

Europolitan

09/2015

The ESB Reutlingen Alumni Quarterly

ESB
REUTLINGEN ALUMNI



Schwerpunkt

Deciphering the Middle East

Jahresevent

Einladung zum Alumni-Wochenende am 14. November 2015 in Stuttgart

Alumni Entrepreneurs

Are bioplastics a way to enjoy plastics guilt-free?

Plastic products are omnipresent in our society and will remain indispensable in the future. Plastic touches every aspect of our daily life, so much so that in 2014 alone we consumed a total of 246 million tonnes¹. But it comes at a price – especially for the environment: 114 million tonnes end-up in landfill and a further 7.8 million tonnes pollute our oceans, every year².

Plastic making our lives easier, and polluting our planet at the same time: Do we need to change our lifestyles, or is there an alternative?

By Marc-Henry de Jong (IPBS 2002)

The situation

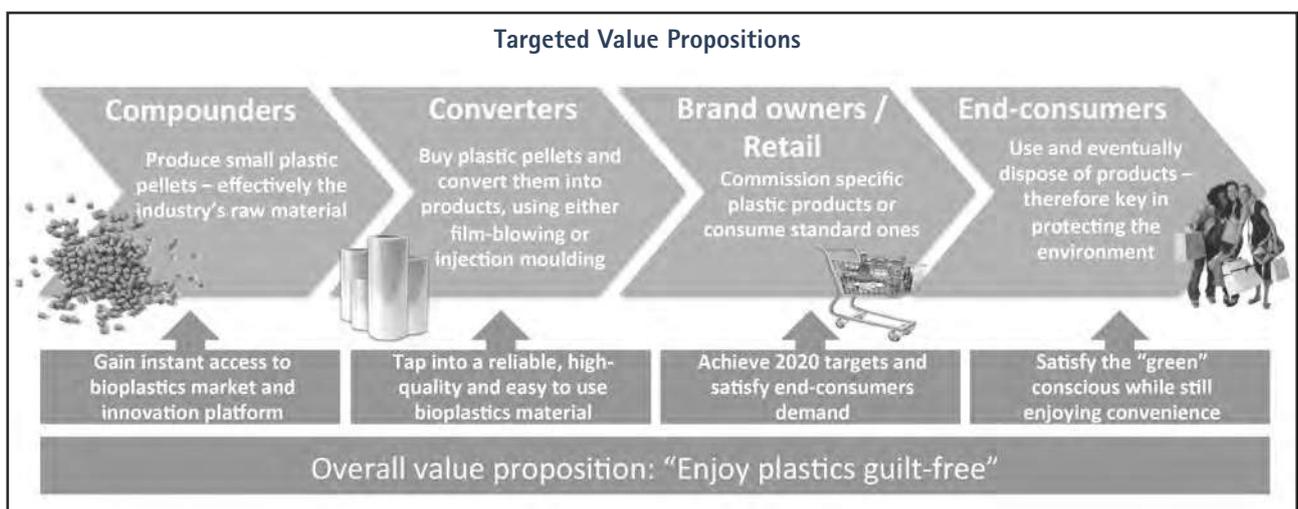
Nearly everything we do involves plastics – whether it helps keep our food fresh, protects us from the environment as fibres in our clothing, keeps us warm as part of our homes’ insulation, or is an integral part of our different modes of transport. Plastic products are everywhere, and – undoubtedly – make our lives easier and more comfortable. But there are several problems associated with petroleum-based plastic (or also referred to as “conventional plastic”).

Societal challenge

On a global scale, the problem is most visible in form of large garbage patches floating in the world’s

ocean, which consist mainly of small plastic particles suspended at or just below the surface. The Great Garbage Patch in the Pacific Ocean (also referred to as the “Pacific Trash Vortex”) is probably the largest one with size estimates ranging from 270,000 square miles (the size of Texas) to 5.8 million square miles (twice the size of the continental United States). Apart from the pollution reaching 46,000 plastic pieces found in every square mile of ocean, latest studies have shown that not only 100,000 marine animals get killed each year as a result of plastic bag pollution³.

