

Introduction to the Circular Economy

Stein Janssens
Circular Flanders



<https://vlaanderen-circulair.be/en>





Periodic Table of the Elements

Atomic Number → **1** ← Symbol
Name → **Hydrogen** ← Atomic Weight
Electrons per shell → **1**

State of matter (color of name)
GAS LIQUID SOLID UNKNOWN

Subcategory in the metal-metalloid-nonmetal trend (color of background)
Alkali metals Lanthanides Metalloids
Alkaline earth metals Actinides Reactive nonmetals
Transition metals Post-transition metals Noble gases
Discover chemical properties

1 1A H Hydrogen 1.008	2 2A He Helium 4.003											13 13A B Boron 10.81	14 14A C Carbon 12.011	15 15A N Nitrogen 14.007	16 16A O Oxygen 15.999	17 17A F Fluorine 18.998	18 18A Ne Neon 20.180
3 3A Li Lithium 6.941	4 4A Be Beryllium 9.012	5 5A Sc Scandium 44.956	6 6A Ti Titanium 47.88	7 7A V Vanadium 50.942	8 8A Cr Chromium 51.996	9 9A Mn Manganese 54.938	10 10A Fe Iron 55.845	11 11A Co Cobalt 58.933	12 12A Ni Nickel 58.693	13 13A Cu Copper 63.546	14 14A Zn Zinc 65.38	15 15A Ga Gallium 69.723	16 16A Ge Germanium 72.64	17 17A As Arsenic 74.922	18 18A Se Selenium 78.96	19 19A Br Bromine 79.904	20 20A Kr Krypton 83.798
19 1A Na Sodium 22.990	20 2A Mg Magnesium 24.305	21 3B Sc Scandium 44.956	22 4B Ti Titanium 47.88	23 5B V Vanadium 50.942	24 6B Cr Chromium 51.996	25 7B Mn Manganese 54.938	26 8B Fe Iron 55.845	27 9B Co Cobalt 58.933	28 10B Ni Nickel 58.693	29 11B Cu Copper 63.546	30 12B Zn Zinc 65.38	31 13B Ga Gallium 69.723	32 14B Ge Germanium 72.64	33 15B As Arsenic 74.922	34 16B Se Selenium 78.96	35 17B Br Bromine 79.904	36 18B Kr Krypton 83.798
37 1A Rb Rubidium 85.468	38 2A Sr Strontium 87.62	39 3B Y Yttrium 88.906	40 4B Zr Zirconium 91.224	41 5B Nb Niobium 92.906	42 6B Mo Molybdenum 95.94	43 7B Tc Technetium 98	44 8B Ru Ruthenium 101.07	45 9B Rh Rhodium 102.91	46 10B Pd Palladium 106.42	47 11B Ag Silver 107.868	48 12B Cd Cadmium 112.411	49 13B In Indium 114.818	50 14B Sn Tin 118.710	51 15B Sb Antimony 121.757	52 16B Te Tellurium 127.6	53 17B I Iodine 126.905	54 18B Xe Xenon 131.29
55 1A Cs Cesium 132.905	56 2A Ba Barium 137.327	57-71 3B Lanthanides	72 4B Hf Hafnium 178.49	73 5B Ta Tantalum 180.948	74 6B W Tungsten 183.84	75 7B Re Rhenium 186.207	76 8B Os Osmium 190.23	77 9B Ir Iridium 192.222	78 10B Pt Platinum 195.084	79 11B Au Gold 196.967	80 12B Hg Mercury 200.59	81 13B Tl Thallium 204.384	82 14B Pb Lead 207.2	83 15B Bi Bismuth 208.98	84 16B Po Polonium 209	85 17B At Astatine 210	86 18B Rn Radon 222
87 1A Fr Francium 223	88 2A Ra Radium 226	89-103 3B Actinides	104 4B Rf Rutherfordium 261	105 5B Db Dubnium 262	106 6B Sg Seaborgium 263	107 7B Bh Bohrium 264	108 8B Hs Hassium 265	109 9B Mt Meitnerium 266	110 10B Ds Darmstadtium 267	111 11B Rg Roentgenium 268	112 12B Cn Copernicium 269	113 13B Nh Nihonium 270	114 14B Fl Flerovium 271	115 15B Mc Moscovium 272	116 16B Lv Livermorium 273	117 17B Ts Tennessine 274	118 18B Og Oganesson 276
57 3B La Lanthanum 138.905	58 4B Ce Cerium 140.12	59 5B Pr Praseodymium 140.908	60 6B Nd Neodymium 144.24	61 7B Pm Promethium 145	62 8B Sm Samarium 150.36	63 9B Eu Europium 151.964	64 10B Gd Gadolinium 157.25	65 11B Tb Terbium 158.925	66 12B Dy Dysprosium 162.50	67 13B Ho Holmium 164.930	68 14B Er Erbium 167.259	69 15B Tm Thulium 168.930	70 16B Yb Ytterbium 173.054	71 17B Lu Lutetium 174.967			
89 3B Ac Actinium 227	90 4B Th Thorium 232.038	91 5B Pa Protactinium 231.036	92 6B U Uranium 238.029	93 7B Np Neptunium 237.048	94 8B Pu Plutonium 244.064	95 9B Am Americium 243.061	96 10B Cm Curium 247.070	97 11B Bk Berkelium 247.070	98 12B Cf Californium 251.083	99 13B Es Einsteinium 252.083	100 14B Fm Fermium 257.103	101 15B Md Mendelevium 258.103	102 16B No Nobelium 259.103	103 17B Lr Lawrencium 260.103			



