CIRCULAR IMPACTS

Methodology for the Case Studies

Funded by the European Union

AUTHORS

Marie-José Smits, Researcher, Wageningen University and Research

Geert Woltjer, Researcher, Wageningen University and Research

Project coordination and editing provided by Ecologic Institute.

Manuscript completed in June 2017; Revised in March 2018

This document is available on the Internet at:
http://circular-impacts.eu/deliverables

Document title	Methodology for the Case Studies
Work Package	4
Document Type	Deliverable
Date	29 March 2018
Document Status	Final

ACKNOWLEDGEMENT & DISCLAIMER

This project has received funding from the European Union's Horizon 2020 research and innovation Programme under Grant Agreement No 730316.

Table of Contents

1 :: Introduction

This document is about the methodology and selection of the case studies. It is meant as a guideline for the case studies, and together with the other reports in this work package can be a source of information for policy officers, interest groups and researchers evaluating or performing impact assessments of circular economy policies or specific circular economy projects. The methodology was developed to ensure that the case studies focus on the overall impacts of the circular economy. The frame of the methodology is a step-by-step approach, which will be described in sections 3 and 4 of this document. In Section 2, we describe the selection of the case studies.

The methodology for the case studies is described in this document, whereas the case studies themselves, using this methodology, are provided in the workshop papers and will be summarized in the final report of this work package. The purpose of the case studies is to show how an analysis of the impacts of circular economy processes may go beyond the direct impacts. We do not only study the impact at a sector or chain level, but also focus on potential influences on society as a whole, i.e. for the environment, productivity in the sector and related sectors, consumers, imports and exports, and employment. Next to this, possibilities to scale up the circular process and enabling factors and barriers for implementation are analysed. Based on this also policy options are formulated.

Many initiatives for the circular economy are still in a pilot phase. Therefore, future developments are important. For example, what are the effects of upscaling the business case, both for profitability and social effects? We propose to focus the analysis on expected developments of the business case and the final impacts when the transition has been completed.

2 :: The choice of the case studies

In selecting the case studies, we made use of the overview given in 'The Circular Economy – A review of definitions, processes and impacts' (deliverable WP2) on the main circular economy processes, see Box 1.

Box 1. Main circular economy processes

USE LESS PRIMARY RESOURCES

- Recycling
- Efficient use of resources
- Utilisation of renewable energy sources

MAINTAIN THE HIGHEST VALUE OF MATERIALS AND PRODUCTS

- Product life extension
- Remanufacturing, refurbishment and re-use of products and components

CHANGE UTILISATION PATTERNS

- Product as service
- Sharing models
- Shift in consumption patterns

Source: Deliverable 2.1 - Circular Economy: A review of definitions, processes and impacts (WP2)

The case studies were selected in such way that there is a link between the case studies and each main circular economy process, as mentioned in Box 1.

The choice of case studies is:

- Nutrient recycling
- Sustainable building
- From product to service
- Critical raw materials

In addition, a literature review of biofuels and other renewable energy sectors will be undertaken in the CIRCULAR IMPACTS project. The results of the literature review will be combined with the case studies in the follow-on work within the project.

The case study on nutrient recycling fits within the processes of 'Recycling'. The case study on sustainable building fits within the processes 'Efficient use of resources', but also links to 'Remanufacturing, refurbishment and re-use of products and components'. The case study from product to service relates to the three processes (i.e. product as service; sharing models; and shift in consumption patterns) included in the category 'Change Utilisation Patterns'. Furthermore, it is expected that the case study from product to service will also relate to the issue of product life extension, since in this case the producer remains the owner and therefore has an interest in extending the life of the product. Finally, the desk research on biofuels and other renewable energy sectors fits within the process 'Utilisation of renewable energy sources'.

The case studies are also in line with the EU action plan for the circular economy published by the European Commission in December 2015. Critical raw materials and sustainable buildings (construction and demolition) are two of the five priority areas of the action plan. Nutrient recycling is explicitly mentioned as one of the elements in the chapter "from waste to resources", while "from product to service" is explicitly mentioned as one of the options to introduce circular economy aspects on the consumer side. The review of biofuels and renewable energy fits into biomass and bio-based products priority area of the action plan.

