



Proceedings

Nickel-Cobalt-Copper Conference

Sponsored by



5th Annual Nickel-Cobalt-Copper Event

ALTA Metallurgical Services, Melbourne, Australia

www.altamet.com.au

PROCEEDINGS OF ALTA 2014 NICKEL-COBALT-COPPER SESSIONS

26-28 May 2014

Perth, Australia

ISBN: 978-0-9871262-9-0

ALTA Metallurgical Services Publications

All Rights Reserved

Publications may be printed for single use only. Additional electronic or hardcopy distribution without the express permission of ALTA Metallurgical Services is strictly prohibited.

Publications may not be reproduced in whole or in part without the express written permission of ALTA Metallurgical Services.

The content of conference papers is the sole responsibility of the authors.

To purchase a copy of this or other publications visit www.altamet.com.au



Celebrating 29 years of service to the global mining and metallurgical industry.

ALTA Metallurgical Services was established by metallurgical consultant **Alan Taylor** in 1985, to serve the worldwide mining, minerals and metallurgical industries.

Conferences: ALTA conferences are established major events on the international metallurgical industry calendar. The event is held annually in Perth, Australia. The event comprises three conferences over five days: Nickel-Cobalt-Copper, Uranium-REE and Gold-Precious Metals.

Publications: Sales of proceedings from ALTA Conferences, Seminars and Short Courses.

Short Courses: Technical Short Courses are presented by Alan Taylor, Managing Director.

Consulting: High level metallurgical and project development consulting.

ALTA 2014 OPENING ADDRESS

**THE UNTOLD STORY OF THE AUSTRALIAN METS SECTOR
– A \$90 BILLION INDUSTRY**

By

Elizabeth Lewis-Gray

Chair, Austmine and Chair, Gekko Systems, Australia

Presenter and Corresponding Author

Elizabeth Lewis-Gray
elizabethlg@gekkos.com

ABSTRACT

Whilst the general public understand the importance of the mining industry in Australia, many people are unaware of the substantial size and contribution of the mining, equipment, technology and services (METS) sector. This industry in Australia has had a fairly short gestation having commenced its growth following the Second World War. Since that time, Australia's research and development capability within the CSIRO, and the Australian university infrastructure, has developed rapidly to become one of the world's best platforms for innovation and knowledge transfer.

The Australian Bureau of Statistics' methodology of collating data into industry classifications, such as heavy engineering and light manufacturing, has not historically provided information to government policy makers or indeed the mining industry on how important this sector has become. The METS sector in Australia, based on a recent survey undertaken by Austmine and funded by the Federal Government, has been identified as a \$90 billion industry. This sector is an important strategic platform for Australia's economic growth and prosperity. It leads the world in many market segments and, if properly directed, will become a key element of Australia's capacity to create specific competitive advantage and long-term growth in our economy.

Attracting "best-in-class" students and professionals into this sector and coordinating a clear vision for its future are some of the key roles that industry organisations such as Austmine, as well as government, can play. Collaboration and consolidation will also be critical for our industry to fulfil its potential.

Myth No 1: Mining is just digging up rocks



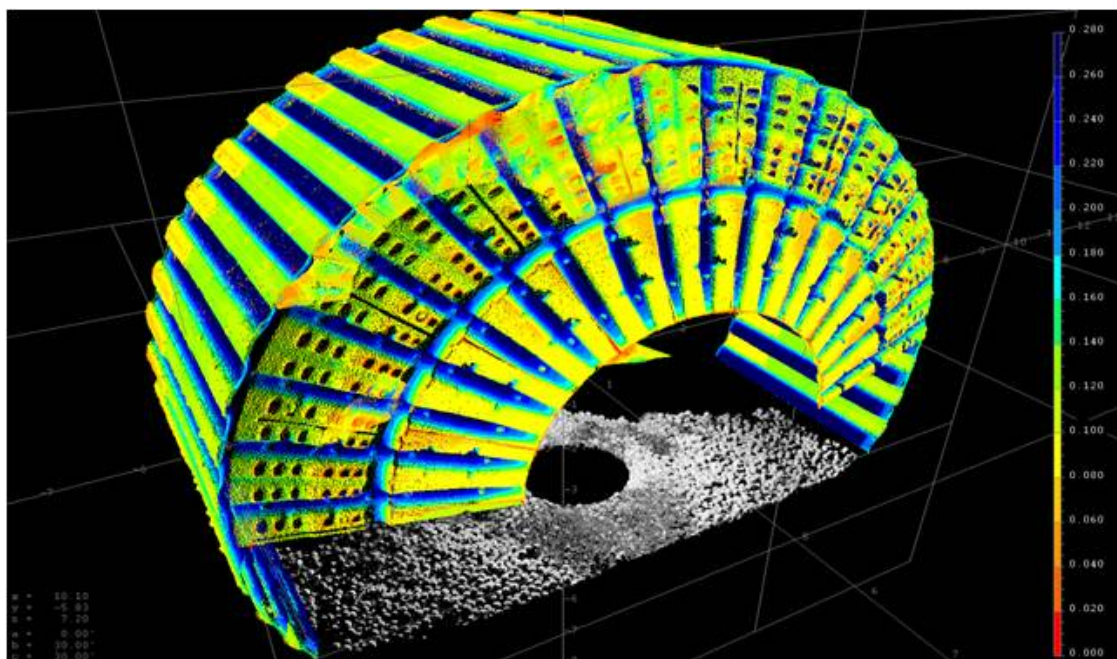
Myth No 2 : the resources “curse”

