CONAMA 2018
CONGRESO NACIONAL DEL MEDIO AMBIENTE

RUMBO 20.30.

ICTA-UAB

Congreso Nacional del Medio Ambiente
Madrid del 26 al 29 de noviembre de 2018

Política europea de ecodiseño. La Directiva Europea de Ecodiseño. Análisis desde la perspectiva de la economía circular.

Dr Xavier Gabarrell Durany
Ecodiseño. (ST-27)
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EXCELENCIA MARÍA DE MAEZTU

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01 Los recursos

El cobre, el oro y los discos duros

02 Implementation of the Ecodesign Directive. Briefing paper

Variabilidad en el diseño

Grupos de productos analizados

El ecodiseño

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01 Los recursos

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EXCELENCIA MARÍA DE MAEZTU

Los recursos. Ejemplo del cobre

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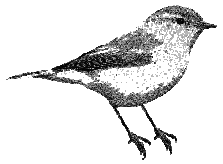
USA se necesitaba 210 toneladas de material (excluyendo las tierras removidas que se deberían añadir, desde un punto de vista ambiental) para obtener una tonelada del metal refinado; el promedio mundial era de 125 toneladas de material (sin contabilizar el agua) para obtener una tonelada del metal.

La huella hídrica es **de 96 m^3 por tonelada de cobre** para el procedente del sulfuro de cobre (proceso pyrometalurgico) y sólo 40 m^3 para el procedente del óxido de cobre (proceso hydrometalúrgico).



1 Tm de Cu

210 Tm de material

96 m^3 de agua

Los recursos. Ejemplo del cobre

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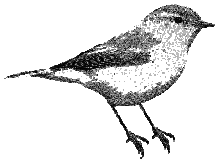


1 Tm de Cu

210 Tm de material

96 m^3 de agua

Los recursos. Ejemplo del oro

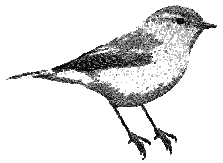
El oro procedente de las minas de las Filipinas.

