



The Plastic Crisis And Sustainable Development in the Eyewear Industry and Global Trends

A Presentation by





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What is Sustainable Development?



UN Sustainable Development



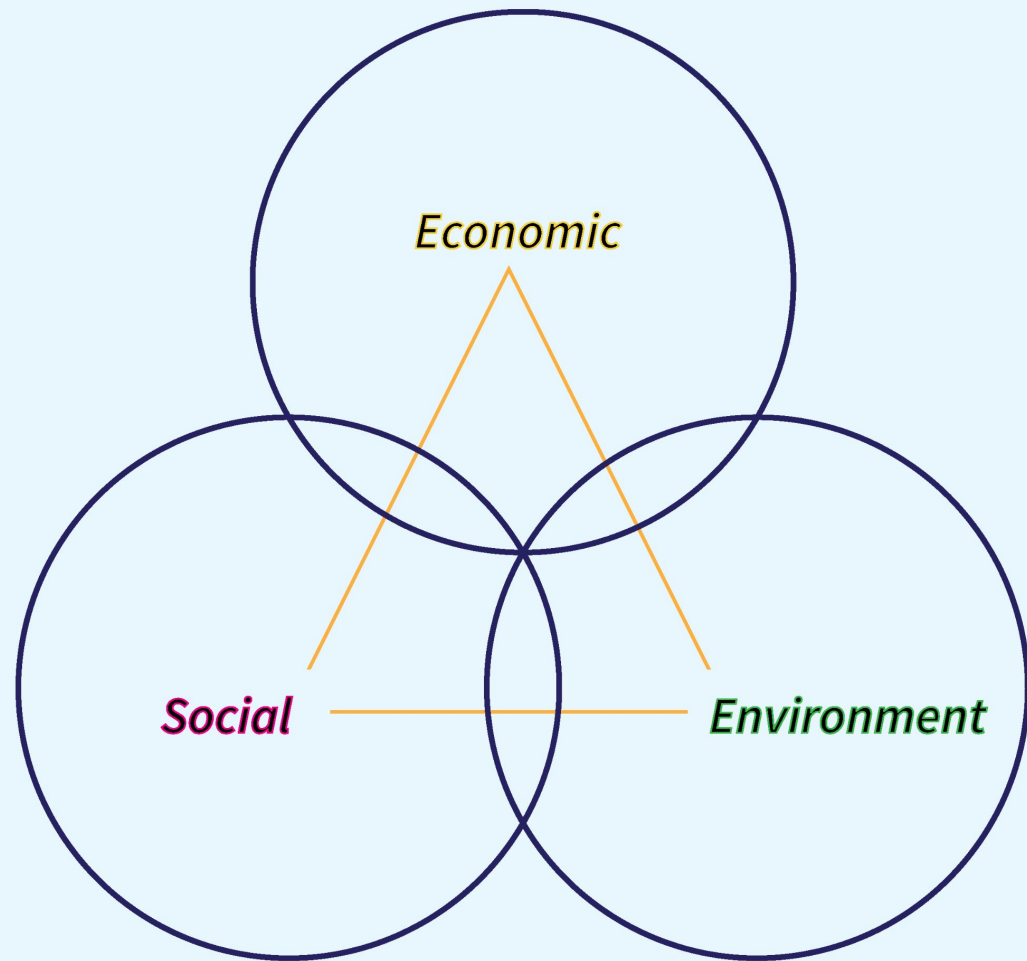
SUSTAINABLE DEVELOPMENT GOALS





Our Approach

- 01** The 3 pillars of sustainable development.
- 02** Properly pricing the environmental costs of economic growth
- 03** Finding better ways of doing things, both for the present, but especially for the future
- 04** Think of ways to change without sacrificing our current social needs/ concerns such as living a modern and convenient life.





COVID-19

01 **Global Health Emergency**

COVID-19 has shown how vulnerable and exposed world is to global threats.

02 **Deloitte Study: Wake Up Call**

COVID-19 has woken up consumers to climate change issues after 2020

03 **2021 Weather Disasters**

A Review from National Geographic states the dangers from climate change, from Heatwaves, to Megadroughts, to Wildfire, and floods

04 **Rise in Plastic Pollution**

ISWA study shows that single-use plastics consumption rose by 250-300%. Think: takeout, e-commerce, and physical protective gear



WORLD
ECONOMIC
FORUM

WORLD
ECONOMIC
FORUM

W
ECO
F

Davos Agenda: The Great Reset

ORLD
NOMIC
DRUM

WORLD
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A large pile of plastic waste, including bottles, containers, and debris, with the text "Current Plastic Crisis" overlaid in a white box. The background is a dense field of discarded plastic items, such as water bottles, food containers, and other unidentifiable plastic fragments, scattered across a dry, brownish ground. The text is centered and underlined, with a white border around it.

Current Plastic Crisis



Do Plastics Benefit Us?



Ultra-versatile, cheap, and durable

Needed in almost every sector

Raise our standard of living

A discarded plastic water bottle lies on a dark, muddy ground covered with twigs, leaves, and other debris. The bottle is white with a blue cap and is partially crushed. The background is a dense layer of natural debris, including sticks, leaves, and small plants, creating a textured and somewhat chaotic scene.

