UNEP
United Nations Environment Programme

Global Action for Sustainable Consumption and Production
10YFP

UNEP | Resource Efficiency | Sustainable Public Procurement

# Using Product Service Systems in Circular Procurement*

Training Module:
Introduction, case studies and lessons learned

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* Circular procurement combines sustainable procurement with developing a more circular economy. This module shows how to insert product-service systems in Sustainable Public Procurement. (UNEP Technical report 'Using product-service systems to enhance sustainable public procurement', May 2015).

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# Introduction

# Summary

This training module for circular procurement provides insights and practical guidance to procurement officials, policy makers and suppliers on how adopting circular procurement principles will help deliver improved sustainable public procurement which, in turn, will deliver associated and evidenced environmental, social and financial benefits at organisational and national scale.

Procurement plays a key role in the development of the circular economy. Procurers can stimulate the market to arrive at a circular supply by specifically asking for circular solutions. Circular procurement seeks ways and steps to close cycles in product categories. Important during the process is cooperation with, and learning from market parties when possible. In addition to the direct benefits of circular procurement for practitioners, every circular tender can be an example which other parties can build on, use to enrich their knowledge and as such benefit from. At this stage, the learning process is very important.

The circular economy is still in the developing stage. Collaboration therefore helps practitioners to find out why it works, where it works and how to get the best outcome. We don’t know exactly where this will lead us, but we can take the first steps towards more resource efficiency through circular procurement.

The training module is produced as part of the SPP Programme of the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP).

## Main goals

- Procurers - to provide practical guidance on how to use circular procurement principles to achieve better outcomes
- Policy makers - to provide effective guidance on how to stimulate circular procurement in order to achieve policy goals
- Suppliers - to provide clear guidance on how circular procurement can improve product supply and service levels

# Learning objectives and continuation

**From introduction to experience in three steps**

1) **Online training module**
Introduction, case studies and lessons learned *(this module)*

2) **Online video course**
Further background information on the concepts *(available October 2015)*

3) **Practical training**
Practice circular procurement *(available 2016)*

**Step 1: Introduction and recognition**
This is what you are looking at right now. On completion of this online training module, users will be able to recognise circular opportunities and appropriate business models, relevant to their own organisation. They will be familiar with circular procurement concepts and they know where to find support and more knowledge and insights. They will have sufficient information to identify circular goals and to set up their first circular procurement projects. This first module is meant as introduction on circular economy and circular procurement.

**Step 2: More backgrounds**
The second step is a video course from the Technical University of Delft, The Netherlands. The lecture will give (theoretical) background on circular principles and more practical insights for circular procurement. This will be available via UNEP in late 2015.

**Step 3: Practice circular procurement**
The third step is achieved through practical training to enable reflection on initial experiences and study the possibilities for wider replication with peers, under the professional guidance of an experienced trainer. *Currently this training is only available in Dutch but in the near future it will be available through established procurement training institutes in your own country.*

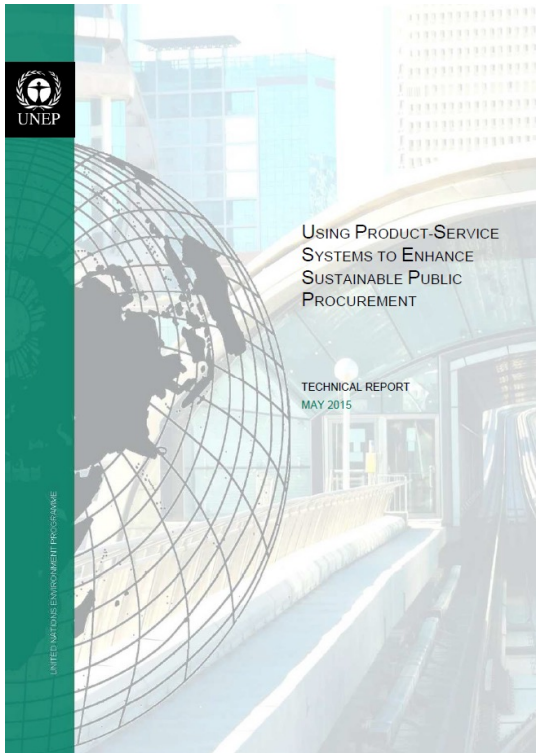
On completion of all three steps, users will be able to set circular sustainable procurement goals and set up product procurement in a circular way using professional procurement techniques to achieve their circular goals.

# Product-service systems

The SPP programme of the 10 Year Framework of Programmes on Sustainable Consumption and Production patterns (10YFP) produced a technical report on product-service systems and their insertion in sustainable public procurement: *Using Product-Service Systems to Enhance Public Procurement*. The report consolidates the information currently available on product-service systems (PSS) and to offer clarity on the drivers, advantages and challenges associated with their provision by the private sector and their use by the public sector.

The focus of the report is on product-service systems (PSS) and not on circular procurement. But since the most important effect of product-service systems on sustainability is on waste reduction and materials savings, the findings and conclusions contribute significantly to circular procurement.

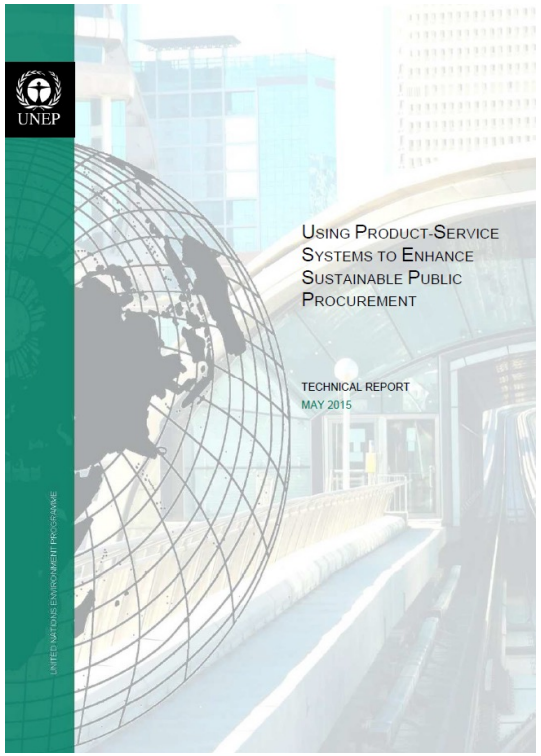
Product-service systems are an important thread through the 19 business models of IMSA and are one of the three procurement models described later in this module.