1 tonelada de oro = 200.000 GJ de energía consumida

260.000 toneladas de agua consumida;
18000 toneladas de CO2 equivalentes

1 kg de oro = 141 kg de cianuro consumidos

1 kg de oro = 1 kg de mercurio

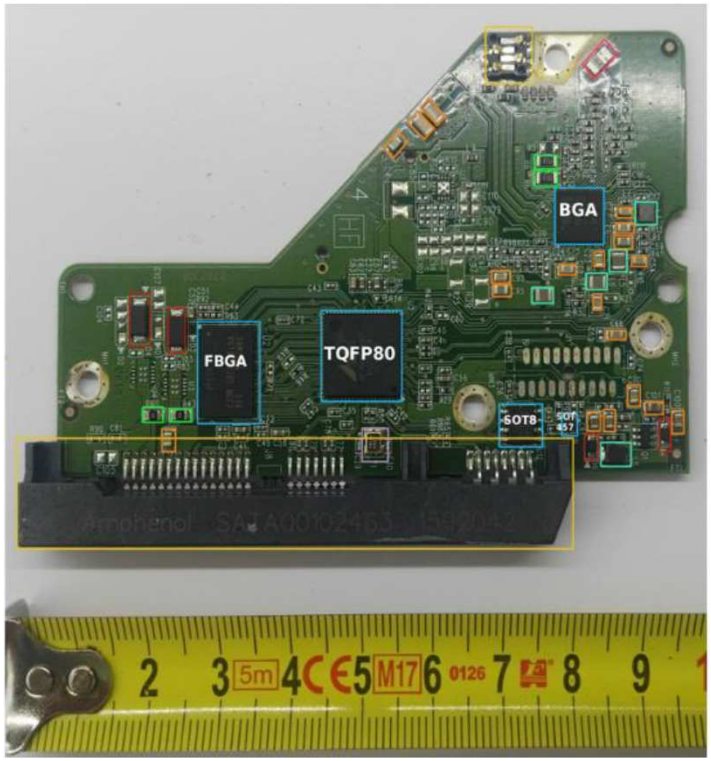


1 Kg de Au

1,2 10^6 Tm de residuos sólidos

Los recursos. Ejemplo discos duro

En el año 2010 se producía en el área de Barcelona 3490 toneladas de residuos electrónicos y eléctricos, 1,09 Kg por habitante. En el 2017 se recogieron 15430 toneladas, es decir unos **4,75 Kg por habitante**. Desde el 2015 los discos duros están incluidos en este grupo de residuos.

