

Searching for Tier 1 gold deposits in the DRC

The Democratic Republic of Congo (DRC) and northwest Tanzania are home to some of the **largest gold mines in the world**.

Loncor Resources Inc.

Ticker: LN: TSX; OTCQB: LONCF

Share price: C\$0.45

Market cap: C\$42.0m

Cash: C\$0.4m

Liabilities: C\$2.0m

Enterprise Value: C\$43.6m

Shares Out: 94.7m

Options: 4.8m

Warrants: 1.4m

Shares (Fully Diluted): 100.9m

CEO: Arnold T. Kondrat

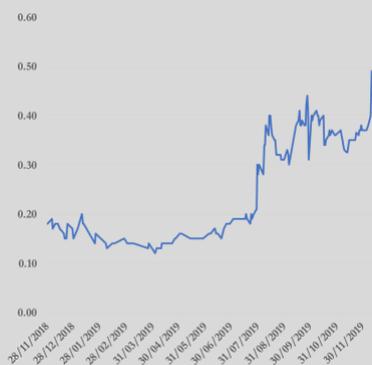
President: Peter N. Cowley

Major Shareholders:

Arnold T. Kondrat: 29%

Resolute Mining: 27%

Newmont Mining: 7%



Prices as of the close of business
13th December 2019

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The **Kibali Mine** in the DRC is 45% owned by Barrick, 45% owned by AngloGold Ashanti and 10% owned by the DRC Government. The mine produced 807,000 ounces of gold in FY 2018 and currently has 13 million ounces of measured and indicated resources. The **Geita Mine** in Northern Tanzania is 100% owned by AngloGold Ashanti and was brought back into production in 2003. It produced 564,000 ounces of gold in FY 2018 and still has 6.3 million ounces of gold in resources. The **Bulyanhulu Mine**, also in Northern Tanzania, started production in 2001 when reserves were 12 million ounces of gold. The first full year of production in 2002 saw 356,000 ounces of gold produced at a total cash cost of US\$198/oz.

The geology of the Kibali, Geita and Bulyanhulu mines are all considered to be Archean, orogenic, greenstone-hosted gold deposits. **Loncor Resources** controls large exploration concessions in the north-east of the DRC, covering **greenstone belts** that are considered to be largely under-explored. In particular, the **Ngayu Archean Greenstone Belt** has significant upside potential because of its large size and gold deposits which I will talk about a little later. **Loncor** started a regional exploration program in 2010 and was assisted by Newmont which realised the potential of the belt and took a 20% equity stake in the Company. However, with the downturn in the gold market in 2013, exploration was put on the back-burner. Over the last 4 years however, CEO and founder **Arnold Kondrat** has consolidated **Loncor's** major footprint over the belt with a number of significant transactions starting in 2016 with a joint venture agreement with **Barrick** (formerly Randgold) covering most of the prospective belt and **the acquisition this year of junior explorer Kilogold's DRC assets** which has more than doubled **Loncor's** own mineral resource inventory. The agreement with **Barrick** allows the major to earn 65% equity interest by funding all exploration to completion of a pre-feasibility study on any gold discovery meeting Barrick's investment criteria.

Since 2016, Barrick has been painstakingly exploring the belt using their geological knowledge from their Kibali mine success and recently announced their intention to commence drilling on several targets within the Ngayu belt.

In line with these exciting developments, **Peter Cowley** re-joined **Loncor** as President two months ago. He has an enviable record of finding ounces in Africa with success at **Geita** in Tanzania, where he led the exploration effort at Ashanti Goldfields that discovered resources of 20m ounces and then later at Banro Corp where 11m ounces of resources were outlined along the Twangiza-Namoya belt in eastern DR Congo. Several of his team of geologists have re-joined the **Loncor** fold.

Prepared by Arlington Group Asset Management Limited

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The Management

Experienced management at Loncor is a competitive advantage.

Loncor have a long history in the **DRC**. Founder and CEO **Arnold Kondrat** is a financier with over **25 years of experience** operating in the country. As a 29% shareholder, Mr Kondrat is heavily-aligned to the long-term success of the Company.

