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MATERIALS INNOVATION AND DESIGN

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MATERIALS KNOWLEDGE TRANSFER NETWORK

THURSDAY 22ND MARCH 2012



METAL THEFT - A NATIONAL PANDEMIC?

Lead



Aluminium



Plated Steel



Cast Iron



HIGHLY ACCESSIBLE METAL FOR CRIMINAL ACTIVITY

COPPER METAL THEFT - CURRENTLY ESTIMATED AT £700m/year

RAIL
4 HITS/WEEK



POWER
70 HITS/WEEK



SCRAP YARDS
(WEEKLY)

COMMUNICATIONS
65 HITS/WEEK



FINISHED STOCK
(WEEKLY)

Development of a Materials and Design Innovation
Programme to introduce disruption to the crime supply chain



INCREASING PRICE & RISK

1. INCREASING DEMAND

DEVELOPING ECONOMIES – (25M TONNES CU PRODUCED ANNUALLY
5M TONNES USED IN CHINA)

2. SECURITY OF SUPPLY

ENVIRONMENTAL ISSUES

- FLOODS IN AUSTRALIA AFFECTING COAL AND WOOL PRICES
- EXPORT TAXES – AFFECTING TIMBER PRICES

3. MATERIAL SCARCITY

POLITICAL ISSUES – ie CHINESE POLICY ON RARE EARTHS
- WASTE POLICY REGARDING INCINERATION

4. MARKET SPECULATION

FOLLOWING DEMAND CHANGE AND DRIVING PRICE INCREASES
– FINANCIAL SAFE HAVEN

2012 MATERIAL PRICES RANGE OF MATERIALS

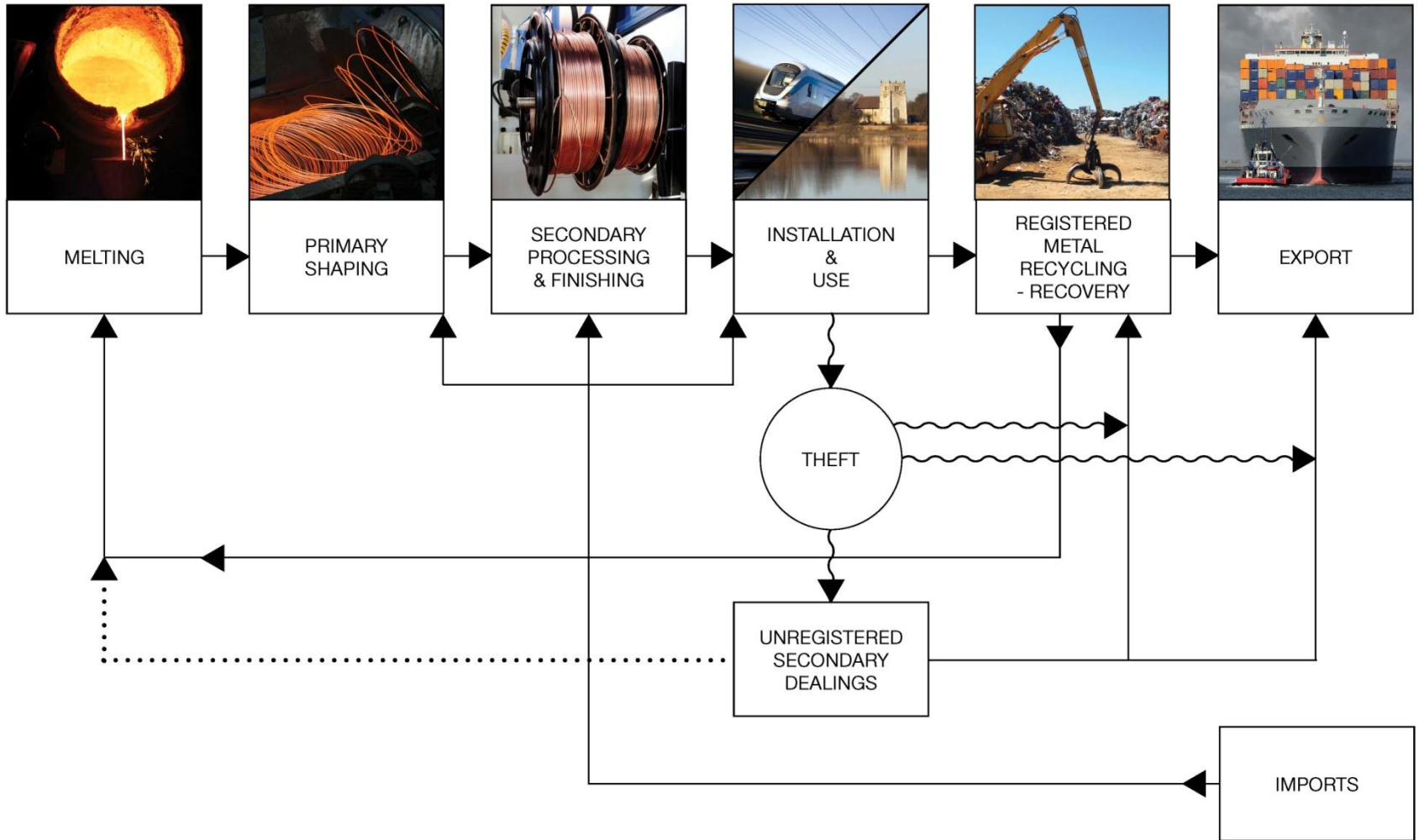
	£/KG
TIMBER	0.03
STEEL	0.28
SPRING WATER (KEG)	0.32
STAINLESS STEEL	0.88
SPRING WATER (BOTTLE)	1.15
LEAD	1.40
PETROL	1.71
WOOL	1.71
DIESEL	1.74
NATURAL RUBBER	1.80
ALUMINIUM	1.90
MAGNESIUM	2.1
OLIVE OIL	2.72
LITHIUM CARBONATE	3.0
COPPER	5.60
NICKEL	12.6
TIN	15.0
COBALT	22.0
SILVER	580.0
GOLD	28863
PLATINUM	29568

