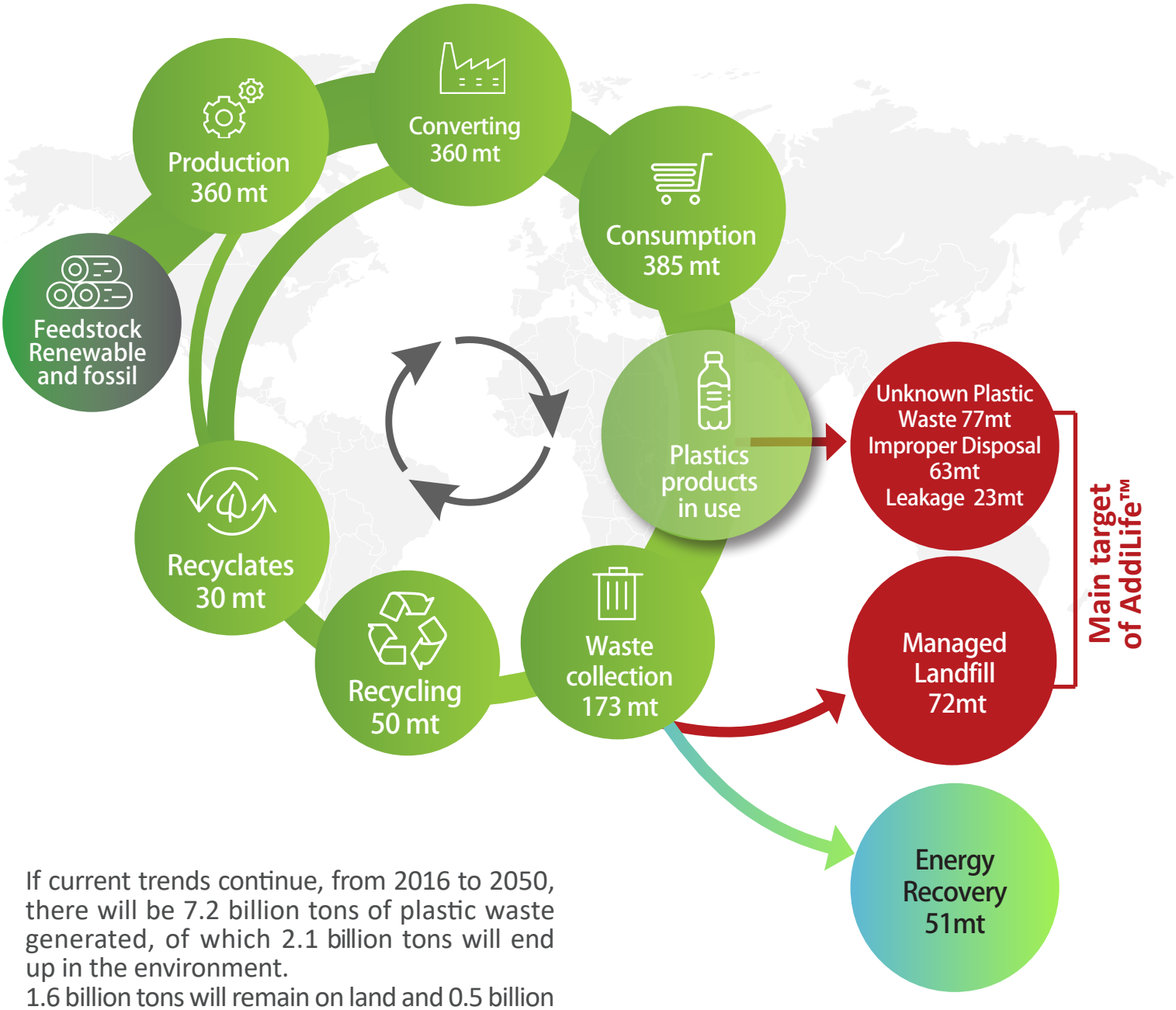
AddiLife™

Help Us Save Our Beautiful Planet

Eloquent Ideas SA

Preliminary Results
Of the "Global Plastic Flow"
Study 2018*



If current trends continue, from 2016 to 2050, there will be 7.2 billion tons of plastic waste generated, of which 2.1 billion tons will end up in the environment.
1.6 billion tons will remain on land and 0.5 billion tons will end up in the marine environment**

The main target of AddiLife™ is to eliminate the pollution caused by this plastic waste

*https://www.k-online.com/en/Home/Hot_Topics_at_K_2019/Global_Plastics_Flow_Study
**Wallis C (2020) Terrestrial fugitive plastic packaging: the blind spot in resolving plastic pollution. Green Materials 8(1): 3 – 5, https://doi.org/10.1680/jgrma.19.00044

About Us
(Eloquent Ideas SA)

Technology and development owner, Eloquent Ideas SA is a privately-owned Swiss company located in Geneva.
We are producing and marketing a polymer additive allowing biodegradability and compostability for conventional plastics, that has been developed over the last 10 years.
AddiLife™ is a registered brand name for our polymer additive range of products.

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Definition of Different types of Plastics

Fossil-based plastics are artificial organic polymers, obtained from natural gas or oil. There are several types of synthetic, petroleum-based plastics on the market today including polyethylene terephthalate (PET), high-density polyethylene (HDPE), polyvinyl chloride (PVC), low-density polyethylene (LDPE), polypropylene (PP) and polystyrene (PS).