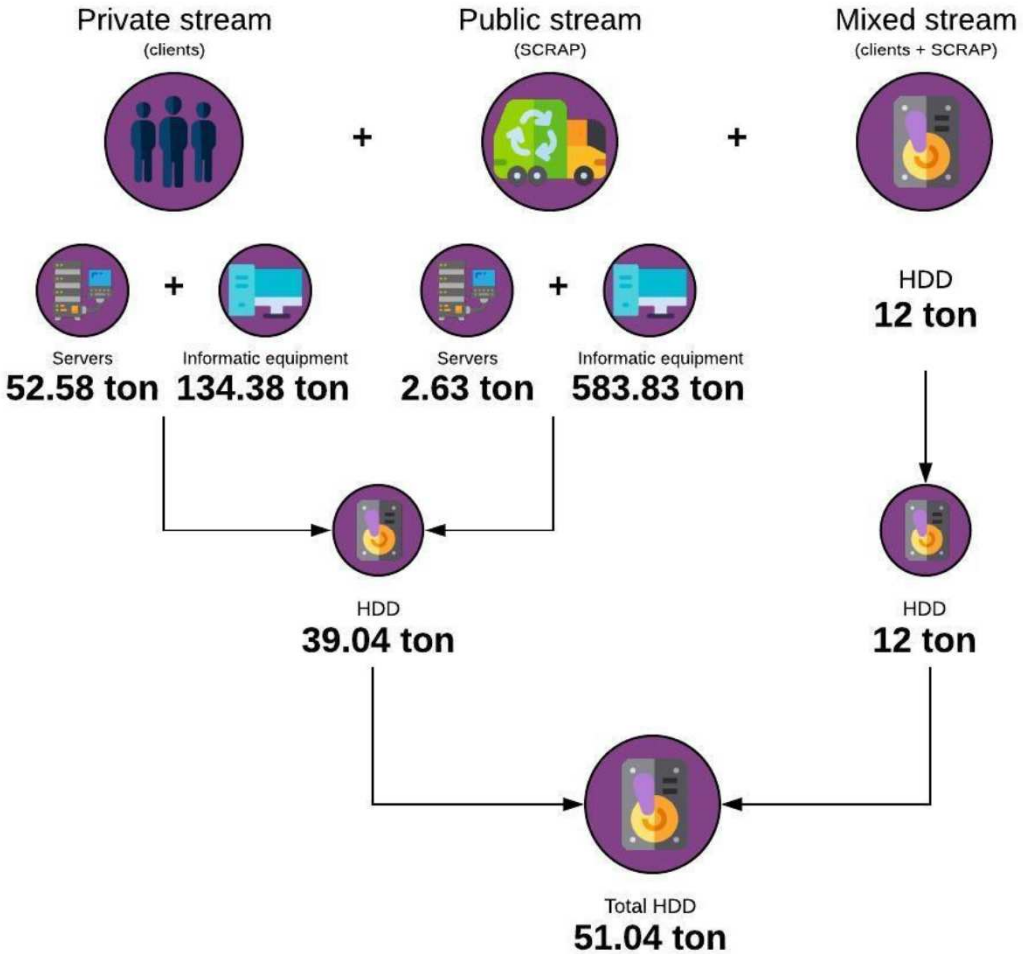


HDD stream in Barcelona for 2016

2016 WEEE in Barcelona

12,434.04 ton

Substream of servers and electronic equipment in Electrorecycling



t of elements found in IC material declarations (mg) (consult raphy and Annex 4 for material declaration references)			
	L1W1	L2S2	L2S5
		74.97	
	5.55	0.01	0.05
			1.31
	0.12	0.12	1.12
	0.04	106.89	0.05
		0.36	6.65
lve Acetate			0.02
			0.01
k	1.37	8.23	6.16
			0.02
	159.04	516.73	598.95
de		0.02	0.01
		0.47	
	55.2	274.30	124.25
		0.73	0.40
	3.80		
	3.25	21.40	10.48
oxide (In203:SnO2)			0.22
	0.97	317.17	8.60
		2.67	0.60
