



BIO-LUTIONS

Renaturing the world of materials

Company Presentation

BIO-LUTIONS

Renaturing the world of materials

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We mechanically transform different agricultural residuals into various products, thereby BIO-LUTIONS is substituting conventional materials like plastic with fully biodegradable and affordable products without infringement on the food chain.

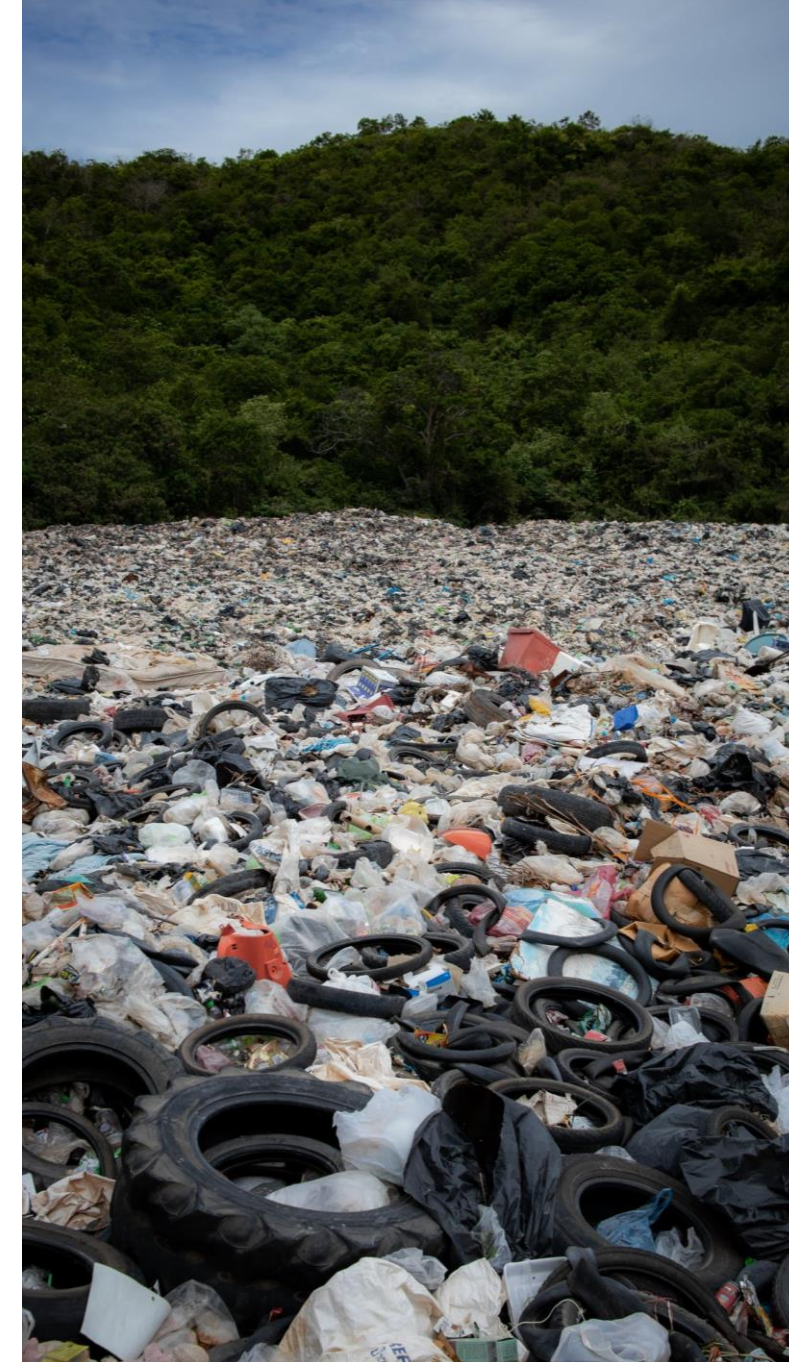
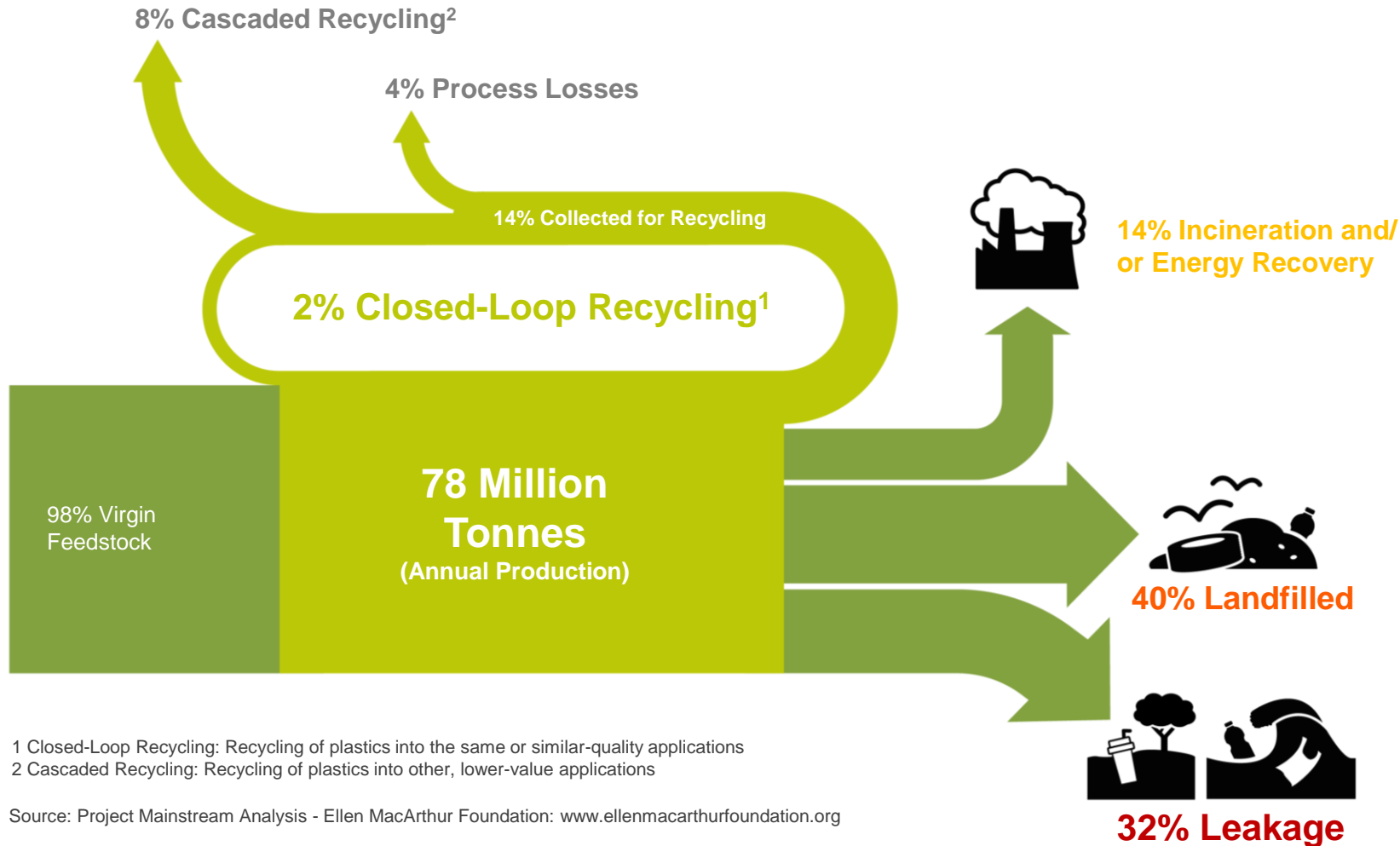
**Made from
tomato plants**



Tomatoes

PLASTIC IS EVERYWHERE

Today, plastic packaging material flows are largely linear. At this rate of waste leakage there will be more plastic than fish in the oceans by 2050.



