waste 2022
The industry's leading waste management conference

Waste 2022 – Coffs Harbour – May 2022

Trends in Compostable Bioplastics and FOGO Programs in Europe, Australia and the US

Markus Leufgens - May 2022

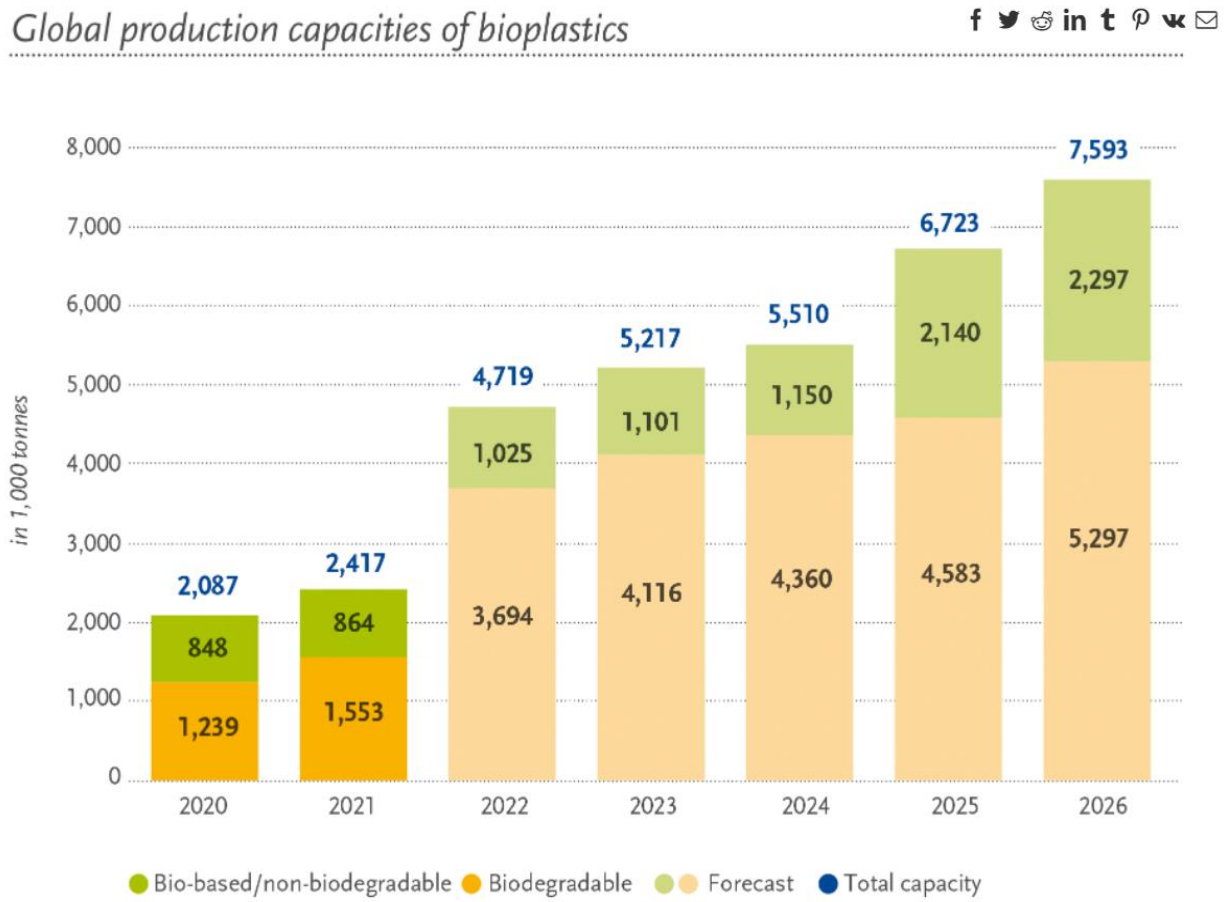
Summary:

