

RESOURCE EFFICIENCY: TOWARDS A CIRCULAR ECONOMY?

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'Dirty trade' challenges EU vision of recycling society



While the EU seeks to curb its import dependency on raw materials through better re-use and recycling, the bloc remains a top exporter of all sorts of waste – including paper, plastics and metals.

Instead of being re-used in Europe, waste resources are increasingly being shipped overseas to fuel booming Asian economies, despite Brussels' push to promote waste as a valuable commodity.

Europe's rising waste export is not confined to illegal hazardous materials, which made headlines when it emerged that poor workers in India have been dismantling rubbish from batteries to used warships containing Asbestos.

Exports also relate to the legal shipments of non-hazardous wastes such as metals, paper and plastic. These do not need to be notified as they have an economic value and represent a useful source of secondary raw material for emerging economies.

According to a 2008 report by the European Environment Agency (EEA), the volume of these exports has increased

significantly between 1995 and 2005, particularly to China and the Far East.

While China is the dominant player of the major Asian economies, India and Indonesia are also sourcing materials from the EU to fuel domestic industries.

In the EU-15, exports of waste paper alone increased from 1.2 to 7.8 million tonnes during that period – with exports to China rising from almost zero to 4.5 million tonnes.

For waste plastics, the rise was from 0.2 to 1.6 million tonnes, of which half was sent to China and Hong Kong. According to the EEA, the most significant type of waste plastic exported – over 1 million tonnes – is of parings and scrap plastic from polymers of ethylene.

The four main categories of waste metals being exported are iron and steel, copper, aluminium and nickel. But much more is being exported in the form of electronic waste such as mobile phones and laptops.

For waste iron and steel, exports went from 6.7 to 8.1 million tonnes and the export

of waste copper, aluminium and nickel from the EU-25 was almost 1.6 million tonnes in 2005.

Drivers of waste export

Factors driving waste exports are numerous and the EU's environmental rules and standards are seen as an incentive as proper recycling at home can be expensive.

The bloc's laws governing waste disposal require more recycling for all sorts of waste streams such as paper and plastic, and seek to prohibit dumping in landfills. Incineration is also heavily taxed in most of Europe.

The cheapest option available may be to simply ship the waste away to countries where health and environmental standards for recycling as well as labour costs are significantly lower.

But it is not only about opting for cheaper treatment outside the EU.

Economic growth and the related increasing costs of virgin raw materials and fossil fuels have also created a higher price

for secondary raw materials, increasing the international market for recovered metals, paper, glass, and special kinds of plastics (PET) of high quality, the EEA notes.

And in a number of countries imports of copper and other scrap metals, for example, are tax free.

An important factor for the EU waste exports to China is the rather low price of the transport: container ships filled with consumer goods from China to European ports might well travel back empty if they are not transformed into a profitable return cargo filled with waste for reprocessing.

According to the EEA, a loaded 40-foot container can be shipped from the EU to Hong Kong for some €500, helping China and other Asian economies cost-effectively satisfy their demand for paper, plastic and other materials from the EU's industrial and municipal waste streams.

As investigated by the UK newspaper, The Guardian, this trade is actually "starving some local recycling initiatives of materials and putting established firms out of business or at risk" in Europe. Whereas expanding national recycling industry would be good for the environment, create local jobs and boost green technologies.

Exporting energy through waste

Patrick de Schrynmakers, secretary general of the European Aluminium Association (EAA), argued that with its scrap exports Europe is also exporting cheap energy and helping China to decrease greenhouse gas (GHG) emissions.

Aluminium scrap, for example, is a highly energy containing material, as 95% less energy is needed when

it is recycled, compared to producing aluminium from virgin bauxite.

De Schrynmakers told EurActiv that compared to other commodities, there is no shortage of aluminium in China and they could easily produce all they need, but "their limitation is electricity, energy."

"Energy is the key and that is precisely where they [Chinese] have problems," de Schrynmakers said, adding that when coupling the lack of energy with China's desire to produce less greenhouse gas emissions, "you can understand why they seek to buy all scrap available".

He also deplored the fact that China is subsidising the use of scrap, with full VAT rebates for imported aluminium scrap. "Last year, China imported 3.7 million tons of scrap – pitifully enough – most of it from Europe," he said.

And while the industry wants to increase its recycling rates in Europe to lower its environmental footprint, de Schrynmakers noted that "it would be particularly unpleasant to see that if we increase our collection rates, then the recycling goes and happens in China."

He also noted that Europe used to be a net importer of aluminium scrap – importing, for example, almost all of Russia's aluminium scrap until Russia put a 50% export duty on it – but is now a significant net exporter.

The industry would like to see quotas or export duties adopted for the export of EU scrap. De Schrynmakers criticised European authorities for merely saying: "We cannot do it because we need to show a good example. We cannot criticise others for doing something while we are doing it ourselves."

EU ponders recycling rules for electric car batteries

The looming challenge of how to deal with hundreds of thousands of used lithium batteries produced to power electric car is on the Brussels "to do" list, EU sources say.

"It's on our radar," an EU official told EurActiv. "But we are just starting this approach and our difficulty and challenge is to prioritise, because it's impossible to consider all products, all materials and all combinations of waste streams."

Lithium is more plentiful than the nickel and cobalt used in hybrid and earlier electric car models. But because recycling it is up to five times more expensive than mining it, few car companies are ready for the scale of recycling that will be needed.

Electric cars have been idealised by some environmentalists, but as well as needing a clean electric energy supply to deliver CO2 savings, end of life cycle planning for their bulky lithium-ion batteries – which can weigh up to 250 kilograms – will also need to be done.