THE TIME IS NOW!

Global focus has rapidly shifted to concerns about Plastic and regulatory institutions are responding with bans of single use plastic products.



Global Plastic Waste

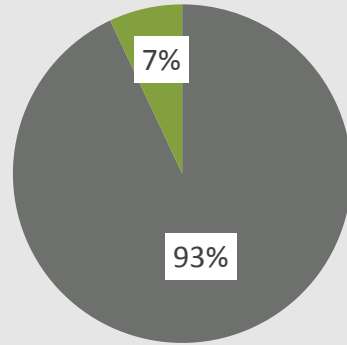


2.849t

of plastic are leaked into the environment **per hour**



Plastic Pollution



93% of Americans (> 6 years) test **BPA positive**.²



Global Bans of Single-Use Plastic



July 2021 - **EU** wide **ban** of **plastic** products such as: cutlery, plates, and food containers made from expanded polystyrene



Canada **ban** of **plastics** as early as 2021, such: as plastic bags, straws, cutlery, plates, and stir sticks.



Worldwide more than **20 countries** have **banned or disincentivized plastic**, either on a manufacturing or a retail level



BIO-LUTIONS

The Problem

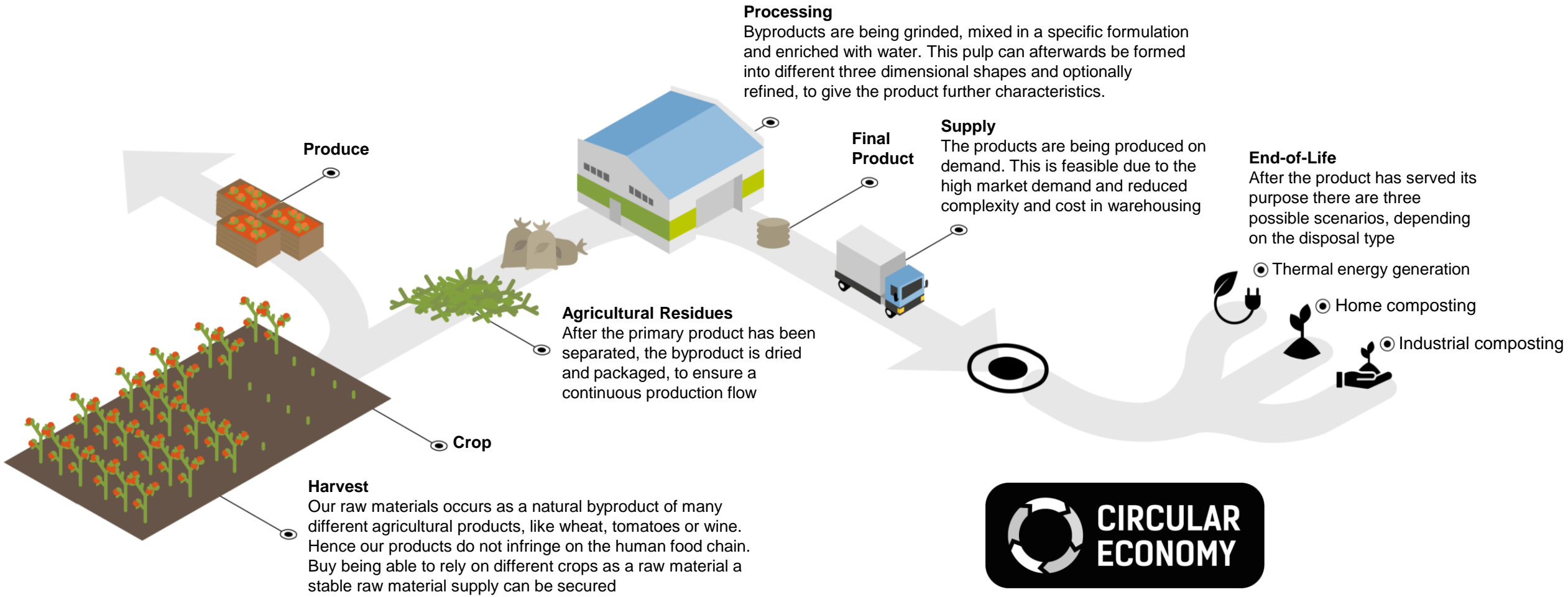
The Solution

Business Model

About Us

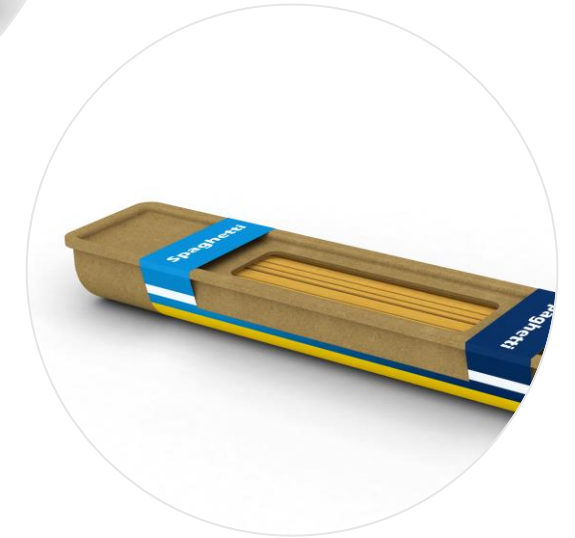
HOW OUR PROCESS WORKS

BIO-LUTIONS offers an competitively priced and at the same time sustainable material.



PRODUCT OVERVIEW