Though even more shocking, these pollutants “can accumulate in fish and other organisms, proceeding-





Marc-Henry de Jong
(IPBS 2002)

Marc-Henry de Jong graduated from ESB's Spanish-German link in 2002 and is Chief Commercial Officer and co-founder of United Biopolymers, S.A. – a technology licensing company, which enables plastic compounders to produce next generation starch-based bioplastics.

Marc-Henry started his career in industry, working initially for BMW and BP, and then switched to consulting where he delivered – both as Manager at A.T. Kearney as well as freelancer – organisational transformations in a wide range of industries.

Thanks to his entrepreneurial drive, he owns a share in a German recruitment agency, a small UK-based consulting firm, and now dedicates himself to help mankind "enjoy plastics guilt-free" with his latest venture.

up the food chain on ingestion by other species. This can cause DNA damage in organisms that accumulate higher concentrations, which, in turn, can lead to cancer or physiological impairment. It can also cause cardiac problems, skeletal deformities and neurological deficiencies. Some of the compounds are classified as endocrine disrupters, meaning they affect hormone levels and systems in plants, animals and even people"⁴.

Bioplastics to date

With today's end-consumers attitude of "one-use and throw-away" in the Western world only changing slowly and millions of new consumers in the emerging markets wanting to enjoy the convenience of plastic, bioplastics can be the solution to overcome the above challenge.

Despite bioplastics – in one form or another – having been already available in the market for over a decade, it is still in its infancy, and there are a few key reasons why it hasn't taken off yet:

Reason/Description

- **Tarnished reputation**
Early technologies damaged bioplastics' reputation, for instance first biodegradable bags weren't strong enough to be used for carrying goods home.
- **No clear definition**
One should assume that bioplastics by definition is made of (or at least includes a large share of) raw materials from a renewable resource and – depending on the application – can be biodegradable, which means there is no long-term harm to the environment.

- **Lack of standard and supply**

The industry players are reluctant to try out new products on their expensive machines, and larger plastic converters switch production only if supply is guaranteed through multiple suppliers.

- **Higher price**

Biodegradable plastics are 2-10x more expensive than conventional plastic (depending on the chosen technology⁵) – though taking into account the hidden costs of conventional plastic, such as waste collection, waste disposal, and clean-up costs, biodegradable plastics become competitive.

- **Missing legislative framework / support**

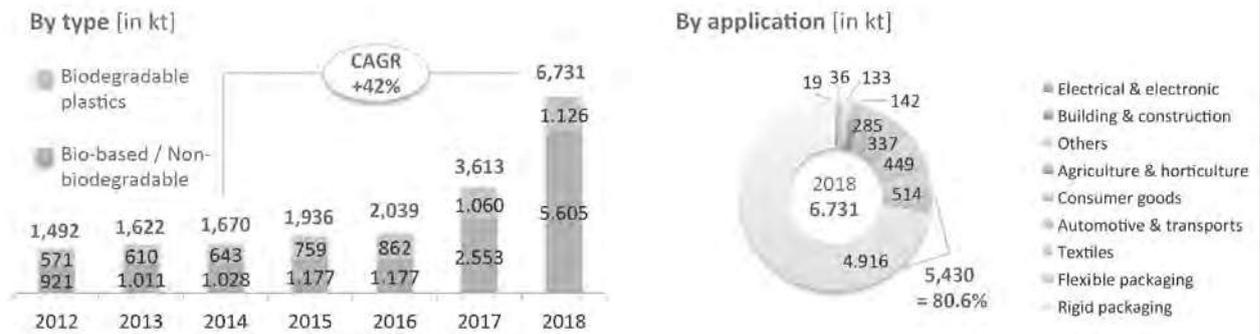
For a while legislators were pushing so-called "oxo-degradable" products as bioplastics, which in essence are conventional plastics with some additives that help degrade the plastic faster – though now deemed to be even more harmful for the environment.

Legislative intervention

The EU has identified the negative environmental impact of plastics, mainly packaging. Despite major recycling efforts over the last years, a staggering 114 million tonnes – or 46.3% – of all plastics still end-up in landfill⁶ and a further 7.8 million tonnes – or 3.2% – pollute our oceans⁷. The European Commission realised that change isn't happening fast enough, and therefore intervened with both the "2020 Climate and energy package" in 2009 as well as its "Directive 94/62/EC on Packaging and Packaging Waste" as recently as in 2014.

