

Safe and sustainable by design in a multinational company

& reflection on the role of the toxicologist

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NUTRITION • HEALTH • SUSTAINABLE LIVING



DSM

BRIGHT SCIENCE. BRIGHTER LIVING.

CONTENT

- DSM
- Sustainable portfolio development
- *Safe and sustainable by design*
- Role of the toxicologist in a changing business environment

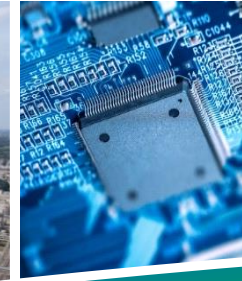


SUCCESSFUL TRANSFORMATION FUTURE- PROOFING DSM

Coal mining

(Petro)chemicals

Nutrition, Health & Sustainable Living



2018

1902



DSM 

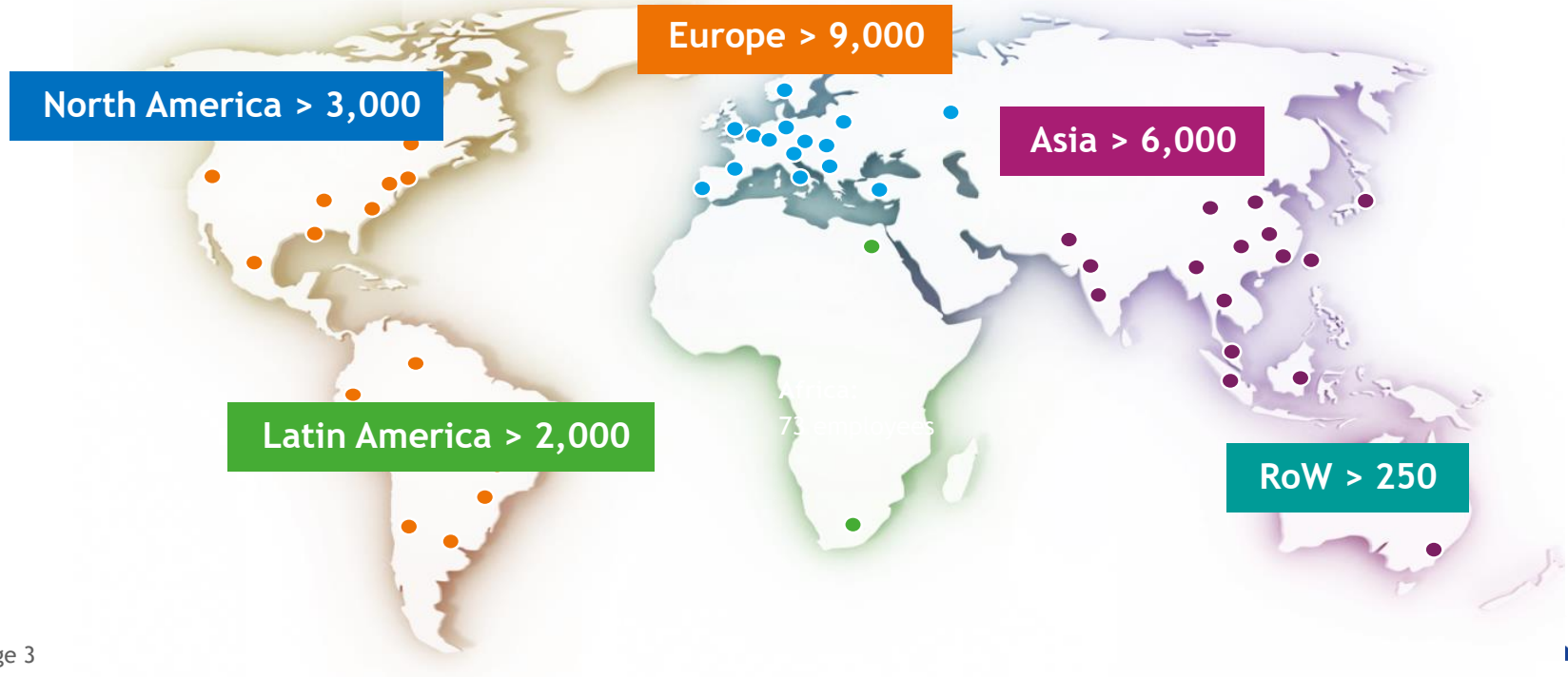
Unlimited. DSM



DSM GLOBAL WORKFORCE

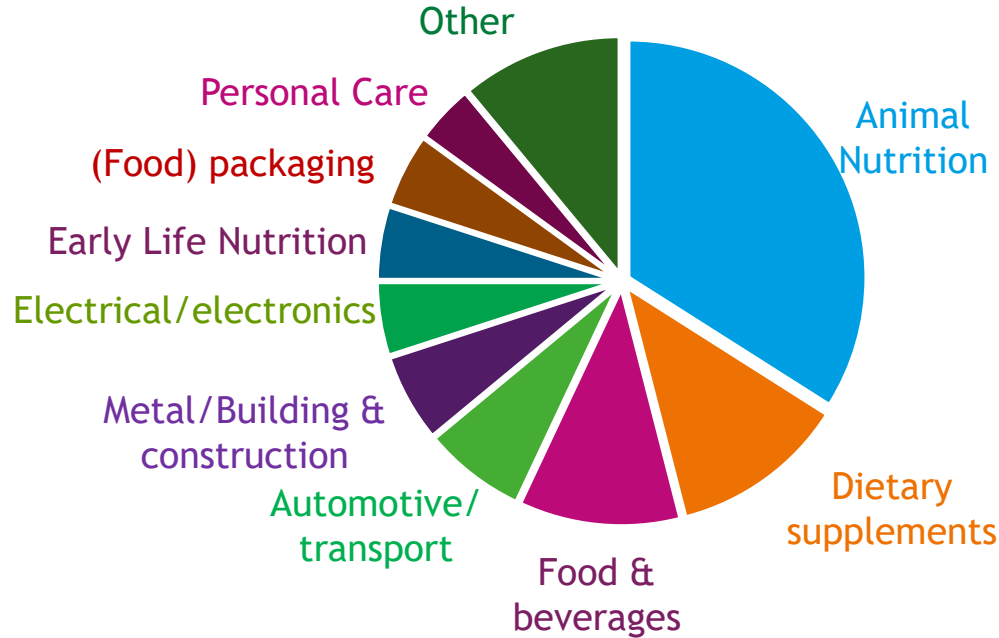
~60% Employees outside Europe (2018) VS. 37% in 2006

~23,000 Employees incl. JVs/associates



Products & solutions for a wide range of end-markets

NET SALES BY END-USE MARKETS (IN %)



- 34% Animal Nutrition
- 12% Dietary supplements
- 11% Food & beverages
- 7% Automotive/ transport
- 6% Metal/Building & construction
- 5% Electrical/electronics
- 5% Early Life Nutrition
- 5% Packaging
- 4% Personal Care
- 11% Other

THREE ATTRACTIVE INNOVATION PLATFORMS



DSM Biomedical

Every second a patient receives a medical device containing a biomedical solution from DSM



DSM Bio-based Products & Services

3% yield improvement for ethanol producers who use our eBOOST™



DSM Advanced Solar

7,500GWh additional power generated due to our solar panel coatings

DSM AT A GLANCE



Royal DSM is a purpose-led science-based company in Nutrition, Health and Sustainable Living.

“We cannot be successful, nor can we call ourselves successful, in a society that fails.”

821M

*Hunger vs.
Obesity:*

Over 821 million people suffer from hunger, while over 650 million people are obese.

140m

*Climate
Catastrophe:*

>140 million people could be forced to migrate due to climate change.

