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RENEWABLES FROM WASTE: OPPORTUNITIES IN THE FMCG SECTOR



ABOUT UNILEVER

On any given day

2 BILLION
consumers use our products

Our products are sold in over

190
countries

We employ

174,000
people

Our sales totalled

€49.8 BILLION
in 2013

14 brands have sales of more than

€1 BILLION
a year



PERSONAL CARE



FOODS



REFRESHMENT



HOME CARE



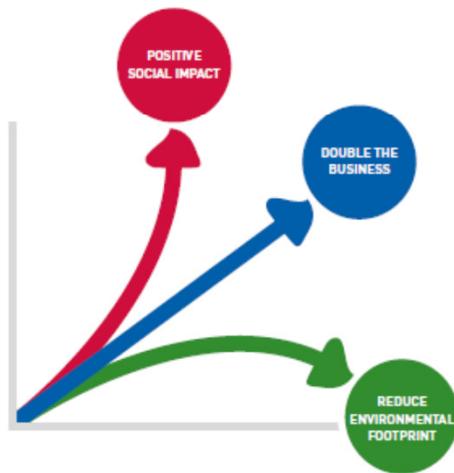
We've Only One Planet, Not Three



"By 2050 we will need three planets. Our pattern of consumption is unsustainable"
WWF, 2012



OUR VISION IS TO DOUBLE THE SIZE OF THE BUSINESS, WHILST REDUCING OUR ENVIRONMENTAL FOOTPRINT AND INCREASING OUR POSITIVE SOCIAL IMPACT



UNILEVER SUSTAINABLE LIVING PLAN

In an uncertain and volatile world, we cannot achieve our vision to double our size unless we find new ways to operate that do not just take from society and the environment.

Launched in 2010, the Unilever Sustainable Living Plan is our blueprint for sustainable growth.

The Plan is helping to drive profitable growth, reduce costs and fuel innovation.

Our Plan sets out three big goals. Underpinning these goals are nine commitments supported by targets spanning our social, environmental and economic performance.

IMPROVING HEALTH AND WELL-BEING FOR MORE THAN 1 BILLION

By 2020 we will help more than a billion people take action to improve their health and well-being.

REDUCING ENVIRONMENTAL IMPACT BY 1/2

By 2020 our goal is to halve the environmental footprint of the making and use of our products as we grow our business.

ENHANCING LIVELIHOODS FOR MILLIONS

By 2020 we will enhance the livelihoods of millions of people as we grow our business.

Our plan is distinctive in three ways. It spans our entire portfolio of brands and all countries in which we sell our products.