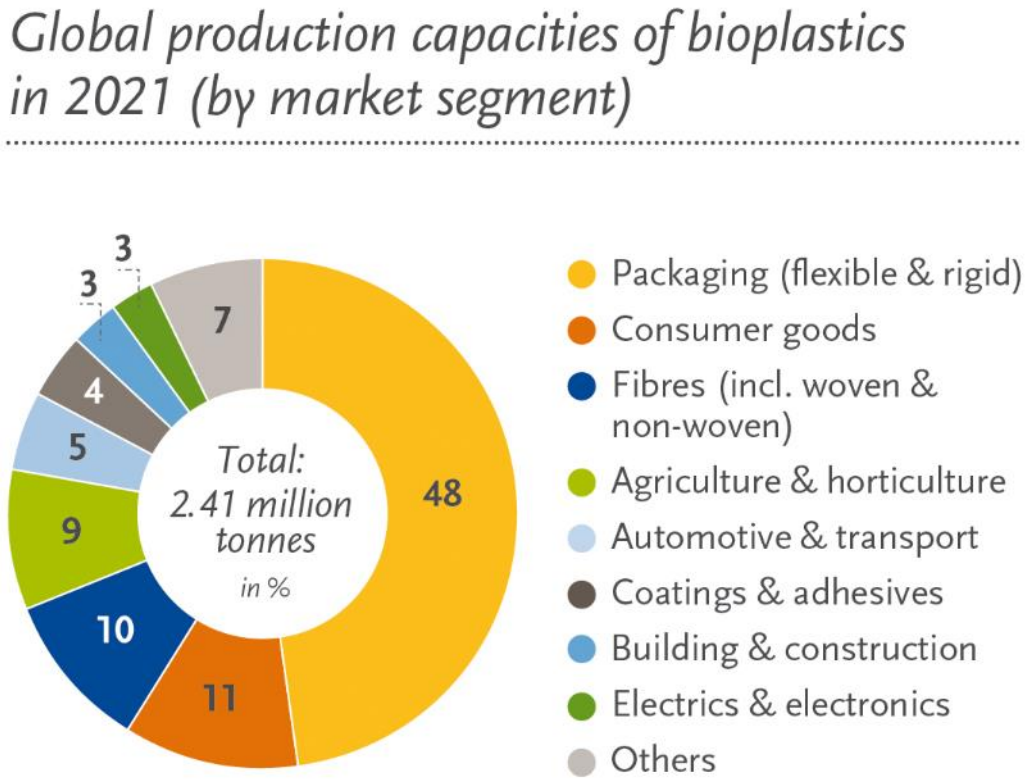
- Organics in landfill are a significant contribution to climate change.
- Compostable kitchen tidy bags and bin liners play an essential role in diversion of food organics from landfill.
- Decision on applications for compostable bioplastics should pass at least three basic criteria:
  - It cannot be economically recycled.
  - Associated with organic waste and end of life in compost.
  - Infrastructure to collect and get it there.
- Compostable food packaging will come, we need to get ready!
- Paradigm shift: WASTE ➔ RESOURCE

Cardia Bioplastics - we make Starch Based Compostable Bioplastics

Bioplastics are Biobased or Compostable or Both

Bioplastics

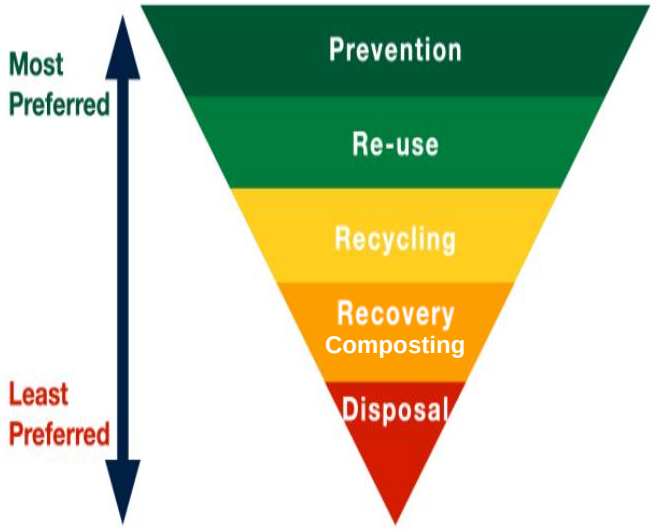




Source: European Bioplastics, nova-Institute (2021)
More information: **www.european-bioplastics.org/market** and **www.bio-based.eu/markets**