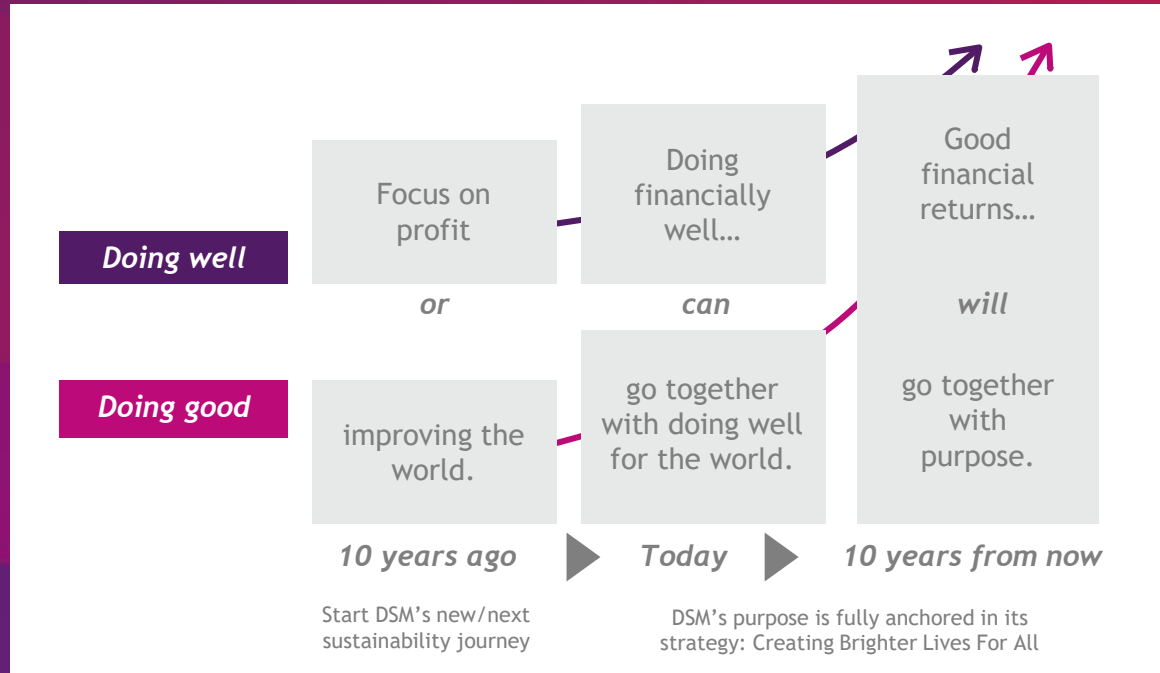
400%

*Resource
Consumption:*

Our demand of resources is expected to reach 130 billion tons by 2050. An overuse of the earth's capacity by more than 400%.