		0.13	0.45
xide			0.11
	0.61		
	3.48	235.45	11.62
pounds	35.70	66.76	0.82
	5.50	20.00	0.27
	0.02	0.00	0.54
n	5.53	74.46	37.66
	0.03	0.03	0.09
			1.20
	2.94	2927.33	1021.54
		30.24	20.24
		8.13	
			0.00
	24.67	240.09	40.39
			0.01
		114.10	
			0.03
	0.04	0.04	0.05
			0.27
	307.86	5040.81	1894.20

e materials are not included in this list as it only accounts for the ma
egrated circuits.

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Los recursos. Ejemp

Disco duro
10 – 20 mg oro
20-30 mg plata
Tunsgteno
Vanadio

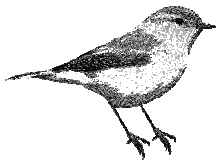
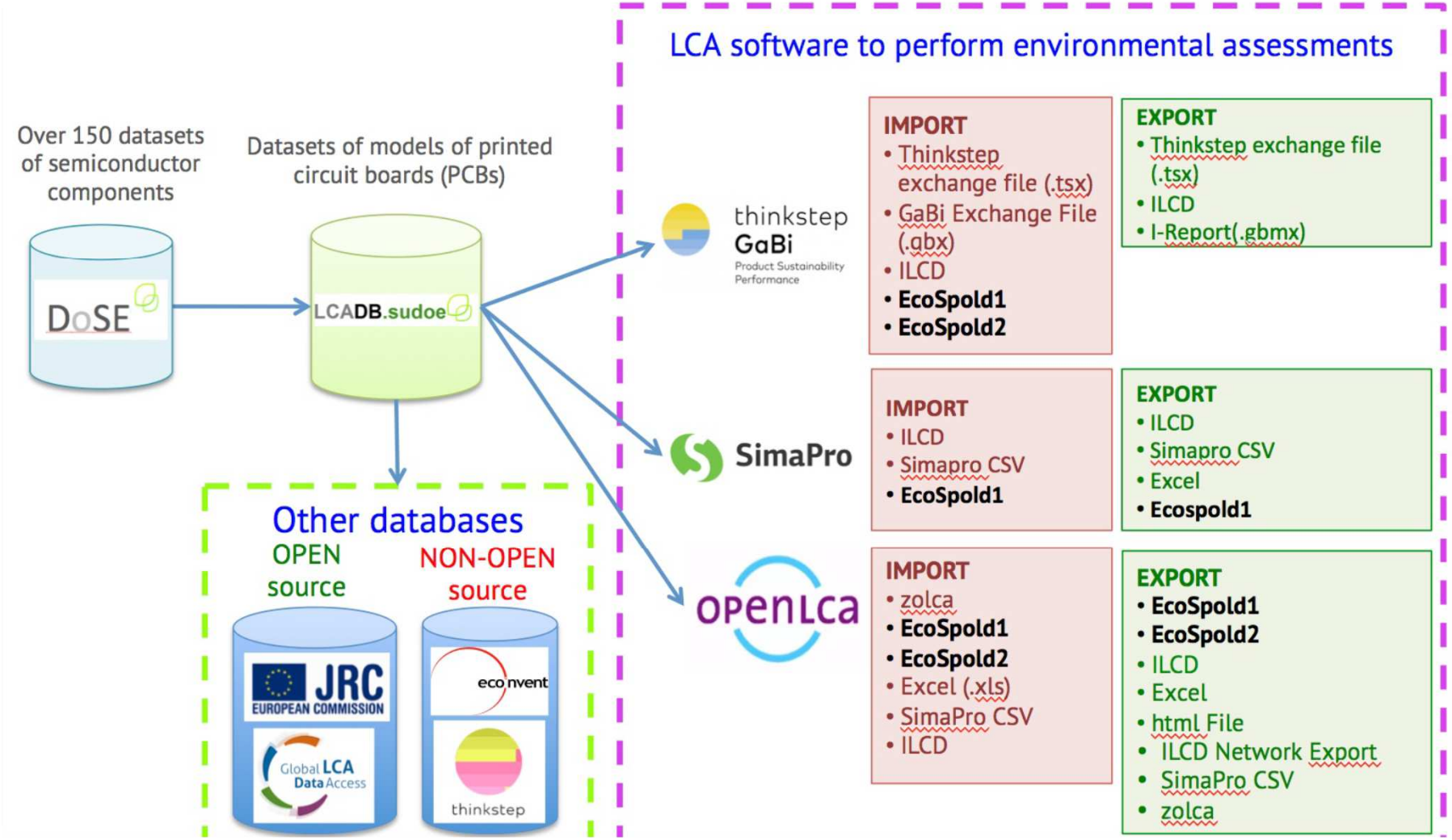