The EU wants to make the use of raw materials more efficient, encourage recycling and create a more circular economy – hence minimising any environmen-

Global Bioplastic Demand/Production



Source: European Bioplastics Association & University of Hannover, Institute for Bioplastics and Biocomposites (2014)

tal impact. And member states have started translating the EU's directives into national laws: France is planning to follow Italy in banning all non-biodegradable shopping bags; Germany is introducing the requirement of a minimum renewable content of 55%; and Portugal is penalising the use of conventional shopping bags with a surcharge tax.

Similar interventions are currently underway in other parts of the world: Major cities in the USA and Asia have already banned plastics within their city limits, and California is in the process of becoming the first US state with a state-wide ban on conventional plastic.

Market demand

With 80% of European consumers wanting to buy products that have a minimal impact on the environment⁸, this awakening of the consumers' "green conscious" will also drive demand for bioplastics – especially in the area of packaging, which accounts for 38.2% of the global polyethylene market and is expected to account for 80.6% of the global bioplastics market by 2018.⁹ And with these legislative interventions above "forcing" a shift to biodegradable plastics, the higher costs, typically 2-10x more expensive than conventional plastics won't be a barrier to entry¹⁰.

Using the global polyethylene market as a reference, we're talking about the world's most important plastic market, which in 2014 accounted for ~85.9 million tonnes and is expected to grow with a CAGR of 5.3% over the next couple of years (mainly driven by growing economies in the Far East) and is expected to reach 117.1 million tonnes in 2020 and 151.6 million tonnes in 2025¹¹. In contrast, the global bioplastics market is still in its infancy with only ~1.7 million tonnes in 2014; yet it is expected grow with a CAGR of 42% to ~6.7 million tonnes in 2018¹², effectively quadrupling over the next couple of years.

The main market segments for bioplastics is flexible and rigid packaging, which will account for ~80 % the market in 2018. That's why we're targeting food and beverage packaging, catering products, shopping and refuse bags. It is expected that the total number of companies involved with bioplastics in one form or another will rise from ~500 in 2012 to >5,000 in 2020.¹³

The solution

Starch-based technologies offer a feasible solution to create a cheap, high quality, and reliable supply chain for bioplastics as:

- starch is already a polymer.
- starch is cheaply available across the globe.
- production costs thanks to low¹⁴ energy inputs are low.
- it could replace 90% of today's polyethylene applications.

The good news is that thanks to bioplastics we can "enjoy plastics guilt-free". But it requires a joint effort from legislators as well as consumers to make this transition to a "greener" economy a reality.

1 Grand View Research (2014): *Global Plastics Product Outlook (Volume, Million Tons; Revenue, USD Million, 2012 - 2020)*

2 Project Aware (2012)

3 Environmental Protect Agency (EPA), Department for Environmental Food and Rural Affairs (DEFRA), Algalita Marine Research Foundation (2012)

4 Scientific American (2014)

5 Study conducted by Australian Academy of Science (2012)

6 Environmental Protect Agency (EPA) (2012)

7 Project Aware (2012)

8 EC eurobarometer survey (2013)

9 European Bioplastics, Institute for Bioplastics and Biocomposites, nova-institute (2014)

10 Study conducted by Australian Academy of Science (2012)

11 Grand View Research, Inc. (2014): *Global Plastics Product Outlook (Volume, Million Tons; Revenue, USD Million, 2012 - 2020)*

12 IfBB Hannover - The Institute for Bioplastics and Biocomposites (2014)

13 ebd.

14 Study conducted by Australian Academy of Science (2012)

The story behind the story: An interview with the entrepreneur who wants to help us "enjoy plastics guilt-free"

Katja Breitinger (MBA 2006) conducted the interview

Europolitan: Marc-Henry, how did you get involved with bioplastics?

