For-analyse:
Udenlandske erfaringer med reguleringsmæssige ændringer for øget ressourceeffektivitet

Udarbejdet af Tanja Bisgaard

Gennemlæst af interviewpersoner/Reviewed by interviewees
5 februar 2015

Overview

Opsummering på dansk

Introduktion og baggrund
Som led i en samlet aftale om Vækstpakke 2014, blev der etableret en task-force til at afdække reguleringsmæssige barrierer for øget ressourceeffektivitet. Task-forcen er et samarbejde mellem Erhvervs- og Vækstministeriet og Miljøministeriet og inddrager andre offentlige myndigheder og relevante interessenter.

I task-forcens opstartsfase i 2014 er der gennemført en for-analyse, som skal give et første indblik i udenlandske erfaringer omkring reguleringsmæssige barrierer for ressourceeffektivitet. Tanja Bisgaard fra Novitas Innovation blev bedt om at udarbejde denne for-analyse. Arbejdet blev gennemført i perioden 17. november til 19. december 2014.

En række konkrete tiltag, nye arbejdsgrupper og igangværende ministerielle analyser er blevet identificeret i otte lande – UK, Skotland, Nederlandene, Finland, Sverige, Tyskland, USA og Japan. I alt er der blevet afdækket 13 eksempler, hvor der arbejdes med reguleringsmæssige barrierer for ressource effektivitet, som er beskrevet i denne afrapportering, og hvor relevante personer er identificeret, som kan kontaktes af task-forcen i det videre arbejde.

For-analysen er ikke repræsentativ ift det arbejde, som bliver lavet i udlandet på at identificere reguleringsmæssige barrierer for ressource effektivitet, men skal ses som et første "nålestik" for at afdække interessante og gode eksempler. Eksemplerne, som er blevet identificeret, og som er skønnet relevante for task-forcen, er inden for områder relateret til håndtering af affald, optimering af materialestrømme, remanufacturing og lettelser af administrative byrder.

Analysen har afdækket stor udenlandsk interesse for det arbejde, som task-forcen skal i gang med. Det har af hensyn til den korte periode, for-analysen er gennemført i, ikke være muligt at interviewe alle identificerede vidanspersoner, men disse kan kontaktes af task-forcen i det videre arbejde. Deres kontaktinformationer kan findes i hvert eksempel, som er beskrevet, samt i appendix.

Metode
Der blev taget kontakt til ca. 60 vidanspersoner fra relevante netværk for at identificere personer, som kunne fortælle om arbejdet med reguleringsmæssige barrierer i de udvalgte lande. Derudover blev der også taget kontakt til en række personer ud fra desk research, som blev foretaget om de forskellige lande. Omtrent halvdelen af de 60 personer, som blev spurgt, har igen identificeret andre relevante vidanspersoner - og i nogle tilfælde har de igen identificeret yderligere andre vidanspersoner, så det totalt skønnes, at der er taget kontakt til

ca. 100 personer. Af de personer er der ca. 30-40, som ikke har svaret, eller som ikke har kunnet bidrage med relevant information i denne sammenhæng.

Videnspersonerne kommer fra offentlige myndigheder, universiteter, NGO'er, politiske interesseorganisationer, nationale programmer og virksomheder. Udover deres egen viden har de også bidraget med yderligere baggrundsinformation i form af rapporter, arbejdspapirer og links til hjemmesider. Disse informationer er indsat i de beskrevne eksempler og i appendix.

Arbejdet omkring reguleringsmæssige barrierer er blevet afdækket i de pågældende lande gennem desk research samt interviews. Der er blevet gennemført 13 telefoninterviews.

Overblik over udenlandske eksempler

Det ser ud til, at den danske task-force, som skal afdække og fjerne reguleringsmæssige barrierer for øget ressourceeffektivitet i virksomheder, tilslutter sig en lille gruppe EU lande, som er i gang med lignende arbejde.

De otte lande, som er beskrevet i denne for-analyse, har arbejdet/arbejder med at identificere reguleringsmæssige barrierer – dog på forskellige måder. Ud fra det materiale, som foreligger på nuværende tidspunkt, ser det ud til, at fire af landene har iværksat konkrete ændringer i reguleringen, mens et land har iværksat programmer, som skal hjælpe virksomheder med at overkomme barrierene. To af landene, som allerede har indført lovmæssige ændringer, samt fire af de andre lande, har etableret arbejdsgrupper eller task-forces, som skal undersøge, hvilke (andre) reguleringsmæssige barrierer der findes. Et af landene er i gang med at oprette programmer, som skal hjælpe med at implementere ændringer i regulering, mens de øvrige fem lande stadig er i undersøgelsesfasen.

Endvidere er der eksempler på uafhængige organisationer, som påpeger reguleringsmæssige barrierer inden for specifikke områder i to af landene.

Der er i alt indsamlet information om 13 udenlandske eksempler:

- Eksempler på reguleringsmæssige ændringer
    - Reguleringsændringer for at fremme bio-baseret økonomi, Nederlandene
    - Remanufacturing, USA
    - Regulatory Reform Act, SEPA, Scotland
    - Recirkulering og ressourceeffektivitet, Japan

- Eksempler på konkrete programmer som skal hjælpe virksomheder
    - WRAP, UK
    - Zero Waste Scotland, UK

- Arbejdsgrupper og task-forces
    - Lettelse af administrative byrder, arbejdsgruppe, Finland
    - Programme for the Bio-based economy, Nederlandene (beskrevet som en del af Reguleringsændringer for at fremme bio-baseret økonomi)
    - Waste to Resource, Nederlandene
    - Affaldsforebyggelse, Sverige
    - Definition af affald ifm. genbrug og reparation, DEFRA UK
    - Zero Waste Task Force, Skotland (beskrevet som en del af Regulatory Reform Act, SEPA)
    - Resource Efficiency Programme (ProgRess), Tyskland

- Barrierer afdækket af frivillige organisationer
    - Remanufacturing, APSRG, UK
    - Circular Economy Task Force, DEFRA, BIS og Green Alliance, UK
    - Federal Association of German Disposal, Water and Raw Mateirals Industries, Tyskland (beskrevet som en del af ProgRess)

Nedenfor gives en kort beskrivelse af de forskellige eksempler, inden de fyldestgørende præsenteres i det efterfølgende kapitel.

Der er fundet konkrete *eksempler på reguleringsmæssige ændringer* i fire af landene. I Nederlandene blev definitionen af nogle affaldsstrømme inden for landbrug og skovbrug ændret i den national affaldsregulering i 2011. Den tidligere regulering medførte en barriere, ift. hvordan affaldsstrømmene skulle håndteres, og ændringen betyder, at de pågældende ressourcer ikke længere skal håndteres inden for EU's affaldsdirektiv. Endvidere har det Nederlandske Økonomiministerium oprettet et program for bio-baseret økonomi, hvor et team bl.a. undersøger, hvilker reguleringsmæssige barrierer der findes, for at virksomheder kan arbejde med nye forretningsmodeller og bruge bio-baserede ressourcer. De har identificeret 80 barrierer og er nu i gang med at undersøge, hvad der skal til for at fjerne barrierene.

Et andet konkret eksempel er fra USA, hvor den amerikanske lov The Freedom of Information Act blev ændret, så producenter kan få adgang til originalfremstillerens produktdesigns for at kunne gennemføre "remanufacturing" af produkter. Loven har oprindelig til formål at give alle adgang til offentlige dokumenter i USA. Den er blevet udvidet til også at gælde for virksomheder, hvor dem, som laver remanufacturing af produkter, nu har lov til at få adgang til produktdesigns fra den oprindelige producent. Derved har de virksomheder som arbejder med remanufacturing af produkter adgang til viden om materialer, kemikalier og andre detaljer om produktet. Det er dog uklart fra det tilgængelige materiale, hvilken barriere der lå til grund for, at reguleringen blev ændret, og hvornår det skete. I Europa ses det som en

barriere, at EU's Freedom of Information Act ikke gælder for producenter på samme måde som i USA. Dog kan europæiske virksomheder som arbejder med remanufacturing få adgang til amerikanske virksomheders produktdesigns mm.

I Skotland vedtog man i januar 2014 en lovændring, Regulatory Reform Act, som giver SEPA (Scottish Environmental Protection Agency) lov til at ændre eksisterende regulering og mulighed for at implementere ny regulering, som skal bidrage til at fremme vækst i erhvervslivet. I øjeblikket undersøger en lille gruppe i SEPA, hvordan affaldsregulering kan bidrage til at skabe større fleksibilitet omkring forandringer i industrien og innovation ift. 'waste recovery". Endvidere har regeringen nedsat en Zero Waste Task Force i 2014 som bl.a. skal undersøge hvordan der kan skabes bedre systemer for at indsamle materialer og tilhørende infrastruktur.

I Japan er regulering blevet ændret ad flere omgange mellem 2001-2008 for at fremme recirkulering og ressourceeffektivitet, nævnt som de 3 R (reduce, reuse, recycle) for at sikre at både forbrugere og virksomheder ikke forbruger eller producere mere end naturen og miljøet kan overkomme. Det fremgår dog ikke umiddelbart af materialet, hvilke barrierer ændringerne skulle overkomme. Der er fokus på alle typer af affald, og på at sikre materiale cyklusser. Det gøres ved at stille frivillige krav til hvordan produkter designes og produceres, samt at efterspørge recycling systemer hos producenterne.

Eksempler på konkrete programmer, som skal hjælpe virksomheder med at overkomme reguleringsmæssige barrierer, er fundet i UK og er WRAP (Waste and Resources Action Programme) og Zero Waste Scotland.

WRAP blev etableret i 2000, og har med udgangspunkt i det europæiske affaldsdirektiv udviklet Quality Protocols, som hjælper virksomheder med at håndtere deres affald, så det ikke bliver defineret som affald og derfor kan genindgå i produktionen, eller sælges. Med udgangspunkt i barrierer erfaret i erhvervslivet, blev ni "affaldstyper" udvalgt, og den første Quality Protocol præsenteret i 2004. WRAP skønnede at erhvervslivet selv ikke kunne finde en måde at håndtere affaldet på så det kunne defineres som en ressource i stedet for affald, og udviklede Quality Protocols på de ni områder. En Quality Protocol beskriver hvilke processer affaldet skal gennemgå, og hvilke standarder de skal leve op til, for at kunne klassificeres som en ressource, i stedet for affald. WRAP tilbyder gratis rådgivning til virksomheder.

Zero Waste Scotland hjælper virksomheder via programmet Resource Efficient Scotland, etableret i 2013, med teknisk support og viden om best practice og ny teknologi relateret til ressourceeffektivitet inden for områder som fx energi og vand, affaldsreduktion og genanvendelse. De er ikke aktive ift. at gøre noget konkret ved de reguleringsmæssige barrierer virksomhederne støder på, men arbejder bl.a. med at oprette en mærkningsordning

for produkter til genbrug (re-use). Zero Waste Scotland tilbyder gratis rådgivning til virksomheder.

Seks af de undersøgte lande har *etableret arbejdsgrupper eller Task-forces* omkring reguleringsmæssige barrierer i forhold til at bruge affald som en ressource, administrative byrder for at virksomheder kan arbejde mere ressourceeffektivt, fremme cirkulær økonomi, eller fremme mere genbrug og reparation.

I Finland nedsatte Økonomi- og Miljøministeriet en arbejdsgruppe i 2012, som har identificeret en række administrative byrder for virksomheder, som vil arbejde med ressourceeffektivitet, fx som en del af en industriel symbiose. Et af resultaterne af dette arbejde er en sammenlægning af flere styrelser for at lette de administrative byrder, og få sagsgange til at blive hurtigere.

I Nederlandene nedsatte Regeringen en arbejdsgruppe i 2014, som skal undersøge otte områder for, hvordan Nederlandene kan lave en "transistion to a circular economy". Et af områderne er at undersøge policy for at fremme cirkulær økonomi, og herunder undersøge reguleringsmæssige barrierer. Arbejdsgruppen skal granske lovgivning og undersøge, hvordan barrierene kan fjernes.

I Sverige implementerede Miljøministeriet Det Svenske Program for Affaldsforebyggelse i 2014. Der er fokus på fire områder: fødevarer; tekstiler; elektronik; og byg og nedrivning. De fire områder er valgt, fordi forbrugerne spiller en vigtig rolle i at efterspørge materialer som plast og metaller. Den svenske regering mener, at der allerede findes gode strategier for ressourceeffektivitet i virksomheder, hvor de er gode til at tænke på, hvordan de kan reducere og forhindre affald. Men der er behov for at inddrage forbrugerleddet og undersøge, hvordan der kan etableres systemer og incitamenter, så alle kan bidrage til at genere mindre affald – ved at inddrage hele værdikæden. Inden for de fire fokusområder er der sat undersøgelser i gang inden for fødevarer og tekstiler. Inden for fødevarer skal det bl.a. undersøges hvilke muligheder og barrierer der findes for at reducere madspild, og det skal foreslås, hvordan der kan skabes incitamenter for at samarbejde langs værdikæden. Inden for tekstiler skal der bl.a. laves en evaluering af regulering på området, og undersøges hvordan der kan etableres bedre systemer og incitamenter for indsamling, "recycling" og "reuse" af tekstiler.

I UK nedsatte DEFRA (Department for Environment, Food and Rural Affairs) en arbejdsgruppe i 2014, som er i gang med at undersøge, hvilke reguleringsmæssige barrierer affaldsdirektivet giver ift. at fremme genbrug og reparation. DEFRA har bedt interesserede stakeholders om at bidrage med kommentarer og eksempler på barrierer som de har oplevet, inden den 30. januar 2015. Efterfølgende nedsættes en arbejdsgruppe som skal undersøge lovgivningen samt gennemføre pilottests for at se, om reguleringsmæssige barrierer kan fjernes ift. den eksisterende definition af affald.

I Tyskland implementerede Regeringen strategien German Resource Efficiency Programme (ProgRess) i 2012. Formålet er at sikre mere bæredygtig udvinding og brug af ressourcer, og reducere den afledte forurening. Seks ministerier er involveret i at implementere strategien, og Økonomiministeriet har nedsat en arbejdsgruppe, som undersøger hvordan ressourceeffektivitet kan øges ved hjælp af regulering. Det kan endvidere tolkes som om, gruppen også skal undersøge, hvordan ressourceeffektivitet kan øges ved hjælp af regulering, men det er ikke entydig i beskrivelsen i ProgRess rapporten.

I UK og Tyskland findes der også eksempler på *interesseorganisationer, som bidrager med input* om, hvor der findes reguleringsmæssige barrierer for ressourceeffektivitet.

Et eksempel er All-Party Parliamentary Sustainable Resource Group (APSRG) i UK, som har undersøgt, hvilke barrierer en række EU direktiver medfører for remanufacturing. I december 2014 offentliggjorde de en rapport med 24 forslag til, hvad Regeringen i UK kan gøre for at fremme remanufacturing, og hvor 10 af forslagene var relateret til barrierene, som EU direktiverne resulterer i. Der er interesse for området i Parlamentet, og APSRG forventer, at der i 2015 vil blive igangsat tiltag for at for at fjerne barrierene.

Et andet eksempel, som også er fra UK, er Circular Economy Task Force, som blev etableret af NGO'en Green Alliance i 2012, i samarbejde med en række ministerier, virksomheder og offentlige organisationer i England og Skotland. Formålet var at undersøge, hvordan en cirkulær økonomi kan påvirke ressourceknaphed. Task Force gruppen identificerede to overordnede barrierer for virksomheder – markedsbarrierer og materialebarrierer. Ingen reguleringsmæssige barrierer blev identificeret. En lang række policy forslag blev også udviklet af Task Force gruppen, dog er ingen blevet implementeret endnu.

