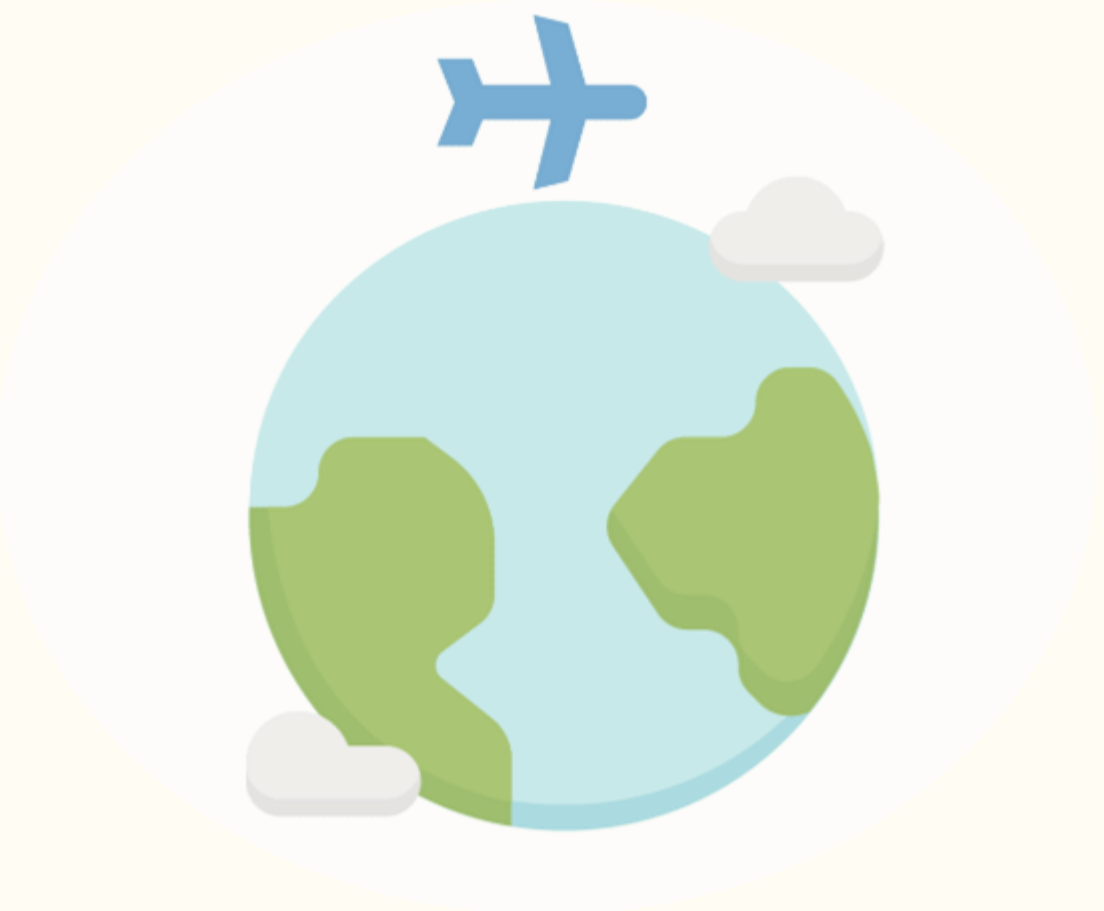

Namrata
Mhaddolkar
And I work with waste!

But that’s not how I started.

Let me tell you a bit about my journey.