After the initial topics of the case studies were selected, we narrowed down the subject in order to get clear focussed case studies. Below we describe, for each of the case studies, the choices made from the initial scope of the case studies to the final specification.

Selection of case study on recycling phosphorus from manure in the Netherlands

Initial scope and final specification. The project team initially formulated nutrient recycling as an interesting topic for a case study. Nutrient recycling was narrowed down to phosphorus recycling, because phosphate rock is on the EU list of critical raw materials. The element phosphorus (P) is essential for life and is used to make phosphate fertilizer, one of the three main parts of mineral fertilizer. It is irreplaceable, but recyclable. Furthermore, the scope is on phosphorus recycling from manure, because phosphorus in manure has two aspects. First, phosphorus in manure is an important fertilizer for the agriculture sector. Second, over application of manure causes eutrophication, i.e. excessive richness of nutrients of a water body, which causes excessive growth of algae and other plants with as a result an oxygen depletion of the water body. Over supply of manure is since decennia an issue in the Netherlands. Since the 1970s, manure is seen as waste instead of a useful resource, as it was until this period. The EU-funded project BioEcoSIM has developed techniques to extract phosphorus and nitrogen from manure, along with organic soil improvers. By recycling mineral and organic components from manure, the project aims to contribute to the circular economy.

Choices made towards delineation. To summarise, the case study team narrowed down the subject of the case study, based on the following consideration:

- Phosphorus: a critical raw material, essential for modern agriculture, irreplaceable.
- Manure: essential for fertilizing agricultural land, but causes severe environmental problems when it is over supplied.
- The Netherlands: a country with over supply of manure, due to an intensive livestock sector.
- BioEcoSIM: state of the art technique, based on an EU-funded project, to extract valuable nutrients, such as phosphorus and nitrogen, from manure.

Selection of case study on recycling concrete in France

Initial scoping. The project team initially examined the issue of sustainable buildings, including both material recycling as well as energy efficiency aspects. Due to the

extremely large number of material types and their complex supply chains, it became clear during the case-study definition phase that a further reduction in scope was necessary, given the project time and budget that was available for completing this particular case study. Because energy topics are already being covered elsewhere in the project, this aspect was removed from further consideration in the case.

Final specification of scope. The case-study team narrowed the scope further, undertaking an analysis to identify a case study that included a recyclable building material of high significance that could also be a suitable target for future circular-economy policy approaches. The team choose a final topic of recycled concrete in France based on these considerations:

- CDW is major waste source. The European Commission identifies construction and demolition waste (CDW) as one of the "heaviest and most voluminous waste streams generated", as it is responsible for 25% - 30% of all waste generated in the EU.[1]
- Concrete is a very significant component of CDW. Concrete makes up by weight and volume the largest portion of CDW, not including natural soil and stones. The recycling of concrete could be a significant help to the EU and its Member States to achieve their objectives by making the European building sector more circular.
- France is one of the largest producers of CDW in Europe with moderate rates of recycling. In France, around 300 million tonnes of Construction and Demolition Waste (CDW) are produced each year. Thereof, only a small portion of concrete is recycled (less than in several other Member States) and is predominantly used as a substrate in road construction.[2]

Selection of case study on carsharing in Germany

Initial scoping. The project team sought a suitable case study on the topic of "product as a service", which is becoming an increasing viable alternative to private ownership of personal goods. Rapid technological changes as well as concurrent societal changes, are increasing peoples' ability and willingness to purchase the short-term use of shared goods. In its initial scoping, the project team initially considered carsharing in Europe as well as lighting-as-a-service models, wherein firms install lighting in buildings on a leasing model rather than the client taking ownership of the lighting technology.

