METALS IN THE CIRCULAR ECONOMY

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Metals are essential components in the manufacturing of smart phones, electric car batteries and other green technologies. In this special report, EURACTIV looks at how the EU’s circular economy strategy can help secure Europe’s supply of critical raw materials in a sustainable way.
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Vanadium, borate, bismuth, gallium – they may sound like planets from a science fiction movie, but in fact they are some of the most critical elements of the European Union’s economy.

They are all on the European Commission’s ‘critical raw materials list’, which will be discussed at the EU Raw Materials Week starting today in Brussels.

The 27 materials on the list are considered both very important to the EU economy and of worrying scarcity. They therefore benefit from specific measures to guarantee their sourcing and encourage their reuse.

It isn’t just the materials on the critical list that are of concern. Metals, such as copper, aluminium and iron may not be scarce but they are still highly valuable to industry and the economy at large.

Whether rare or abundant, the importance of these raw materials to the economy is being increasingly recognised by the EU. This is the third annual raw materials week organised in Brussels, as concerns about the reliability of sourcing grow louder.

We may not always see these materials, but they are in the products we use every day – washing machines, smartphones, cars and computers. Because they are essential to these products, they are also very valuable. By throwing them into landfill, we are literally throwing away money.

The Commission wants to stop that. As part of its circular economy strategy, first put forward in 2015, it is launching an effort to make the sourcing and recovery of these materials more efficient and more sustainable.

This strategy is highly relevant for certain manufacturing industries – particularly those involved in large appliances, high technology and renewable energy. APPLiA, the Brussels-based association representing European appliance manufacturers, has been asking the Commission to help increase the rate of recovery from their products.

“Today 17% of appliances are ending up in waste bins, wasting valuable raw materials,” says APPLiA secretary general Paolo Falcioni. “Two-thirds are not traced, so we don’t know how they are treated. We need authorities to help us to understand where the heck they go.”

Tracking these appliances at the end of their life, he says, would help the sector immensely because it would mean easier sourcing of the materials needed to make new appliances.

In this special report, we will look at all stages of the lifecycle of metals – from extraction, to use, and recycling. The discussions over the coming week in Brussels will determine whether lawmakers can square this circle, and make these processes more efficient.

**EFFICIENT EXTRACTION**

The most efficient procurement of metals, both from an environmental and economic point of view, is that which comes from within the EU. Importing metals is costly.

One of the programs discussed this week will be the GeoERA Raw power

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Materials Consortium, a research program of European national and regional geological surveys which are assessing what raw materials Europe has already which it doesn’t need to import. It is hoped that this research will enable the most efficient mining of these materials, particularly metals. It is also using Copernicus satellite info to keep track of these resources.

GeoERA coordinator Antje Wittenberg, who will present the latest findings today, says that this research on extraction is a major component of the circular economy. “By using the entire inventory of Europe, it adds to lower the ecological footprint by, for example, short transport and application of high technological standards,” she said.

Bernard Respaut, chief executive of the European Copper Institute, says that for the metals sector it’s essential that the EU maintains an efficient usage of the copper it has, so that it has to import the smallest amount possible. “Copper isn’t a critical raw material, we produce it in Europe and it’s available through recycling.”

“There is enough capacity to get it outside of Europe if we need more,” he said. “But we need to make sure we can secure enough supply for the needs of EU industry.”

EFFICIENT USE

Metals don’t only have a role to play in the circular economy through sourcing and recycling. They can also form a central pillar of the green economy.

There are 20 market-ready technologies involved in the green economy which depend on non-ferrous metals, including photovoltaic panels, heat pumps, and solar thermal. These technologies have their choice of raw material to use, but some are more efficient than others. Respaut says the use of copper can reduce the energy impact of these technologies.

“Copper is sustainable, recyclable and efficient because it has the best connectivity performance for heat or electricity,” he said. “So for instance if you put a wind turbine and you want to transport the electricity generated, you need a copper cable, and you need a copper router, because it’s the best for technical performance.”

However if the supply of these materials isn’t secure, it could lead to bottlenecks if the need for any one of these materials exceeds supply. A recent study by the consultancy Ecofys identified which materials are most vulnerable to such bottlenecks.

Of course, the production of these metals has a negative effect on the green economy in that it is energy-intensive and produces large amounts of carbon emissions. That’s why they are subject to the Emissions Trading Scheme (ETS), which caps the amount of carbon they can emit and forces them to buy permits to spew any extra.

