



European Institute of
Innovation & Technology



“EIT Raw Materials: 1st Greek Raw Materials Community Dialogue”

Athens, 23rd – 24th November 2016

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SOCIAL LICENSE TO OPERATE

KASSANDRA MINES



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Location map



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Reserves

Mavres Petres Mine:

Mixed sulphide deposit

6.0% lead (Pb), 8.3% zinc (Zn), 170 g/t silver (Ag)

0.5 million tonnes of ore

Mine life ~2 years (actively exploring the orebody to extend mine life)

Olympias mine:

Mixed sulphide deposit

4.6% lead (Pb), 6.0% zinc (Zn),
9 g/t gold (Au), 138 g/t silver (Ag)

11.5 million tonnes of ore

Mine life >25 years

Skouries mine:

Porphyry deposit

0.54% copper (Cu), 0.83 g/t gold (Au)

146.2 million tonnes of ore

Mine life >30 years



Mavres Petres mine



Stratoni mill

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The investment in brief



Mavres Petres Mine

- Continue UG mine operation (Mavres Petres)
- Operation of existing flotation plant (Stratoni)

Olympias Mine

- Upgrading and development of existing UG mine
- Recommissioning & operation of upgraded flotation plant

Skouries Mine

- Combination of open pit and underground mine
- Flotation plant and recovery of free gold
- Disposal areas to be put into operation in stages and rehabilitated in phases

New Ore Treatment Facilities in Madem Lakkos

- New flotation plant for Mavres Petres and Olympias ore
- New metallurgy plant for Cu, Au & Ag production
- New Olympias – Madem Lakkos adit for transportation, exploration and ventilation
- New Kokkinolakkas TMF, high environmental protection standards