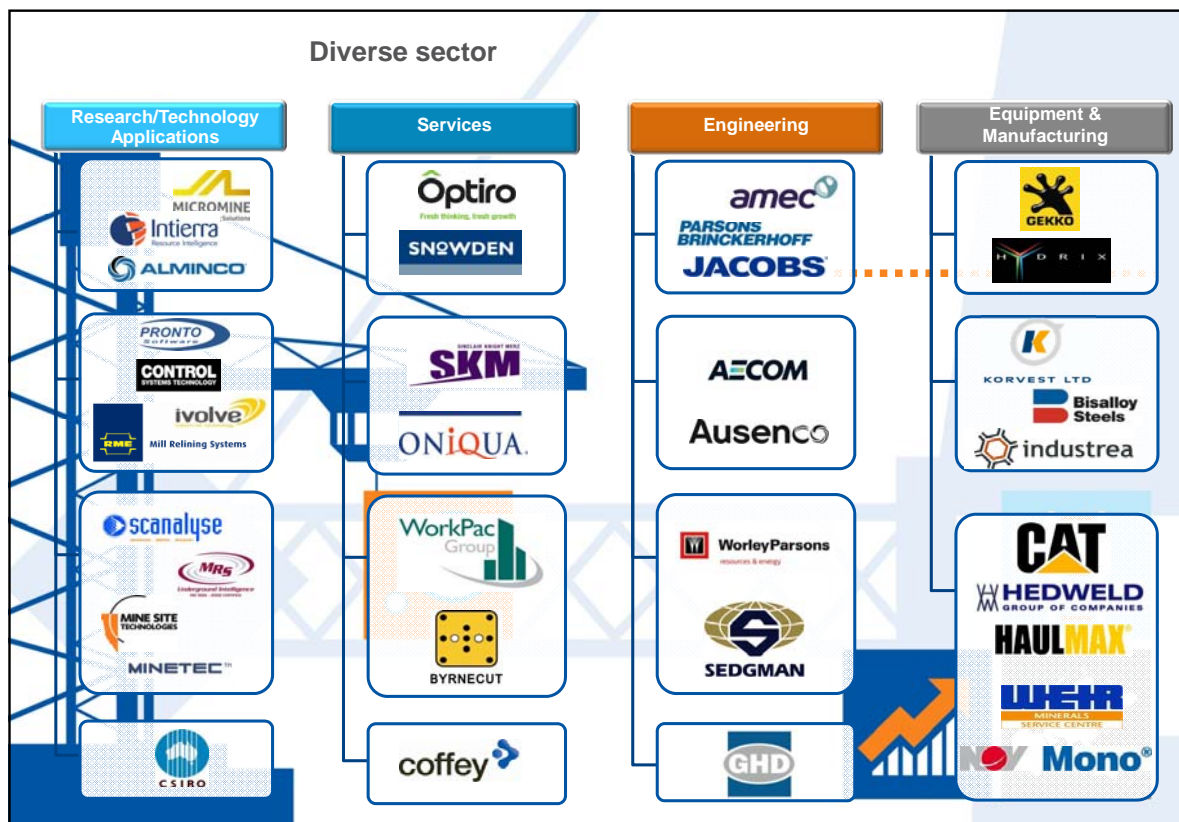


Myth No 3 : the Australian METS sector is an insignificant portion Australian economy



Reality is very different





METS SECTOR SURVEY RESULTS

Survey Size and Process

Sector Size

Sector characteristics

860 companies surveyed

Jan – Feb 2013

By telephone and online

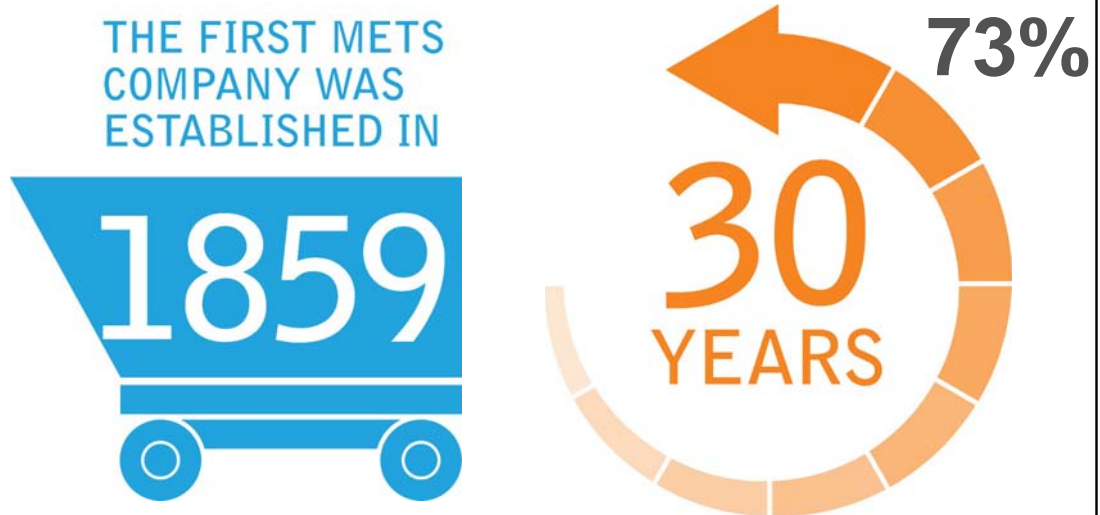
Funded by BAHA Program
(Dept of Industry, Innovation,
Climate Change, Science,
Research and Tertiary
Education)