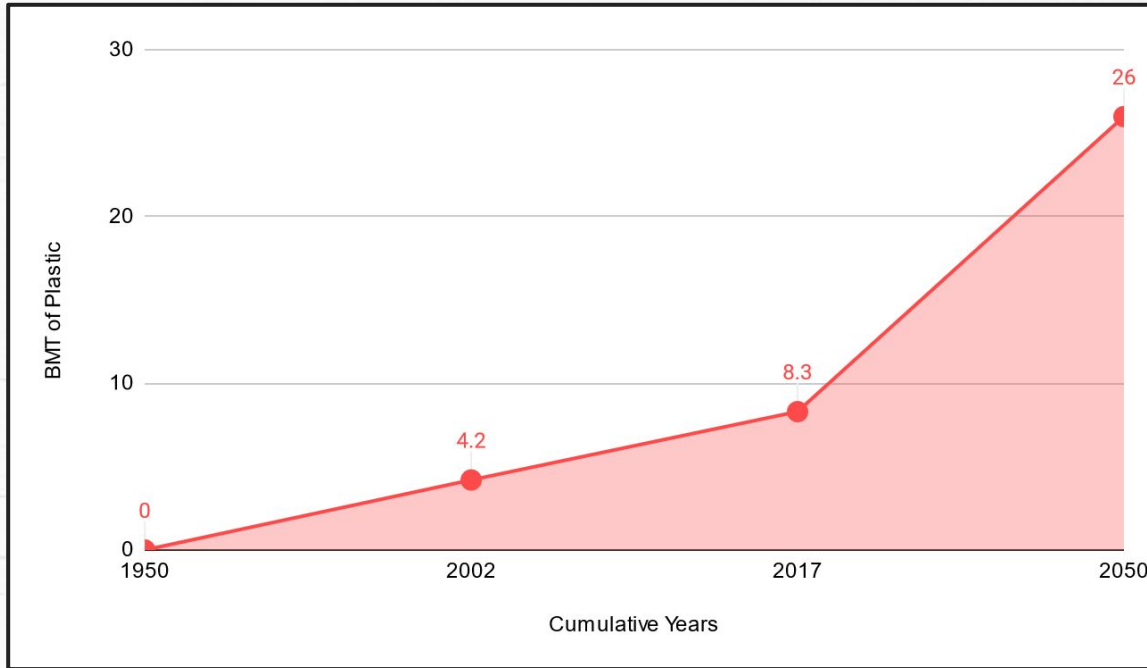
However!

Our current levels of plastic consumption is

Unsustainable!



Cumulative Plastic Production (World)



In billion metric tons (BMT)

1950-2002

Exponential Growth

2017

50% of plastics
produced in 15 years

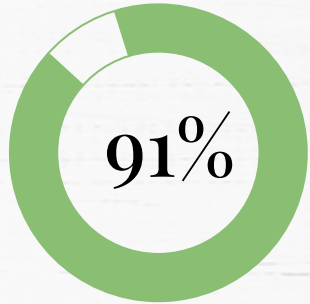
2050

Expected to triple to
around 26 BMT

Data sourced from: Geyer et al., 2017 (#5 under references)

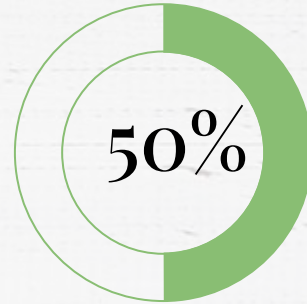


The Issues with Our Plastic Consumption



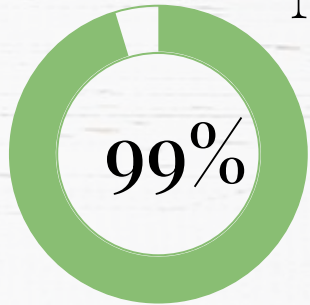
Recycling

91% of all plastics are NOT recycled at all



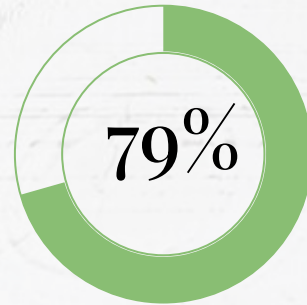
Single-Use

Up to 50% of all plastics are intended to be used once



Non-renewable Resources

99% of all plastics are derived from non-renewable resources (oil, gas, and coal)

