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Company Information

ASX Code	TNG
Share Price	A\$0.10
Ord Shares	406.8m
Options	22.9m
Market Cap	A\$40.3m
Cash (est. Sept 12)	A\$10.4m
Total Debt	A\$0m
Enterprise Value	A\$22.2m

Directors

Chairman	Jianrong Xu
Managing Director	Paul Burton
Non-Executive Director	Neil Biddle
Non-Executive Director	Rex Turkington
Non-Executive Director	Zhigang Wang
Non-Executive Director	Stuart Crow

Substantial Shareholders

Ao-Zhong Int.Min Resources	15.3%
Aosu Inv. & Develop. Co	14.7%
WWB Investments P/L	6.5%
CBH Resources	3.5%
JP Morgan Nom's	2.2%

Source: Bloomberg

Company Details

Address	Level 1, 282 Rokeby Rd Subiaco, WA, 6008
Phone	+618 9327 0900
Web	www.tnglimited.com.au

1 Year Price Chart



TNG Limited (TNG)

PFS confirms robust economics at flagship Mount Peake vanadium project

Recommendation: Speculative **BUY**

Key Points

- JORC Resource of 160Mt at flagship Mount Peake project
- PFS indicates robust project with LOM revenue of ~A\$12B
- Patented TIVAN™ processing provides competitive advantage
- Potential for additional 500-700Mt in surrounding area
- Cornerstone Chinese investors provide A\$13m cash injection @ 11c/share
- Prospective copper projects provide diversity; drilling to commence imminently

TNG Limited has a large vanadium-titanium-iron resource at its flagship 100% owned Mount Peake project located close to existing infrastructure in the Northern Territory. A patented processing flow sheet, called TIVAN, provides TNG with a significant competitive advantage allowing for high recovery rates of vanadium whilst also achieving high recovery rates for titanium and iron, which can be sold as a by-product. The company is now well funded to advance the project through the DFS stage and continue exploration within its diverse portfolio.

Company Overview

TNG Limited (ASX: TNG) is an Australian based exploration company with numerous projects located in the Northern Territory and Western Australia.

TNG's principle focus is the advancement of the 100% owned Mount Peake vanadium-titanium-iron project located 235km north of Alice Springs, NT. The project currently hosts a JORC resource of 160Mt @ 0.27% V₂O₅, 5% TiO₂ and 22% Fe with significant opportunity for resource upgrades as drilling continues. TNG has a conceptual exploration target for an additional 500-700Mt in the surrounding area at similar grades to the current resource.

The recently completed Mount Peake PFS indicates an economically robust and lucrative project. The economics have been enhanced by a revolutionary processing route, called TIVAN, which has been developed and patented by the company. Using TIVAN, TNG is able to achieve high recovery rates of vanadium whilst also achieving high recovery rates and purity for titanium and iron which can be sold as a by-product providing the company with a significant competitive advantage. Following the positive outcomes of the PFS, TNG will commence Definitive Feasibility Study (DFS).

TNG recently completed a A\$13m placement with two cornerstone Chinese investors @ 11c/share. The company is now well funded to advance the Mount Peake project through the DFS.



Investment Review

TNG Limited has a diverse portfolio of projects covering an area of ~10,000km², with the majority of the projects located in the Northern Territory.

The most advanced project in the portfolio is Mount Peake which hosts a JORC resource of 160Mt @ $0.27\% \, V_2O_5$, $5\% \, TiO_2$ and 22% Fe for 236kt of vanadium, 5.8Mt of titanium and 17.4Mt of iron. The project is strategically located close to existing infrastructure, including the Alice Springs-Darwin Railway, Stuart Highway and the new LPG pipeline, 20km to the east.

160Mt JORC resource close to existing infrastructure

TNG project map



Source: TNG Limited

PFS indicates LOM revenue of A\$12B

A pre-feasibility study (PFS) assessing the technical and financial viability of the Mount Peake project has recently been completed by consultants SKM, METS and Snowdens Pty Ltd. Based on a 17 year mine life, the combined consultants estimate the project is capable of generating revenues of ~A\$ 12B with cumulative operating cash flow of A\$5B.