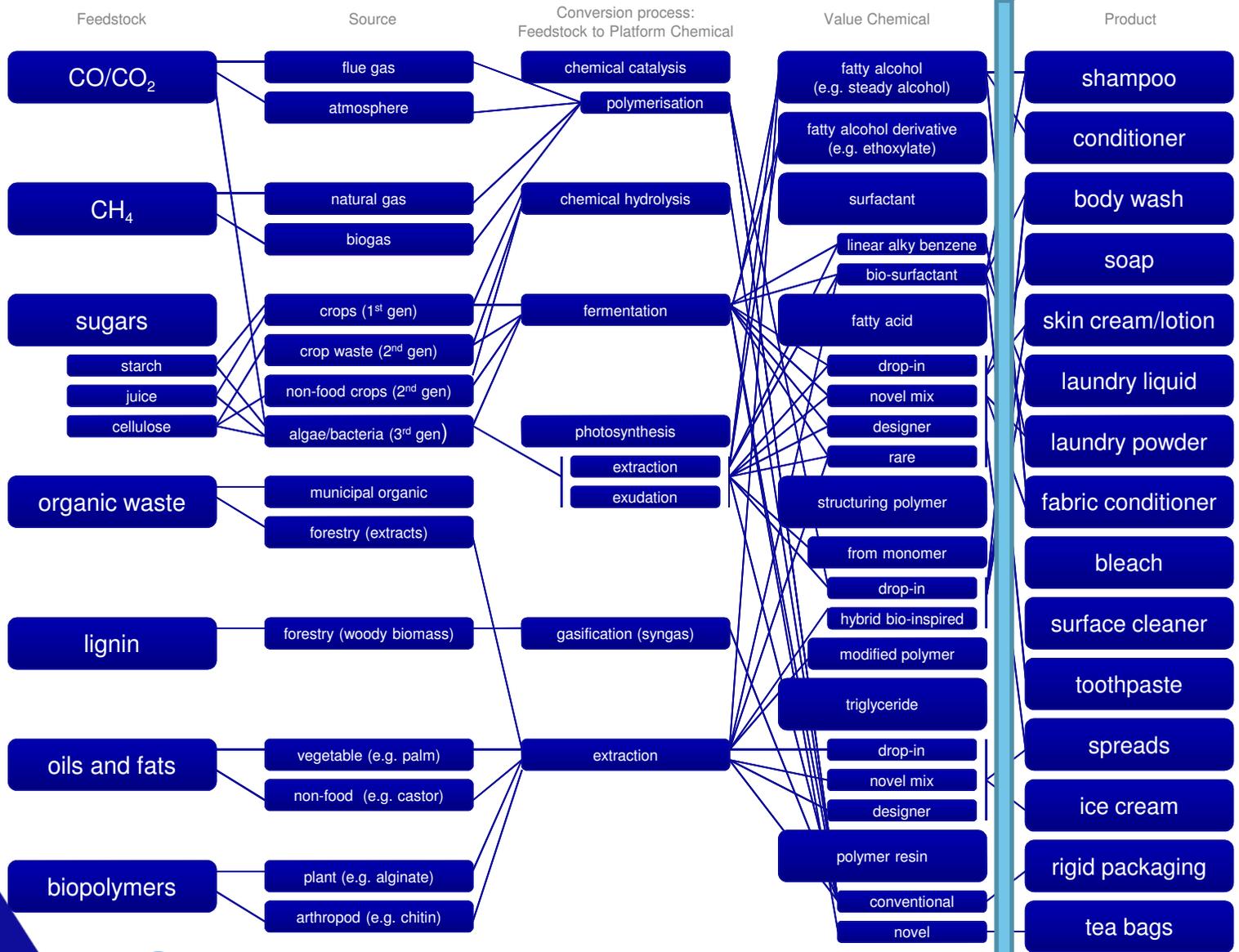
Secondly, it has a social and economic dimension – our products make a difference to health and well-being and our business supports the livelihoods of many people.

Finally, when it comes to the environment, we work across the whole value chain – from the sourcing of raw materials to our factories and the way consumers use our products.