What is a circular economy?

Why is this needed?

How can I implement this?

References



What is Circular Economy?

A circular economy is an economy that keeps **eco-designed materials** and **products as long as possible** in use, with **maximal value**, hereby using specific **circular strategies**, long before the recycling stage.

A photograph taken from inside a washing machine drum, looking out through the circular opening. A man and a young child are peering into the machine. The man is in the foreground, looking directly at the camera with a slight smile. The child is behind him, also looking towards the camera. The interior of the washing machine is metallic and perforated. The lighting is dim, with a blueish tint. A large white graphic overlay is centered over the image, consisting of a circle containing the number '2' followed by the text 'Why?'.

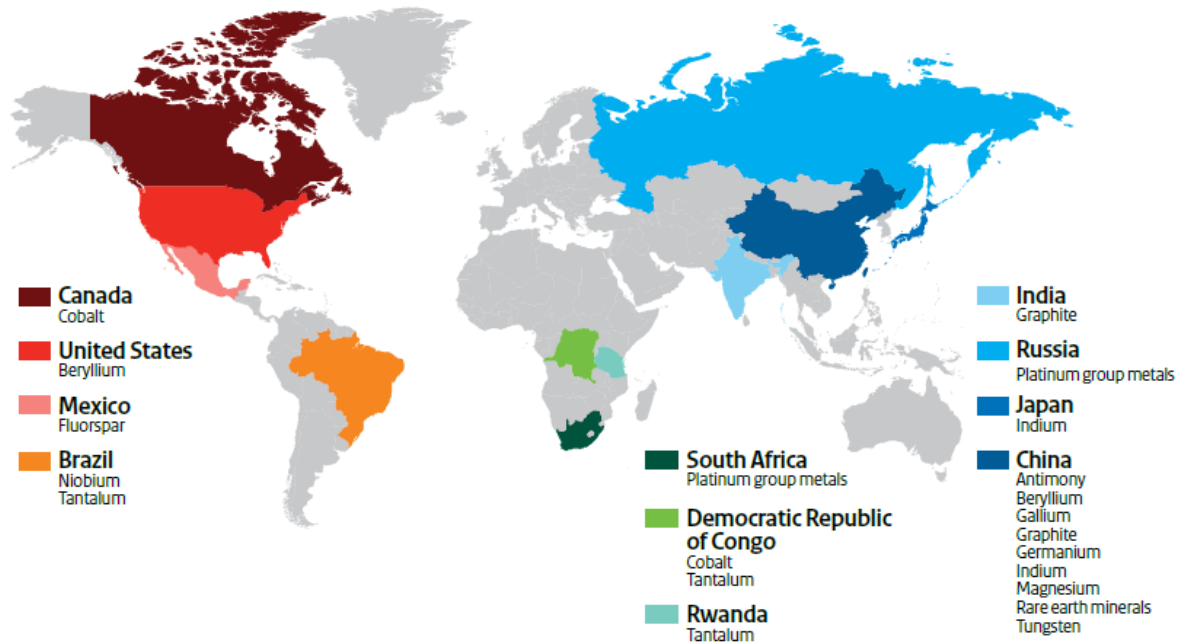
2 Why?

