‘Industrial Biotechnology – opportunities in fast moving consumer goods sector’

Unilever Sustainable Living Plan

Industrial Biotechnology

BIO World Congress Industrial Biotechnology

Neil Parry
[R&D Programme Director]
Biotechnology Leader
We’ve Only One Planet, Not Three
Facing up to full LCA impact

<table>
<thead>
<tr>
<th>Component</th>
<th>Greenhouse Gases</th>
<th>Water Use</th>
<th>Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Raw Materials</strong></td>
<td>26%</td>
<td>Water used in sourcing raw materials</td>
<td>Primary packaging</td>
</tr>
<tr>
<td><strong>Manufacture</strong></td>
<td>3%</td>
<td>Water we add to the product</td>
<td>Secondary packaging</td>
</tr>
<tr>
<td><strong>Distribution/retail</strong></td>
<td>2%</td>
<td>Water used by consumers in water-scarce countries</td>
<td>Leftovers</td>
</tr>
<tr>
<td><strong>Consumer Use</strong></td>
<td>68%</td>
<td>49%</td>
<td></td>
</tr>
<tr>
<td><strong>Disposal</strong></td>
<td>1%</td>
<td></td>
<td>Materials recycled, reused or recovered</td>
</tr>
</tbody>
</table>

Footprint heavily focussed to what consumers do with our products.
TIME / PLACE FOR BIOECONOMY / BIOMATERIALS?

Building a Bio-based Economy for Europe in 2020

* Government & Regional

* Legislation

* Resources

Now maturing

- Capability has changed
- Industrial Biotechnology to be widely realised in 21st century?

.....early clarity on the business case!

.....we are searching for “Superior Functionality, Sustainably Sourced”
Everything is possible – choose the right material / functionality journey

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!

Return on investment

Area needed to support / develop Biorefineries / Biobased materials

Area for current FMCG R&D – e.g. JDA’s

Area for market ready materials.

Idea

Proof of Principle

Proof of concept

Technology development and optimisation

Scale up lead, Registration etc

Market Ready

T-8+ T-6/-7 T-5 T-3/-4 T-2 T0 T-8+

FMCG

Industrial Biotechnology

Find

Scale

……..capability has matured!
Building the value chain

- How can we connect / accelerate
- Managing expectations
- Resources / timeframes

Emerging Bioeconomy Partnerships

Partnerships defining opportunities

Emerging Biotech Companies

Dialogue / Influence

Access

Bridging the gap

- Strategic direction
- Technology access
- Skill gaps
- Leveraged funding

End User

Unilever
Unilever Sustainable Living Plan

For more info: www.unilever.com/sustainability/