Unilever's Greenhouse Gas Footprint

Everything is possible – choose the right material / functionality journey



Business Specific Briefs

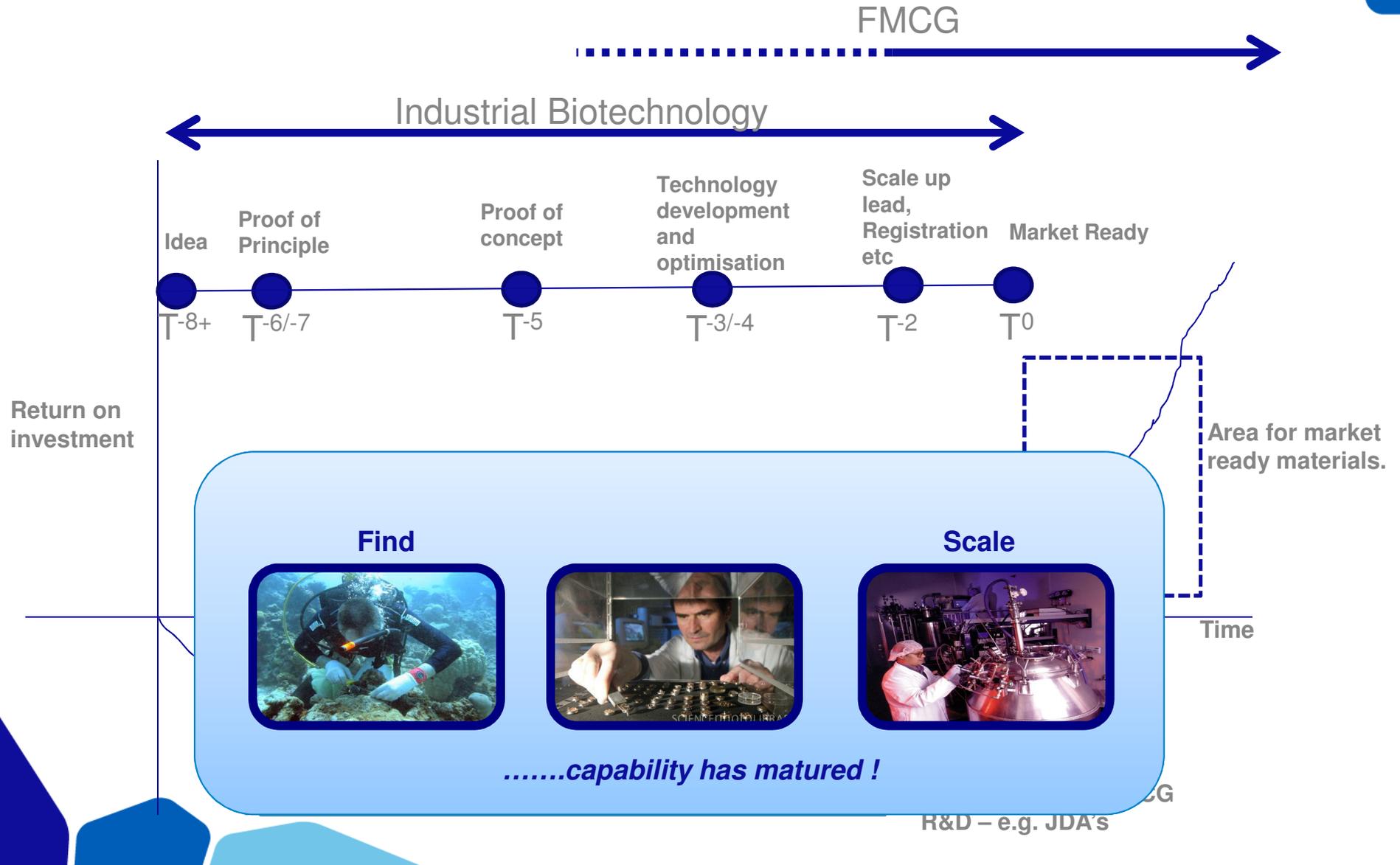
Define Functionality and Attribute

- Superior performance / unmet need

- Drop in replacement / sustainability advantage

Scope of new material opportunities

NEW TOOLS CAN HELP SPEED UP BUT THE INNOVATION VALUE CHAINS NEED TO BE ESTABLISHED TOO !



Example

DEVELOPING OUR PARTNERING: THE MICROBIOREFINERY



State of the art capability:

- To access new bio-derived ingredients with superior functionality
- To become a partner of choice with emerging key players of the bioeconomy
- To support the commercialization of existing leads with key partners

3 years project funded by the
Regional Growth Fund
(£10 m total value)