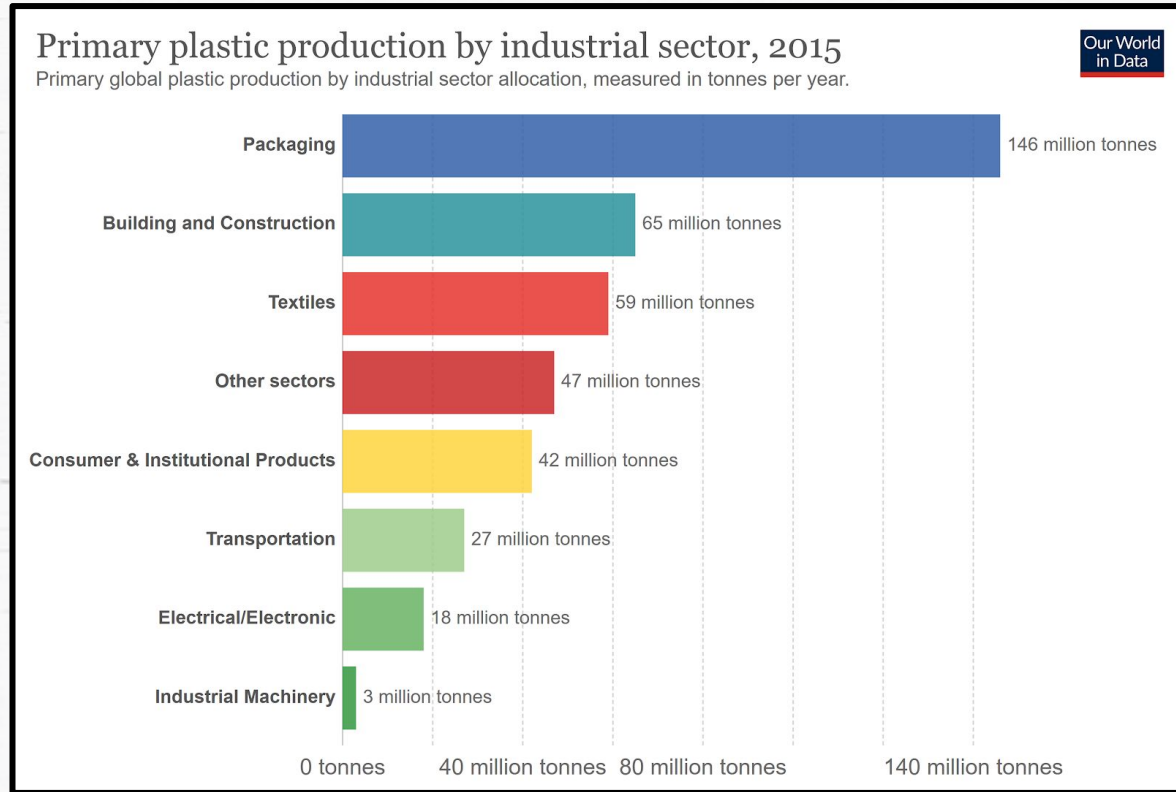


Discarded Plastics

79% of all plastics has ended up in landfills, dumps, or the environment

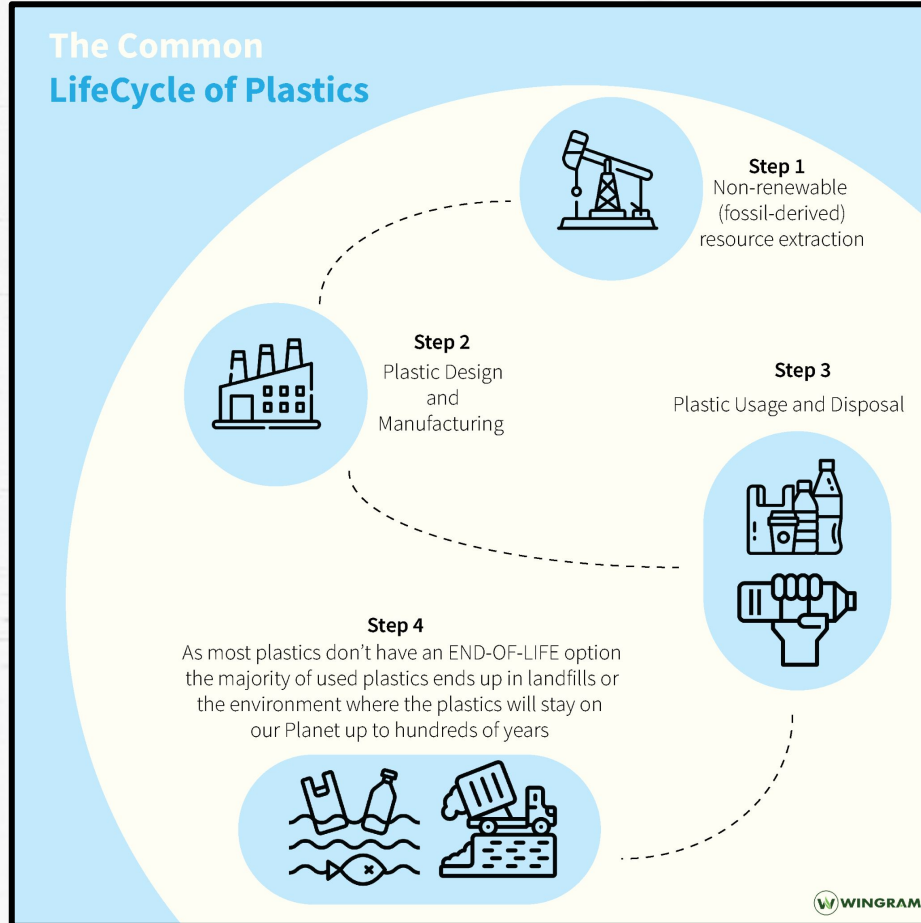


The Issues with Our Plastic Consumption





Most Plastics Are Designed to be Used and Discarded with NO Afterthought!





