Sustainable resins in medical devices

Novo Nordisk at a glance

Novo Nordisk is a leading global healthcare company, founded in 1923 and headquartered in Denmark

We drive change to defeat diabetes and other serious chronic diseases

We work to:

- Pioneer scientific breakthroughs
- Expand access to our medicines
- Prevent and ultimately cure disease

Products marketed in
169
countries

Total net sales
126.9
billion DKK

Supplier of nearly
50%
of the world's insulin

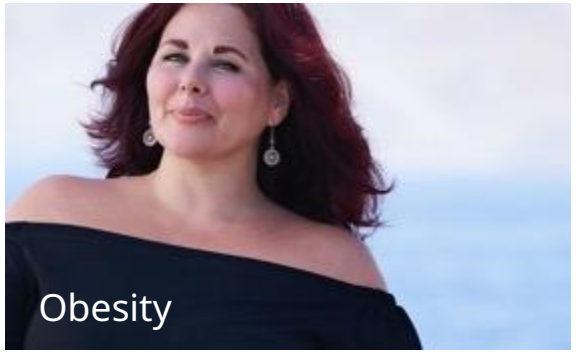
32.8
million people use our diabetes care products

Affiliates in
80
countries

R&D centres
in China, Denmark, India, UK and US

Strategic production sites in Denmark, Brazil, China, France and US

About
45,300
employees



Among the world's