Lead Role: Austmine

Partners: Austrade
Enterprise Connect, ICN
MESCA
AEMEE
MAIN

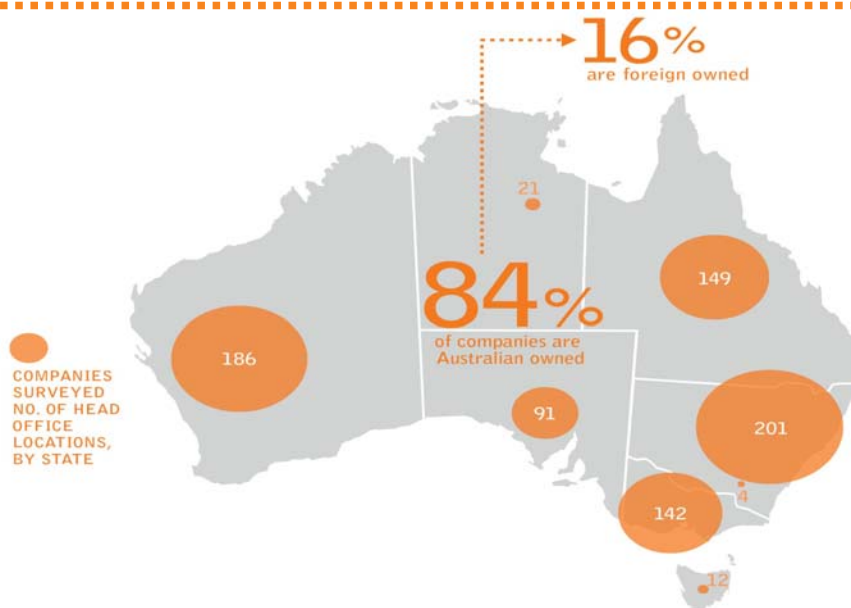
METS COMPANIES

HIGH ESTABLISHMENT RATE IN PAST 30 YEARS

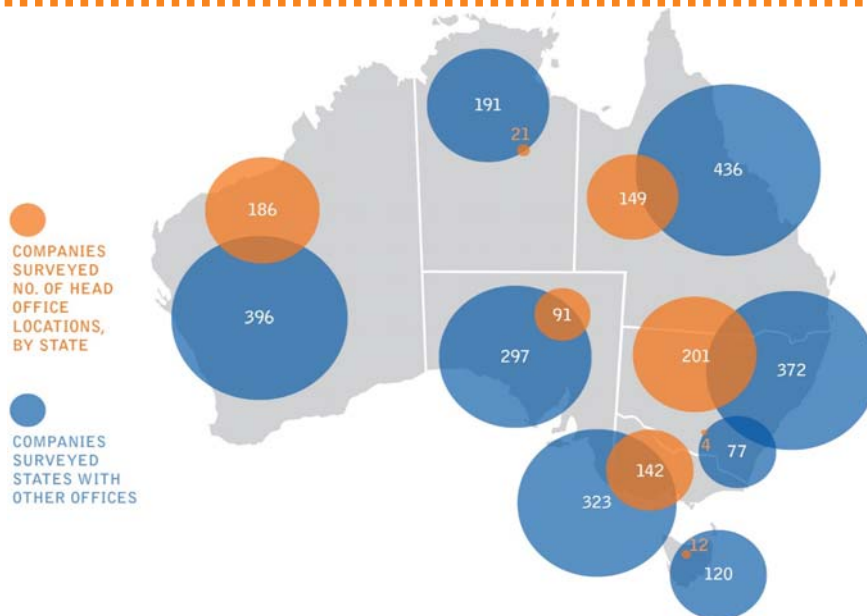


METS COMPANIES

NATIONAL REACH : 84% AUSTRALIAN OWNED

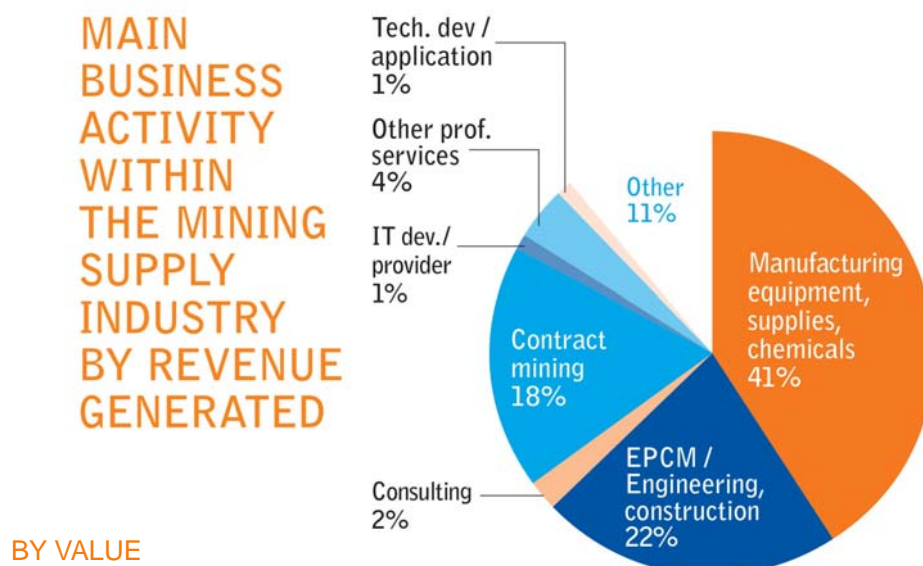


METS COMPANIES NATIONAL FOOTPRINT



METS COMPANIES BY ACTIVITY

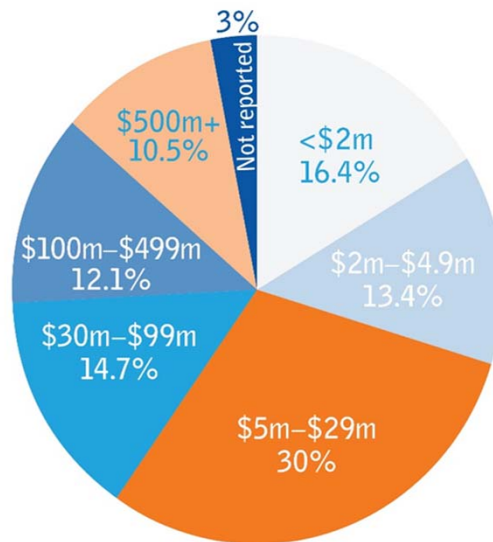
MANUFACTURING AND GOODS SUPPLY 41%



METS BY COMPANY SIZE

37% LARGE COMPANIES, 63% SME

SIZE OF COMPANIES' REVENUES (\$M, FY11-12)

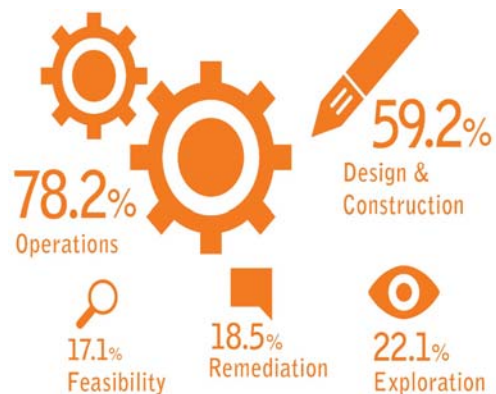
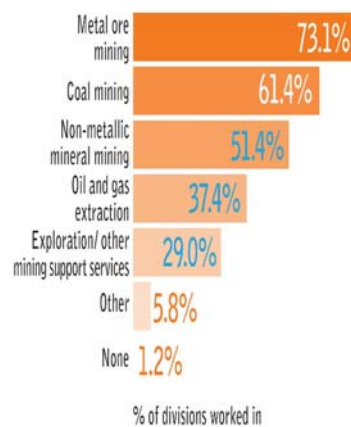