HELIUM £50 PER THOUSAND CUBIC FEET

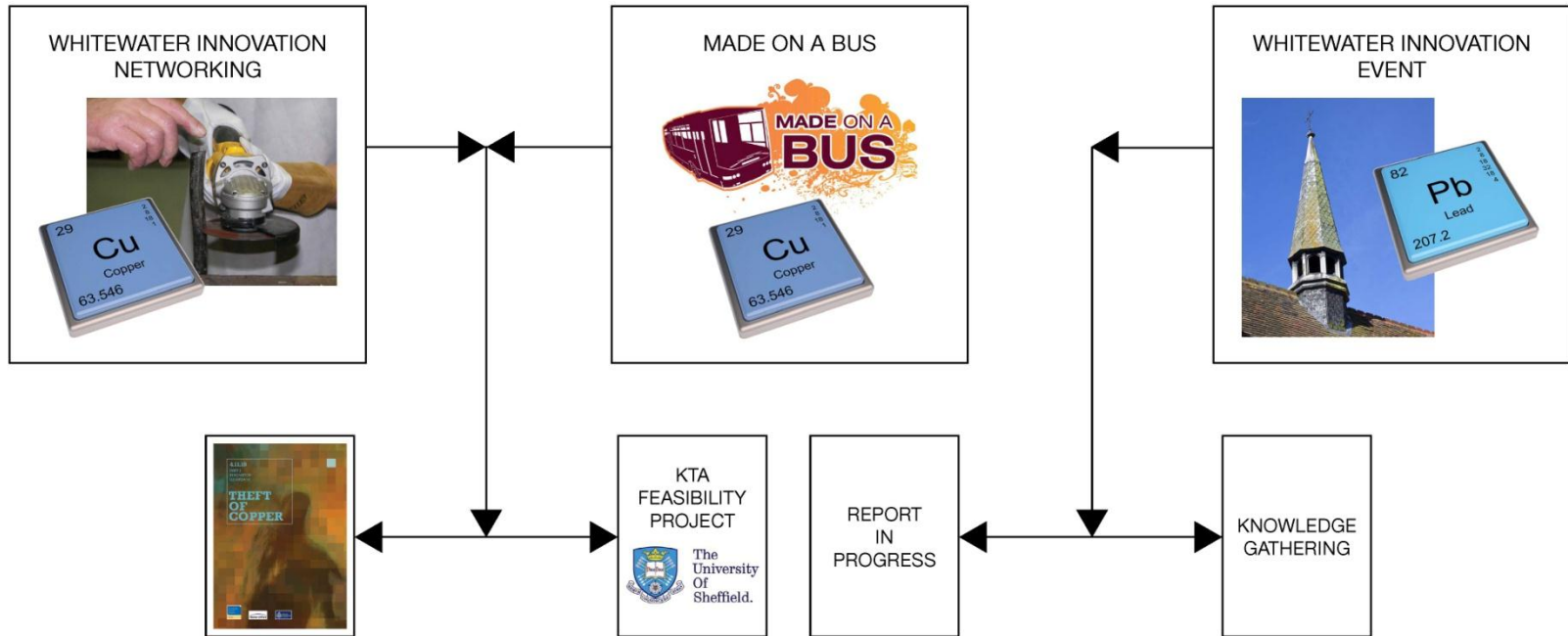
MATERIALS PRICES RATE OF CHANGE IN 3 YEARS