**What Can
We Do?**



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The General Trend Across Nations:

Is to play an active role in

- (1) increasing awareness of the problem
- (2) tackling the issue of unsustainable plastic usage with governmental action





The European Union

In June 2019, the EU issued the ***Single Use Plastics Directive*** that stipulates that all plastic products for which more sustainable alternatives are available be forbidden after 3 July 2021. This is a comprehensive EU-wide ban on single-use plastics

Items being banned:

- Single-use plastic cutlery (forks, knives, spoons and chopsticks)
- Single-use plastic plates
- Plastic straws
- Cotton bud sticks made of plastic
- Plastic balloon sticks
- Oxo-degradable plastics and food containers and expanded polystyrene cups





Canada

From a campaign promise in 2019, the Canadian government pledged to fight against the unsustainable plastic consumption.

In December 2021, Canada announced its plastic ban and is now available for public comment.

Items being banned:

- Checkout bags
- Plastic cutlery
- Food Service ware contain problematic plastics
- Ring Carriers
- Stir Sticks
- Straws





United Kingdom

On October 2020, the UK government banned single use plastic items.

In November 2021, the UK announced that it will introduce a plastic packaging tax from April 2022 at 200 pounds per tonne on plastic packaging below the minimum threshold of at least 30% recycled content.

Items being banned:

- Plastic straws
- Plastic stirrers
- Plastic stemmed cotton buds





Hong Kong

- On December 29 2021, Hong Kong ended its Public Engagement on Control of Single-Use Plastics.

Types of disposable plastic tableware	Phase One	Phase Two
EPS tableware	Prohibits the sale to local end-consumers (including catering premises)	Prohibits the provision by catering premises to customers for dine-in and takeaway services
	Prohibits the provision by catering premises to customers for dine-in and takeaway services	
Straws	Prohibits the provision by catering premises to customers for dine-in and takeaway services	
Stirrers		
Cutlery (e.g. forks, knives, spoons)		
Plates	Prohibits the provision by catering premises to customers for dine-in and takeaway services	
Cups		
Cup lids		
Food containers		
Food container covers		



- Phase One of the Regulation Scheme is targeted to be implemented in 2025.
- The Second Phase will launch 12-18 months after.

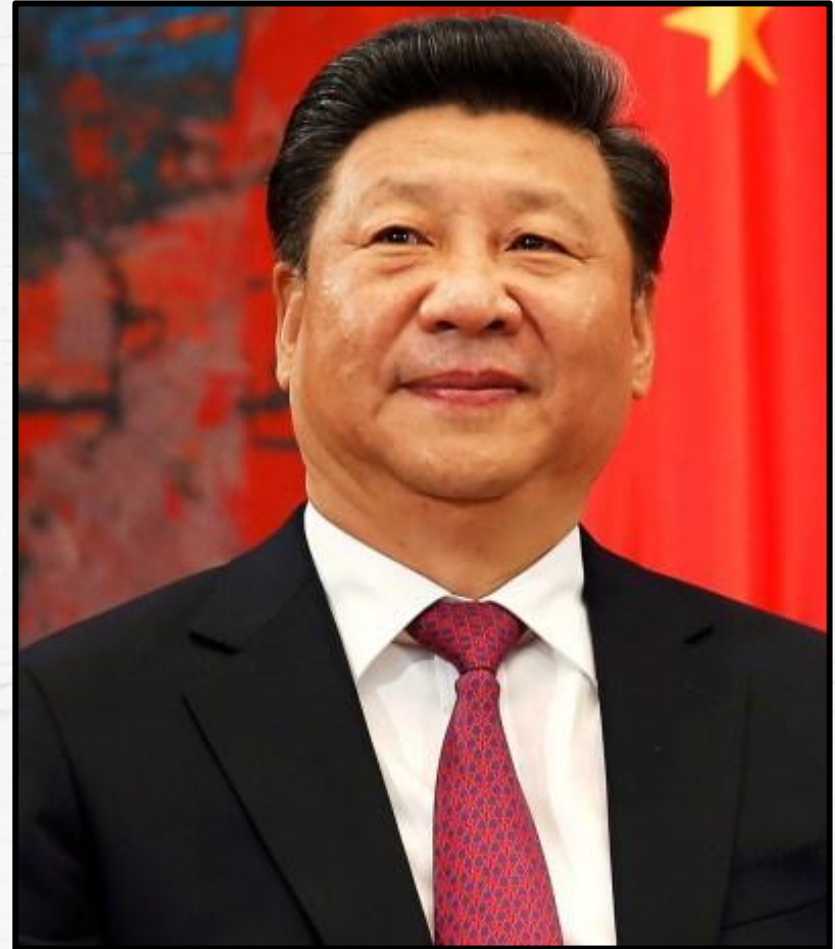


China

In January, 2020 China unveiled its **5 year plan** to reduce single-use plastics. Furthermore, China is forcing restaurants, ecommerce platforms, and delivery services to report their single-use plastic consumption. This shows China's strong commitment to reduce single-use plastics and protect the environment.