"The trouble is that the recycling rate of all the high tech metals that are so much in demand today is less than 1%," Ernst Ulrich von Weizsäcker, the co-chair of the UNEP's International Resource Panel told EurActiv.

"This recycling rate applies also to lithium that you need for car batteries."

Batteries directive

Under the EU's batteries directive, member states are

obliged to collect 25% of all portable batteries – which are often made of lithium-ion – by 2012. That figure is supposed to rise to 45% by 2016.

There is general scepticism about whether these targets will be met, and a recognition that there will soon be a lot more lithium-ion batteries to dispose of, despite manufacturers' attempts to prolong their batteries lives.

Roland Berger Strategy Consultants believe that lithium-ion powered electric cars could make up 20% of the Western European car market share by 2020.

Another consultancy firm, Frost & Sullivan, proposed that nearly 500,000 lithium-ion battery units per year could be needed by 2015. Because of their prohibitive cost, they will probably be leased to electric car buyers, rather than sold.

Industry insiders believe that the world's climate might not be able to wait for the market prices to correctly align themselves with a planetary crisis.

"The implication is that if you have the prices fluctuate just by market demand and supply, then you might not be ready for the moment that you need to be," said Sybil Brouwer, the general manager of battery recycling and recycling development at the newly opened Umicore plant in Hoboken, Belgium.

"It might be an idea to ask for a certain amount of recycled material in your product," he told EurActiv. If car companies were obliged to buy recycled

lithium-ion, it would guarantee a non-market price for the material, he said.

Vague commitment

But EU experts suggest that this may still be some time off, and the private sector has not yet taken up the slack. So far only two car companies have signed recycling deals with Umicore – Tesla and Renault.

Weighed down by an ongoing trench war over the Eco-design directive, with only 11 out of the directive's 41 named product groups approved as of March 2011, there is also a distinct lack of urgency in the Brussels air.

On the radar or not, the closest the European Commission came to mentioning lithium-ion in the recent resource efficiency roadmap was a vague commitment to "ensure security of supply of critical materials (needed for batteries)" on page 26.

But a staff working paper on the roadmap had previously noted (on Page 26) that the deployment of 'green' vehicles increased the demand for raw materials – like lithium for batteries – which were "subject to supply restrictions and concentrated in a few geographical areas."

"Sometimes the recycling schemes haven't been set up yet to implement the lofty goals that we've set," the Green MEP Reinhart Butikofer said wistfully, as the Umicore plant in Hoboken opened its doors for business in September.

EU's green economy roadmap meets criticism



Choosing the right indicators

The European Commission's roadmap for a resource-efficient Europe does too little to address environmental concerns, argue green campaigners while businesses have criticised it for ignoring the benefits eco-industries bring to the environment.

The European Commission's resource efficiency roadmap, unveiled in September, suggested decoupling economic growth from natural resource use.

Europe's economy is threatened by growing competition for natural resources – including energy, water or minerals – it warned, suggesting a complete transformation of the way our society produces and consumes manufactured goods.

A leaner, more efficient industry would be better insulated from external shocks like sudden rises in commodity or energy prices, the Commission argued, and would therefore also reduce costs for businesses.

Environment Commissioner Janez Potočnik refuted claims that the Commission had shied away from proposing binding objectives, saying the roadmap did not contain targets because there had not been enough time to carry out impact assessments.

Gerben-Jan Gerbrandy, a Dutch liberal MEP who is drafting the European Parliament's position on the roadmap, agreed: "I am in favour of targets but smart ones, and I don't think we have them yet," he said.

Under the roadmap, targets should be agreed by the end of 2013 with the aim of steering company's investments towards eco-innovation.

Potočnik also underlined that in order to propose targets, a consensus needs to be reached first among experts on which indicators are the most suitable for monitoring progress.

Work has already started, with examples including consumption based indicators on land, materials, water, carbon or energy. Life cycle-based indicators are also being developed by the Commission's Joint Research Centre with first results expected by the end of 2011. An assessment of existing resource use indicators should be ready by early 2012.

But before agreement is reached on the best indicators, the EU executive suggested measuring progress immediately by introducing a "resource productivity" indicator that would measure GDP against material consumption expressed in euros per tonne.

Environmentalists have criticised the indicator, saying it ignores land, water and carbon footprints. Businesses have also complained, claiming that the indicator should also take into account the environmental benefits of raw materials use, not just the damage.

Product footprint

The roadmap also seeks to address the environmental footprint of products, building on an ongoing assessment due in 2012. This could be done for example by expanding the scope of the EU's Ecodesign directive

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to non-energy related products.

While business stakeholders generally welcome the idea, some stress that the EU executive should be careful when assessing the environmental performance of products, such as their ability to be recycled or reused.

The European Aluminium Association (EEA) for example notes that “recycled content cannot today be considered as a relevant indicator to predict which product will be most recyclable in the future”.

Indeed, although metals are infinitely recyclable, they may sometimes not be recovered after decades. According to the European Environment Agency, aluminium has a life-cycle of

up to 80 years in buildings for example.

For this reason, the metals industry is insisting on considering the whole life cycle approach when it comes to assessing the environmental footprint of a product.

Green taxation

In one of its potentially most controversial aspects, the Commission roadmap also suggests shifting taxation away from labour to resource use. Green taxes, it argues, are ultimately the only way to bolster a shift to a resource efficient economy.

The Greens in the European Parliament are calling for the Commission to come forward

with a “Resource Taxation Directive” to “send a clear signal for investors”. This could be done for example by broadening the scope of the existing Energy Taxation Directive.