Final specification of scope. The concept of product-as-a-service is a wide ranging, rapidly shifting economic development. Due to time and budget constraints in the CIRCULAR IMPACTS project, it was necessary to narrow the scope further if the team was going to be able to analyse the complex issues and relate them to specific sectoral developments as called for in the case-study methodology. The project team selected a final topic of carsharing in Germany for these reasons:

- Carsharing has transformative potential. The transportation sector is responsible for a large portion of energy consumption and greenhouse gas emissions. Carsharing is a transition that is already underway, with carsharing services have rapidly expanded across the globe. The high fixed costs of

[1] http://ec.europa.eu/environment/waste/construction_demolition.htm

[2] http://www.pnrecybeton.fr/en/

automobiles, changing demographics and shifts in urban lifestyles make the idea of car ownership less attractive, while the combination of internet, GPS and smartphone technologies has dramatically lowered barriers to carsharing models.

- The sector is facing rapid changes, contradictory effects and high uncertainties. Carsharing's future effects are highly uncertain and the effects will differ by geography, economic class and demographic groupings. The project team ruled out a Europe-wide scope for a carsharing case study because the available task budget would have been inadequate to fund the detailed data collection and issue analysis required by the case-study methodology.
- Germany is an important automotive market. Germany is one of the world's major automobile-producing countries. At the same time, it is among the world leaders in adoption of carsharing. Germany offered a rich case study on both the demand and supply sides of carsharing developments. With Germany a frontrunner country in a new and rapidly evolving sector, the current and near-term developments in Germany also offer one of the best glimpses into possible future developments elsewhere.

Selection of case study on end-of-life electric vehicle batteries

Initial scoping. Critical raw materials (CRMs) were chosen as one of the overarching case study themes by the project team. The inclusion of CRMs in the Commission's 2015 Action Plan for the Circular Economy as one of the key priority sectors was a key reason for this choice. These materials are crucial to Europe's economy and are increasingly being used in new technologies.

Final specification of scope. Following a first round of meetings and telephone discussions with experts in the field, it was decided that the case study should concentrate on either a number of critical raw materials or on a specific product that contains these materials. This would help gather accurate and measurable data to form reliable results since there are many CRMs used in various quantities and in a range of applications. After a second round of interviews with experts on the topic, including CRM associations in the EU and US, recyclers and academic researchers, it became apparent that a product approach to this case study was most appropriate. Mobile phones and lithium ion batteries were two key products mentioned by several experts as being important to assess due to the materials that can be recovered and the lack of vigilant end-of-life management. Lithium ion batteries are becoming increasingly important in our low-carbon and digital future. They are a type of rechargeable battery used in most portable electronic devices (laptops, mobile phones, tablets, electric vehicles etc.). Because the size and type of these batteries varies significantly, further narrowing down of the scope was important to ensure the data gathered was consistent. Demand for electric vehicles is expected to increase significantly over the next few decades and the fact that an electric vehicle battery is about one thousand times larger than a mobile phone battery provided a strong case for end-of-life electric vehicle batteries to be the final product chosen by the project team.

Motivating this decision further is the current policy agenda of the European Commission and national governments. The European Battery Alliance has been initiated by Maroš Šefč ovič , which aims to establish a full value chain of batteries in Europe, with large-scale battery cell production facilities and the circular economy at the core. The Battery

Directive is also currently undergoing a review and results from this case study have the potential to inform the European Commission during this process. Plus, a number of Member States have announced plans to ban internal combustion engine vehicles in the future, which has stimulated a reaction from car manufacturers and will see a dramatic shift towards alternative fuelled vehicles, including electric vehicles, in the coming years.