Loncor's geological work is led by **Peter Cowley** as President of the Company. Mr Cowley has un-paralleled experience in the region having **worked as a geologist in Africa since the 1980's** and having been involved in the discovery and development of a number of gold mines there. As CEO and President of Banro, Mr Cowley delineated major gold resources at Twangiza and Namoya in the DRC and as Managing Director of Ashanti Exploration, he led the exploration team that **discovered and developed the Geita mine in Tanzania**.

A recent **Loncor** announcement, highlighted the appointment of Daniel Bansah and his team at Minecon Resources and Services Limited (MINECON) as geological consultants to **Loncor**. What's notable about this announcement is that Peter Cowley and Daniel Bansah worked successfully together on the Geita and Twangiza/Namoya discoveries.

The Geology

Understanding the geology is key to understanding the investment opportunity.

For non-geologists, of which I'm one, it's important to try and understand what's so interesting about **Loncor** from a geological perspective. What are **Archean, orogenic, greenstone belts** and why are they so interesting for gold exploration at **Loncor's Ngayu Project**?

'**Archean**' is a geological timeframe that refers to the age of the rock. The timeframe spans from 4.0 billion to 2.5 billion years ago. Archean rocks are amongst the oldest rocks on earth. Age is favourable, since it allows the geological processes to take place that provide the necessary environment for the formation of gold deposits.

'**Orogenic**' is a geological term that describes the process in which sections of the earth's crust are **folded and deformed** by lateral compression to form mountain ranges. The word 'orogenic' is derived from Ancient Greek and literally means '**mountain forming**'.

From where greenstone belts get their name.

Regions of Archean (very old) rocks are subjected, over billions of years, to greater or lesser degrees of **folding and deforming processes** (orogenic processes). This folding and deforming creates fractures and voids into which mineralising fluids can pass. In regions of Archean rock, volcanic and sedimentary type rocks gradually transform under great temperatures and pressures into what are known as 'metamorphic' rocks of various kinds. Some of these metamorphic rocks are abundant in chlorite which has a green colour and hence the name '**greenstone**' belts. Archean regions are home to some of the most significant gold mines in the world. Circled in the map below are the **Kibali, Geita** and **Bulyanhulu** mines in the Archean rocks of central Africa. The prolific

Obuasi and Ahafo mines in Ghana are found in Archean-aged rocks, as is the Yilgarn in Western Australia containing the Kalgoorlie Superpit, and the prolific mining camps in eastern Canada such as Detour Lake, McKintyre-Hollinger and Dome.



Adapted from Groves et al. (2015)

The key point is that Archean, orogenic, greenstone belts are known to provide the geological conditions for gold deposits to form and are where some of the world's largest and most prolific gold mines have already been found.

The importance of Banded Ironstone Formations.

Staying with geology, a key feature of the Geita and the Kibali gold mines is the presence of '**Banded Ironstone Formations (BIFs)**'.

A research report by P. J. Bird (2016) titled 'Evolution of the Kibali Granite-Greenstone Belt' describes the following geology at the Kibali gold mine;

The mechanism believed to cause the deposition of gold at Kibali.

"Mineralisation in the Kibali Granite-Greenstone Belt is characterised by a pyrite (\pm gold) + arsenopyrite + chalcopyrite + pyrrhotite (\pm marcasite) assemblage occurring as both disseminated and vein-style mineralisation, hosted in deformed and altered volcano-sedimentary conglomerates, basalts and **Banded Ironstone Formation**. Localised deformation of the host lithologies during regional metamorphism is thought to have created high permeability Fe-phyllsilicate-rich zones into which ascending CO₂-rich fluids were focused. Interaction of these fluids with the Fe-rich host lithologies resulted in the widespread development of an Fe carbonate (ankerite \pm siderite) + quartz \pm aluminoceladonite alteration assemblage. **Gold transporting fluids are inferred to have been H₂S-rich, interacting with the Fe-rich host and alteration phases to form the Fe sulphide-rich assemblage and deposit gold.**"

Our translation of this geological terminology: **Kibali contains Banded Ironstone Formations that are understood to be key to the formation of this very large gold deposit.** Similarly, at Geita, gold deposits are intimately associated with Banded Ironstone Formations.