However, taxation is always going to be controversial as EU action on the matter needs unanimity among member states, which keep the last word on taxation matters.

Business groups too tend to look with scepticism at any taxation initiative. The European Steel Association (Eurofer) prefers to place the emphasis on “technology-related measures”, such as improving the recyclability of products at the design stage. Life cycle-based decision-making are “more applicable to

manufacturing industries than price signals introduced by caps or taxes,” it said.

On the consumer side, the European organisation BEUC says the Commission should coordinate ecological tax policies at national level and suggests introducing reduced VAT rates for green products and services.

A joint proposal to reduce VAT rates for green products was put forward by France and the UK in 2007 but it did not win enough backing from other EU countries to move forward. BEUC does not give up on the idea and hopes the Commission will revive it when it reviews its sustainable consumption and production action plan in 2012.

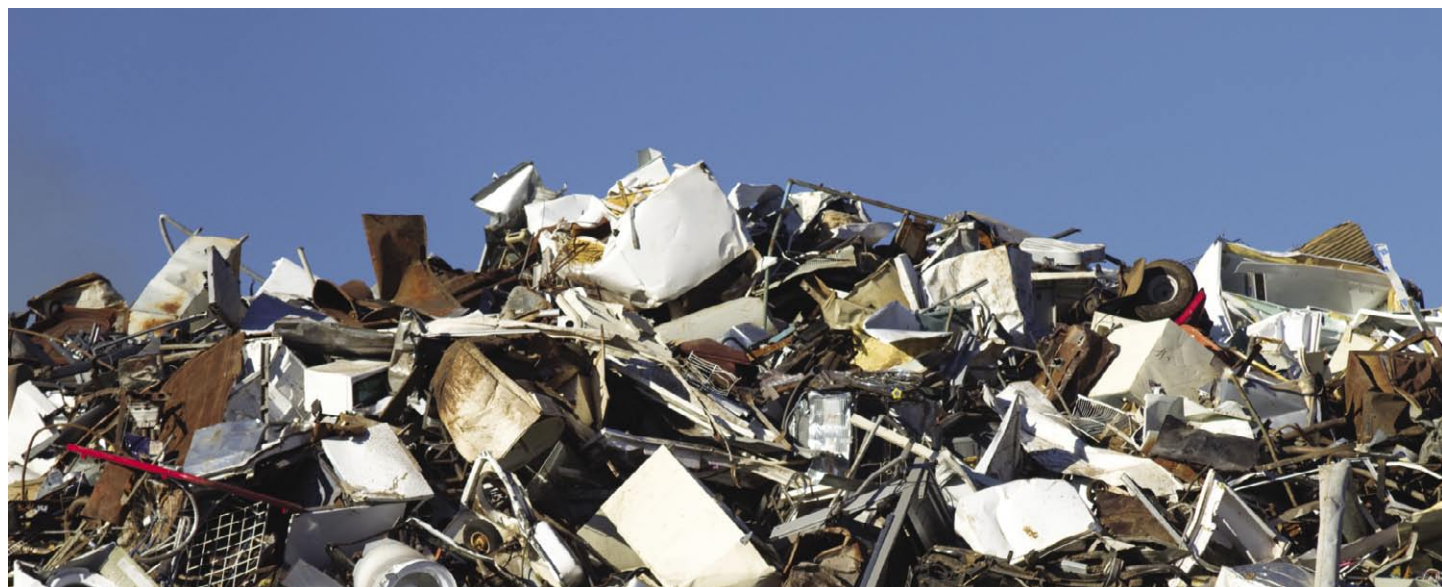
Waste as a resource

One thing that everybody seems to agree on is to promote waste as a key resource in the EU’s future economy.

But in order to feed waste back into the economy as a raw material, better functioning waste sorting and collection is a must while landfilling must be curbed.

Furthermore, products need to be designed for recycling in the first place, so that different resources can be more easily extracted when dismantled. Investments in modern facilities for waste treatment and high quality recycling are needed as well, stakeholders said.

UK authorities ‘failing’ companies that want to recycle



Local authorities across the UK are failing companies that want to recycle more of their rubbish by not giving small businesses access to their recycling facilities, and forcing them to go through more expensive private contractors, according to the manufacturers’ trade body.

The result is to add costs to recycling for already hard-pressed manufacturers, and potentially depress recycling rates, the Engineering Employers’ Federation said on Wednesday.

Gareth Stace, head of climate and environment at EEF, said small companies were often badly served by the commercial waste management sector, which charges high prices. “Waste management companies are not interested in offering affordable services for small amounts of residual waste that manufacturers

manage to segregate from their waste streams, such as paper, cardboard and food waste,” he said.

While recycling rates have been improving among consumers and businesses, more must be done to meet European Union targets and avoid heavy fines.

Companies that do recycle their waste effectively are also not having their efforts counted, the EEF claims, because when materials are reused rather than put through a formal destruction and recycling process, that is not always counted as recycling. As a result, the true level of recycling among manufacturing businesses in the UK is likely to be under-represented.

The EEF wants government to improve manufacturers’ access to local authority waste recycling facilities, and to improve measurement and

awareness of the UK’s national recycling goals.

EU waste ‘hierarchy’

The organisation’s report comes as a new EU waste framework directive comes into force, requiring companies to consider a “waste hierarchy” in disposing of their unwanted materials. This means companies must try to use raw materials more efficiently, reuse materials where they can and strive to recycle materials that may have a significant value but are difficult to extract from waste.

Many companies have already begun treating waste in this manner, but what has until now been a voluntary action has been turned into a legal obligation, although many companies are still unaware that it applies to them.

