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EASAC work on the Circular Economy

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What is EASAC?

- Collective voice of the National Academies of Science of the EU member states +2
- Source of *independent* scientific analysis and advice for policy-makers in the European institutions and EU societies
- National Science Academies in the EU:
  - Networks of scientific excellence
  - Shared task of science-based policy advice

2015 statement on Circular Economy

Provides natural and social science perspective

- The concept of the 'circular economy'
- Quantitative estimates
- Evaluating scarcity and assigning priorities
- Barriers: why does the linear economy stay linear?
- Competitiveness considerations
- New indicators
- General policy considerations
- Policy instruments

Specific points

- Increasing population and per capita consumption on top of existing levels of consumption of resources well above sustainable levels. Improving the efficiency with which humanity uses resources is a priority.
- Barriers to a transition to a circular economy are substantial, and increased by some current trends in corporate and consumer behaviour.
- Linear economy is the result of failure of current pricing systems to fully integrate all costs (including social and environmental costs), so fail to deliver 'correct' signals.
- EASAC accepts the conceptual benefits of the CE but sees uncertainties over models used in quantifying the benefits. Questions also over transition issues.
- There is potential for improved competitiveness and new markets, but there are also potential disadvantages from an economic theory. perspective where policies for a circular economy are applied only within the European Union. Needs to be embedded in trade rules/negotiations
- New indicators required and special measures may be needed for particularly critical elements required for key economy sectors. These issues emerged in the initial EC statement, thus EASAC decided to follow up with more detailed reports.

Working group members

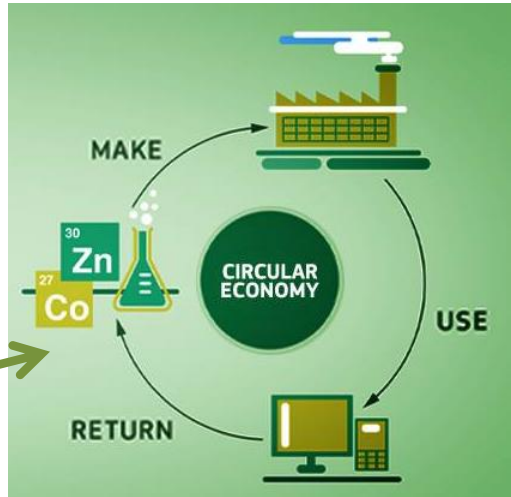
Full circular economy working group	Critical materials	Indicators
• Professor Gunter Stephan (University of Bern)	√	√
• Dr Ioannis Agapitidis, Hellenic Recycling Organisation		√
• Ms Geraldine A Cusack, Siemens Ireland		√
• Dr Anni Huhtala, VATT Institute for Economic Research (Finland)		
• Professor Mark van Loosdrecht, Delft University of Technology	√	
• Professor Dr Ir Egbert Lox, Umicore, Belgium	√	
• Dr Guiseppe Mininni, IRSA (Italian Water Research Institute)	√	√
• Professor Sture Öberg, University of Uppsala		√
• Professor Dr Ionut Purica, Romanian National Institute of Economic Research		√
• Professor Kristin Vala Ragnarsdottir, University of Iceland	√	√
• Professor Armin Reller, University of Augsburg	√	
• Professor Baiba Rivza, Latvian Academy of Sciences		√
• Professor Filipe Santos, University of Lisbon		
• Professor Roger Sheldon, Delft University of Technology		
• Professor Thomas Sterner, University of Gothenburg		
• Professor Richard Tol, University of Sussex		
• Professor Michael Norton, EASAC Environment Director	√	√

Joint Working Group Meeting Brussels, May 5 2016. Commission meeting (4 May)
Peer reviewers nominated by Academies (Aug-Sept 2016)
Endorsed by EASAC Academies Sept 2016.