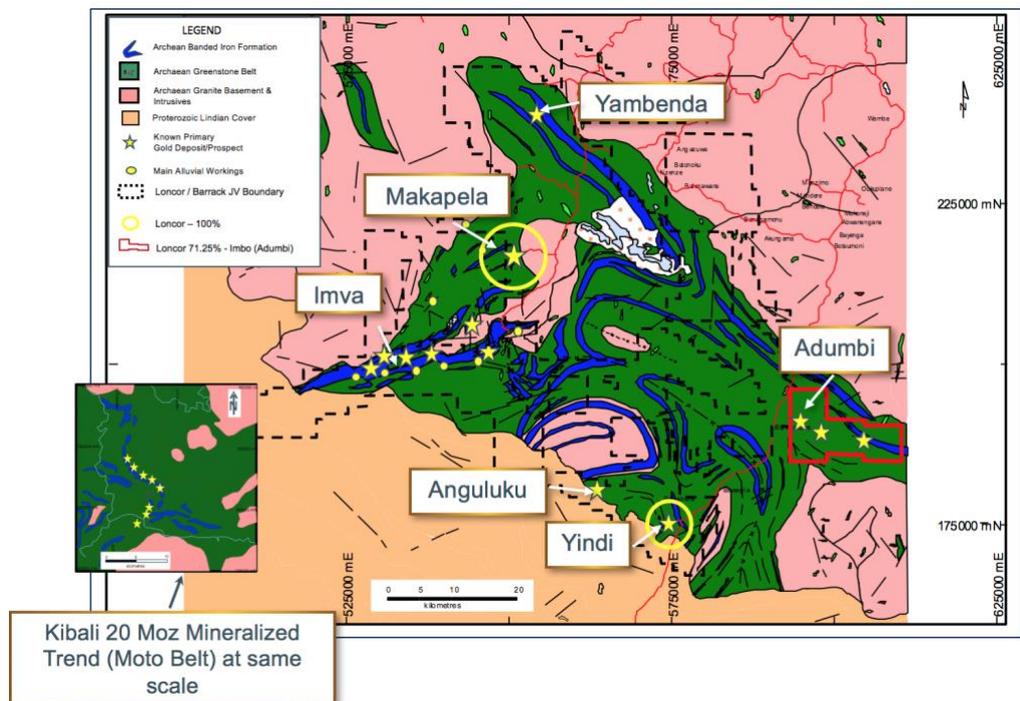
The Imva Fold Structure.

Once created, Banded Iron Formations are subjected to further ‘orogenic processes’ and often undergo **folding and deformation**. Folds create voids and spaces in the rocks into which mineralised fluids can flow. However, this time, as seems to have happened at Kibali and Geita, the mineralised fluids react with the Banded Iron Formations and lead to the precipitation of gold. **From an exploration perspective, folded-structures in Banded Iron Formations within Archean greenstone belts are an excellent place to search for gold deposits.**

The following two figures highlight the significant size of the Ngayu greenstone belt compared to Geita, as well as the association of the gold deposits at Kibali (Moto Greenstone Belt) and Geita with Banded Ironstone Formations (shown in blue). Note that gold occurrences are widespread within the Ngayu belt and that **Ngayu is significantly larger than the Geita Greenstone Belt.**