Bio-based plastics are those with building blocks that are derived partly or wholly from plant-based feedstocks. These are often also known as bioplastics. Polylactic acid, polyhydroxyal kanoate (PHA), starches, cellulose, chitin and gelatin for example, belong to this group. Biobased plastics can be biodegradable – but they are not always.

Oxo-degradable plastics **are** degradable plastic in which degradation results in lower molecular weight fragments produced by the action of naturally occurring microorganisms such as bacteria, fungi and algae. oxo-degradable plastics are only degradable – not biodegradable or certified compostable –after the bio-additives have broken down traditional plastics remain. Even if the small pieces are microscopic, the plastic still exists and can easily enter the environment.

Compostable and Biodegradable plastics are capable of undergoing physical, biological decomposition, by micro-organisms in the presence of oxygen to carbon dioxide, water and mineral salts of any other elements present (mineralization) and new biomass or in the absence of oxygen to carbon dioxide, methane, mineral salts and new biomass. Compostable polymers can, but need not be produced from renewable raw materials. The biodegradability does not depend on the raw material, rather, it depends entirely on the chemical structure of the polymer.

Solution

AddiLife™ will convert plastic waste into biomass

End users

Manufacturers

Clean

- No toxic residue
- No heavy metals
- No micro-plastics

Behavior independent

Works even if waste is not disposed of correctly Even in the absence of the heat or UV and in the depth of the ocean.

Economical

Marginal cost increase as only a small amount of AddiLife™ is needed .

No investment needed

AddiLife™ works with traditional manufacturing techniques, making it easy to add to existing formulations.

Large compatibility

AddiLife™ can be used in different fabrication processes including injection molding sheet extrusion, blow molding thermoforming film-forming or fiber spinning without losing efficiency or longevity. The characteristics of traditional plastics are not significantly changed by the addition of AddiLife™.

Applications
and Solutions

Flexible Packaging & Films

Agricultural
and horticultural sectors

Applications and Solutions

Rigid packaging

Non-woven

AddiLife™
For Mulch Films

Bio-mulches produced with AddiLife™ are materials that have all the properties of polyethylene plastic films but are composed of materials from natural resources such as corn starch, degradable polymers, vegetable oils, and minerals. Over time and under the influence of physical factors such as temperature, humidity, acidity, radiation, UV and biological agents caused by the activity of microorganisms (bacteria, fungi, and algae) mulch films produced with AddiLife™ are disintegrated and converted into substances such as carbon dioxide, methane, water, and dry matter and acts as a fertilizer without leaving any harmful residues and microplastics.

Bio-plastic decomposition at the end of the season

Comparison of lettuce growth with AddiLife™ bioplastic and without plastic four months after planting.

Benefits of AddiLife™

- No need for collection and recycling.
- Environmentally friendly and does not leave any toxic effects.
- Plowing at the end of the season ensures that no plastic particles are left to harm the next crop and the environment.
- No problem for harvesting.
- Easy layering on the ground and strong resistance to pulling and tearing.
- Preservation of environmental resources.
- Prevention of weed growth.
- Increase in soil temperature for better and faster crop yields.
- Prevention of moisture evaporation and drought stress.
- Prevention of water and wind erosion.
- Protection of the irrigation strip against damage from birds and rodents.

Well-Known Customers

- Hyper Star (Carrefour S.A.)
- Nestlé
- Hayat (Canbo Chain stores)
- Ofogh Kourosh

Test Results

Standards	Tests																	
	Heavy metals					Average molecular weight (Area below diagram-carbonyl)	Abiotic Degradation (UV)	Migration							Service life or shelf life	Volatile	Moisture vapor transmission rate (MVTR)	Oxygen transmission rate (OTR)
								Overall migration	Heavy metal migration									
ISIRI 14417	ASTM D 3335					ASTM D 6474	ASTM D 5208	INSO 13737-7	ISIRI 14417						ASTM D 3826	ISIR 11228	ISIRI 2936	ISIRI 5937
Limit Range	Cr:50 mg/kg	Hg:0.5 mg/kg	Ni:25 mg/kg	Cd:0.5 mg/kg	Pb:50 mg/kg	>0.01	based on Average molecular weight, Tensile strength, measuring Gel Content	60 ppm	Cr:<1 ppm	Cu:<1 ppm	Zn:<1 ppm	Mn:<1 ppm	Cd:<0.1 ppm	Pb:<1 ppm	5 years	-	-	-
Film with **M3**	6.2 mg/kg	<0.1 mg/kg	5.7 mg/kg	<0.1 mg/kg	7.5 mg/kg	0.98	Passed	2.63 ppm	0.4 ppm	0.3 ppm	0.9 ppm	0.7 ppm	<0.05 ppm	0.6 ppm	1 and half year	0.27	21.53 gr/ m2.day	2650 ml/ m2.day
Film with **M5**	5.9 mg/kg	0.1 mg/kg	4.7 mg/kg	<0.05 mg/kg	7.8 mg/kg	0.8	Passed	2.59 ppm	0.5 ppm	0.3 ppm	0.8 ppm	0.7 ppm	0.01 ppm	0.5 ppm	1 and half year	0.62	19.7 gr/ m2.day	2802 ml/ m2.day

Ongoing test Plan
According to EN 13432

- Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions — Method by analysis of evolved carbon dioxide Part 2: Gravimetric measurement of carbon dioxide evolved in a laboratory-scale test (ISO 14855-2)

- Plastics — Determination of the degree of disintegration of plastic materials under defined composting conditions in a pilot-scale test (ISO 16929)

- Terrestrial Plant Test: Seedling Emergence and Seedling Growth Test (OECD 208)

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