Details of Plan:

- Ban on non-degradable single-use plastic bags, eating utensils, and straws
- Ban on single-use plastics in hospitality industry nationwide by end of 2022
- Restaurant industry must reduce single-use plastic by 30% by 2022
- Ban on production and sale of plastics bags that are less than 0.025mm thick





Carbon Neutral Targets

Reduce Fossil Fuel Dependency and Reduce Emissions

<u>Country</u>	<u>Year</u>
EU	2050
Canada	2050
UK	2050
China	2060
Brazil	2050
Chile	2050
Bhutan	Achieved



The General Trend Seems Clear

The general trend among countries to reduce unsustainability and plastic consumption is clear. In fact, in a 2019 UN resolution,

170 nations

have pledged to “*significantly reduce*” the use of single-use plastics by 2030. It is greatly acknowledged that the move to a sustainable and circular economy is vital to reduce plastic pollution.





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Two Core Issues with Plastics Consumption



**WHAT are
Plastics Made of**



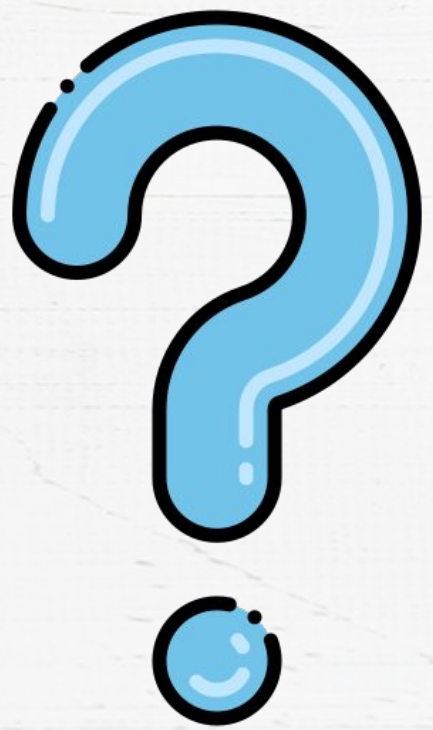
**Plastics
End-Of-Life**



Do we just
stop using
plastics?

Why don't we
just recycle?

Are there viable
alternatives?





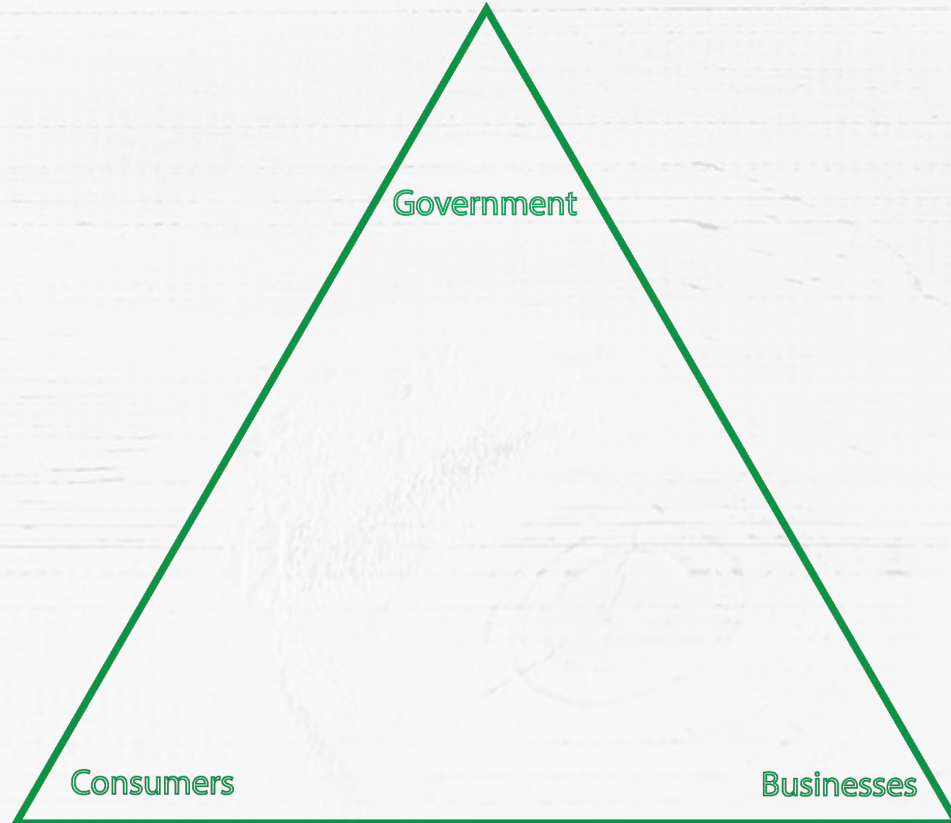
Relying on Recycling

- 01** **2/7 Recycled Plastics**
Only 2 out of 7 categories of plastics are viable candidates for recycling
- 02** **Downcycling**
Each time plastics are recycled, its mechanical properties are downgraded
- 03** **9% of Plastics are Recycled**
As Roland et al.'s research shows, only 9% of plastics are even recycled





Societal Agreement to Achieve Objective





A Multifaceted Approach

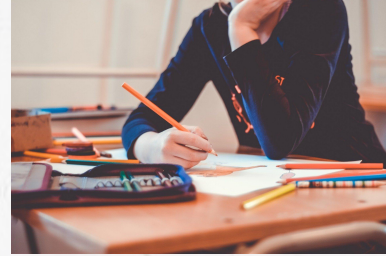
Complex problems require complex solutions



Reduce Consumption



Recycling



Increased Education



Alternatives



Example of Alternatives

01

Natural Cotton

A renewable and biodegradable material that can provide durable reusable bags to replace single-use plastic bags.