**Parallel development of the 3 mines
(Mavres Petres, Olympias & Skouries) &
full vertical integration**



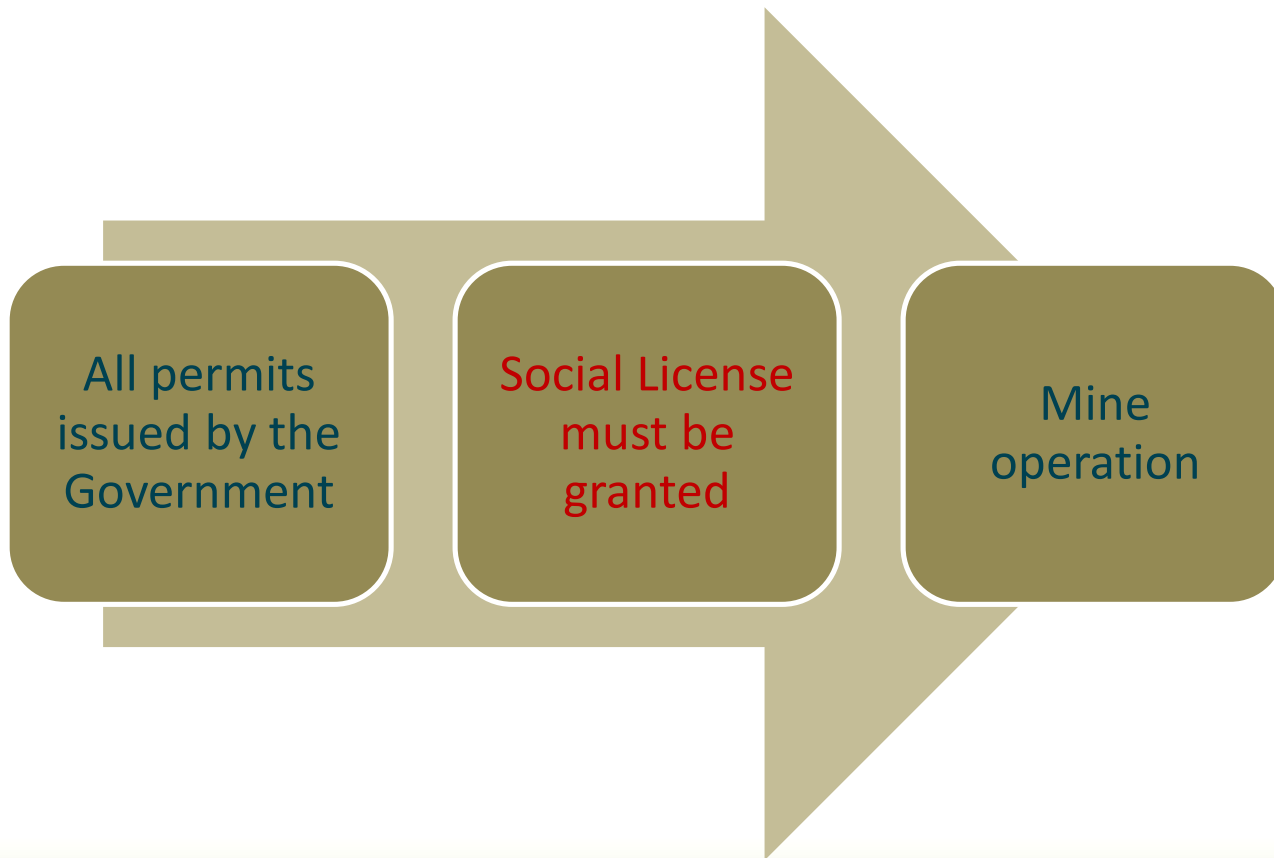
The company established in 2003

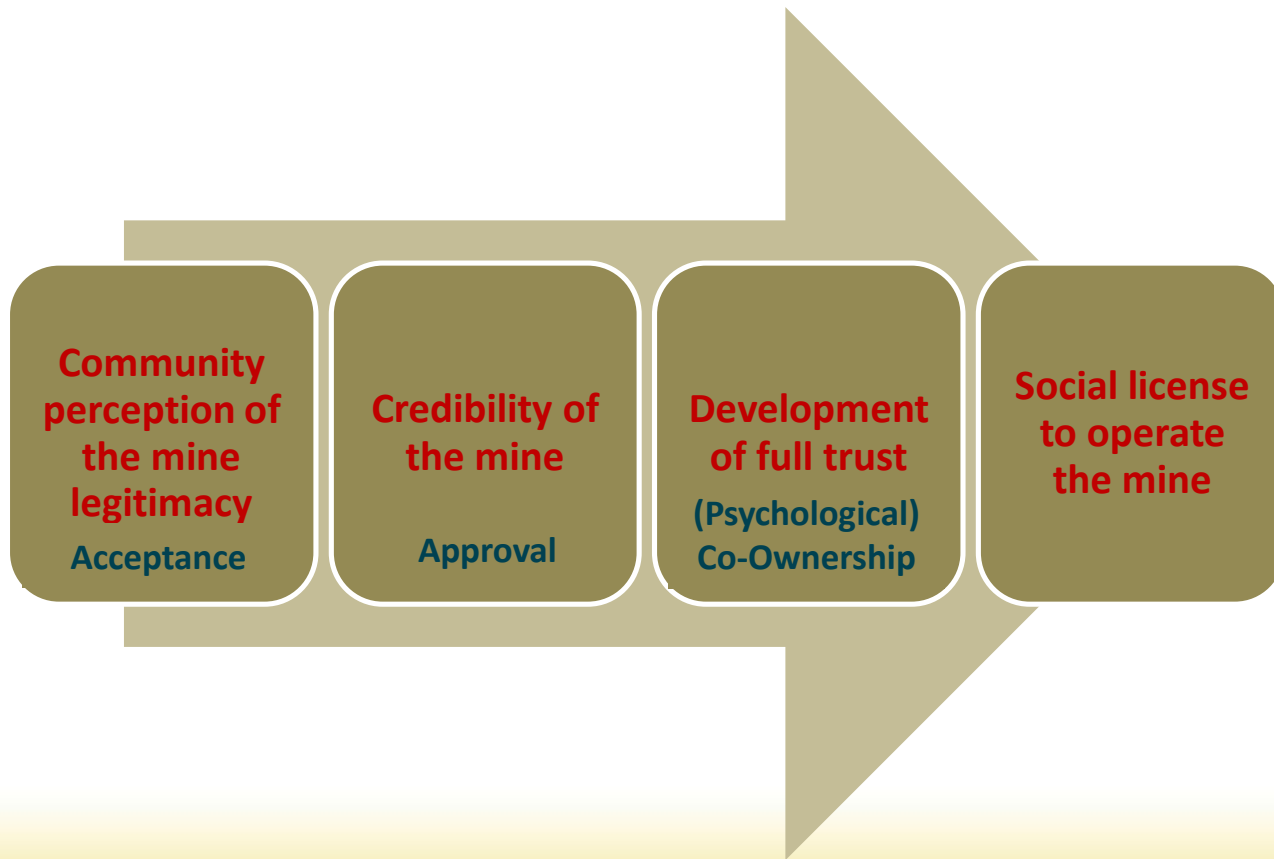
- ✓ January 2004: The transfer contract ratified by the Greek Parliament
- ✓ July 2011: EIS approved by Joint Ministerial Decision
- ✓ February 2012: Technical Studies Approved
The company began operating as a subsidiary of the Canadian firm Eldorado Gold
- ✓ April 2013: The Council of State confirmed the legality of the EIS approval (18 more judgments in our favour followed)