2.5Mtpa ramping up to 5Mtpa in year 4

The PFS assumes an initial 2.5Mtpa processing plant, ramping up to 5Mtpa in year 4 of operation to produce and average of 15,300tpa of vanadium pentoxide (V_2O_5), 375,000tpa of titanium dioxide (TiO_2) concentrate and 1.13Mtpa of iron oxide (Fe_2O_3) via the patented TIVAN processing route.



TIVAN processing allows for high recovery rates of vanadium, titanium and iron

Recoveries could be higher than that indicated in the PFS The TIVAN processing route is **ground breaking** in that is uses a combination of leaching and solvent extraction to recover vanadium as vanadium pentoxide, titanium as titanium dioxide and iron as iron oxide rather than conventional salt roasting processing route which would just recover vanadium as ferro-vanadium. This significantly enhances the project economics as the iron and titanium can be sold as by products **contributing approximately 32% and 23% of revenue respectively.** Although the individual units that make up the processing flow sheet are commonly used, there are currently no mines which employ this hydrometallurgical process.

Significant opportunity exists to further enhance the already robust economics of the Mount Peake project. Pilot plant test work of the TIVAN processing route has indicated recoveries of +80% for V_2O_5 , 80% for TiO_2 and 75% for Fe_2O_3 . These recoveries are substantially higher (in the case of titanium and iron) than the recoveries used in the PFS. (The PFS used recoveries of 80% V_2O_5 , 67% TiO_2 , 66% Fe).

Projected project time line

	2012		20	13		20	014
	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Completion of Pilot Plant	1						
test work	•						
Pre-feasibility study	,						
completion	•						
Commercialisation of TIVAN	✓						
Feasibility Study							
EPCM, off-take, EIS							
Partner for Development							
Financing							
Construction							\rightarrow

Source: TNG and Breakaway

Additional exploration in the Mount Peake region continues to deliver further encouraging results, highlighting the potential for resource upgrades in the future. Following a limited RC drilling program, TNG confirmed the presence of two large magnetite-gabbro structures which are the hosts to the iron-vanadium-titanium mineralisation at the Mount Peake deposit. Further drilling is required however, confirmation of additional magnetite-gabbro could significantly expand the resource potential. TNG has an exploration target of 500-700Mt for the Mount Peake region.

Elsewhere, TNG has a strong project pipeline of earlier stage projects prospective for copper, gold, lead, zinc, silver, bauxite and iron ore which provide welcome diversity to the portfolio. TNG's has farmed out majority interests in a number of these projects allowing TNG to maintain a risk free exposure and receive cash injections which can be used to advance the flagship Mount Peake project and its copper portfolio.

Corporate activity

TNG recently completed a capital raising with China's ECE and Aosu Investment & Development Co Pty Ltd. ECE is one of China's leading explorers and developers while Aosu is a privately owned industrial and technology company. A representative of the both companies has been appointed to the board.

The placement (@11c/share) resulted in a cash injection of A\$13.4m into the company providing the necessary funds to underpin the advancement the Mount Peake project through the DFS and to continue commercialisation of the TIVAN process and provide support for TNG's other active projects.

500-700Mt exploration target in surrounding acreage

Strong project pipeline

Chinese partners provideA\$13m cash injection

Project Review

Mount Peake

100% interest: Iron - Vanadium - Titanium

Mount Peake is located ~235km north of Alice Springs, within the Northern Territory, and is strategically located close to road, rail and the Darwin to Alice Springs gas pipeline.

Mount Peake - Location Map

Mount Peake located close to existing infrastructure

~70% of the resource in indicated category

Source: TNG Limited

The Mount Peake deposit was originally discovered in 2008 and was recently upgraded, by mining consultants 'Snowdens', to a JORC estimate of 160Mt @ 0.27% V_2O_5 , 5% TiO_2 and 22% Fe using a V_2O_5 cut off of 0.1%. Approximately 70% of the resource is within the Indicated category and is thus available for conversion to 'Ore Reserves'.