Ellen McArthur Foundation: Vision of Circular Economy for Plastics

1. ***Elimination of problematic or unnecessary plastic packaging*** through redesign, innovation, and new delivery models is a priority
2. Reuse models are applied where relevant, reducing the need for single-use packaging
3. All plastic packaging is 100% reusable, recyclable, or compostable
4. All ***plastic packaging is reused, recycled, or composted in practice***
5. The use of plastic is fully decoupled from the consumption of finite resources
6. All plastic packaging is ***free of hazardous chemicals***, and the health, safety, and rights of all people involved are respected



https://ellenmacarthurfoundation.org/

Wrap, UK – 2019

- Considerations for Compostable Plastics Packaging
- List 6 packaging product types that meet guidelines
- Basis for APCO Guidelines on Compostable Packaging

Europe

BioSinn - Nova Institute (Germany) … where compostables make sense:

- 1) it is not possible / economically feasible / common practice to collect the products or their leftovers;
- 2) it is not possible / economically feasible / common practice to separate the products or their leftovers from organic waste
- 3) Recycling it is not possible / economically feasible / common practice;
- 4) thermal recycling is not a viable option due to the high moisture content;
- 5) the use of biodegradable materials prevents microplastics from entering the environment;
- 6) there are indirect positive effects / there is a secondary benefit (e. g. more bio-waste can be collected);
- 7) relevant quantities of the product are produced;
- 8) biodegradable substitutes are technically feasible.

EU – Legislation:

- Waste Directive: Mandatory kerbside collection of organics by January 2024 (EU and UK).
- Framework regulation on bio-based, biodegradable and compostable packaging in final consultation process

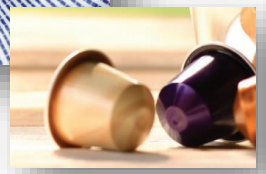
The Compostable Conundrum (UK)

Published by ”A Plastic Planet”, UK, October 2021

A practical guideline on the sensible use of compostable packaging in a circular economy, including a **“GREEN”** and a **“RED”** list.

‘Does this help get food waste into the food waste system?’

THE UNDISPUTED GREEN PRODUCTS



RED LIST RECOMMENDATION
Do not use compostable materials for these products

RATIONALE

1	2	3
Carries food, beverage residues, plant waste or soil to composting or AD facilities	Too small, flimsy, flexible, multi-laminated and hard to recycle in any other waste stream	When made of non-compostable plastic, product currently contaminates biowaste stream

Australia

AUSTRALIA'S 2025 NATIONAL PACKAGING TARGETS

APCO in co-operation with ABA and AORA developed:

TARGET		Result 2019-20
100%	reusable, recyclable or compostable packaging.	86%
70%	of plastic packaging being recycled or composted.	16%
50%	average recycled content included in packaging^ (revised from 30% in 2020)	39%
The phase-out of problematic and unnecessary single-use plastic packaging.		Development phase