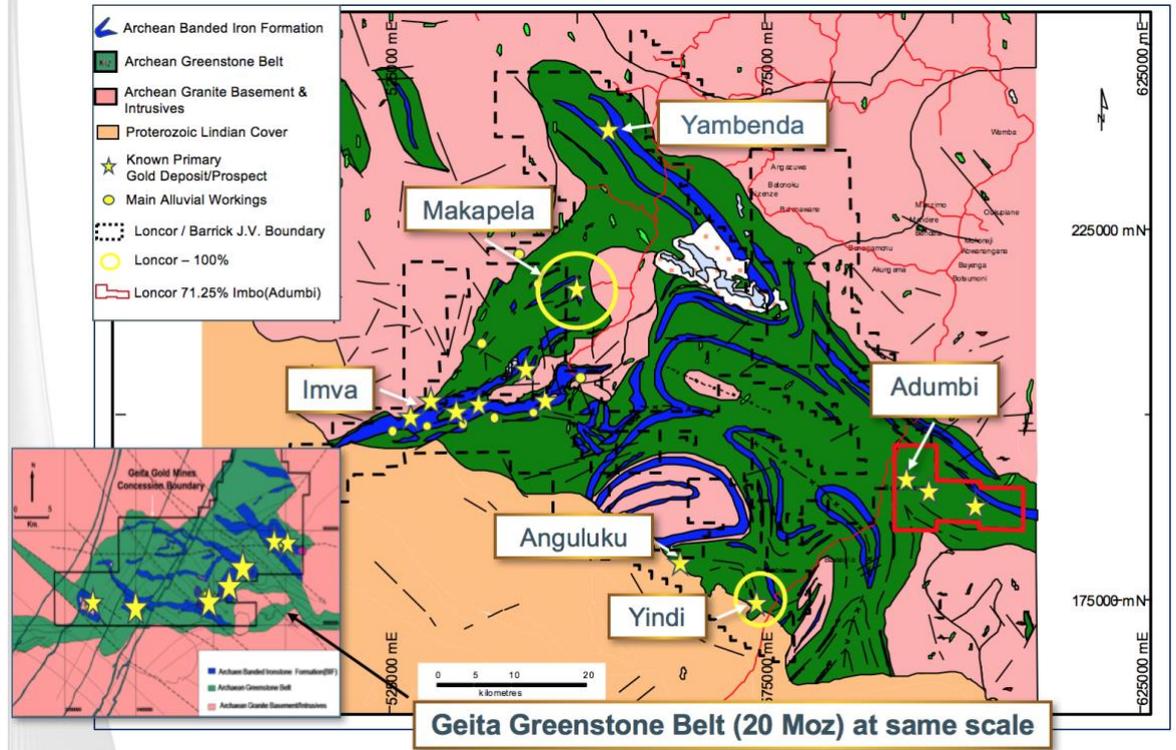
In summary, **Loncor’s Ngayu Project** covers Archean, orogenic, greenstone belts in the northeast of the DRC. What’s important to understand is that the Ngayu project contains Banded Iron Formations similar to those that are believed to have helped with the formation of gold deposits at the Geita and Kibali gold mines. The other important point is that the greenstone belts found within the Archean rocks in central Africa (DRC, Tanzania) are **relatively under-explored.**

Ngayu Greenstone Belt – Similar Geology (Host Rocks, Alteration & Structure to Moto Belt)



The scale of the Ngayu greenstone belt shown against the Geita greenstone belt and the association of gold with Banded Ironstone Formation (in blue) at both Ngayu and Geita;

Ngayu Greenstone Belt – Similar Geology to Geita Belt in Tanzania but Much Larger



Source: Loncor, December 2019.