10
largest pharma companies measured by market value[1]

Zero impact is our ambition

circular FOR zero

novo nordisk®

Our key environmental challenges

Resources

CO_2 emissions

Waste

To achieve zero impact, we embrace a circular mindset

Minimise consumption
across our value chain

Eliminate waste and turn
it into new resources

Design and produce our products
so that they can be recycled

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Working across the value chain to achieve zero impact

CIRCULAR SUPPLY

CIRCULAR COMPANY

CIRCULAR PRODUCTS

CIRCULAR SUPPLY

Reduce supplier footprint.

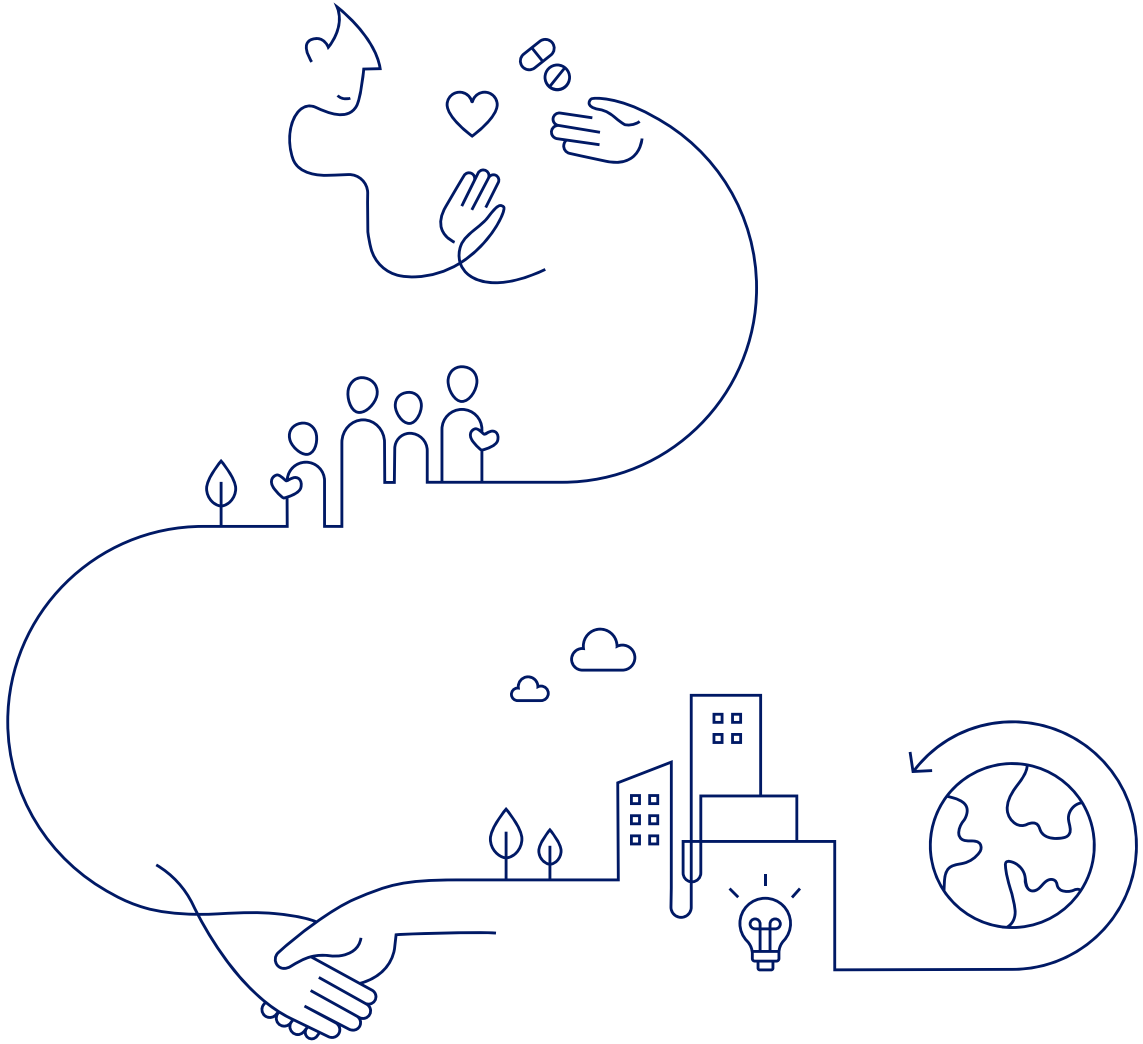
To achieve zero impact we are requesting our suppliers to produce using sustainable energy.