Table V. List of elements found in IC material declarations (mg) (consult bibliography and Annex 4 for material declaration references)			
	L1W1	L2S2	L2S5
Acrylic		74.97	
Aluminum	5.55	0.01	0.05
Antimony			1.31
Bismuth	0.12	0.12	1.12
Bisphenol	0.04	106.89	0.05
Bromine		0.36	6.65
Butyl Cellosolve Acetate			0.02
Carbon			0.01
Carbon Black	1.37	8.23	6.16
Chromium			0.02
Copper	159.04	516.73	598.95
Dicyandiamide		0.02	0.01
Diluent		0.47	
Epoxy	55.2	274.30	124.25
Ester		0.73	0.40
Glass fiber	3.80		
Gold	3.25	21.40	10.48
Indium Tin oxide (In203:SnO2)			0.22
Iron	0.97	317.17	8.60
Lead		2.67	0.60
Magnesium		0.13	0.45
Metal Hydroxide			0.11
Metal Oxides	0.61		
Nickel	3.48	235.45	11.62
Organic compounds	35.70	66.76	0.82
Other	5.50	20.00	0.27
Palladium	0.02	0.00	0.54

La DoSe. LCADB

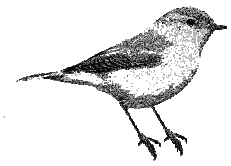
DoSE

La DoSe. LCADB



Los recursos. Ejemplo discos duro

Table VII. Price estimations of CRM and precious metals based the material valuation of Cucchiela et al. (2015)							
Material	**€/kg**	**L1W1 (kg)**	**L2S2 (kg)**	**L2S5 (kg)**	**AVERAGE (kg)**	**MASS/ YEAR (kg)**	**€/YEAR**
Aluminium	1.50 €	0.000006	0.000000	0.000000	0.000002	0.21	0.32 €
Antimony	7.60 €	0.000000	0.000000	0.000001	0.000000	0.05	0.38 €
Copper	5.20 €	0.000159	0.000517	0.000599	0.000425	48.19	250.59 €
Glass fiber	0.05 €	0.000004	0.000000	0.000000	0.000001	0.14	0.01 €
Gold	34,070.00 €	0.000003	0.000021	0.000010	0.000012	1.33	45,256.00 €
Indium Tin oxide	550.00 €	0.000000	0.000000	0.000000	0.000000	0.01	4.47 €
Iron	0.12 €	0.000001	0.000317	0.000009	0.000109	12.35	1.48 €
Lead	1.70 €	0.000000	0.000003	0.000001	0.000001	0.12	0.21 €
Nickel	14.00 €	0.000003	0.000235	0.000012	0.000084	9.47	132.61 €
Palladium	23,214.00 €	0.000000	0.000000	0.000001	0.000000	0.02	493.13 €
Silver	514.00 €	0.000000	0.000030	0.000020	0.000017	1.91	980.99 €
Tantalum	156.00 €	0.000000	0.000000	0.000000	0.000000	0.00	0.01 €
Tin	17.00 €	0.000025	0.000240	0.000040	0.000102	11.54	196.11 €
Vanadium	20.00 €	0.000000	0.000000	0.000000	0.000000	0.01	0.10 €
Zinc	1.70 €	0.000000	0.000000	0.000000	0.000000	0.01	0.02 €
TOTAL					**0.00075**	**85.36**	**47,316.42 €**



45 mil € de oro en los discos duros

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02 Implementation of the Ecodesign Directive. Briefing paper

Ecodesign Directive (2009/125/EC)

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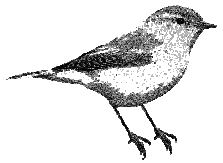
EXCELENCIA MARÍA DE MAEZTU

Directiva de Ecodiseño. 2009/125/EC

Se presenta el análisis realizado para el Parlamento Europeo de la Directiva de Ecodiseño (2009/125/EC) en el contexto de la economía circular. La aplicación de dicha directiva a través de los planes de trabajo y regulaciones se ha centrado en los en la eficiencia energética de los productos en su etapa de uso. Pero al tiempo que dichos productos son más eficientes energéticamente, **más importante es considerar todo su ciclo de vida: materias primas, producción, y gestión del fin de vida**. Así se debería incidir más en su reutilización, reparación, recuperación, renovación, reciclaje y durabilidad, aspectos clave en la economía circular.



Variabilidad en el diseño
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El ecodiseño

Directiva de Ecodiseño. 2009/125/EC

El objetivo del Paquete de Economía Circular es ayudar a las empresas y los consumidores europeos en la transición hacia una economía más fuerte y circular en la que se utilicen los recursos de una manera más sostenible, lo que permitiría reducir la dependencia y protegerse de la volatilidad de los precios. Las acciones propuestas contribuirán a "cerrar el ciclo" de los productos a través de un mayor reciclaje y reutilización, y aportar beneficios tanto ambientales como económicos.

The Ecodesign Directive establishes a framework for the setting of the EU ecodesign requirements for energy-related products.
Ecodesign' is defined as the integration of environmental aspects into product design with the aim of improving the environmental performance of the product throughout its whole life cycle


European Parliament

The Ecodesign Directive (2009/125/EC)

European Implementation Assessment

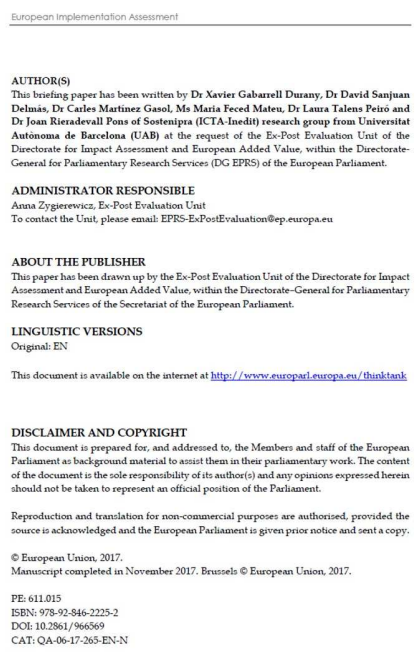
STUDY

EPRS | European Parliamentary Research Service

Author: Anna Zygierewicz

Ex-Post Evaluation Unit

PE 611.015 - November 2017


European Implementation Assessment

AUTHOR(S)