**All permits issued
by the Government**

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License to operate





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From acceptance to full trust

Actions taken:

- ✓ Financial
- ✓ Social
- ✓ Environmental

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Financial actions to build true trust

Financial actions taken so far:

☐ National economy

- ✓ \$700 million invested so far
- ✓ More than 2,000 jobs created - Annual cost per employee: € 45,000
- ✓ 30-35% of total revenues a year pumped back into the national economy (in the production phase)

☐ Local economy

- ✓ €150 million directly into the local economy between 2006 and 2015 (supplies and contracting work)
- ✓ The figure rose from €2.5 million in 2006 to €30 million a year in 2015
- ✓ More housing and growing population in the mining villages



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Financial actions to build true trust (cont.)



Financial actions over the next 20 years:

- ✓ Investment worth \$1.5 billion
- ✓ €1.6 billion in direct taxes and €1.5 billion in salaries
- ✓ €1 billion – insurance contributions
- ✓ €2.5 billion to local businesses and suppliers
- ✓ €150 million on environmental projects
- ✓ €30 million on CSR activities



Kokkinolakkas TMF dam construction

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Social actions to build true trust

Transparency – Open communication:

- ✓ Ongoing dialogue and real answers
- data about everything
- ✓ Announcements, press releases,
press conferences, reacting
immediately by providing
information in every crisis

Official information, direct from the company: site, blog, social media, etc.

An outward-looking approach:
Members of Official institutions,
activities, conferences, events



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Social actions to build true trust

Social Investment:

- ✓ €13 million spent over the last 10 years on CSR activities
- ✓ €19 million spent on infrastructure works in NE Halkidiki between 2006 and 2015
- ✓ Summer internships for local students. 350 students in 2015
- ✓ Open Doors Policy: More than 5,000 citizens have visited Hellas Gold's projects



Environmental actions to build true trust

Environmental actions taken:

- ✓ Cleaning and rehabilitation of old mine waste disposal areas
- ✓ Enhancement & remodeling of released areas
- ✓ Mine water management
- ✓ Waste management
- ✓ Integrated environmental monitoring program & website

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Cleaning and rehabilitation of old mine waste disposal areas (cont.)

- ✓ **The example of the old AsPy disposal area METBA**
 - Area 100 stremmas
 - Nursery plant (2,5 M plants & 20 jobs)



Before (2008)



Today

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Cleaning and rehabilitation of old mine waste disposal areas (cont.)

- ✓ **The example of the old Olympias AsPy stockpiles**
 - Area 30 stremmas
 - 300.000 t AsPy & 70.000 t contaminated soils removed



Before (2012)



Today

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Cleaning and rehabilitation of old mine waste disposal areas (cont.)

✓ **The example of the old Olympias tailings pond**

- Area 300 stremmas
- Old tailings removed 2.4 Mt



Before (2012)



Today

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Cleaning and rehabilitation of old mine waste disposal areas (cont.)