02

Paper

Alternative to single-use plastics that is renewable and biodegradable.

03

Other Biodegradable Plastics

E.g. biodegradable CA, Cardboard, or Bamboo





China's Fossil Fuel Withdrawal and Sustainable Development



Biodegradable Plastics Production

- Massive increases in biodegradable plastic production after 2020 single-use plastic bans
- (1) Result in lower prices and (2) stable/improve technology and performance

China “Dual Control” Implementation

- **2025:** national energy consumption per unit of GDP will drop by 13.5% compared with 2020
- **2030:** Reaching peak carbon emissions
- **2060:** Achieve carbon neutrality

GB/T 41010-2021 JJ Standard

- China's New Standard for biodegradable plastics
- Similar to International standards
- E.g. need >90% for material to be considered biodegradable



Education and Awareness

Biodegradable

Oxo-degradable

Biobased





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Eyewear Industry

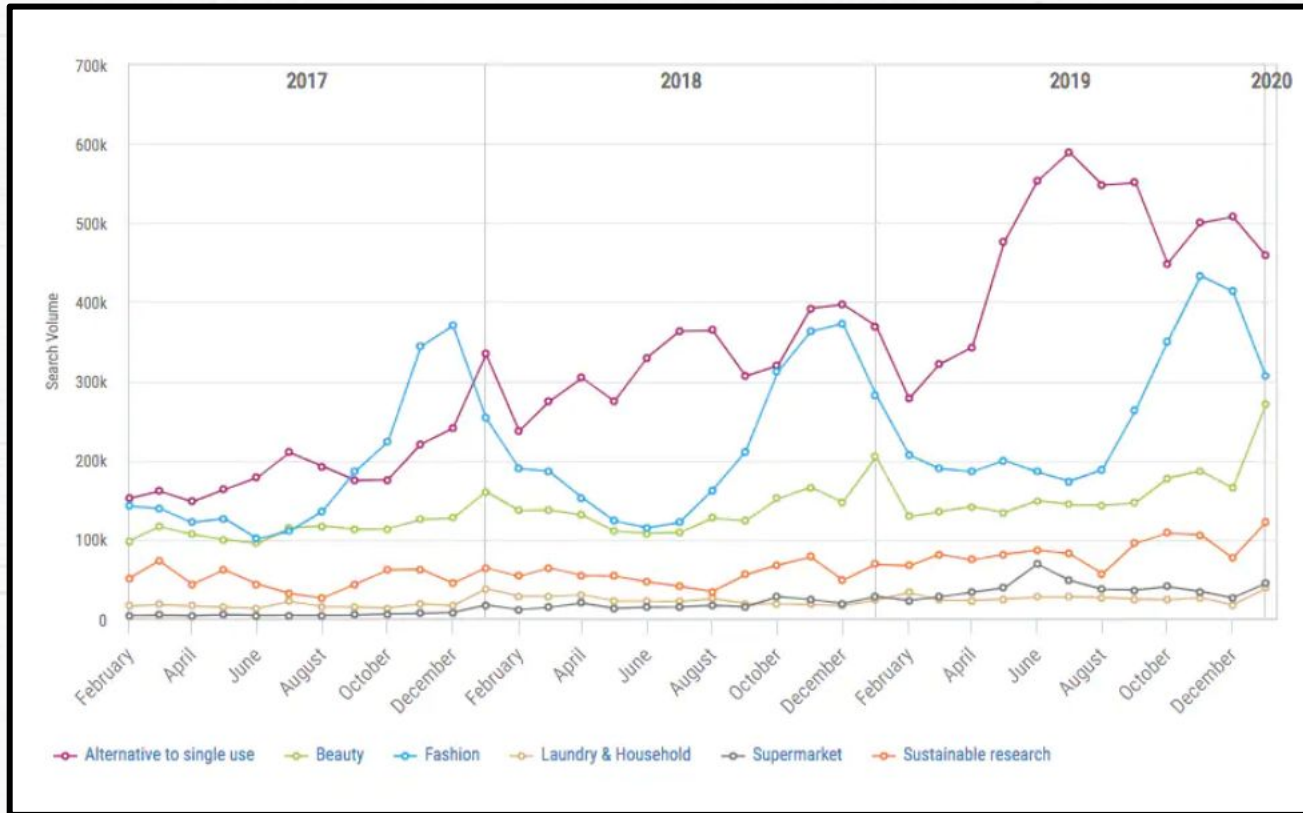


Chart: Telegraph UK (#2 in references)



HKOMA Stance On Sustainable Materials



Congratulatory Message
Mr Mohamed D. BUTT, MH
 Executive Director of Hong Kong Productivity Council

As the world's third largest exporter of spectacles and frames, Hong Kong is world-renowned for its pursuit of innovative designs, advanced manufacturing technologies and application of eco-friendly materials.



Congratulatory Message
Dr Sunny Chai
 Chairman, Federation of Hong Kong Industries

Hong Kong as one of the major exporters of spectacles and frames in the world, the local optical industry plays a crucial role in the context of design, innovation and technology as well as quality control in the international arena. With the aim to enhance products' competitiveness, Hong Kong manufacturers not only strive to develop their own brand products and original design, but also add value to the products by integrating new technology as well as eco-friendly and sustainable elements.