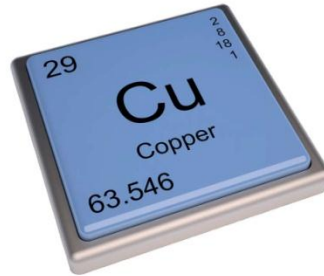
	2009 £ KG	2012 £ KG	
WOOL	0.75	1.71	X 2.28
NATURAL RUBBER	1.00	1.80	X 1.8
COPPER	2.50	5.60	X 2.24
GOLD	10,560	28,863	X 2.73
PLATINUM	17,600	29,568	X 1.68
 OTHERS			
DIESEL	X 1.51		
OLIVE OIL	X 1.28		
HELIUM	X 1.85		
TIMBER	X 1.55		

A VISUALISED SUPPLY AND CRIME CHAIN FOR MATERIALS



INTERDISCIPLINARY NETWORKING TO COLLECT INNOVATIVE CONCEPTS TO DISRUPT CRIME CHAINS





REDUCTION OF
METAL THEFT



ALTERNATIVE
MATERIALS
= FIBRE OPTICS
= SUPERCONDUCTORS
= ALUMINIUM



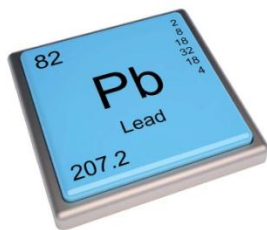
IMPROVED
RECYCLABILITY
= CLOSED LOOP
WITHIN THE UK