Mount Peake JORC Resource

Category	Tonnes	V ₂ O ₅ %	TiO₂ %	Fe %	Al ₂ O ₃ %	SiO ₂ %
Indicated	110,000,000	0.29	5.3	23	8.1	34
Inferred	48,000,000	0.24	4.5	21	8.8	35
Total	160,000,000	0.27	5.0	22	8.3	34

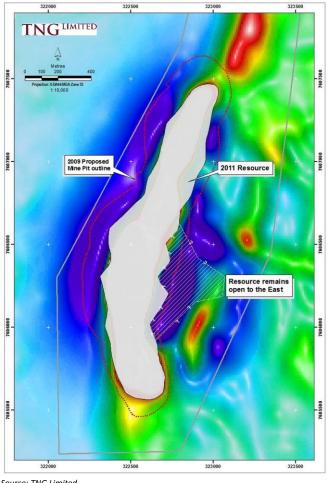
Source: TNG Limited

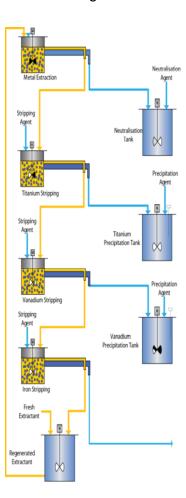
The deposit has a north-south orientation extending along strike of $^{\sim}$ 2km with a width of $^{\sim}$ 300m and a vertical depth of $^{\sim}$ 150m. The drilling campaign that resulted in the resource upgrade also revealed that the deposit remains open to the east, potentially expanding the mine pit beyond the parameters of the recently undertaken prefeasibility study.



Magnetic Image Showing Outline of Current Resource

TIVAN Processing Flow Sheet





Resource is open to the east

Source: TNG Limited

TIVAN™ Processing

TIVAN processing flow sheet is patented

The current 160Mt resource comprises a number of potentially valuable minerals. Whilst vanadium is the most valuable, significant opportunity also exists to extract iron and titanium as by products through a solvent extraction (SX) process that has been designed optimised by TNG Limited and Mineral Engineering Technical Services Pty Ltd (METS).

Importantly, the individual processing units used to extract the valuable minerals have been utilised around the world for many years. However, there are currently no operating process plants which utilise a commercially viable route of extracting vanadium through a combination of leaching and solvent extraction. Significantly, the process also achieves a higher vanadium recovery and purity rate than that of the conventional salt roast route, as well as capital and operating cost savings.

TNG and METS have carried out extensive bench scale and optimisation test work and, in March 2012, assembled a pilot plant at the ALS laboratory in Perth. The aim of the pilot plant was to provide a definitive test of the commercial potential of the TIVAN process.

Titanium and iron extracted as byproducts



The pilot plant phase has since confirmed a viable process, achieving recoveries of up to 90% for vanadium pentoxide, higher than previous bench scale results and exceptionally high purities.

Pilot plant indicates high recovery and purity rates

TIVAN PILOT PLANT RESULTS				
Product	Purity %	Recovery %		
Final V ₂ O ₅ product	99	89-90%		
Final TiO ₂ product	55	67-80%		
Final Fe ₂ O ₃ product	99.9	63-80%		

Source: TNG Limited

The processing route designed by TNG and METS is ground breaking. It increases recoveries, allows for the capture of titanium and iron as high quality by-products and reduces OPEX and CAPEX by an expected ~50%.

Through the use of the TIVAN processing route, TNG expect to produce the following quantities of metal from the current 160Mt resource (at purities shown above):

Contained Metal

Product	Avg Concentrate Grade (%)	Total Metal Production (t)
V ₂ O ₅	1.2%	236,000
TiO ₂	18%	5,822,000
Fe ₂ O ₃	55%	17,400,000

Source: TNG Limited

Pre- Feasibility Study Outcomes

Following the resource upgrade and the successful trials of the TIVAN processing route, TNG Limited, in conjunction with METS, Snowden and SKM, completed a PFS to further assess the commercial viability of the Mount Peake project. The PFS was undertaken to an accuracy level of $\pm 25\%$ which is typical for a PFS and provides the platform for the company to progress to a Definitive Feasibility Study (DFS) (expected to commence imminently) which would de-risk the project further to an expected $\pm 5-10\%$ accuracy.