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Anna Zygierewicz, Ex-Post Evaluation Unit

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ABOUT THE PUBLISHER

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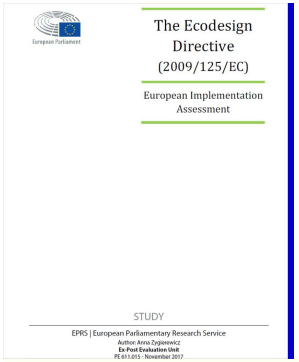
CAT: QA-06-17-265-EN-N

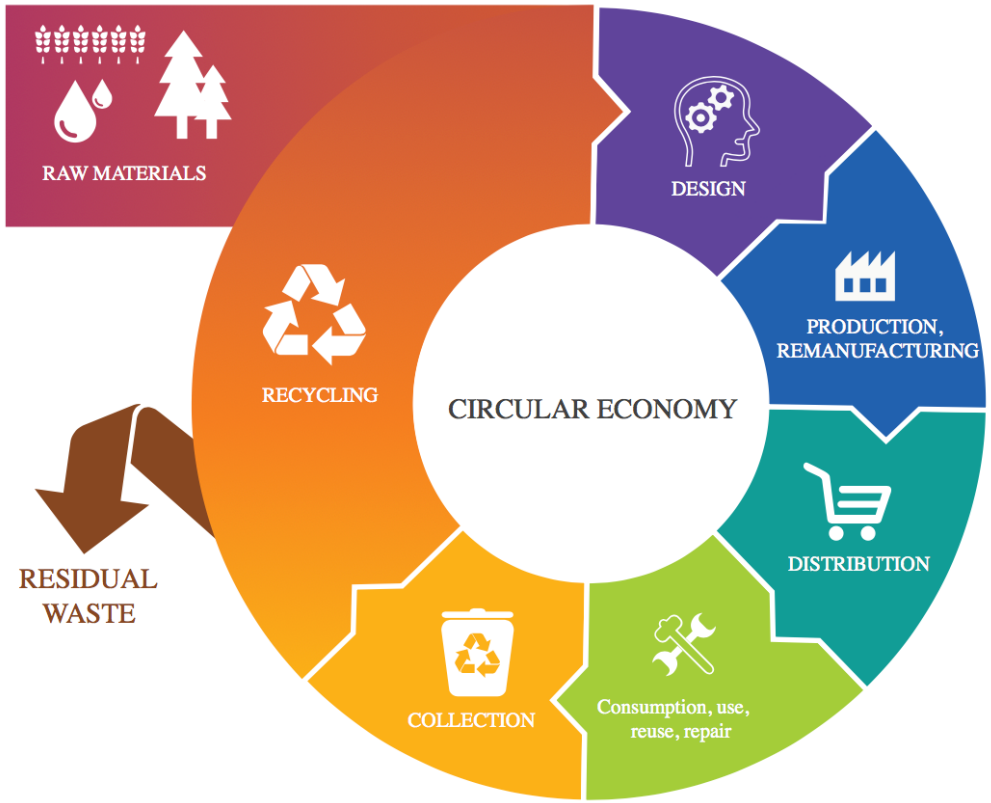


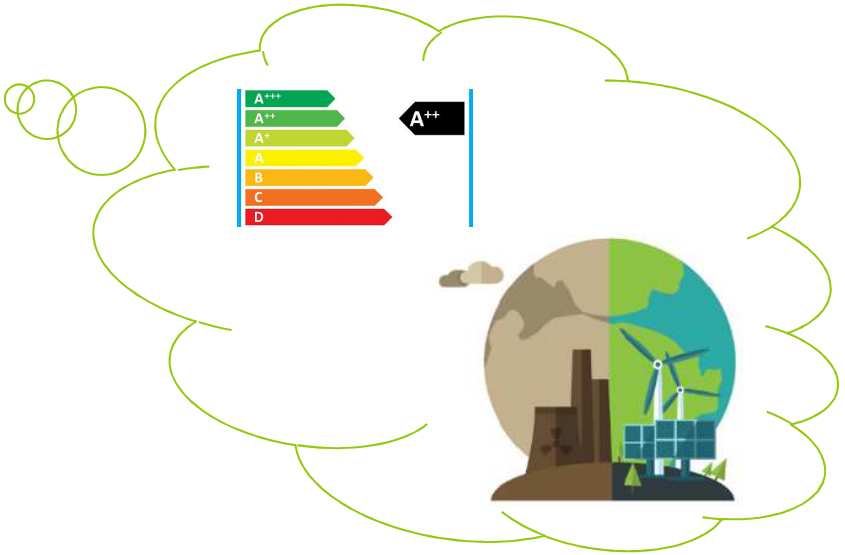
Implementation of the Ecodesign Directive via working plans, based on the analysis of the selected product groups. Briefing paper.

PhD David Sanjuan-Delmás// PhD Laura Talens Peiró // PhD Carles Martínez Gasol //
// PhD. Joan Rieradevall // **PhD Xavier Gabarrell**

Leader and contact: ***xavier.gabarrell@uab.cat***

Energéticamente más eficientes, mayor necesidad de considerar todo el ciclo de vida del producto

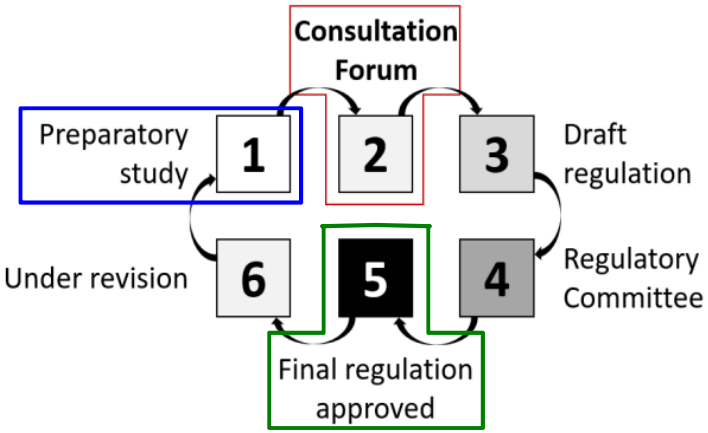