Why?



Production concentration of critical mineral materials

Europe is dependent on other continents



Source: European Commission, 2010

Raw materials
are limited

Why?



It's the law

VISIE2050



Reduction of **30%** in raw material use by **2030**
= -15% by 2025
= additional -15% by 2030

Flemish Government

CE = 1 of the 7 transition priorities

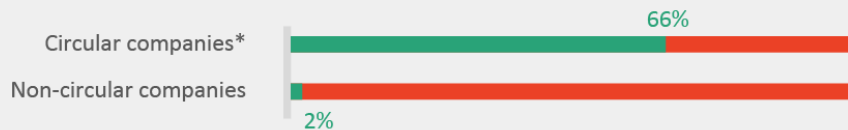
Flanders' ambition = fully circular economy by 2050

Why?



Requirement for healthy, future-proof business

Is your organization experiencing shortages during the Corona crisis?



* these are companies that apply at least a good basis for more than 4 of the 8 circular strategies tested (less material consumption, sharing production resources ...)

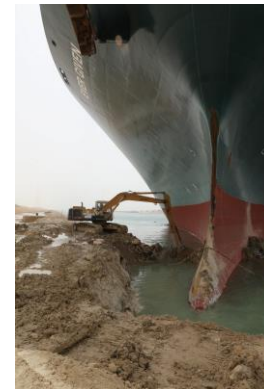
● = No, we don't experience shortages

Global manufacturers reporting of port or shipping delays

as % of all companies reporting longer supplier delivery times



Source: IHS Markit



Why?



Capital and funding rounds will be much easier

“Sustainable Finance”: ESG (Environment, Sustainability, Governance) criteria worden steeds belangrijker voor investeerders

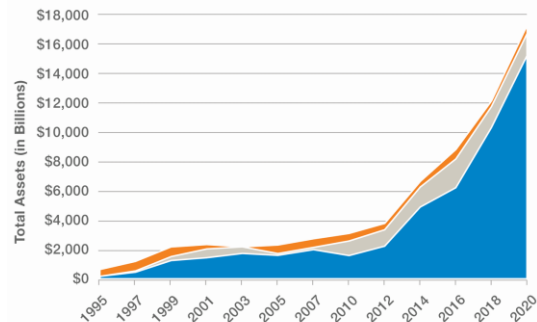
Regionale/Nationale/EU subsidie criteria

Larry Fink CEO van Black Rock, één van de grootste investeringsfondsen ter wereld, stelde dit jaar in een open brief dat in 2020 de wereldwijde investeringen in duurzame projecten en ondernemingen 1 jaar tijd gestegen waren met maar liefst 96% tot 288 miljard dollar.

FIGURE A

Sustainable Investing in the United States 1995–2020

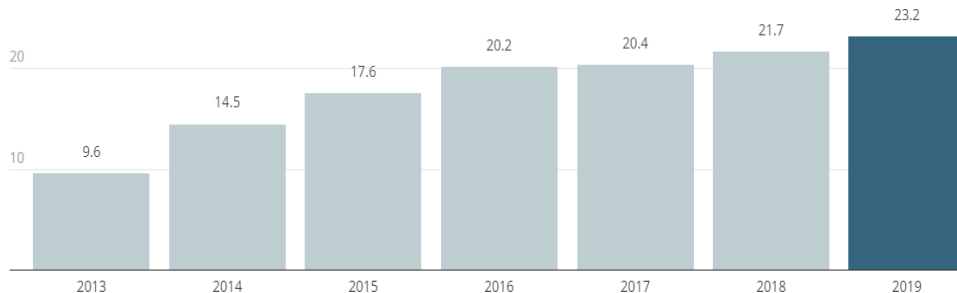
■ ESG Incorporation ■ Overlapping Strategies ■ Shareholder Advocacy



SOURCE: US SIF Foundation.