The main operating parameters, financial outcomes and assumptions of the PFS are outlined below:

Key Operating Parameters: Mount Peake PFS

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Total ore mined	75.9Mt
Total waste movement	72Mt
Total material mined	147.9Mt
Strip Ratio	0.95
Processing Rate	2.5Mt pa increasing to 5Mtpa in year 4
Avg. head grade	0.39% V ₂ O ₅ , 27.09% Fe, 7.02% TiO ₂
Avg. recoveries	80% V ₂ O ₅ , 67% TiO ₂ , 66% Fe
Total Metal Production	245kt V ₂ O ₅ , 20,246kt Fe, 6,495kt TiO ₂
Life of Mine	17.2 years

Source: TNG Limited

TIVAN processing indicates better recoveries than those used in PFS

DFS to commence

imminently

Breakaway notes that the PFS has been based on conservative product recoveries. The pilot plant testing phase has indicated potential for significantly higher recoveries for each of the commercial products, highlighting further upside.

Key Financial Outcomes: Mount Peake PFS

Total Revenue (LOM)	A\$ 12 billion
Surplus operating cash flow (LOM)	A\$ 5.8 billion
Net cash flow (LOM)	A\$ 5 billion
CAPEX requirement for plant and	A\$ 563 million
infrastructure	A3 303 IIIIII0II
Total operating costs	A\$ 75/t of plant feed
Net annual cash flow	A\$ 294
Pre-Tax IRR	31.80%

A\$5B LOM net cash flow

Source: TNG Limited

Key Assumptions: Mount Peake PFS

- Operating costs and pit slope angles estimated to PFS level (±25%)
- V_2O_5 price of US\$ 20,305/t (for >80% grade)
- TiO₂ price of US\$ 400/t (for >67% grade)
- Fe₂O₃ price of US\$ 200/t (for >66% grade)
- Royalty rate of 2.5% per tonne of plant feed
- Discount rate of 8%
- AUD:USD exchange rate of 1:1

The PFS demonstrates the potential value of the Mount Peake project. Breakaway is particularly encouraged by the indicative revenue it is capable of generating (~A\$12B), as well as the cumulative cash flow of ~A\$5B over a 17 year life or ~A\$294 annually. With the PFS now completed, TNG will move to a DFS which should commence Q4 2012, ultimately targeting construction of a 2.5Mtpa plant in 2014.

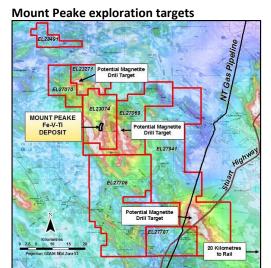
Funding large projects can be challenging for junior companies such as TNG but this will be helped by the strong cash flow attributes of Mount Peake and its strong Chinese connections.

Huge exploration potential

A\$12B revenue

Further exploration potential at Mount Peake

TNG has a 100% interest in approximately 2,000km 2 of exploration ground which surrounds the flagship Mount Peake V-Ti-Fe deposit. The company has identified numerous large magnetite gabbro zones which are prospective for similar styles of mineralisation and support an exploration target of **500-700Mt** with a grade range of 0.2-0.4% V_2O_5 , 5-8% TiO_2 and 25-35% Fe These targets will be tested in due course.



Source: TNG Limited



Commodity Outlook - Vanadium

Vanadium is present in the earth's crust at a mean concentration of ~150g/t and is therefore one of the more common metals (it is more abundant than nickel and copper and similar to zinc)

Vanadium is used in the steel industry as an alloying element (usually as ferrovanadium FeV) to increase the tensile strength and high temperature strength of carbon steel. Adding vanadium to titanium significantly improves the properties making it ideal for load bearing components and blades in jet engines. Other areas of increasing importance include power stations, shipbuilding, reactor technology and more importantly in energy storage and batteries.

Vanadium increases the strength of steel

TNG, once in production, could

produce ~14ktpa

Supply and Demand

Global vanadium production is $^{\sim}60,000$ tpa and is dominated by three countries; namely South Africa, China and Russia which account for $^{\sim}95\%$ of production.

One of the more recent uses for the vanadium is in the production of high powered lithium-vanadium batteries for electric cars. An uptick in demand from this sector of the market may have significant effect on the overall demand of vanadium and thus the vanadium price.

The use of vanadium as an alloying additive in steel accounts for over 85% of total consumption and demand trends are heavily influenced by trends in steel production in general and in high strength alloy steels in particular. Steel production, in turn, closely follows global economic trends.