Research shows that British

manufacturers have a track record of improving their recycling rates in recent years, with the amount of waste produced by the sector down by about 23% between 2002 and 2009, and the amount of waste sent to landfill cut even further, by about 43%.

Stace said: “Waste has been a tough nut to crack and this new requirement should act as a wake-up call for both manufacturers and government. Manufacturers have already taken significant action as they have long recognised that it makes good business sense to cut out waste from their operations. However, recovery and recycling have now reached a mature stage within company operations and industry can only make further progress if government unlocks barriers created by lack of investment in infrastructure. Now is the time for government to make a

big leap forward and shake up this stagnant area of policy.”

He called for a clearer regulatory framework from the government, as well as help in accessing local authorities’ recycling facilities. He also accused the government of having done little to raise awareness of the new waste treatment requirements among manufacturers.

As much as a quarter of waste currently sent to landfill by businesses and consumers might be recoverable, according to estimates. This represents a potential resource that is being neglected by local government and companies, say green campaigners. The UK must invest billions of pounds in facilities to recover this waste if EU targets are to be met, but if the waste is recycled effectively, this cost is likely to be outweighed by the benefits, the campaigners say.

Central Europe plays catch up on steel recycling



products made of steel can be recycled infinitely. As a magnetic material, steel is easy to separate from other waste and has no effect on foods' or beverages' quality or taste, they underlined.

Recycling lagging in Central Europe

Recycling rates for steel packaging in Central European countries remain relatively low. In 2009 Slovakia achieved exactly the EU average with 72%. The recycling rate for Hungary was 70%, for Poland 48% and for the Czech Republic 47%.

US Steel Košice President David J. Rintoul said: "Production, consumption and recycling of steel packaging constitute a big potential for the whole region, the business sector and environmental protection."

Among all European states the top ranks for steel packaging recycling are held by Belgium (98%), Germany (92%) and the Netherlands (87%).

According to Philip Buisseret, Managing Director of the Association of European Producers of Steel for Packaging (APEAL), steel is currently the most recycled packaging material.

In 2009 the rate for steel packaging in the EU was 72%, while for other packaging materials the rates were considerably lower: 67% for glass, 64% for aluminium beverage cans, 34% for beverage carton and 30% for plastics.

Sceptical of regulation

In its 2004 directive on packaging, the European Union sets a target of 50% for the

recycling of metals. APEAL's objective for 2020 is to achieve an 80% recycling rate of steel packaging in the EU. The organisation also aims to have no steel packaging dumped in landfills by that date.

During discussion panellists agreed that although setting targets at the EU level and passing necessary legislation are important, the motivation of citizens themselves to return metal scrap back to the production cycle is even more vital.

John Clinton of Metal Packaging Europe said: "It shouldn't take legislation. If it takes legislation I think we have kind of failed. We should succeed through education, through creating motivation ... If we don't get the consumer to be responsible with his litter and understand its value, legislation isn't going to do that."

Central Europe's relatively low rates of recycling represent an untapped potential with easy gains, said participants at a Steel Packaging Summit in Košice. EurActiv Slovakia reports.

On 21 September 2011, representatives of the steel industry, consumers and national and local government met at a conference held in Košice, Slovakia on 'Steel

Packaging: Green Solutions in Central Europe'.

Its purpose was to highlight steel packaging's potential to contribute to sustainability and environmental protection. It was the first time this kind of event has been organised in Central Europe.

Many attending experts and representatives of metallurgical companies stressed that

EU set to miss targets for battery collection, recycling

Many EU member states are going to miss targets for collecting a quarter of all waste batteries by 2012 and 45% of them by 2016, EurActiv has learned.

New industry data shows that several countries including the UK are set to miss the 2012 target, and only very few countries such as Belgium and Germany are on track to meet the 2016 targets.

The information will be handed to the European Commission in the next fortnight.

"A couple of countries will reach the 2016 target but it will definitely be difficult for most countries to reach it," an industry insider familiar with the figures said. "Some countries only started collecting batteries in the last year or so."

One of those countries

– the UK reportedly – had a collection rate in 2010 of just 10%, less than half the required rate, and 60% of its waste portable batteries were sent overseas for treatment.

Frustration on collection rates data

An EU official familiar with the issue told EurActiv that such figures were "frustrating" and that the collection by member states of the relevant information was "a delicate issue".

"We don't yet have a clear picture of collection rates at the European level, only partial information," he said. But this would change soon, he believed.

If member states failed to meet the directive's targets by the 26 September deadline

next year, action would be taken rapidly.

"That's for sure," he said. "We will send letters and launch infringement proceedings as soon as we have the confirmations. Of that, there is no doubt."

Dismay

Figures in the recycling community voiced dismay at the prospect of the batteries directive's target being partially missed.

"We are concerned that those targets [in the batteries directive] will not be met by all member states," Hans Craen, the secretary general of the European Portable Batteries Association told EurActiv.

His fears were echoed by the German Green MEP Reinhard Bütikofer who called for more

concerted action by member states.

"We need a coalition for economic and environmental progress between environmentally conscious legislators, progressive parts of industry and responsible citizens who want to put pressure on decision makers to really make this a priority," he said.

As well as collection rates, the batteries directive, which was passed in July 2006, set stringent recycling targets for member states.

Sixty-five percent of lead acid batteries are supposed to be recycled, along with 75% of nickel-cadmium batteries and 50% of all other batteries.

But far from spurring a recycling boom, the directive coincided with a recession that has closed some of Europe's biggest

recycling plants, such as the Citron SA plant in Le Havre and the Valdi plant at Feurs, both after industrial accidents.

Their closures have reportedly reduced spare capacity and pushed up recycling prices, further hampering the fledgling battery recycling industry in the process.

