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Miners must discover better exploration formula now, says Schafer

Veteran geologist and North American industry leader, Bob Schafer says more strategic, and perhaps “sustainable” project-generative partnerships between big miners such as South32, OZ Minerals, Newcrest Mining and others, and smaller companies, might be setting the industry on the right course to better rates of return on what look again to be climbing global exploration expenditure levels



Many questions remain to be answered, of course, about how effectively different companies, boards and agendas (and stakeholder groups) can combine to deliver sustainable outcomes in the "soft" areas Schafer spoke about at the ResourceStocks Sydney 2018 conference, including early community and government relations work that leads into life-of-project corporate social responsibility programs and ultimately value that sits on, and off, balance sheets.

Majors are already paying market premiums for projects and owners that lay a platform for long-term, prosperous CSR outcomes from the earliest stages of projects, recognising the later value destruction that can come from badly laid foundations.

The former president of the Prospectors and Developers Association of Canada (PDAC), Schafer said part of his "sustainable discovery" business model was a requirement for industry, government "and society" to cooperate or collaborate to measure financial and

quality-of-life benefit trade-offs against "disruption costs perceived by society and the environment" in a fair way.

He didn't name companies that were already starting to equitably divide exploration and development/mining responsibilities, and expenditures, or those making adequate plans to split future economic spoils of new discoveries, resources, and viable projects.

But South32 with the likes of Trilogy Metals and Arizona Mining, OZ Minerals with Encounter Resources, Minotaur Exploration, Cassini Resources and others, and Newcrest Mining with a number of juniors, are structuring deals on both greenfields exploration and brownfields projects that create new templates for "collaborative" and perhaps sustainable exploration going forward.

Interestingly, Schafer said future deals might consider "compensation payments for shelving viable mining projects when social values outweigh business value", potentially building future inventory.

"My belief is we need to change the business paradigm"

He said regardless of whether companies pursued the traditional organic corporate growth model, with its regular, often untimely, swings in exploration spending, (usually) predatory M&A, current prospect-generation and acceleration investments, or any new collaboration model, "we're not adding enough metal inventory to maintain our capacity for continuous industrial development, particularly as it relates metals such as zinc and nickel ... and copper and gold are going to be challenged as well".

"My belief is we need to change the business paradigm.

"There is something inherently challenged in the way exploration is being funded and carried out now.

"The lack of performance [relative success] and efficiencies in recent exploration business activities means we need to find ways to improve. Our investors are exasperated.

"We need to find a way to get consistent funding into exploration."

Schafer said between 2007 and 2017 significant increases in exploration spending - on average, including a peak of US\$21.5 billion in 2012 - and only a modest increase in the number of discoveries, meant the return on each dollar spent on exploration had dropped alarmingly, from a value-to-expenditure ratio of 1.0, to 0.47. That is, various research showed about \$90 billion of "value" was generated by \$200 billion of exploration spending to uncover more than 80 important discoveries.

"We're no longer seeing a 1-to-1 return on exploration money. Now it's more like 50c on the dollar," he said.

"Historically about 70-80 notable mineral deposits are found each year in the world. Most discoveries are of small size and low value [and] world-class deposits are rare with only about 12 found each year historically.

"In the past decade only 12 were found. These few hold more than 50% of the total value of all deposits that were discovered [in that period]."

Schafer said many of the mineral discoveries that underpinned the growth of major mining companies were made in the 1950s, 60s and 70s. The "great discoveries of the world came from corporate exploration activities and the advent of real science going into discovery, not traditional prospecting".

Over the past 20 years the role and importance of junior exploration companies had increased to the point where juniors accounted for about 70% of all significant discoveries during this period.

HOMING IN ON 2007-PRESENT A VALUE DESTRUCTION SITUATION

Where were the Discoveries?

Location	Expenditure	No. of Major Discoveries*	Estimated Value	Value per \$ Spent
Australia	\$23 B	12	\$12 B	0.54
Canada	\$27 B	14	\$16 B	0.62
USA	\$12 B	4	\$ 5 B	0.42
Latin America	\$38 B	12	\$13 B	0.33
SW Pacific	\$10 B	4	\$ 7 B	0.69
Africa	\$25 B	17	\$20 B	0.80
Rest of World	\$64 B	18	\$21 B	0.33
TOTAL	\$197 B	81	\$92 B	0.47

* Notional valuation > \$ 500M threshold Source: SNL and Schodde, 2017

"From 1975 to the present there has been a more or less continuous decline [in the discovery rates of majors], with bigger drops coming since about 1990 when majors started deferring exploration to the junior sector," Schafer said.

"1990 seems to have been the turnover year in which junior explorers actually started making, on a consistent basis, year in and year out, more discoveries and greater value discoveries than the majors.

"And that's continuing to today.

"But no matter who is making discoveries, you have to ask the question, is exploration as a business finding enough material to satisfy our industrialising world?"

Research by Brook Hunt and the US Geological Survey, among others, seemed to indicate supply deficits for nickel, zinc, gold and other commodities - copper may be looking increasingly likely to join them - could grow over the next 15 years at least.

"And of course it takes time to go from discovery to a mine that produces the metal," Schafer said.

"From discovery hole to first production we're looking at 12-13 years for almost every type of commodity we can look at. So there is a big lag time as well.

"Even if we have a plethora of discoveries over the next 3-4 years it's still going to be almost 15 years before we start seeing them impacting the market."

All of which led Schafer to declare that, "we are looking at crisis in the not too distant future" in the supply of staple industrial metals.

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