Source: http://www.europarl.europa.eu/news/en/headlines/economy/20151201STO05603/circular-economy-the-importance-of-re-using-products-and-materials

Variabilidad en el diseño

Productos analizados



- Vacuum cleaners

- Domestic Light products products
- Domestic dishwashers
- Televisions and electronic displays

- Professional refrigerating and freezing equipment
- Heaters
  - Water heaters and hot water storage tanks
  - Space and combination heaters

Estrategias actuales

Energy efficiency







Durability

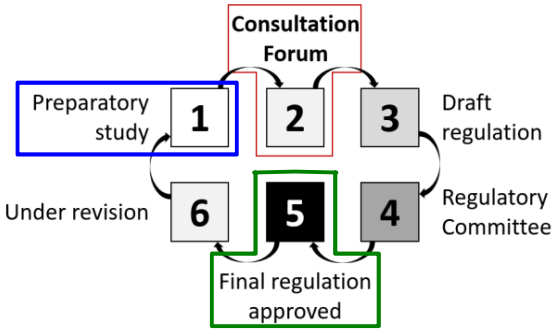

End of life management




Estategías de mejora

Ecodesign Policy process

- Assess the whole life cycle of the product, especially the manufacturing and end of life
- Accelerate the Ecodesign process for the integration of new technologies (i.e microLED in electronic displays)
- Assess the resource efficiency of the product adopting a system-approach