But metals sectors, particularly aluminium, steel and copper, have complained that this puts them at a competitive disadvantage in a global industry, and risks moving production outside of Europe. This, they say, would hurt the very environmental goals which the ETS is supposed to promote.

Axel Eggert, the director general of Eurofer, the European steel association, said that large ETS costs, likely as the price of carbon increases in the system, will mean “the industry will suffer and the environment will nevertheless go unprotected”.

“European industry needs a balanced EU ETS which takes into account industrial competitiveness in order to remain viable and keep the ability to invest in CO2-mitigating innovation,” he said.

EFFICIENT RECYCLING

The biggest untapped potential in the circular economy lies in stopping the waste of valuable materials and resources.

The process by which these materials such as valuable metals can be recovered is called ‘urban mining’. In a traditional mine, metals are extracted from the ground. In urban mining, metals are extracted from products and buildings in order to reuse them.

But even though there’s a lot of money to be made in this recovery, the field is rather underdeveloped. While metals like copper and aluminium have high recovery rates, rarer metals and earths used in electronics don’t.

“In terms of material recovery, at the moment there’s a low recycling rate for e-waste in the EU, and the reality is a lot of e-waste is still exported illegally out of the EU, which is in breach of the Basel Convention,” said Jean-Pierre Schweitzer, a product policy and circular economy officer at the European Environment Bureau.

“There are 300 grams of gold per one tonne of smart phones, which is a greater yield than you would get from many commercial mines today,” he said. “So there is an economic opportunity. But I think the economic signals for mining those things send it to the least regulated location, because that’s the easiest place to do it.”

But if the raw materials leave Europe, so does the value. The delegates meeting at raw materials week will be looking at ways to keep these valuable materials within the circle. But as this special report will outline, that may require an entirely new way of thinking about the economy.
As excitement builds about the opportunities of the new green economy, concerns are growing as well. The economic transition will require new grid infrastructure, new distribution models and, perhaps most importantly, more raw materials, says Kornelis Blok.

There are increasing worries over the future availability of mined and non-renewable minerals and materials that are essential for green technologies like solar panels, wind turbines and batteries.

This concern is especially stark concerning rare earth metals which are – the clue is in the name – rare. But it also extends to more common metals such as copper and aluminium.

For this reason, environmental group WWF commissioned a study

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in 2014 to look at which materials are at risk of shortages as a result of the transition to a green economy. Conducted by the consultancy Ecofys, it bases its calculations on the 100% sustainable energy scenario presented in The Energy Report, a study produced by WWF and Ecofys in 2011.

EURACTIV spoke with Kornelis Blok, one of the authors of the study.

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With this study, you set out to find out if the transition to a green economy could put a strain on global resource use. What did you find?

The transition to a 100% sustainable energy system will obviously require significant material inputs. That can include a common material like copper that is needed all over the place, for example for solar modules, wind turbines, power grid expansion and efficient motors.

New solar cell types will require substantial amounts of indium, gallium or tellurium. However, these materials are not needed if we stick to the now common solar cells based on silicon. Silicon is abundant.

Which materials did you find would experience the greatest bottlenecks? How can those bottlenecks be alleviated?

The greatest bottlenecks can be expected for lithium and cobalt. These are used as materials in batteries, for instance in electric vehicles.

Bottlenecks there can be alleviated by recycling the lithium from batteries after their lifetime is over, by substituting lithium use in other sectors, and by using less cobalt-intensive cathodes. Also, different battery types may be developed, for example by making use of graphene.

On the whole, will the transition to the green economy lead to more material demand or more material savings?

We have not investigated this question in full. But the 100% sustainable energy scenario that we developed also includes high levels of energy efficiency and material efficiency. This leads to significant material savings that will likely more than offset additional material use across-the-board, but not for every single material.

Is additional legislation needed to ensure increased material efficiency to prevent bottlenecks? What happens in a scenario where there is no such legislation?

The concerns are not so strong that dedicated regulation for sustainable energy material use is necessary. There are already strong drivers to use materials in an efficient way, as this can lead to important cost reductions. And furthermore, material efficiency in this area will also benefit from circular economy policies that are anyway needed.

What was the most surprising result of this study for you?

We were surprised that material constraints played such a limited role, given the substantial attention for so-called critical materials. We found that geopolitical constraints may play a role as for some materials, like neodymium and yttrium, as the majority of current production is concentrated in just one country, like China.