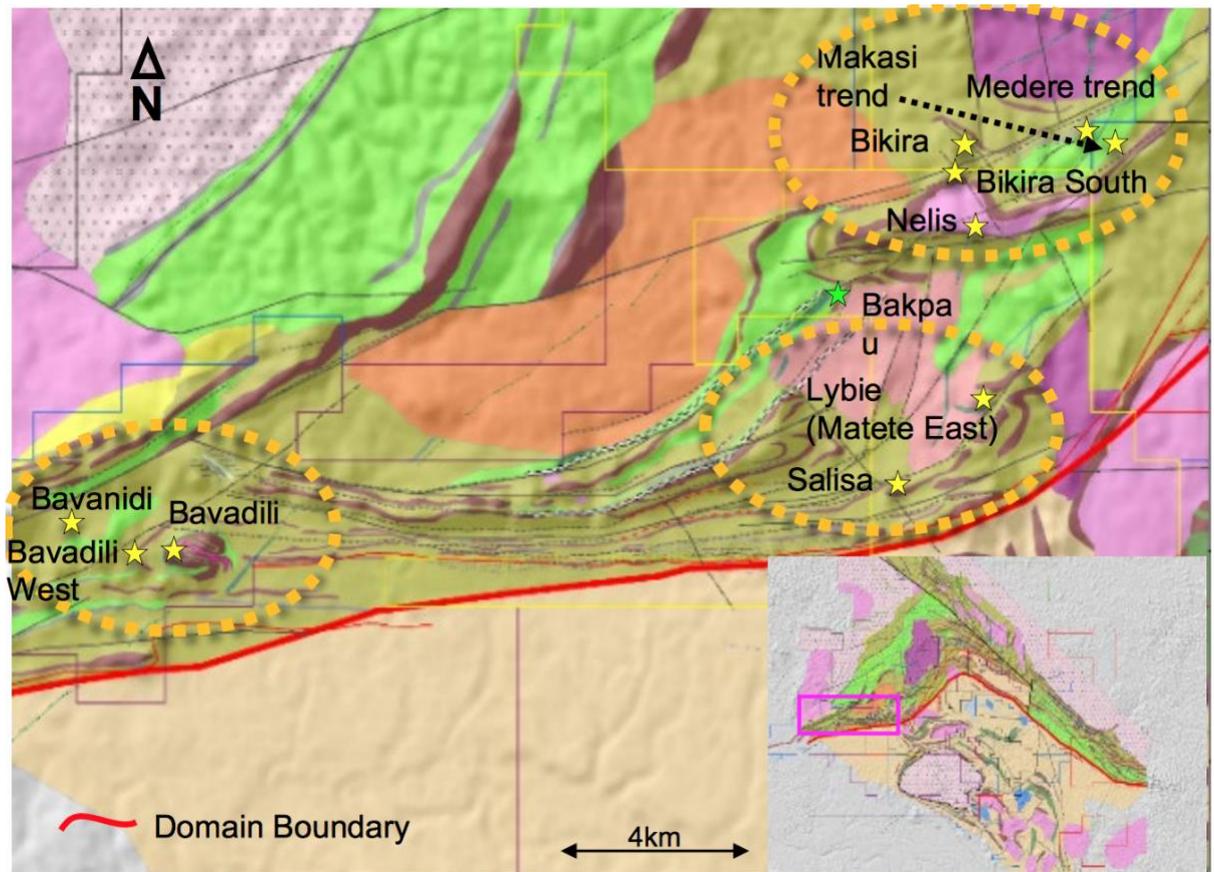
So, how does this geological theory tie-up with current exploration?

A Loncor exploration update released on November 6th, 2019 commented;

“Barrick’s exploration at Ngayu during the recent quarter has **focused on four priority areas all located along the 30 kilometre-long Imva fold structure.** These blocks are Bavadili/Bavanidi, Bakpau, Lybie (Matete East)/ Salisa and Bikira-Makasi.”

See figure on the following page for a map of the targets along the Imva fold;

Ngayu – Finding New and Developing Prospective Targets on the Imva Zone



Source: Barrick Gold Corporation.

Besides the Imva structure, Barrick also intend to drill Anguluku in the south of the Ngayu belt.

The Loncor / Barrick Joint Venture

The Joint Venture (JV) deal signed in 2016 with Barrick (formerly Randgold) was a key milestone in Loncor's history and a strong endorsement of the geological potential of the Ngayu greenstone belt.

The JV agreement covers all of the exploration permit areas covering Loncor's Ngayu project except for **'certain parcels of land surrounding and including the Makapela and Yindi prospects that are retained by Loncor and do not form part of the Joint Venture.** Randgold (now Barrick) shall have pre-emptive rights over these two areas.'

This means that an exclusion zone is carved out around the Makapela and Yindi deposits, rather than the whole license area being excluded from the joint venture.

The JV agrees that Barrick 'will manage and fund all exploration of the permit areas until the completion of a pre-feasibility study on any gold discovery meeting the investment criteria of Barrick'

'Once the Joint Venture has determined to move ahead with a full feasibility study, a special purpose vehicle (SPV) would be created to hold the specific discovery areas. Subject to the Democratic Republic of the Congo's free carried interest requirements, **Barrick would retain 65% of the SPV with Loncor holding the balance of 35%**. Loncor will be required, from that point forward, to fund its pro-rata share of the SPV in order to maintain its 35% interest or be diluted.'