Vanadium currently trades for ~ US\$25/kg and appears depressed in recent times (relative to pre GFC pricing). Increasing steel production (especially high-technology steel/alloys) and electric car (batteries) are the two key areas which Breakaway sees as catalysts for potential price increases over the medium to longer term.

Vanadium demand linked to steel production

7 year vanadium price chart

24.75 USD/kg 18 Sep '12 100 Vanadium Price (USD/kg) 90 80 70 60 Ferro V 40 30 20 10 InfoMine.com Dec 22 Jun 4 2010 Jul 29 Nov 1 Feb 15 Apr 10 2005 2011 2008

Ferro Vanadium Price

Significant opportunity for increased demand through battery production

Source: Infomine



TNG has a diverse portfolio of earlier stage exploration projects prospective for a range of base metals (particularly copper) and precious metals.

Mount Hardy

100% interest – prospective for copper

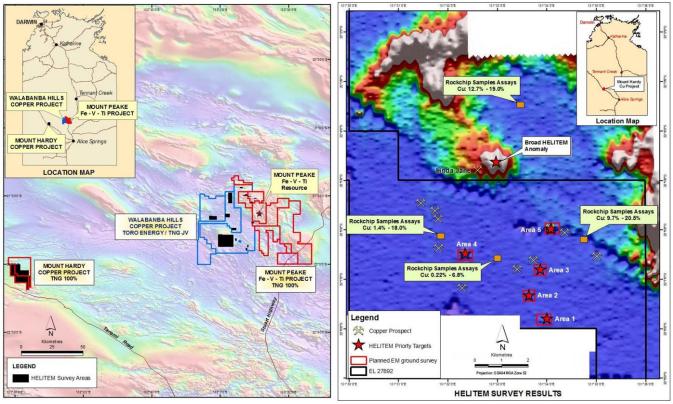
Highly prospective copper targets

Drill campaign set to commence imminently

TNG recently carried out a HELITEM survey over the Mount Hardy prospect which covers an area of ~900km² of the Lander Group Formation. Extensive high grade surface mineralisation (rock chips) have been identified from outcropping and subsurface gossans with results of up to 20% copper in association with anomalous gold, silver and lead. No modern exploration has been carried out on the tenements however limited shallow drilling by the Northern Territory Geological Survey in 1967 confirmed extensions of high-grade mineralisation below these gossans.

TNG will imminently commence a drill campaign targeting the most prospective targets (at least 6 high priority targets have already been identified and confirmed by ground EM, indicated by the red stars in the below image).

Walabanba Hills, Mount Peake and Mount Hardy Location and HELITEM Survey results



Source: TNG Limited

Walabanba Hills

JV with Toro Energy – earning up to 80%

The recent HELITEM survey was also carried out over the Walabanba Hills project area which is thought to be prospective for Ni, Cu and PGM's. Results are still pending however historical results include rock chip samples of 3,581ppm Ni and 2,410ppm Cu over 20-50m.



McArthur River

100% interest - prospective for copper

Rock chip sample program set to commence

The McArthur River tenement has two major targets – Kilgour Crossing and Donkey Yard which are considered prospective for copper mineralisation. Historical rock chip samples from both targets returned values of up to ~2% Cu at surface. Numerous other copper targets have also been identified from soil sample campaigns. TNG is planning to commence an extensive rock chip sample program to better define targets ahead of a possible drill campaign. TNG also has two nearby tenements, Yah Yah and Black Springs, which are also thought to be prospective for copper mineralisation.

Sandover

100% interest - prospective for copper

The Sandover Copper Project encompasses three licences which are located ~100km north east of Alice Springs. TNG considers the area highly prospective for copper mineralisation and is planning a detailed exploration programme during 2013, subject to attaining access rights.

Western Desert Exploration (ASX: WDR)

HoA signed with WDR - WDR under takeover

TNG Ltd holds several projects in the Northern Territory which are at various stages of exploration and are the subject of a Heads of Agreement with Western Desert Resources and/or its subsidiaries. WDR can earn up to 80% interest in each Project area, subject to meeting specific exploration expenditure levels. The main target is Tennant Creek style copper-gold mineralisation.

On the 18th of September 2012, WDR received a takeover offer from Meijin Energy Group (of China) to acquire all of the listed shares in the company at A\$1.08/share (at a 50% premium to the 30 day VWAP). Meijin Energy Groups strategy on the HoA tenements (assuming a successful takeover) is unclear at this stage, but could provide TNG with an additional strong Chinese partner.