The Hungarian socialist MEP, Edit Herczog, who fronted the European Parliament's recent battery collection day, insisted that the battery recycling industry would soon charge itself up.

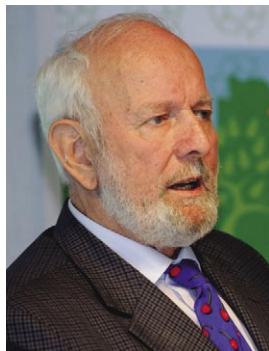
"There's a learning curve and an adoption curve and the member states which started later after entering the EU are of course lagging behind," she told EurActiv.

"But generally speaking there isn't a major problem in the EU," she added.



UNEP: 'Price signals needed for metals, energy, biomass'

Recycling less than 1% of high tech metals, Europe has no moral justification to blame the Chinese for restricting their exports of rare earths, Ernst Ulrich von Weizsäcker from the United Nations Environment Program argued in an interview with EurActiv.com.



Ernst Ulrich von Weizsäcker is Co-Chair of the UNEP's International Resource Panel. A German scientist and politician, he is the founder and served as the president of the Wuppertal Institute for Climate, Environment and Energy. He is also a member of the Club of Rome. He was speaking to EurActiv's Outi Alapekkala.

What kind of work does the UNEP Resource Panel do on resource efficiency? Your report on 'Decoupling natural resource use and environmental impacts from economic growth' last spring said that 'humanity can and must do more with less'. Where should we start from?

Half a dozen of our reports, including the one you mention, are essentially fact collecting. They show the methodology of looking at resource intensity or resource productivity. They then show that so far decoupling is not happening – except for so-called relative decoupling, meaning that GDP grows faster than resource consumption.

That, however, can however be explained by overcoming the initial clumsiness and by saturation. So this [relative decoupling] is not automatically the result of policies to reduce resource consumption or resource intensity.

Nevertheless, this report also contains case studies of four countries – China, South Africa, Japan and Germany – which in different fields have been implementing policies of reducing resource consumption.

But those were originally

meant as case studies for what is now meant to be the second decoupling report on policies and technologies, currently in the pipeline. Similarly we have a report on metals, which is one particular class of resources also of particular importance for the roadmap.

So the first two reports were essentially fact-finding and the third and the fourth ones are on technologies and policies, which is the typical scientific approach: first you have a look at what is there before you can seriously enter the policy field.

The report on technologies and policies is in the pipeline. It is well advanced and entering peer review soon. We hope to have it ready in time for the Rio+20 summit. This would mean we have to publish it in January or so.

So you will be giving policy recommendations in this upcoming report?

We are not meant, as panellists, to give policy recommendations. What we do is supposed to be policy relevant, but not policy prescriptive, so that the member countries of the UN can look at the report and say 'so it is'.

And perhaps in this case the policy analysis will lead some countries to follow some recommendations. But this is something that the states don't want to be told by a panel like ours.

However, this is what the European Commission is trying to do with its resource efficiency roadmap, to give policy recommendations and then finally propose legislative initiatives.

Yes, and that is very good. Actually the European Commission has a much stronger mandate to do such things. After all, it is the EU Commission that is the typical initiator, if not the only one, for new legislative instruments. Therefore, I think that people would be disappointed if the roadmap would not come up with legislative proposals.

Is there something particular you would like to see tabled as a legislative proposal by the Commission?

One – that is very unlikely to

happen because the British are going to block it – is a proposal for fiscal instruments that encourage resource productivity, meaning a tax shift from labour to resources.

It would make sense in terms of employment policy and environmental policy. But the British say 'this is none of your business – this is national business'. But nevertheless – the roadmap can do that in the appropriate language.

So you support the EU call for shifting taxation from labour to resource?

That would be very clever, because it would make the EU more competitive in fields that really count on world markets.

Such as?

Energy efficiency and saving metals that are otherwise wasted. All this kind of thing would greatly benefit from higher prices on natural resource, including energy, and lower prices on wages, indirect wages. So, this tax shift from labour to resources would make this 'scarcity factor' a little dearer.

As there is this factor of scarcity of metals, energy, biomass, etc, it is absolutely reasonable to have price signals making the scarcity factor dearer and the abundance factor less dear. Labour is an abundant supply – otherwise you would not have unemployment.

The EU roadmap on resource efficiency identifies food, housing and mobility as the main consumer sectors to be addressed, as they consume the most resources. If we start taxing these sectors' resource use more, what kind of social consequences would this shift have on the poorest and the emerging middle class, as a lot of people already cannot afford to buy food?

This is exactly the same question I raised with the EU Environment Commissioner Janez Potočnik at the global resource forum in Davos. And I offered him a policy instrument – that I have not invented – that simply looks at the so-called lifeline philosophy that is in place in South Africa.

What is the lifeline philosophy?

Essentially it says that what you really need for living in terms of energy and water is cheapness and the cost – price signal – begins only above that lifeline amount. And that would mean that the poor are almost entirely exempted from the price rise.

You say the poor would be exempt from the price rise because they anyway already are consuming only what they need, basically, for example regarding food?

I don't know if the roadmap specifically says that the food should become expensive. I think that in terms of a resource efficient economy you would fiscally target the primary resources. Those would be water and minerals, including those that you need for fertilisers. Fiscally-targeted resources could also be energy – and even space, but you probably wouldn't do that.

It is correct that those three sectors – food, housing and mobility – should be the main targets but you would not actively make mobility or food more expensive, you would make energy use for mobility or energy use for food more expensive and then that leaves the option of consuming less energy for your transport. This would mean that a technological answer is needed – not an austerity answer.