Europe's contribution to climate finance (in €bn)

Since 2013, Europe has more than doubled the funds raised to help developing countries mitigate and adapt to the impact of climate change



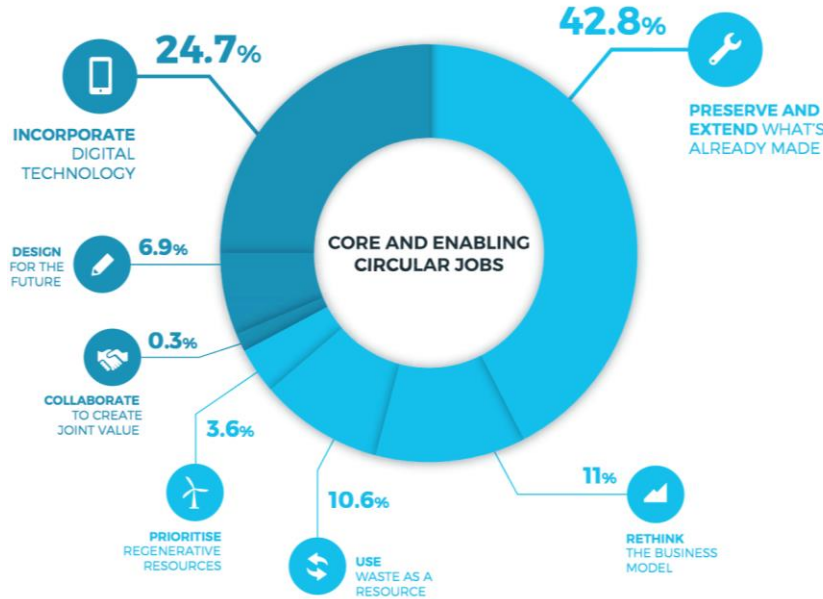
Figures include sources from public budgets and development financial institutions of the EU, its member states (including the UK) and the European Investment Bank.

Source: Council of the European Union

Why?



Job creation +
top talent
attraction



Labour intensive recycling/repair/...

Low-tech jobs in repair/remanuf activities
=> Opportunities for social profit/non-profit

Innovation (tech development/new materials/industry 4.0)

Fintech (sustainable finance)

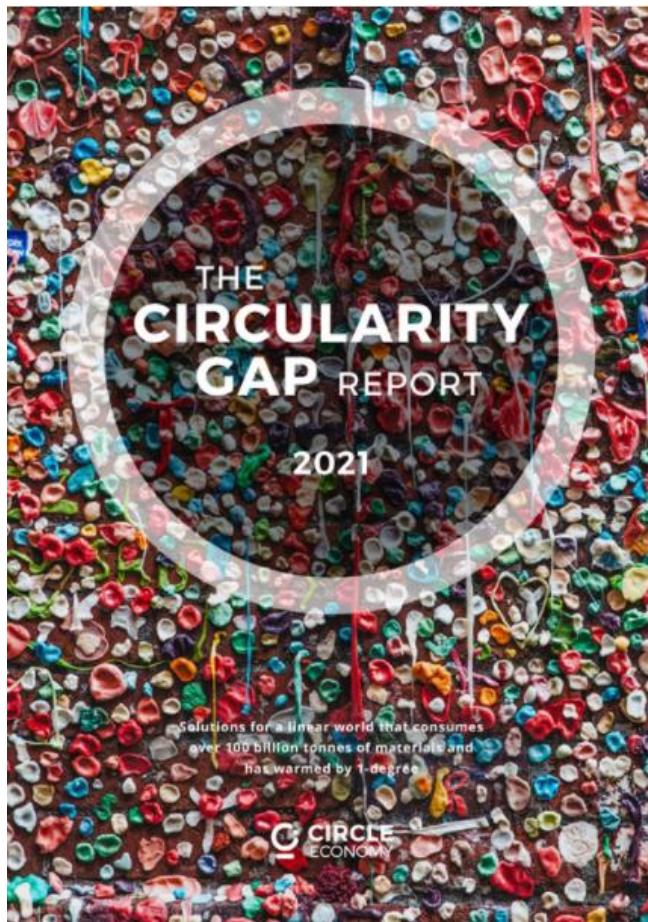
By 2030, additional BNP growth of 0,5% resulting in 700.000 jobs in the EU [EU CE Action Plan, 2020]

Future talent attaches stronger to company values
=> Advantage in attracting talent!

Why?



It reduces GHG,
and therefore
has direct
climate impact



CE reduces GHG with **39%**
[Circularity Gap Report, 2021]

A photograph of a man and a young child looking into the open door of a washing machine. The man is smiling and looking towards the camera, while the child is looking into the drum. The scene is lit with a cool, blueish light. The washing machine's drum and door are visible, with the drum having a perforated metal surface. The overall mood is domestic and caring.