I Tyskland arbejder Federal Association of German Disposal, Water and Raw Mateirals Industries (Bundesverband der Deutschen Entsorgungs-, Wasser- und Rohstoffwirtschaft - BDE) sammen med en række europæiske eksperter og EU Kommissionen om at udarbejde kriterier for at definere "end of waste" for nogle materialestrømme. Det er dog uklart, i hvilket omfang arbejdet er relateret til at identificere reguleringsmæssige barrierer.

I skemaet nedenfor gives der et overblik over eksemplerne fra de forskellige lande.

Land	Reguleringsmæssige ændringer	Arbejdsgrupper/ Task Forces/ Programmer/ Initiativer uafhængige organisationer	Tema/område
Skotland	Regulatory Reform Act, SEPA Giver SEPA større beføjelser Enklere og mere integreret miljøregulering 2012	SEPA arbejdsgruppe kigger på affaldsdirektivet Zero Waste Task Force 2014-2015 Zero Waste Scotland 2011 (Resource Efficient Scotland) 2013	Waste recovery End-of-waste Systemer og infrastruktur for indsamling af materialer Ressource effektivitet fx vand og energi Cirkulær økonomi Recycling Madspild Low carbon heating (for virksomheder og offentlige organisationer)
Nederlandene	Ændring i affaldsregulering Lettelse af administrative byrder 2011	Programme for Bio-based economy 2012 Waste to Resource 2014	Bio-baseret økonomi REACH Recycling (high grade materials) End-of-waste Cross-border transport of waste Innovation Standards (for virksomheder)
USA	Freedom of Information Act ændret så remanufacturing virksomheder har adgang til information om det oprindelige produkt		Remanufacturing – adgang til produkt designs, viden om materialer, kemikalier mm (for virksomheder)
Japan	Ændring af 5 love for at fremme 3R (reduce, reuse, recycle),		Alle typer affald Sikre materiale cyklusser

	herunder Waste Disposal Law 2001-2008		Produkt fremstilling og desing Recycling systemer hos producenter (for virksomheder og forbrugere)
UK		DEFRA: definition af affald ifm genbrug og reparation, 2014 APSRG: Identifikation af barrierer for remanufacturing, 2014 DEFRA, BIS & Green Alliance: Circular Economy Task Force, 2012 WRAP 2000	Genbrug og reparation (for forbrugere og virksomheder) Remanufacturing (for virksomheder og policy makers) Barrierer for en cirkulær økonomi og policy forslag (for virksomheder) Definition af affaldstyper som ressource (for virksomheder)
Finland	Sammenlægning af styrelser for at nedbringe sagsbehandlingstider 2014	Arbejdsgruppe nedsat for at fremme "material efficiency" blandt virksomheder i Finland 2012	Administrative procedurer Tilladelser ift ny teknologi relateret til miljø og affald Overlap i regulering Manglende viden hos embedsmænd (virksomheder og offentlig ansatte)
Sverige		Affaldsforebyggende program 2014 - 2017	4 fokusområder: - Fødevarer - Tekstiler - Elektronik - Byg og nedrivning Reducere affald Produkt design Værdikæde tilgang (forbrugere og virksomheder)

Tyskland		ProgRess, arbejdsgruppe som kigger på regulering 2012	Værdikæde tilgang Råmaterialer som "biotic resources" og "abiotic, non-energetic resources" (virksomheder og forbrugere)

Der er stor forskel blandt eksemplerne på, hvordan de forskellige lande arbejder med at fremme ressource effektivitet via regulering og andre programmer. De fleste lande har en tilgang, hvor fokus er på at sikre bæredygtige materialestrømme på tværs af sektorer, mens Sverige har valgt at fokusere på fire specifikke sektorer og optimere værdikæder inden for de områder.

I lande som Nederlandene, Skotland, Tyskland og Japan har regeringen bidraget til at igangsætte programmer, som skal undersøge hvordan landet kan blive mere ressource effektivt, ved at etablere konkrete arbejdsgrupper med specifikke mål, som i Nederlandene og Tyskland, eller ændre regulering, som i Skotland og Japan. I Finland leder en tidligere departementschef fra Miljøministeriet arbejdet med at omstrukturere styrelser og rapporterer direkte til statsministeren.

I lande som UK, Sverige og Finland, har implementeringen af den nationale affaldsstrategi ført til etablering af arbejdsgrupper som skal undersøge reguleringsmæssige barrierer. I UK er det DEFRA, som undersøger konsekvenserne af affaldsstrategien på genbrug og reparation, mens Miljøministeriet i Sverige undersøger barrierer i to konkrete industrier, og Økonomiministeriet i Finland kortlægger barrierer for industrien generelt.

Endelig kan det nævnes, at UK er det land, hvor konkrete programmer er blevet etableret for at hjælpe virksomheder med at blive mere ressource effektive, WRAP i England og Zero Waste Scotland i Skotland.

Afrapportering

I den følgende afrapportering er eksemplerne beskrevet på engelsk, siden informationen er tilgængelig på engelsk, og interviewene er blevet foretaget på engelsk.

13 udenlandske eksempler er beskrevet, og hvor det har været muligt, er der henvist til en kontaktperson, der kan uddybe yderligere. Informationen er samlet via desk research og interviews. For at undgå gentagelser er relevante pointer fra interviews skrevet ind i eksemplerne og ikke gentaget i interviewnoterne.

Interviewnoter er en kort opsummering af hvert interview, som er blevet foretaget, og er indsat som et kapitel sidst i dokumentet. Interviews, der vurderes mest relevant for for-analysens undersøgelsesområde, er sat ind først i kapitlet. Ikke alle pointer fra interviews er taget med i de beskrevne udenlandske eksempler, da de ikke altid var relevant i den kontekst, eksemplerne er blevet skrevet i. Der kan derved være interessante pointer, som kun findes i interviewnoterne.

Tre af interviewene er foretaget med virksomhederne: Desso i Nederlandene, Safechem i Tyskland og Steelcase i USA.
Desso og Safechem har begge påpeget, at de har oplevet reguleringsmæssige barrierer, når de skal transportere materialer, som bliver defineret som affald, men som i deres tilfælde er materialer, som skal recirkuleres. Det medfører administrative byrder, som er tidskrævende, og derved øger omkostningerne ved at recirkulere materialerne. Desso nævnte endvidere, at REACH direktivet gør det svært at genbruge (gamle, brugte) materialer. Siden Desso ikke ved hvilke kemikalier materialerne indeholder, gør de noget ulovligt, hvis de genbruger dem.

Steelcase fortalte om regulering på kemikalieområdet, hvor produkter skal indeholde brandhæmmende kemikalier, men hvor der ikke tager hensyn til, hvordan kemikalierne påvirker miljø og sundhed. For at fjerne barrierene har Steelcase været i dialog med myndighederne, og har fået tilladelse til at udfase kemikalierne. Men i et andet tilfælde har Steelcase måtte opgive at lave et produkt, siden det ikke var muligt at fjerne kemikalierne, og Steelcase vurderede at de var for sundheds- og miljøskadelige.

Identifying regulatory barriers for resource efficiency

Examples from other countries

1. Amending regulations to promote a bio-based economy, The Netherlands

The Ministry of Economic Affairs in the Netherlands hired SIRA Consulting in 2011 to conduct a study of the obstacles to a bio-based economy. In addition to identifying a range of obstacles, that were not exclusively regulatory, they also found that several of the obstacles faced by entrepreneurs have now been removed. These efforts have included, for example, the interdepartmental catalyst team of Green Gas, a foundation that collects information on green gas and biogas to accelerate market developments; a programme of the Ministry of Economic Affairs to reduce administrative burdens; previously implemented changes and evaluations of regulations by ministerial departments (such as changes to the Ministry of Infrastructure and the Environment's waste regulations); and the government's top sector policy (source 2).

One example of the obstacles that have been removed concerned *the appeal and review procedures* that delayed plans to build a co-digestion plant (the simultaneous fermentation of manure and other biotic waste streams). The lack of knowledge about co-digestion among local-level civil servants, and their fear of the risks, made it hard for the companies to realize their plans. As a result of this risk-averse behaviour, it took longer than necessary for the local-level civil servants to process the permits and to issue unnecessarily strict requirements that would affect the plant's profitability. The solution involved providing civil servants with information: InfoMil, a knowledge centre within the Ministry of Infrastructure and the Environment. They have launched a new initiative, 'Assistance in co-digestion of manure', so that these issues receive consistent attention, and are organising information sessions for businesses and for civil servants (source 2).

Another example is the removal of regulatory obstacles to the *use of biotic waste streams*, making it easier to use them as bio-based raw materials. An amendment to Dutch waste regulations (Dutch Environmental Management Act, chapter 10), which came into effect in March 2011, has meant that some agricultural and forestry waste streams are no longer regarded as waste products, so that the waste regulations no longer apply. After the amendment was implemented, there are still specific conditions that apply, such as for crop residues and wood shavings, that must be used for agricultural or forestry purposes, or to generate energy, and must not be harmful to humans or the environment (source 2).

Furthermore, a Programme for the Bio-based economy at The Ministry of Economic Affairs has been established, where a team is looking at what can be done to eliminate regulatory barriers faced by companies. They are looking at 80 barriers that were identified by SIRA Consulting, and have so far sorted them into four main groups (source 1):

- *Fundamental constraints*. These call for a political and policy approach (e.g. import duties, level playing field, certification, and financial feasibility);

- *Conflicting constraints*. These barriers cannot be removed, but governments can help the companies to meet the regulations (e.g. REACH regulations);
- *Structural constraints*. These require adjustment to regulations, but do not demand policy or political action;
- *Operational constraints*. Here the regulation itself is not the problem but its implementation by, for example, local authorities. Especially for SMEs, these lead to substantial barriers to investment in the bio-economy

One specific area they are looking at, that Mr John Butter mentioned, is the transportation of waste.

In another report, *Opportunities for a Circular Economy*, a range of obstacles for a circular economy that are created by government policy, rules and regulation was identified. According to the report they are (source 2):

- Risk-averse behaviour by local governments regarding innovation, e.g. long waits for licences that regards the use of new technology unfamiliar to government officials.
- Government inconsistency with regard to measure, e.g. changing policy on subsidies for green energy such as feed-in tariffs for solar and wind power.
- The thinking behind waste regulation and rules is that "we have to get rid of waste" rather than regarding it as a raw material.
- It takes too long to implement new rules and regulation. It often takes less time to take a product to market, than e.g. get a new licence.

In addition, policy and regulatory barriers to making more effective use of biotic waste streams were also identified in the study *Opportunities for a Circular Economy* (source 2):

- Inequalities on the use of fossil and biotic raw materials. E.g. an energy tax is levied on fossil fuels, but not on products based on fossil raw materials. Fossil-based products are *not* subject to import levies within the EU, but bio-based products and biofuels such as bioethanol are.
- The overcapacity of incineration plants in the Netherlands. The low rates charged by incineration plants for treating biomass and biotic waste are a barrier to more effective and high-grade uses of biomass.
- The rules and regulations regarding food security are obstructing the effective use of raw materials and energy from biotic waste streams. As an example, the use of swill ("food waste") for insects, which are a novel source of protein, is not permitted.
- The rules and regulations regarding minerals are obstructing the use of digestate from biodigestation plants as a substitute for artificial fertilizers. The digestate is regarded as a fertilizer and selling it costs money

Finally, regulatory barriers to the expansion of the abiotic economy were also identified in the study, *Opportunities for a Circular Economy* (source 2):

- Complicated regulations regarding the import and export of waste streams. As an example, the rules and regulation for plastic vary for each type, complicating the recycling of plastics from electrical and electronic appliances.
- The EU's WEEE directive sets targets for waste collection based on weight and not on the value of raw materials. There is therefore little incentive to recycle scarce materials since the amounts per product are so small.
- Subsidy schemes such as MIA and VAMIL only encourage purchasing environmentally friendly and energy efficient appliances. However, it would be useful to explore how these types of subsidies also could encourage circular behaviour such as sharing and other ways to reduce the use of raw materials.
- Imports of used products for recycling are regularly blocked. The persons interviewed for the report, *Opportunities for a Circular Economy,* said that used products (after their first life cycle) imported to the Netherlands were not allowed because of the uncertainty about processing rules. However, it is not clear whether this is because the regulation is ambiguous, the authorities lack relevant knowledge, or the authorities have misinterpreted the rules.

As a result of the work on this report, the Ministry of the Environment has commissioned additional research regarding the potential of subsidy schemes to encourage circular behaviour, such as the shared use of appliances and other ways to reduce the use of raw materials.

Contact person

Mr John Butter
Program Manager, Program for a Bio-based economy
Ministry of Economic Affairs
Tel: + 31 64 81 31 118
Email: j.w.butter@minez.nl

Mr Ton Bastein
Program Manager, Resource Efficiency and the Circular Economy
TNO, The Netherlands
Email: ton.bastein@tno.nl
Mob: +31 651 52 52 78

Sources and more information

1. Interview with Mr John Butter, Program Manager, Program for a Bio-based economy, Ministry of Economic Affairs Netherlands

2. Opportunities for a circular economy in the Netherlands, TNO, 2013
http://www.government.nl/documents-and-publications/reports/2013/10/04/opportunities-for-a-circular-economy-in-the-netherlands.html

2. Remanufacturing in the USA

There are economic as well as environmental benefits to remanufacturing. Studies conducted show that remanufacturing uses 85% less energy and saves on the amount of raw materials used, also saving on input costs for companies. (source 5)

The US is the largest producer, consumer and exporter of remanufactured goods in the world. There are several incentives to support the remanufacturing industry. The national Center for Remanufacturing and Resource Recovery (SIC) in New York is an internationally recognised leading centre for applied research in remanufacturing. Its mission is to deliver advanced technologies and tools for efficient and cost-effective remanufacturing and the design of products that have no negative environmental impacts. (source 1)

The Department of Commerce has remanufacturers on its International Trade Advisory Committee to help assess and examine trade barriers to remanufacturing. (source 1)

In 1998, New York passed a remanufacturing bill mandating that purchases from state agencies should consider remanufactured goods first, and prohibits state agencies from purchasing goods from OEMs (Original Equipment Manufacturers) that place restrictions on remanufacturing. The following year Texas, Connecticut and California passed similar laws. In 2000, New York passed a tax credit law to benefit remanufacturing companies. (source 1)

The Freedom of information Act (FOIA) in the US is a law that gives any person the right to gain access to federal agency records. On the homepage of the United States Department of Justice, the following explanation can be found regarding the FOIA: *"Enacted on July 4, 1966, and taking effect one year later, the Freedom of Information Act (FOIA) provides that any person has a right, enforceable in court, to obtain access to federal agency records, except to the extent that such records (or portions of them) are protected from public disclosure by one of nine exemptions or by one of three special law enforcement record exclusions. A FOIA request can be made for any agency record."* (source 4)

In the US, the Freedom of Information Act was amended to cover private companies, thereby allowing remanufacturers access to OEMs' design specifications and other relevant information to be able to remanufacture the product or material. This is not the case in the EU. (source 1 & 2) However, based on the material that has been found, it is not possible to determine what was the reason for changing the legislation – and what the nature of the barrier was. Advocates of remanufacturing in Europe point out that the Freedom of Information Act in Europe does not enable third party manufactures access to product designs, and in that way creates a barrier for remanufacturing. However, European remanufacturers are able to access product designs etc. by manufacturers in the US. (source 2)