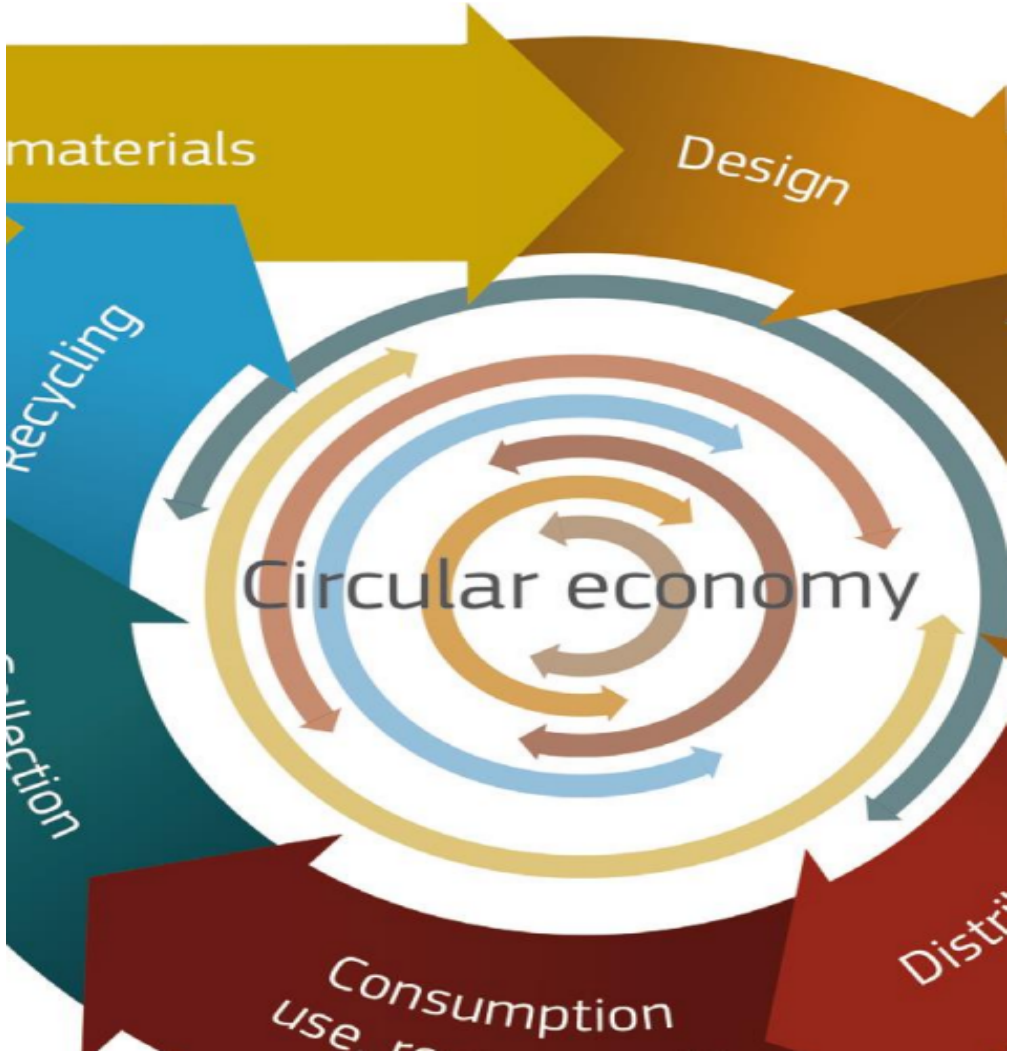


# Product-service systems – benefits & conclusions

The use of product-service systems by public bodies can result in sustainability benefits. Product-service systems are an innovative business approach that shifts the traditional business focus from selling physical products only (e.g. a washing machine) to selling a mix of products and services (e.g. cleaning services) that are jointly capable of meeting specific client demand (clean clothes). The key idea behind PSS is that consumers do not demand products per se, but are seeking the utility provided by products and services. One benefit of PSSs lies in their potential to decouple consumption from economic growth, as they offer the possibility of meeting needs with lower material and energy requirements. The report examines the nexus between product-service systems and sustainable public procurement, drawing together international experience.

The most important conclusion of the report is that public procurement can nurture and harness the potential of PSS to drive environmental sustainability and trigger market transformations towards more sustainable business models. However, PSS can only truly contribute to sustainable development when they are consciously designed over the whole life-cycle. This requires different ways of thinking and working throughout the procurement process and supply chains, acquiring experience on how to encompass all important aspects of the life-cycle and putting the adequate organizational and business models in place.






- **Introduction Circular Economy**
- **Circular Design**
- **Circular Business Models**

# Circular Economy

# Circular economy

The circular economy is an alternative economic system to the traditional linear (procure, use dispose) system, that is based on supply chain collaboration. It counteracts resource wastage by focussing on waste prevention, maximising reusability of products and materials and minimising value destruction. This contrasts with the linear approach, where raw materials are turned into products that are generally destroyed at the end of their service life. This is value destruction and increases environmental (and often social) impacts.

A study conducted by McKinsey[1] shows that the circular economy offers major opportunities for Europe. The circular economy could generate between €300-350 billion in material savings alone in Europe, which could also lead to the creation of over 2 million new jobs[2]. The opportunities offered by the circular economy are great.

**Click on the image below for a short animated video on the circular economy**


Re-thinking Progress: The Circular Economy

Source: **Ellen MacArthur Foundation**

1.Towards the Circular Economy 1: Economic and business rationale for an accelerated transition (2012) Ellen MacArthur Foundation
http://www.ellenmacarthurfoundation.org/business/reports/ce2012
2. http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1415352499863&uri=CELEX:52014DC0398R%2801%29

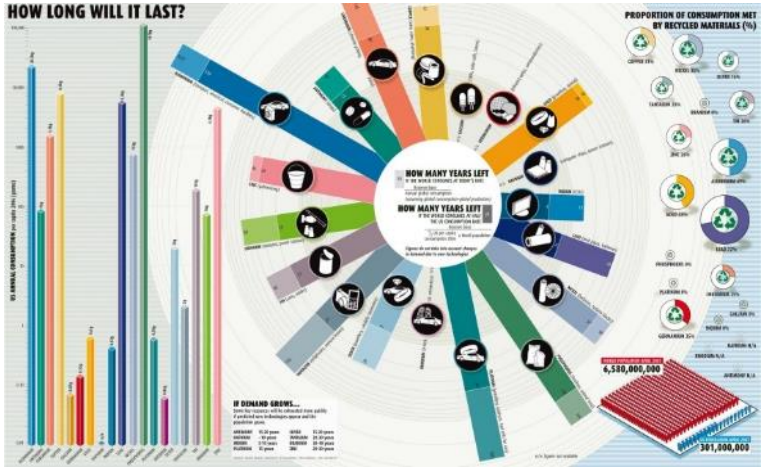
# Advantages

There are other reasons, besides economic, for stimulating the circular economy:

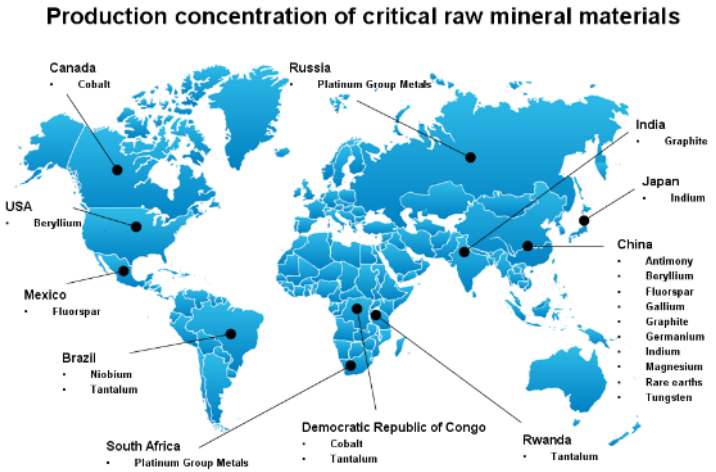
1. It is important to combat the waste of raw materials. The amount of available and affordable raw materials is limited. Demand for finite resources is increasing as the world's population is forecast to grow to over 9 billion by 2050, with over 5 billion 'middle class' consumers by 2030.
2. Every country is partly dependant of the import of raw materials or semi-finished products required in both manufacturing and consumption. Dependency will decrease by reusing materials – including raw materials – from discarded products[3]. In Europe only very few of the relevant raw materials are naturally present, European countries have to import practically all raw materials.
3. It can generate revenue in an organisation's own business operations. Purchasing products that have value after the use phase as products, components or raw materials can offset capital expenditure and reduce pressure on limited budgets. As the circular economy is growing and becoming more stable, capitalisation on this value will become easier and more rewarding.
4. With increasing global supply chains and increasing pressure on finite resources, more circular procurement offers greater resilience within the global market place by encouraging more sustainable production and consumption patterns and by better understanding and utilising product and material resource flows.

3. http://europa.eu/rapid/press-release_IP-14-763_en.htm

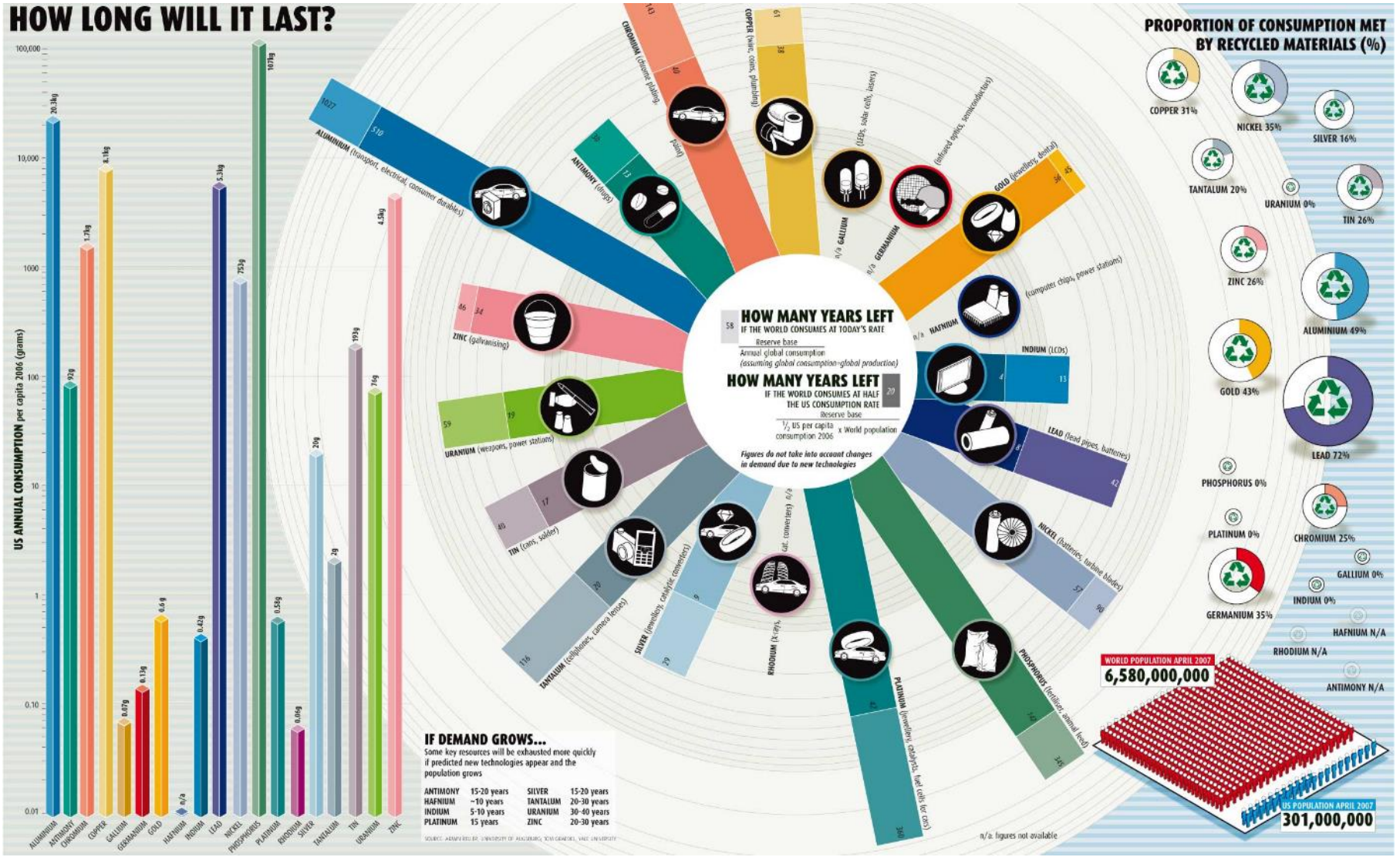
**Click on the images below to enlarge**