Current Tier 1 CO_2 committed on 75,7 % and growing.

Ensure circular procurement.

Driving a change towards sustainable raw materials.

Transition to sustainable resins is essential for achieving this target.

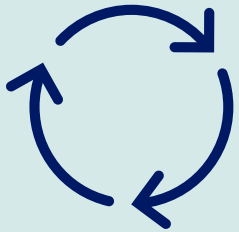


To ensure truly circular solutions, we have set the bar high for sustainable plastic

There is no universal definition of ‘sustainable plastic’. In Novo Nordisk, we define plastic as sustainable when it is

Renewable
Produced from a regenerative resource

and/or



Recycled
Produced from post industrial or post consumer waste

We have set further requirements for sustainable plastics:

- The carbon footprint should be lower or equal to fossil plastics
- The plastic must be recyclable to allow for end-of-life recycling
- We must be able to certify the plastic to ensure full transparency in the value chain
- If using biobased plastic, it must be based on 2nd or 3rd generation feedstock. This means that we avoid increasing land use and crops/plants suitable for food and feed*
- Mass-balance approach is acceptable until segregation is feasible on both sustainability and commercial.
- Very high level of purity is needed to make recycled resins suitable for medical devices.

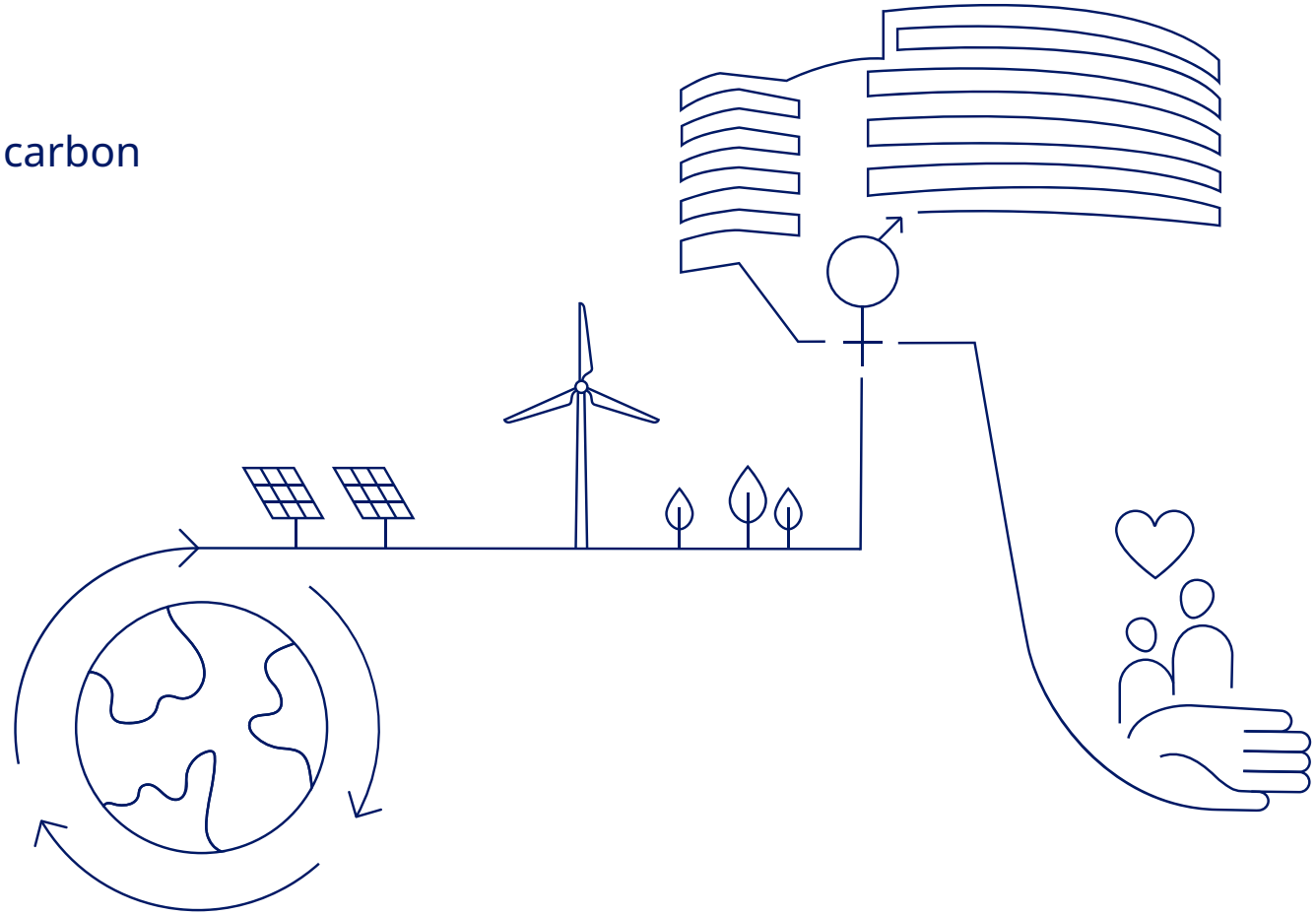
* 1st generation feedstock could be e.g. palm oil, corn, wheat and sugar cane