Looking at the US today, the country is a leader when it comes to producing, consuming and exporting remanufactured goods. In 2011, production of remanufactured goods in the US totalled $43 billion and accounted for 2% of all sales of manufactured goods. SMEs are estimated to have accounted for 25% of US production of remanufactured goods, and 17% of their exports. The US also dominates in terms of employment with remanufacturing accounting for over 180,000 full-time jobs, with 36% of these in SMEs. (source 1)

Contact person

Mr John Chalifoux
President and COO
Motors and Equipment Remanufacturers Association (MERA)
Email: jchalifoux@mera.org

Mr Shawn Zwicker
Head of Remanufacturing operations
Cummins Inc
Email: shawn.k.zwicker@cummins.com

Sources and more information

1. Triple Win - The Social, Economic and Environmental case for Remanufacturing, December 2014
http://www.policyconnect.org.uk/apsrg/sites/site_apsrg/files/report/535/fieldreportdownload/triplewin-thesocialeconomicandenvironmentalcaseforremanufacturing.pdf

2. Remanufacturing and Product Design - Designing for the 7th Generation
http://cfsd.org.uk/Remanufacturing%20and%20Product%20Design.pdf

3. Materials for remanufacturing – safeguarding supply
http://www.eef.org.uk/resources-and-knowledge/research-and-intelligence/industry-reports/materials-for-manufacturing-safeguarding-supply

4. Freedom of information Act
http://www.foia.gov/about.html

5. Remanufacturing – Towards a resource efficient economy
http://www.policyconnect.org.uk/apsrg/sites/site_apsrg/files/apsrg_-_remanufacturing_report.pdf

3. Regulatory Reform Act, (SEPA), UK

The Scottish Environment Protection Agency (SEPA) is currently working on the Better Environmental Regulation programme, which has been running since 2012. SEPA works closely with the Scottish Government on Regulatory Reform, in addition to working with Zero Waste Scotland, Enterprise Agencies Scottish Government and others on Scotland's Circular Economy Programme. SEPA is also part of Scotland's Zero Waste Task Force that is a Scottish Government Minister led group. (source 1)

Regulatory Reform
Through the joint Better Environmental Regulation Programme, the Scottish Government and SEPA aim to provide a simpler and more integrated legislative framework, enabling SEPA to take a more joined-up, transparent, accountable, proportionate, consistent and targeted approach to carrying out its regulatory functions. This is part of a broader agenda to enable SEPA to better identify and focus on the most important environmental risks and harms. It will ensure more effective and efficient protection of the environment and reduce the administrative burden on those who are regulated.

The Regulatory Reform (Scotland) Act 2014 enables the legislative changes required to deliver a new integrated permitting framework, a broader range of enforcement tools and a new statutory purpose for SEPA. Beyond the Act work is ongoing to drive forward further improvements through non-legislative means, including taking forward work on a new regulatory charging scheme, as part of SEPA's wider change agenda.

Scottish Government and SEPA are phasing implementation under the Act, with the aim of having a new enforcement framework in place by summer 2015 and a new integrated permitting framework in place in 2016. There will be phased operational implementation under the latter.

New Integrated Permitting Framework
The new permitting framework will involve bringing together the current separate regulatory regimes for waste, Pollution Prevention and Control, radioactive substances and water (the 4 Main Regimes) into a single, simpler, more proportionate and outcome-focused regime.
This would:

- Allow consistent and more proportionate levels of permissioning to be applied across all activities and media covered by the 4 Main Regimes;
- Simplify the legislative framework and the regulatory procedures, making it easier for SEPA, operators and others to understand and navigate;
- Simplify the legislation by removing the need for complicated provisions signposting between regimes and avoid the potential for duplication/gaps in regulatory control;

- Support the introduction of more joined-up permissions e.g. single site and operator permissions; and
- Increase opportunities for streamlining the administrative processes involved in permissions for operators and SEPA and increasing processing efficiency.

A single permitting structure, with a single set of procedures, will result in simplification of SEPA's existing permissioning and compliance control regimes.

As part of the development of this new integrated permitting framework work is being carried out to look at opportunities for reform of SEPA regulation of waste and how reform of permissions could support a more proportionate approach and outcomes specific to that sector e.g. encouraging genuine low risk recovery operations whilst making abuse more difficult.

Example where barrier has been removed (source 1)
One example is the work that has been done around End of Waste and Processed Fuel Oil. SEPA aims to promote the recovery and use of waste derived fuels. SEPA supports and create markets through end of waste positions under Article 6 of the revised Waste Framework Directive. Initially, in relation to Processed Waste Fuel Oil, waste regulation was being seen as a barrier but by working through the end of waste process with industry, higher standards were applied and an end of waste position was reached, enabling the processed fuel oil to be reused.

The key barrier to the recovery of these fuels remains the Waste Incineration Directive. Whilst these are fully justified in the burning of, for example, heavily contaminated oil, where a waste derived fuel can demonstrate equivalent environmental performance against a virgin fuel. The WID does not apply to fuels meeting 'end-of-waste'. SEPA has developed a guidance for processed fuel oil, that guide producers on how to meet the "end-of waste" criteria, and thereby enable them to reuse the oil instead of having to treat it as waste. The approach promotes the use of recycled products, helps business save on fuel costs, and encourages Scottish manufacturing whilst maintaining a high level of local environmental protection (see source 6).

Other work at SEPA (source 1)
SEPA has an internal project looking at the systematic assessment of resource use under Pollution, Prevention and Control Scotland Regulations 2012 (transposes the Industrial Emissions Directive). SEPA is trying to look at how they can help regulated industry comply with their permit condition that focuses on waste management and resource use. This in turn will help identify improvements that can be made by the operator in relation to resource efficiency.

As part of Scotland's Circular economy Programme, SEPA recently commissioned a study to look at the role of regulatory levers in helping to support a more circular economy and this was also to identify challenges and opportunities. This did pick up that improved awareness around the use of the regulatory tools e.g. licence, exemption, end of waste would help operators understand what they need to do to comply with the regulations. SEPA has also kicked off a piece of work to publish guidance on "reuse and preparing for reuse" so it is clearer when and how waste regulation applies to these activities.

Other work in Scotland

Zero Waste Task Force is a Scottish Government Minister led group that was established in 2014 and is expected to report its work in May 2015. The task force is jointly chaired between Scottish Government (Cabinet Secretary John Swinney) and COSLA (Convention of Scottish Local Authorities). The minister Richard Lochhead also attends. The task force focuses on progressing the following areas: awareness raising of circular economy, consistency of collection of materials by local authorities, and infrastructure.

Contact person

Ms Rebecca Walker
Principal Policy Officer – Sustainable Resource Use
National Operations Waste Unit
Scottish Environment Protection Agency (SEPA)
Tel: +44 (0)131 2737234
Mob: +44 (0)7787668585
Email: rebecca.walker@sepa.org.uk

Callum Blackburn
Policy Manager - Circular Economy
Zero Waste Delivery, Environmental Quality Division, Scottish Government
Tel: +44 (0)131 244 7593
Mobile: +44 (0)7837 062 967
Email: callum.blackburn@scotland.gsi.gov.uk

Sources and more information

1. Email from Ms Rebecca Walker

2. SEPA, Better Regulation
http://www.sepa.org.uk/about_us/publications/better_regulation.aspx

3. Better Environmental Regulation
http://www.scotland.gov.uk/Topics/Environment/waste-and-pollution/BER

4. Consultation on Proposals for an Integrated Framework of Environmental Regulation, Analysis of responses, Dec 2012
http://www.scotland.gov.uk/Resource/0041/00411494.pdf

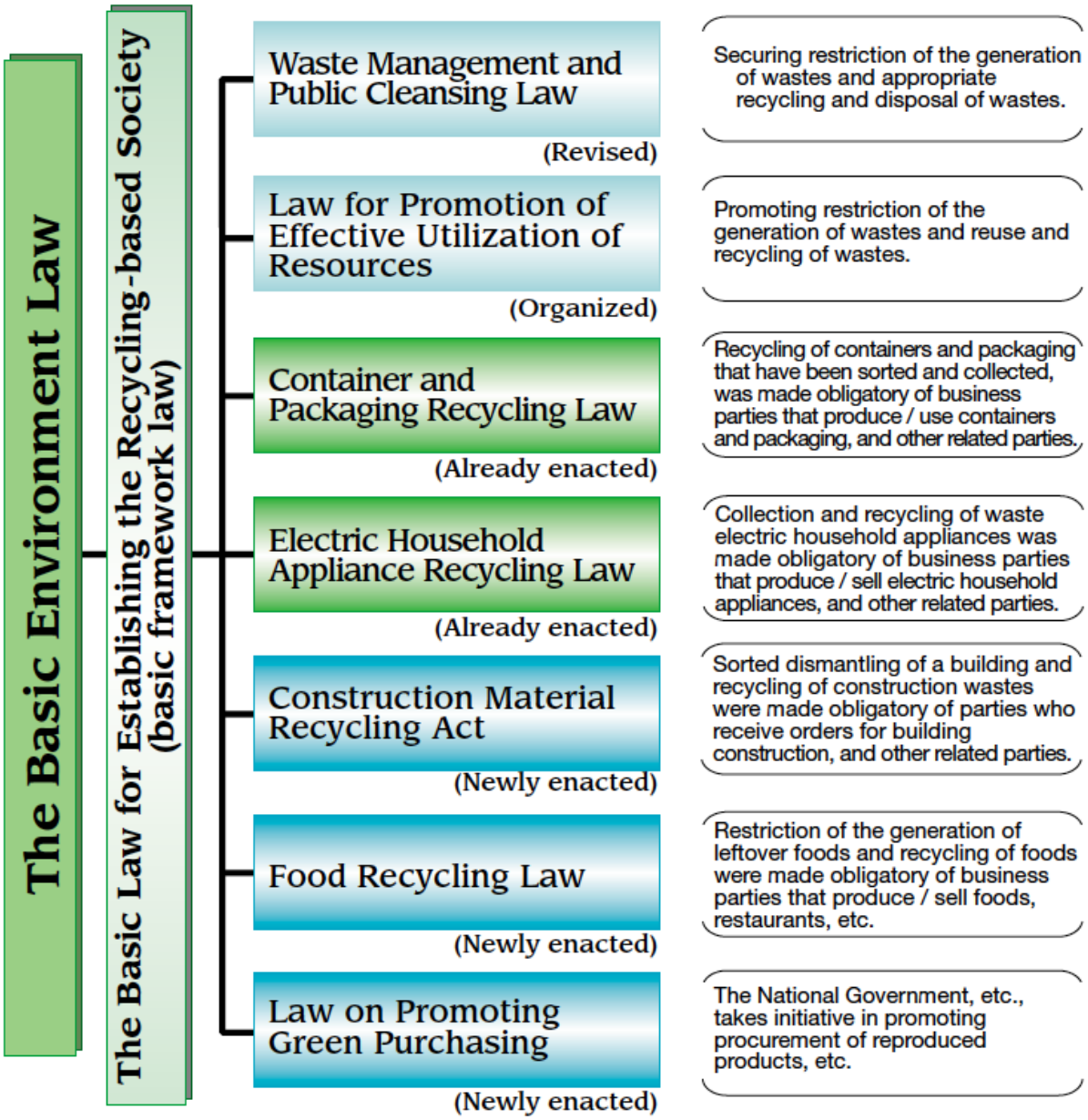
5. Work process for developing new regulation (for charging schemes)
http://www.sepa.org.uk/about_us/charging_schemes/charging_scheme_development.aspx

6. Processes fuel oil
http://www.sepa.org.uk/waste/waste_regulation/idoc.ashx?docid=5ab28b51-4510-4e64-b677-296ac4512e38&version=-1

4. Revision of regulation for resource efficiency, Japan

The Basic Law for Establishing the Recycling-based Society was enacted in May 2000, in order to change Japan into the Recycling-based Society. In addition, five individual laws were revised, including a revision of the Waste Disposal Law. (source 2)

Figure taken from the report: The challenge to establish the Recycling-based Society (source 2)



In April 2001, there was an amendment to the Resource Recycling Promotion Law, which became the Law for the Promotion of Effective Utilization of Resources. Its goal is to promote integrated initiatives for 'the 3 Rs' (reduce, reuse, recycle) that are necessary to create a sustainable society. The goal of the law is to reform society and people's lifestyles that today are based on mass production, mass consumption and mass disposal, and secure the material cycle in society and form a "recycling based society" where the consumption of natural resources will be restrained to reduce the load on the environment. (source 5)

The law targets all types of waste, and requires products to be restrained from becoming waste by viewing waste as recyclable resources, by promoting appropriate recycling, and by securing appropriate disposal of waste that cannot be recycled. (source 5)

It uses cabinet orders to designate the industries and product categories where businesses are required to undertake 3R initiatives, and stipulates by ministerial ordinances the details of voluntary actions that they should take. Ten industries and 69 product categories have been designated, and actions stipulated include 3R policies at the product manufacturing stage, 3R consideration at the design stage, product identification to facilitate separate waste collection, and the creation of voluntary collection and recycling systems by manufacturers. (source 3)

In March 2003, the government established the "First Basic Plan for Establishing the Recycling-based Society" and set quantitative targets for resource productivity, cyclical use rate, and final disposal amounts. In March 2008, the government made a cabinet decision to revise the first plan into the second one, setting tougher quantitative targets for the three indicators regarding the inlet, outlet and cycle of material flow as well as setting up indicators to supplement and monitor the three indicators. Targets are set for year 2015. (source 5)

In 2008 the Central Environment Council conducted the first check of the progress of the second basic plan – measuring indicators for year 2006 (source 5):

1. Resource productivity (=GDP/natural resources input)
    a. **1990**: 210,000 yen per ton
    b. **2006**: 348,000 yen per ton
    c. **Target 2015**: 420,000 yen per ton

2. Cyclical use rate (=cyclical use amount/cyclical use amount + natural resources input)
    a. **1990**: 8%
    b. **2006**: 12.5%
    c. **Target 2015**: 15%

3. Final disposal amount of wastes
    a. **1990**: 110 million tons
    b. **2006**: 29 million tons
    c. **Target 2015**: 23 million tons

The Council indicated a few specific challenges after their first review of the indicators, and the need for among others (source 5):

- faster statistic reports
- the combination of low-carbon and natural symbiosis society policies
- the development of systems and cooperation for strategic use of resources, such as rare metals

Furthermore, the need for future policy cooperation was identified as necessary to overcome the challenges.

Contact person

Ministry of Economy,Trade and Industry (METI)
Mr Yasujiro Miyake
Principal Deputy Director Multilateral Trade System Department
Tel: +81-3-3501-5923
E-mail : miyake-yasujiro@meti.go.jp
(The Ministry of Economy,Trade and Industry (METI) is responsible for Home Appliance Recycling Law)

Mr Kensuke Nakajima
Invest in Denmark, Royal Danish Embassy Tokyo
Investment Manager
Tel: +81 3 3780 8741
Email: kennak@um.dk

Mr Kensuke Nakajima can establish contact to relevant persons within Ministries and companies.