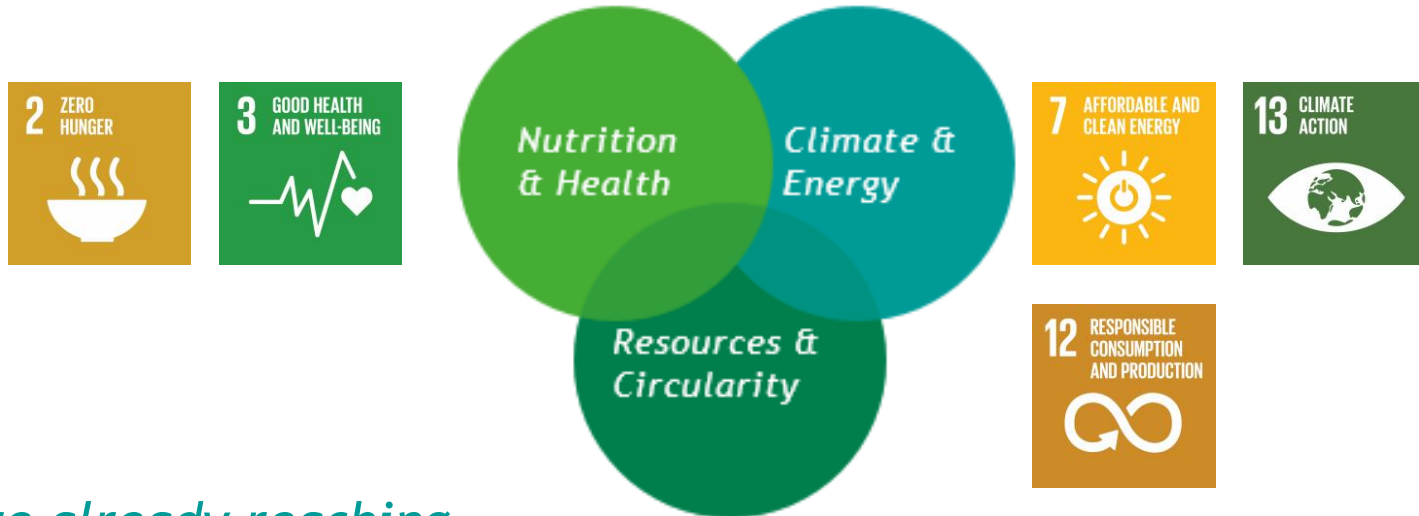
The world is changing.

Ten years ago,
The general belief was,
That as a company,
you either focused
On profit or improving
the world, but that you
couldn't do both.



Our 3 focus domains.

We use our key competences to address the UN sustainable development goals; these provide growth opportunities in our 3 focus domains:

