



Mapping Global Gold Doré Flows

11th India International Gold Convention

13th September, 2014

About Metals Focus

- Truly independent precious metals consultancy
- Experienced team of precious metals specialists, 16-strong, based in 7 countries
- Not just desk-based research – extensive travel programme, with regular visits to key market participants in major markets

Presentation Outline

- General Background
 - What is doré?
 - The market for gold doré
 - How is gold doré produced?
 - Where is gold doré produced?
- Breakdown of gold doré supply
 - Analysis of captive markets
- The outlook for gold doré supply
 - Key growth regions
- Conclusions



Metals Focus – Doré Flows Service

The **Gold and Silver Doré Flows Service** offers a detail insight into the global flow of gold and silver doré from mine site to refiner. Designed to aid the industry as it plan ahead, identify opportunities and achieve economies all against the backdrop of falling feed from secondary sources and growing focus on sourcing compliance and risk management.

The service includes:

- Over 725 mine and projects, with mine-by-mine production outlook to 2030.
- Wide range of project details, including development status, mine site costs, ownership and current information on doré metal content & refining location (where known).
- Monthly database updates (delivered in excel) with a bi-annual report.

For more information, please contact;
charles.demeester@metalsfocus.com



What is doré?

- Typically a gold-silver alloy, with less than 5% impurities.
- Impurities: non-precious metals, eg copper, lead, bismuth.
- Above certain limits these impurities can be damaging, can incur a refining penalty charge.



The market for gold doré

- The market for gold doré is relatively stable compared with base metals.
- Refining a relatively minor part of a gold mine's operating costs.
- Global gold refining capacity ~2.5 times greater than annual gold mine production.
- Miners offered better rates, due to the regular consistent source.
- Gold's high unit value opens up an array of refining options.



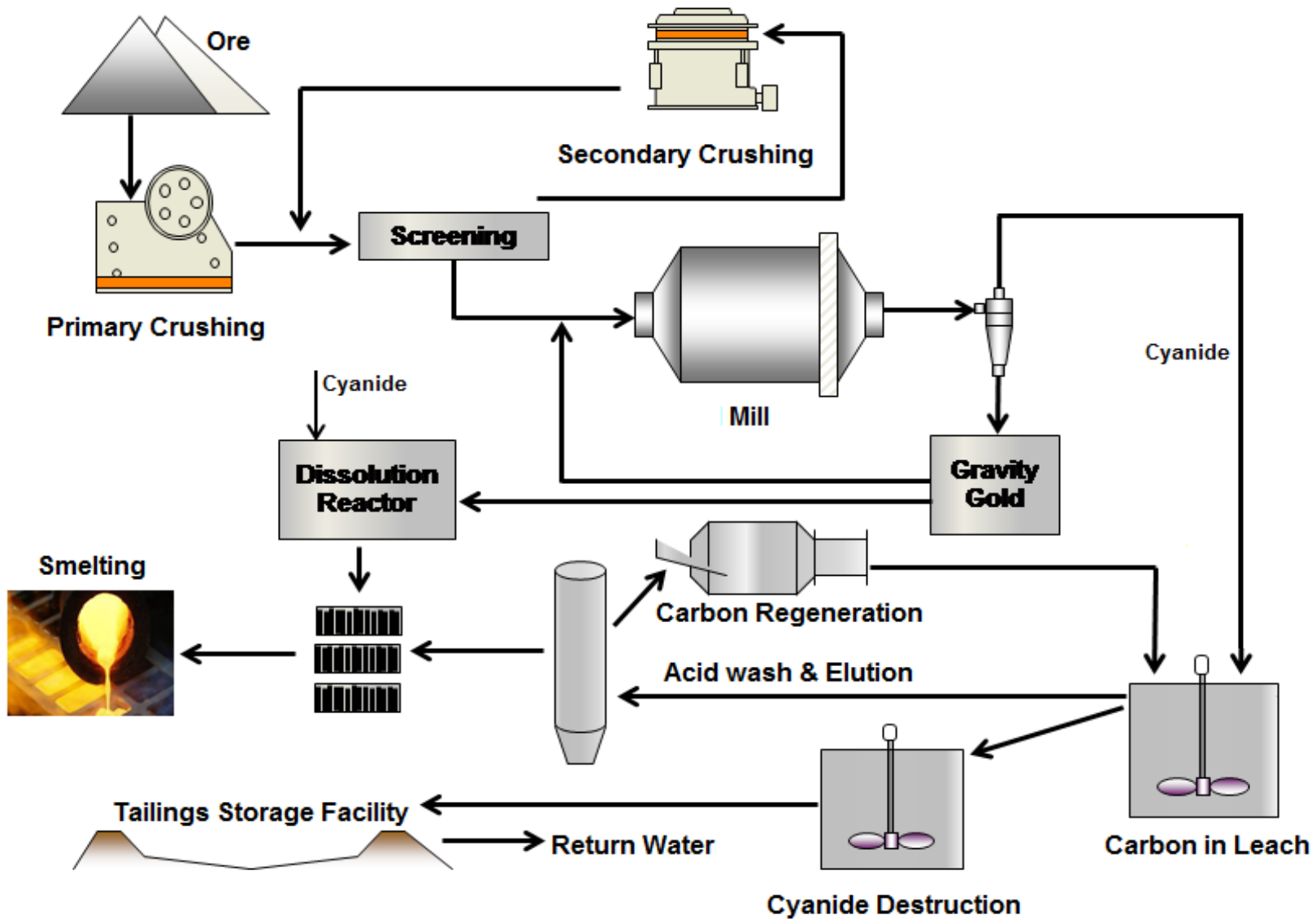
How is gold doré produced?