Well it could be an austerity answer if fossil fuels are taxed even more and private car use becomes tremendously expensive eventually leaving people with no other option than abandoning their cars, no?

As a matter of fact in Vienna, Austria, every third family has a car because public transport is so excellent. While in a city in Kansas or Missouri or anywhere in America trying to get by without a car would just be unacceptable because everybody needs a car because there is no public transport.

It is very difficult if you have a commuting distance of 30 miles each way and there is no reasonable public transport available – so you just need to use your car. And this I of course a sick symbol, a sick feature of the American society and they will find it a lot more difficult to combat global warming and other things.

What will then happen to, let's say, car manufacturers if private car use becomes too expensive for the most of us? The incentive here is for them to innovate to be less polluting and use less fossil fuels?

Yes.

During your presentation at the global resource forum in Davos, did you already give a little insight on the UNEP's next report on technologies and policies?

Yes. Many of the thoughts I have already actually published in the book Factor Five - Transforming the Global Economy through 80% Improvements in Resource Productivity.

The book simply shows that you can manufacture cars which only consume about a litre and a half for a hundred kilometres and you can have food with a lot less energy and water. You can have houses that are essentially energy neutral – I'm living in a passive house in Germany where you hardly need to use any external energy.

And this is all part of my story saying 'we can do five times better'.

It may take a generation or two but if we now begin to give a signal that energy efficiency and resource efficiency become ever more economically reasonable, we will see after 30, 40 or 50 years a five-fold increase in resource efficiency.

And the EU would be very, very wise to follow that trajectory: it would end up with hardly any dependence on oil or gas imports. Even in metals, in which Europe is not particularly rich, we could do a lot with recycling.

There are businesses that want to recycle and use recycled materials, but they can't because no recycling market really exists and they cannot get their hands on enough materials.

The trouble is that the recycling rate of all the high tech metals that are so much in demand today is less than 1%. This is shown by the second metal report, coordinated by professor Thomas Graedel from the Yale university, that we published recently.

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And this recycling rate applies to rare earths, but also for lithium that you need for car batteries, gallium you need for computers and digital cameras and indium that you need for computer screens - and many other such high tech metals that are very, very valuable.

The rare earths are not actually that rare - most of them are less rare than, for instance, indium is. But they also have recycling rates below 1%. And that means that this is a fabulous challenge for metallurgical science and technology inside Europe. Actually, we need a so-called Fraunhofer Institute (German applied science association) for metals recycling.

And then this would also create markets because their output would have to be marketed.

How then can we have food with much less water and energy?

My book Factor Five has a full chapter on agriculture looking, for example, at stables of cows and sheep that are mostly overheated. Then the food processing is losing a lot of energy.

Also, artificial fertilisers are typically mined phosphates processed with high input of energy - whereas this is not necessary, if you have a more cyclical kind of nutrition flow

inside agriculture. Then, of course, the chain from farm to the consumer, the distances, can be far shorter.

A friend of mine did years ago a study at the Wuppertal Institute on strawberry yogurt. The study - that became quite famous - shows that for the manufacture of strawberry yogurt lorries typically crisscross Europe making some 8,000 km until this yogurt is on your breakfast table. This is simply crazy and has to be improved. And it can be by the factor of four or five or so.

What is your assessment of the current raw materials hype, Chinese export restrictions on rare earths**and the WTO challenge from the resource efficiency and recycling perspective, as you say that Europe already has a big recycling potential?**

That means that as long as we, Europeans, are wasting 99% of the rare earths that we are using we have no moral justification to blame the Chinese for being a bit restrictive on exports.

So we should first make a bit of moral critique ourselves for showing such a wasteful behaviour and then perhaps, in the end, negotiate with the Chinese if perhaps in exchange for recycling technology we can have a little more of their stuff.

That would make sense.

The WTO issue is much more difficult for the Chinese to handle because the WTO is against any export restrictions by their very legal setup. So if the Chinese declare 'we are producing less and exporting less' they are in trouble with the WTO.

Any final comment on the EU resource efficiency roadmap?

The roadmap is a good, great step forward - but it needs, of course, a number of concrete binding commitments. But this is not for the Commission to decide but for the Council.

UNEP: EU wastes 99% of its high-tech metals



Recycling less than 1% of high tech metals, Europe has no moral justification to blame the Chinese for restricting their exports of rare earths, Ernst Ulrich von Weizsäcker from the United Nations Environment Programme argued in an interview with EurActiv.com.

According to a report released by UNEP's Resource Panel in the spring of this year, recycling rates of metals are in many cases "far lower than their potential for reuse".

Less than one-third of the 60 metals studied in the report have an end-of-life recycling rate above 50% while 34 elements are below 1% recycling, the UNEP panel found.

The trouble is that the recycling shortfall also concerns very valuable high-tech metals, which are much in demand today, said von Weizsäcker,

who is co-chair of the UNEP's International Resource Panel.

It "applies to rare earths, but also for lithium that you need for car batteries, gallium you need for computers and digital cameras and indium that you need for computer screens," he told EurActiv.

The weak performance is frustrating for the UNEP resource panel, because unlike some other resources, metals are "inherently recyclable".

And while more than half of the iron and steel, as well as platinum, gold, silver and other precious metals, are recycled in industrial applications, only a small fraction of them is recycled in electronic goods.

Asked to comment on the rare earths row between China and Europe, von Weizsäcker was categorical: "As long as we, Europeans, are wasting 99% of the rare earths that we are using

we have no moral justification to blame the Chinese for being a bit restrictive on exports."