TRACEABILITY DETERRENTS
COATINGS AND MARKS
TO UNIQUELY IDENTIFY
INSTALLED INFRASTRUCTURE



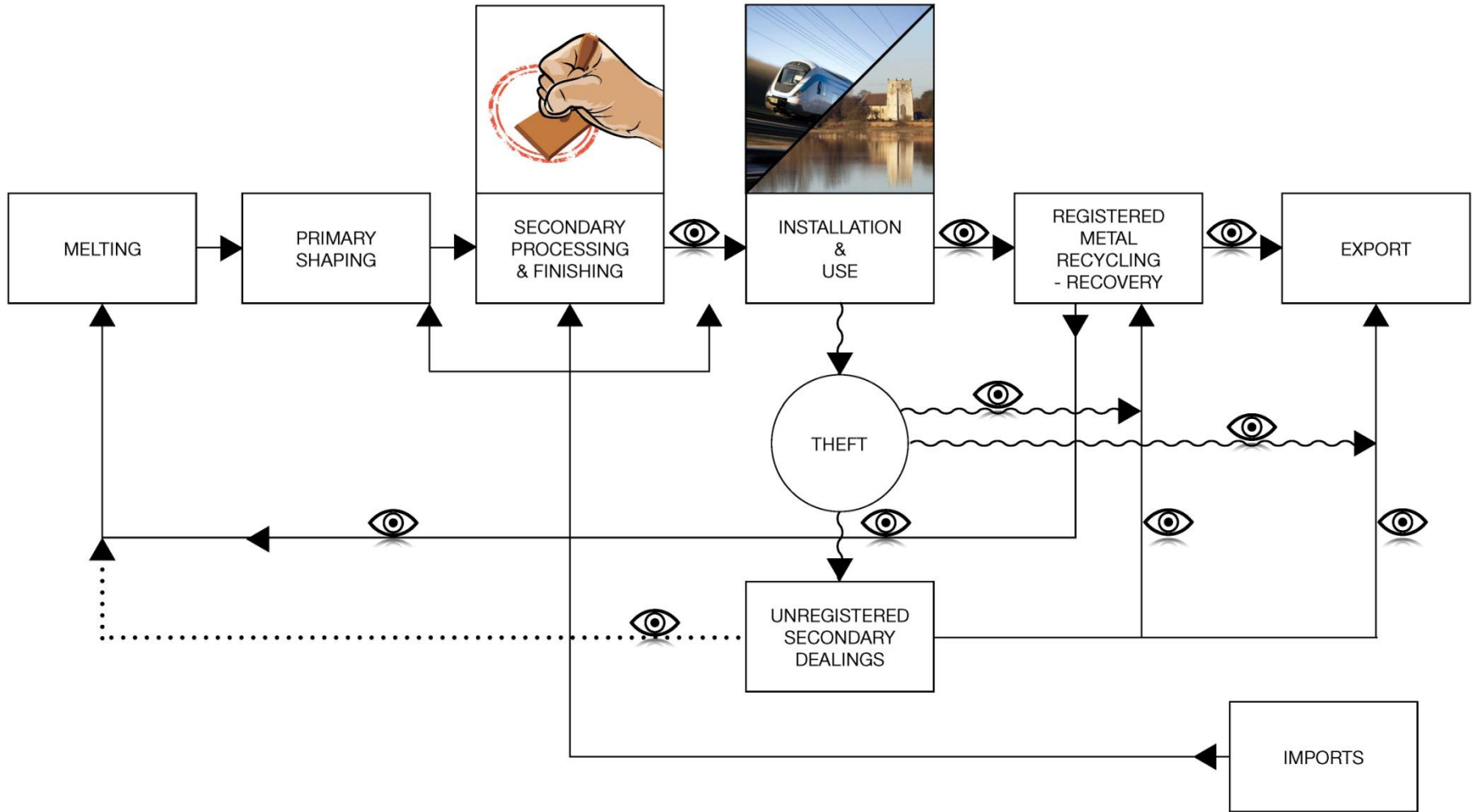
LOWER COST METAL
COMPOSITES,
COPPER AND
ALUMINIUM ON STEEL



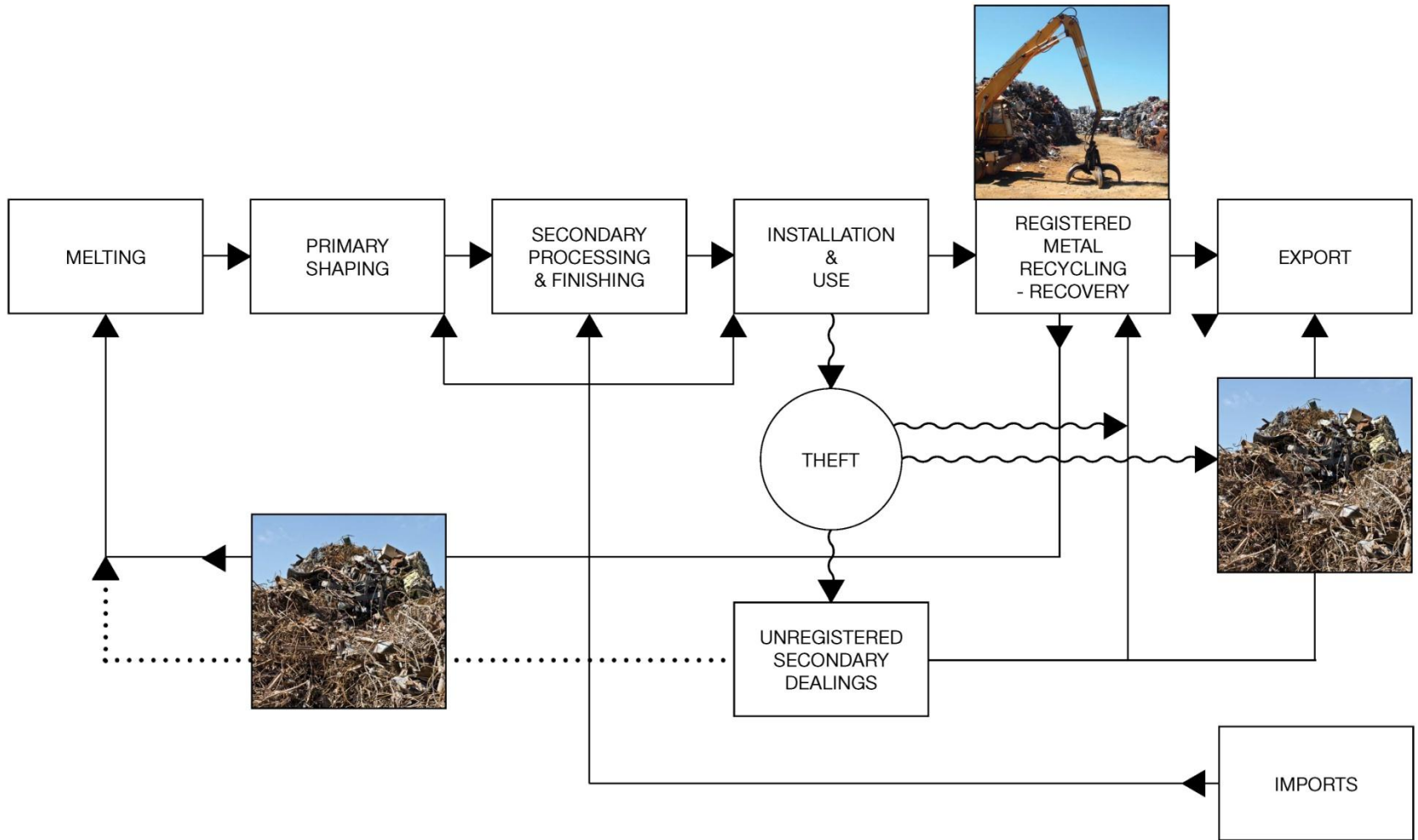
INNOVATIVE IDEAS (SELECTION FROM TOP 10)

1. Stamp materials with unique barcode/mobile phone app.
2. National register/database of marks
3. Dope lead for traceability
4. Fund alarm installations, movement sensors and beam triggers
5. Local awareness campaigns
6. Scanning system for containers
7. Hand held scan/read ID devices at registered traders
8. Increase penalties
9. Restrict export movements
10. Novel materials (Viagra Roof)

METAL MARKING

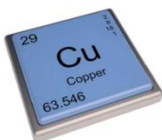


CHARACTER OF METAL WASTE

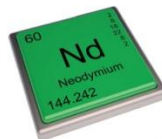
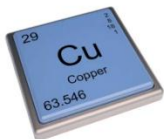


CURRENT AND FUTURE METAL THEFT – AREAS OF NETWORKING DEVELOPMENT

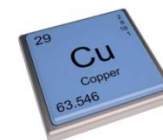
POWER SUPPLY



POWER GENERATION (FUTURES)



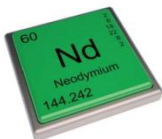
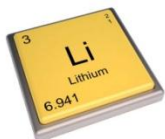
COMMUNICATION LINKS



AUTOMOTIVE (FUTURES)



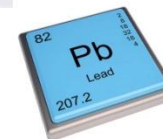
JAGUAR



CONSTRUCTION/ STRUCTURES



THE CHURCH OF ENGLAND



THEFT
DISPLACEMENT



TODAY



TOMORROW