- ✓ **The example of the old Olympias waste rock stockpile**
 - Area 30 stremmas
 - 180.000 t waste rock removed



Before (2012)



Today

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Enhancement & remodeling of the wider area

✓ The example of the archaeological site in the wider Olympias mill area

- Pottery workshops & storage buildings. Early Hellenistic period (from the end of 4th century BC)
- The site was excavated in 2000 and is preserved since. The enhancement will start within 2017



Today



Plan

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Mine water management

✓ Mine water treatment: Actions to improve environmental performance

Current mine water treatment scheme:

- Lime addition (for precipitation of metals as hydroxides)
- Removal of suspended solids (clarification ponds)

Additional treatment stages under development:

- pH adjustment and aeration for oxidation
- Filtering with sand and catalyst
- Absorption with Activated carbon

Parameter	Units	Limits	Goal	Potable water limits
pH	-	6-8,5	6-8,5	-
Pb-t	µg/lit (ppb)	100	7,2	10
Cd-t	µg/lit (ppb)	20	0,25	5
As-t	µg/lit (ppb)	500	30	10
Zn-t	µg/lit (ppb)	2000	125	-
Fe-t	µg/lit (ppb)	15000	15000	200
Mn-t	µg/lit (ppb)	2000	2000	50
Cr-d	µg/lit (ppb)	200	50	50



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Mine waste management

✓ **Mine waste: Actions to reduce surface disposal**

STRATONI MINE (ROM 1Mt) - Surface disposal 10% of ROM

- Products PbS & ZnS concentrates – 25% ROM
- Coarse tailings total recycling after mixing with cement to backfill the mining voids – 65% ROM
- Fine tailings & neutralization sludge **disposal – 10% ROM**
- Waste rock total recycling as construction material - 11% ROM

OLYMPIAS MINE (ROM 11.5 Mt) : Surface disposal 0% of ROM

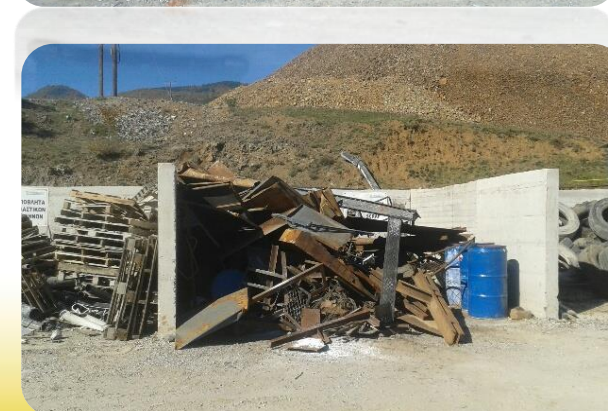
- Products PbS, ZnS & AsPy concentrates – 50% ROM
- Tailings total recycling after mixing with cement to backfill the mining voids – 50% ROM
- Waste rock total recycling as construction material - 17% ROM

SKOURIES MINE (ROM 146,2 Mt) : Surface disposal 0% of ROM

- Product Cu/Au concentrate – 2% ROM
- Tailings recycling to backfill the open pit – 38% ROM
- Tailings recycling after mixing with cement to backfill the mining voids – 15% ROM
- Tailings **disposal – 45% ROM**
- Waste rock total recycling as construction & rehabilitation material - 25% ROM

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Waste management (other than mine waste)



	2014		2015		2016 YTD	
	Quantity (tn)	Income (€)	Quantity (tn)	Income (€)	Quantity (tn)	Income (€)
Recycling Common (paper, plastic, etc.) & Non hazardous Industrial Waste (scrap, cables, wood, etc.)	445	38.570	724	89.948	822	119.979
Hazardous Industrial Waste Management (chemicals, oils, asbestos, etc.)	107	-9.641	117	-109.067	67	-33.508
TOTAL		28.929		-19.119		86.471



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Integrated environmental monitoring program (320 stations)

