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Waste Policy: Understanding the Circular Economy

While governmental and non-governmental organisations, mainly in Europe, are eagerly pushing to implement and integrate the concept of circular economy into environmental policy, scientists, including environmental economists, have shown little interest. This workshop was an attempt to narrow this gap and identify insights that can be used to improve policies for a more circular economy.

Background
The economy can be seen as a collection of interactions between producers and consumers that result in the re-allocation of scarce resources among alternative uses. The question asked in this workshop was what it means when we add the word circular to that economy. Recent literature describes circular economy as lacking clear definitions and as a collection of vague ideas from scientific and semi-scientific areas. Yet, at least in Europe, ambitious initiatives have introduced policy for a more circular economy.

Circular economy is a term first used by Pearce and Turner (1992) in an environmental economics textbook, but ideas of increased material and resource circularity can be traced back to early debate on sustainable growth. Observing that non-renewable resources are limited, Meadows et al. (1972) argued for increased reuse and recycling of products in the economy. In the 2010s, the concept of circular economy started to gain popularity because of successful campaigns by the Ellen McArthur Foundation and was added to the agenda of policymakers. A major breakthrough came in 2015 when the European Commission launched its action plan for a more circular economy, which dramatically increased the visibility of the concept. Today, many countries in the EU are considering introducing, or have already begun to introduce, policies for a more circular economy.

Key issues discussed
This report is based on a workshop among experts from policy and environmental economists to better understand circular economy and its implications for environmental policy.

The report highlights three key questions with implications for practical application of circular economy in policy:

• What and why ‘circular economy’?
• What are the current policies for a more circular economy?
• How can we improve policies towards a more circular economy?

Summary of workshop discussion
What and why circular economy?

• The term has no clear definition, but the common element is related to reducing material throughput and waste in society by less material use or reuse of material or goods in the economy.
• Circular economy is a broad concept
and leaves room for many different interpretations ranging from fundamentalist to lighter versions. The fundamentalist version asks for radical social and behavioural changes in production and consumption. The lighter versions are content with increased resource efficiency, where an increase in production and consumption is possible with less resources and increased circularity can be achieved without compromising and possibly even enhancing economic growth.

- The environmental problems that a more circular economy needs to address are not always clear. Circular economy is often associated with resource scarcity and the external costs of waste, but it includes even reducing other external costs such as peer effects but it includes even reducing other external costs associated with emissions and externalities such as peer effects.”

- • Policies to stimulate the development of a more circular economy aim to increase resource efficiency and reduce waste through increased maintenance, repair, reuse, remanufacturing, refurbishing and recycling, such policies already exist in the form of polices for waste reduction and increased sustainability.

- • Waste-reducing polices are a combination of market and non-market policy instruments such as mandatory producer responsibility, deposit-refund systems and landfill taxes. Policies to improve product design and increase environmental awareness in the private and public sector are also common.

- Past, new concepts such as green or sustainable growth have been a way to attract attention to environmental causes and conservation of nature. It is also interesting to note that the geographical spread of the term circular economy is limited. It is used in Europe and other countries, such as China, but is much less known in other countries.
• Policies to increase resource efficiency are less evident. Many policies that reduce waste are also considered to increase resource efficiency, in particular those creating incentives for reuse of resources and goods. In addition, there are specific subsidies to increase resource efficiency. The EU Ecodesign directive is one example of a policy to improve energy efficiency.

• At present, there are few examples of more elaborated policies for increased resource efficiency even though a few countries, such as Japan and more recently Finland, the Netherlands and Italy, have adopted broader national strategies for a circular economy.

How can we improve policies to stimulate a more circular economy?

Identify the problems:

Circularity is not a goal in itself, so the problems to be solved with a more circular economy must be made clear. If a more circular economy is about reducing extraction of resources for use in the economy and reducing outflow of materials, i.e. reducing waste, out of the economy, then the problems associated with each of these two targets need to be identified.

The environmental problem of waste:

Waste generated in the economy should be reduced for two reasons. First there is a need to reduce the direct environmental problems of waste (i.e. littering, contamination to waste and land). Second there is a need to reduce the content of valuable resources in waste. This is because due to transaction costs or high yield requirements, individuals may not be able to fully exploit valuable resources in their own waste.

The environmental problem of reducing the inflow of resources:

It is unclear whether inflow of new resources in the economy is a problem per se or whether it is about how new or virgin resources are introduced in the economy.

If an excessive inflow of new resources per se is a problem, then the environmental problems or externality generated need to be identified before policies can be introduced to solve the problem. One often debated issue is the concern that global resources might run out. To date, these concerns have been unfounded, even if scarcity of some rare resources is still debated.