- ~85% of global gold production is recovered to doré (or a gold rich concentrate); ~2,550t/yr of gold.
- Gold is mined from ore, from rock containing:
 - Open pit 0.5-2.5 g/t
 - Underground 4-7 g/t
- Processing methods vary depending on the mineralogy of the deposit, typically involves the extraction of gold using cyanide.

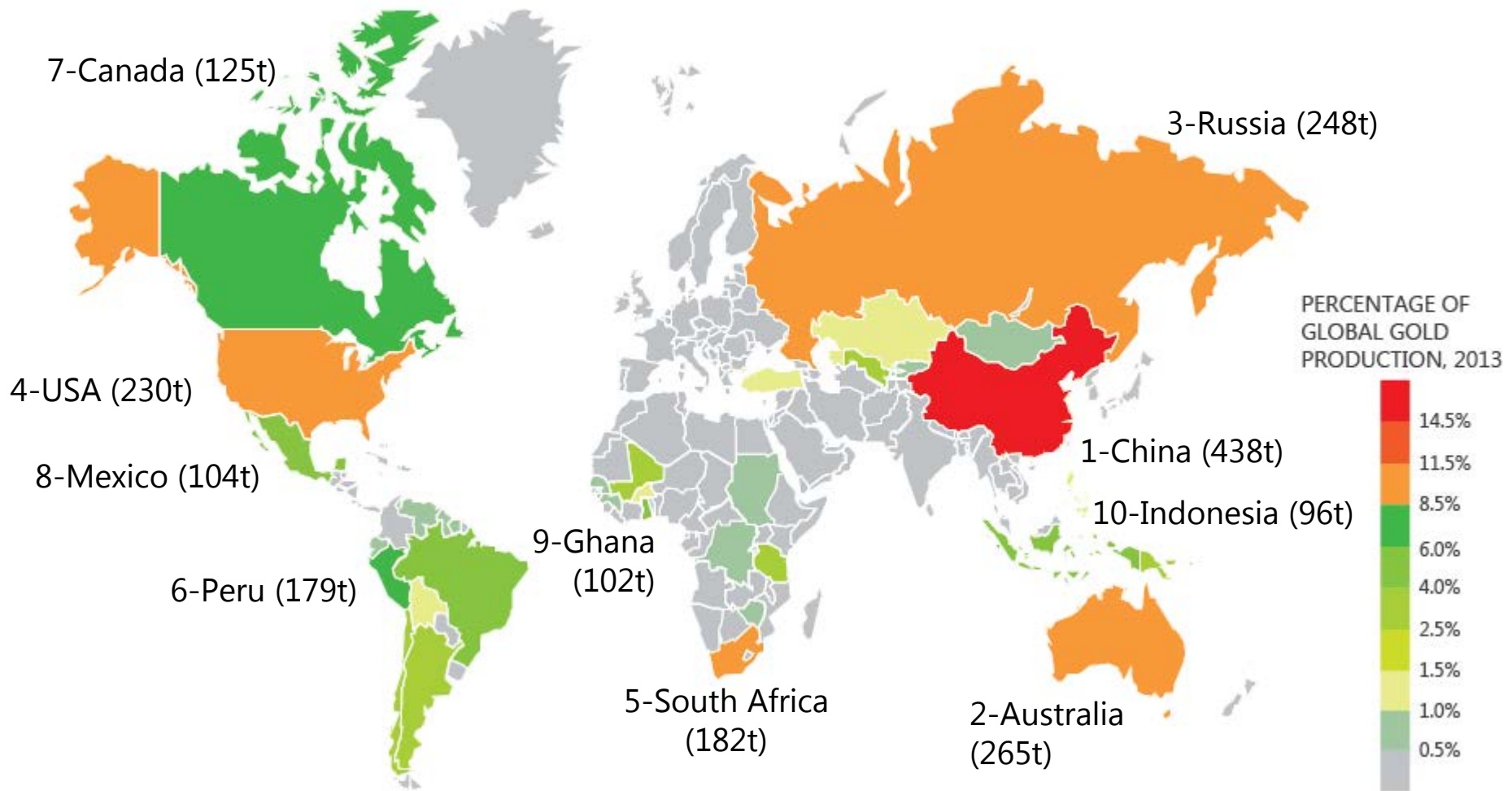


Cortez, Nevada

How is gold doré produced?