Our key focus today lies in packaging and disposable tableware. By being able to use our fibers in various production processes, we can create a wide range of products for different applications. This gives us opportunities for continuous R&D achievements.



OUR UNIQUE FEATURES SET US APART



Natural Raw Material

The usage of agricultural residues ensures flexibility and low raw material cost



Minimizing CO2

Decentralized production reduces emissions and cost



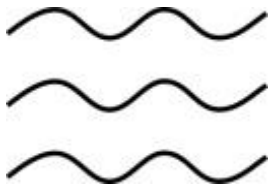
100% Plant Based

Our Products are able to replace the majority of paper- and plastic based products



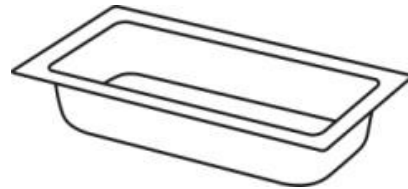
Mechanical Fiber Preparation

No chemicals are needed within the fiber preparation process



Low Water Usage

Only five liters of water per kg
No contamination of water with chemicals



Simple and Complex Forms

The products are aesthetic and can be moulded into nearly all three-dimensional forms



Affordable Ecology

An ecological, large scale product, which is pricewise competitive



Natural Circle

100% Biodegradable
100% Compostable
100% Recyclable

THE DIFFERENCE

The sustainable local value chain creation, enables a faster scaling of the business model into future markets. Agricultural residues and a demand for packaging are nearly ubiquitous.