But the overall resource is often large enough, and also spread across a variety of countries, so there are not necessarily geopolitical concerns in the long run.
The green economy usually brings to mind traditional renewable materials such as wood, biomass, water and earth. Less likely poster children are the big metals that have formed the backbone of the industrial revolution – steel, copper, iron, tin and aluminium.

These metals have been with us for many years, produced in giant smelters through processes that consume large amounts of energy. At first glance, they might not seem like they would have a part to play in the sustainable transition. But in fact, without many of them, the building blocks of the green economy wouldn’t exist.

“Non-ferrous metals are absolutely essential to Europe’s low-carbon transition, because of their central use in breakthrough technologies including clean mobility, renewable energy and batteries,” said Guy Thiran, director-general of the Brussels-based metals industry association Eurometaux. They have an essential role to play in the circular economy strategy, launched by the European Commission in 2015, he said.

But not everyone is so convinced. “The circular economy should really be about reducing the use of materials and the consumption of waste,” said Jean-Pierre Schweitzer, a product policy and circular economy officer at the European Environment Bureau (EEB), a network of green NGOs. “If that’s the case, is that really where we’re going in Europe?”

**By 2050, the world’s wind turbines will require 300% more metals than today, according to the World Bank. [Vattenfall / Flickr]**

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A report released last year by the World Bank found that aluminium, cobalt, copper, iron ore, lead, lithium, nickel and zinc are all going to be needed in significantly higher quantities to deliver on global renewable energy goals. By 2050, the world’s wind turbines will require 300% more metals than today, according to the report. Solar panels will require 200% more, and energy storage 1000% more.

The study concluded that the technologies needed for the clean energy shift—wind, solar, hydrogen, and electricity systems—are in fact significantly more material intensive in their composition than current traditional fossil-fuel-based energy supply systems.

As a result of the green transition, global demand for non-ferrous metals is now expected to increase more quickly than for any other raw material – from 7 to 19 gigatonnes per year by 2060 according to the OECD’s Global Materials Outlook to 2060.

Electric vehicles, crucial to meeting the EU’s transport emission reduction goals, will also need many new materials not needed by conventional cars. According to research commissioned by the International Copper Association, more than 100,000 tonnes of copper will be needed to build the 40 million charging points needed to service electric vehicles coming on the market by 2027. The copper is used in port charging cables, charging units and wiring to electrical panels.

Katia Lacasse, director for health, environment and sustainability at the European Copper Institute, said electrification of transport is going to be a huge driver for increased copper use. “A typical medium-sized electric vehicle, for example, contains around 60 kilograms of copper, compared to around 20 kg of copper in a comparable car powered by an internal combustion engine,” she said. Aluminium has also been recognised for its potential in renewable transport because it is such a lightweight material. A car made of aluminium will use less fuel than one made of other materials.

“One of the most interesting dimensions of aluminium is that it actually offsets its initial energy use by providing significant energy savings during the use and recycling phases,” says Coline Lavorel from industry association European Aluminium. “On top, it is a ‘permanent material’ which can be endlessly recycled without losing its properties.”

So many raw materials are needed to support the green economy that there have been worries that their increased use is going to create bottlenecks in the supply chain. A recent study by the consultancy Ecofys identified which materials are most vulnerable to such bottlenecks.

**MATERIAL INTEREST**

The connection between raw materials like metals and the green economy is being increasingly recognised.

The Commission has set up the European Innovation Partnership on Raw Materials, a stakeholder platform that brings together representatives from industry, public services, academia and NGOs. It provides guidance to the Commission, national governments and companies on how to address the challenges presented by the need for raw materials.

This week the Commission is running the Raw Materials Week, gathering stakeholders in Brussels to discuss the issue. “The more green technologies we deploy, the more raw materials we will need,” says Peter Handley, head of the raw materials unit at the Commission. “One example: a 3 megawatt wind turbine contains 335 tonnes of steel, 4.7 tonnes of copper, 1200 tonnes of concrete, 3 tonnes of aluminium, 2 tonnes of rare earth elements as well as zinc and molybdenum.”

“Rapid uptake of climate-friendly technologies will increase competition for resources.” he adds. “Production and consumption are shifting towards emerging and developing countries, which on average have higher materials intensity than Europe. Asia, particularly China, has emerged over the last two decades as a major producer and user of raw materials.”

To ensure secure supply, the Commission has increased funding for work on domestic sourcing of raw materials. While just €180 million was allotted for research on raw materials in the 2007-13 period, €600 million was allotted as part of Horizon 2020 for the 2014-20 period. The money is being channelled through a European Innovation Partnership on raw materials which is seeking to raise the industry’s contribution to the EU GDP to around 20% by 2020.