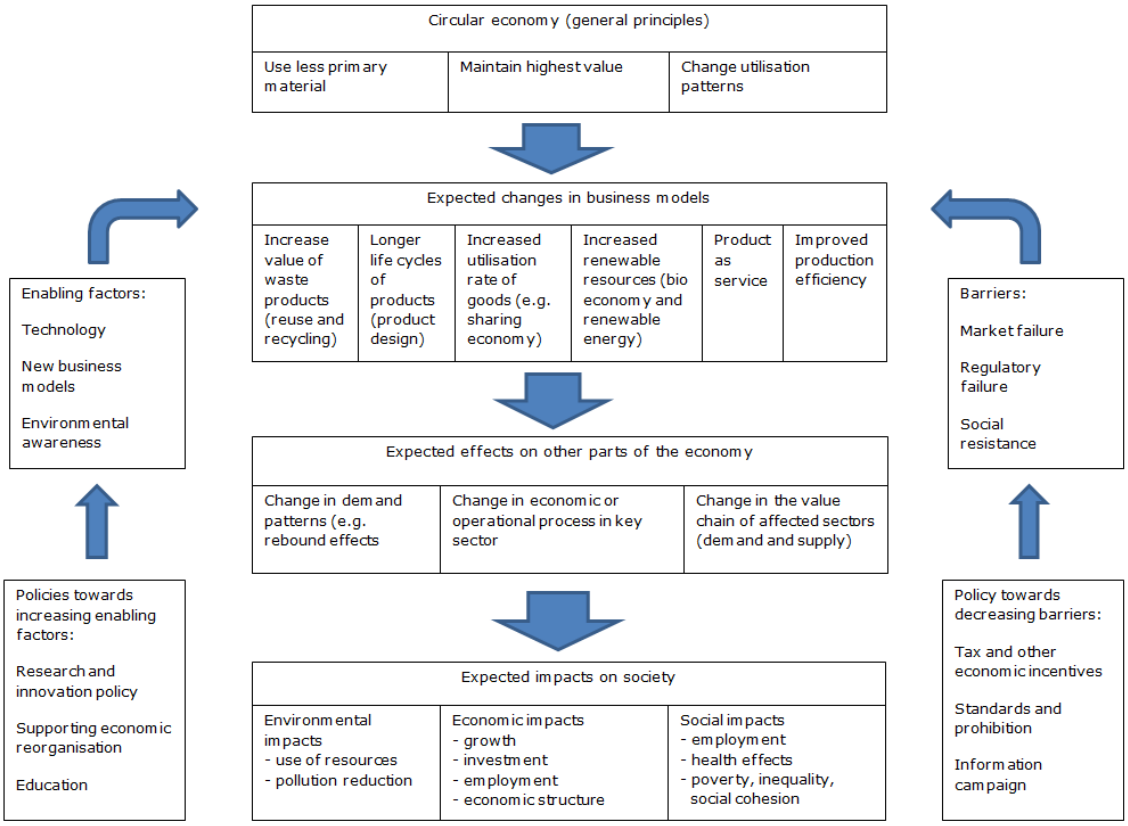
3 :: Overall framework

A step-by step approach was developed to structure the case studies. The main characteristics of this approach are:

- It is based on overall framework, see scheme below
- It distinguishes physical and economic flows
- It has an emphasis on indicators
- It has an emphasis on policy options and policy evaluation
- It distinguishes between potentials and conditions, i.e. conditions that have to be fulfilled in order to realize the potentials;
- Policy options can be derived from these conditions, i.e. on which aspects may policy intervention be relevant in order to fulfil the conditions necessary to realize potentials.
- An explicit step for a broader perspective is incorporated in the case studies, especially on alternative innovations

The structure of the case studies fits within an overall framework, depicted by scheme 1.

Scheme 1: Overall framework to describe the transition towards a circular economy



We distinguish in our approach the following steps:

Step 1: Defining the baseline

Step 2: Defining the new business case

Step 3: Changes in the key sector

Step 4: Effects on other parts of the economy

Step 5: The impact on the environment and society

Step 6: Are alternatives available?

Step 7: Policy options

Step 8: Overall conclusions

Notice that the steps do not have to be performed sequential.