*Availability - consumption rate of minerals and how much time before the supplies run out*

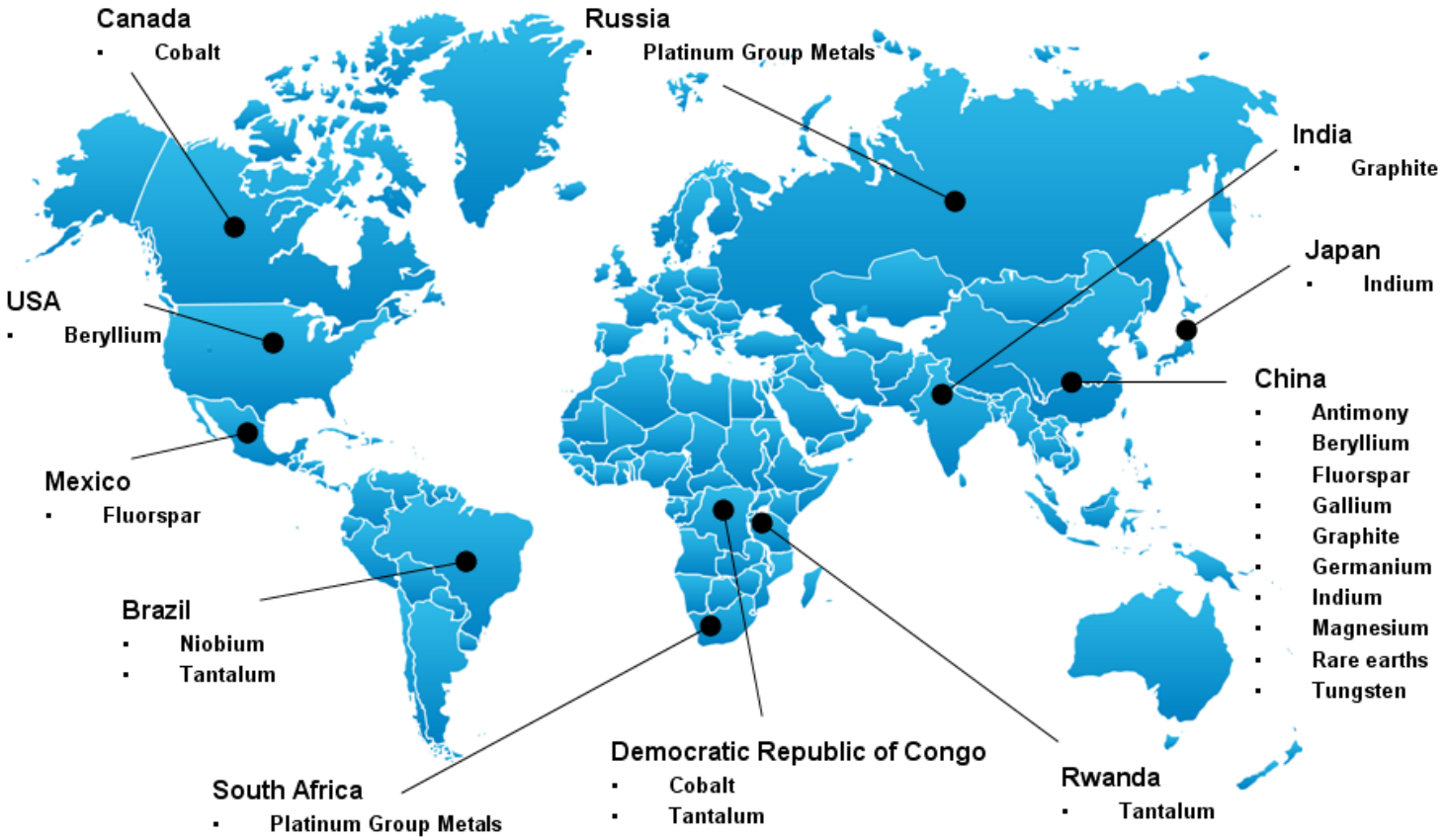



*Dependency - worldwide production of critical raw mineral materials*




*Infographic by Armin Reller of the University of Augsburg and Tom Graedel of Yale University, 2009*

# Production concentration of critical raw mineral materials



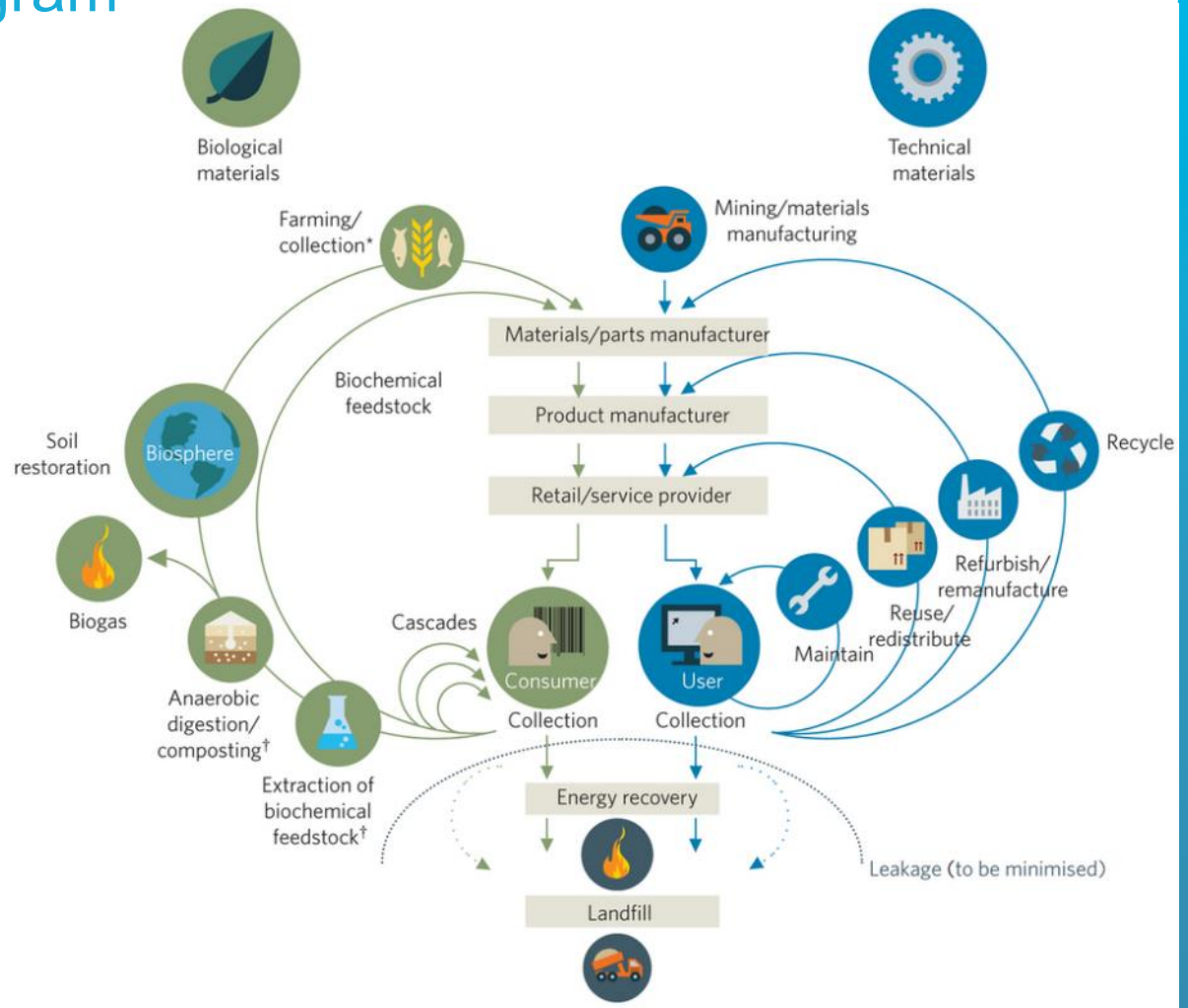

*Press release European Commission: 'Report lists 14 critical mineral raw materials', 2010*

# The circular economy butterfly diagram

A circular economy is an economy with a biotic circle consisting of cascades of biomass (biotic resources) and closed abiotic circles of (technical) resources. The latter means that abiotic resources are constantly reused in products and do not end up as fuel for energy or as waste in landfill or nature.