Loncor Landholdings outside the Barrick Joint Venture

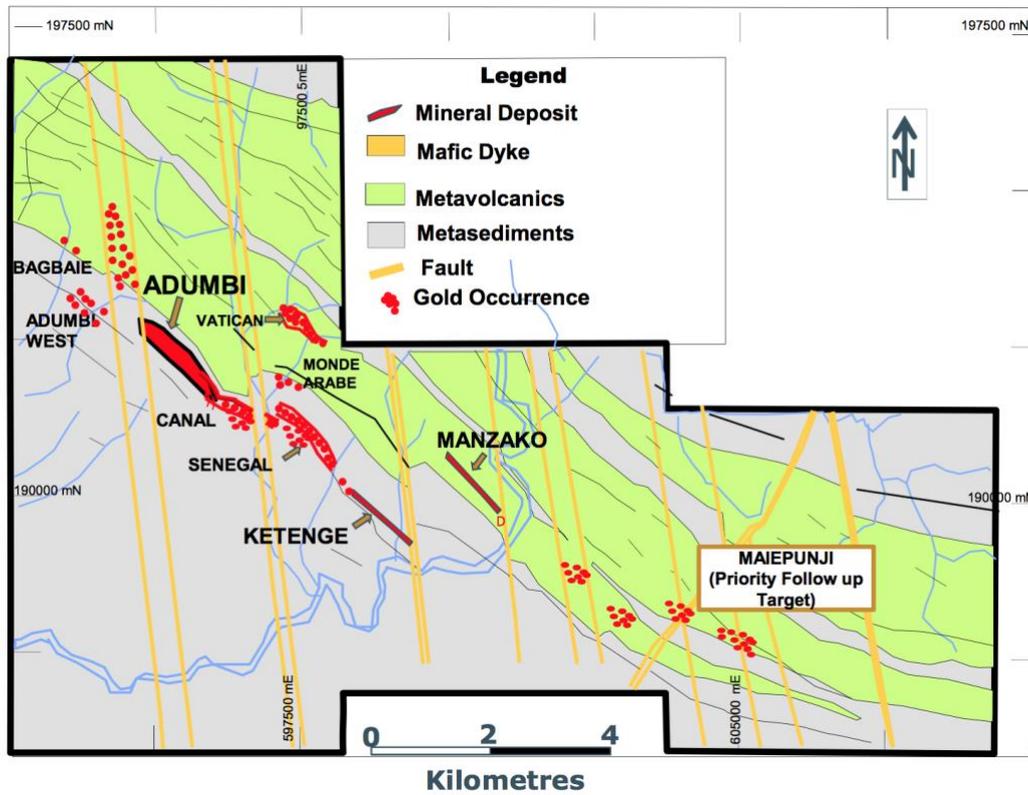
Partnering with
a major.

Outside of the **Barrick** JV, **Loncor** also has a 100% equity stake in the **Makapela Deposit** in the north of the Ngayu belt where the Company previously drilled out a high-grade vein system and delineated **Indicated Mineral Resources of 614,200 ounces of gold (2.2 million tonnes grading 8.66 g/t Au) and Inferred Mineral Resources of 549,600 ounces of gold (3.22 million tonnes grading 5.3 g/t Au)**. The deposit is still open at depth and further exploration is warranted to outline additional resources.

More recently, in September 2019, **Loncor** entered into a transaction to acquire further concession in the Ngayu greenstone belt from Kilo Goldmines. Most notable of the concessions acquired is the Imbo licence. This licence contains the Adumbi, Kitenge and Mazanko deposits, the most significant of which is the Adumbi deposit. The licence is outside the Barrick joint venture and is 71.25% owned by Loncor.

Within the Imbo licence which is found in the east of the Ngayu belt, **Inferred Mineral Resources totalling 1.67 million ounces (20.78 million tonnes grading 2.5 g/t Au)** have been drilled on three deposits **Adumbi, Kitenge and Manzako**. Excellent potential exists at Adumbi to increase mineral resources below the Inferred Resource. In 2017, four deeper holes at Adumbi all intersected significant gold mineralisation including intercepts of **23.45 metres grading 6.08 g/t Au and 12.69 metres grading 5.51 g/t Au**. Loncor intends to undertake additional drilling at depth where the Company estimates the underground potential of an **additional plus 1.5 million ounces of gold**. The Adumbi gold deposit is found within a 100 metre thick Banded Ironstone Formation.