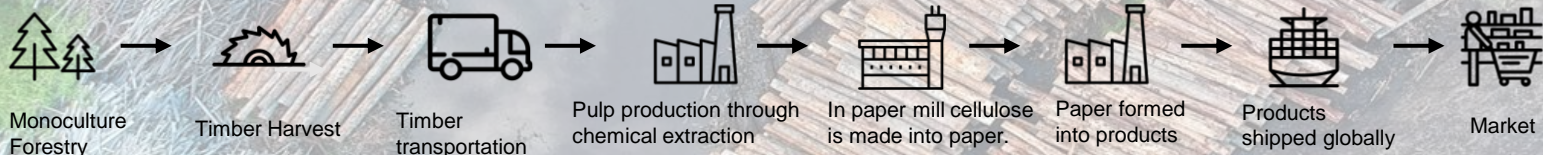
BL-Fibers



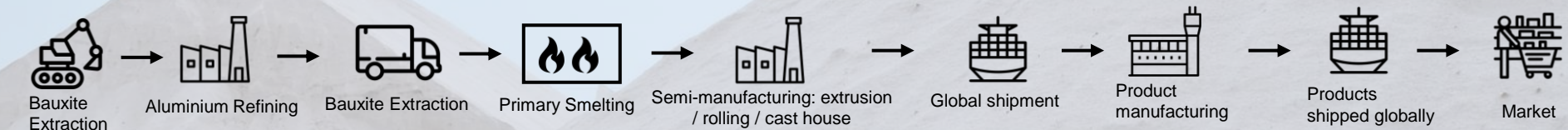
Fossil Based Plastic



Paper
















Aluminium



MATERIAL OF THE FUTURE: BL FIBERS

BIO-LUTIONS fibers offer and therefore our products offer unique competitive advantages

Properties		Plastic	Bioplastic	Paper	Sugarcane Cellulose	BL-Fibers		
	Simple and complex shapes	✓	✓	(✓)	✓	✓		
	Recyclable	(✓)	(✓)	✓	✓	✓		
	Natural raw materials		✓	✓	✓	✓		
	Compostable		(✓)	(✓)	✓	✓		
	No impairment of food production	✓			✓	✓		
	Regional supply chain				(✓)	✓		