Marc-Henry: I'd never thought that I would get excited about plastics. And thinking back, it all started innocently with a "chance encounter", while on holidays in 2009, where I met a Dutch/German couple while registering for the New Year's Eve gala dinner. In 2013, the Dutch guy asked me for some strategic advice on how to turn around his bioplastics business. Unfortunately, it was in such a bad financial state that despite all the best efforts it went under. Though there is always a silver lining: It gave me an opportunity to acquire the company's technology and other assets, such as machines and materials.

That sounds like a costly move. How did you go about financing it?

Yes, I couldn't have done it without investors. Though finding them was a very tedious process – not helped by the fact that I had never done anything like this before. I started with the typical things: Researching the market, creating a business case, and preparing an investment deck. My consulting background did help, of course. But it didn't prepare me for the challenge of finding investors. I spoke to VCs, family offices and business angels. Turns out, the challenge is finding someone, who firstly is interested in your sector, secondly has funds available, and thirdly believes in your business idea, business plan, and – most importantly – you and your team. It was nerve wrecking. And after six months and 40+ pitches later, on the day I was about to throw in the towel, a classmate's father from ICADE introduced me to my now Portuguese shareholders. These self-made businessmen not only got the business but also have proven invaluable thanks to their hands-on approach.

What other challenges did you face?

Setting-up a new company throws a lot of challenges at you, and my patience has been tested more than

once. Everything takes longer than you expect – whether it is installing machines, getting products ready for market, convincing prospects to try out new products – especially in a conservative industry. And obviously cash flow is an entrepreneur's main worry. But then you do learn also about EU funding, which can be a great alternative to bank loans – if you can get it.

What makes your venture stand out?

The answer is easy: Our product! With our patented BIOPAR® Technology one can produce second generation bioplastics, meaning our bioplastics compared to existing ones has a higher renewable content, better functional properties, and is cheaper to produce.

Do you have any recommendations for others considering the switch from corporate life to entrepreneurship?

First of all, do it. I know leaving the comfort of a corporate job with all its trimmings like regular salaries, bonuses, business class travel, and so on, sounds daunting. But the freedom you gain from working for yourself is immense. Though joking aside, you need to make sure that you've some savings to get you through the initial period. And when you think of how long that initial period might be, double or treble it.

Anything that other alumni could help with?

Glad you're asking this. I am actually looking for alumni working either in retail or product management who are interested in exploring bio-based and/or biodegradable plastic packaging. Just hit me up on LinkedIn.

Thanks and good luck with your venture.

Die ESB Business School dankt ihren Partnern, die sie durch eine Mitgliedschaft im Verein zur Förderung der internationalen Managementausbildung (V.I.M.A.) e.V. unterstützen.

AKKA MBtech Management Consulting GmbH

ALDI GmbH & Co. KG MURR

All for One Steeb AG

Bain & Company Germany, Inc.

BASF SE

Bayer

becos GmbH

Robert Bosch GmbH

Hugo Boss AG

The Boston Consulting Group GmbH

Capgemini Deutschland GmbH

Coca-Cola Erfrischungsgetränke AG

Comarch AG

Commerzbank AG

CRANE Co.

Danone GmbH

Dassault Systèmes Deutschland GmbH

DB Mobility Logistics AG

Deloitte & Touche GmbH Wirtschaftsprüfungsgesellschaft

Deutsche Post DHL Inhouse Consulting GmbH

Ernst & Young GmbH Wirtschaftsprüfungsgesellschaft

Henkel AG & Co. KGaA

Hilti Deutschland AG

Holtzbrinck Publishing Group

IBM Deutschland GmbH

Alfred Kärcher GmbH & Co. KG

Landesbank Baden-Württemberg (LBBW)

Lilly Deutschland GmbH

L'Oréal Deutschland GmbH

Mars GmbH

MLP Finanzdienstleistungen AG

OC&C Strategy Consultants GmbH

PA Consulting Group

Payback GmbH

Procter & Gamble Deutschland GmbH

PwC Strategy& GmbH

SAP SE

Schwarz Dienstleistung KG (Lidl Stiftung & Co. KG)

Shell Deutschland Oil GmbH

Solon Management Consulting GmbH & Co. KG

Somfy GmbH

Stern Stewart & Co. GmbH

Veyhl GmbH

Vodafone GmbH

Oliver Wyman Group GmbH

ZF Friedrichshafen AG