If the problem of excessive inflow of resources is about the environmental problems caused earlier in the material flow, policies should address these problems. However, this is complicated since many governments are more interested in supporting the extraction of virgin resources than in taxing extraction and production even when environmentally motivated. In addition, policy is often national while markets are global and complex. A nation that wants to address these externalities is limited by the fact that most resources are extracted in one country and used in production and consumed in many other countries.

Solving the problems

Policies should target the environmental problems:

An important criterion for efficient policy instruments is to clearly target the source of the environmental problem. Policies for a more circular economy need as the first step to become clearer than today on what specific circularity problems to target. Waste policies need for instance to separate policies for the direct environmental impact of waste from policies to reduce valuable resources left in waste.

A possible way to separate these policies is to use taxes to incentivise reduction of the direct environmental impact of waste and a subsidy to recycle valuable parts of waste. Such instruments create incentives both to reduce environmental damage from waste and to develop systems to get valuable materials and products back into the economy.

The processes of material recycling (collecting, processing, sorting and recycling) may have environmental impacts. Thus, the question for policy is what degree of material or resource recycling is
Does resource efficiency reduce the inflow of new resources in the economy? Increased resource efficiency is one of the most popular policies to stimulate the development of a more circular economy. Increased resource efficiency might increase circularity in the sense that more materials are kept in the economy, but it does not necessarily reduce the inflow of new resources into the economy. Increased resource efficiency has two effects. First, a material or good that is more efficient will be more attractive to use. Second, since higher efficiency means we do the same with less, it creates excess resources to be used elsewhere. Thus, even if resource efficiency may initially reduce the amount of resources used in the economy, the total resource use might eventually bounce back to or even exceed initial levels. That is, in physical terms, we may end up with more materials circulating in the economy. This illustrates that increased resource efficiency will most likely not be achieved as a result of more efficient technologies alone. The end result depends to a large extent on which policies are applied.

Traditional environmental problems such as emission externalities can be internalised by traditional policy instruments. However, complication factors, such as international aspects of environmental problems, may make the implementation of these policy instruments more complex. These complications need to be addressed through international collaborations or by use trade policies in order for a more circular economy to be achieved.

Behaviour-related externalities, which are gaining increasing attention, are also interesting to address. Policies to solve peer effects, network effects, and coordination failures may lead to a more circular economy. Industrial symbiosis, where waste from one industry is reused in another, may contribute to the solving of coordination failures. Policies that encourage the development of new services for leasing goods such as homes or cars may contribute to dematerialising the economy. Furthermore, the policies may increase incentives for the use of higher quality goods with a long life expectancy.

There are market failures on knowledge and technologies that need to be addressed to reduce excess inflow of resources and reduce waste generated in the economy.

Get the price right:

The most common policy instruments for waste reduction are independent of the volumes of waste created. For example, most household waste fees around the world consist of a flat rate per a time period, regardless of volume. Relating policy instruments more to waste weight or volumes would contribute to reduced amounts of waste. Household fees per unit of waste would greatly increase the incentives to reduce waste.

Certain waste policies strive to reduce energy recovery and instead increase biological recovery. If this is the ambition, it might be better to collect food waste separately than to implement a weight-based waste tax.

Network, coordination and other behavioural externalities need to be addressed. Network or coordination externalities need to be addressed to facilitate increased use of resources in the economy. Policies to address transaction costs may be needed to reduce the cost of using or selling valuable resources in waste.

Policies to address knowledge externalities are necessary towards more circularity in the economy. The growth of information technology may open up for opportunities to challenge traditional markets and find new ways to provide goods and services. New knowledge might increase the availability leasing services instead of owning some durable goods. For example, this may involve selling services rather than products.
Conclusions

Environmental policy should strive for the most appropriate policy intervention to deal with the environmental problems generated in the economy. It is therefore important to identify what problems a circular economy is supposed to solve. To this end, it is necessary to define more clearly the meaning of circular economy. It seems that reducing the inflow and outflow of material resources from the economy may be the common element of most definitions of circular economy.

Circular economy policies are usually centred around two main aims: increased resource efficiency and reduced amounts of waste. Reducing waste can also reduce the outflow of resources from the economy. However, it is less clear whether increased resource efficiency reduces the inflow of resources into the economy. In fact, it is possible that resource efficiency increases the use of resources in the economy and increases circularity, but it may also increase the inflow of resources into the economy.