CIRCULAR
COMPANY

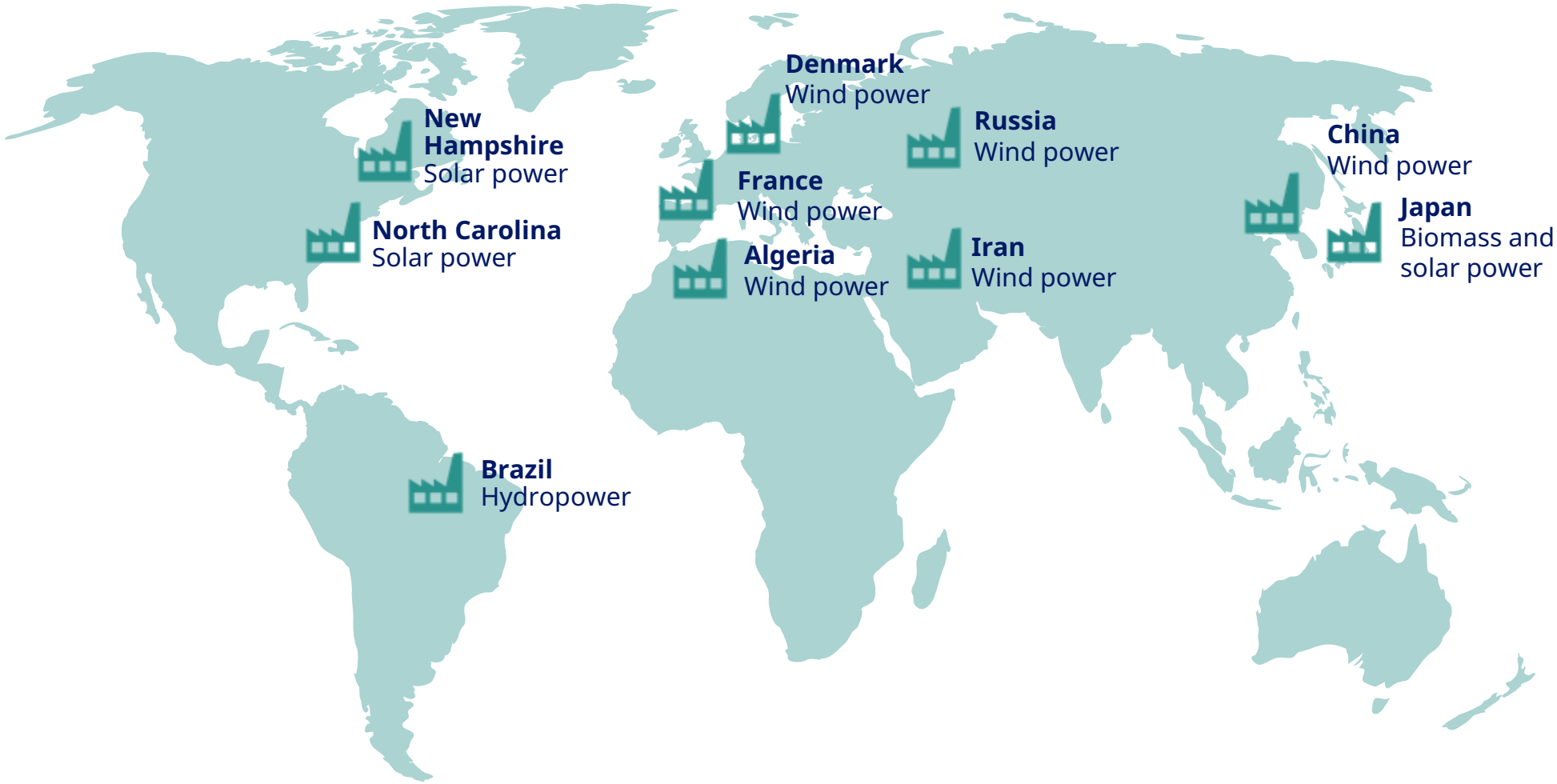
Reduce operations to zero CO_2
100 % of our all power consumption for production is carbon neutral.

Eliminate waste of energy, water and materials.
Zero CO_2 from our own operations and transport.
Zero production waste to landfill.

Support affiliates going green.
Ongoing, mainly by individual initiatives to best serve the local situation and readiness.



All Novo Nordisk production is sourcing renewable power worldwide



CIRCULAR
PRODUCTS

Design products for circularity .
How to make an easy to use tamper-evident device with hazardous materials designed for circularity?

Solve end-of-life product challenge.
Introducing industry take-back system. Handling of clinical waste for recycling is in some countries yet to be solved.

Design devices and packaging for circularity

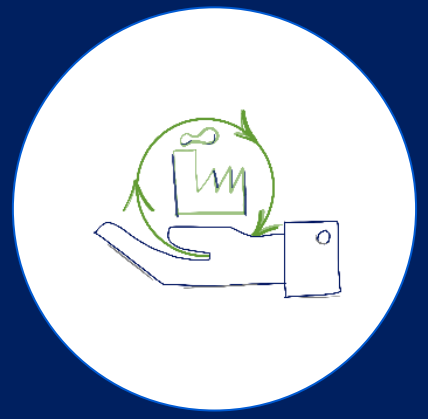
Circularity is achieved through four levers