Indicators

- What is the problem we are trying to solve?
- Dominance of GDP linked to linearity
- Can anything compete with GDP?
- Many attempts to find substitute indicator but no consensus yet.
- Introducing indicators for the circular economy - part of efforts to move beyond GDP and to sustainable development goals

Circular economy indicators



Alternative Indicator	Abbreviation
Better Life Index	BLI
Ecological Footprint	
Environmental Pressure Index	EPI
European Environment Agency Core Set of Indicators	EEA CSI
Genuine Progress Indicator	GPI
Gross National Happiness Index	GNHI
Happy Planet Index	HPI
Human Development Index	HDI
Index of Sustainable Economic Welfare	ISEW
Sustainable Development Indicators	SDI
World Values Survey	WVS

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GDP Alternatives

HEADLINE INDICATORS OF THE SUSTAINABLE DEVELOPMENT INDICATOR (SDI) SET

SDI THEME	HEADLINE INDICATOR
Socio-economic development	Real GDP per capita
Sustainable consumption and production	Resource productivity
Social inclusion	People at risk of poverty or social exclusion
Demographic changes	employment rate of older workers
Public health	Life expectancy and healthy life years
Climate change and energy	Greenhouse gas emissions, and primary energy consumption
Sustainable transport	Energy consumption of transport relative to GDP
Natural resources	Common bird index
Global partnership	Official development assistance
Good governance	None

Potential Indicator sources

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Indicator type	Examples	Availability of data	Relevance to the CE
Sustainable development	Social economic development, sustainable consumption and production, social inclusion, demographic changes, public health, climate change and energy, sustainable transport, natural resources, global partnership, good governance	Voluntary based reporting via EU DG Energy (focused), European Sustainable Development Network (ESDN); corporate sustainability indicators (e.g. carbon disclosure)	Natural resources, sustainable consumption and production
Environment	Agriculture, air pollution, biodiversity, climate change, energy, fisheries, land and soils, transport, waste, water	Regulatory based reporting via EEA cores indicators and country-specific statistics	Waste generated, packaging waste recycling
Material Flow	DE, DMC, DMI, PTB, NAS, DPO, TMR, TDO	Eurostat, SERI	All
Societal behaviour	Sharing, municipal waste recycle, waste generated per capita (total and segregated), environmental/resource taxation	National and voluntary organisation statistics	All
Organisational behaviour	Material flow accounting in organisations, remanufacturing, use of recycled raw materials, eco-innovation, per capita statistics (e.g. reduction in waste generation per capita)	Private sector voluntary reporting via EU Forum for Manufacturing; VDMA (German Engineering Federation); etc.	All
Economy performance	Resource productivity, recycling industry, green jobs, waste generation/GDP, 'transformation of the economy'	Eurostat EU Resource Efficiency Scoreboard	All

No shortage so what criteria?

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- You can't manage what you cannot measure, nor can you review progress without monitoring it, so indicators are an essential part of policy.
- Not just the simplest to obtain but we need "intelligent" indicators
- Should inform and influence stakeholders AND public, media and policymakers
- Should aim to show benefits of circularity -both environmental and economic
- Some sets already in use in other countries
- Look for mutual reinforcement with other trends (e.g. sustainable reporting)
- Use for monitoring the performance of markets in the recycling business and address regulatory barriers, such as those related to transforming waste into secondary raw materials.

Critical materials report

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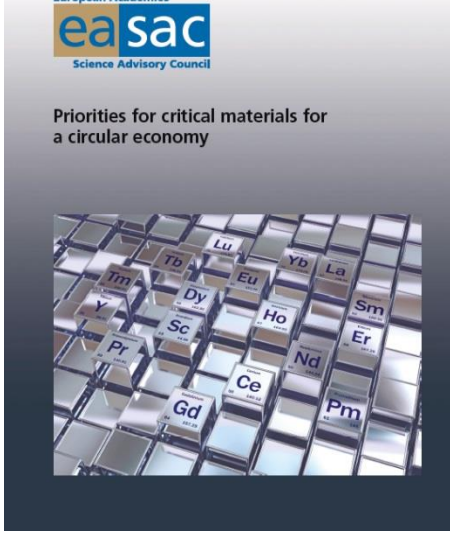
- What is the problem we are trying to solve?
- Bottom line is that high technology has made us dependent on relatively small quantities of specific elements-not just on provision of bulk raw materials (iron, copper etc.)

- Also these areas are ones in which our future economic development is expected to depend-low carbon, information and communication technologies etc.
- So what special measures are required?

Key questions

- How do we select critical materials?
- What criteria do we use?
- How do we maximise potential sources within the EU?
- How do we minimise avoidable losses?