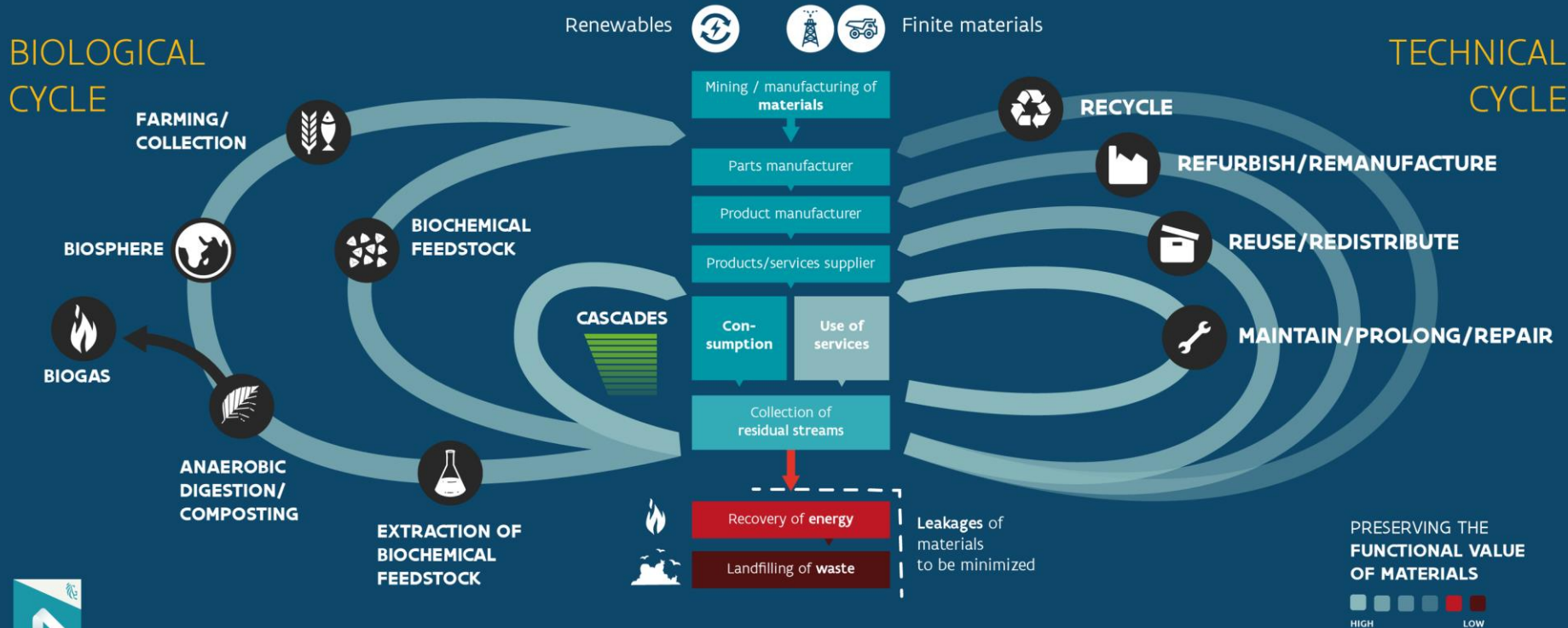
3 How to implement?

THE CIRCULAR ECONOMY

Renewability and preservation of value

BIOLOGICAL CYCLE

TECHNICAL CYCLE



<p>A</p>  <p>Reduce total amount of materials</p>	<p>B</p>  <p>Reduce amount of virgin inputs</p>	<p>C</p>  <p>Extend the useful life</p>	<p>D</p>  <p>Maximise the reusability of a product or component</p>	<p>E</p>  <p>Maximise the reusability or recyclability of materials</p>
--	--	---	--	--