Design for expected lifetime

Optimise the design to have the lowest impact during intended lifetime

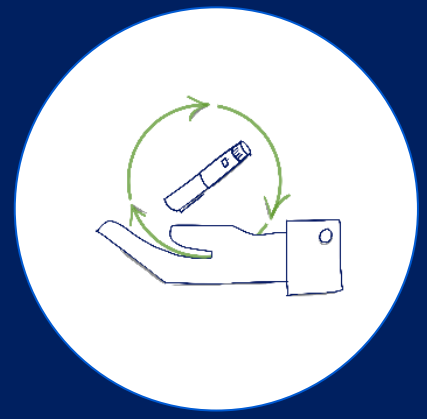
Design for sustainable materials

Choose renewable, recycled and low impact materials



Design for no waste in production

Avoid scrap and design out waste



Design for recycling after use

Design products that are ready for recycling into new products

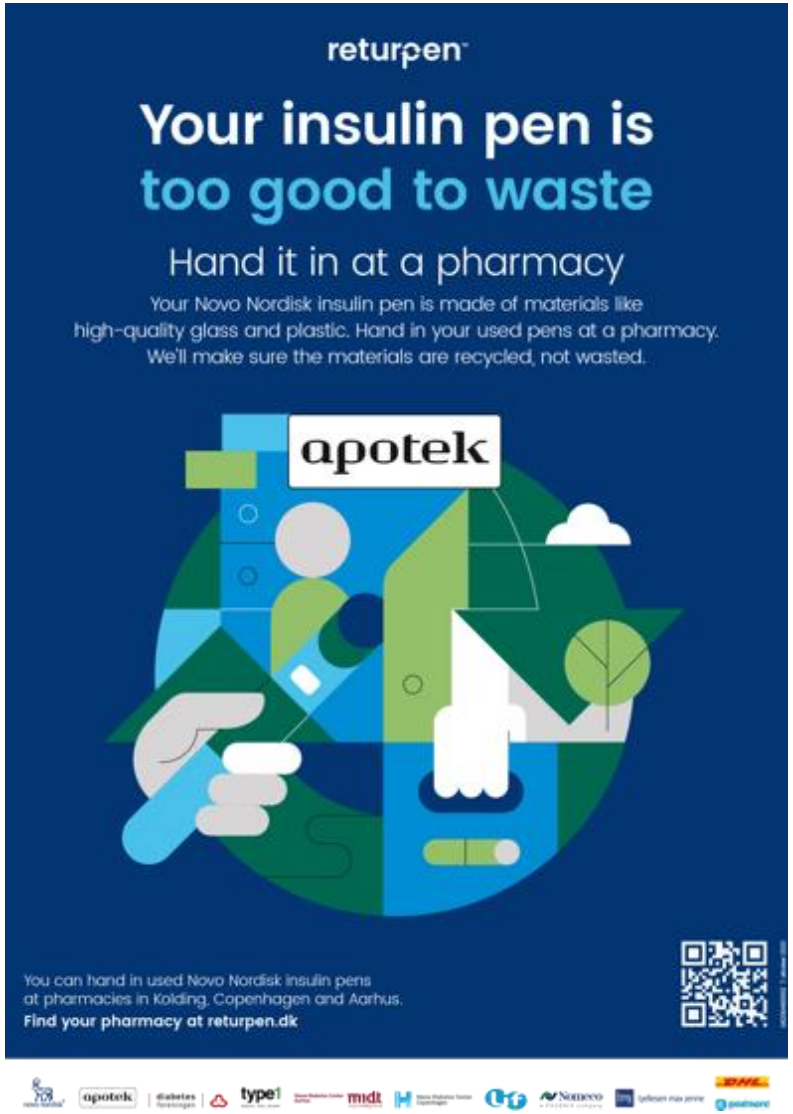
Design devices and packaging for circularity

Three circularity indicators defined

	**Carbon footprint** **kg CO_2/patient/year**	Environmental impact across the full lifecycle of the product and/or packaging
	**Sustainable materials** **% by weight fraction**	Share of materials derived from either renewable or recycled content
	**Recyclability** **% by weight fraction**	Share of materials that can be retrieved in clean recyclable material fractions at product end-of-life

DK Take-back pilot: returpen™

- Today the project is fully implement in Denmark.
- Pilot setups in ongoing several countries
- Other manufactures have started chipping in to the system.
- Recycle process plants are established within a distances short enough not to cause negative impact.
- Several resins users have shown interest in the recycle materials.