Product group specifications

- Improve the durability
- Extend the lifespan of the product
- Enhance the Design for **easier Maintenance, Repair and Recycling**
  - strategic placement of key components to facilitate their separation
  - remove unnecessary connectors
  - combination of materials that favors non-destructive operations for separation

La directiva debería servir para alinear los objetivos considerados en otras drectivas

Waste directive

22.11.2008 EN Official Journal of the European Union L 312/3

DIRECTIVES

DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 19 November 2008
on waste and repealing certain Directives
(Text with EEA relevance)

WEEE directive

L 197/38 EN Official Journal of the European Union

ECTIVE 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COU
of 4 July 2012
on waste electrical and electronic equipment (WEEE)
(recast)
(Text with EEA relevance)

RoHS directive

L 174/88 EN Official Journal of the European Union 1.7.2011

DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 8 June 2011
on the restriction of the use of certain hazardous substances in electrical and electronic equipment
(recast)
(Text with EEA relevance)

L 305/8 EN Official Journal of the European Union 21.11.2017

DIRECTIVES

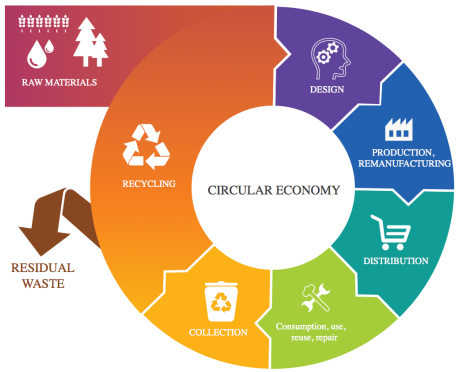
Energy performance of buildings directive

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

amending Directive 2012/27/EU on energy efficiency

(Text with EEA relevance)

{SWD(2016) 399 final}
{SWD(2016) 401 final}
{SWD(2016) 402 final}
{SWD(2016) 403 final}
{SWD(2016) 404 final}
{SWD(2016) 405 final}
{SWD(2016) 406 final}



REACH directive

COUNCIL

29.5.2007 EN Official Journal of the European Union L 136/3

CORRIGENDA

Corrigendum to Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

(Official Journal of the European Union L 396 of 30 December 2006)

Regulation (EC) No 1907/2006 should read as follows:

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 18 December 2006
concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC
(Text with EEA relevance)

Critical Raw Materials Comm.

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

on the 2017 list of Critical Raw Materials for the EU

Product Environmental Footprint Comm.

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

Building the Single Market for Green Products

Facilitating better information on the environmental performance of products and organisations

(Text with EEA relevance)

{SWD(2013) 111 final}
{SWD(2013) 112 final}

Herramienta edTOOL: iniciación al ecodiseño en PYMES

edTOOL
ecodesign tool

Herramiena para el ecodiseño

http://edtool.sostenipra.cat

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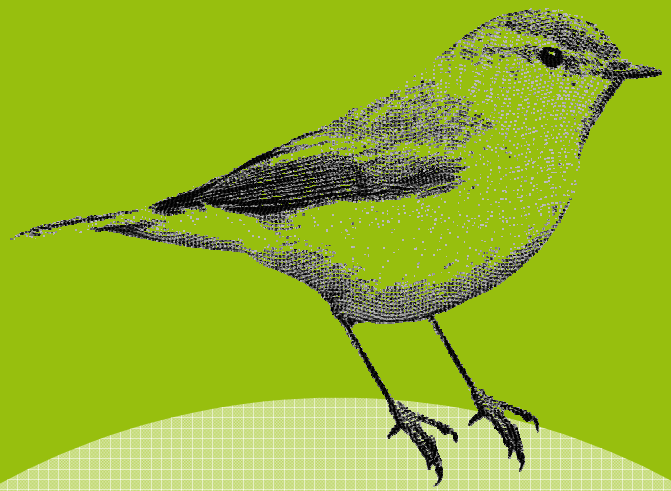

¡Gracias!

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