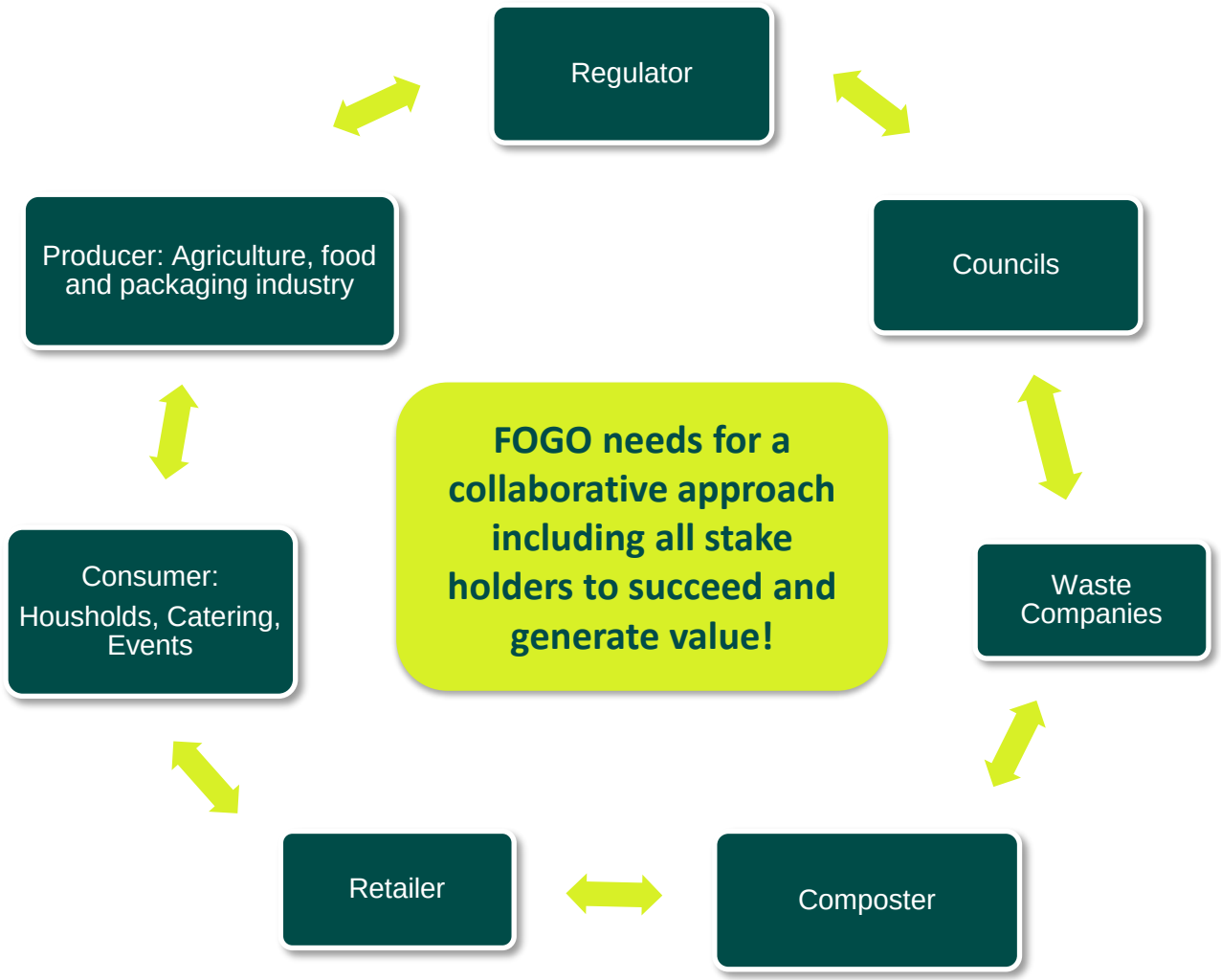
^Data shown excludes wood packaging due to insufficient data

https://apco.org.au/national-packaging-targets

Benefits of Compostable Packaging in a Circular Economy

- Compostable waste handling products, e.g. bin liner and bags enable a convenient, safe, low-mess collection and transport of organic food waste to the composter
- Existing robust certification schemes for compostability, like ABA, ensure compliance with Australian and international standards for industrial and home composting
- New packaging solutions are aiming to deliver high renewable content and functional packaging for food that does not compromise on shelf-life and quality of foods
- Compostable Bioplastics do not cause persistent microplastics

FOGO: Stake Holders



Challenges to broad FOGO Implementation:

- Infrastructure for processing
- Contamination
- Performance in individual plants varies
- Insufficient, ineffective separation at source decreases value
- Creation of viable markets for products
- Research on materials and packaging design to assist FOGO
- Education, communication and understanding
- Policing of policies