Global gold production in 2013

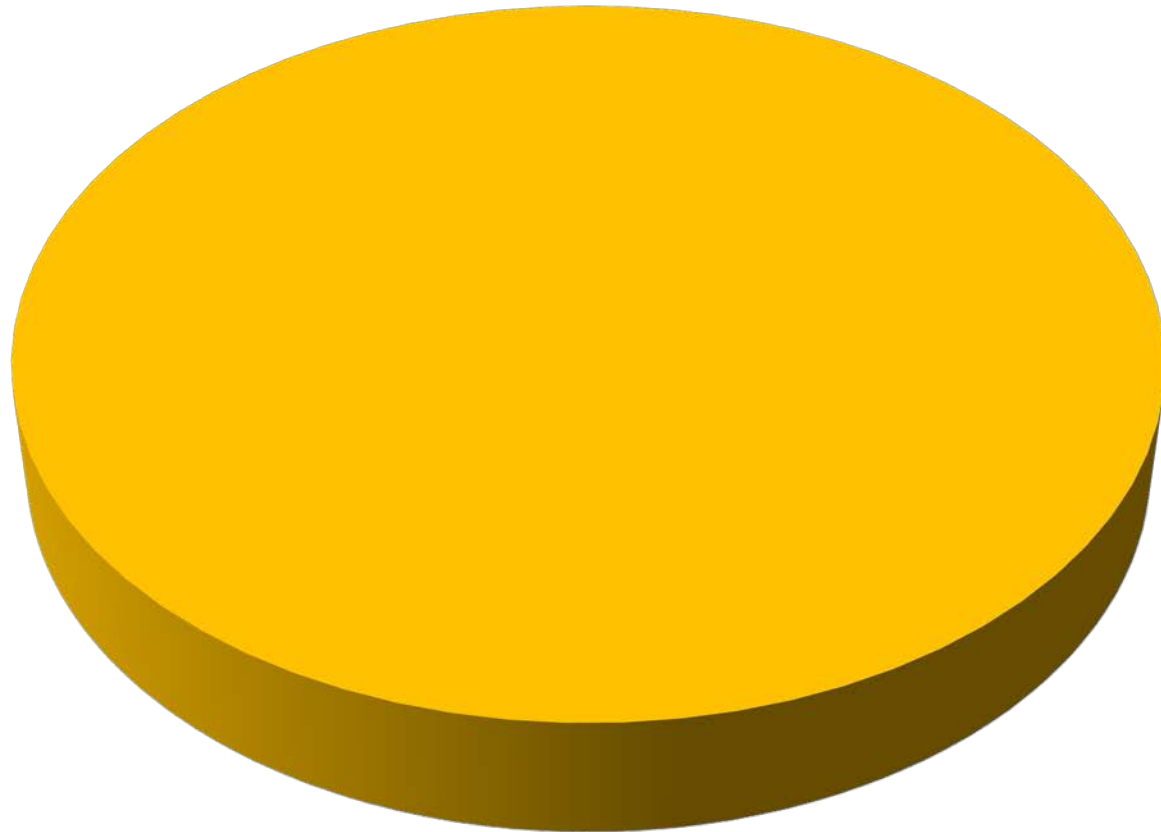


Source: Metals Focus

Breakdown of global gold production

How much doré is "readily" available?

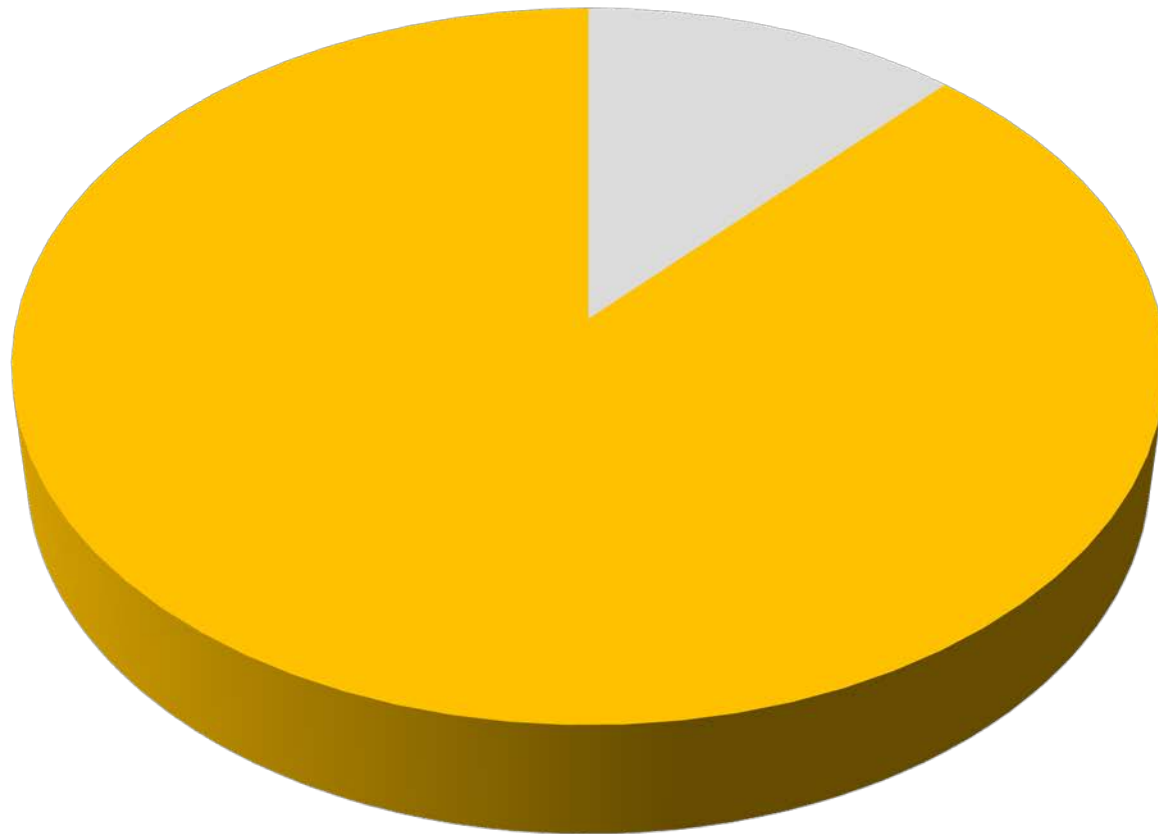
Global Gold Mine Supply; +3,000 t/yr



Breakdown of global gold production

How much doré is "readily" available?