Sources and more information

1. Basic Law for the Promotion of Recycling-Based Society
http://www.env.go.jp/recycle/low-e.pdf

2. The Challenge to establish the recycling based society
http://www.env.go.jp/recycle/panf/fig/e-guide.pdf

3. Law on the Promotion of Efficient Use of Resources
http://www.meti.go.jp/policy/recycle/main/english/law/promotion.html

4. Scheme of law for promotion of effective utilisation of resources
http://nett21.gec.jp/Ecotowns/data/img/c05-1.pdf

5. The ten year framework of programmes on sustainable consumption and production patterns, UN National report Japan
http://www.un.org/esa/dsd/dsd_aofw_ni/ni_pdfs/NationalReports/japan/scp.pdf

6. Eco-Innovation Policies in Japan, Environment Directorate, OECD
http://www.oecd.org/japan/42876953.pdf

7. Country Analysis Paper, Japan, for the Fourth Regional 3R Forum in Asia
http://www.uncrd.or.jp/content/documents/Country%20Analysis%20Paper_Japan.pdf

5. WRAP - Waste and Resources Action Programme, UK

About WRAP
WRAP is a not-for-profit organisation established in 2000, working on promoting the circular economy in the UK. They work with the government on implementing resource efficiency initiatives by gathering information and evidence, and bringing together partners from government, business and the community. (source 2) Business support programmes in the UK are free for companies to participate in. But work not related to this and done overseas is charged for. (source 1)

WRAP focuses on resource intensive sectors – which currently are 1) food waste reduction, 2) manufactured products, 3) the built environment, and 4) resource management.

WRAP has been funded by UK government (DEFRA), the EU and other public sector organisations. However, in recent years government funding has been reduced, and WRAP therefore became a charity on 8 December 2014. (source 2) This will allow them access to other types of funding. In addition, WRAP is planning on changing their business model and including a "trading arm" where they can offer consultancy services in addition to the work offered by the charity. (source 1)

Quality Protocols
WRAP have developed Quality Protocols for 9 materials that guides companies on how to recover materials that are considered waste. According to Mervyn Jones, there is a clear definition in the EU Waste Directive of what is considered waste that has been in place since 1977, and revised in 1990. The directive has been in place for a long time, and business has challenged it in the European court – because it does not live up the current way of looking at waste vs resources, and the adoption of new business models. But it has not been possible to change the definition of what is considered waste. That is why the UK adapted a short-term alternative and developed the Quality Protocols.

Some of the barriers companies are experiencing are information and organisational barriers, financial barriers, and regulatory barriers. One of the biggest barriers is to identify the quality of a material – when it goes in and when it goes out. (source 1)

The Quality Protocols were established to help companies with barriers related to understanding and interpreting the EU Waste Directive. Uncertainty over the point at which waste has been fully recovered and ceases to be waste within the meaning of Article 3(1) of the EU Waste Framework Directive (2008/98/EC) has been a barrier to the development and marketing of materials produced from waste which could otherwise be used beneficially. In some cases, the uncertainty has also inhibited the recovery and recycling of waste and its diversion from landfill. (source 8)

Interpretation of EU legislation is ultimately a matter for the Courts and there is now a substantial body of case law on the interpretation of the definition of waste in Article 3(1) of the Waste Framework Directive. Drawing on the principles established in this case law, it is possible to identify the point at which certain wastes cease to be waste and thus when the Waste Framework Directive's waste management controls no longer apply. (source 8)

A Quality Protocol sets out end-of-waste criteria for the production and use of a product from a specific waste type. Compliance with these criteria is considered sufficient to ensure that the fully recovered product may be used without undermining the effectiveness of the Waste Framework Directive and therefore without the need for waste management controls. In addition, the Quality Protocol indicates how compliance may be demonstrated and points to good practice for the storage, handling, application and use of the fully recovered product. The Quality Protocol further aims to provide increased market confidence in the quality of products made from waste and so encourage greater recovery and recycling. (source 8)

A non-waste product is when waste ceases to be waste – in EU terms that is end-of-waste. There are specific criteria that waste has to meet for it to cease to be waste and obtain status of a product or a secondary material. The waste has to undergo a recovery operation (including recycling) and must comply with criteria for the use of the specific material. (source 7)

The effect of Article 6(1) and (2) of the WFD is to enable measures to be adopted, under a procedure known as "comitology with scrutiny", providing end-of-waste criteria for specified waste streams. Article 6(1) provides that the certain specified waste ceases to be waste within the meaning of Article 3(1) when it has undergone a recovery operation, including recycling, and complies with end-of-waste criteria adopted under the terms of Article 6(2). The criteria must be adopted in accordance with the conditions set out in Article 6(1)(a)-(d). The QPs enable this to happen within the UK. The EC has also adopted end-of-waste criteria for ferrous and aluminium scrap metal. New criteria on Glass were adopted in July 2012. Proposals for Copper and Paper were put forward at the same time as those for glass, but Member States did not reach an agreement and those proposals were not adopted. (source 1)

One example is the process of turning waste into compost, which is classified as a waste recovery operation and is subject to the waste management controls in the Waste Framework Directive as well as national legislation. The Compost Quality Protocol describes the process of turning waste into compost that must be used appropriately within the areas of land restoration, horticulture (including domestic use), agriculture or forestry. Examples of waste include waste from the textile or food industry where e.g. textile fibres or animal tissue can be turned into compost using the processes described in the Quality Protocol. (source 8)

A Quality Protocol gives guidance on how to recover waste, and remove it from the regulatory regime and unnecessary obstacles in regulations. The regulatory barrier that must be overcome for all materials and resources is related to defining a point in a specific process where the waste ceases to be a waste, and therefore becomes free of waste regulation. In some cases however, the material or resource might become subject to other regulations, such as REACH. (source 2)

The first Quality Protocol was published in 2004. (source 3) The nine Quality Protocols are (source 1 & 2):

1. The Quality protocol for the production and use of quality compost from source-segregated biodegradable waste.
2. The Quality Protocol for the production of aggregates from inert waste
3. The Quality Protocol for the production of processed cullet from waste flat glass
4. The Quality Protocol for the manufacture of secondary raw materials from waste non-packaging plastics
5. The Quality Protocol for Biodiesel derived from waste cooking oil and rendered animal fat
6. The Quality Protocol for Anaerobic Digestate (AD)
7. The Quality Protocol for Tyre-derived Rubber Materials
8. The Quality Protocol for Gypsum from Waste Plasterboard
9. The Quality Protocol for Pulverised Fuel Ash

The three most successful Quality Protocols are the aggregates, composting and AD protocols. While three of the Quality Protcols not used. These are: production of processed cullet from waste flat glass, manufacture of secondary raw materials from waste non-packaging plastics and Tyre-derived Rubber Materials (source 1). The reason the Quality Protocols are not being used, could be because the materials are being used by industry for different purposes than WRAP expected – or it could be because the market for the "recycled" material is not big enough, industry cannot achieve the requirements cost effectively or industry would rather use the material for other purposes. As Mervy Jones says: "Just because WRAP makes a model showing that it makes economic sense, does not mean the market will adopt it".

Compliance with Quality Protocols is voluntary. If producers do not comply with the quality protocol in full, the waste will still be regarded as waste and the onward transfer and use of the waste will be subject to the requirements of the Waste Management Licensing Regulations. (source 3)

Identifying materials with a "business case"

WRAP made an open call to industry where they could send in their proposals as to which materials they thought it was a good idea for WRAP to look at. WRAP establsihed a committee

that evaluated the proposals. During this process it was important to evaluate whether industry could do something about the barrier themselves, or if it was necessary for WRAP to get involved. In order to evaluate this, the committee did a market based study for each of the materials identified to determine whether it was economically viable – one challenge is that it is necessary to collect sufficient amounts of the material/resource for it to become a well functioning market where there is sufficient supply and demand. (source 1)

WRAP worked with companies to help them find out when a material is a waste and when it is not. They worked with companies that had materials that were considered waste as well as waste handling companies to determine when a material ceases to be a waste. (source 1)

There are 3 steps in the process of working with companies on determining which materials hold a "business case" and therefore should be handled in a special way – requiring guidance through a quality protocol: (source 1)

1) Identify materials where industry wanted the definition changed. Today there are 9 materials with a quality protocol. In the beginning WRAP started with the "easy" materials such as wood, then coloured glass, then packaging that is plastic etc.
2) Identify a process that is repeatable – that can be used every time for the material – e.g. screening of the material, determine the grade (quality). Then develop publicly available specifications that make it clear when it is not a waste any longer (this is also required by EU), and ensure it meets the quality standards for each material for the market.
3) Ensure the material is sellable. Sometimes the material is cheaper than virgin material – then there is a "business case".

The goal of the process is to bring industry/sectors together. Often they end up with a voluntary agreement from industry. It is important for the industry to understand what the opportunities are for them – "what in it for me?". WRAP works on building the evidence using tools like cost/benefit analysis. Often they work with early adopters, e.g. in the retail sector 6 large companies account for 80% of the market. If WRAP gets M&S to join in the work, they know they can get the others to follow. But to get them on board it has to make economic sense. (source 1)

Other work at WRAP

WRAP is working on various projects that are supporting the development of a more circular economy. This includes an EU project regarding improving re-use and recycling – how to create incentive systems that encourage collection, e.g. mobile phones. There is a large value to be gained in extracting the gold out of all mobile phones. But maybe it would make more sense to reuse some parts, rather than trying to recycle all the parts in a phone. WRAP is investigating how you can make systems that encourage proper collection of used goods so

they don't get damaged. But reuse poses other challenges – such as guarantees on e.g. telephones, TVs, laptops. WRAP is currently working with companies on this. (source 1)

Contact person

Dr Mervyn Jones, Head of Collaborative Programmes, WRAP
Email: mervyn.jones@wrap.org.uk
Mobile: +44 7931 329937

Sources and more information

1. Interview with Dr Mervyn Jones, Head of Collaborative Programmes, WRAP

2. WRAP homepage
www.wrap.org.uk

3. About WRAP Quality Protocols on WRAPs homepage
http://www.wrap.org.uk/content/quality-protocols

4. About WRAP Quality Protocols
http://aggregain.wrap.org.uk/quality/quality_protocols/

5. Partnership WRAP and Northern Ireland Environment Agency
http://www.doeni.gov.uk/niea/waste_quality_protocols.htm

6. UK government website about end-of-waste etc
https://www.gov.uk/turn-your-waste-into-a-new-non-waste-product-or-material

7. Criteria for end-of-waste according to EU Waste Directive
http://ec.europa.eu/environment/waste/framework/end_of_waste.htm

8. Quality protocol compost
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297215/geho0812bwpl-e-e.pdf

6. Zero Waste Scotland, UK

Zero Waste Scotland is the Scottish government's body for implementing resource efficiency related to areas such as water and energy. This is part of the Waste Prevention Plan – Safeguarding Scotland's Resources. (source 1)

During 2013-2014 Zero Waste Scotland became a subsidiary company of Waste and Resources Action Programme (WRAP), and during 2014-2015 they will become a separate Scottish-based legal body. Zero Waste Scotland is fully funded by the Scottish government. (source 2)

The work is structured into three programme areas:

- Circular Economy
- Resource Management
- Resource Efficient Scotland

The work is delivered through their Communications and Engagement function, which aims to influence behaviour amongst key audiences, and their Policy Support function which provides technical expertise to the programme and to the Scottish Government in areas such as economics, research, evaluation, environmental analysis, data and financial mechanisms. (source 2)

Priority areas for action in 2014-2015 is:

- Supporting a circular economy
- Harnessing the value of recycling
- Transforming attitudes to food waste
- Reducing the impacts of litter
- Implementing resource efficiency savings
- Accelerating the development of low carbon heat

Zero Waste Scotland have a programme for business that is free of charge, Resource Efficient Scotland, that is designed to help the public and private sector reduce costs by implementing resource efficiencies in energy, water, raw materials and waste management. Resource Efficient Scotland offers free advice and technical support as well as the sharing of best practice and new technologies. Launched in April 2013, the programme has already engaged with 33,000 organisations, helping to identify and implement millions of pounds in savings. (source 3)

Resource Efficient Scotland has been expanded to look at companies as well as the public sector. The programme offers advice and help with implementation. They work across

industry sectors – also bringing larger groups of companies together, to e.g. work on voluntary agreements, report data etc. Some of the areas they work in are: (source 1)

- Materials
- Water
- Energy
- Waste prevention
- Recycling – how to ensure high quality
- Change behaviour

Some of the regulatory barriers, they hear about when working with companies, are related to waste. This seems to be the biggest barrier. The definition of waste is a big challenge. But if something is going to be done with the definition, it has to be changed at EU level. Zero Waste Scotland work "hands-on" with companies to find out how to overcome the barriers. (source 1)

Another challenge is related to reuse and take-back. Not everybody is allowed to collect waste – they must be a waste management company. Sometimes they use the Quality Protocols that are developed by WRAP, but they do not always help solve the problem. (source 1)

Zero Waste Scotland are working on developing standards that will make it easier for reuse (project is called Revolve) by helping companies have control over their stock, how to repair the products etc. If companies can get such a standard/ label, it will help consumer feel more confident in what they are buying. (source 1)

A barrier for remanufacturing is that there is no clear standard/ definition of what that entails. (source 1)

A recent report by the All-Party Parliamentary Sustainable Resource Group, says that Scotland is the place in the UK where remanufacturing is working the best.

Contact person

Ms Louise McGregor, Head of Circular Economy
Tel: +44 1786 433 977
Email: louise.mcgregor@zerowastescotland.org.uk

Ms Marissa Lippiatt, Head of Resource Efficiency
Tel: +44 1786 433 967
Email: Marissa.Lippiatt@resourceefficientscotland.com

Sources and more information

1. Interview with Ms Louise McGregor and Ms Marissa Lippiatt, Zero Waste Scotland

2. Zero Waste Scotland homepage
http://www.zerowastescotland.org.uk/category/what-we-offer/business-support

3. Resource Efficient Scotland homepage
http://www.resourceefficientscotland.com

4. Standard for reuse (Revolve)
http://www.revolvereuse.com

5. Inspiring change for Scotland's resource economy – Programme delivery plan 2014-15
http://www.zerowastescotland.org.uk/sites/files/zws/Our%20delivery%20plan.pdf

6. Waste (Scotland) Regulations
http://www.zerowastescotland.org.uk/content/waste-scotland-regulations

7. Working group on National Material Efficiency Programme, Finland

In December 2012, the Ministry of the Employment and the Economy and the Ministry of the Environment formed a working group to draft a proposal for Finland's national material efficiency programme and investigate opportunities for the development of measurement and assessment. The working group also consisted of the Ministry of Agriculture and Forestry, Ministry of Environment and Ministry of Finance. (source 2)

They have looked at what barriers there are among companies in Finland and made a proposal of what regulation to look at to encourage material efficiency. (source 1)

The barriers they have identified are: (source 1)

- **Environmental permits** – it can take up to 7 years to get a permit in Finland. What often happens is that by the time a company gets the permit, the technology they are using has become out-dated, and they need to apply for a new permit that can keep up with the new clean tech technology.
- **Administrative procedures** – there are separate authorities for different kinds of permits; there is little coordination. Companies say that often the decisions from the different agencies may even contradict each other in the of case new industrial symbiosis it may be difficult to determine which permits to apply for.
- **Waste legislation** – in relation to activities with industrial symbiosis it is often not clear what types of permits a company needs to apply for. Should it be an industrial permit, a waste management permit, fisheries permit, etc?
- **Geographical differences** - local authorities apply regulation in different ways in different areas of Finland – e.g. road building. In some places some materials may be used with an easy procedure, but not in other places.
- **Lack of knowledge and training among government officials** – often the employees in the public institutions do not know enough about material efficiency and issues such as closed loop. One question from companies is e.g. if they are working with a closed loop regarding a material – why do they need an environmental permit?
- **Overlapping regulation** – by-product regulation when working with agriculture sometimes can be perceived as overlapping with waste regulation