The Ellen MacArthur Foundation developed the 'butterfly-diagram' on the right to illustrate this, with the biotic circles on the left and the abiotic on the right. In this training module, the opportunities for circular procurement are merely based on the technical materials (the right-hand side of the diagram). The left section, biological materials, is equally interesting though. The bio-based economy may offer many specific opportunities for new biological materials, including biodegradable materials.

(contd.)

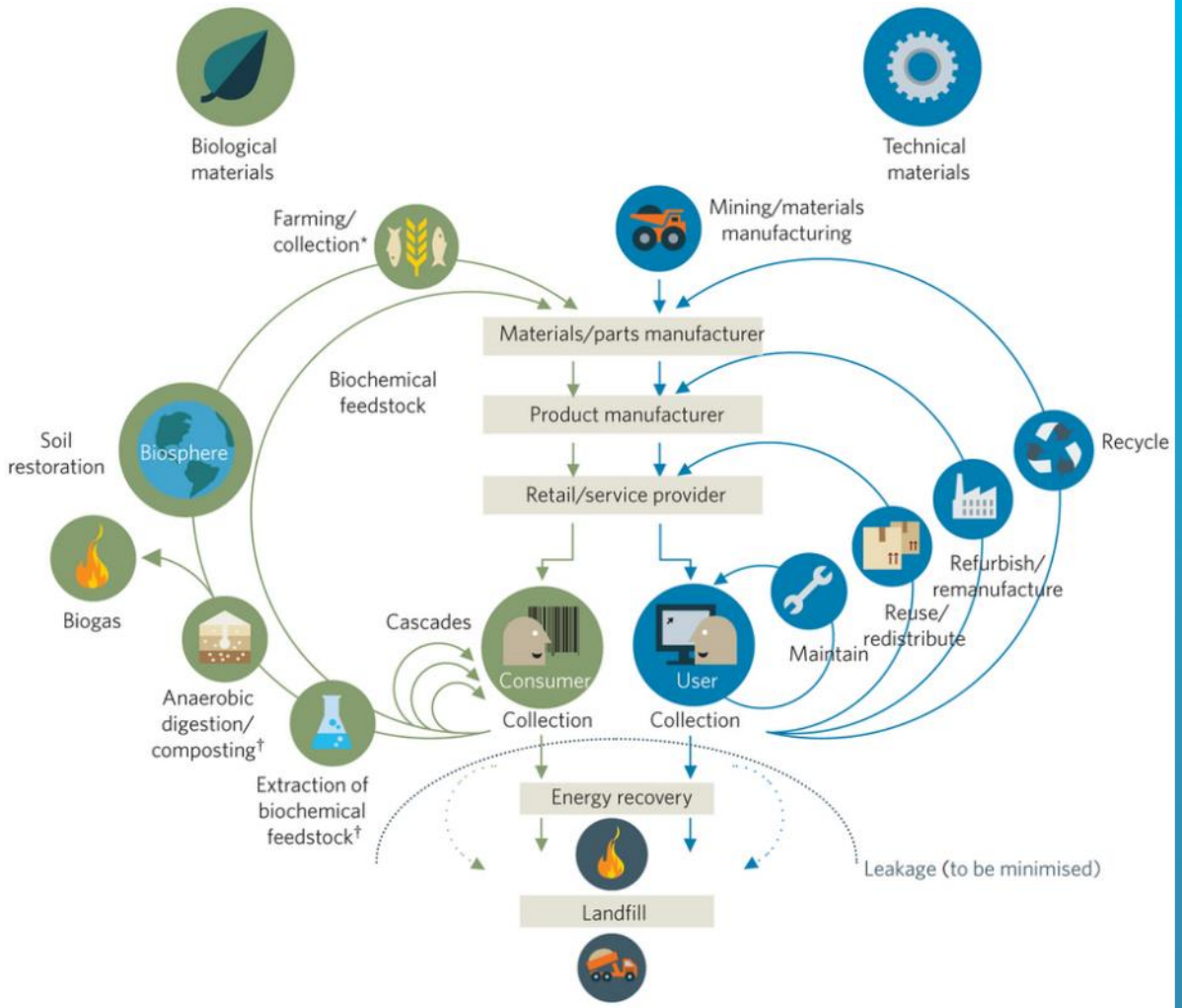



Source: EMF 2013 Towards the circular economy Report 1

# The circular economy butterfly diagram (contd.)

The main reason for focusing on the technical materials in this module is that the role of procurement is more explicit with technical materials. As a procurer you can choose (a combination of) different possibilities to stretch the lifespan of a product and/or it's materials. Using biological materials the cascades are more obvious.

A second reason is that there are still a lot of uncertainties concerning the bio-based economy. For instance, bio-based materials may conflict with other policy goals (e.g. the food vs. fuel debate) and are often in an experimental phase. The procurers' position is difficult and subject of discussion. Therefore it's impossible to summarise general insights, lessons learned and tips and tricks in a training module like this.




Source: EMF 2013 Towards the circular economy Report 1

# Circular business models

Throughout the world more and more companies have started to develop and apply circular business models. These are business models fitting in a circular economy, i.e. an industrial system that is restorative or regenerative by intention and design.

In some views, the essence of a circular economy lies in economic transactions that focus on performance rather than ownership. The combined effect of these business models is the previously mentioned circular economy with a biotic circle and closed abiotic circles.

IMSA has integrated existing knowledge of circular economy to produce a list containing 19 circular business models in six categories[4].

(contd.)

4. IMSA - Circular Business Models - Part 1: An introduction to IMSA's circular business model scan, 2015.
http://www.imsa.nl/#!IMSA-presents-Circular-Business-Model-Scan/c8s6/552baa940cf215f35a5dc014

| | | |
|---|---|---|
| **1. Short cycle** | | |
| 1 | Pay per use | One time payment to use product or service |
| 2 | Repair | Product life extension by repair services |
| 3 | Waste reduction | Waste reduction in the production process |
| 4 | Sharing platforms | Products and services are shared among consumers |
| 5 | Progressive purchase | Pay periodically small amounts before purchase |
| **2. Long cycle** | | |
| 6 | Performance based contracting | Long term contract and responsibility with producer |
| 7 | Take back management | Incentive to ensure product gets back to producer |
| 8 | Next life sales | Product gets a next life |
| 9 | Refurbish & resell | Product gets a next life after adjustments |
| **3. Cascades** | | |
| 10 | Upcycle | Materials are re-used and its value is upgraded |
| 11 | Recycling (waste handling & repurpose) | Materials are cascaded and reused, recycled or disposed |
| 12 | Collaborative production | Cooperation in the production value chain leading to closing material loops |
| **4. Pure circles** | | |
| 13 | Cradle to cradle | Product redesign to 100% closed material loops |
| 14 | Circular sourcing | Only sourcing circular products or materials |
| **5. Dematerialized services** | | |
| 15 | Physical to virtual | Shifting physical activity to virtual |
| 16 | Subscription based rental | Against a low periodic fee consumers can use a product or service |
| **6. Produce on demand** | | |
| 17 | Produce on order | Only producing when demand is present |
| 18 | 3D printing | Using 3D printing to produce what is needed |
| 19 | Customer vote (design) | Making customers vote which product to make |

# Circular business models (contd.)

This list by IMSA is probably not final because these models will develop as a result of growing experience and new possibilities. As a procurer, it's important to understand these business models and the differences between them, because they represent options for suppliers to produce and deliver their goods and services in a circular way. This can only happen if the procurer creates the conditions for a supplier to present his bid in such a way. In other words, the more functional a tender is formulated, the more options are available for suppliers to offer their goods and services using a circular business model.