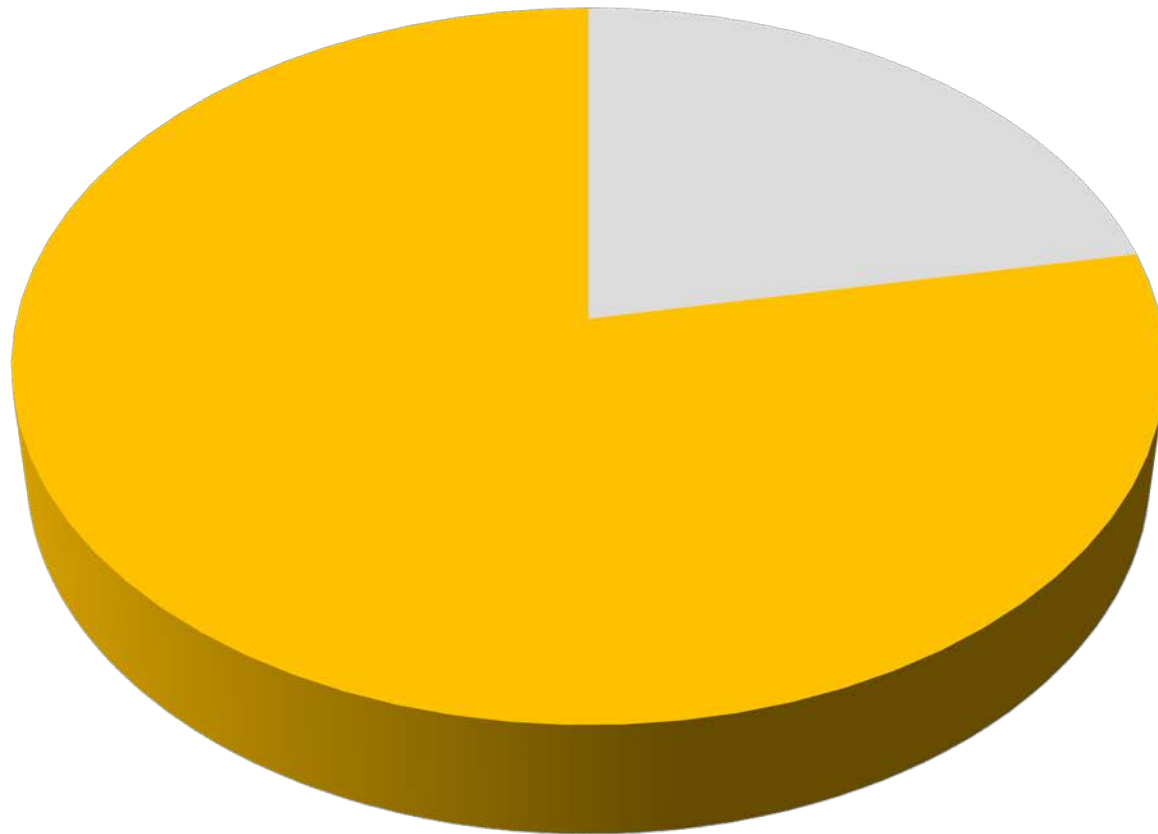
Less informal gold production; ~350t/yr



Breakdown of global gold production

How much doré is "readily" available?