The link between scheme 1 and the eight steps is as follows:

We start with describing the current (linear) business model which is the baseline, and the new (circular) business case (Steps 1 and 2). In order to describe why the new business case fits within the concept of a circular economy, we explain how it contributes to the general principles of a circular economy (see first row of scheme 1) and to the business

models for a circular economy (see second row). The new business model is made possible thanks to enabling factors e.g. technology improvements, but probably it faces also some barriers, such as regulations which may have been useful in a linear economy but are counterproductive in a circular economy (see scheme, blocks on the right and left). We describe expected developments of the business case and its impact when the transition has been completed.

Step 1 and 2 are descriptive. In Step 3, we add quantitative information for the key sector, especially on changes in economic and operational processes (see third row, in the middle). Important are changes in both physical and monetary flows. In order to visualize the physical flows one may make use of a flow chart. Next, (monetary) values are added to these flows. These values together with information on investments are steps towards a cost-benefit analysis.

Changes in the key sector will have an effect on demand patterns and other sectors (see third row, left and right). In order to understand indirect effects and rebounds one has to evaluate the effects of the new business model on other parts of the economy. This is done in Step 4. Our time horizon is again when the transition has been completed.

Next, in Step 5, we can describe the impact of the new business model on the environment, the economy and social impacts (see fourth row). To be able to perform this step smoothly, it is important that from the beginning we distinguish between physical flows and monetary flows, and that we pay attention to employment effects and consequences for international trade.

Innovations are an answer to environmental or social problems, e.g. sustainable energy sources are an answer to exhaustibility of fossil energy and carbon emissions. Often, several solutions are developed at the same time, e.g. solar based energy, wind energy, bio-energy etc. When focusing on one innovation, one has to keep in mind that there are other, competitive, innovations developed at the same time for the same problem. These other innovation may be develop quicker or more efficient. In Step 6 therefore we examine whether other innovations may become competitive.

Next we come to formulate policy options, which is Step 7. Often, policies are formulated in order to increase enabling factors, and to decrease barriers (see scheme, blocks on right and left). Furthermore, a distinction should be made between the potential of the new business case, and conditions under which the potential can be realised. Policy options are formulated to improve the conditions needed.

The final step, Step 8, is about overall conclusions. What did we learn about the new business case, and its environmental, social and economic impact. And which policy recommendations can be derived from the analysis.

The task sheets, i.e. which kind of information should be the result of the case studies, are as follows. For both the old (linear) and new (circular) business model information is needed on:

- Inputs used (both material and labour), and where do these inputs come from;
- Output (both products and emissions), and where do these outputs go to;
- The process (and if possible, information on circular loops);
- If relevant, visualize this with a flow chart. The flow chart gives information on physical flows.
- These physical flows are completed with estimates of the values of the flows, i.e. monetary information;
- Investments needed for the new business model.
- Externalities in production that may be reduced by the circular opportunity
- Welfare effects of the externalities that may be reduced
- Does the circular opportunity create skills or knowledge that gives a competitive advantage or that can be exported to other regions of the world?

All case studies will be based on a desktop literature review, expert interviews, and a workshop with experts. Experts are chosen from both public and private organisations. The expert knowledge is used to improve and check the outcomes of the case study.

4 :: Step-by-step approach structuring the case studies

Some general remarks have to be kept in mind when working on the case studies:

- Important is to make clear the argumentation behind a case study, i.e. the line of reasoning should be transparent;
- Describe who are the winners and who are the losers, e.g. towards employment;
- Describe direct effects, but also indirect effects and rebounds;
- Towards the baseline: how will the sector develop anyway, i.e. without the new business case;
- Which results are specific for the case study, and which more general conclusions may be drawn from it.

Below we elaborate on each step defined above.

4.1 Step 1: Defining the baseline

This step will give an overview of the existing situation, including the context and the current (linear) business case. The current business case is called the baseline. Both the context and the current business case are presented in a descriptive manner.

Part of the context may be: why is this case study chosen, is resource depletion a problem nowadays or foreseen in the near future, are emissions a problem, are there social or environmental issues at stake, etc.

In defining the baseline, it is important to describe current inputs, outputs and processes, and expected changes in the (near) future, i.e. without the new business case. Which

investment opportunities would be realized without specific policy measures to stimulate the circular economy?