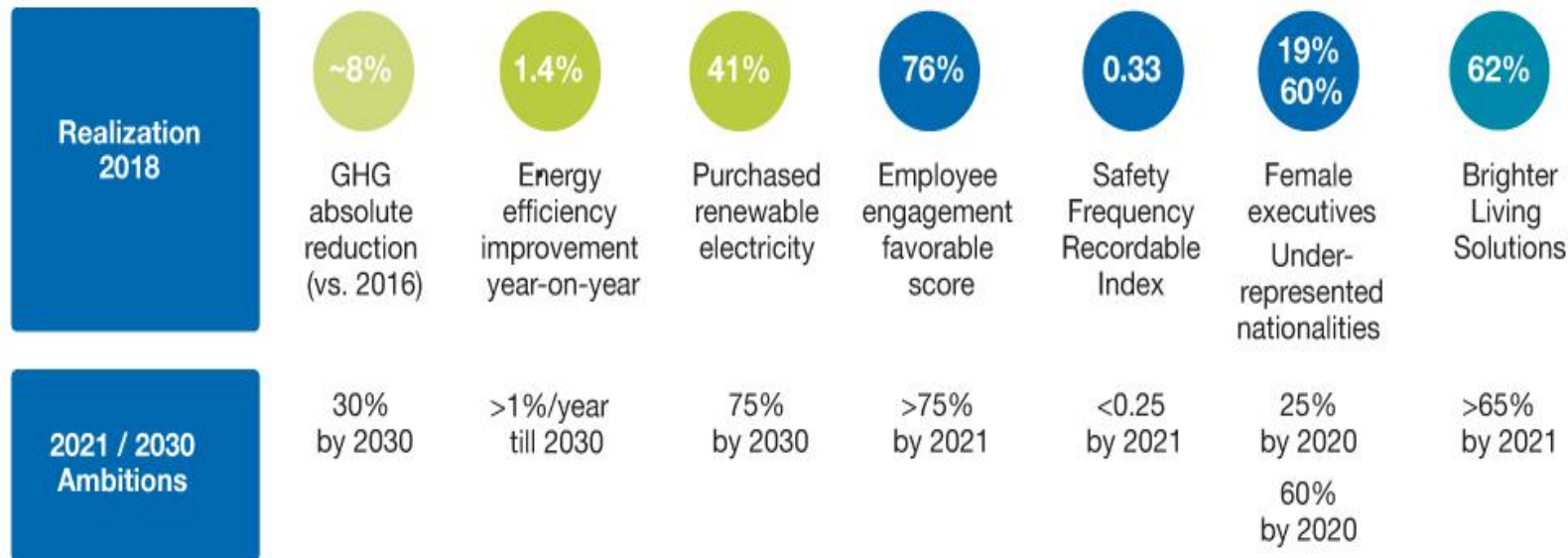


*We are already reaching
~2.5 billion people worldwide.*

CONTINUED STEP-UP IN SUSTAINABILITY LEADERSHIP

Continued step-up in sustainability leadership

(for definitions and detailed data see 2018 Integrated Annual Report)



Brighter Living Solutions (BLS).

Innovations and products that are better for the planet (eco+) and/or people (people+) based on a product life cycle approach.

ECO+



PEOPLE+



Brighter Living Drivers

Resources

Land use

Water

Energy

Emissions

Health
conditions

Comfort &
Wellbeing

Working
Conditions

Community
Development

Akulon® RePurposed

- DSM uses discarded fishing nets as the source to produce the recycle-based polyamide Akulon® RePurposed
- it is used in high-end applications in the sports and leisure segment (e.g. surfboard accessories)
- the discarded fishing nets are collected along the coastlines of India, then treated and upcycled using local labor, before being compounded
- with this new product line DSM contributes to cleaner oceans, litter-free beaches and jobs for local communities

contributing to
cleaner oceans
and beaches

produced using
local labor

performance
close to prime
PA6 grades



Decovery®

- plant-based, eco-friendly resin containing renewable materials
- contrary to traditional crude oil based resins, Decovery® offers our customers a plant-based building block for sustainable paints
- contains a high content of renewable materials of up to 49%, and consequently, has a lower carbon footprint up to 34%
- enables the coating and inks industry to develop more sustainable, healthier products

plant-based,
eco-friendly
resin

lower carbon
footprint

helps ensure a
safer, healthier
environment



EcoPaXX®

- high-performance green plastic made from tropical castor bean plant which do not compete with the food chain
- 100% carbon neutral cradle to gate
- extremely durable
- applied in automotive, electrical & electronics, and consumer goods, sports & leisure

70% plant-based
bio-plastic

durable

100% carbon
neutral



DSM endurance backsheet

- for ultimate solar module protection
- reliable & high efficiency performance in extreme environments
- innovative manufacturing process allowing flexibility in material design & costs
- solvent & fluorine-free and recyclable, resulting in 30% carbon footprint reduction
- enabling the industry to create 100% recyclable solar module

100% recyclable

durable

30% lower carbon
footprint



Niaga®

- all materials in our redesigned products can easily be recovered, to make the products again, and again
- 95% of carpet being burned or sent to landfill after use; among the top-five contributors to landfill and incineration in Europe and North America
- DSM-Niaga team has been able to design a carpet that uses only pure materials, requires 95% less energy to manufacture than mainstream lamination processes, and can easily be recycled

redesigning
products from
scratch

sustainable
solutions for
household
products

clean materials
enabling
100% recycling





Keep it simple

Use the lowest possible diversity of materials.



Clean materials only

Only use materials that have been tested for their impact on our health and the environment.



Use reversible connections

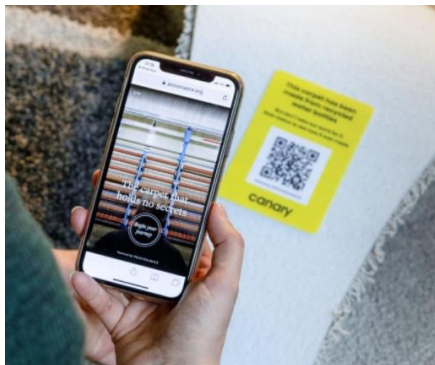
Connect different materials only in ways that allow them to be disconnected after use.

auping



Again™ carpet collection.

