting which converts pyrite into porous iron oxides containing small grains of gold that can be dissolved by cyanide.

DEVELOPMENT

The Deccan Gold Mines Ltd (DGML) is India's first and largest listed gold exploration company. DGML has plans for geophysical studies and drilling prospects at areas located in proximity to existing old mines and also at earlier explored areas in Hutti belt, Mangaluru belt, Dharwad-Shivamogga belt in Karnataka; Attapadi Project in Kerala; and Ramgiri belt in Andhra Pradesh. The main prospects for gold at Ganajur and Karajgi have progressed into advanced stages of exploration and existence of high-grade gold-bearing zones in the prospect have been established. Exploration is being conducted in Hutti belt at various prospects, viz, in Hutti Mine north prospect, Hirenagnur prospect, southern & northern continuity of Uti mine lodes, Uti Temple prospect, Chinchergi prospect, Buttapur prospect and Yatkal prospect. In south Hutti RP block, investigations are going on in Tuppadhur-Buddini prospect, Maski prospect, Ashoka prospect and Sanbal prospect.

The mining method suggested for Ganajur Gold project by Snowden (mining consultancy based in Perth, Australia) is conventional open-pit mining with load, haul and drill blast activities performed by an experienced mining contractor. It is planned that the mining contractor will buy back the waste for use in their civil operations elsewhere, subject to an offtake agreement with DESPL. The Ganajur gold ore comprises layer of oxide ore followed by sulphide ore and will be mined at the rate of 0.3 Mtpa. The proposed mining plan envisages the oxide and sulphide ores being mined separately. The projected life of mine (LOM) average process operating cost for the 0.3 Mtpa Ganajur Gold recovery plant is USD 18.36/tonne(t) or USD 243/oz of Oxide ore processed and USD 23.53/t or USD 249.31/oz for the Sulphide ore processed. Snowden has estimated 2.14 million tonnes @ 3.63g/t gold as Proved ore reserves, and 0.37 million tonnes @1.98 g/t as Probable reserves for the Ganajur Main Gold Deposit.

DGML in Joint Venture with JB Group examined the available data to select the area for reconnaissance studies. The detailed geological mapping and systematic channel sampling have revealed the 5 sub-parallel zone of gold mineralisation in Hesdaba prospects and Asaleyta prospects in Djibouti in Africa.

Birla Copper Complex of Hindalco Industries Ltd situated at Dahej, district Bharuch, Gujarat has an installed capacity of 15 tpy for gold recovery from imported copper concentrates.

HCL which recovers by-product secondary gold from indigenous copper ores at its ICC plant in Jharkhand has an installed capacity of 698 kg per annum gold recovery plant. This plant, however, did not report production since 2007-08.

NMDC has secured a gold mining lease in Bulyangombe area in Tanzania. The Company is in process of setting up of a pilot-scale processing plant for gold in Tanzania

NMDC has submitted the proposal for Bhukia Gold block to DMG, Govt. of Rajasthan, for over an area of 24 sq km in Dist. Banswara. The Company has been allocated 3 Gold blocks, 2 in Karnataka and 1 in Madhya Pradesh.

Legacy Iron Ore Ltd (NMDC holding 78.56% equity stake) based in Perth, Australia is concentrating in exploration of gold in Mount Ceila where good occurrence of gold is observed. Mount Celia gold project has identified two gold occurrences namely, Kangaroo Bore and Blue Peter deposit. A total of 14,755 m (183 holes) drilling were done in these tenements with a total gold resources of 3.41 million tonnes @ 1.68 g/tonnes.

In Jharkhand NMDC has submitted application to DMG, Jharkhand for proposal to reserve 24.80 sq km area in Kuchai Tehsil, District - Saraikela - Kaswan, Jharkhand under Section 17A (2A) of MM(D&R) Amendment Act, 2015 for prospecting and mining operation of gold & associated minerals.

NMDC has successfully bidded for Chigarunta - Bisanathan gold block for Mining Lease (area 263.01 ha) located in Chittoor district in Andhra Pradesh through e-auction route with a final bid offer of 38.25%.

NMDC has applied for prospecting of various minerals (diamond, gold, PGE, nickel, etc.) in Jabalpur, Katni Block (563 sq km). Tripartite MoU among GoMP (MRD, through DGM) MPSMCL & NMDC was signed for geological and geophysical exploration for various districts of Madhya Pradesh.