Instead of dwelling in such "wasteful behaviour" it would make sense if the EU sought to negotiate with the Chinese to exchange our recycling technology for a bit more of these rare metals, the German scientist suggested.

Commission urged to table green tax reform

After several fact-finding reports on resource intensity or resource productivity, which show that decoupling natural resource use and environmental impacts from economic growth is not happening - the UNEP's International Resource Panel is currently finalising a report on technologies and policies needed to do so.

The report should be ready on time for next year's Rio+20 summit, which is expected to agree on an action plan for a 'Global green economy' to guide international action on sustainable development policy for decades to come.

However, the report will not be giving any policy recommendations, as "this is something that countries don't want to be told by a panel like ours," Ernst Ulrich von Weizsäcker noted.

"Actually, the European Commission has a much stronger mandate to do such things. After all, it is the EU Commission that is the typical initiator, if not the only one, for new legislative instruments," he said, adding that people would be disappointed if its roadmap would not lead to any legislative proposals.

In particular, von Weizsäcker

er would like to see the EU executive table a proposal for fiscal instruments that encourage resource productivity, meaning a tax shift from labour to resources. However, that "is very unlikely to happen because the British are going to block it," he added, referring to national subsidiarity in fiscal matters.

Shifting taxation from labour to resources "would be very clever, because it would make the EU more competitive in fields that really count on world markets," he argued, listing as examples energy efficiency and metal savings.

The scarcity of metals, biomass and others makes "it absolutely reasonable to have price signals making the scarce factor dearer and an abundant factor less dear," he pursued.

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Lifeline philosophy

While the EU roadmap on resource efficiency identifies food, housing and mobility as the main sectors where resource use should be addressed, and eventually taxed more, von Weizsäcker insisted that this does not mean one would actively seek to make mobility or food more expensive.

"You would make energy use for mobility or energy use for food more expensive," leaving a person the option of consuming less energy for his transport, he said.

Meanwhile, slapping taxes on primary resources such as energy, water and minerals, including those needed for fertilisers, could indirectly make private car use or food so expensive that it would have social consequences, in particular for the poorest, but also for the large middle class which is already struggling in the current crisis.

Von Weizsäcker said he had addressed this topic with EU Environment Commissioner Janez Potočnik at the global resource forum in Davos in late September. "I offered him a policy instrument – that I have not invented – that simply

looks at namely the so-called lifeline philosophy that is in place in South Africa," he said.

"Essentially it says that what you really need for living in terms of energy and water is cheap and the cost-price signal – begins only above that lifeline amount. That would mean that the poor are almost entirely exempted from the price rise," he explained.

But he acknowledged that "if you have a commuting distance of 30 miles each way and there is no reasonable public transport available" trying to do without a car could be very difficult.

As to the fate of car manufac-

turers – in case private car use falls – Professor von Weizsäcker said that they would be incentivised to innovate and produce cars that use less fossil fuels, for example, underlining the need for a technological, and not an austerity, answer.

'Factor five'

Professor von Weizsäcker is thoroughly convinced that "we can do five times better".

In his latest book *Factor five - Transforming the Global Economy through 80% Improvements in Resource Productivity*, he shows that it is possible to manufacture cars

which only consume a litre and a half for a hundred kilometres, that food can be produced with a lot less energy and water and that our houses can be built energy neutral.

"It may take a generation or two but if we now begin to give a signal that energy efficiency and resource efficiency becomes ever more economically reasonable, we will see after 30, 40 or 50 years a five-fold increase in resource efficiency," he said.

And the EU would be very wise to follow that trajectory, as it would help the bloc put an end to its dependency on oil or gas imports, he said.

Umicore chief: Recycling comes at a cost

In September 2011, Belgium's first battery recycling plant opened in Hoboken. The €25 million battery recycling and development centre can recover nearly all the elements used in electric and hybrid cars, but so far only two car companies have signed deals with it. Despite the EU batteries directive, recycling lithium is an expensive process and for the moment, the Hoboken plant is operating beneath its capacity.



Sybolt Brouwer is the general manager of the Umicore battery recycling plant. He was talking to EurActiv's environment and energy correspondent, Arthur Neslen

Are you satisfied that electric car manufacturers have given enough thought to what will happen to their lithium batteries at the end of their life cycle?

Yes I think so, because we talk to car manufacturers and they all consider us to be a serious candidate for recycling their batteries. With a lot of these things, during the development phase, recycling or end-of-life gets a bit forgotten.

Automobiles are not a unique example of that. Design for recycling is something that a lot of manufacturers should consider more. There is room for improvement there.

Is there a chance that lithium batteries could end up being incinerated or buried in landfills?

I don't think that's an option. If you have a green policy and you have a green car - which is fantastic - then it's very hard to make your battery's end of life the end of your green image also.

And yet a number of car companies still don't seem to have plans for recycling these batteries.

Well the market for end of life batteries is still small. They don't have their own plans for that, but we offer them a service.

Who are you talking to about this?

We are talking a lot to everybody. Tesla is one that we have already talked about. They have decided to go public on that but we respect those who choose to be low profile.

Which batteries are recyclable?

There are two different types of batteries - the lithium-ion and the nickel metal hydride batteries - and two different types of application that we recycle. It's the portables you find in your cellphone, laptop or kids toys because they're the rechargeable nickel metal

hydrides, and then there are the automobile batteries from hybrid and electric cars, like the Toyota Prius and the Honda Insight.

There was a disaster at a battery recycling plant in Hampshire in England recently. What's your strategy to avoid a repetition of that?