Foreword
Evan Tse
 President of HKOMA

Welcome to the HKOMA Annual Directory (Issue 2022)! I am very pleased to share my vision for the Hong Kong optical industry with you all here.

This year is the 40th anniversary of Hong Kong Optical Manufacturers Association (HKOMA), which marks the beginning of a new milestone. I am much honored to be elected as the new president, and hope that in the next two years of my term, together with the new executive committee, we could create another exciting chapter for HKOMA as well as the Hong Kong optical industry as a whole, since our theme of celebration for this anniversary is "Gathering elites for future".

Hong Kong eyewear products have been internationally recognized for their excellent quality since the 1990s. Hong Kong has always been one of the world's top export destinations for eyewear products. The export volume had once been ranked second in the world after Italy for more than 10 years. Despite the tremendous challenges due to COVID-19, Hong Kong's total exports of spectacles, lenses and frames remained high up to HK\$16 billion in the first 10 months of 2021, with a growth of 25.6% from the same period in 2020. However, when compared to the same period in 2019 before the pandemic, the export value has dropped by almost one-third.

The COVID-19 pandemic has devastated the global economy and caused unprecedented changes to the global business environment and consumption patterns. Although the COVID-19 vaccine rollout brought us hope, the spread of the variants added uncertainty to our lives. The globalized industrial landscape and supply chain were dismantled and re-assembled amid international political uncertainties. Hong Kong eyewear enterprises are export-oriented, thus facing even more severe and complex challenges. We need to explore ways to overcome this turmoil to make a better future for the eyewear manufacturing industry, as well as to identify a more suitable path for the industry's development.

Smart manufacturing and digital transformation are among the challenges for the global manufacturing industry. We must go beyond the traditional thinking and upgrade our products with innovative elements. In the past 10 years, some manufacturers in the industry have invented new products from OEM or ODM to OBM. They also devoted time and efforts to develop their own brand production and marketing, which have earned them a position in the market and gained reputation from customers.

In order to meet the growing needs of the industry, HKOMA is committed to provide all kinds of information and activities to enhance the industry competitiveness. Looking forward to the new year, we will put immense efforts in the following categories to foster the development of the industry:-

- **Strengthen Industry Exchanges**
To hold monthly online meeting for members and counterparts to exchange information both locally and internationally.
- **Encourage ECO Friendly Production**
Industrialists have a mission to slow down global warming, for example, by executing green manufacturing and reducing carbon emissions. HKOMA is discussing a study on recycling of metal waste as eyewear raw materials with Hong Kong Productivity Council.
- **Establish Supply Chain Networking**
To organize networking events in mainland that would create opportunities for business matching between eyewear manufacturers and suppliers.
- **Set-up Digital Application Platform**
As e-commerce has undergone rapid growth during the pandemic, HKOMA is exploring how to set up a digital application platform for future prospects in this sector.



**What Can
We Do?**



Eco-Friendly Solutions: Different Materials for Eyewear



Wood/Seaweed

Material that stems from unique sources



Biobased

Material made from renewable resources



Recycled/renewed

Material made from recycled or renewed content



Biodegradable

Material that can be converted back into CO₂, H₂O, and Biomass back into Earth



Hazardous Substance Free
E.g. Material that's free of DEP



Combination

E.g. Material that is biodegradable and biobased



BioAcetate S70

A sustainable material that is

Good for Earth
and
Good for Performance





BioAcetate S70

Competitive Advantages

01

62% Bio Based

62% 生物基

02

Biodegradable

$\geq 90\%$ within 180 days

可生物降解 180 天内 $\geq 90\%$



03

Harmful Plasticizers

Free (No DEP)

不含有害塑化劑(DEP)

04

Hardness Enhanced CA

(HECA) Frames

加硬眼镜架



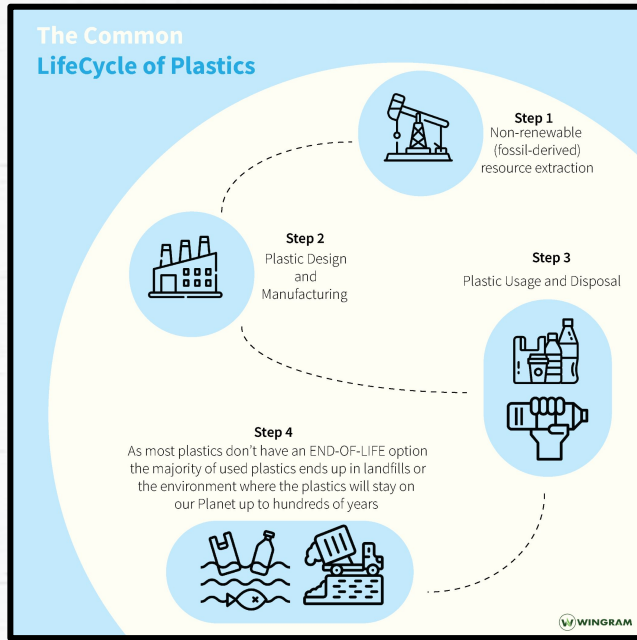
Two Core Issues with Plastics Consumption