Note that a circular business model in itself is not always a guarantee for circularity. Most business models are enablers for circularity, they will only become circular when products and components are used long term and at the end of their lives the used materials are not wasted, but returned to production processes. Circular procurement helps to meet these conditions by linking the procurement phase with use (in service) and disposal once the need has been served.

| | | |
|---|---|---|
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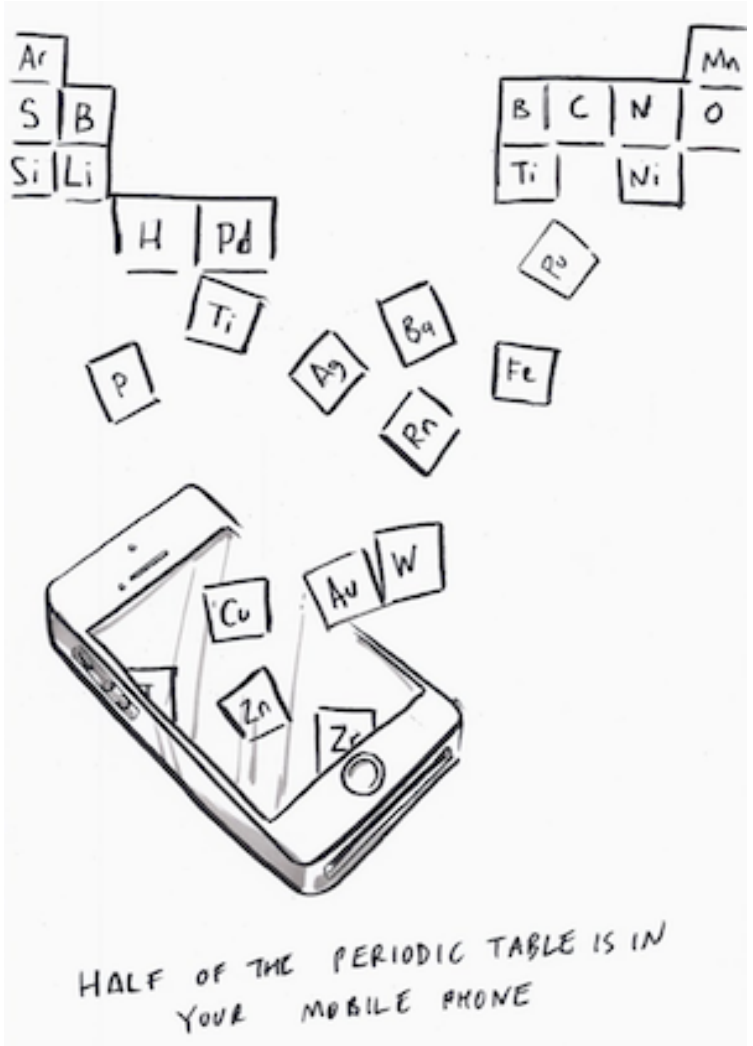
# Circular Design

Stimulating the circular economy requires a shift in thinking about purchasing needs. A circular approach ensures that products do not just end up as waste to landfill but that value is retained and impact minimised through lifetime optimisation. The circular approach to product procurement means taking account of design life and ensuring they can be fully recycled at the end of this life. This means that when designing a product, requirements are set regarding the used materials and the way in which the product was constructed. It should be easy to repair the components and these should also be reusable wherever possible (this could also be for use in other products).

These steps extend the products' and components' lives, so fewer new products with new materials will need to be produced. Linked to the total recycling, this will lead not only to closed cycles and less addition of original materials in products, but also to new economic opportunities. The steps to extend the life of products and components are the driving force behind the potential creation of around 580,000 jobs across Europe through achieving the EU waste targets[3].




Source: Ellen MacArthur Foundation, UK

3. http://europa.eu/rapid/press-release_IP-14-763_en.htm



- Introduction Circular Procurement
- Three major models
- How it's done

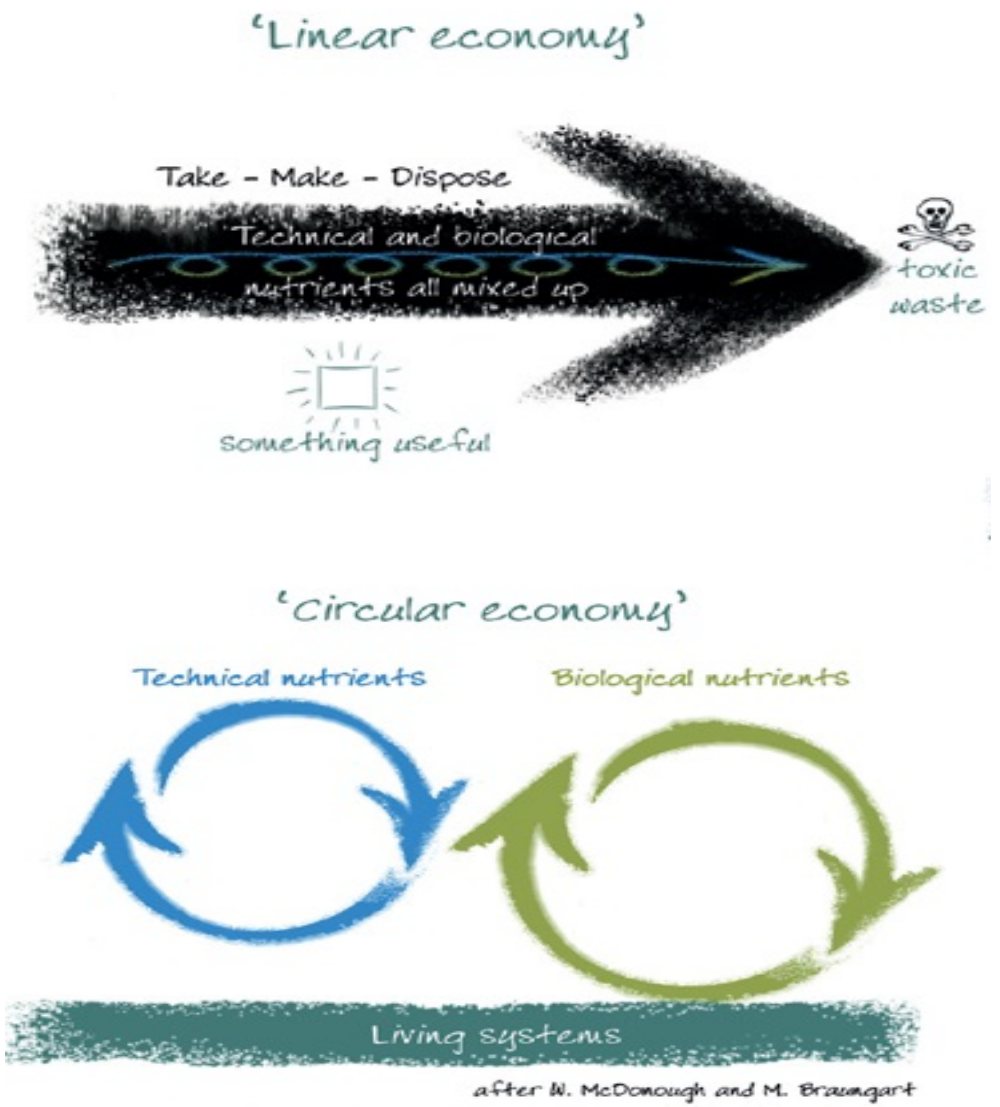
# Circular Procurement

# Circular procurement

Circular Procurement can be defined as the use of procurement to encourage more circular production and (re)use of products and services. And thus contribute to a more circular economy by reducing environmental and social impacts and by improving value and generating financial benefits in your organizations' business operations.

Using procurement as a tool to stimulate the circular economy generates results. A circular demand creates opportunities for a circular supply. Circular procurement is not in itself difficult and requires no additional competencies from procurement staff compared with linear procurement. However, like implementing a more circular economy, circular procurement is still in its infancy.

Circular procurement requires procurement staff to look at products differently and to learn to ask different questions that will help them understand more fully the potential life cycle impacts, and potential benefits of available options. In order to stimulate the circular economy through procurement, procurement staff will need to more closely consider what happens to a product after its own use phase and what alternatives are available.




Source: Ho, Mae-Wan. Living, Green and Circular, 2012

# Three procurement models

Procurement plays an important role in stimulating the circular economy. The procurement process is the gateway for the use of goods by organisations. At this stage there are three main procurement models that will drive the closed abiotic cycles in the right section of the butterfly-diagram from Ellen MacArthur: 'buy - sell back', ‘buy - resell' and 'product-service systems'. These models contain all sorts of variants, but this distinction clearly illustrates the most important differences.

In case of buy-sell back, the supplier buys back the product after the use phase for a specific price, for instance a chair that is returned to the furniture supplier after use. This encourages refurbishment and remanufacturing. In case of buy-resell, a third party purchases the product from the user. This encourages lifetime optimisation and recycling. A good example is collected plastics that are bought by a plastic converter. In case of a product-service system, the product remains the property of the supplier. Only the service the product provides is sold or leased, not the product itself. Good examples are leased products, such as photocopiers or 'pay-per-lux': paying for light without possessing a lamp.