KBL Mining Joint Venture

KBL have a right to earn up to 51% - Neighbouring KBL mine to begin development

KBL mining owns the Sorby Hills lead/zinc/silver project, located in northern WA, on the border of the Northern Territory. The project hosts a 16.7Mt resource containing 28moz of silver, 750kt of lead and 117kt of zinc. KBL Mining (and its 25% JV partner Henan Yuguang – a major Chinese lead producer) will commence development of the project in 2013, targeting first production in 2014.

KBL Mining has farmed into TNG's nearby Manbarrum project (30km east of Sorby Hills) which currently hosts a poly metallic resource of 35.9Mt of lead-silver-zinc. Under the terms of the agreement, KBL will pay a total of A\$4.5m of which A\$2.5 is in cash (A\$0.5m paid, A\$2m due by Dec 2013) and A\$2m in exploration, for 51%. Opportunity exists to earn up to 80% of the project by sole funding all exploration through to a decision to mine however (to be decided at a later stage).

KBL progressing to development

WDR under take over

Melville Island

Rio Tinto to spend \$5m to earn 80% - Prospective for Bauxite

Rio is yet to commence exploration. The farm in provides potential upside for TNG with a free carry through the high risk phase.



Chairman

Jianrong Xu is Deputy Director-General of the East China Mineral Exploration and Development Bureau (ECMED).

Jianrong Xu

Mr Xu is the current General Manager of ECE, Deputy Managing Director of Jiangsu Geophysical Society, the Chairman of HK ECE, Hong Kong East China Non-Ferrous International, Mineral Development Co Ltd, Namibia East China Non-ferrous Investments Pty Ltd and other OCMED wholly owned subsidiaries. Mr Xu is also a director of AIM-listed Company, China Africa Resources Plc.

Managing Director

Paul Burton

Paul Burton is an Exploration Geologist and Geochemist with over 20 years' experience in exploration and mining He previously held the positions of Exploration Manager and Exploration Director with the company and has been involved in the discovery and development of the company's main projects, including their Flagship project Mount Peake and extensive copper portfolio. He has previously managed successful mineral exploration and feasibility study programs for a range of different commodities, with previous career appointments including senior and executive roles at Anglo American/De Beers Ltd, Normandy Mining Ltd and Minotaur Exploration Ltd.

Non - Executive Director

Neil Biddle

Neil Biddle is a geologist with over 25 years' experience in precious metal, base metal and iron ore exploration, development and management of listed mining and exploration companies.

Since 1986, Mr Biddle has managed numerous successful exploration programs throughout Australia and has served almost continuously on the boards of several successful ASX-listed companies in senior executive positions including as Exploration Director, Technical Director and Managing Director.

Non - Executive Director

Rex Turkington

Rex Turkington is a highly experienced corporate advisor and economist who has worked extensively in the financial services industry in Australia, specialising in the exploration and mining sectors. He has extensive experience with equities, derivatives, foreign exchange and commodities, and has participated in numerous corporate initial public offerings and capital raisings for listed exploration and mining companies.

Non - Executive Director

Zhigang Wang is Chairman of Aosu which is part of the Wanlong Group of companies (Wanlong Group) comprising Suzhou Wanlong Electric Group Co. Ltd (Wanlong) and Suzhou Beijia Investment Co Ltd. (Beijia).

Zhigang Wang

Non - Executive Director

Stuart Crow

Stuart Crow has more than 25 years' experience in all aspects of corporate finance and investor relations in Australia and international markets, and has owned and operated his own businesses in these areas for the last twelve years. He brings extensive working knowledge of capital markets to the Board.

^{*}Director CV's taken from company website



Analyst Verification

We, Grant Craighead and Andrew McLeod, as the Research Analysts, hereby certify that the views expressed in this research accurately reflect our personal views about the subject securities or issuers and no part of analyst compensation is directly or indirectly related to the inclusion of specific recommendations or views in this research.

Disclosure

Breakaway Investment Group (AFSL 290093) may receive corporate advisory fees, consultancy fees and commissions on sale and purchase of the shares of TNG Limited and may hold direct and indirect shares in the company. It has also received a commission on the preparation of this research note.

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