All of this is feeding into the Commission’s circular economy strategy.

**HEAVY EMISSIONS**

However, not everyone thinks more metals translates to more environmental good. Jean-Pierre Schweitzer from the EEB says that while metals have a place in the circular economy, he is wary of a strategy which increases mining while also increasing reuse.

“It’s a bit like the term ‘sustainability’ – ‘circular economy’ can be interpreted in many different ways by different actors,” he said. “My personal perspective is that the circular economy should really be about reducing the use of materials and the consumption of waste.”

“The question is, on a very macro level, what’s the real objective for the circular economy and where do we
want it to go? Recycling targets are valuable, but is it linked to big picture issues like planetary boundaries?”

Not only are metals a finite material, but their refining also uses a lot of energy and has a large carbon footprint. That’s why they are subject to the Emissions Trading Scheme (ETS), which caps the amount of carbon they can emit and forces them to buy permits to spew any extra.

But metals sectors, particularly aluminium, steel and copper, have complained that this puts them at a competitive disadvantage in a global industry, and risks moving production outside Europe. This, they say, would hurt the very environmental goals which the ETS is supposed to promote.

The metals sector believes that the focus should be on minimising emissions from a lifecycle perspective, including the emissions from raw materials and end-of-life emissions. For example, copper production consumes a significant amount of energy, but once produced, the material can be recycled over and over again. In the long run, they say, the upfront energy investments are largely recouped.

In Europe, non-ferrous metals production now uses electricity instead of direct fossil fuels as its main energy source. For instance, electricity represents more than 85% of all energy used in the production of zinc.

“The ETS actually penalises electricity-intensive industries compared with carbon-intensive industries,” said Thiran. “Although the cost of industry’s direct emissions is fully compensated at EU level by the ETS, non-ferrous metals production mainly faces indirect carbon costs, which the power sector passes on through higher electricity prices.”

The industry also says it is lowering its upfront emissions through actions at source. One example is the Aurubis-enercity cooperation in Hafencity, Hamburg, where surplus industrial heat from copper production is now channelled into a district energy network. Copper producers are also involved in innovation platforms such as “Copper-Based Electrochemical Solutions” (CuBES) to reduce emissions.

While every little bit helps, environmentalists are still sceptical of any Commission strategy that places too much importance on metals as the basis of a circular economy. There are concerns that the use of these materials as a basis for renewable technologies is being used as an excuse to lower their ETS obligations.

“Any product that contains these materials has the embedded energy that’s gone into making it,” said Schweitzer. There’s a business model behind that, based on a bottom line about sales. I don’t think you can really ignore that. So there’s a driver in certain sectors in creating high output.”

As stakeholders discuss the place of raw materials in the circular economy this week in Brussels, the contention around this issue will be on display. Metals producers are hoping to convince the sceptics that they are prepared to play a constructive role in the transition to a green economy.
There can be no wind or solar energy, no smart grids and no electric vehicles without copper, aluminium or steel, to name but a few. What Europe must do is enable advanced processing of materials in order to close the loop, writes Dr Katia Lacasse.

Dr Katia Lacasse is director for health, environment and sustainable development at the European Copper Institute (ECI).

Raw materials are crucial to the EU and the European economy. They form a strong industrial base and facilitate modern, everyday life due to their key role in a broad range of goods, applications and technologies.

Raw materials will also enable our sustainable future: they have a leading role to play in the low-carbon and circular economy. There can be no wind or solar energy, no smart grids and no electric vehicles without copper, aluminium or steel, to name but a few. In addition, more and more metals used by European industry come from secondary or recycled sources, contributing to the EU’s ambitions for a closed-loop economy.

It is clear, therefore, that Europe needs, and must further develop, its sustainable raw materials base inside Europe. As the third EU Raw Materials Week comes to an end, here are some

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thoughts on how to facilitate the move to an effective closed-loop economy—and the legislative support needed to make it happen.

A CIRCULAR ECONOMY OF METALS

Copper is a perfect example of a circular material by nature and the copper industry has long operated on circular principles. The life of copper is infinite and has no end phase. Once mined, it can be recycled over and over with no loss of properties. We’re particularly good at this in Europe: nearly 50% of European copper demand is currently met by recycled material. This has multiple benefits for the environment: in addition to reducing waste and protecting scarce resources, recovering copper from common applications such as motors, transformers and cables—in which it is the main material—uses up to 85% less energy than primary production. This is all the more important since copper is core to several growth areas, including clean energy, mobility and energy efficiency and demand thus projected to increase significantly.