Using one of these models in itself is no guarantee for a closed cycle. This applies to all these three options. It requires an additional condition, namely an agreement about what happens to the product after the use phase – the role of the procurement function. If no monitoring agreements have been made then at best procurement only implies *the possibility* of closing a cycle.

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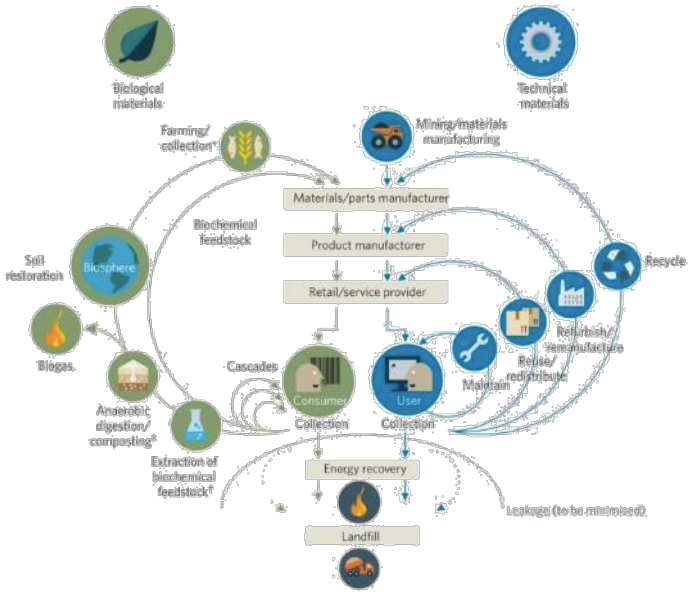
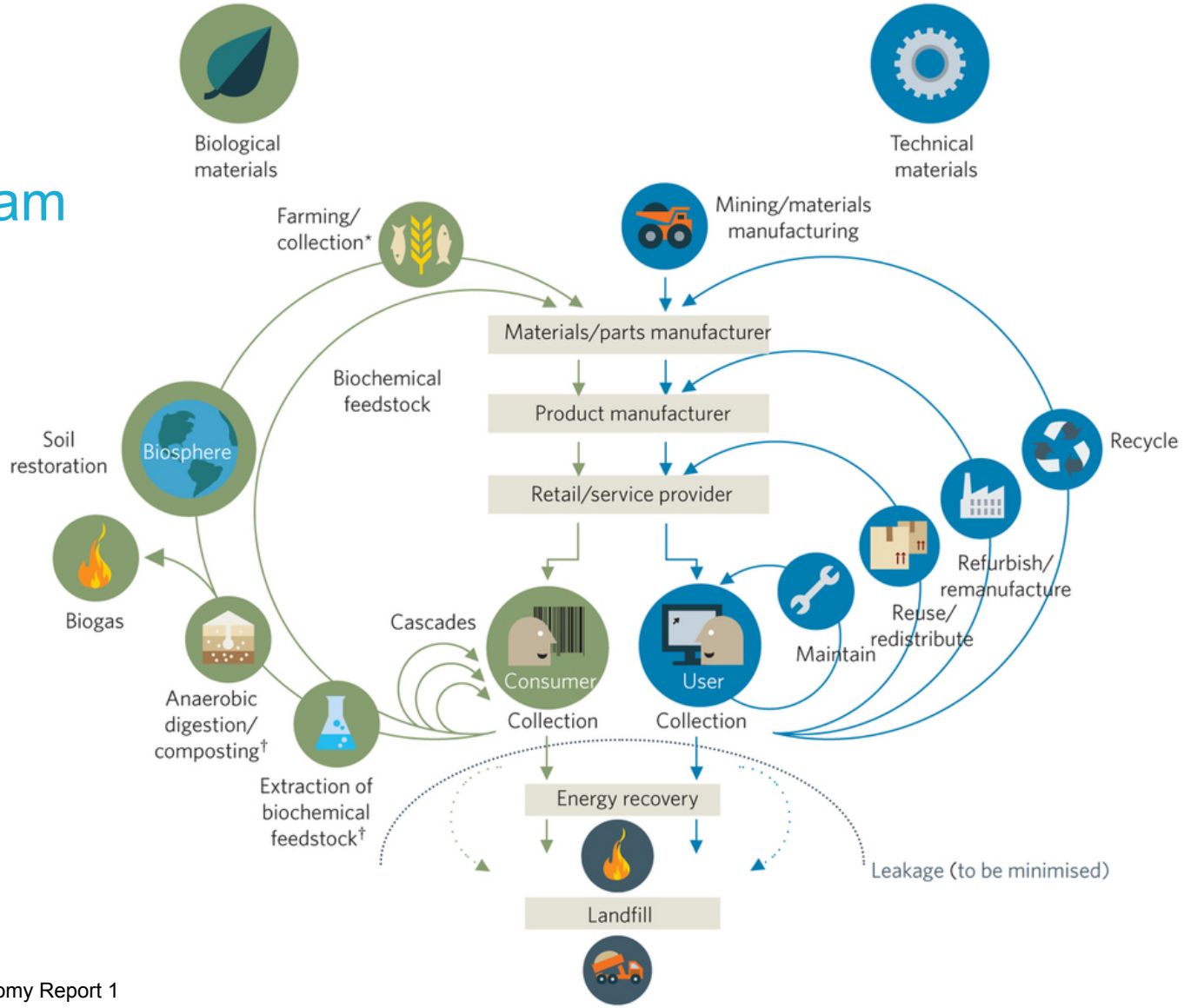


# The circular economy butterfly diagram




Source: EMF 2013 Towards the circular economy Report 1

# Procurement models - remarks

**Situational**

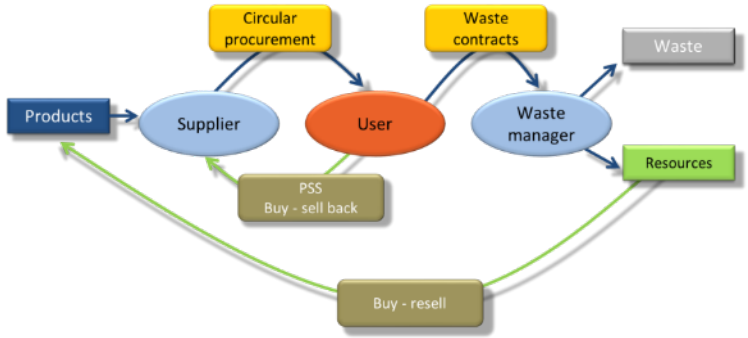
No one model is better as conditions are  different for each product and for each supplier, and it also depends on the options available to the market players and their supply chain partners. Different markets are at different stages of their development, so currently making the switch towards a entire circular model is not always a  viable option for all markets and products and materials can often stay part of the cycle in different ways. This highlights the importance of the procurement function in identifying the most appropriate cycle for different product and categories.

The three models help to find ways in the procurement procedure to make agreements about reusing products after use by (the first) buyer. At this stage it is not about finding the best circular model, but about realising closed cycles. In circular procurement, procurement staff look for ways to manage the lifetime extension and reuse of the product, and to manage closing the cycle when the product has reached the end-of-life stage. Without deciding beforehand which of the three models is the best. Circularity is not yet a homogeneous standard that can be required for each product. It is therefore  necessary to benchmark, pilot, create working examples, and evaluate what works best at an organisational scale. It is also important to share this knowledge and experience and learn from others to maximise the benefits at a national and international scale.