**WHAT are
Plastics Made of**



**Plastics
End-Of-Life**



01 Biobased Raw Materials

Reduce dependency on non-renewable resources

02 Design and Production

Improve conventional CA performance

03 Product Used

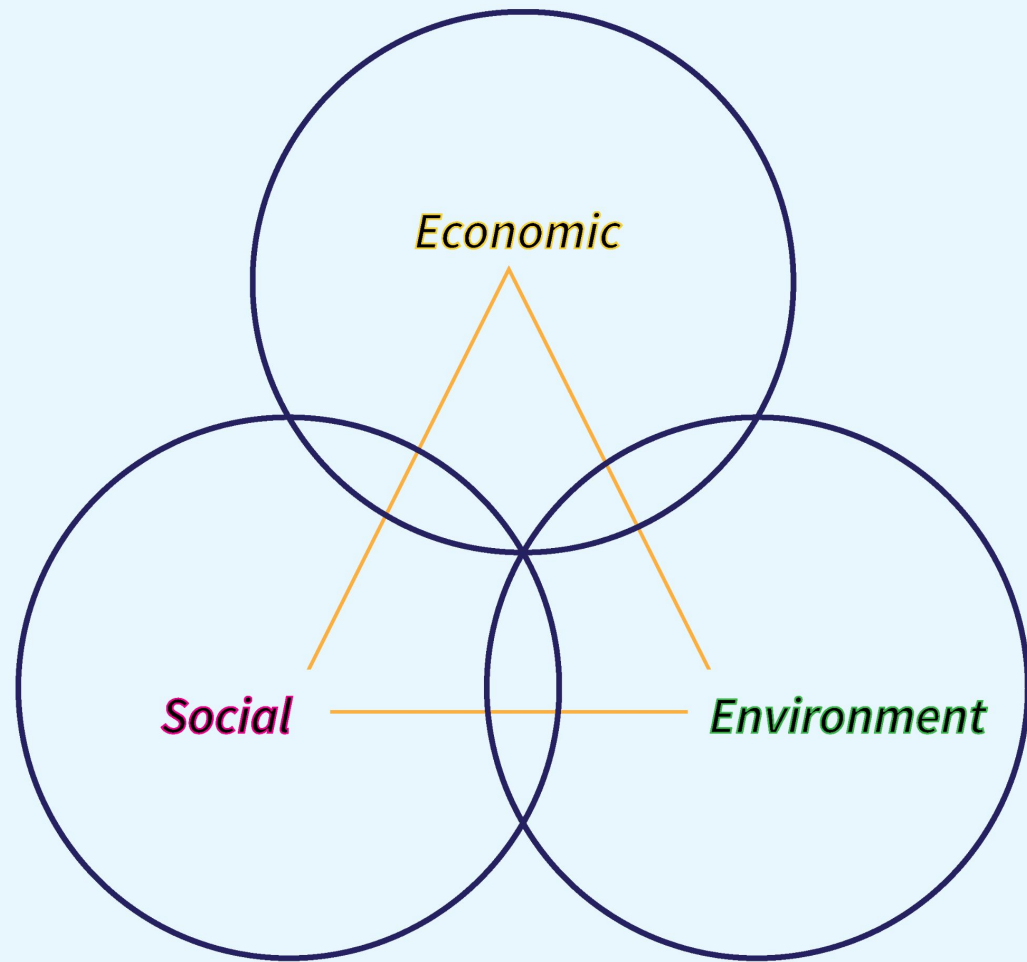
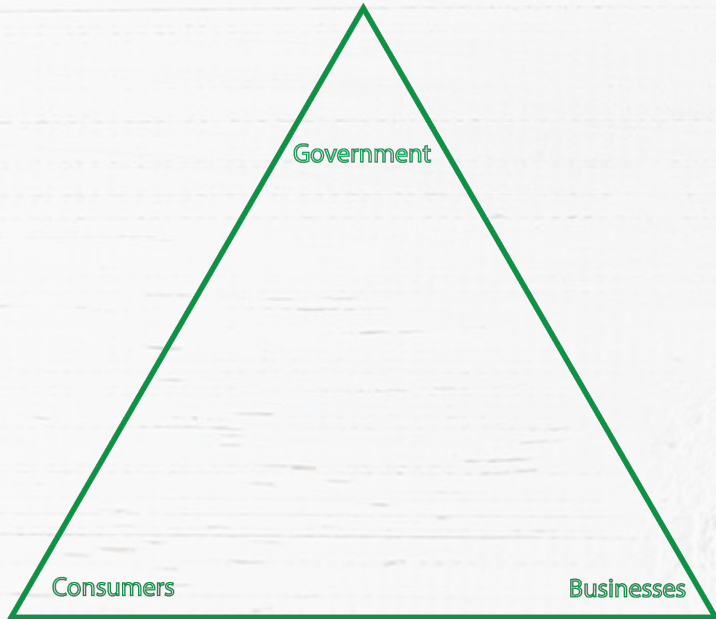
Create a product that is better for the planet and health when used by being harmful plasticizers free

04 End-of-Life Option

Undergo biodegradation

05 Offset Carbon Footprint

Protect Planet's resources and climate for future generation





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Thank You For Your Time

Let's Work Together to Protect the Earth
and its Climate!



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Website: Bioacetate.com