Current policy to promote a more circular economy often consist of efforts to increase the maintenance, repair, reuse, remanufacturing, refurbishing and recycling of products. Three basic principles to increase the efficiency of such policy are:

1. Identify the environmental problems circular economy need to solve. For policies to be effective, it is important that the problems that need to be solved are clearly defined.

2. Target the environmental problems. There are a number of external costs that need to be addressed by circular economy. These include externalities resulting from emission and over-exploitation of resources as well as other recently acknowledged externalities associated with social norms, network effects and coordination failures. Knowledge and technology externalities are also important policy targets towards a more circular economy.

3. New policies can only be motivated if there are environmental problems that have not yet been (properly) addressed by existing policies.

The toughness of regulations should vary with the severity of the respective environmental impacts. For market-based policies, this corresponds to setting prices right. Many fees and taxes for e.g. waste are flat rates per month, regardless of weight or volume of waste. Fees and taxes that vary with the extent of the environmental problems might create greater incentives to reduce the problems and contribute to a more circular economy.
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6th World Congress of Environmental and Resource Economists (WCERE) Pre-Conference Report

Background
Successful management of many of the environmental, economic and social challenges that humanity is currently facing requires collective action both between and within states. The Paris Agreement and the adoption of the 2030 Agenda for Sustainable Development are examples of agreements that aim to foster such cooperation and collective action. However, implementation of global agreements in practice often requires quite bold policymaking at state level, and here social scientists have a crucial role to play by suggesting and evaluating sound policies that promote greener economies. The need for evidence-based policy advice is larger than ever before and looking ahead, the demand will most likely continue to increase.

One challenge to sound policy making, in particular at Swedish agencies, is that most practitioners responsible for the management of environmental resources and issues are natural scientists. This is a challenge since environmental matters also need to be dealt with from a social science perspective and require the involvement of practitioners with a background in social sciences, not least environmental economists with expertise in the design, implementation and evaluation of policies. However, many aspects of environmental economic policymaking in practice are inherently complex and far from simple textbook models. Moving into the real world adds layers of complexity for example in the form of political restrictions and goals, temporal and dynamic effects, ethical considerations, imperfect information, uncertainty and behavioural constraints. Practitioners need to make decisions within this complex context with limited resources and time.

Hence, the existence of platforms that can facilitate and enable communication on equal terms between the research and policy communities is essential. Large academic conferences such as the World Congress in Environmental and Resource Economics (WCERE) gather experts in environmental economics from all over the world and have great potential to improve the interaction between leading academics and experts at agencies and organisations working with environmental policies. Traditionally, policy sessions at such gatherings are organised such that scientists give policy recommendations. We think that these sessions can be greatly improved if instead an interface for dialogue is created.

The 6th World Congress in Environmental and Resource Economics (WCERE) was an opportunity to improve the interaction between environmental economists at agencies and those in academia. This pre-conference used practitioners’ questions at Swedish agencies as a starting point for such interaction. Academics and experts at agencies and organisations involved in policy work were brought together in five parallel workshops: fisheries management, biodiversity protection, circular economy, climate change and chemicals. The overall aim of the workshops was to strengthen the role of environmental economics in Swedish policy. Each workshop, which consisted of up to 10 experts and a chair, with a balance between practitioners and researchers, aimed to provide participants with new insights by addressing practical problems faced in policymaking and to strengthen networks of environmental economists.
Lessons learned

• Despite the short time available (3-hour workshops), there was room for plenty of new reflections, discussions and building of new networks. Several suggestions for continued collaboration between researchers and agency representatives were made, including joint workshops and studies. As one practitioner said, ‘I wish my everyday work had more time for reflections of this kind.’

• It is important to build up infrastructure and resources for more frequent interaction between scientists and practitioners.

• The participation of international experts was highly appreciated as it broadened the national perspective on the issues discussed.

• The format of mixed and balanced groups worked well and was rewarding to all participants.

• If the goal is to increase the likelihood that the discussions will have a direct impact on the work at the agencies, it is important to address specific issues of direct relevance to them. During these pre-conference workshops, the broader questions in the biodiversity and circular economy workshop led to a more general level of discussions compared to the other workshops with narrow and specific questions well embedded in the agencies work.

• Each workshop chair benefitted from the preparatory coaching on the meeting technique most appropriate for their workshop. The meeting techniques were applied to encourage active participation and make everyone’s voice heard. This was particularly important in the larger groups.

• The participants strongly appreciated that the only thing they needed to do to prepare for a workshop was to read a short background text (see text for each workshop). Remember that each participant is already an expert on the topics discussed at the workshops they were invited to participate in.
References

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