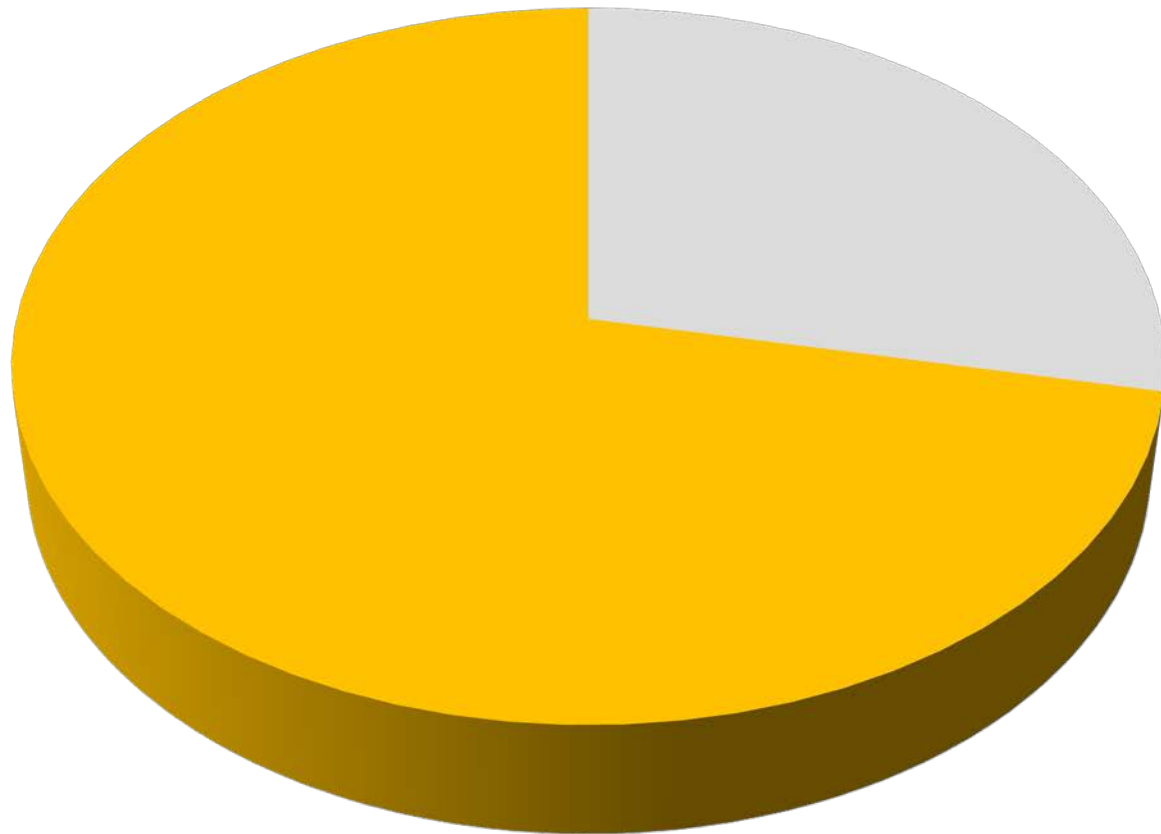
Less by-product gold from base metal mining; ~300t/yr



Breakdown of global gold production

How much doré is "readily" available?

Less gold recovered to concentrate (Au+Ag mines); ~200t/yr



Analysis of captive markets

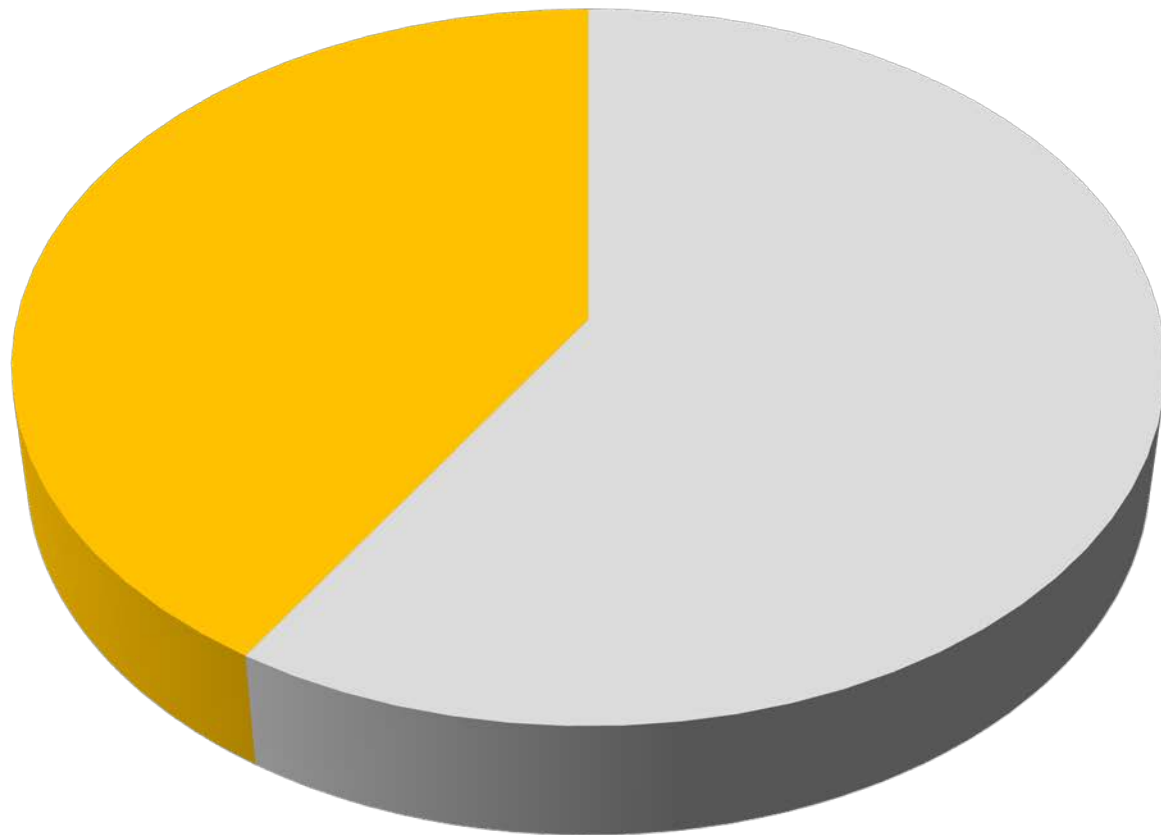


Source: Metals Focus

Breakdown of global gold production

How much doré is "readily" available?