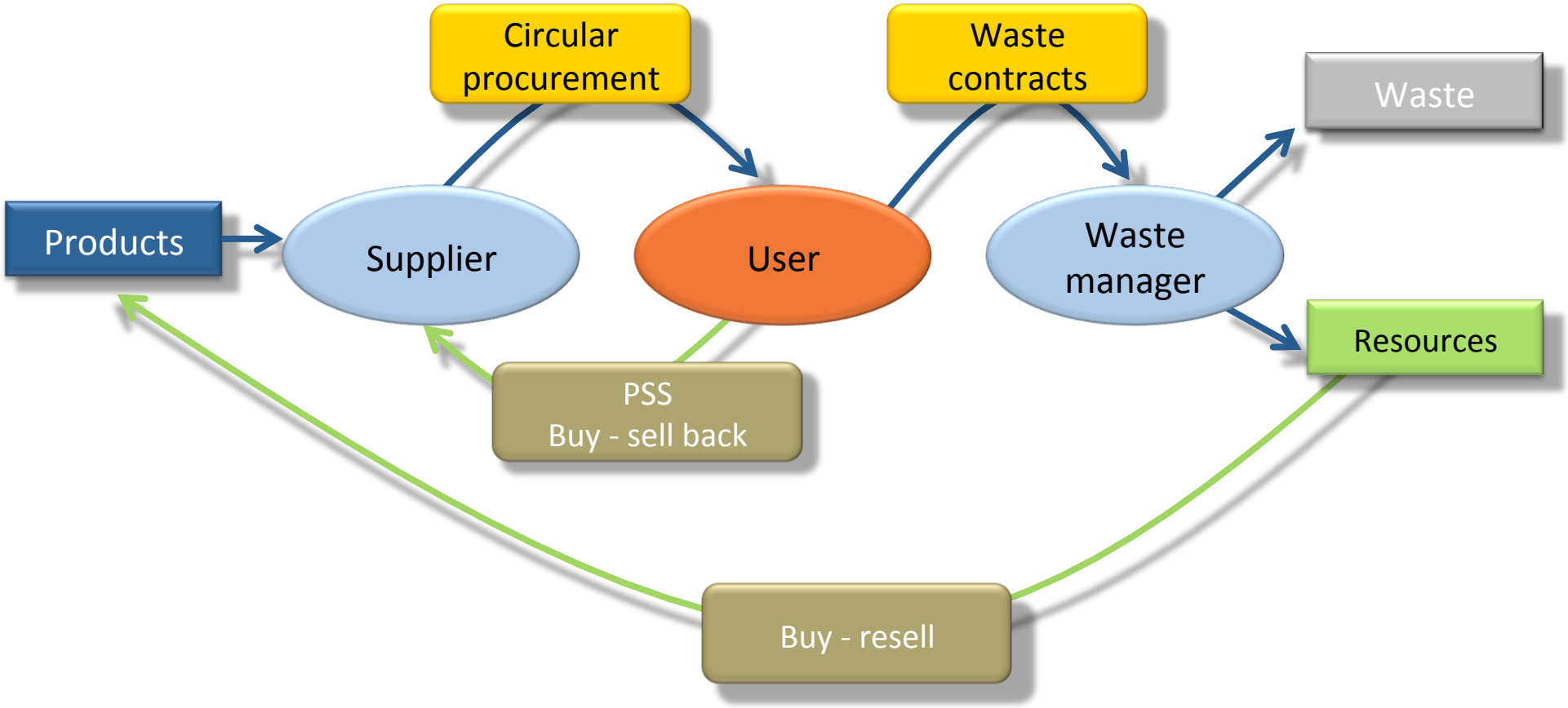
**Waste management**

It's essential that circular procurement relates in your organisation to waste management. On the one hand because of the logical interference between the two: more circular products lead to less waste and/or to other destinations for your waste. On the other hand because of your organisations' credibility. Working on circular procurement makes more sense when you are also separating your waste and trying to reduce your waste volume.

**Click on the image to enlarge**



# Circular procurement and waste management



# Circular procurement - How it's done

## Enabling conditions for circular procurement

**Functional view on needs**

In many cases, the circular economy benefits from functionally described needs, based on the performance of the required product. This must be a carefully considered choice: functional specification is not ideal in all situations. In some cases, a technical description is called for, or perhaps a combination of functional and technical specifications. The banks of a river, for example, can be spanned in different ways (functional description). However, if the chosen crossing involves the use of timber, one condition may be that this timber is certified sustainably sourced timber (technical specification).

**Encouraging other revenue models**

By basing your call for tenders on the functional side you can give space to other revenue/business models of the supplier. These models include Product-as-a-Service, leasing, a buy back agreement. It is all about a rethink of the concept of 'ownership.' After use, products are not waste but instead represent a certain (residual) value either through re-use or recycling. This value should be reflected as an explicit part of the revenue model and the price you are quoted.

A simple summary is:

- Where does it come from?
- Who made it?
- What is it made of?
- What is it wrapped in?
- What will happen to it afterwards?

# Circular procurement - How it's done (contd)

## Enabling conditions for circular procurement

**Design conditions**

In circular procurement of products or services it is advisable to think about the conditions you want the product to meet. Also think about what you will ask the (potential) supplier about this. The following questions can be helpful here:

- Is the product/service/work suited for high-grade reuse? Is the design modular/C2C?
- Does the product contain reused raw materials/parts?
- What percentage of the product is made from recycled material and how does this compare to industry average?
- What is the product's projected (economic and technical) service life?
- How does the design help optimise the product's life span?
- Is there a methodology that guarantees high-grade reuse and/or high-grade recycling?
- Can the supplier produce the product using fewer or more sustainable materials?
- How does the supplier explore options and ambitions in further developing the product and improving circularity

Source: WRAP, UK

# Circular procurement - How it's done (contd)

## Enabling conditions for circular procurement

**Production phase conditions**

You can also specify requirements for the supplier's production phase as part of circular procurement/requesting tenders. Relevant questions in this context include:

- Where were the materials sourced? Is there proof of that?
- How is waste handled during the production phase?
- How does the supplier handle material efficiency during the production phase? In other words, how do they prevent loss of material during production as much as possible?
- Resource recovery from waste streams and return streams
- Avoiding the use of toxic substances in the production process


Source: WRAP, UK

# Circular procurement - How it's done (contd)

## Enabling conditions for circular procurement

**Use phase conditions**

Stimulate service life maximisation, for example:

- What is the projected technical service life of the product?
- What is the projected economic service life of the product?
- What does the supplier offer in terms of repair/maintenance?
- Are there upgrade options?

Source: WRAP, UK

# Circular procurement - How it's done (contd)

## Enabling conditions for circular procurement

**Post-use phase conditions**
Encourage the supplier to take responsibility for keeping the product or materials in the supply chain after the use phase.

- Actions taken to extend the product's service life after taking it back: upgrade, resell, repair, refurbish and remanufacture
- Actions taken to enable highest-grade reuse of products/parts/materials after the end of the technical service life: remanufacture, repurpose, recycle.
- For all these actions: What *commitments* can the supplier make for reuse of the product or materials in a subsequent cycle? How is this 'directed' by the supplier or through the procurement exercise? Will the product end up as scrap heap after the 2nd user? This is a complicated issue, both in terms of contents and legal implications.
- How does the supply chain organise reuse of the product, parts, and materials used. Through what steps in cascading down to recycling and why these steps?
- In which concept is the product offered and what arrangements are possible in the supply chain?

Source: WRAP, UK

# Circular procurement - How it's done (contd)

## Enabling conditions for circular procurement

**Conditions for supply chain collaboration**

In circular procurement, a purchase can include agreements on high-grade reuse at the end of the use phase and corresponding accountability. This can produce a different distribution of risks, profits, and value among all supply chain partners.

The supplier may become the cycle coordinator which would involve the supplier bringing about collaboration and transparency across the supply chain. The supplier would then set the tone in optimising value retention in the supply chain. Agreements to this effect will be captured in customised contract provisions and a corresponding bespoke contract and contract term.

Source: WRAP, UK



- 10YFP
- Car sharing
- Office furniture and carpeting
- Temporary office
- Advanced Patient Care

# Case Studies

# Case Studies

**Role of public procurement**

National, regional and local governments can help to expand business opportunities
by developing PSS-related policies and making them part of existing procurement
policies, and by creating clear markets for companies' offerings.

It is not sufficient to just produce a policy paper. A common complaint by businesses is that they develop services based on policies, but in practice the expected change lags behind. Policymakers and/or organizations that undertake public procurement have a duty to turn their policy goals into practical guidelines for considering the procurement of PSS, and adjusting the procurement process (including tenders) accordingly. This requires a coherent top-down approach supported by both policy and practical activities.


The UNEP report describes eight examples of product-service systems. There are several other sources available on the internet with interesting cases of circular procurement (see links at end of module).

The following slide provides a summary of 4 of these case studies to give you some inspiration from examples in practice.

# Case Studies (contd)

## Implementing a top down approach

Policymakers and/or organizations that undertake public procurement have a duty to turn their policy goals into practical guidelines for considering the procurement of PSS, adjusting the procurement process (including tenders) accordingly. This requires a coherent top-down approach, supported by both policy and practical activities such as:

- embedding commitments in corporate policy
- raising awareness of the use of PSS among all relevant stakeholders
- coordinating and sharing international research, knowledge and experience, including through training and communities of practice
- using market engagement and dialogue before and during the procurement process
- developing contract templates and examples of specifications to ensure that environmental criteria are included in PSS
- developing structural tools (e.g. annual product category plans) for implementation on an organisational level
- sharing pilots and lessons learned from PSS tenders already undertaken (not only successes: we also learn from our mistakes)
- publishing annual market assessments, providing an overview of the new services businesses can offer, and stimulating competition and innovation, which can also help procurers to look beyond familiar services and companies
- facilitating collaboration, in particular addressing the position of SMEs.

# Case studies – click image to highlight details


Case Study 1 –
Car sharing public fleet management in Bremen (Germany)

Case Study 2 –
Supplying office furniture and carpeting in a circular model (the Netherlands)

Case Study 3 –
Temporary office for Brummen Town Hall (the Netherlands)


Case Study 4 –
Advanced Patient Care, Georgia Regents Medical Centre (U.S.A.)