Aspects covered

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- Factors to be considered in defining critical materials. Basic supply risk and importance to the economy PLUS
  - Environmental impacts of extraction and processing (both within and outside the EU)
  - Substitution and recycling rates
  - Impending scarcity
- Securing future critical materials
  - Critical materials supply
  - Improving recycle rates

Particular focus-recycling

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- Currently major leakage from end-of-life goods due to inefficient return and insufficient use of technologically advanced recycling
- Major implications for consumer-retailer relationship and for manufacturers extended producer responsibilities . Efficient country models exist.
- Action needed at all stages from original design, through end-of-life collection and sorting to ensuring critical metals recycling infrastructure
- Should attempt to harmonise consumer innovation trends with the needs of circularity

Special factors

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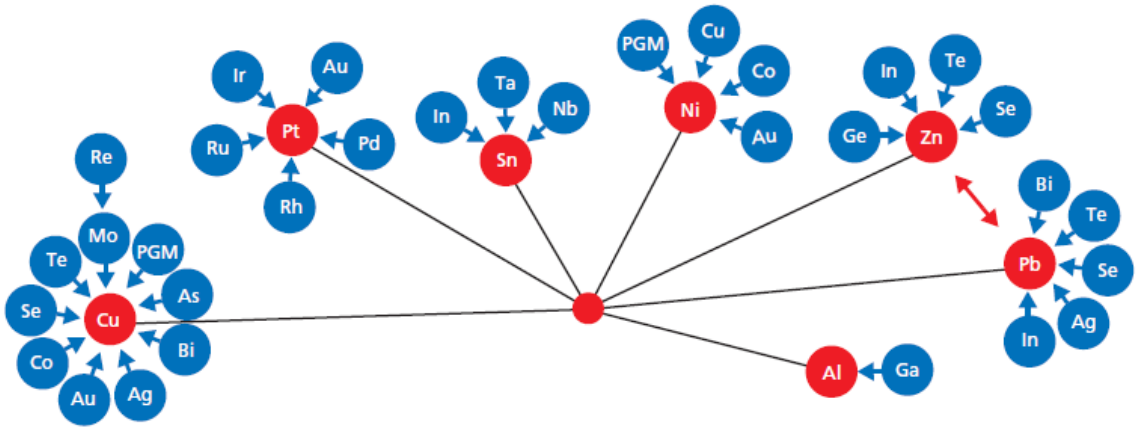
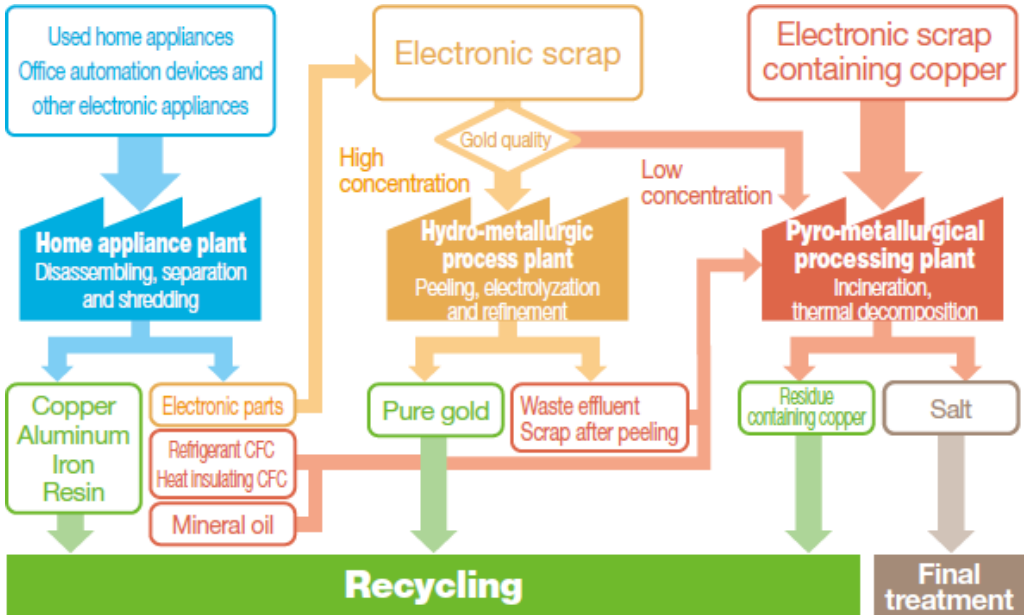
Web of metals



- Complex processes



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Thank you for listening!