4.2 Step 2: Defining the new business case

This step will give an overview of the new business case in a descriptive manner. It is described in terms that are later useful for estimating the impacts on society.

In defining the new business case, it is important to describe why it fits within the idea of a circular economy. Therefore, how does the business case make use of (one or more of) the general principles of the circular economy. Furthermore, what are the expected changes in the business model?

Changes in the business model are described along three aspects:

- Do the inputs needed for the process change, including labour (And where they are bought or hired)?
- Does the process change (e.g. more energy efficient)?
- Do the outputs of the process change (products, waste streams, emissions)? Does the use value of the finished products by users change (e.g. energy efficiency)?

Furthermore, which enabling factors play a major role in this business model? And are there barriers that influence the business model negatively? Here a distinction may be made between potential of the business case and conditions under which these potentials may be fulfilled.

Finally, in which phase of development is the business: is it operative, is it in a pilot phase, or is it in business for a longer time already. What are expected future developments, and what is the expected situation when the transition is completed. Important expected future developments may be:

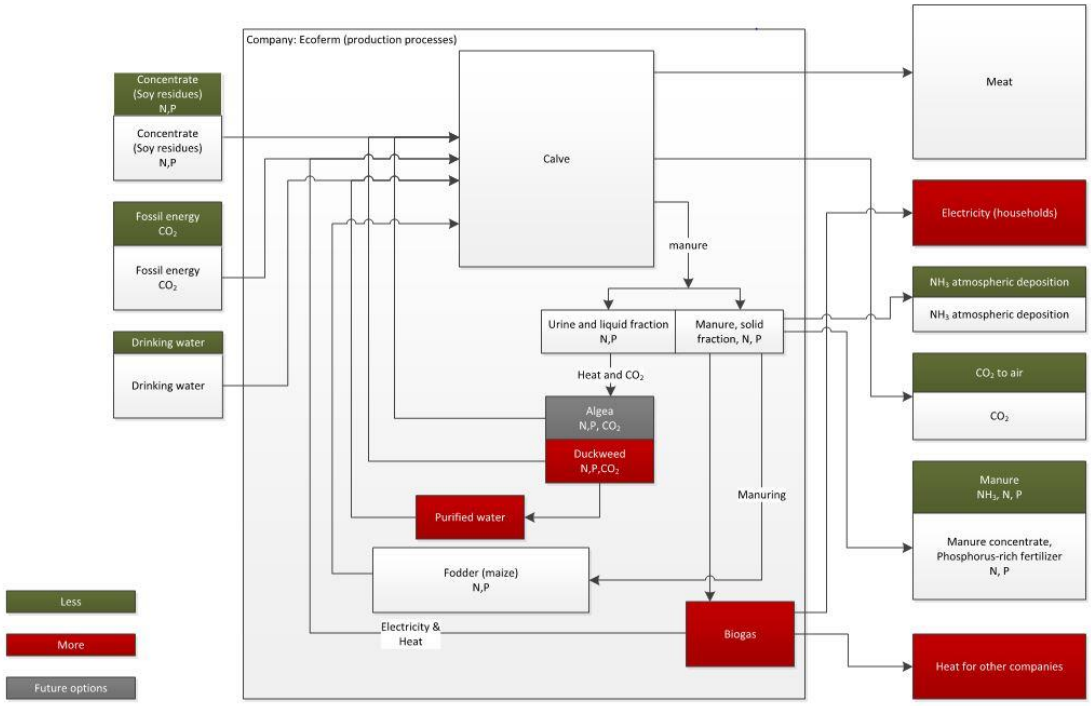
- Expected future improvements in technology
- Expected economies of scale in the future. (Or diseconomies of scale: is it a niche market which is served and is there a possibility that the market becomes satiated by oversupply or consumer disinterest?)
- In case of upscaling the business model, how does it influence either the positive or the negative impacts on society?

4.3 Step 3: Changes in the key sector

This step provides quantitative information on changes in the key sector or chain, due to the introduction of the new business case.