A committee on Transforming India's Gold Market was constituted by NITI Aayog to recommend measures for Transforming the Gold Market Ecosystem in the country. The major recommendations of the committee are structured into five key areas . These are make in India in Gold, finalisation of Gold, Tax and duty structure, Regulatory Infrastructure and Skill Development & Technology Upgradation.

The Recommendations of the Committee are summarised as follows:

Gold Mining

1. Make gold mining viable and attractive to investors by promoting ease of doing business with single window clearances.

2. Government may consider making available the risk capital for long term capital intensive mining projects to attract investments.

3. The mining policy should consider availability of suitable exit option. Aspects related to brownfield exploration may also be considered.

4. Improve the quality and availability of digital data, covering geological database (which includes quality and scale of maps and ease of access to informations).

5. A comprehensive taxation policy should be formulated to align India's taxation framework with the strategic needs of the gold mining sector.

POLICY

Foreign Direct Investment (FDI) up to 100% in Mining Sector has been allowed.

In the revised Export-Import Policy, comprised in the Foreign Trade Policy (FTP), 2015-20, gold ores and concentrates are under freely importable category. Under Heading No.7108, the import of non-monetary gold metal also falls under Free category subject to RBI regulations, while import of gold metal in monetary form is restricted.

ENVIRONMENTAL CONCERNS

Gold is recovered from ores by two main methods, both of which affect environment. Earlier, for recovery of gold, amalgamation processes were used in which ore was mixed with mercury that selectively dissolved gold which was then recovered by evaporation. Mercury from these operations was never recovered and remained as pollutant in many old mining areas. The cyanide process is based on the property of precious metals in forming soluble complex ions with cyanide anion. Cyanide does not dissolve quartz, iron oxides and other common gangue minerals and yields a relatively simple gold-bearing solution known as pregnant solution. In some gold mines, gold is dissolved from the ore by crushing and grinding followed by mixing with cyanide solution in large vats.

Cyanide is a highly toxic compound and requires special handling. During ore treatment, pH of cyanide solution must be kept at about 11 to prevent cyanide from reacting with hydrogen ion to produce HCN, a deadly gas. Although less toxic substitutes of cyanide are known, it is not yet clear whether such substances will be cost-effective or environment-friendly.

DEMAND & CONSUMPTION

Jewellery accounted for major consumption of gold. The Industrial demand especially in the Electrical Sector for gold is mainly due to excellent thermal and electrical properties. Besides, a significant amount is consumed in dentistry and medicine. Continuing research has discovered new applications for gold as catalyst and in nano-technology. There is increase in demand from Ornamental and Electronic Sectors. Gold is considered a valuable asset, for investments and bank reserves.

SUBSTITUTES

Platinum and palladium substitute gold to some extent, but their use is influenced by price relationship and by an established consumer preference for gold. Silver can be a substitute, but it offers less resistance to corrosion. Gold-plated palladium and bright tin-nickel can be used in electronics. Titanium and chromium-based alloys can be used in dental work. High prices encourage substitutes, particularly base metal clad with gold in Electronic & Electrical Industry and in jewellery products. No metal or alloy substitute has all the properties of gold, and therefore, the emphasis is only on reduction of gold content rather than substitution.

WORLD REVIEW

The estimated world reserves of gold were about 50,000 tonnes of metal content. The gold reserves are mainly located in Australia, Russia, South Africa, USA, Indonesia, Brazil and Peru. The world reserves of gold are provided in Table- 8.

The world mine production of gold was estimated at 3,350 tonnes in 2018. China contributed about 12% to the world's total mine production of gold followed by Australia (9%), Russia (8%), USA (6%), Canada (5%) and Ghana, Peru & Indonesia (4% each) (Table-9).