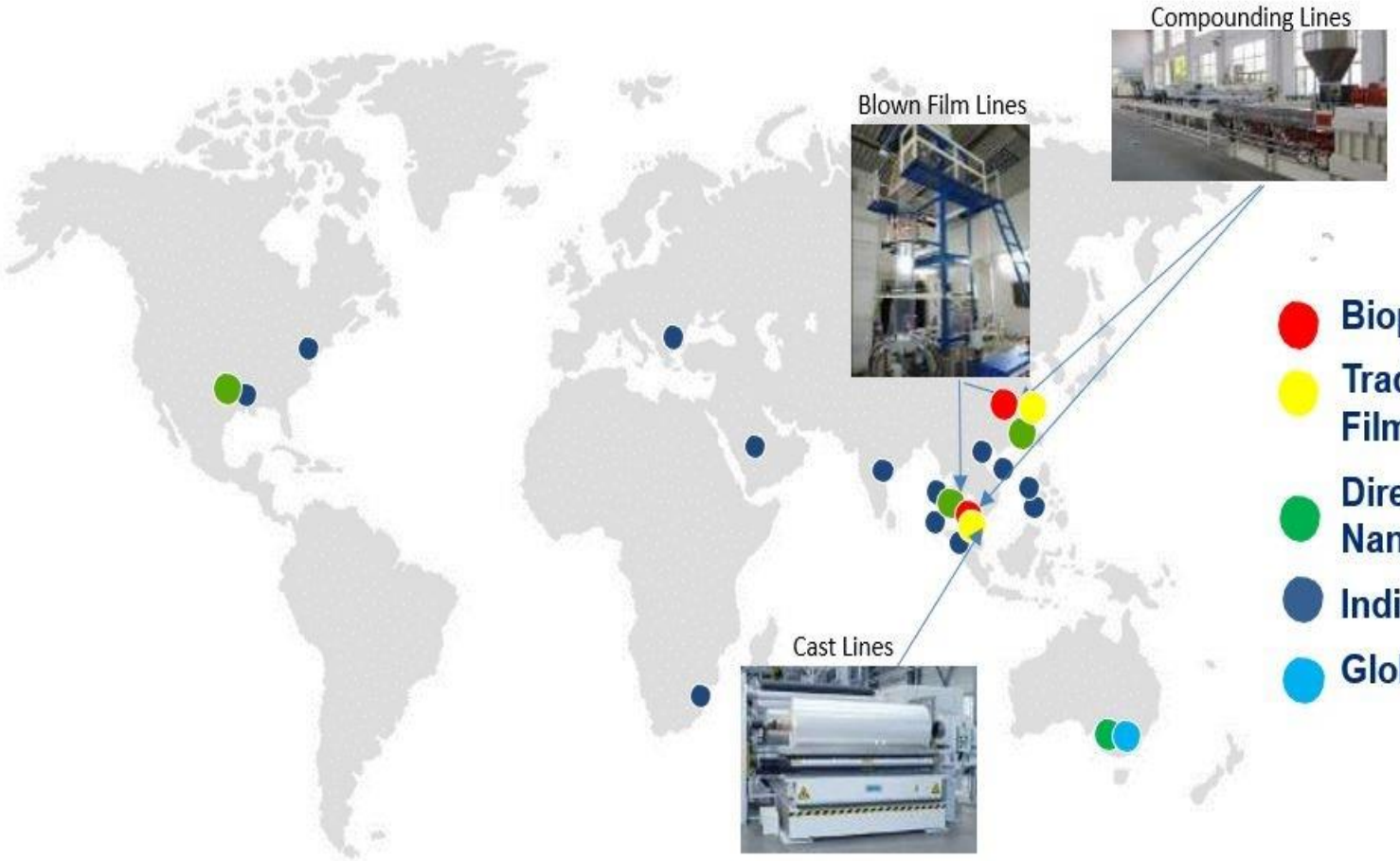
Introducing SECOS Group

- Cardia is part of SECOS Group Limited (ASX: SES)
- Cardia develops, manufactures and distributes compostable products, resin, films and bags certified to all relevant global standards for compostability:
- New state-of-the-art R&D centre, the “Onestonium”, in Melbourne