Less captive gold doré production; ~925t/yr

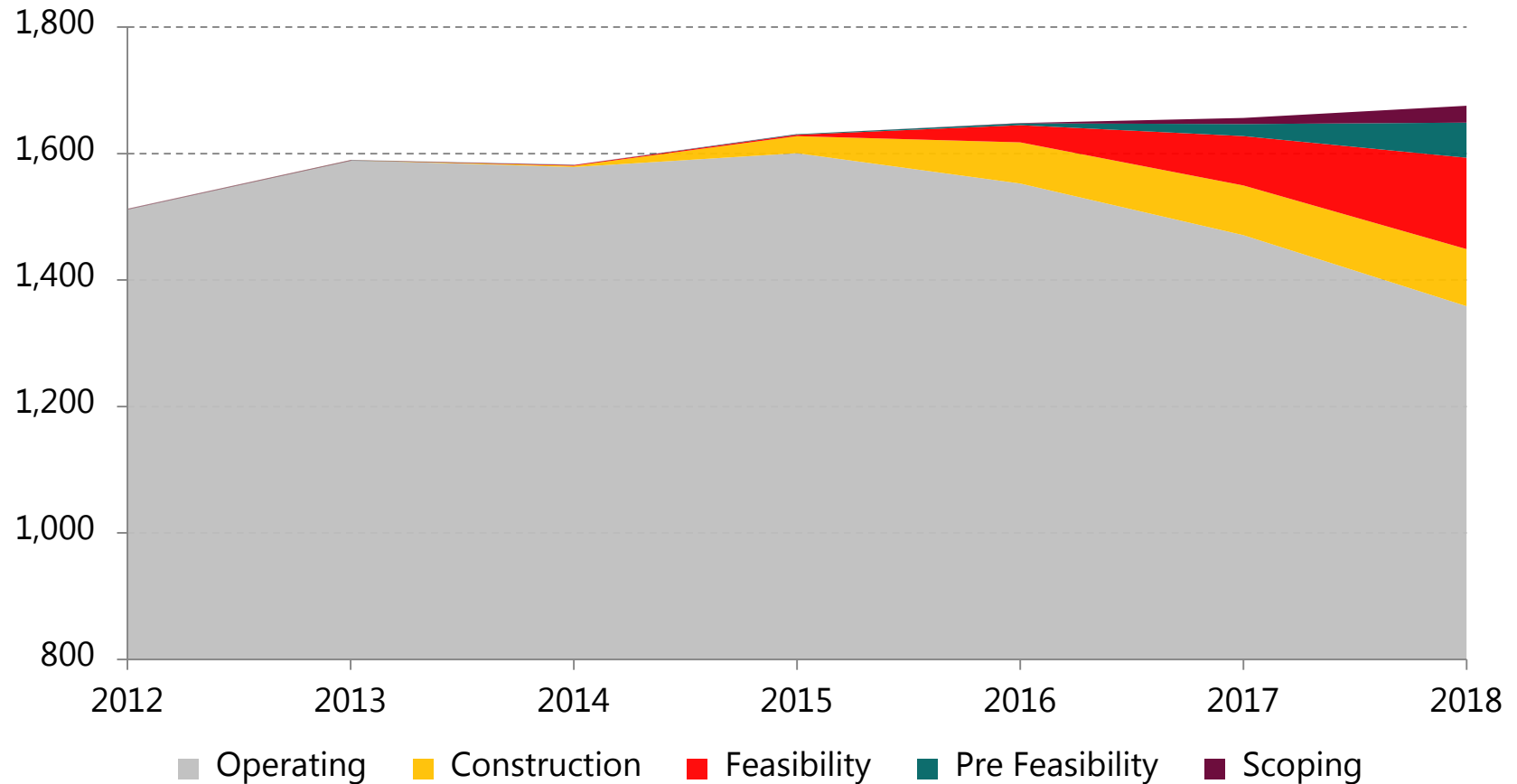


Leaving ~1,225t/yr, or 40% of global gold mine supply

Outlook for gold doré supply

Global gold in doré production capacity

Tonnes



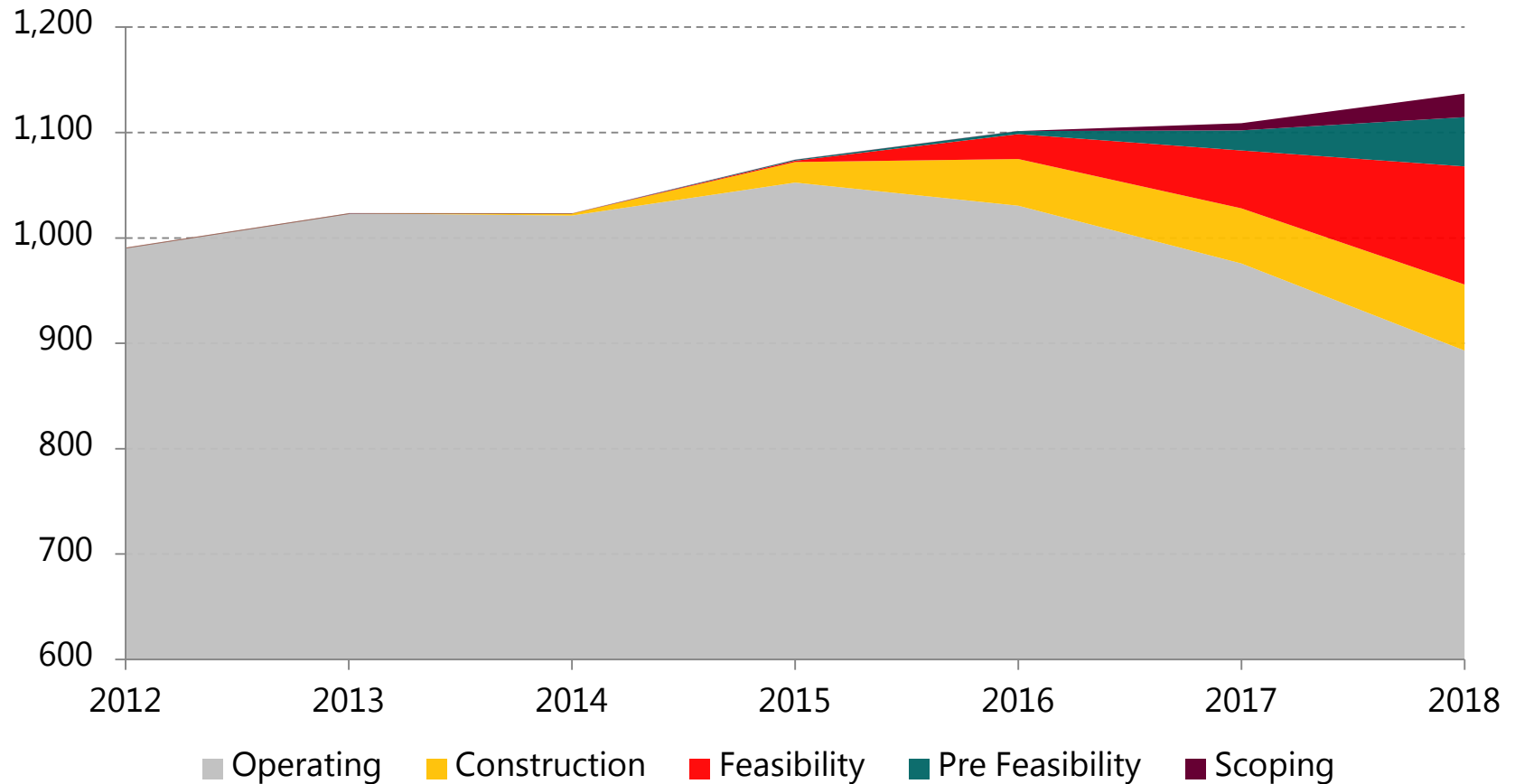
Source: Metals Focus Doré Flows Service, September 2014