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We are recycling waste

In collaboration with Danish design firm Hay, we are turning used plastic into office chairs

Designer Pernille Bülow is recycling Novo Nordisk glass into lamps, vases, bowls and more

More to come...

"It has been absolutely fantastic to work with Novo Nordisk. I never imagined that such a small company like ours could work with such a large company. It may also be an inspiration to others"

Pernille Bülow, Glass blower

+90% of the plastic from our pen production is now recycled

circular FOR zero

Reduce, Reuse, Recycle

- lowering demand for virgin resins.

Reduce

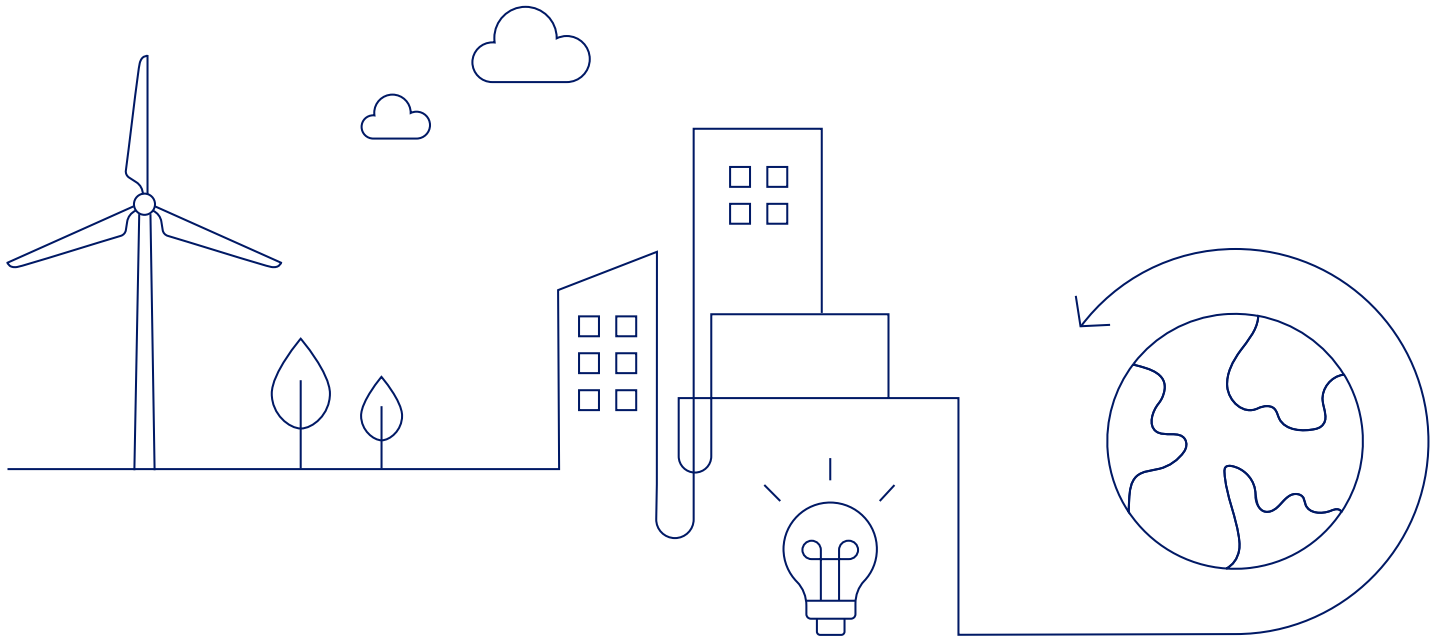
Future devices are designed for lower resin consumption