<p>A 1</p> <p>Internal sharing</p>	<p>B 1</p> <p>Understanding the share of recycled, biobased and virgin materials present</p>	<p>C 1</p> <p>Extending guarantees</p>	<p>D 1</p> <p>Design for Disassembly</p>	<p>E 1</p> <p>Design for recycling</p>
<p>A 2</p> <p>Renting or peer to peer sharing</p>	<p>B 2</p> <p>Increasing the amount of recycled content</p>	<p>C 2</p> <p>Contractual arrangements for maintenance and repair</p>	<p>D 2</p> <p>Modular design</p>	<p>E 2</p> <p>Understanding materials</p>
<p>A 3</p> <p>Reuse, refurbishing or upgrading</p>	<p>B 3</p> <p>Increasing the amount of biobased content</p>	<p>C 3</p> <p>Upgradable products</p>	<p>D 3</p> <p>Standardised design</p>	<p>E 3</p> <p>Contractual arrangements for take back and recycling</p>
<p>A 4</p> <p>Minimal use of materials in design</p>		<p>C 4</p> <p>Design for longevity</p>	<p>D 4</p> <p>Understanding the internal composition and connections</p>	<p>E 4</p> <p>Reducing or banning toxicity</p>
<p>A 5</p> <p>Less waste</p>		<p>C 5</p> <p>Repairability and maintainability</p>	<p>D 5</p> <p>Contractual arrangements for take back and reuse</p>	<p>E 5</p> <p>Biologically degradable / compostable</p>

<p>C 6</p> <p>Modular/change oriented design</p>	<p>D 6</p> <p>Stimulate circular business models</p>	<p>E 6</p> <p>Stimulate circular business models</p>
<p>C 7</p> <p>Contractual incentives for extension of useful life</p>		
<p>C 8</p> <p>Supplier guidance for use optimization</p>		

GOALS AND STRATEGIES FOR CIRCULAR PURCHASERS

References



Your search term

SECTORS

- construction
- energy
- water
- metals
- services
- retail trade
- logistics
- bio-economy
- chemistry / plastics
- electrical engineering / manufacturing
- furniture & interior / manufacturing
- textile and fashion / manufacturing
- food chain
- culture / events
- health & care
- itc / technology
- government
- social-community

THEMES

- policy instruments
- circular purchasing
- communication / sensibilisation
- financing
- innovation / entrepreneurship
- jobs / skills
- research
- prevention / prolonging service life



Salmon croquette

WEDNESDAY 31 AUGUST 2022

Circular Hub Brugge makes the processing of salmon more sustainable by reusing residual flows. The result: a delicious salmon croquette.

[READ MORE >](#)



Froep

WEDNESDAY 31 AUGUST 2022

Froep provides fresh soup and tasty fruit snacks for pre-school and primary school children.

[READ MORE >](#)



CILAB

WEDNESDAY 31 AUGUST 2022

CILAB is a circular textile collective from Mechelen that develops processes and solutions to upcycle clothing and creates awareness for the circular transition in the textile sector.

[READ MORE >](#)



Hair Recycle by Dung Dung vzw

WEDNESDAY 31 AUGUST 2022

Hair Recycle collects cut hair from hairdressers to use as cushions that absorb polluting oil from Belgian rivers.

[READ MORE >](#)



Urbin

TUESDAY 23 AUGUST 2022

Urbin rents out reusable moving boxes in Antwerp, including the Antwerp districts of Berchem, Borgerhout and Deurne.

[READ MORE >](#)



Sam Serveert

TUESDAY 2 AUGUST 2022

Unloved fruit and vegetables find a new purpose as pure fruit sweets, snacks, tea infusions, granola and many other goodies

[READ MORE >](#)

A photograph of a man and a young child looking into the open door of a washing machine. The man is smiling and looking towards the camera, while the child is looking into the drum. The scene is lit with a cool, blueish light. The washing machine's perforated drum and internal components are visible.

5 References



Ben je ondernemer in de circulaire economie?

Op zoek naar experts in circulaire economie? Met CircleAid vind je eenvoudig en snel de juiste mensen die jou verder kunnen helpen.

[ONTDEK CIRCLEAID >](#)



Het bos door de bomen zien?

Op deze pagina's bundelen we een overzicht van de business-to-business (B2B) tools die je kunnen helpen om circulaire principes in de praktijk toe te passen.

[NAAR DE TOOLS EN PLATFORMEN >](#)



Een handige checklist voor jouw circulair project

Het CE Kompas is een analysetool die aangeeft welke accenten van circulaire economie gelegd worden in een circulair project.

[NAAR HET CE KOMPAS >](#)

Thank you!

stein@vlaanderen-circulair.be



<https://vlaanderen-circulair.be/en>