Many of these barriers have posed problems for companies that want to work in industrial symbiosis partnerships in Finland. (source 1)

The working group found that there are two critical success factors for achieving sustainable growth through material efficiency: 1) knowledge, expertise and attitudes, and 2) supportive operating environment. Within 2) one of the focus areas identified was that legislation has to be in order and administration has to be seamless. (source 2)

The number of compulsory environmental permits is high in Finland by international standards and with short renewal intervals. To make it easier for companies to operate, one of the working group suggestions was to ease the administrative burdens such as clarifying waste and environmental permits systems (including e.g ICT applications). This would make it easier to introduce new technology to implement experimental facilities faster and in an appropriate manner, and to utilise waste and industrial secondary flows in a sustainable way. (source 2)

In relation to the work on this programme, is the Government's structural policy programme that was approved on 30 November 2013, and which is looking into how procedures for environmental permits can be eased. (source 2) In order to make it easier for companies to get their permits, the government decided to change the structures of the authorities and join some of them. This work is lead by former secretary general of the Ministry of the Environment, Mr Lauri Tarasti, who reports directly to the Prime Minister. Mr Tarasti is working together with SITRA on this task. (source 1)

Contact person

Ms Erja Fagerlund
Ministry of Employment and the Economy, Finland
Email: erja.fagerlund@tem.fi
Tel: +358 2950 62101

Ms Mari Pantsar-Kallio,
SITRA
Email: Mari.Pantsar-Kallio@sitra.fi
Tel: +358 294 618 210

Sources and more information

1. Interview with Ms Erja Fagerlund, Ministry of Employment and the Economy, Finland

2. Report: Sustainable growth through material efficiency – Working group proposal for a National material efficiency programme
http://www.tem.fi/files/38764/TEMjul_8_2014_web_27022014.pdf

8. Waste to Resource, The Netherlands

The Waste to Resource programme is the government's effort to stimulate the transition to a circular economy. Waste to Resource builds upon the Netherlands Waste Prevention Programme that the Netherlands established under the European Waste Framework Directive. In January 2014 a report suggesting how to implement the program was sent to the House of Representatives. (source 1) It contains eight operational objectives: (source 2)

1. Promoting sustainability at the front of the value chain
2. Making consumption patterns more sustainable
3. Improving waste separation and collection
4. Focusing existing waste policy on a circular economy
5. Adopting an approach to specific material chains and waste streams
6. Developing financial and other market incentives
7. Connecting knowledge and education to the circular economy
8. Simplifying measurement methods, indicators and certification labels

Regarding *4. Focusing existing waste policy on a circular economy*, it is suggested that the goal of waste policy should be to reuse materials. At present, legislation is often seen as obstructing this goal. The following needs to be done:

- identify and eliminate unnecessary obstacles in legislation
- stimulate the application of end-of-waste status
- promote recycling by means of a European level playing field for waste
- create scope for innovation in legislation and in standards

Identifying and eliminating unnecessary obstacles in legislation
Obstacles in legislation often exist because insufficient consideration was given to the possibilities for using waste as a resource at the time when the legislation was made. Through the Waste to Resource programme, the Cabinet wants to identify and eliminate unnecessary barriers. This examination of legislation must also consider that the legislation serves purposes such as environmental protection and public health, and provides a basis for taking action when it is necessary to do so.

The programme will investigate whether legislation like the Registration, Evaluation, Authorisation and restriction of Chemicals (REACH), the Waste Framework Directive and other European and Dutch laws create unnecessary barriers for optimal recycling of high-grade materials from waste streams. A similar review of the obstacles experienced by companies for using waste as a raw material has already occurred for bio-based materials and, where possible, the obstacles are being eliminated. The programme will also investigate the scope that REACH offers for simpler registration of recycling. This will be followed in 2014

by an assessment of practical problems and a position paper agreed with stakeholders on Dutch efforts in the EU in the REACH field.

Stimulating the application of end-of-waste status

European waste legislation provides a possibility to give waste the status of resource under certain conditions. The earlier lifting of the waste status will lower administrative costs and may have a positive effect on recycling. The European Commission has already set down end-of-waste criteria for glass, metal and copper scrap and criteria for various other materials are being prepared. Member states may additionally define national criteria if no European criteria are in force. In the Netherlands, for example, national criteria are being prepared for recycling granulates. The Dutch business community has expressed interest in using the end-of-waste concept. Companies can obtain information about end-of-waste from the Directorate-General for Public Works and Water Management (RWS). In 2014 RWS will unveil a test tool (e-tool) that enables companies to make their own assessment of the status of a material. RWS can subsequently be asked for its opinion. Together with value chain partners, the programme will also take stock of the wishes for the use of end-of-waste to determine whether an extra effort is relevant in this respect.

Promoting recycling through a level European playing field for waste

Cross-border transport of waste plays an important role in the transition to a circular economy. The European Waste Shipment Regulation (WSR) sets out the frameworks. The Netherlands is endeavouring to make good use of the scope within these frameworks. Additionally, the Netherlands is pursuing a level playing field at European level, among other things for the standardisation of enforcement and the interpretation of the WSR. The Cabinet is also attempting to separate high-quality and low-quality recycling in European legislation to prevent a shift to foreign countries with low-quality recycling. Minimum European standards might be a solution. They could then play an important role in implementing the WSR.

Creating scope for innovation in legislation and in standards

Waste policy must stimulate innovation. Interim changes are being made to the current National Waste Management Plan ('LAP') in order to promote innovation. It is no longer allowed to export recyclable waste for use as a fuel or to fill mines. In the European revision of the BREF for Waste Treatment – the reference document for best available waste processing techniques – the Netherlands wants to ensure the inclusion of innovative and proven techniques.

The use of national and international standards (NEN, CEN and ISO), in combination with certification or otherwise, presents opportunities to close material loops. But existing standards can actually be a barrier to closing them. Therefore, the Netherlands Standardization Institute (NEN) is going to examine whether prevailing standards and

certification schemes can stimulate sustainability and whether amendment of these documents is desirable. The goal is twofold. Scrutinising a number of practical cases will help selected material chains and value chain partners and will yield generic knowledge. An important matter requiring attention is that all relevant parties must be tied in the standardisation process. Results are expected at year-end 2014. Within Europe the Netherlands is striving to make the prevailing standards for products and processes more dynamic. This will allow faster alignment with the most advanced technology and method of approach. Dynamic standardisation is part of the Eco-innovation Action Plan.

Overview of actions taken from report *Waste to Resources Programme, Elaboration of eight operational objectives, 2014*

Most important actions

	What	How	Who	When
18	Review of obstacles in legislation	Conduct a study into obstacles Position paper on REACH	Central government in cooperation with the sector	Year-end 2015
19	Stimulate end-of-waste status application	E-tool for companies	Together with Directorate-General for Public Works and Water Management (RWS)	Q3 2014
20	Define national end-of-waste criteria	Criteria for granulate Take stock of wishes for other streams	Central government in cooperation with the sector	2014-2015
21	Make optimum use of the WSR	Utilise the scope offered by the WSR Pursue amendment of the WSR	Central government in cooperation with the sector	2014-2015
22	Stimulate innovative recycling	Amend the WSR	Central government	Q1 2014 (consultation)
23	Focus standards of the circular economy	Scrutinise practical cases Pursue dynamic standardisation in Europe	Netherlands Standardization Institute (NEN) Central government together with EU	2014-2015

Contact person

Mr John Butter
Ministry of Economic Affairs
Email: j.w.butter@minez.nl
Tel: + 0031 64 81 31 118

Mr Ton Bastein
Program Manager Resource Efficiency and the Circular Economy
TNO, The Netherlands
Email: ton.bastein@tno.nl
Mob: +31 651 52 52 78

Sources and more information

1. Implementation of the Waste to Resource Programme, Letter to the Parliament, 2014
http://www.government.nl/documents-and-publications/parliamentary-documents/2014/01/28/implementation-of-the-waste-to-resource-programme.html

2. Waste to Resources Programme, Elaboration of eight operational objectives, 2014
http://www.government.nl/documents-and-publications/parliamentary-documents/2014/01/28/waste-to-resource-elaboration-of-eight-operational-objectives.html

9. Waste Prevention Programme, Sweden

As a result of the EU Directive on Waste (2008/98/EC), Sweden has made a plan to implement its Waste Prevention Programme. This is the first programme of its kind in Sweden, and it is planned that a follow-up to the program will be implemented in 2018 at the latest. The Swedish Environmental Protection Agency (EPA) is responsible for drawing up the programme which contains 8 objectives and 167 measures. (source 1)

The aim of the programme is to guide and inspire Swedish stakeholders so that environmental goals are achieved, so that less waste is generated and so that products are designed which contain no dangerous substances, irrespective of how much the economy grows. There are four focus areas in the programme (source 1):

1. Food
2. Textiles
3. Electronics
4. Construction and demolition

The EPA is currently looking at regulatory barriers in the food and textile areas, in order to evaluate them and determine whether any changes need to be made. These four areas have been chosen since they are consumer related industries, and have an influence on the demand of materials such as plastic and metals. The Swedish EPA believes that there is already a lot of focus in industry on reducing and preventing waste. (source 1) However, from the work being done in the food and textile areas, it can be seen that there is a focus on the entire value chain, and what can be done to improve systems for all actors to participate in generating less waste.

The EPA is working together with the National Food Agency and the Swedish Board of Agriculture to reduce food waste throughout the entire value chain. Areas that they describe as important to look at are food production companies, retailers, restaurants, large kitchens (such as in canteens), and private households. The work is due to be completed in March 2016. Some of the points being looked at are (source 4):

- Analyse opportunities and barriers to reducing food waste
- Create incentives for different actors to work together
- Stimulate the use of food waste for bio-gas production

The EPA has a call out regarding textiles, and where they have requested the work to look at areas such as (source 3):

- Develop suggestions for better collection systems, including suggestions for producer responsibility

- Develop suggestions for requirements and incentives to be placed on municipalities and producers to increase recycling and reuse of textiles
- Evaluate regulation that is related to consumers as well as industry
- Develop suggestions for better regulation to ensure sustainable consumption and production of textiles

The EPA is also conducting four impact assessment studies to evaluate measures and instruments. They have started looking at the following (source 1):

- Repair allowances (REP allowances), i.e. deductible repair services
- Building logbooks to record the types of materials currently being used in the construction of a building and to retain the information until the building is refurbished or demolished.
- Lower cooling temperatures in shops and households
- Information campaign to reduce the amount of food waste generated by households

Contact person

Ms Maria Ivarsson
Project manager
Swedish Environmental Protection Agency (Naturvårdsverket)
Tel: +46 10 698 10 00
Email: maria.ivarsson@naturvardsverket.se

Sources and more information

1. Tillsammans vinner vi på ett giftfritt och resurseffektivt samhälle - Sveriges program för att förebygga avfall 2014-2017
http://www.naturvardsverket.se/Nerladdningssida/?fileType=pdf&downloadUrl=/upload/miljoarbete-i-samhallet/miljoarbete-i-sverige/avfall/avfallsforebyggande-programmet/avfallsforebyggande-programmet-giftfritt-resurseffektivt-samhalle.pdf

2. Naturvårdsverket's homepage – Avfallsförebyggande Program
http://www.naturvardsverket.se/Miljoarbete-i-samhallet/Miljoarbete-i-Sverige/Uppdelat-efter-omrade/Avfall/Avfallsforebyggande-program/

3. Looking at barriers in textiles (ready December 2015)
http://www.naturvardsverket.se/Nerladdningssida/?fileType=pdf&downloadUrl=/upload/miljoarbete-i-samhallet/miljoarbete-i-sverige/regeringsuppdrag/2014/hantering-av-textilier/ru-utveckla-forslag-om-hantering-av-textilier.pdf

4. Looking at barriers within food (ready in March 2016)
http://www.naturvardsverket.se/Miljoarbete-i-samhallet/Miljoarbete-i-Sverige/Uppdelat-efter-omrade/Avfall/Avfallsforebyggande-program/Matsvinn/

10. The definition of waste for reuse and repair activities, DEFRA, UK

Based on the paper "Clarifying the application of the definition of waste to re-use and repair activities", DEFRA (Department for Environment, Food and Rural Affairs) has launched a consultation asking stakeholders where the definition of waste may currently present a barrier to re-use and repair. (all below is source 1)

England's Waste Prevention Programme (WPP) was published in December 2013 and identified a need to clarify the definition of waste. The WPP describes the Government's view on how to reduce the amount of waste produced. It outlines the key roles and actions for businesses, government, the wider public sector, civil society and consumers, towards a more resource-efficient economy.

The current definition of waste has been used for more than 30 years and is embedded into the Waste Framework Directive (WFD), which indicates that once a material or item ceases to be required for its original purpose – usually because it is unsuitable or unwanted – it becomes waste. Furthermore, the WFD also describes activities for "re-use" and "preparing for re-use":

- **Re-use**: any operation by which products or components that are not waste are used again for the same purpose for which they were conceived (repair is allowed)
- **Preparing for re-use:** checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.

The difference between "re-use" and "preparation for re-use" is rooted in whether the product or material has become waste or not prior to its "new" life. If items have not become waste, then they are re-used. However, if items have become waste and are then re-used, they must undergo a process to turn them from waste into a useable product or material for the same purpose, a process classified as "preparing for re-use".

In order to provide clear guidance to ensure businesses and other organisations take the right decisions in defining what is waste and non-waste, DEFRA (together with other agencies) published *Guidance on the legal definition of waste and its application* in August 2012. The guidance clarifies that the intention of the "discarder" of a material or item is critical in defining whether it is waste. If the discarder intends that the item should be re-used or repaired, then it would not be considered waste, and would not be subject to the associated permitting or monitoring framework. This would be the case when people give items to their local charity shop etc.

Evidence gathered to date suggests that it is not the definition of waste itself that acts as a

barrier to growth in the re-use and repair sectors, but the interpretation of the definition, and the application of the regulatory regime. This can act as a blocker in some cases. Therefore it is necessary with greater clarity on the application of the definition of waste, consistency within and across the Devolved Administrations (institutions operating only within a defined part of the UK, e.g. England, Scotland, Wales), and communication across different sectors.

When looking into barriers in a number of sectors, such as construction, farming, and energy, the definition of waste proved to be challenging when carrying out reuse and repair activities. Some examples were found by DEFRA:

Examples of where the definition of waste has been perceived to be a barrier to re-use and repair

Industry/ sector	Sector's desired activity	Perceived barriers
Construction & demolition	Company A is demolishing bridges near a major road. Company B shows an interest in taking the material for use in a road-widening project but the project schedule windows don't fit each other. Company A decides to store the 10,000 tonnes of material at a disused former station site until Company B is in a position to take the material.	Company A's intention to discard means regulatory controls. Window of opportunity for providing the regulators with the necessary paperwork makes re-use by another project prohibitive
WEEE	A householder decides to order his new TV from a supermarket chain and subsequently takes his old TV back to the store. He receives loyalty card points for using the take-back scheme. The supermarket uses its own vehicles and employees to transport Used Electronic Electrical Equipment to a centralised location, which is under the control and ownership of the supermarket. At this centralised sorting centre, TVs are tested to ascertain whether they are fully functioning, some minor repairs may also take place before these TVs are offered for sale or for re-use.	Old item is classed as waste at point of return, meaning regulatory controls and waste permitting.
Agriculture	A farmer wants to carry out on-farm activities such as spreading ditch dredging, covering with trimmings and re-use of paper as animal bedding.	Established approaches to re-use of on-farm waste require additional waste permit
Chemicals	A company receives drums of chemicals, uses the chemicals then has the drums picked up for cleaning and re-use.	Established approaches class the drums as waste meaning regulatory controls. A company

		collecting and storing the drums prior to sending them back to the chemicals company must have the necessary permits, at additional cost.
Other e.g. energy	A business wants to use biomass as a fuel for power stations, and that meets the Renewables Obligation Fuel Measurement and Sampling Guidance (which states "To meet the definition an individual fuel's energy content must be at least 90 per cent derived directly or indirectly from 'relevant material' e.g. plant matter, animal matter, fungi or algae").	The current waste system renders a significant proportion of viable biomass materials as 'waste'. Difficulties associated with demonstrating recovery, combined with the complicated issues associated with incineration and energy recovery means that the current policies prevent some beneficial re-use of natural materials.