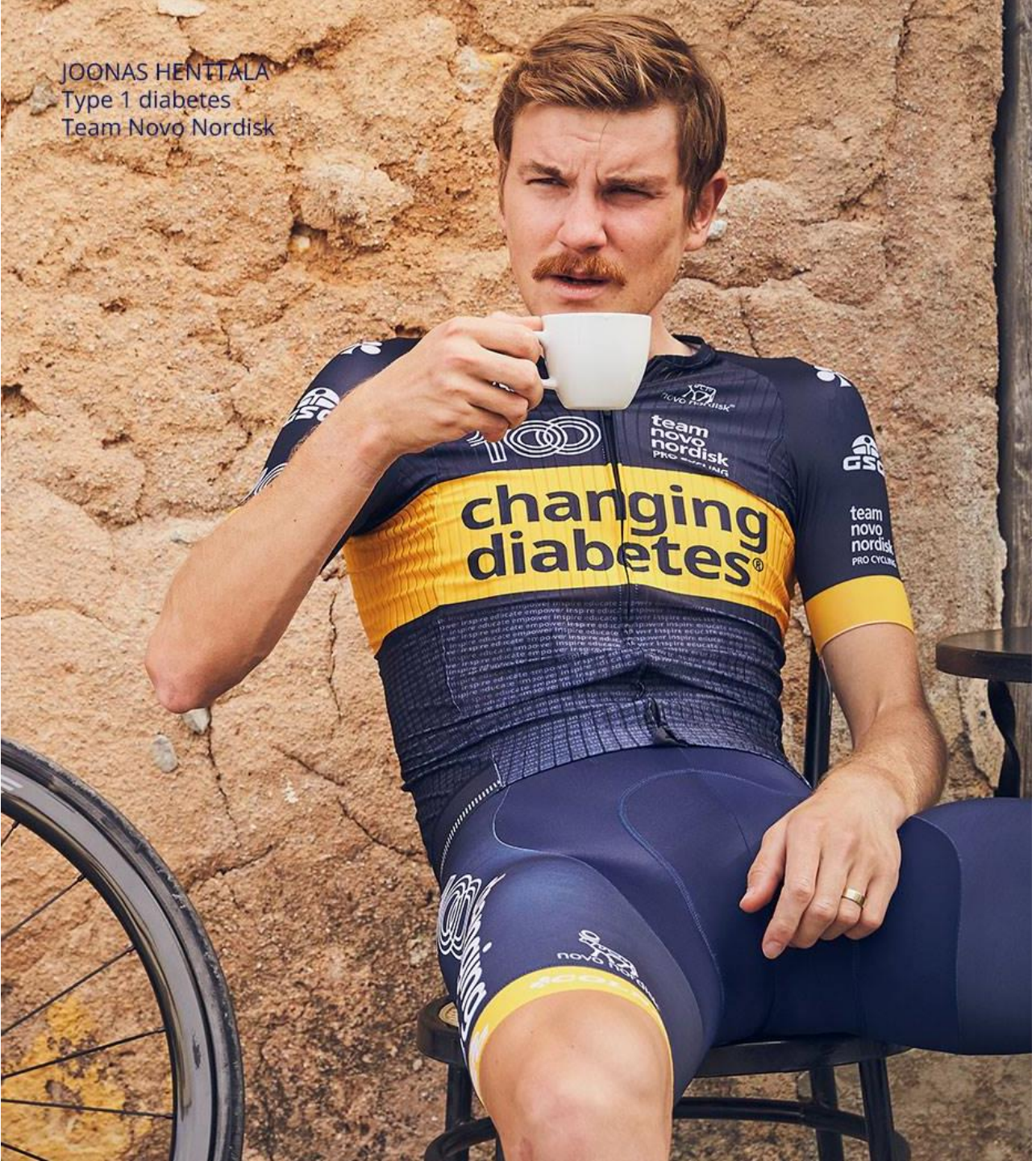
Reuse

Reusing resin scrap from production. To lower consumption in current devices.

Recycle

By ReturPen System the devices can be collected and the resin can be recycled for new applications.





Reduce, Reuse, Recycle.

Reflect, Rethink, Relax.

Thank you.

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