The main questions are: What are expected changes in the operational processes and what are economic changes in the key sector? What is the difference between the new business case and the baseline in material use, emissions, workforce needed, financial changes, etc.?

Step 3a: Describe as far as possible (quantitatively) changes in materials, emissions, employment, investments, output, trade, etc. due to the new business model. Are there expected savings, e.g. on materials, compared to the baseline. Or is a new product introduced? Here a flow chart may be illustrative. An example of a flow chart is given below:



A flow chart provides insight in physical flows of input and output, combined with processes and circular loops. Next, quantitative values may be given for these physical flows, and if possible, the monetary value of these physical flows may be revealed.

Step 3b: Describe as far as possible (quantitatively) the private cost-benefit analysis of the new business case, including consequences for the price of the product produced. It is important to know to what extent it will be develop automatically because private benefits are higher than private costs and the return on investment is higher than in the baseline. And if not, what is the problem that must be solved?

What is the expected situation after the transition has been completed, both for the operational processes and economically?

4.4 Step 4. Expected effects on other parts of the economy

In this step, a broader view on the effects of the new business case is investigated by taking into account other parts of the economy. This is important since we will not only

study direct effects in the key sector or key chain, but also indirect effects in other parts of the economy.

Changes in one sector will often effect changes in other sectors. First, inputs and outputs of the key sector are demand and supply for other sectors, and therefore will influence the other sectors. One of the inputs is labour, influencing employment and labour income. Second, the circular alternative replaces other processes such as mining. A decreased demand of primary resources will influence international trade. Third, the circular alternative may influence markets and transport, so for example the harbour may have to adjust to changes of commodity flows as a consequence of the development of the circular economy. As far as possible, all these effects should be described in the case study.

If the circular alternative increases national income, this income will be spend and therefore demand of polluting or resource using commodities may increase. This may reduce the effect of the circular economy on resource savings and pollution. However, this so-called rebound effect will be the same for all case studies, and therefore it is not necessary to analyse this in the context of the case studies except when special effects are to be expected.

In summary, it is important that the case study provide an indication on employment effects, changes in trade and changes in product prices for all sectors that are influenced by the introduction of the circular business case.

To explain the reasoning above, we give an example in Textbox 1.

Textbox 1: an example of indirect effects

Phosphate is more and more recycled from wastewater, by wastewater treatment plants. This requires an investment of the wastewater treatment plant, and furthermore, it changes its position from an organisation that executes a service to an organisation that, in addition, also produces a product and has to sell it. Furthermore, it has a (negative) influence on the import of phosphate rocks, mined in e.g. Morocco. Because the substitute is produced in the EU, this implies a rise in the trade surplus of the EU and an increase the trade deficit of resource exporting countries. The reduction of demand for phosphate rock will mean less employment in those countries exporting phosphate, less employment in harbours where phosphate is imported, and more employment in wastewater treatment plants since they enlarge their business. Phosphate is, among others, used to make fertilizer, so recycled phosphate influences the inputs used and the process of making fertilizer. However, it does also have an effect on other products containing phosphate and which are more and more recycled, e.g. animal manure and wasted food (these are indirect effects, on other sectors). When the supply of phosphate increases (thanks to recycling) the price of phosphate will go down, which has a negative effect on the business model for recycling (rebound effects). In short: several developments are going on concerning phosphate recycling, which makes it an interesting case with many interactions. In this step we will focus on expected changes, due to the new business model, outside the main sector.

In this step, we analyse the impact of the new business model on society, which is the essence of our research. The described impact should be the sum of the direct and indirect effects described in the steps before.

When we know the changes in the key sector and changes in other parts of the economy, we are able to say something about the impact on society. Especially since we made a distinction, in Step 3 and 4, between material flows (including emission), financial consequences and consequences for the work force. Furthermore, the flow chart, optional in Step 3, will be of use in this part of the research.