Table – 8: World Reserves of Gold (By Principal Countries)

(In tonnes of gold content)

Country	Reserves
World: Total *(rounded off)*	**50,000**
Argentina	1600
Australia	10000[(a)]
Brazil	2400
Canada	1900
China	2000
Ghana	1000
Indonesia	2600
Kazakhstan	1000
Mexico	1400
Papua New Guinea	1000
Peru	2100
Russia	5300
South Africa	3200
USA	3000
Uzbekistan	1800
Other countries	10000

Source: *USGS,Mineral Commodity Summaries, 2020.*

(a) For Australia, Joint Ore Reserves Committee-compliant reserves were 3,900 tonnes

Table – 9: World Mine Production of Gold (By Principal Countries)

(In tonnes)

Country	2016	2017	2018
World: Total	**3230**	**3330**	**3350**
China[a]	453	426	401
Australia	291	292	313
Russia	253	270	280
USA	222	237	211
Canada	164	171	184
Ghana	1141	33	149
Peru	153	152	143
Indonesia	81	99	135
Mexico	132	127	118
South Africa	142	137	117
Kazakhstan	75	85	100
Brazil	94	80	97
Sudan	93	107	94
Uzbekistan*	100	90	90
Papua New Guinea	62	65	68
Other countries	800	859	851

Source: *BGS, World Mineral Production, 2014-2018.*

a:-Metal production

**:- estimated*

According to Gold Fields Mineral Services Ltd (GFMS), annual review of world gold supply and demand, the total global supply of gold in 2017 was 4,420 tonnes, about 3.8% less than in 2016. The supply decrease included a 4 tonnes decrease in global primary production and a 73 tonnes net increase in producer stocks. Gold recovery from old scrap decreased for the first time since 2013 and decreased by 7.4 % to 1,210 tonnes. China, the leading scrap-producing country, produced 223 tonnes of gold contained in scrap, which was a decrease of 4.2% compared with 2016 production.

The 12 leading gold-producing countries, were China, Australia, Russia, USA, Canada, Peru, South Africa, Ghana, Mexico, Sudan, Uzbekistan

and Kazakhstan. These countries together accounted for 69% of global production. The next 12 leading gold-producing countries accounted for about 20% of global gold production.

PRICES

The prices of gold are covered in the Review on "Prices" under General Review.

To give a generalised view of the development in various countries, countrywise description as sourced from latest available publication of U.S. Geological Survey Minerals Yearbook - 2017 is furnished below:

Argentina

In 2017, gold production was estimated at 63,000 kg, 11 % more than the production in 2016. About one-half of the increase was due to the production increases at Goldcorps Inc.'s Cerro Negro Mine, which produced 14,100 kg of gold up by 25 %. The increase was due to the increased amount of ore mined.

Australia

In 2017, gold production was 3,01,000 kg, up by 5%. Some of the increase was from Kirkland Lake Gold Ltd's Fosterville Mine, which produced 8,210 kg of gold in 2017 about 3,500 kg or 74% more than the amount produced in 2016. Northern Star Resources Ltd produced a combined 17,000 kg of gold from three operations in Australia, 15% more than 2016 production. A production increase was also reported by the Tropicana Mine, a joint venture between Anglo Gold Ashanti Ltd (70%) and Independence Group NL (30%), which produced 14,300 kg of gold, 10% more than 2016 production.

Canada

Canada's gold mine output increased slightly in 2017 to 1,64,313 kg. The leading producer in the country was the Canadian Malartic Mine, jointly owned by Agnico Eagle Mines Ltd (50%) and Yamana Gold Inc. (50%); output in 2017 was 19,700 kg of gold, 8% more than 2016 production. The Detour Lake Mine produced 17,800 kg of gold in 2017, 6 % more than that which was produced in 2016. Agnico Eagle's La Ronde and Meadowbank Mines produced 10,900 kg (up by 14%) and 11,000 kg of gold (up by 13%), respectively.

China

China continued to be the world's leading gold producer in 2017 despite a 6% decrease in production as compared with that in 2016. In 2017, gold production was 4,26,142 kg. Gold production from gold mines was 3,69,000 kg, and by-product output from other non-ferrous metals mining was 57,000 kg.

According to the China Gold Association, China's gold consumption (which includes bullion consumption) in 2017 was 10,89,000 kg, an increase of 9.41%. Consumption of gold for industrial and other applications was 90,200 kg.

Ghana

In 2017, production was 87,573 kg which was 11% more than in 2016. Ghana's three leading Mines produced at similar levels to those in 2016 - Gold Fields Ltd's Tarkwa Mine produced 17,600 kg Newmont's Akyem Mine produced 14,700 kg and Newmont's Ahafo Mine produced 10,900 kg.