BY NO OF COMPANIES

METS COMPANIES ARE DIVERSE

BY MINERAL AND LIFE CYCLE STAGE

MINING/ RESOURCES ACTIVITY SERVICED



BY NO OF COMPANIES

METS SECTOR GROSS REVENUE

SIGNIFICANT CONTRIBUTOR TO THE ECONOMY (FY12)



State	Gross Revenue	%
WA	\$23.18 b	26
NSW/ACT	\$22.79 b	25
QLD	\$21.22 b	24
VIC/TAS	\$16.73 b	19
SA/NT	\$1.62 b	2
Unaccounted	\$4.39 b	4
Total	\$89.9 b	100

3% Aust GVA

Australian METS sector strengths

- Global focus: export culture
- Strong skills and knowledge clustering
- Large domestic customer base
- Strong entrepreneurialism
- World class R&D infrastructure

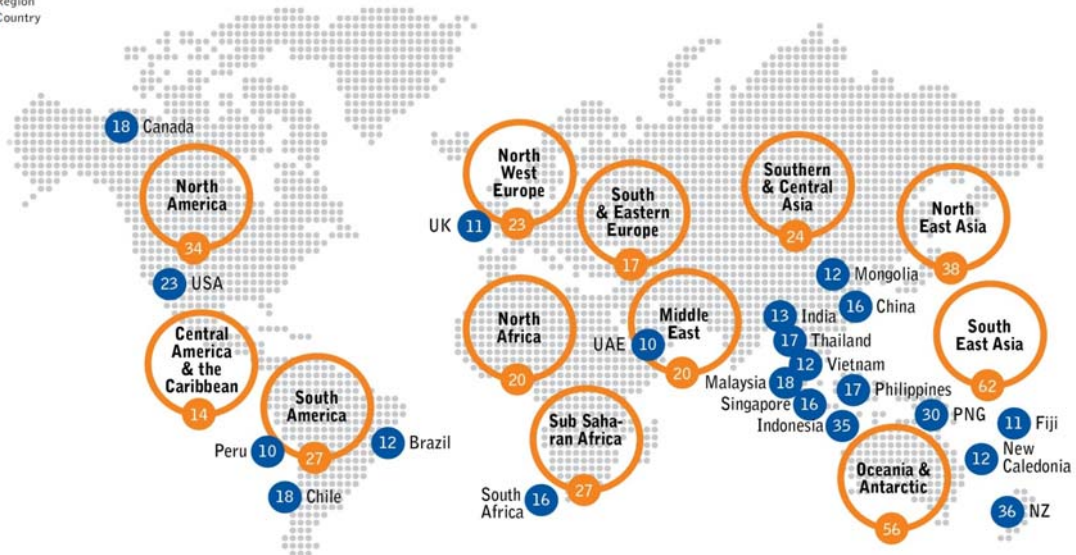


METS INTERNATIONAL FOOTPRINT

PROPORTION OF COMPANIES EXPORTING TO THIS REGION/ COUNTRY

REGIONS AND COUNTRIES EXPORTED TO (%)

● Region
● Country



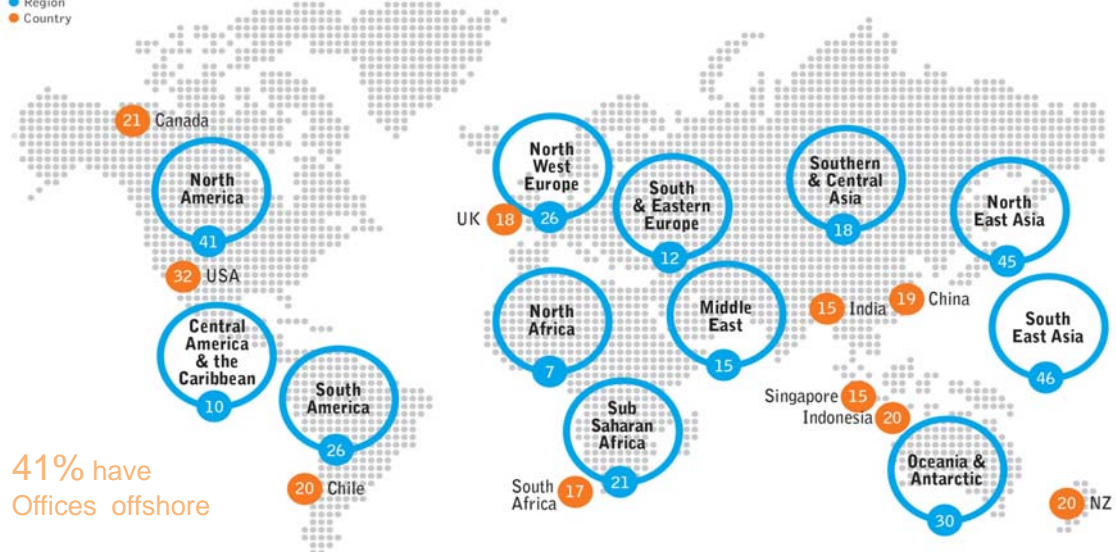
Victoria has highest proportion of companies exporting

METS INTERNATIONAL FOOTPRINT

LOCATION OF INTERNATIONAL OPERATIONS

LOCATION OF INTERNATIONAL OPERATIONS (%)