DEFRA has asked organisations involved in the sector to comment on the paper. It also seeks specific examples on their experience of where the definition of waste has acted as a barrier and suggestions for changes that might support the growth of the industry.
The consultation closes on 30 January 2015.

Furthermore, DEFRA will establish a working group in 2014/2015 in order to tackle identified barriers, consisting of the enforcement authorities Waste and Resources Action Programme (WRAP), representatives of the re-use/repair sector and the Devolved Administrations. They will examine the issues covered by the paper with a view to developing an action plan, and develop trial approaches in different sectors to help remove barriers to re-use and repair brought about through the current application of the definition of waste.

Contact person
Ibby Sanusi
Email: ibidun.sanusi@DEFRA.GSI.GOV.UK

Sources and more information
1. Clarifying the application of the definition of waste
http://www.letsrecycle.com/wp-content/uploads/2014/11/Clarifying-the-application-of-the-Definition-of-Waste.pdf

2. Aticle about DEFRA's call
http://www.letsrecycle.com/news/latest-news/defra-seeks-feedback-waste-barrier-reuse/

3. Prevention is better than cure – The role of waste prevention in moving to a more resource efficient economy
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265022/pb14091-waste-prevention-20131211.pdf

4. Guidance on the legal definition of waste and its application, DEFRA, 2012
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69590/pb13813-waste-legal-def-guide.pdf

11. German Resource Efficiency Programme (ProgRess), Germany

The Federal Cabinet adopted the German Resource Efficiency Programme (ProgRess) on 29 February 2012. With this, the German government implemented the decision in its Raw Materials Strategy of 20 October 2010 to develop a national resource efficiency programme. (all below source 1)

The goal of the German Resource Efficiency Programme is to make the extraction and use of natural resources more sustainable and to reduce associated environmental pollution as far as possible. ProgRess deals with raw materials, focusing on abiotic, non-energetic resources, supplemented by the material use of biotic resources. The use of raw materials is connected to the use of other natural resources such as water, air, land, soil, biodiversity and ecosystems. These resources are already covered by other programmes, processes or legislation, and are therefore *not* addressed by ProgRess.

ProgRess gives an overview of numerous existing activities and describes approaches and measures for increasing resource efficiency. It covers the entire value chain. Five strategic approaches are considered:

- Securing a sustainable raw material supply
- Raising resource efficiency in production
- Steering consumption towards resource efficiency
- Enhancing resource-efficient closed cycle management
- Using overarching instruments.

A total of 20 strategic approaches are identified and underpinned with measures. The programme attaches particular importance to market incentives, information, expert advice, education, research and innovation, and to strengthening voluntary measures and initiatives by industry and society. Examples include measures for strengthening efficiency advice for small and medium-sized enterprises, supporting environmental management systems, taking greater account of resource aspects in standardisation processes, placing greater focus on the use of resource-efficient products and services in public procurement, strengthening voluntary product labelling and certification schemes, enhancing closed cycle management and increasing the transfer of technologies and knowledge to developing countries and emerging economies.

Several Ministries are involved in the work. They include:

- Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
- Federal Ministry of Economics and Technology

- Federal Ministry of Transport, Building and Urban Affairs
- Federal Ministry of Education and Research
- Federal Ministry of Food, Agriculture and Consumer Protection
- Federal Ministry for Economic Cooperation and Development

The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is looking into how resource efficiency can be increased by means of economic or regulatory instruments and improving progress measurement by developing further suitable indicators. It is not clear whether the work also includes looking into regulatory barriers.

Furthermore, the Federal Association of German Disposal, Water and Raw Materials Industries (BDE) is working with European experts and the Commission to draw up criteria that define the end-of-waste status for various material flows. The BDE advocates a "long" definition of waste with high standards/ criteria for release from the waste regime. Recycled materials that are considered to have a high quality can be released from waste law and will contribute to raising the acceptance of recycled materials.

Contact person

Dr. Nadja Salzborn
Leiterin des Fachgebietes
Rechtswissenschaftliche Umweltfragen
Umweltbundesamt
Wörlitzer Platz 1
06844 Dessau-Roßlau
Tetl: +49 (0)340 2103 2476
E-Mail: nadja.salzborn@uba.de

Dr. Michael Paul
Head of Division WR III 3
Federal Ministry for the Environment, Nature Conservation, Buildng and Nuclear Safety
Soil Conservation Legislation, Legal Aspects of Ressource Efficiency
Robert-Schuman-Platz 3
53175 Bonn
Tel.: +49 (0)228 99 305 3435
E-Mail: michael.paul@bmub.bund.de

Sources and more information

1. German Resource Efficiency Programme (ProgRess), 2012
http://www.bmub.bund.de/fileadmin/bmu-import/files/pdfs/allgemein/application/pdf/progress_en_bf.pdf

2. Final report on the Material Efficiency and Resource Conservation Project (MaRess), Wuppertal Dec 2010
http://ressourcen.wupperinst.org/downloads/MaRess_FinalReport.pdf

12. Recommendations for remanufacturing, UK

Established in 1995, the All-Party Parliamentary Sustainable Resource Group (APSRG) informs the debate between parliamentarians, business leaders and the sustainable resource community. The APSRG organises parliamentary events, conducts policy research projects and provides in-depth parliamentary monitoring and analysis to its associate member organisations and parliamentarians. Their work is funded through donations. (source 2)

The All-Party Parliamentary Sustainable Resources Group in the UK launched two reports in 2014 describing the benefits of remanufacturing, the challenges of seizing the opportunities, and a set of recommendations to government. The report from December 2014 has 24 recommendations to Government and industry on what can be done to enhance remanufacturing in the UK. (source 1)

Remanufacturing means rebuilding a product to specifications of the original manufactured product using a combination of reused, repaired and new part.The failure of parts of the UK's resource, waste, manufacturing and design industries' ability to understand the definition of remanufacturing and the opportunities that it carries continues to be one of the sector's key barriers. This also forms one reason for much of the over-focus on recycling targets as recycling is more easily defined and understood. Although a commonly accepted academic definition of remanufacturing exists there is not yet a globally accepted legal definition of remanufacturing. (source 4)

The APSRG have made the following definitions:

- **Repairing:** The fixing of a fault but with no guarantee on the product as a whole
- **Reusing:** The simple reuse of a product with no modifications
- **Refurbishing:** The largely aesthetic improvement of a product which may involve making it look like new, with limited functionality improvements
- **Reconditioning:** The potential adjustment to components bringing an item back to working order, although not necessarily to an 'as new' state
- **Recycling:** The extraction of a product's raw materials for use in new products. This is a good option for products which are easily constructed and have minimal numbers of components
- **Remanufacturing:** A series of manufacturing steps acting on an end-of-life part or product in order to return it to like-new or better performance, with warranty to match

The APSRG have identified a range of regulatory barriers described below (all below from source 4):

The Waste Electrical and Electronic Equipment (WEEE) Directive
The WEEE Directive requires EU member states to ensure that producers do not prevent WEEE from being reused, and should therefore not prevent OEMs (Original Equipment Manufacturer) from remanufacturing. However, this still happens since there is no clarification as to whether a product at the end of its life, but before being remanufactured is classified as 'waste'.

Classifying products as 'waste' at their end-of-life stage can hinder the rapid re-entry of those materials into the circular economy because organisations are required to have waste handling certificates. This is the case even if a part or product easily can be remanufactured, but has been classified as waste.

The definition of waste has been in use in its current wording for over three decades and is now included in the 2008 Waste Framework Directive as: "…any substance or object which the holder discards or intends or is required to discard…". The current 'Guidance on the Legal Definition of Waste' and its application also adopts this definition but does not mention remanufactured products.

The Freedom of Information (FOI) Act
In Europe there is a lack of access to OEMs' design specifications. Third party remanufacturers who are not directly working with OEMs or manufacturers must reverse engineer all products before any remanufacture process can begin, adding to time and investment costs of remanufacturing as well as adding to the risk that not all remanufactured products are of as high a standard as they could be. In the United States the Freedom of Information Act allows remanufacturers access to OEMs' design specifications, allowing third party remanufacturers to remanufacture to original specifications.

The End of Life Vehicles (ELV) Directive
The effect of the ELV Directive on remanufacturing is unclear. It should encourage remanufacturing due to the requirement that vehicle manufacturers take responsibility for vehicles. However, no credit is offered for remanufacture, making other options such as recycling more attractive to some manufacturers.

Sale of Good Act (SoGA)
SoGA states that it is the retailer, not the manufacturer, who is responsible if something happens to a product. When a consumer purchases a product, the retailer holds the warranty,

not the consumer. Therefore when the consumer claims for a malfunctioning part or product, that claim is against the retailer; the retailer then has to sue the manufacturer for the amount. This means that there is no direct connection or responsibility between the manufacturer and the end consumer and therefore little incentive for the manufacturers to produce reliable products.

Trade Description Act (TDA)

The TDA prevents manufacturers, service industry providers and retailers from misleading consumers as to what they are purchasing. Remanufactured products are often considered by consumers to be less reliable than new products. If a product is remanufactured, the producer is obliged to inform the customer. The result could be that manufacturers are reluctant to engage in remanufacturing activities if customers perceive the product as worse.
Following the recommendations surrounding a legal definition of remanufacturing, creating a certified mark for remanufactured products could increase consumer acceptance.

REACH

The Registration, Evaluation, Authorisation and restriction of CHemicals Regulation (REACH) requires manufacturers of products which contain more than 0.1% of weight of any Candidate List Substance of Very High Concern (SVHC) to provide customers with sufficient information to allow safe use of the product. The use of chemicals must therefore be managed through the supply chain and this can be a large financial burden to remanufacturing. REACH has a particular impact on the paints and chemicals industry.

Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive

The RoHS Directive can be a barrier to remanufacturing if parts contain substances that today are considered hazardous, but not at the time of manufacturing. If part of a product is replaced, the whole product will have to be reassessed in order to be awarded a CE mark. In this respect, the RoHS represents a legal black hole regarding reuse and remanufacturing.

The Energy using Products (EuP) Directive

Remanufactured components may not be as energy efficient as new components of more recent design. The EuP Directive is continually revised to reduce standby and in-use energy consumptions. There is the possibility through this Directive that it could become impossible to sell remanufactured products if they use more energy than new, low-energy models. Although lowering stand-by and in-use energy consumption is beneficial in isolation, it may not be the best measure to drive holistic improvement. A more holistic approach focusing on the entire supply chain of products should be used to assess energy-saving potential. This Directive is particularly relevant for large electrical appliances such as white goods, which have a high potential to be successfully remanufactured.

The EU Waste Shipment Regulation

The EU Waste Shipment Regulation bans all exports of hazardous waste to non- OECD countries and all exports of waste for disposal outside the EU. Although this is a very important and extremely necessary piece of regulation, industry members interviewed during APSRG's inquiry stressed the need for both remanufactured items and items due to be remanufactured to not get caught up in this regulation.

Recycling Targets

Increasing recycling targets has an indirect and perhaps unexpected impact on the remanufacturing industry. Government policy transformed the recycling sector between 1990 and 2010 by diverting wastes from landfill to recycling. The next step toward greater resource efficiency however is thought to be diverting more products away from recycling and towards methods higher up the waste hierarchy. This development has the potential to transform the existing remanufacturing sector. Although the EU is recognising the potential of the remanufacturing industry by funding numerous research and development projects in this area, legislation is still largely focussed around recycling rates with the most recent EU recycling targets set at 50% by 2020 and 70% by 2030. Some companies, for example Lexmark, have begun to set internal management targets that aim to reduce recycling rates, enabling them to achieve higher rates of remanufacture. European policy makers have perhaps not recognised that to move on to the next stage of a resource efficient economy the familiar policy framework favouring recycling may need to be reversed. By continuing to promote materials recycling, the policy framework may hinder the development of product remanufacture in Europe.

Government support for recycling in the UK has led the industry to grow by 300% since 2005, whereas without government support, the remanufacturing sector has only grown by 15-20%.

Some evidence gathered during APSRG's research suggested that in some areas government policies to promote recycling has been so successful that it is to the detriment of remanufacturers. WRAP has, after being instructed by Government to do so, been very successful in promoting recycling. In 2012/13 for example, 43.2% of household waste in England was recycled or composted. This is more than three and a half times the rate of recycling in 2000/01 (12%) when WRAP was created and shows the value of Government initiatives in driving change. This same Government support is now needed for remanufacturing.

Contact person

Ms Laura Owen
Manager, Sustainable Resource
Policy Connect
Tel: +44 207 202 8570
Email: Laura.Owen@PolicyConnect.org.uk

Sources and more information

1. Interview with Laura Owen, Manager, Sustainable Resource, Policy Connect

2. The All-Party Parliamentary Sustainable Resources Group webpage
http://www.policyconnect.org.uk/apsrg/home

3. Remanufacturing - Towards a Resource Efficient Economy, March 2014
http://www.policyconnect.org.uk/apsrg/sites/site_apsrg/files/apsrg_-_remanufacturing_report.pdf

4. Triple Win - The Social, Economic and Environmental case for Remanufacturing, December 2014
http://www.policyconnect.org.uk/apsrg/sites/site_apsrg/files/report/535/fieldreportdownload/triplewin-thesocialeconomicandenvironmentalcaseforremanufacturing.pdf

5. Remanufacturing and Product Design - Designing for the 7th Generation
http://cfsd.org.uk/Remanufacturing%20and%20Product%20Design.pdf

13. Circular Economy Task Force, UK

The Circular Economy Task Force is a government supported, business led group convened by Green Alliance.

The Circular Economy Task Force was established in 2012, when Green Alliance was considering the next phase of a decade long programme of work on 'designing out waste' and 'closing the loop'. At the same time, the UK government was launching the Resource Security Action Plan (RSAP), a joint project of the Department for Environment, Food and Rural Affairs (DEFRA) and the Department for Business, Innovation and Skills (BIS), which saw that conserving resources in the economy was one of the best ways to meet resource security concerns. Green Alliance proposed a task force to examine how a circular economy might address resource security, and how to turn the theory behind it into practice. (source 1)

Seven leading companies, plus government delivery body WRAP, DEFRA, BIS, the Scottish Government, the Welsh Government and several of the UK's most important business institutions, have contributed to the analysis. The central, overarching question that has been addressed is what is stopping more businesses being more circular right now? (source 1)

Two main barriers to the circular economy are identified in the report made by the Task Force – market barriers and material barriers. (source 1)

There are three market barriers faced by companies:

1. **Mispriced risk**: companies assume that since there have not been problems regarding material availability and costs in the past, there will not be any problems in the future.
2. **Split incentives**: open loop systems create different incentives for different actors along the value chain. E.g. the benefits of designing a product for easy disassembly might not accrue to the original manufacturer, but the company that disassembles the product.
3. **Inadequate recovery infrastructure**: existing infrastructure and information systems have been developed in conditions of mispriced risk and split incentives, which has lead to limited investments in appropriate infrastructures and systems.