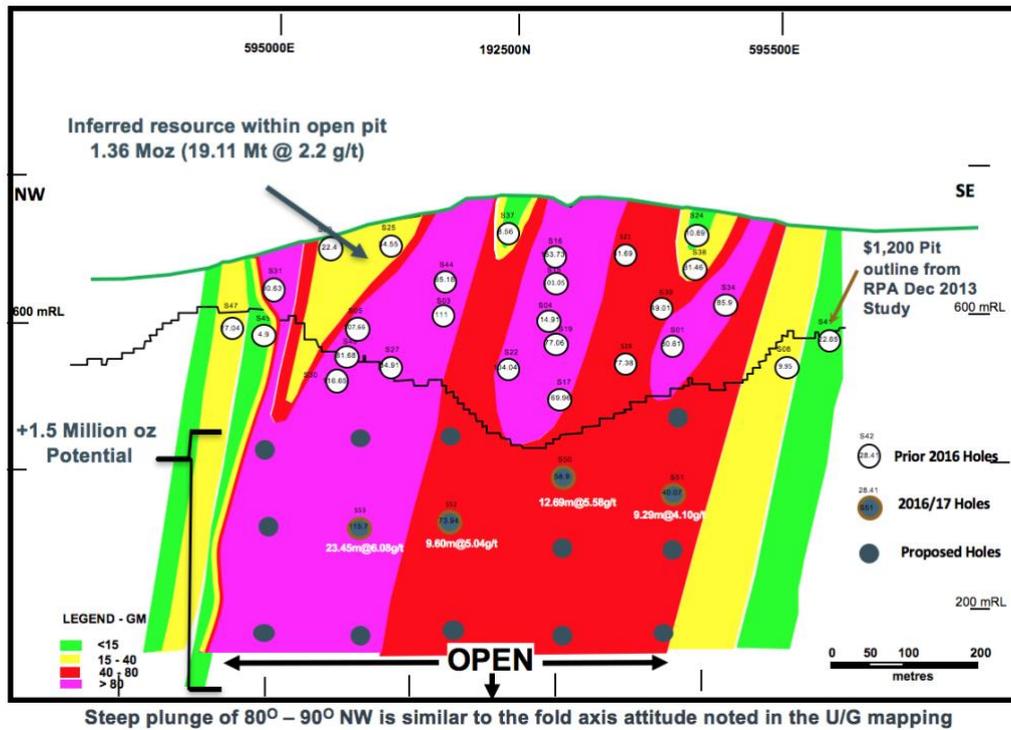
Imbo Exploitation Permit (Adumbi) 71.25% Loncor
14 km Mineralized Trend



Source: Loncor Resources, December 2019.

Adumbi Longitudinal Section

(Accumulated True Thickness (Metre) x Gramme / Tonnes Plot)



Source: Loncor Resources, December 2019.

What's appealing about **Adumbi** is it hosts a significant resource already and is open at depth with excellent potential to increase resources further. There appears to be potential to expand this resource and exploration is **operated by Loncor** themselves.

Conclusion:

Loncor Resources own significant exploration tenements in **highly-prospective** and **under-explored greenstone belts** located in the north-east of the DRC (Democratic Republic of Congo). The geology of the Ngayu Project appears to have similar characteristics to the geology of the Kilbali (Northern DRC) and Geita mines (Northern Tanzania). From a geological perspective, **folded structures** and **Banded Ironstone Formations** are key to understanding the formation of the Kibali and Geita gold mines and this geological model appears to be relevant at the Ngayu Project. **Loncor** have the world's largest gold company, **Barrick**, as their joint venture partner on the majority of Ngayu project tenements. A major discovery, funded by Barrick, would still leave **Loncor** with a **35% interest in the discovery, free-carried to a feasibility study**. Recent exploration news from Loncor states that drilling targets have been developed by Barrick, focussing on the major Imva fold structure and that **drilling is expected to commence during the coming dry season** (December to April). After a lengthy period of hibernation for the Ngayu project, this is where things get interesting.