● Region
● Country



41% have
Offices offshore

METS INTERNATIONAL FOOTPRINT

SIGNIFICANT EXPORTER



METS INTERNATIONAL FOOTPRINT

EXPORT GROWTH STILL TO COME



METS WORKFORCE

SIGNIFICANT EMPLOYER

386,000 EMPLOYEES IN AUSTRALIA

PERCENTAGE (%) OF COMPANIES BY SIZE OF WORKFORCE



2% unknown

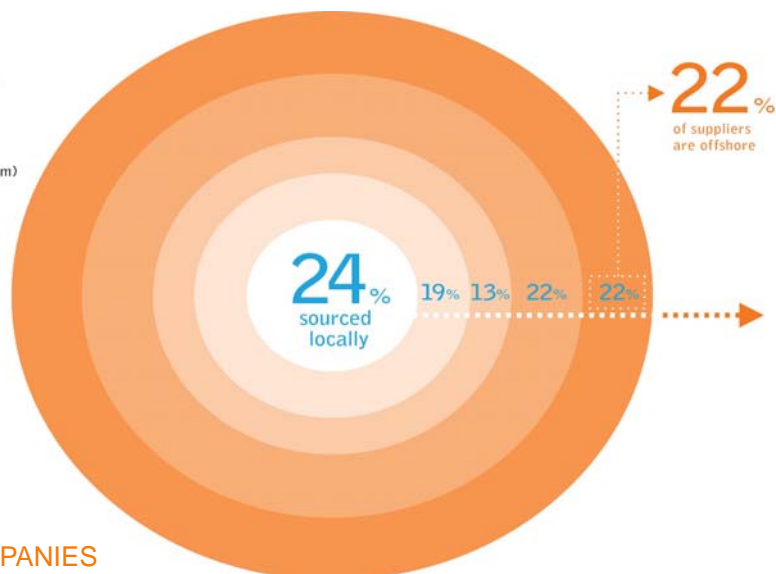
REPRESENTS EMPLOYEES OF ALL METS RELATED CO'S

METS SUPPLY CHAIN

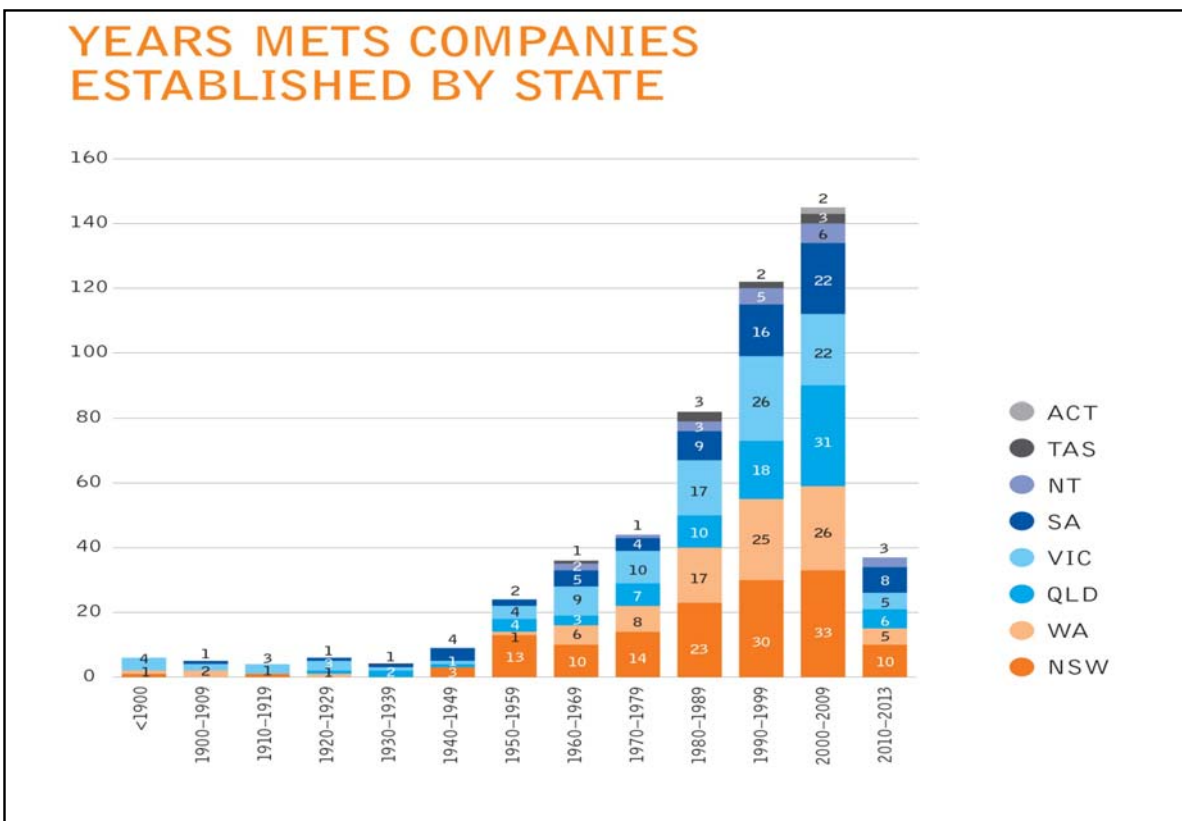
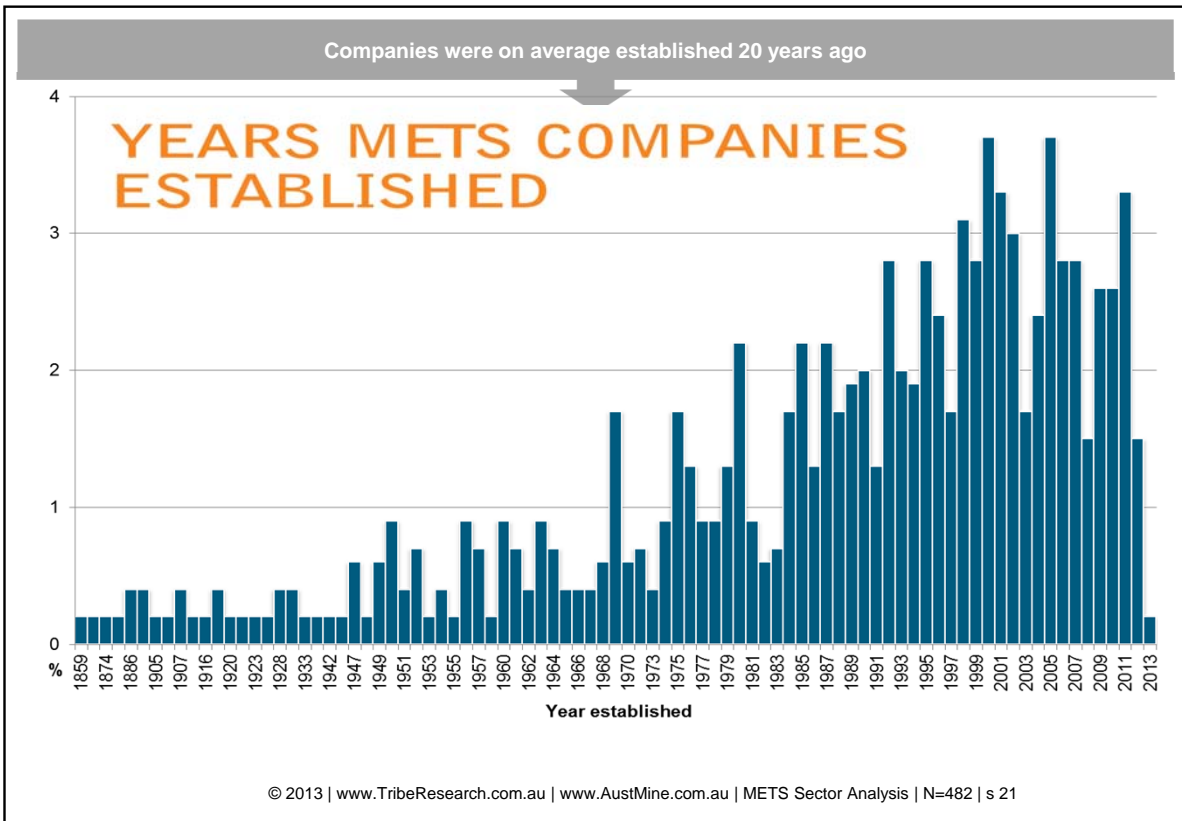
SIGNIFICANT LOCAL AND REGIONAL IMPACT