The questions to be answered in this part of the research are: How does the new business case have an influence on 1) the environment, especially on the use of resources and on emissions, 2) on the economy, especially on productivity, investment, and employment, and 3) what is the social impact, especially on employment, health, and inequality.

The impacts must be defined in a specific manner. Concerning employment it is important to know whether the increase or decrease of employment takes place in an area which relatively high unemployment rates or not, e.g. the difference between cities (with harbours) and the countryside. A distinction between regions and skill levels is essential. For example, in the case of phosphate recycling employment may be generated in some regions with relatively high unemployment for low skilled labour, while for example activities in the harbour, probably a region with low employment, may be reduced. What are the skill levels for the people involved and is this the type of labour that is for some reason unemployed?

Textbox 2: an example of crowding out labour

Less imports of phosphate rocks will decrease employment in harbours. On the other hand, recycling phosphate, for example from wastewater, may increase employment. But suppose that for recycling phosphate from wastewater, specific skills and know-how is needed, which is not abundant. Than a consequence may be that other sectors are crowded out, and that total employment is not increased.

Again, describe the situation after the transition has been completed.

4.6 Step 6. Are alternatives available?

Often parallel developments take place. In this step, the question is whether the business case that is elaborated on is actually the best answer to the problem that has to be solved.

Even if a new business case seems to work out well compared to the baseline, better alternatives may be available. For example, it may be that harvesting phosphorus from sludge through precipitation has net social benefits, but investment in this technique with a recovery rate of only 15% may prevent investments in more efficient techniques. So, it is always important to evaluate all relevant opportunities to solve a problem, and not only to compare the new business model with the current business model.

So the question here is: which alternatives are developed which may become competitive with the business case described in the case study? And are these alternatives expected to become more profitable in the future? Or more sustainable?

4.7 Step 7: Policy options

In this step, insights gained in the previous steps are used to formulate policy options in order to facilitate positive effects on society to the max.

The understanding we won in the steps described above is used here to define the key obstacles for the business case, and the policy options that could address those obstacles.

A distinction may be made between enabling factors and barriers. For example, which enabling factors could be supported by policy makers, such as research and innovation policies, supporting economic reorganization, or education?

Institutions which once were useful in the linear economy may have become an obstacle for the transition towards a circular economy. Which barriers could be decreased by policy makers, e.g. legislation? For example, in the case of phosphate recycling, it may be that it is only profitable if the price of fertilizer would include also prices for greenhouse gas emissions and externalities in fossil fertilizer production in mining.

4.8 Step 8. Overall conclusions

This step should give an overview of the results of the case study. The business case is described, and how it fits within a circular economy. Furthermore, the expected economic, environmental and social impact of introduction of the business case is described. Finally, policy recommendations are formulated.

5 :: Practical issues for the case studies

5.1 Work flow

- The schedule below is for the first case study. The case studies that have their workshops later may take a little bit more time.
- June-July: Step 1 and 2. And first interviews with experts.
- August-October: Step 3, 4, 5, 6 and 7. Final interviews with experts.
- October: workshop paper for the case sustainable building
- November: workshop paper for the case nutrient recycling
- December: workshop paper for the case critical raw materials
- December/January: workshop paper for the case product to service
- January 2018: Report on impacts of biofuels and renewable energy
- March 2018: report on all case studies.
- Workshop are in the month after the paper is finished, and reporting about each workshop is at the end of the month of the workshop, i.e. the last report on the workshop must be finished at the end of February 2018.

5.2 Communication during the case studies

During the development of the case studies, the following communication with the steering group and experts is planned:

1) Steering Group will be contacted to provide comments on the papers before the workshop
2) Selected experts (e.g. policy makers, industry experts, etc.) will be provided the papers before the workshop
3) The final versions of the papers will be made available to the public after the workshops

6 :: Concluding comments

This report gives an outline of steps to be accomplished for the case study reports. During development of the case studies, the methodology may be further developed,

while the outcomes of the case studies will be used as inputs for the impact assessment in work package 5.

List of partners

Ecologic institute

CEPS
The Centre for European
Policy Studies

Wageningen University and Research