Operating on circular principles is intrinsic to our industry and something we have been doing a long time before the concept of a ‘circular economy’ was born in legislative terms. We continue to invest in optimising the value chain as much as possible. To go further, it is essential to have a well-thought through legislative framework, fully implemented across Member States, that supports recycling and reuse whenever feasible. Currently, however, this is at risk.

ENABLING FRAMEWORK

In our view, three components in particular need tackling to create a truly enabling framework for the circular economy to thrive:

• Enabling advanced processing of materials

More and more sophisticated electronic products and applications are being put on the market, incorporating a vast amount of different materials and metals in small quantities. This in turn has an impact on waste processes where increasingly complex technologies ensure that all these materials can be efficiently sorted and recycled. Copper’s role is important, because it is a key enabling material for circularity. In other words, recovering copper enables the recycling of many other materials, many of which are of high value but are present in very small quantities. Recovering the materials embedded in products requires more effort and investment in intricate recycling processes and our industry is already investing heavily. It now needs to be supported by a legislative framework that encourages recycling processes where these make sense, balancing the energy and CO2 increase of a more complex process against the recycling value extracted from materials.

• Supporting access to a steady supply of strategic raw materials

To remain competitive, European industry is highly dependent on a steady supply of raw materials, both primary and secondary. EU legislation should therefore encourage the use of recycled materials, so that waste streams and secondary materials can stay in Europe. Any measures preventing certain materials from being recycled in Europe will result in waste leakage to third countries. This means that Europe loses out on the jobs and growth associated with recycling and the creation of a market for secondary raw materials, but also that the high European treatment standards will not have to be met, to the detriment of the environment.

• Facilitating a market to sell innovative and sustainable products

Metal mining and recycling often provide a number of valuable co-products, which are not only unavoidable, but also needed: they are an integral part of the production process, but also find uses in other ways and sectors. One of copper’s co-products, iron silicates, is, for example, commonly used in the building and construction sectors. Hence, the use of iron silicates can contribute to a circular economy by avoiding environmental, financial and spatial burdens of landfiling, thus preserving natural mineral resources in the loop and conserving energy. A legislative framework across Europe should therefore facilitate a market for these co-products.

• 2019: the year of transition

2019 marks a year of transition with the European Parliament elections taking place in May and a new Commission taking office in November. It is clear that we—the industry and the new EU institutions—will need to continue the important work launched under the Juncker Commission to create a circular economy in the EU. Raw materials in general and copper as a key, enabling material, are important parts of that puzzle.

Let’s work together across sectors and governments to ensure we create a legislative framework in the EU that enables the move to a closed-loop economy, while at the same time ensuring the security of supply of raw materials in Europe. While a lot has already been done, more action is needed to create the right framework to prevent waste leakage to third countries, boost European recycling efforts, increase the use of recycled materials and create industrial synergies across sectors.
Urban mining: In search of Europe’s valuable waste

By Dave Keating | EURACTIV.com

Each year Europe wastes millions of tonnes of valuable metals by landfilling or exporting them. How can policy measures increase the recovery of these materials?

Most people know that raw materials like metals are valuable. This is why construction sites have heavy security – in order to keep people breaking in and stealing new or used metal.

The problem for Europe is that even though these used materials have extraordinary value, they are still being wasted or exported.

In 2014, Europe exported almost 2 million tonnes of scrap metal including aluminium and copper, as well as 1.3 million tonnes of electronic waste, according to industry association Eurometeaux. The problem is actually getting worse – export levels have steadily increased for over a decade.

The European Commission has targeted an increase in the recovery of these used materials, so-called “urban mining”, as part of its Circular Economy Strategy put forward in 2015. The topic has been discussed this week at the EU’s Raw Material Week, organised by the Commission in Brussels.

“For metals, recycling has always been important and the use of scrap steel, aluminium or copper not only reduces the need for primary raw materials, it is also saves energy and reduces emissions,” says Peter Handley, head of the raw materials unit at the Commission.

“Given the amount of raw materials that Europe imports, it makes economic sense to use urban mining to keep resources in the European economy once buildings or products come to the end of their operational life.”