As Peter Cowley, President of Loncor recently said;

“The Barrick Joint Venture bears testimony to the prospectivity of Ngayu in terms of its size and geological similarities to both Geita and Kibali. After a number of years of systematic exploration by Barrick geologists, we are now at the exciting stage of starting to drill out the joint venture’s priority targets of which there are several. Besides the Barrick Joint Venture, Loncor also intends to drill additional holes at Adumbi where there is excellent potential to double the current resource and assess the economic potential of a stand-alone project with possible additional high-grade feed from Makapela.”

APPENDIX

Loncor's History:

November 2019: Ngayu exploration update highlights additional targets identified by Barrick on Loncor's Ngayu Joint Venture project. Recent exploration has focussed on the major exploration Imva fold structure where a number of drill targets have been developed. Drilling is expected to commence during the coming dry season.

October 2019: Loncor appoint Peter Cowley as President and MINECON as geological consultants to advance the Ngayu gold project.

September 2019: 2 for 1 share consolidation effective 25th September 2019.

September 2019: Loncor enters agreement with Kilo Goldmines and Resolute to consolidate ground in the Ngayu gold belt.

June 2018: Resolute Mining acquires 27.2% of the outstanding shares of Loncor.

April 2016: Joint Venture partner Randgold Resources (now **Barrick Gold**) to commence a regional helicopter-borne VTEM B-Field, Horizontal Magnetic Gradiometer geophysical survey over Loncor's Ngayu project.

January 2016: Loncor enter into a joint venture agreement with **Barrick** (formerly Randgold Resources). The agreement provides for a joint venture between Loncor and Barrick covering all of the exploration permit areas comprising **Loncor's Ngayu** project, other than certain parcels of land surrounding and including the **Makapela** and **Yindi** prospects which are retained by **Loncor** and do not form part of the JV.

April 2013: Loncor increase and upgrades mineral resources at its **Makapela** prospect.

May 2012: Loncor outlines significant maiden gold resource of 1 million ounces grading 7.59 g/t Au at its **Makapela** prospect.

January 2012: Loncor report on the discovery drill hole at its **Itali Prospect**, Ngayu Project. Intersection of 38.8m grading 2.66 g/t Au. The rock is completely oxidised to a depth of 110 metres below surface.

January 2012: initial bottle-roll metallurgical test-work results reported from Makapela. Cyanide leach tests from drill core yield an average 84% gold recovery from Vein 1, 80.6% from Vein 2.

September 2011: regional BLEG survey results released highlighting four principle areas for follow up: **Imva Fold Area, Adumbi Trend, Anguluku Area and Makapela Extension Area.**

March 2011: commencement of a regional geochemical BLEG (Bulk Leach Extractable Gold) survey at its Ngayu Gold Project is announced. The BLEG survey is being undertaken as part of a technical services agreement between Newmont and Loncor.

January 2011: drill results of 7.1 m grading 64 g/t Au and 10.86 m grading 5.14 g/t Au announced at the **Makapela** gold prospect. Five drill holes have so far been completed at Makapela and all holes intersected the quartz vein at depths of between 26 m and 77 m below surface.

December 2010: **Newmont** increase their stake in Loncor to 16.9%.

December 2010: first drill results from the **Makapela** prospect are reported which include 4.1m @ 15.2 g/t Au from 105.7m.

August 2010: **Loncor** announce that an airborne magnetic and radio metric survey was flown over a large portion of the Ngayu project area by New Resolution Geophysics in July and August 2010.

June 2010: The **Makapela** prospect is the site of a new discovery by artisanal miners with diggings reported to have started in 2006. Six channel samples in the Main pit over a strike length of 85 metres. Results from the channel samples include; 4.2 m grading 11.6 g/t Au; 3.2 m grading 2.22 g/t Au; 3.1 m grading 33.4 g/t Au (open to southeast).

February 2010: main **Ngayu** exploration camp established at the **Yindi** prospect.

REPORT END

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