# Insights and Lessons Learned

# Insights

**New possibilities**

True circular procurement, like a fully circular economy, is not practically possible because not all products and services have the potential to be truly circular and currently not all markets can offer truly circular solutions.

Circular procurement implies ‘being as circular as possible at this moment in time’. In other words, some degree of prioritisation is required in order to identify the potential alternatives to business as usual and choose the most appropriate approach for each purchase to discover what the possibilities are.

# Insights

(contd.)

**Collaboration**

A key principle of circular procurement is collaboration. Not only within the supply chain, but crucially between the producer and the user. The new way of thinking, approaching and procuring requires reviewing and creating new terms and contracts and demands a greater transparency between partners in order to learn and benefit from each other. A further level of collaboration is within the users' organisation.

The client (i.e. the budget holder or end user) of the procurer must recognise the specific benefits for a circular approach to ensure they are willing to play their part in stimulating that. Circular procurement needs a circular client.

The benefits can be purely financial but also complementary, e.g. using circular procurement to achieve progress against other indicators and targets such as encouraging innovation, reducing waste, social responsibility, employment, economic growth, environmental performance etc. Benefits can also be personal in that circular procurement principles and metrics can be easily embedded in personal and team performance reviews.

# Lessons learned

Several pilots lead to insights on what works and what doesn't. These lessons learned are based on theoretical knowledge from research combined with the practical experience from pilots with circular procurement. Since circular economy is developing and growing, this list of lessons learned is continuously developing. On the one hand it's the view of the moment and can/will be different tomorrow. On the other hand these lessons and considerations are assumed to be relevant for everybody who wants to actually start with circular procurement.
The lessons and considerations are classified by the following aspects: preparation, demand, materials, selection and contract, costs and business models.

**Preparation**

- Formulate your organisations' ambitions and vision on circular procurement before you start. Make clear what you want to achieve with circular procurement.
- Organise a market meeting with potential suppliers, including small innovative enterprises, to share your ambitions and vision and in the same time get an insight in the possibilities of the market.
- Take your time to decide on the tender procedure to be used. In every case: have more than two parties competing and spend some serious time in the market consultation.
- Work on the knowledge of circular economy and circular procurement in your organisation and with the specific stakeholders. Give presentations and lectures, use your organisations' communication tools and media.
- Make 'circularity' important from the very first beginning of the tendering procedure (while formulating the demand)
- Work on dialogue and trust between your client and the potential suppliers. Not only to find out what's possible in the market, which business models can be used, et cetera, but also create awareness and understanding of each other's roles, positions, challenges, risks and language. Circular procurement is new for both sides, therefore the chance of misunderstanding is very real.

# Lessons learned (contd)

**Demand**

- Formulating performance based specifications including maintenance, instead of the concept of 'ownership' is easier said than done. Prioritisation is necessary in order to be aware of the option to buy the goods and find your own end-of-life solution when time comes.
- At this moment in time there are no clear and widely accepted definitions of (aspects of) the circula
  opportunity and a challenge that to create a relevant organisational definition, based on the organis
- A further challenge is understanding just how different products and categories contribute to the ci
  relative importance of different metrics and indicators is also necessary – e.g. what is more importa
  of-life recycling?
- Apply terms and conditions to secure the use of future (technological) possibilities of high end reus
- 'Best Value Procurement' is a useful method for circular procurement, because it provides the oppo
  capabilities before entering the demand/specification phase.

**Materials**

- There is need for tooling to judge the materials in a product on several aspects like: the used materials, percentage of recycled content, toxicity, the use of bio-based materials, critical materials, et cetera. A **materials or product passport** could work, if it's easy to use by procurers and producers and in the same time gives non-disputable outcome.
- There is also a need for tooling to describe and measure in which way products are modular, reusable and designed for disassembly.

An EU advisory panel has recommended that goods manufactured and sold in Europe have a ‘product passport’, or a declaration of what materials are used and their potential for reuse at the end of the product’s life.

*(click box to exit)*

# Lessons learned (contd)

**Selection and contract**

- Should the use of sustainable energy during production (less carbon emissions) be more important than circularity of the product?
- How to make the right agreements on maintenance and quality of a product? Without experience it's hard to know up front what is necessary.
- It's often difficult to change the mindset of suppliers and clients from 'all new' towards 'reuse of existing' and 'second use'.
- Even though suppliers want to shift to circular economy and circular production, it's seems hard to let them take back used products for reuse and/or recycling.
- Depending of your contract period you can consider different business models. A lease construction will probably be less interesting with long term contracts.
- Some products are fashion sensitive (e.g. furniture), consider this when trying to buy it circular. A trendy product may be harder to resell and reuse in the future.

**Costs**

- Consideration on pay-per-use (including maintenance):
  Up front payment is a kind of banking from the client towards the supplier. There often is a need for financing the start, but beware not to pay to much at once. Payment in terms gives you a lever towards the supplier in case of less performance.
- Circular and cradle-to-cradle products may be more expensive. That's why you must consider the total costs of ownership. The higher price can be earned back by lower costs of maintenance, longer use in you organisation and by a higher end-of-use value. Take all your organisations' costs into account when comparing the total costs of ownership (or total costs of use): cleaning and maintenance, space and housing, labour, energy, waste management, et cetera.
- The uncertainty of markets in change can have a negative effect on the pricing of circular products and circular business models. Especially if you start up a pilot because everything is small scale. To prevent this from happening, try to purchase larger amounts of products and negotiate long term contracts. That will benefit your business case.

# Lessons learned (contd)

**Business models**

- As mentioned earlier, IMSA identified 19 business models for circular economy. Consider which models suit you best, based on your organisations ambitions and vision and on the possibilities of the specific market you are entering.
- Sometimes it's possible to control the reuse of a product within your organisation. In that case you don't have to worry about this aspect of circular procurement in your contract with the supplier. Obviously this means that you'll have to arrange and monitor the reuse and end-of-life recycling yourself. And be transparent about it!
- For some the transition to a circular economy is primarily about shifting towards performance based business models. For others it's about adding value to products and materials and/or about closing material loops. This leads to different starting points and insights. Consider none of these insights wrong, but discuss this and choose what is most important for you and your organisation. It depends on ambitions and vision, on possibilities of your organisation and the market, on technological development, et cetera.

# PSS and circular procurement links

## Links

A non-exhaustive set of related links. Please check the UNEP SCP Clearinghouse for further information on Sustainable Procurement

Ellen MacArthur Foundation - online learning providing cutting edge insight and content to support circular economy education
Green Deal - The Dutch Green Deal Circular Procurement is an initiative of Kirkman Company, MVO Nederland, Nevi, PIANOo and Circle Economy. The goal is to encourage purchasing goods which are more circular in production.
IMSA - IMSA Amsterdam was founded in 1996 focussing on innovative sustainability projects in partnership with business, science, government and NGOs all over the world.
Product Service Systems – The UNEP guide to the role of PSS in a sustainable society
Rijkswaterstaat - Rijkswaterstaat is responsible for the design, construction, management and maintenance of the main infrastructure facilities in the Netherlands.
Sustainable Procurement Resource Centre - ICLEI is an Association of over 1,200 local governments that represents the interests of local authorities within the United Nations and at international policy forums.
UNEP 2015 *Using Product-Service Systems to Enhance Public Procurement* – Working Group 3a report that forms a key component of this training module.
UNEP 10 Year Framework Programme - The 10-year framework of programmes on sustainable consumption and production patterns (10YFP) is a global framework of action to enhance international cooperation to accelerate the shift towards sustainable consumption and production (SCP) in both developed and developing countries.
US EPA – United States Environmental Protection Agency. Sponsored the UNEP 10YFP SPP Working Group 3a that produced the PSS report.
WRAP – UK resource body with information of sustainable procurement and circular economy in practice

# Module 1 - completed

**From introduction to experience in three steps**

1) **Online training module**
   Introduction, case studies and lessons learned *(this module)*

2) **Online video course**
   Further background information on the concepts *(available October 2015)*

3) **Practical training**
   Practice circular procurement *(available 2016)*

**Step 1: Introduction and recognition**
This is what you have completed.
This first module has been an introduction on circular economy and circular procurement.

**Step 2: More backgrounds**
The second step is a video course from the Technical University of Delft, The Netherlands. The lecture will give (theoretical) background on circular principles and more practical insights for circular procurement. This will be available via UNEP in late 2015.

**Step 3: Practice circular procurement**
The third step is achieved through practical training to enable reflection on initial experiences and study the possibilities for wider replication with peers, under the professional guidance of an experienced trainer. *Currently this training is only available in Dutch but in the near future it will be available through established procurement training institutes in your own country.*

On completion of all three steps, users will be able to set circular sustainable procurement goals and set up product procurement in a circular way using professional procurement techniques to achieve their circular goals.