	Regional value added					✓		
	Low water consumption					✓		
	No chemistry in fiber preparation					✓		
	Free of bleaching agents	✓	✓			✓	✓	True
	Reduction of air pollution					✓	(✓)	Partial or restricted possible
	Lower energy consumption					✓		Not true
	Cost-effective	✓		✓		✓		

✓ True
(✓) Partial or restricted possible
Not true

GLOBAL OVERVIEW

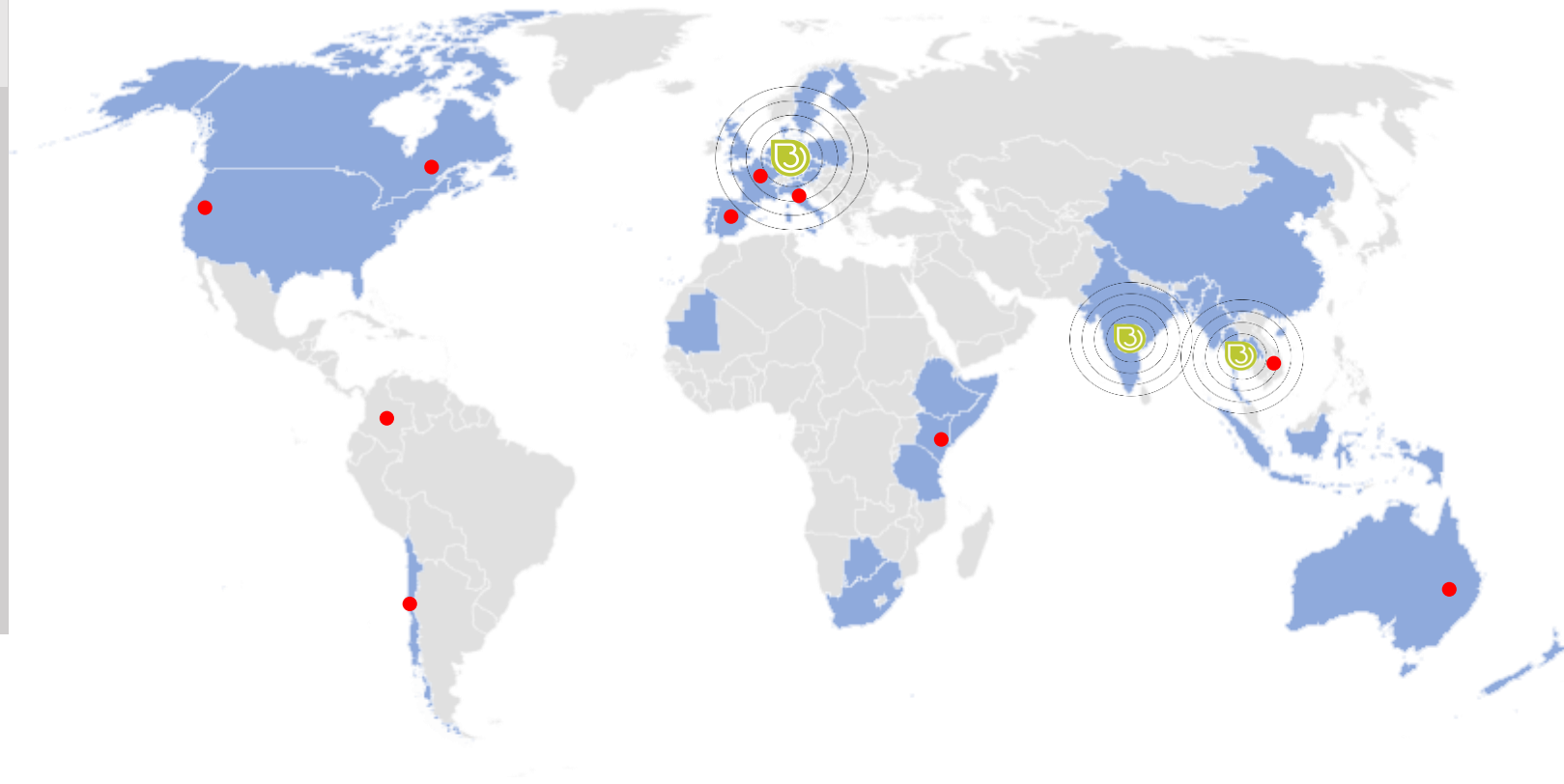
BIO-LUTIONS aims is to archive sustainable production through decentralisation of supply chain so that each factory is focused on its local market.