FOREIGN TRADE

Exports

There was only one kilogram exports of gold ores & conc. during 2018-19, as against nil in the preceding year. Export of gold-clad metals/base metals, NES was negligible during both the years. Out of the total exports of gold (non-monetary & monetary), the share of non- monetary was almost cent per cent & the share of monetary was negligible. The exports of gold (non-monetary & monetary) decreased drastically to 507 kg in 2018-19 from 36,927 kg in 2017-18. Almost all the exports in 2018-19 were to Singapore (99%) and Guinea (1%), meagre quantities to UK and Germany. (Tables- 10 to 17).

Imports

Imports of gold ores & concentrates decreased manifolds to only 1 kg during 2018-19 from 11,572 kg in the preceding year. On the other hand imports of gold non-monetary, powder increased to 6 kg in 2018-19 from 1 kg in the previous year. USA was the only country from which imports were made. No imports of gold-clad metal in the year 2018-19 were reported. Imports of gold (monetary and non-monetary) increased to 9,82,697 kg in 2018-19 from 9,55,366 kg in 2017-18. The share of Non-monetary: Other Unwrought forms, was at 9,79,935 kg. Imports of gold were mainly from Switzerland (39%), Ghana & USA (8% each), Peru (7%), UAE (6%), South Africa (3%) and Bolivia (2%). (Tables-18 to 24).

Table – 10 : Exports of Gold (Non-monetary & Monetary) Total (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**36927**	**96685965**	**507**	**1441337**
Singapore	-	-	500	1423180
Guinea	-	-	5	12201
UK	++	24	1	2547
Germany	-	-	1	2130
UAE	36926	96683274	++	892
Canada	-	-	++	197
USA	-	-	++	152
South Africa	-	-	++	24
Italy	-	-	++	12
Turkey	1	2661	-	-
Other countries	++	6	-	-

Figures rounded off

Table – 11: Exports of Gold (Non-monetary) (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**36927**	**96685965**	**507**	**1441328**
Singapore	-	-	500	1423180
Guinea	-	-	5	12201
UK	++	24	1	2547
Germany	-	-	1	2130
UAE	36926	96683274	++	892
Canada	-	-	++	197
USA	-	-	++	152
South Africa	-	-	++	24
Italy	-	-	++	3
Turkey	1	2661	-	-
Other countries	++	6	-	-

Figures rounded off

Table – 12: Exports of Gold, Non-monetary: Other Unwrought Forms (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**36927**	**96685958**	**505**	**1436329**
Singapore	-	-	500	1423180
Guinea	-	-	5	12201
UAE	36926	96683274	++	892
USA	-	-	++	33
UK	++	24	++	22
Turkey	1	2661	-	-

Figures rounded off

Table – 13 : Exports of Gold - Monetary (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**-**	**-**	**++**	**9**
Italy	-	-	++	9

Figures rounded off

Table – 14: Exports of Gold-clad Metals/ Base Metals, NES (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	**++**	**148**	**++**	**1084**
Nigeria	++	59	++	969
USA	++	57	++	112
Bangladesh	_	_	++	3
Congo, Dem. Rep.	++	23	_	_
UK	++	8	_	_

Figures rounded off

Table – 15 : Exports of Gold Ores & Conc. (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**-**	**-**	**1**	**14**
Nigeria	-	-	1	14

Figures rounded off

Table – 16 : Exports of Gold, Non-Monetary, Powder (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**-**	**-**	**++**	**35**
USA	-	-	++	35

Figures rounded off

Table – 17 : Exports of Gold, Non-monetary, Other Semi-manufactured Forms (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**++**	**6**	**2**	**4964**
UK	-	-	1	2525
Germany	-	-	1	2130
Canada	-	-	++	197
USA	-	++	++	84
South Africa	-	-	++	24
Italy	-	-	++	3
Oman	++	6	-	-

Figures rounded off

Table – 18: Imports of Gold (Non-monetary & Monetary): Total (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**955366**	**2170720688**	**982697**	**2295364963**
Switzerland	417729	1106696518	383301	1061164800
Ghana	63139	154308593	80289	210166136
UAE	85336	228076362	60642	174872159
Peru	59771	114508652	73132	153565873
USA	77102	135499084	81752	148020020
South Africa	30850	82260226	31725	90579771
Bolivia	17280	42758170	22510	59639279
UK	1836	4935001	20667	59285323
Burkina Faso	15485	34642357	24537	56342242
Hong Kong	16855	45763717	14020	40378561
Other countries	169953	221272009	190122	241350799