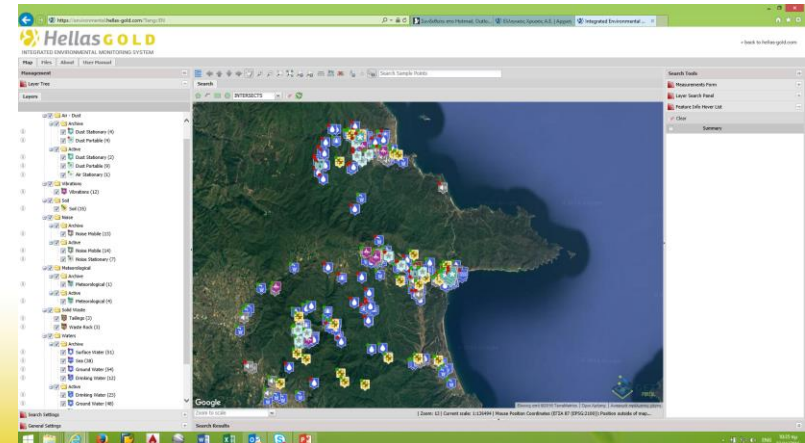


➤ A. Environmental media

- Air
 - Air quality
 - Ambient dust
 - Meteorological parameters
- Water and sediments
 - Surface water
 - Ground water
 - Drinking water
 - Sea Water and sediments
 - Coastal quality
 - River mouth water and sediments
- Soils
 - Soil quality
 - Landslides
- Acoustic environment
- Ecology (flora – fauna)

➤ B. Operational parameters

- Mine water
- Drinking water
- Seismicity
- Noise level
- Vibrations
- Energy consumption
- Production parameters
- Dust emissions
- Mining wastes
- Landslides



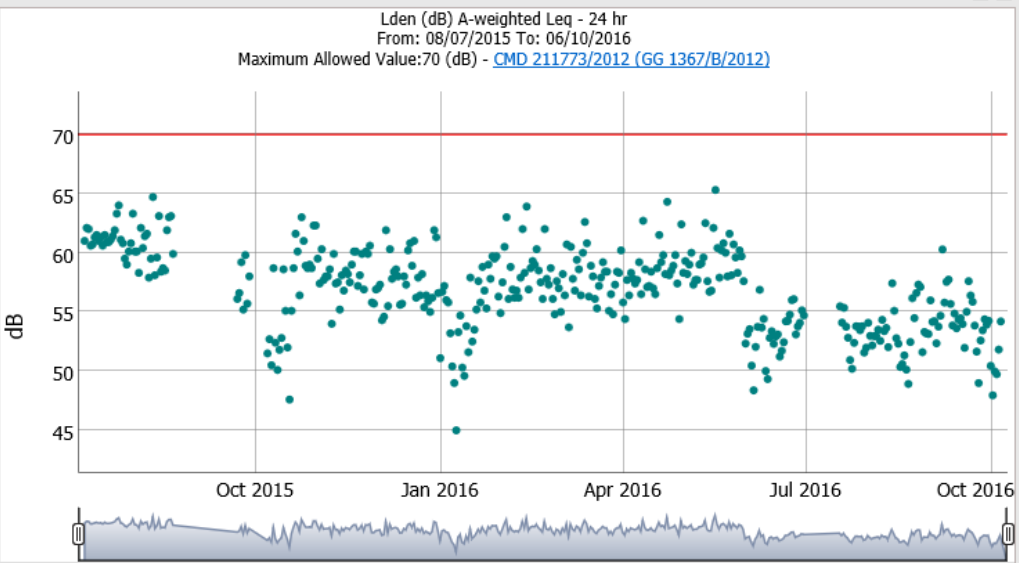
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Integrated environmental monitoring database & website

Ελληνικός Χρυσός Α.Ε. | Αρ. Integrated Environment × +
environmental.hellas-gold.com/?lang=EN

MNM23 - Lden (dB) A-weighted Leq - 24 hr

Lden (dB) A-weighted Leq - 24 hr
From: 08/07/2015 To: 06/10/2016
Maximum Allowed Value: 70 (dB) - [CMD 211773/2012 \(GG 1367/B/2012\)](#)



Attribute	Value
Station	MNM23
Description	Stratoni Facilities
Status	Active
Location	Stratoni - Madem Lakkos
Category	Noise
Sub Category	Noise Stationary
Comments	(Null)
X (GGRS 87)	485272
Y (GGRS 87)	4484662
X (WGS 84)	23.8279128
Y (WGS 84)	40.51512863

Sample Point	Date	Value
<input type="checkbox"/> MNM23	08/07/2015 00:00:00	61,0000
<input type="checkbox"/> MNM23	09/07/2015 00:00:00	62,1000
<input type="checkbox"/> MNM23	10/07/2015 00:00:00	62,0000
<input type="checkbox"/> MNM23	11/07/2015 00:00:00	60,6000
<input type="checkbox"/> MNM23	12/07/2015 00:00:00	60,7000

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Management
Layer Tree
Layers

- Vibrations
- Soil
- Noise
 - Archive
 - Active
 - Noise Stationary
- Meteorological
- Solid Waste
- Tailings (3)
- Waste Rock
- Waters