Countries Prohibiting or Disincentivizing Plastic Products

Local for Local Supply Chain

- ✓ decentralized value creation with local agricultural residues
- ✓ Small infrastructure needed for production set-up
- ✓ Adaptable level of automation
- ✓ High tech implementation through low tech → Low skilled workers and easy to use, low maintenance machinery

Best prerequisites for scaling



Types of Usable Raw Material

Temperate Climate Zones

- ✓ Tomato stems
- ✓ Red pepper (paprika) stems
- ✓ Wine pruning
- ✓ Hops twines
- ✓ Rapeseed straw
- ✓ Different grains straws
- ✓ Hemp
- ✓ Nettle fibres

Tropical Climate Zones

- ✓ Sugarcane
- ✓ Rice straw
- ✓ Banana leaves and stems
- ✓ Areca palm leaves
- ✓ Pineapple leaves
- ✓ Giants grasses
- ✓ Reed

● Requested Cooperations Today

BIO-LUTIONS

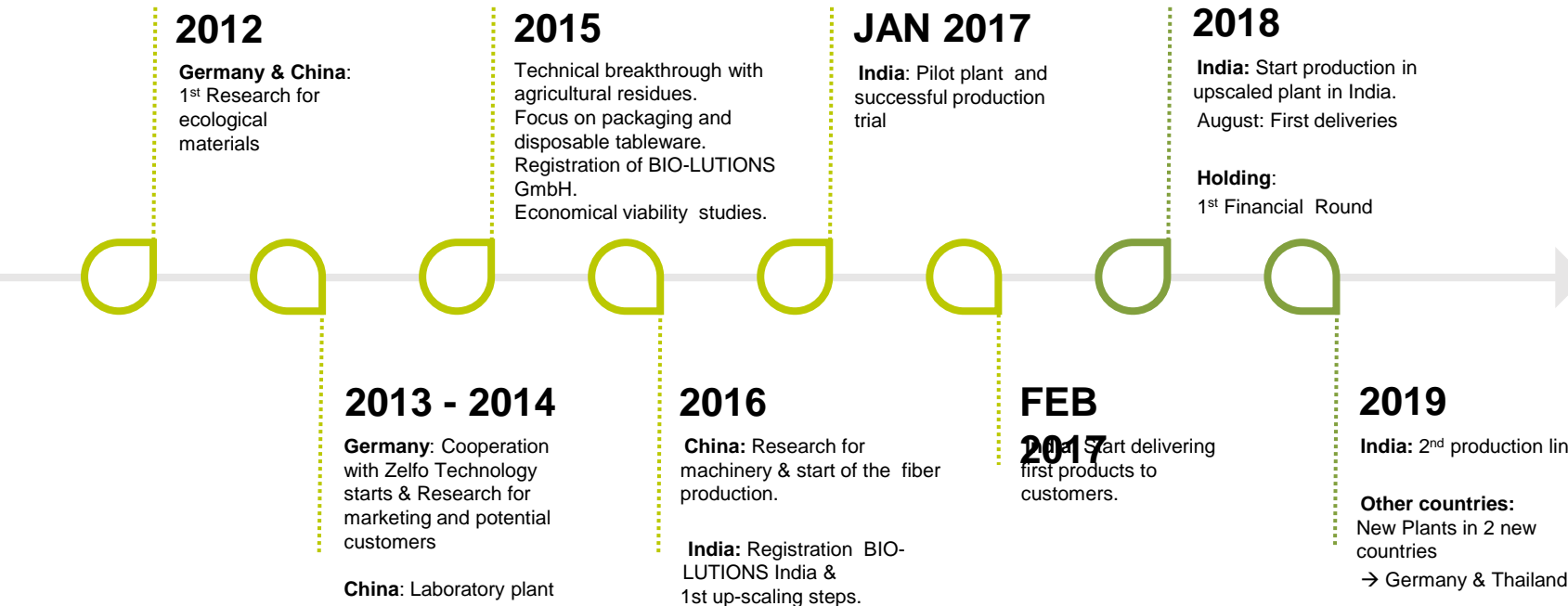
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The Solution

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About Us

HOW IT ALL STARTED



Stefan Dircks
Co-Founder

*1955
Business Economics, Germany 1980. Managing Director Terramar GmbH, Hamburg and affiliated companies in Germany and overseas.

Co-Founder and managing partner BIO-LUTIONS International AG

Finance, controlling, accounting, legals, IT, HR, business administration in Germany and overseas.

Eduardo Gordillo
Founder

*1966
Architect, Colombia 1990 Master Industrial Design, Germany 2000. Founder and managing partner of Upgrading GmbH Germany / China.

Founder and managing partner BIO-LUTIONS International AG

Initiator, strategical conception, R&D, design, marketing, sales, production, QC, purchasing, costing.

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ABOUT US

We are a research driven production company and have developed a revolutionary ecological material with the potential to disrupt traditional plastic dominated markets. The first markets we have entered are packaging and single use products



Operational Company - Germany

Fiber Technology Development Centre

Pulp Moulding Production Facility

Production Start Q3 2020



Investment and Management Holding

Corporate Development

Expansion Team

R&D Team and Research Partnerships (e.g. Universities)

PR, Communications and Brand Building

Key Account Management



Operational Company - India

First Production Site in Asia

Pulp Moulding Production Facility

First products delivered in 2017

Local Management Team



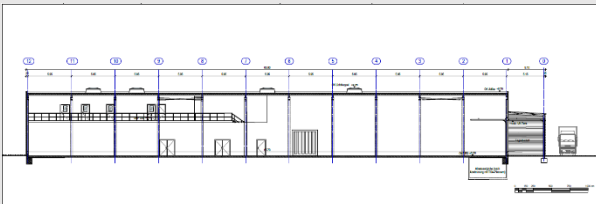
Operational Company - Thailand

Production for South-East-Asia

Pulp Moulding Production Facility

Production Start Q3 2020

Focus on take-away packaging



QUESTIONS?



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