The market barriers related to materials are based on:

- **The value of the material:** products or materials with high value justify investment in recovery
- **Control, collection and communication**: the ability to control or collect a known quantity of materials or products
- **Ease of recycling, remanufacturing and reuse**: based on the characteristics of materials and products, some are easier to transform

- **Pace of change**: if product or material function changes too rapidly, investments in recovery might not occur
- **Concentration/ contamination:** if materials are spread out or contaminated, they are expensive or impossible to recover

To address resource constraints on business, the Circular Economy Task Force has identified how reuse, remanufacturing and secondary material supplies can address the root causes of resource insecurity. (source 1)

Contact person

Mr Dustin Benton
Head of Energy and Resources
Green Alliance, UK
Tel: +44 207 630 4522
Email: DBenton@green-alliance.org.uk

Sources and more information

1. Resource Resilient UK, A report from the Circular Economy Task Force
http://www.green-alliance.org.uk/resources/Resource%20resilient%20UK.pdf

2. Article from the Guardian
http://www.theguardian.com/sustainable-business/scotland-proposes-resource-efficient-circular-economy

3. Article from Edie.net
http://www.edie.net/news/5/Defra-lends-backing-to-circular-economy-taskforce/22661/

4. Influence on the report 'Ending the Throwaway Society: Growing a Circular Economy', from the Environmental Audit Committee. Wasted Opportunities: Smarter systems for resource recovery, A report from the Circular Economy Task Force
http://www.green-alliance.org.uk/wasted_opportunities:smarter_systems_for_resource_recovery.php

5. Green Alliance submission to the UK's Environmental Audit Committee:
http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environmental-audit-committee/growing-a-circular-economy/written/8608.pdf

Interview notes

Overview of people interviewed

1. Dr Mervyn Jones, Head of Collaborative Programmes, WRAP, UK
2. Mr Ton Bastein, Program Manager Resource Efficiency and the Circular Economy, TNO, The Netherlands
3. Mr John Butter, Program Manager, Program for a Bio-based economy, Ministry of Economics, The Netherlands
4. Ms Erja Fagerlund, Ministry of Employment and the Economy, Finland
5. Ms Louise McGregor, Head of Circular Economy and Ms Marissa Lippiatt, Head of Resource Efficiency, Zero Waste Scotland, UK
6. Mr Joss Blériot, Executive Officer, Lead Communications and Policy, Ellen McArthur Foundation, UK
7. Ms Kathleen Stokes, Senior Researcher, Nesta, UK
8. Ms Laura Owen, Manager, Sustainable Resource, Policy Connect, UK
9. Mr Steffen Saecker, Business Manager, Safechem, Germany
10. Mr Rudi Daelmans, Director Sustainability, Desso, The Netherlands
11. Ms Tammy Ayers, Manager of Material Chemistry Platform, Steelcase, USA

Dr Mervyn Jones

Head of Collaborative Programmes, WRAP, UK
Email: mervyn.jones@wrap.org.uk
Mobile: +44 7931 329937

WRAP = Waste and Resources Action Programme

When developing the quality protocols WRAP worked with the Environmental agency. The purpose was to identify when something is a waste. There is a very clear definition of waste that has been in place in the EU since 1977 (revised in 1990s) and that definition is not going to change. So instead of saying "let's change the definition of when something is a waste" WRAP said they would work with companies to help them find out when a material is a waste and when it is not. WRAP worked with companies that had materials that were considered waste as well as waste handling companies to determine when a material ceases to be a waste.

When working with companies several types of barriers were identified: information and organisational barriers, financial barriers, regulatory barriers. One of the biggest barriers is to identify the quality of a material – when it goes in and when it goes out.

To be able to use materials that formerly had been considered a waste, WRAP tried to create markets for the new materials. It always comes down to economics, so it was necessary to create materials that could be sold and which there would be a demand for.

The process for identifying barriers is described in example 5 about WRAP in the UK.

Effects
WRAP need to demonstrate their effect – measure return on investment, show the benefits to the sectors/industries, costs saved, increased sales; measure environmental effects such as on water, reduction of landfill; jobs created etc.

Links:
WRAP Quality Protocols – End of waste (regulatory burden of waste regulations); economic viability; markets; price volatility
http://www.wrap.org.uk/content/quality-protocols

Feedstock (inappropriate collection systems; volumes of feedstock; access to supplies; quality assurance, guarantees)
http://www.wrap.org.uk/category/subject/re-use

End of life decisions / disposal options (availability of) from users (e.g. public sector and procurement rules)
http://www.wrap.org.uk/content/pas-141-re-use-standard

EU REBUS project
http://www.wrap.org.uk/content/rebus

Centre for Remanufacturing and Reuse
http://www.remanufacturing.org.uk/

Attachments
Approaches to using waste as a resource: Lessons learnt from UK experiences, EEA, 2013
UNEP Case study – Clothing
UNEP Case study - Food
UNEP Case study - Construction

Mr Ton Bastein

Program Manager Resource Efficiency and the Circular Economy, TNO, The Netherlands
Email: ton.bastein@tno.nl
Mob: +31 651 52 52 78

One of the authors of the report Opportunities for a circular economy in the Netherlands, from November 2013 (http://www.government.nl/documents-and-publications/reports/2013/10/04/opportunities-for-a-circular-economy-in-the-netherlands.html)

Ton has also been involved in an EU project where they looked at business barriers for resource efficiency. http://www.ucl.ac.uk/polfree/publications/publications-2014/Report_1.5_Business_Barriers_final_new_disclaimer.pdf
They had several interviews. They were supposed to ask the question: 'Why are resources used inefficiently'? But felt that was not a good way to ask the question, so instead asked 'Why are resources used as they are'? They found that there are barriers linked to the organisation of companies, technology and institutional (regulatory).

Regulatory barriers are important to understand, because they lead actors to change their behaviour without communicating with each other. But at the same time, regulation is not the only reason for things happening as they do.

There are also negative examples of regulation. One example was from Philips regarding recycled plastic. Regulation demanding companies to recycle different types of plastic resulted in the price of recycled plastic increasing. This lead to companies not wanting to perform ahead of regulation, but instead just fulfilled what they had – the companies did not want to be more ambitious than necessary since it was becoming expensive for them.

In the Netherlands focus on resource efficiency is often on waste. Waste – any type of waste - can be considered harmful and toxic. Treatment of waste often has unknown consequences and can be potentially risky. This is why it is difficult for local and regional authorities to implement regulation where waste can be considered as a resource. They are risk averse, and do not want to risk anything that might be harmful and that they can be blamed for.

Waste regulation is based on public health and safety – the outset of the regulation is not to look at waste as a resource. This is important to remember. In the 1960s, 70s and 80s waste regulation was implemented to avoid landfill, water pollution, transport of waste to areas with less regulation etc. All of these regulations had the main purpose to protect public health and safety.

Looking at waste as a resource requires looking at new solutions and a new "business case"

for waste, while at the same time being cautious to not reduce the safety aspects. Regulation can be changed if it is possible to monitor the processes and they are transparent – and there must be a clear benefit to changing the rules.

In the Netherlands there is an overcapacity of waste incinerations, and there is a free market. This makes it difficult to get waste to be used for other purposes. Just by reducing the capacity of incineration does not mean that the other waste recycling opportunities are better. Companies and government need to work together to find out what possibilities there are.

At the moment Parliament are working on policies for a circular economy, under the name From Waste to Resources (in Dutch VANG). They have a set of operational goals and among other things they will be looking into business barriers for a circular economy.
(Waste to Resources Programme, Elaboration of eight operational objectives, 2014 http://www.government.nl/documents-and-publications/parliamentary-documents/2014/01/28/waste-to-resource-elaboration-of-eight-operational-objectives.html)

In October 2014 the Dutch government established a Public Private Partnership with 6 organisations. This working group is called Realisation and Acceleration of the Circular Economy (RACE). They are looing at a broad range of issues, such as how to reduce household waste, fiscal incentives etc. (http://www.circle-economy.com/news/multidisciplinary-coalition-transforms-the-netherlands-into-a-global-circular-hotspot and http://www.mvonederland.nl/publicatie/nieuwe-samenwerking-brengt-winst-circulaire-economie-dichterbij)

One area that is difficult for regulation to manage is how to handle maintenance and repair. This is not an area the Ministry of Economic Affairs has looked at before and not an area where policy has been used before to stimulate such behaviour.

About TNO
TNO is a not-for-profit research and technology organisation that was founded in 1932 by an act of the Dutch parliament to make scientific research accessible and applicable for businesses and government. By law, TNO is required to operate in an independent and objective way. TNO's trademark is the application of rigorous scientific principles to a wide variety of disciplines. At the start of 2013 TNO employed around 4,000 highly qualified professionals. TNO is active in seven main themes: industrial innovation, healthy living, energy, mobility, the built environment, the information society, and defence, safety and security.

Mr John Butter

Program Manager, Program for a Bio-based economy
Ministry of Economic Affairs
Tel: + 31 64 81 31 118
Email: j.w.butter@minez.nl

The work he does is for the Ministry of Economic Affairs and the Ministry of the Environment. He has been working in this area for 2-3 years.

Mr John Butter is in charge of the Program for a Bio-based economy. The bio-based economy is where biological raw materials is used for producing the things we need – e.g. corn starch can be used for making plastic, biological waste can be used for energy or new materials.

John is working on finding out how to remove the barriers. He does this by working together with companies on identifying the barriers and helping them e.g. change their business models.

SIRA Consulting did some work for the Program for Bio-based economy and uncovered barriers companies encountered when implementing the bio-based economy. For example, they experienced problems when implementing new business models.

More about the barriers can be found in example 1. Amending regulations to promote bio-based economy in the Netherlands.

When identifying what the barriers are, they need to become very concrete. This is done by interviewing companies. John estimates it takes about 1 week to identify one barrier – they have to interview several people – and come up with a suggestion for what regulation needs to be changed.

Of the barriers identified, some can only be solved by changing regulation. Sometimes it is fundamental regulation that needs to changed – such as REACH – that is not really possible. There could also be barriers related to certifications etc. And some problems just can't be solved!

One issue they often meet is the definition of waste. If this definition is to be changed it is necessary to work together – many EU countries should be able to influence Brussels. The Dutch office in Brussels has this as one of their main issues to be discussed at the EU Parliament. In the long run it will be necessary to change the definition of waste if we are to change the way we live today – and adopt a circular economy or bio-based economy. In the

short run companies will have to find a way to deal with current legislation since it will take a while to change.

This is particularly relevant for the chemicals industry and the building industry. They often encounter problems regarding the use of new materials.

A specific barrier John is working on at the moment is related to the transportation of a specific type of waste. Once this problem has been solved, the solution might be used for transporting other types of waste.

Ms Erja Fagerlund

Ministry of Employment and the Economy, Finland
Email: erja.fagerlund@tem.fi
Tel: +358 2950 62101

In Finland a joint working group between the Ministry of the Environment and the Ministry of Employment and the Economy was established in December 2012. They have looked at what barriers there are among companies in Finland and made a proposal of what regulation to look at to encourage material efficiency.

Barriers are described in example 7, Working group on national material efficiency programme, Finland, as well as a description of changes to the structures of the authorities in Finland to make it easier for companies to get their permits.

Ms Louise McGregor & Ms Marissa Lippiatt

Louise McGregor, Head of Circular Economy, Zero Waste Scotland
Tel: +44 1786 433 977
Email: louise.mcgregor@zerowastescotland.org.uk
Marissa Lippiatt, Head of Resource Efficiency, Zero Waste Scotland
Tel: +44 1786 433 967
Email: Marissa.Lippiatt@resourceefficientscotland.com

Resource efficiency is considered to be incremental changes that take place – such as optimising water or energy use etc. The Circular Economy takes a more holistic and fundamental look at the problem, often looking at entire systems. However, there are overlaps.

Zero Waste Scotland is fully funded by the government. Companies receive advice for free.

Information about Resource Efficient Scotland can be found in example 6, Zero Waste Scotland.

Within the Resource Efficiency group they work with main sectors that are:

- Food and Drink – from production to consumption; look at the entire supply chain; and work with sub-sectors such as Whisky or Red meat
- Hospitality
- The Built Environment
- Heavy industry – how to decarbonise industry

A lot of the work also involves municipalities.

Within the Circular Economy group they work with some main sectors that are:

- Aerospace – in relation to remanufacturing
- Energy infrastructure – such as renewable energy
- Food and Drink
- Textiles – throughout the value chain from design to manufacturing
- Medical equipment
- Chemical sector

Description of the barriers they meet when working with companies are described in example 6 Zero Waste Scotland.

In October 2014 it was announced that the Scottish Institute for Remanufacturing would be established from the beginning of 2015. It will receive 3 year initial funding from Zero Waste Scotland. The goal is for the institute to become self sufficient after that. 10 companies within aerospace and automotive industry have already committed to participate in funding the institute.

Mr Jocelyn Blériot

Executive Officer, Lead Communications and Policy, Ellen McArthur Foundation, UK
Tel: +44 1983 201 603
Email: joss.bleriot@ellenmacarthurfoundation.org

Ellen McArthur Found has just started working on the development of a policy toolkit geared towards accelerating the transition to a circular economy. The study is still in its early days, so there is not very much information to share from it yet.

What can be said is that the barriers are encountered by industries that are material intensive, in other words manufacturers, and companies that wish to move towards performance-based or service contracts (as opposed to selling the goods outright).

Some barriers EMF has heard about from companies they work with are related to remanufacturing. Companies in the EU have proposed to lower the VAT on remanufactured goods, which considerably reduces the need for virgin materials. E.g. a remanufactured car engine can already be 40% cheaper for the customer, whilst requiring 75% less energy to produce than a new one - all of this for the same level of performance, and the same manufacturer warranty.

Also a lot of barriers EMF hear about from companies are related to waste. Once a material is classified as waste, there are very strict rules for how it has to be handled. Companies are asking for the possibility to try out new ways of working with the materials, e.g. through pilot projects – like what seems to be happening in Denmark through trial derogation schemes, he said.

They have not really engaged in trying to change any of the barriers the companies encounter.

The EMF works with the EU on policy issues, and sometimes also regional government. In the UK they are involved in some of the work DEFRA is doing.

The EU waste directive predominantly looks at waste at the end of the stream – the legislation does not look at what happens upstream enough. Focus is on end-of-life materials. The directive looks at what needs to be done to clean it up. But no legislation is looking at how to avoid the waste in the fist place – e.g. by designing waste out of the system.

The EU Eco-design directive does not even consider material use – it only considers how much energy the electrical device uses and thereby how much CO2 it emits. The purpose of the legislation was to reduce emissions, and therefore other areas have not been considered. But Joss thinks this should change when the Eco-design directive is revised next time, as there

seems to be growing acceptance of the fact that it should consider factors such as repairability and durability, for example.