Compostable AS 4736 ABAP 10007 · Home Compostable AS 5810 ABAP 20018 · BPI COMPOSTABLE · COMMERCIALLY COMPOSTABLE. FACILITIES MAY NOT EXIST IN YOUR AREA. CERT #891049 · HOME COMPOSTABLE DIN Geprüft NF T51-800 9P0008 · Compostable EN13432 7P0347

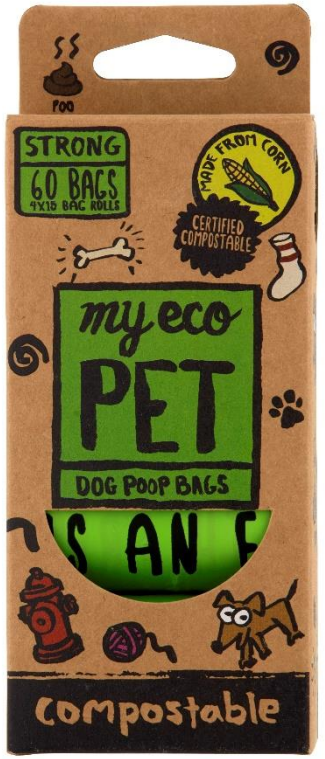
MADE FROM CARDIA COMPOSTABLE MATERIAL

SECOS Group – Cardia: Locations



- Biopolymer resin lines – Malaysia & China
- Traditional Film Lines (Malaysia) Biopolymer Film Lines (China)
- Direct Sales Offices in Melbourne, Dallas, Nanjing & Kuala Lumpur
- Indirect sales resources
- Global management, R&D lab (Melbourne)

Cardia Products – New Brands



THANK YOU!

Cardia bioplastics™

SECOS GROUP
Changing the world of packaging

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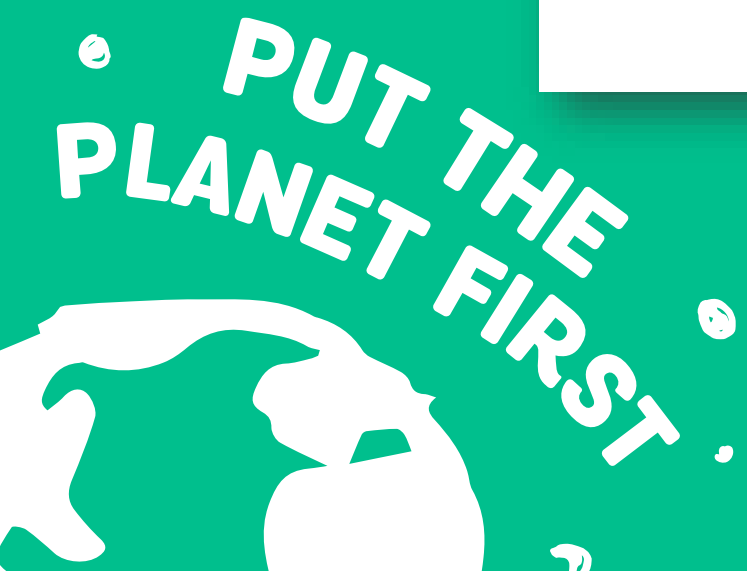

Resources and INFO

- https://bioplastics.org.au/the-compostable-conundrum-making-sense-of-when-to-use-compostable-materials/
- https://renewable-carbon.eu/publications/product/biosinn-products-for-which-biodegradation-makes-sense-pdf/
- http://www.fao.org/home/en
- https://www.nasa.gov/feature/goddard/2021/esnt/nasa-at-your-table-where-food-meets-methane
- https://documents.packagingcovenant.org.au/public-documents/Sustainable%20Packaging%20Guidelines%20(SPGs)
- https://wrap.org.uk/sites/default/files/2022-02/WRAP-Reducing-household-food-waste-and-plastic-packaging-Summary.pdf
- https://docs.european-bioplastics.org/publications/EUBP_discussion_paper_criteria-for-compostable-plastics_products.pdf
- https://calrecycle.ca.gov/organics/slcp/education/
- https://bioplastics.org.au/resources/fact-sheets-2/
- https://bpiworld.org/BPI-Resources