MBR LABS NOW FULLY OPERATIONAL 330 M² AT THE UNIVERSITY OF LIVERPOOL

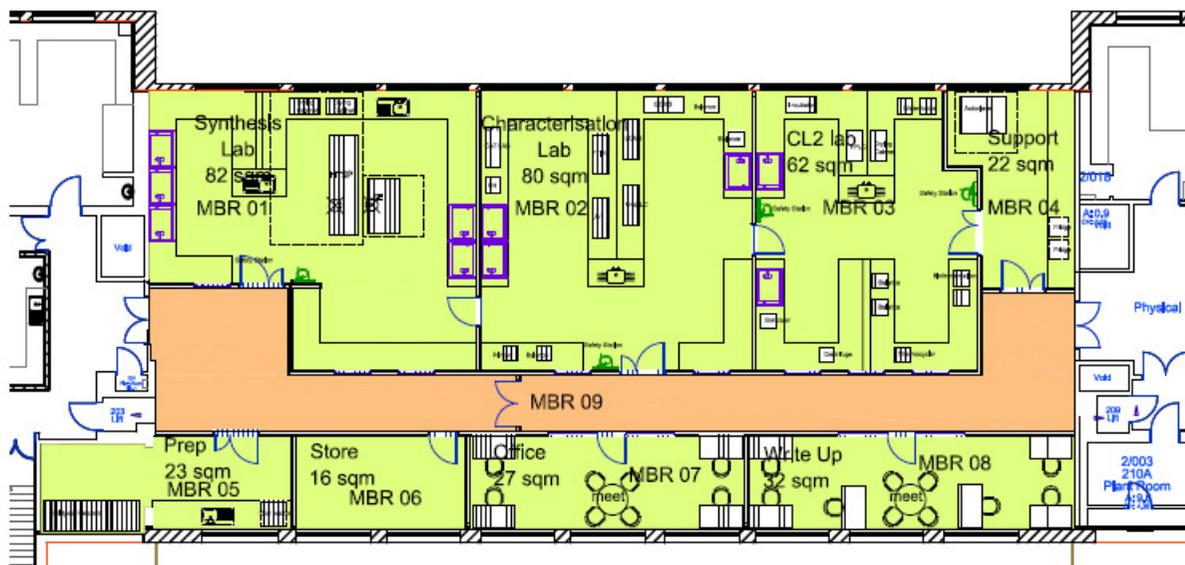


Key areas:

Chemitransformation lab
 Biomass break down
 High temp high pressure reactor
 Derivatisation
 Biocatalysis

Chemical & physical characterisation & separation:
 LC-MS
 FTIR
 Prep hplc
 Physical properties
 Rheology

Biotransformation / Class 2:
 Small scale biotransformation
 cell culture
 protein purification



LOW FAT, FULL TASTE... A HELLMANN'S CASE STUDY



The consumer dilemma...

Low fat variants are highly desirable, but most light mayonnaises don't deliver a taste or mouth sensation anywhere near as good as the full fat variants

The technical challenge...

- Full fat mayonnaise contains around 75% oil which is crucial to the mayonnaise's structure. It gives the product its creamy texture thanks to the densely packed network of oil droplets which are emulsified by egg yolk proteins.
- A light variant has insufficient oil droplets so typically extra starches and gums are used to enable the emulsion to set, but do so at the expense of the texture and mouth sensation.

The solution: Citrus fibre – waste material from the juice industry

Citrus fibre works by ensuring that the fewer oil droplets in light mayonnaise remain evenly distributed throughout the structure. This results in a mouth sensation close to that of full fat mayonnaise.



MARMITE...LOVE IT OR HATE IT, ITS BASED ON A WASTE PRODUCT



The origin of Marmite

In 1902 the Marmite Food Extract Company was formed in Burton upon Trent, Staffordshire. The by-product yeast needed for the paste was supplied by neighbouring Bass Brewery

Where does the yeast come from?

- During the beer making process, the brewers yeast which turn sugars into alcohol multiply rapidly
- Once the brewing process is complete, some of the yeast is retained for the next brewing cycle, but most of it is no longer required

How is “yeast extract” made?

Salt is added to the yeast suspension which triggers autolysis in which the yeast self-destructs.

The yeast cells are then heated to complete their breakdown, and the cell wall debris filtered out. Finally, to create Marmite, a special blend of vegetable extracts and herbs is added.