Extended Producer Responsibility schemes are an important topic for many producers of electronic equipment. Some would like to collect their own products to secure their feedstock, but no one company wants to be the first mover and take responsibility for establishing such systems. There are currently no incentives to create systems where producers get their own equipment back. At the moment, all electronic waste is collected, and mashed together in an effort to extract useful materials. However, this is a very inefficient process, and very few materials are recovered that can be reused. Joss thinks the number is as low as 7-10% - but he is not sure so the figure cannot be used as reference.

In the US they are far ahead with remanufacturing, though it remains a small sector in absolute terms. Getting to scale will require increased customer acceptance ("new" is perceived of higher quality) and more efficient take-back systems.

Link that might be relevant:
http://laverypennell.com/the-next-manufacturing-revolution/

Ms Kathleen Stokes

Senior Researcher, NESTA, UK
Email: Kathleen.Stokes@nesta.org.uk

Nesta has done work on the Sharing/ Collaborative economy.

- Running a research programme into the collaborative economy: www.nesta.org.uk/project/collaborative-economy , which has included several outputs:
    - The report "Making sense of the UK collaborative economy" (written in partnership with Collaborative Lab): http://www.nesta.org.uk/publications/making-sense-uk-collaborative-economy
    - Response to the Department for Business, Innovation and Skills sharing economy review: http://www.nesta.org.uk/publications/nestas-response-bis-review-sharing-economy
    - Future scenarios for the UK collaborative economy: http://www.nesta.org.uk/news/collaborative-economy-2025
    - A blog series considering impact in the collaborative economy: http://www.nesta.org.uk/blog/impact-collaborative-economy-time-check-assumptions (first blog)

Others in the UK working in this area are Department of Business Innovation and Skills (BIS) – they have made a review looking at the sharing economy https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/378291/bis-14-1227-unlocking-the-sharing-economy-an-independent-review.pdf. Here it is suggested that the government should look at regulation to ensure that they are fit for business models related to the sharing economy. The Government will respond to that review in 2015.

- The British Insurance Brokers Association has created a guide on how to insure for the sharing/ collaborative economy (BIBA) http://content.yudu.com/Library/A36b3t/BIBASupplement2014Au/resources/index.htm?referrerUrl=http://free.yudu.com/item/details/2414722/BIBA-Supplement-2014---Autumn-2014
- Taxation – for both companies and individuals
- How to use land, and planning of land use
- Organisational and legal structures

The list was compiled by looking at research and speaking to experts, including government officials.

Nesta also worked with Collaborative Lab to identify issues. They can be found on page 28 of this report:
http://www.nesta.org.uk/sites/default/files/making_sense_of_the_uk_collaborative_economy_14.pdf

There is also a lot taking place at EU level – e.g. European Urban Network, looking at collaborative/ sharing economy and civic economy at city level – will have some effect on resource efficiency, e.g. when it comes to transport and infrastructure.

In Seoul, South Korea, the government has created sharing platforms. More can be seen here:
http://english.sharehub.kr

Other organisation working on the sharing economy:
European Urban Knowledge Network
http://www.eukn.org
URBACT – European exchange and learning programme
http://www.blog.urbact.eu/
Ouishare
WE economy
Collaborative Lab
Shareable

Ms Laura Owen

Manager, Sustainable Resource, Policy Connect, UK
Tel: +44 207 202 8570
Email: Laura.Owen@PolicyConnect.org.uk

Policy Connect is a network of Parliamentary groups, research commissions, forums and campaigns working to inform and improve UK public policy. They are independent and are funded through sponsorships.

Laura works for the All-Parliamentary Sustainable Resource Group, and together with the All-Parliamentary Manufacturing Group they launched a report on 8 December 2014 about remanufacturing: Triple Win – The Social, Economic and Environmental case for Remanufacturing http://www.policyconnect.org.uk/apsrg/sites/site_apsrg/files/triple_win_-_the_social_economic_and_environmental_case_for_remanufacturing.pdf

The report presents 24 recommendations on how the UK can work with remanufacturing. This is the second report, and Laura expects more action to be taken on this report than the first report which was not as detailed.

In the report they identified barriers for companies wanting to work with remanufacturing. They interviewed 35 organisations:

- Large companies
- Micro and SMEs
- Universities
- Industry organisations

They identified barriers related to current EU legislation. The directives they have looked at are:

- The Waste Electrical and Electronic Equipment (WEEE) Directive
- The Freedom of Information (FOI) Act
- The End of Life Vehicles (ELV) Directive
- Sale of Good Act (SoGA)
- Trade Description Act (TDA)
- The Registration, Evaluation, Authorisation and restriction of CHemicals Regulation (REACH)
- Restriction of the Use of Certain Hazardous Substances in Electrial and Electronic Equipment (RoHS) Directive
- The Energy using Products (EuP) Directive
- The EU Waste Shipment Regulation

More information about the specific details and how the US have changed legislation to the Freedom of Information (FOI) Act can be found in the report, and are described in example 12, Recommendation for remanufacturing, UK.

Mr Steffen Saecker
Business Manager,
Safechem, Germany
Tel: +49 211 4389 318
Email: s.saecker@safechem-europe.com

Safechem is a subsidiary of DOW Chemical Company and provides products and services using chlorinated and non-chlorinated solvents for cleaning metal parts and dry cleaning.

Safechem stays up to date on regulation that is relevant for them by receiving information from their mother company DOW Chemicals, and from different associations that they are members of.

One regulatory barrier that Safechem encounters is related to cross-border transportation of waste in Europe. The type of waste that Safechem deals with is used chemicals/ solvents by their clients.

There is an EU principal that waste should be handled in the country where it is produced. Safechem handles the use of chemicals/ solvents for their clients all over Europe, and when the chemicals/ solvents no longer can be used at the client site, Safechem transports it back to contracted factories in Germany to clean and recycle it to be used again. Safechem only has contracted factories in Germany that can clean and recycle the chemicals/ solvents, and there are no other factories in Europe that can offer the same quality of recycling, that gives a good yield and that avoids down-cycling.

It is therefore necessary for Safechem to transport the used chemicals/ solvents from their clients' sites across Europe to Germany – thereby engaging in cross-border transportation of waste.

It is possible to transport waste across borders, but it requires a permit from both of the countries' authorities - where the waste is being transported to and from. The process for getting a permit varies from country to country, and sometimes it is very bureaucratic and takes a long time.

Safechem speaks to authorities on a case by case basis to smooth the process, but they have not addressed the principals of the regulation regarding the barriers they encounter.

Mr Rudi Daelmans
Director Sustainability
Desso, The Netherlands
Tel: +31 416 68 41 52
Email: RDaelmans@desso.com

Desso is a Dutch carpet manufacturer that offers carpets and carpet tiles. In addition to production of carpets, they also offer leasing of their carpets and carpet tiles. Desso has a take-back program where they take back used carpets and carpet tiles – their own as well as their competitors.

Their goal is to have all of their products designed based on the Cradle to Cradle principles by 2020 – enabling all products to be disassembled at end of life and recycled or reused. (see more www.desso.com)

In the interview, Desso mentioned three challenges related to legislation.

The first example is related to the EU Waste Directive (and the implementation of it at national level.)

Desso has a take-back program for their used carpet tiles, which means that the used carpets have to be transported back to Desso's factory where the carpets are separated and the different materials reused and recycled. When collecting used carpets in other European countries, they are transported across borders. To be able to do this, Desso has to fill out papers required by regulators and show that they are not transporting waste but transporting secondary raw materials.

In order to find out what should be done to demonstrate that the used carpet tiles are not waste but raw materials, Desso spoke to a range of waste management companies and transport companies –to remain up to date with what they are able to do according to legislation.

Desso has to be able to prove that the carpet tiles are secondary raw materials – this is done by showing that the company has a factory and procedures that allow them to recycle the materials. The reason for transporting the "waste" in Desso's case is not to get rid of it, but to extract the value of the materials.

The second example is related to the EU Directive REACH.

According to the REACH Directive, manufacturers are only allowed to use chemicals that are REACH compliant. However, when using recycled materials it is not always possible to know if they are REACH compliant. But companies like Desso still continue to use recycled materials – which means that Desso and other companies that use recycled materials are actually breaking the law since they do not know what is in the materials. According to Rudi, the EU is aware of this.

A third example of a regulatory barrier for Desso, is in relation to the permit they must obtain to be able to manufacture carpets and carpet tiles.

Their permit allows Desso to produce the carpets and carpet tiles, but not to recycle them. Recycling carpets and carpet tiles require additional processes to be in place, and is therefore a change to the type of business performed by Desso - according to what is stated in the permit. Desso has made an agreement with the local authorities allowing them to recycle only small amounts.

Desso is often consulted by the Dutch authorities that work with waste legislation. They participated in dialogs when the National Waste Management Plan (LAP) was developed. The authorities are interested in speaking to front-runner companies because they have the latest knowledge and technology, and the authorities are increasingly trying to cooperate with the business community before implementing new regulation.

Ms Tammy Ayers

Manager of Material Chemistry Platform
Global Environmental Sustainability
Steelcase, USA
Email: TAyers@steelcase.com

Tammy's team is responsible for analysing the ingredients in the products of Steelcase. They do this at the product development stage, and decide if it is possible to replace (harmful) materials at an early stage in the process. They work with:

- Material innovation
- New products
- Disassembly
- Specific parts and materials – obtaining formulas for what they contain
- Work with other companies (e.g. Dupont) and get information about what materials and parts contain.

Laws, that are relevant to Steelcase's work: In the 1970s there was a law that was passed that regulates the use of chemicals (Toxic Substances Control Act 1976). But one of the challenges for the EPA (Environmental Protection Agency) is that they are not able to monitor the implementation of the law. So now the law has been passed down to the State level, giving each State the responsibility for implementing and overseeing the law. However, this means that it is not consistent from State to State.

As an example, two flame retardant laws were passed in the state of California. Manufactures had to add flame retardants to their products. But Steelcase did not want to use them since they consisted of hazardous chemicals. So Steelcase did a lot of advocacy in 2013/2014 to try to change the regulation, and one of the two laws was changed. It did not prevent flame retardants being used, but became less rigid, and now it is possible to phase out the use of flame retardants. Now other States are looking towards California to see if they can make the same changes in regulation – but there are still a lot of States that are not. This is a big challenge to Steelcase that sells products all across the US in many different States – they have to ensure that they live up to the standards in all of the different States.

Regarding the second law on flame retardants - it was not changed. Steelcase did some research into the chemicals used for this flame retardant and found they are very hazardous. Since Steelcase could not produce the products concerned without using the flame retardant, they decided to not make the product at all.

When approaching government to advocate for changes in legislation, Steelcase often work together with their trade organisation BIFMA (trade association for business and institutional furniture manufacturers). They were of great help when advocating for change in California.

Steelcase also work with their customers and get them on board to be able to advocate together.

Steelcase feel that they are often ahead of regulation. In 2009 Steelcase started working on a plan for eliminating flame retardants from all of their products. As part of this work, they also made a plan for how they would approach government and change legislation. Some of the other areas Steelcase is working on regarding chemicals and substances they want to phase out of their products are compounds and PVC.

Steelcase has a group of lawyers that is always up to date with what regulation is necessary for them to keep up with.

Tammy's team started analysing what chemicals and components are included in Steelcase's products in 2005 when they wanted to design a sustainable chair (C2C). They established a process for evaluating the materials in the chair:

- Evaluate the materials needed to make the chair
- Looked into all the materials contained in the chair and asked for specific information on all components from suppliers
- Looked into research for the different materials, as well as looking into regulation
- Mapped all the materials used and colour coded them depending on how good/bad they are: black, red, yellow and green
- Suggested alternatives for materials that were not green. But alternatives have to live up to a certain quality – Steelcase offers 15 year guarantee on their products, so alternative materials must be able to fulfil those requirements
- Evaluate whether any of the materials pose such challenges that Steelcase needs to engage in advocacy for change (such as flame retardants)
- The indicators developed by Tammy's team (colour codes etc) help the designers and engineers get an idea of what materials are good to use, and which materials are less good. Often there are alternatives that are available to the design team.

At the moment Steelcase is trying out a new business model. They are collecting their own as well as competitors' products via a take-back program. When the old products come back, they must evaluate whether they can be used again in a new product – either for parts (remanufacturing) or materials. Parts that do not live up to the quality of new Steelcase products can be used for secondary products. Steelcase have teamed up with a NGO, and together they send secondary products to Haiti.

Appendix

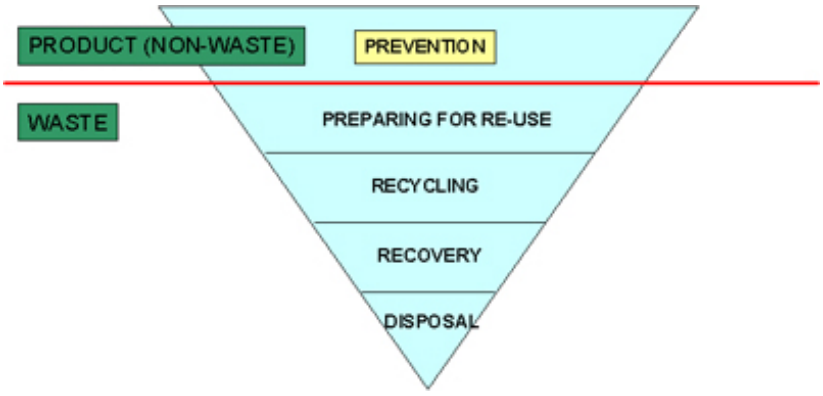
EU Waste Hierarchy and Definition of Waste

The EU's waste management policy

EU waste policy has evolved over the last 30 years through a series of environmental action plans and a framework of legislation that aims to reduce negative environmental and health impacts and create an energy and resource-efficient economy. The EU's Sixth Environment Action Programme (2002- 2012) identified waste prevention and management as one of four top priorities. Its primary objective is to ensure that economic growth does not lead to increased waste. This led to the development of a long-term strategy on waste. The 2005 Thematic Strategy on Waste Prevention and Recycling resulted in the revision of the Waste Framework Directive, the cornerstone of EU waste policy.

The revision brings a modernised approach to waste management, marking a shift away from thinking about waste as an unwanted burden to seeing it as a valued resource. The Directive focuses on waste prevention and puts in place new targets that will help the EU move towards its goal of becoming a recycling society. It includes targets for EU Member States to recycle 50% of their municipal waste and 70% of construction waste by 2020.

The Directive introduces a five-step waste hierarchy where prevention is the best option, followed by re-use, recycling and other forms of recovery, with disposal such as landfill as the last resort. EU waste legislation aims to move waste management up the waste hierarchy (see illustration below).



The Definition of Waste

The definition of waste is embedded in the 2008 Waste Framework Directive (Directive 2008/98/EC): "...any substance or object which the holder discards or intends or is required to discard..."

After the revision in 2008 two main provisions were made that can have an impact on what is or is not classified as waste. They are:

1. **By-Products**: a substance or object, resulting from a production process, the primary aim of which is not the production of that item, may be regarded as a non-waste by-product – *but only if all* of the conditions set out in Article 5(1)(a)-(d) are met.
2. **End-of-waste criteria**: the certain specified waste ceases to be waste within the meaning of Article 3(1) when it has undergone a recovery operation, including recycling, and complies with end-of-waste criteria adopted under the terms of Article 6(2). End-of-waste criteria have been adopted for ferrous and aluminium scrap metal, and new criteria on glass were adopted in July 2012.

Sources:
http://ec.europa.eu/environment/waste/pdf/WASTE%20BROCHURE.pdf
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69590/pb13813-waste-legal-def-guide.pdf