WHERE METS SUPPLIERS ARE LOCATED (%)

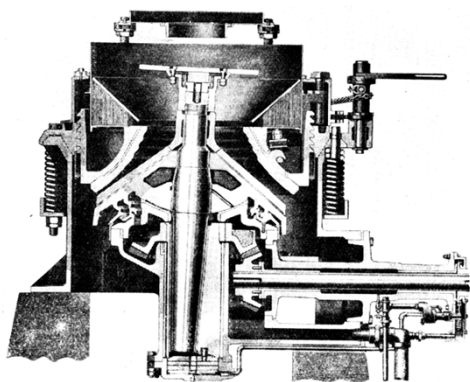
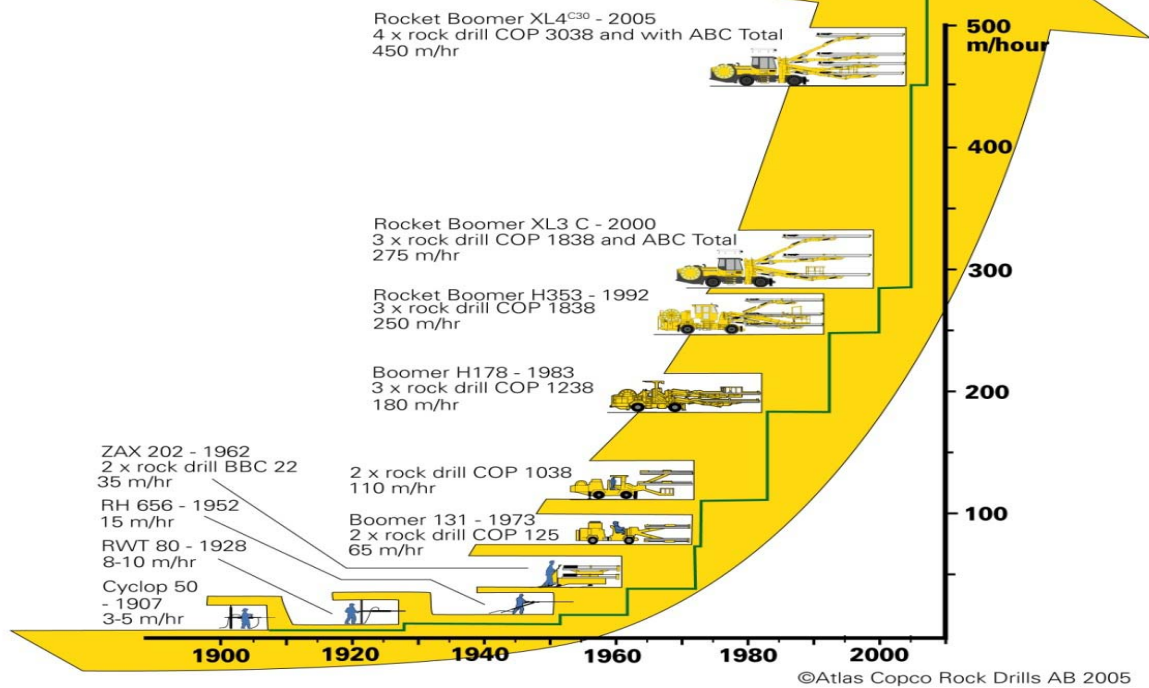
- Local (<25km)
- Regional (25-200km)
- State/Territory
- Australia
- Imported



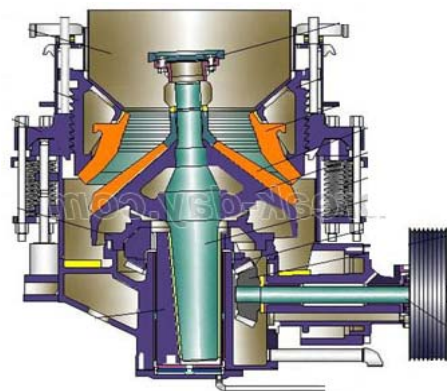
BY NO OF COMPANIES



LONG INNOVATION CYCLES LEVERAGE AND ACCELERATE



1935



2012



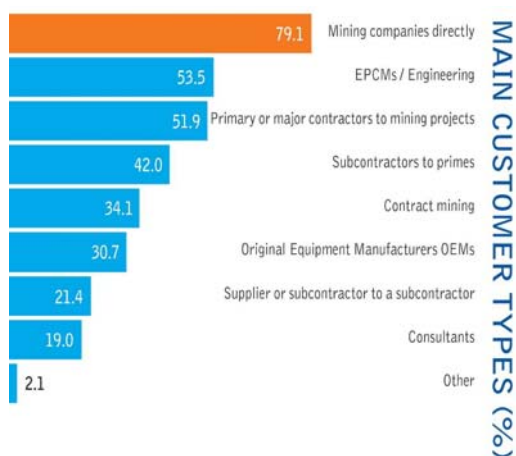
METS DEVELOPMENT

INVESTING IN THE FUTURE



METS COMPETITIVE ADVANTAGE

CUSTOMER FOCUSED & COLLABORATIVE



Global opportunities won and lost

Regional successes

- Debunking the “resources curse”
- Scandinavia
- Bothnian Minerals Cluster
- Norwegian Oil and Gas