Outlook for gold doré supply

Global gold in doré production capacity, less captive supply

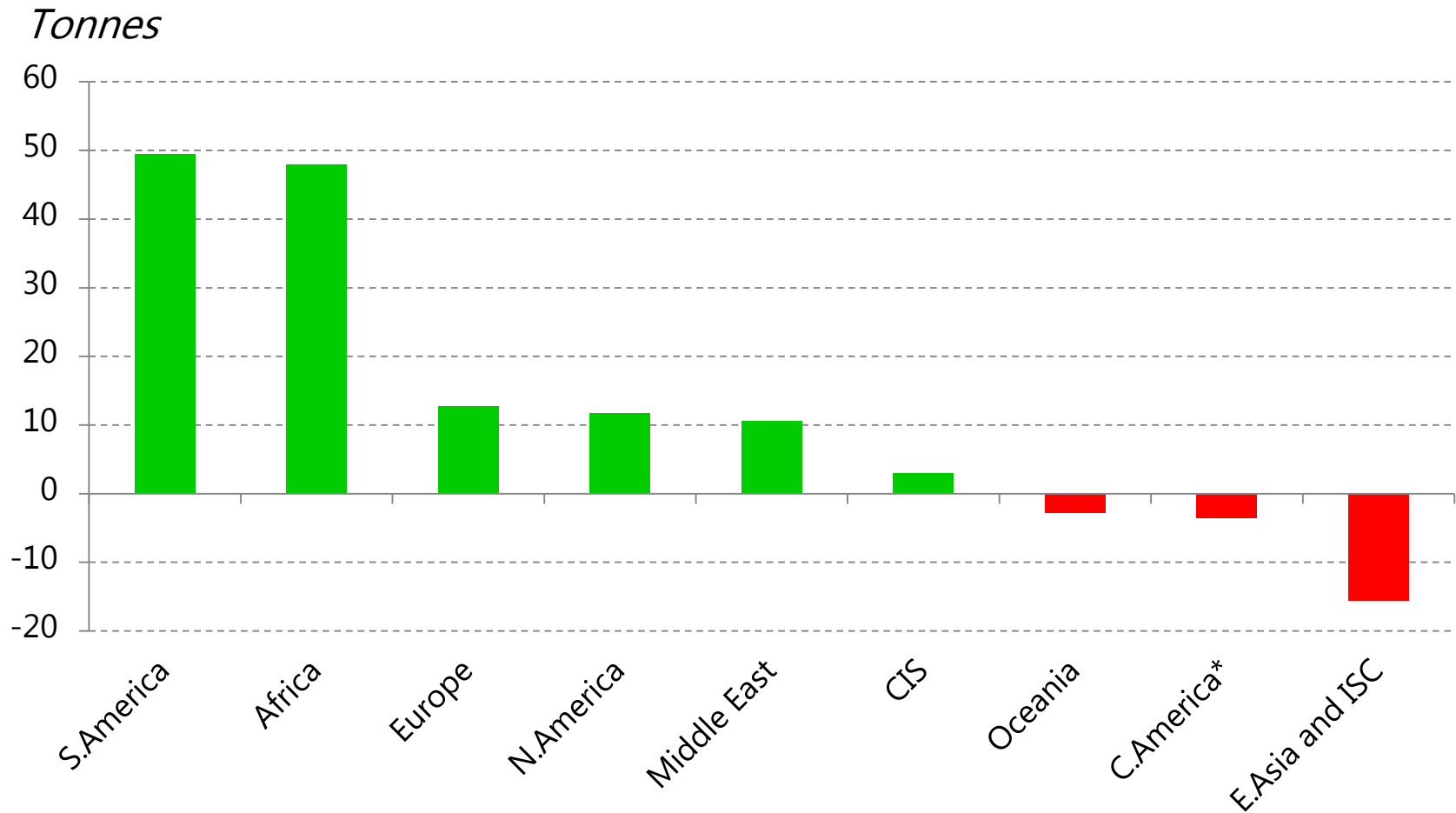
Tonnes



Source: Metals Focus Doré Flows Service, September 2014

Outlook for gold doré supply

Global gold in doré production capacity, winners & losers, 2013 vs 2018



* Includes the Caribbean

Source: Metals Focus Doré Flows Service, September 2014

Outlook for gold doré supply

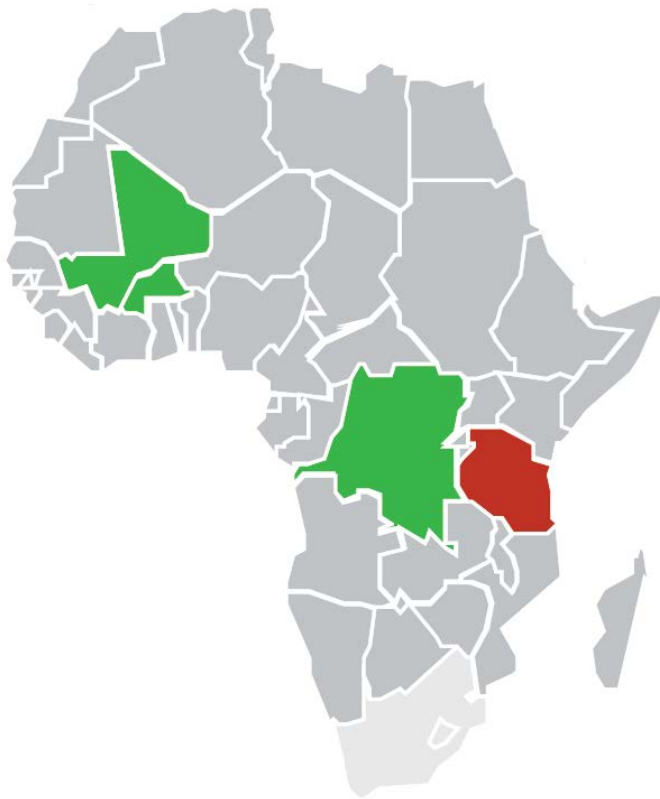
SOUTH AMERICA



- **Argentina's** production boosted by the ramp-up of Cerro Negro (Goldcorp), which poured first gold in July 2014.
- In **Brazil**, Yamana Gold brought two mines into production last year (Pilar and Santa Luz), as did Carpathian Gold with Riacho dos Machados. A number of project have the potential to start in the next 5 years.
- Newmont recently greenlighted the development of Merian in **Suriname**. Scheduled to enter production in late-2016, with a potential for 300-500koz/yr.
- **Guyana** Goldfields Aurora project in construction. First pour expected early-2015. Currently expected to produce 125-300koz/yr.

Outlook for gold doré supply

AFRICA



- **Democratic Republic of the Congo** has seen three mines enter production in under two years. Twangiza and Namoya (Banro Corporation) and Kibali (JV: Randgold-AngloGold Ashanti). At full capacity, +600/yr of consolidated production.
- West Africa has seen a swathe of new projects over the past five years. And the region remains highly prospective.
- In August 2014, True Gold secures US\$120 million to fully fund construction of its Karma project in **Burkina Faso**.
- There are currently a handful of other greenfield projects in West Africa with the potential to enter production in the next 5 years.

Outlook for gold doré supply

NORTH AMERICA



- Growth in Canada being counteracted by declines in the USA; Mexico maintaining production levels following a decade of sustained growth.
- Along with China, Canada has some of the best potential gold production growth of an country.
- Outside of Ontario, **Canadian** production to be boosted by the ramp-up of a number of mines that have recently entered production, such as Canadian Malartic and Westwood. In addition, Éléonore is due to enter production in Q4 14, and at full capacity (H1 18) will produce 575-625koz/yr. There are also a swathe of development projects with the potential to enter production in the next five years.

Outlook for gold doré supply

- There exist the capacity to lift global gold doré higher, however there are a number of hurdles facing the industry:
 - Current market has led to a very sharp drop in project spending across the gold sector, from majors, to developers and most strongly at the grass roots level.
 - Our outlook for gold prices and significant company debt mean this is unlikely to reverse anytime soon.
 - Many companies have shift there mindset from growing production to just focusing on returns to shareholders.
 - Mining projects getting harder to develop; permit requirements, higher royalties and government free carry shares all cutting into investor returns.

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