In order to increase urban mining, Europe needs to first understand what’s out there. In January, the Urban Mine Platform was launched. It is part of the ProSUM project, which is building a centralised database of information on arisings, stocks, flows and treatment of waste electrical and electronic equipment (WEEE), end-of-life vehicles (ELVs), batteries and mining wastes.

This will give policymakers access to primary and secondary raw materials data, easily accessible in one platform.

The EU is also implementing legislation to increase the rate of urban Continued on Page 14
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mining. This year the EU adopted new waste legislation with increased recycling targets for municipal waste overall, and specific targets for packaging waste – 80% for ferrous metals and 60% for aluminium. The hope is that the targets will encourage better product design and setting standards that encourage circularity, extended producer responsibility, improving collection rates and changing consumer behaviour.

“Landfill mining is another area to look at – with today’s technologies we may be able to find treasures in what we discarded as waste years ago,” Handley says.

**COMPLEXITY PROBLEM**

Base metals used in simple applications actually have fairly high levels of reuse in Europe – 90% from automotive, 90% from buildings and 60% from buildings.

“Recycling already makes up a major part of European production,” says Guy Thiran, director-general of Eurometaux. “Over 50% of Europe’s copper and aluminium is supplied from recycling, and over 60% of lead.”

However recycling rates drop immensely once the products start getting complex, such as in appliances and electronics. “For every one tonne of electronics waste Europe recycled through the proper channels, two tonnes is a lost opportunity – either getting discarded, scavenged, exported, or recycled improperly,” says Thiran. “That’s a huge loss when you consider that Europe’s metals recyclers are equipped to recover over 20 metals including copper, gold and platinum.”

It’s a problem that’s been particularly frustrating for Europe’s appliance industry. The systems are not in place to make it easier for consumers to properly discard of their products.

“Large appliances are not easy to move on your own,” says Paolo Falcioni, secretary-general of European appliance industry association APPLIA. “The market is a replacement market. You go for a new washing machine when the one you have is not working any longer.”

Because of the lack of robust collection systems, much of the reuse is currently involved in the black market. “Waste is a resource, and that is the reason why two-thirds of appliances disappear,” he says.

“Because the most valuable appliances, the ones containing more metal, like ovens, they barely come back to manufacturers under this compliance system. Because the value can be captured easily by anybody. So the value creates a distortion in the takeback systems, whereby the cost of processing appliances outweighs the value.”

Falcioni says that European waste legislation so far has been successful in improving the situation. But new legislation is needed to understand what’s happening to the two-thirds of untraced appliances. “We need authorities to help us to understand where the heck they go.”

**CONFLICTING LEGISLATION**

Some in the metals sector have complained that rather than addressing the problem, some EU legislation is actually exasperating it by making it more difficult to reuse materials due to environmental restrictions.

“Some of the EU’s legal framework is contradictory to the circular economy,” says Bernard Respaut, chief executive of the European Copper Institute. “For example, listing lead as a candidate metal for authorisation under REACH,” the EU’s chemical authorisation and registration scheme.

“That means that the recycled flows will no longer be authorised to be recycled and reused. That means landfill or going out to less constraining countries in terms of environmental law. We are not convinced that the lead containing the alloys of copper products generate an exposure scenario that would justify these alloys to no longer be used.”

Respaut says a better approach would be to take the usage into account, speaking of risk management instead of hazard management. “The latter is to say that pure lead can be dangerous for health. But if lead is alloyed with copper or glass, and that amount of lead and the way the product is used is such that there is no actual risk, then why forgo the possibility?”

Some elements of the EU’s electric and electronic waste legislation, called WEEE, also need to be reformed in order to increase reuse, he says. Metals have an innate value and that should be driving a market for legal urban mining. But the lack of harmonised product design rules at EU level is holding back that market. This would be particularly helpful for copper, he says, because it has such a long lifespan.

“One of the hurdles is that the design of the product makes it uneconomical to recycle. We should have product design with recycling already as one of the parameters.”

“The value of copper is linked to the price, and that price is set on the market via the metal exchange. There’s little you can do to increase the value. It’s more about facilitating the recovery. That recovery takes time, because copper has a long shelf life. It’s not like a glass bottle where after 7 rotations it gets recycled. A copper cable can go for tens of years, which explains why we will never get to 100% recycling rate.”

The attendees at Raw Materials Week have chewed over these issues all week. As the importance of securing Europe’s access to raw materials is more and more recognised, policymakers are grappling with how to keep this value in the EU. It will be for the next Commission, taking office next year, to figure out how to deliver on this aspect of the circular economy strategy.