Search Settings
General Settings

Search Results

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ISO 14001

CERTIFIED ENVIRONMENTAL
MANAGEMENT SYSTEM



Distinctions and Awards:

- ✓ **ISO 14001** Environmental Management System
- ✓ **ISO 50001** Energy Management System
- ✓ **OHSAS 18001** Occupational Health and Safety Management System
- ✓ **ISO 39001** Road Traffic Safety Management
- ✓ **Responsible Business award SILVER (2016)**
- ✓ **CSR Prize from Federation of Industries of Northern Greece as part of the Greek Value awards.**
- ✓ **CRI SILVER (2015) and BRONZE (2014) award**
- ✓ **Winner & Gold Health and safety awards for our H&S policies and contingency plans.**
- ✓ **HR Awards**

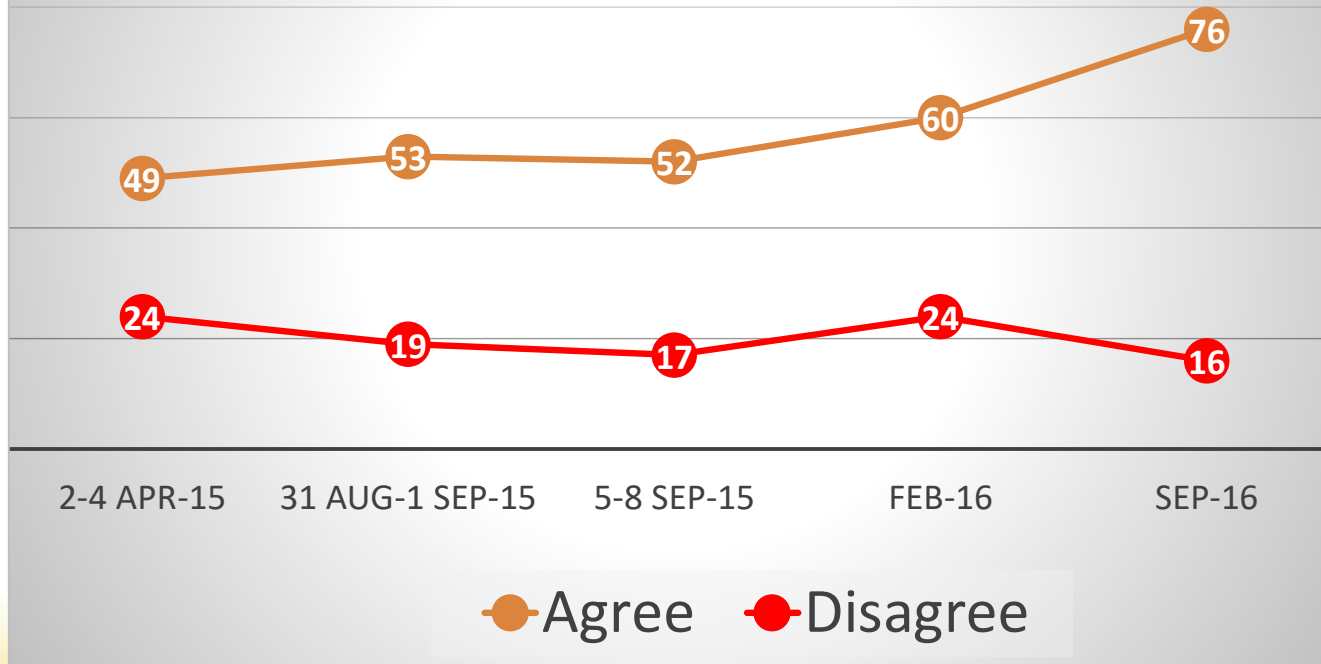


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METRON ANALYSIS survey about acceptance of Hellas Gold investment in Chalkidiki



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*The industry has to act positively to recover its reputation and gain a “social license to operate” in a process that, beginning at the level of individual mines and projects, would, over time, **create a new culture and public profile for the mining industry***

Jim Cooney
Director of international and public affairs of Placer Dome
Washington, 1997

THANK YOU



...what nature gives us
is a **gift**

...what has a history
has a **future**

...what makes our lives better
needs **care**

Our society and environment
are important to
all of us

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