Figures rounded off

Table – 19 : Imports of Gold, Non-monetary (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**955336**	**2170720688**	**982697**	**2295364963**
Switzerland	417729	1106696518	383301	1061164800
Ghana	63139	154308593	80289	210166136
UAE	85336	228076362	60642	174872159
Peru	59771	114508652	73132	153565873
USA	77102	135499084	81752	148020020
South Africa	30850	82260226	31725	90579771
Bolivia	17280	42758170	22510	59639279
UK	1836	4935001	20667	59285323
Burkina Faso	15485	34642357	24537	56342242
Hong Kong	16855	45763717	14020	40378561
Other countries	169953	221272009	190122	241350799

Figures rounded off

Table – 20 : Imports of Gold, Non-monetary: Other Semi-manufactured Forms (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**2184**	**5324599**	**2756**	**7387109**
USA	1073	2747270	1223	3271581
Switzerland	-	-	1000	2881474
Spain	122	283227	138	343895
Germany	119	176908	195	326686
Italy	60	160167	75	223853
UAE	75	202517	46	126472
Hong Kong	133	339858	42	103386
UK	19	54528	20	60654
Singapore	25	59287	10	30336
Japan	++	56	2	7589
Other countries	558	1300784	5	11184

Figures rounded off

Table – 21 : Imports of Gold, Non-monetary: Other Unwrought Forms (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**953151**	**2165393827**	**979935**	**2287960756**
Switzerland	417729	1106696518	382301	1058283326
Ghana	63139	1543085933	80289	2101661358
UAE	85261	2278738456	60596	174745688
Peru	59678	1144906202	73132	153565873
USA	76028	1327495663	80523	144731398
South Africa	30850	82260226	31725	90579771
Bolivia	17280	42758170	22510	59639279
UK	1817	4880459	20647	59224669
Burkina Faso	15485	34642357	24537	56342242
Hong Kong	16722	45423859	13978	40275175
Other countries	169162	219309615	189697	240407200

Figures rounded off

Table – 22 : Imports of Gold Ores & Conc. (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**11572**	**3242641**	**1**	**12**
UK	-	-	1	7
USA	-	-	++	5
Australia	4501	1450595	-	-
Canada	1328	756506	-	-
Chile	3409	460872	-	-
Peru	2224	307910	-	-
Brazil	72	175774	-	-
Turkey	38	90984	-	-

Figures rounded off

Table – 23 : Imports of Gold, Non-monetary, Powder (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (kg)	Value (₹'000)	Qty (kg)	Value (₹'000)
All Countries	**1**	**2262**	**6**	**17098**
USA	1	2247	6	17042
Italy	-	-	++	56
UK	++	15	-	-

Figures rounded off

Table – 24 : Imports of Gold-clad Metal / Base Metals, NES (By Countries)

Country	2017-18 (R)		2018-19 (P)	
	Qty (t)	Value (₹'000)	Qty (t)	Value (₹'000)
All Countries	++	**340**	-	-
Italy	++	340	-	-

Figures rounded off

FUTURE OUTLOOK

Historically, purchase of gold was consider to be a safe haven, hedge against economic failures, portfolio diversifier and store of wealth.

India is a traditional and stable market for gold consumption. The present production of gold is insufficient and does not meet the ever increasing demand. Therefore, efforts will be required to reduce the gap between production and demand.

The recommendations of the Committee on Transforming India's Gold Market (Constituted by NITI Ayog) contributes for fulfilling the transformational vision for India's gold market seeking to double its contribution in GDP and more than double the exports of gold by 2022, enhance employment opportunities, increase FDI inflow and increase the gold market size, without negatively impacting upon India's Current Account Deficit.

Further, to reduce dependence on gold imports, it is necessary to boost domestic supply which has to happen through the 'Make in India' initiative for mining, recycling & refining and increased monetisation. The policies around gold mining may need to be revisited with regard to the auctioning process, providing for single window clearance for the pending proposals and increasing co-operation between the states and the Centre.