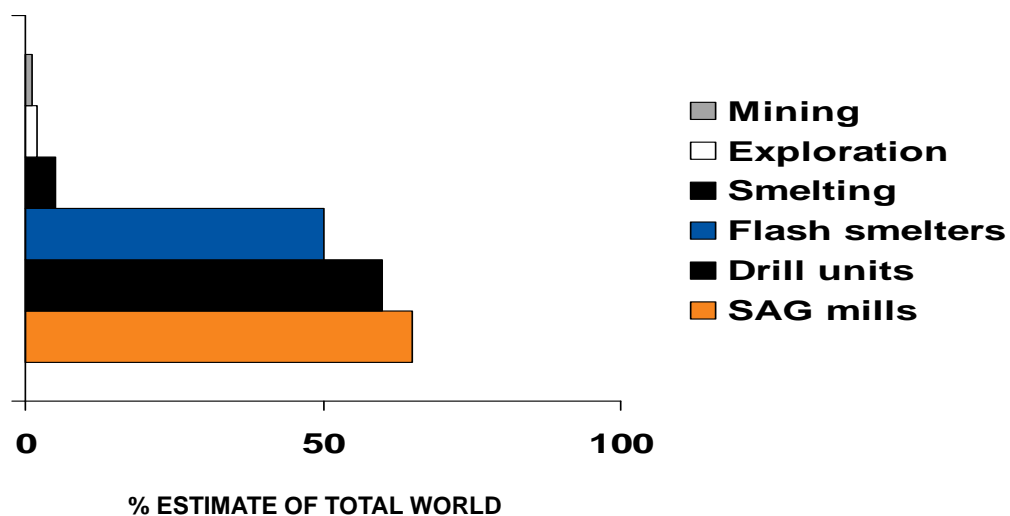
“Sea of lost opportunity”

- North Sea oil..... UK
- NW Shelf, Bass Strait Australia
- Dutch experience



Information from Intierra Resource Intelligence and Raw Materials Group. www.intierra.com

Bothnian Cluster Market Shares








Source: Noras, Ericsson:Raw materials group

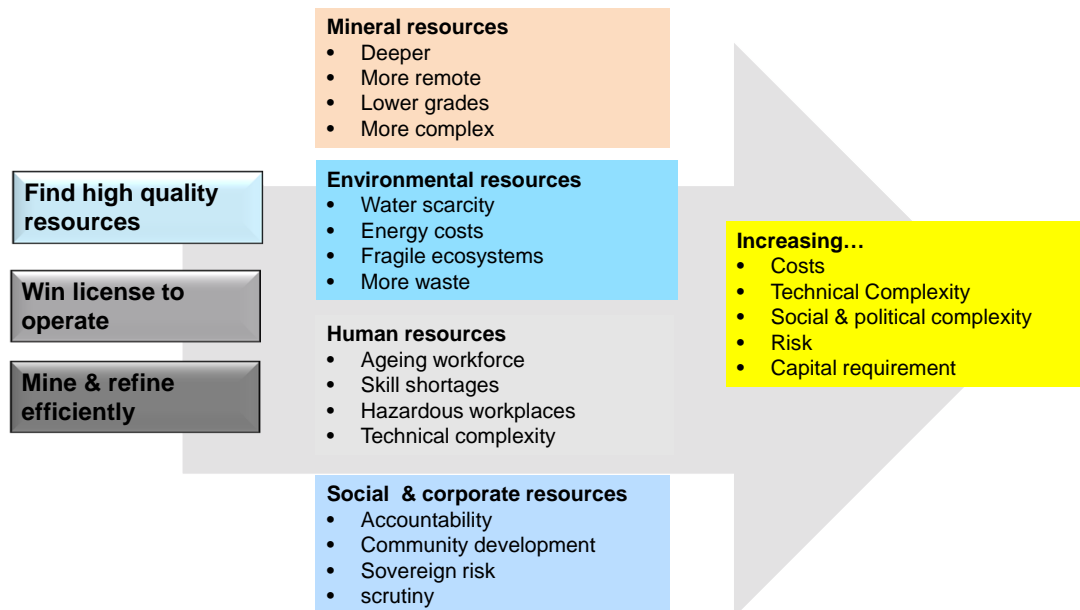
Scandinavian sectoral leaders

Company	2011 Total Income Global	2013 Total Income Global	2013 Mining division income	Total no. Employees Global 2013	Country	Country Population (2014 estimate)
	A\$13.3 bn	A\$14.3 bn	A\$5 bn	47,338	Sweden	9.5 million
	A\$10.2 bn	A\$13.8 bn	A\$4.7 bn	40,000	Sweden	9.5 million
	A\$8.5 bn	A\$5.7 bn	A\$4.5 bn	16,000	Norway	5 million
	A\$13.8 bn	A\$5.4 bn	A\$3.8 bn	15,317	Denmark	5.6 million
	A\$1.8 bn	A\$2.8 bn	A\$1.2 bn	4,800	Finland	5.4 million

Some of Australia's largest METS

Company	2011 Total Income Global	2013 Total Income Global	2013 Mining division income	Total no. Employees Global 2013	Country
	A\$19.4B	A\$24.4B	A\$5.6B Contract mining only	55,900	AUS
	A\$7.0B	A\$9.1B	A\$2.6B	4,500 Downer mining	AUS
	A\$5.2B	A\$6.9B	A\$5.7B	14,500	AUS
	A\$1.4B	A\$2.6B	A\$1.8B Engineering construction div	7,400	AUS
	A\$836	A\$1.1B	A\$1 B	4,500	AUS