It's a lesson that we already knew: You have to know what you're doing. Why? Because batteries are like a little chemical factory in themselves. They're charged and when you make short cuts, short circuits, they can heat up and create a fire. What we've done over here in the handling and storage of batteries is take all the knowledge in the market and that we've built up ourselves [and create] a system that's workable, a system with detection and segregation of storage so that if there is a fire, in the end, it cannot spread. There are a lot of things you can do to avoid fire. We have addressed a lot of them.

Are there any changes to product design requirements that would help your work?

Lithium-ion is quite a general term. In a Lithium-ion battery there can be cobalt, nickel, manganese iron, and other elements in all kinds of combinations. In the process of going from the old pure lithium cobalt batteries to a lithium-ion phosphate battery or lithium manganese battery, you decrease the value of the metals inside. But the cost of recycling will not decrease by

the same amount. Depending on what kind of battery you have, this will cost money. The Tesla battery is a high end cobalt-containing battery that saves money in recycling, but with many of the others, recycling is a cost. We can recover lithium from batteries in our [recycling] process but it is more expensive than the price of primary lithium for the moment.

How would you like to see product design requirements changed? Which elements would you like to see used more and which used less?

I would like to communicate – and this is our responsibility also – to the product designers the impact of their designs on recycling, but I am not a battery expert. We should make them aware of the impacts at least.

What quantities of batteries are you recycling that have been imported from abroad?

The majority. This facility has a capacity of 7,000 tonnes a year. That's around 250 million small batteries and this capacity has not been filled yet. We didn't expect it to because we are being proactive for the future. The amount coming from Belgium itself now is really limited because electric car batteries are in an introductory phase. Our main amounts come from mobile phones, and laptops, from collection networks all over Europe.

Can you tell me from which countries they

mainly come from?

They're countries with developed performance collection networks, like the Scandinavian countries, and also Germany, England, and France.

And from outside Europe?

You can imagine that most batteries are produced in Asia and not all of them are a success. Some of these are coming to us. But this kind of battery recycling is driven by legislation and there is legislation in Europe that says you have to collect 25% by next year and 45% by 2016.

Do you think we're on track to meet it?

I think for some countries it will be a challenge but other countries have already developed, although there are a lot of countries which lag a little bit behind.

Which ones?

Maybe the ones I didn't mention before. I don't want to specifically mention any country.

Why do you think only two car companies have agreed recycling deals with you so far?

That's a good question. I don't know actually. Maybe this company [Tesla] was happy with the results and clearing out of all their batteries. For the others, this is a process.

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The recycling of batteries comes at a cost. It is a service that we give. This is unlike recycling a car catalyst, which is underneath, because we can pay for that. There's money in it. This has to be paid for and that's an important message that has to be explained many times.

Should there be greater assistance from member states and from the EU itself?

I think that the laws are already clear on this.

I'm talking about tariffs, or bringing recycling into the ETS more. Could there be ways of bringing revenue streams online that would help mitigate the costs?

That might be a solution. You're talking about portable battery recycling. We pay everything up front for our battery recycling. What do I think of those kinds of schemes? I'm not a specialist to be honest.

Are you satisfied that**the recycling points and collections going back to manufacturers and vendors - that were talked about in 2010 - are advancing at a fast enough speed?**

You can look at the statistics and see that some countries are already beyond the 25% (target for 2012) and some others are lagging behind. But then I understand that some of these countries are making efforts to get there.

Which electric car batteries cause you the most problems?

There are differences between one electric car battery and another. These batteries can weigh between 50 and 250 kilos. Some of them are designed for dismantling and recycling. You can take out the modules. There's a big battery and all sorts of small modules that need to be recycled. Other batteries are more of a challenge to dismantle. That is what I mean by design for recycling, and that is also an incentive we give to car manufacturers in discussing and investing how this can be optimised.

This is the first battery recycling plant in Belgium. Why haven't there been more? Why isn't the EU legislation leading to a proliferation of these plants?

I think it's because it's the first industrial one on this scale. But the 7,000 tonnes I told you about is way beyond what we need at the moment. We don't take that yet. For us this is important because we want to be ready (for when the EU batteries directive is implemented) and also this is a showcase, an experience-building thing.

Does it suggest a policy failure?

No I don't think so. There are a lot of other recycling companies and for the moment that seems to be enough. You can ask why other companies aren't yet ready for something which will really be exploding in five or ten year's time. We want to build the expertise to get ready for that time. We are convinced that we should go this way as a technology platform.

What rare earth recycling takes place here?

Nickel hydride batteries are the only ones that contain rare earths. In a lithium-ion battery there are none. Our aim as Umicore is to close the loop on metals. We do it now with cobalt and nickel and now we also have a supply of nickel metal hydride batteries which contain rare earths. We also designed a process together with Rhodia (a French chemical company) to refine and recycle, and get rare earths back into the process. We have sort of the same thing for lithium but that doesn't pay off yet, because the price of lithium is low. For rare earths the price is high enough to do this but if prices go down to their historical level, we might come to a point where we stop it.

So you're dependent on market prices for all of this?

Yes
But at the same time, environmentally there are resource needs and climate needs that might not be able to wait for prices to align correctly.

Yes, that's correct.

What's the implication of that?

The implication is that if the prices fluctuate according to market supply and demand, then you might not be ready for the moment when you need to be.

Is that an argument for greater regulation of the markets or intervention by policy makers?

It might be an idea to ask for a certain amount of recycled material in your product. If you know that there are companies that can do the recycling and you need a recycled product, then these companies can compete amongst each other for a best price that is not related to the market price.

So if there was a requirement on them to use recycled materials in the manufacture of their products in the first place, that would guarantee a market for those recycled products?

Yes.

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