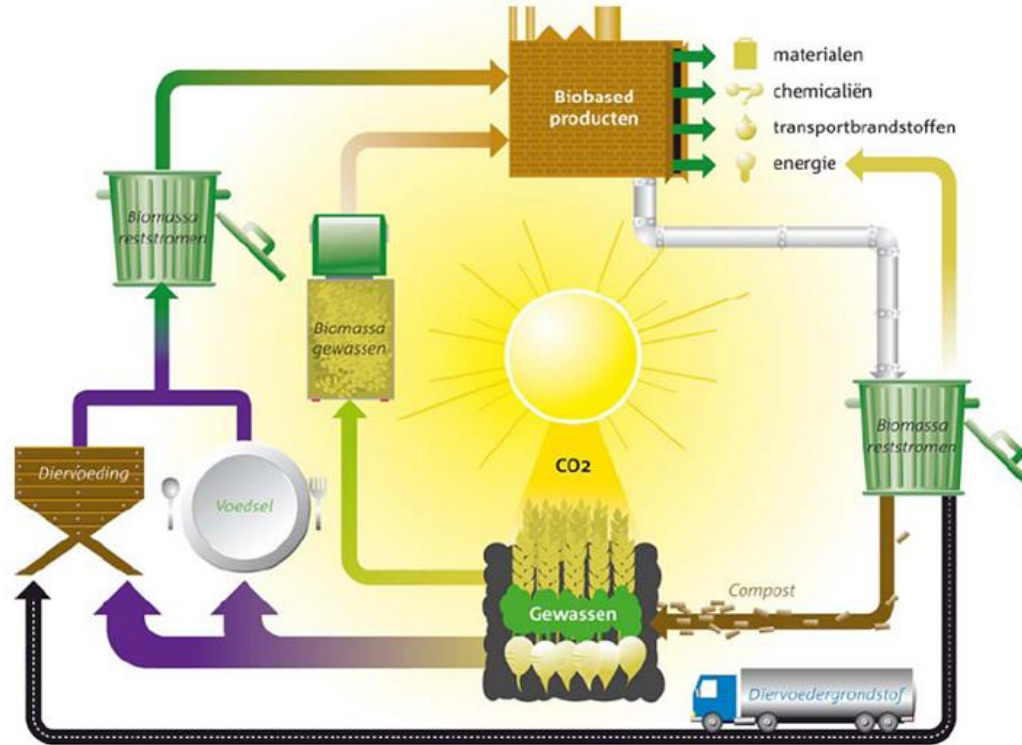
Again™ is our commercial broadloom carpet designed for circularity. It is made of recycled materials and can be recycled into new carpet after use. It meets commercial carpet's highest quality standards.



Introducing a digital passport for carpet

To support further recycling, ingredient information now travels with products

BIO-BASED ECONOMY: FROM FOSSIL TO BIOMASS



‘The greatest threat to our planet is the belief that someone else will save it.’

*Robert Charles Swan, OBE, FRGS (born 28 July 1956)
the first person to walk to both Poles*



VERANDERDE ROL

VOOR DE TOXICOLOOG

?

HAZARD VS RISK

(<https://toxedfoundation.org/hazard-vs-risk/>)



$RISK = HAZARD \times EXPOSURE$

We cannot do this alone.

We are recognized as a positive contributor to a changing world – we achieved this thanks to our employees, shareholders and customers.

*With our
employees*

Doing
something
meaningful
everyday.

*With our
customers &
suppliers*

Pioneering
solutions that
enable
brighter living.

*With our
share-
holders*

Profit with a
purpose.

*For
society*

Transforming
our world.

BRIGHT SCIENCE. BRIGHTER LIVING.™