Challenges for sustainable growth



Source: MCA Report by Don Scott-Kemmis 2013

Challenges for METS & Austmine

- Provide solutions to mining industry problems, faster
 - Develop faster demonstration platforms and knowledge transfer
 - Attract Funding – grow firm size, create more global MNC's
 - Closer, more strategic relationships, with mining companies
 - Collaborate with other METS – provide whole solution
 - Collaborate with research sector
 - Speed up innovation cycle
- Industry skills investment – attract the best minds
- Brand Australia globally – grow exports
- Educate gov't, public



Growing METS sector is good for Australia

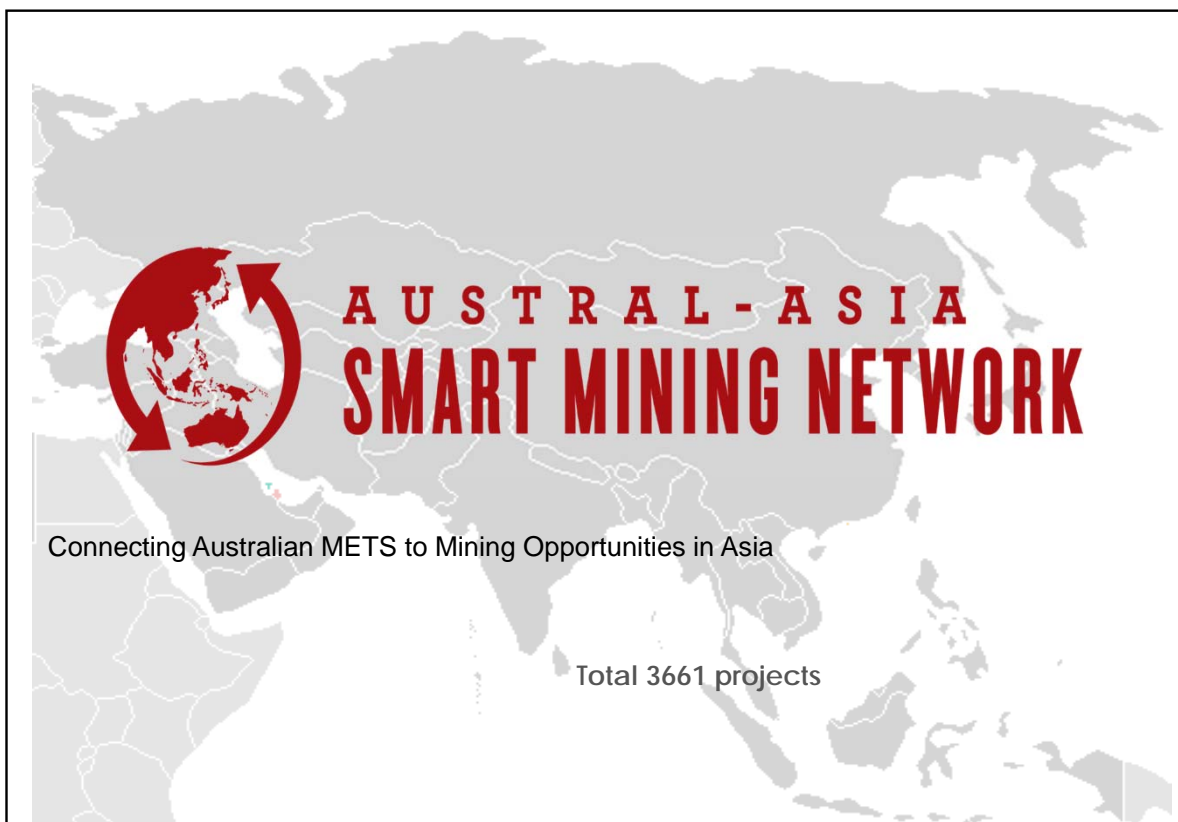
- Grow export income
- Leverage R&D investment
- Increase and deepen world class cluster capability
- Create sustainable global competitive advantage
- Train skills, opportunity to transfer to non minerals



AUSTMINE
Smart Mining

Top 6 Reasons to Join Austmine Today

Network and Build New Connections at Austmine Events	Gain Access to New Markets Through Mining Missions	Get Listed in the Industry-Leading Austmine Member Directory
Accompany Austmine to International Mining Exhibitions	Submit your News and Information to our Popular Publications	Advance the Interests of the Australian METS sector





**INTERNATIONAL
MINING AND
RESOURCES
CONFERENCE**

Melbourne 22 – 26 September 2014



The Australian METS Sector



THANKS TO OUR PARTNERS

Steering Committee Members

Austmine Limited
MESCA
Minerals Council of Australia
Gekko Systems
Haulmax
International Energy Centre
CSIRO
Industry Capability Network (ICN)
Austrade
Department of Resources, Energy and Tourism
Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education (observer)
Enterprise Connect (observer)

Survey Distribution Partners

Austmine Limited
MESCA
Industry Capability Network (ICN)
Austrade
Enterprise Connect
Mackay Area Industry Network (MAIN)
Aboriginal Enterprises in Mining, Exploration and Energy (AEMEE)



Australian Government

**Department of Industry, Innovation,
Climate Change, Science, Research
and Tertiary Education**



BIBLIOGRAPHY

- Australian Trade Commission (Austrade), *Australia Benchmark Report, 2012*, Australian Government
- John Barber, Tom Shael, Nina Hitchins, Adam Bialowas, *Resources and Energy Major Projects, October, 2012*, Bureau of Resources and Energy Economics (BREE), Australian Government, Canberra
- Don Scott-Kemmis, *How about those METS? Leveraging Australia's mining equipment, technology and services sector*, A Public Policy Analysis produced for the Minerals Council of Australia (March, 2013), ACT
- Vanessa Rayner and James Bishop, *Industry Dimensions of the Resource Boom: An Input-Output Analysis*, Research Discussion Paper 2013-02, Economic Research Department, Reserve Bank of Australia
- Richard Roberts, *METS top 100 tops \$65B in sales*, High Grade, 27th March, 2013
- Wright, Gavin & Czelusta, Jessie, *"Exorcising the resources curse: minerals as a knowledge industry, past and present,"* Stanford University July 2012
- Smith, Norman J., *"The sea of lost opportunity volume 7: North Sea oil & gas, British industry and the offshore supplies office* (Handbook of petroleum and production)" Elsevier 2011
- Presentation by Ian Satchwell, Director, International Mining for Development Centre, *"Building mining services clusters in Australia,"* 15 May 2012