My Journey

Born

School

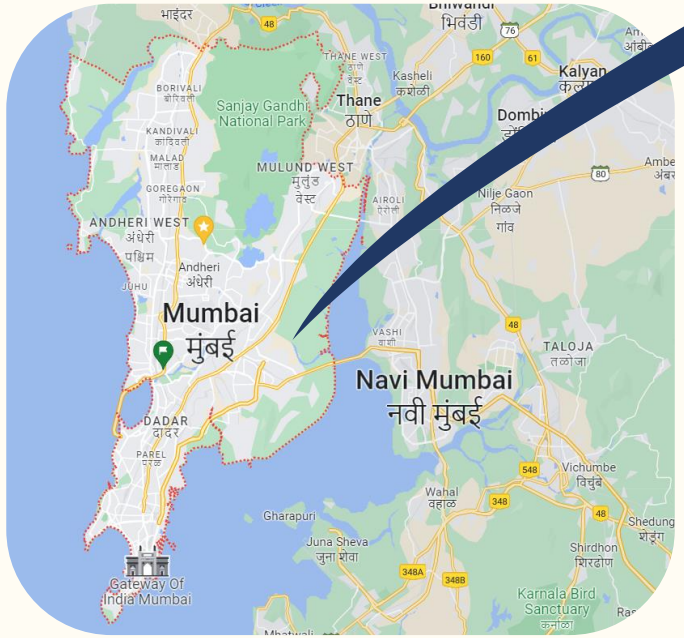
Electrical Engineer

Worked as Electrical Engineer

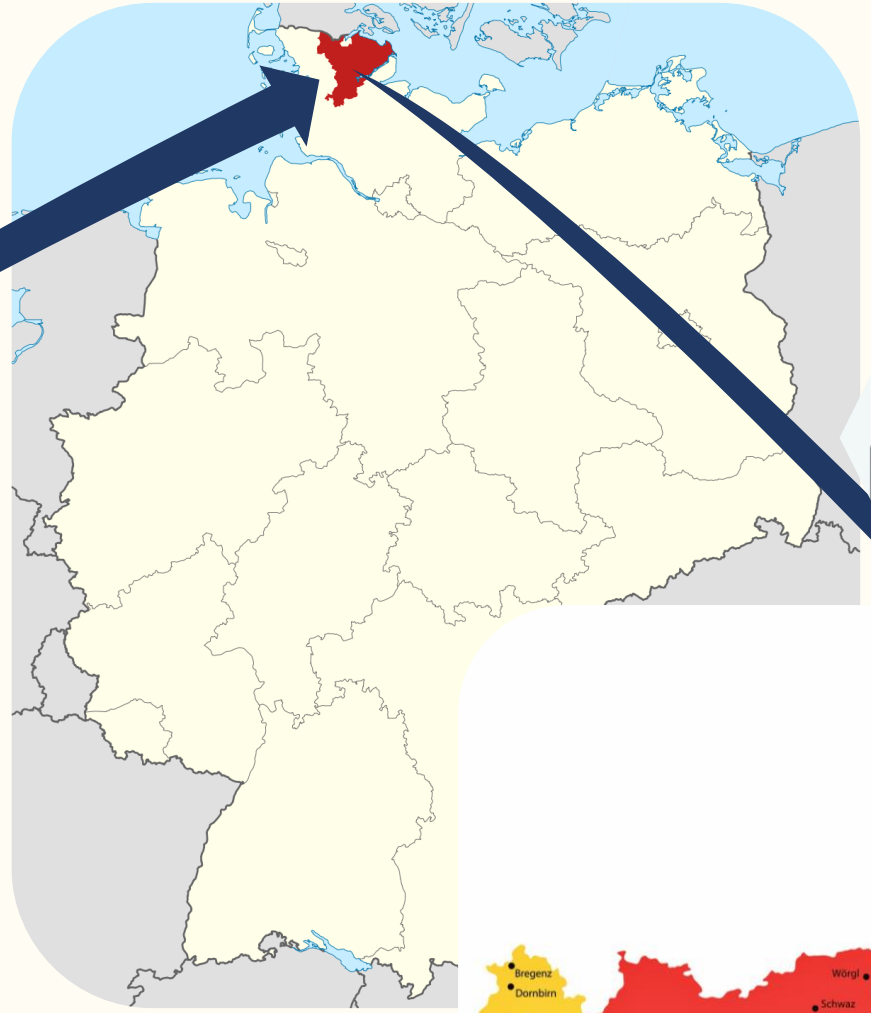
Interested in waste management

Image source: [ontheworldmap.com; Google Maps]

My Journey



In 2018, moved to Germany for Master's.



In 2020, moved to Austria for doing my PhD.

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M.Eng.

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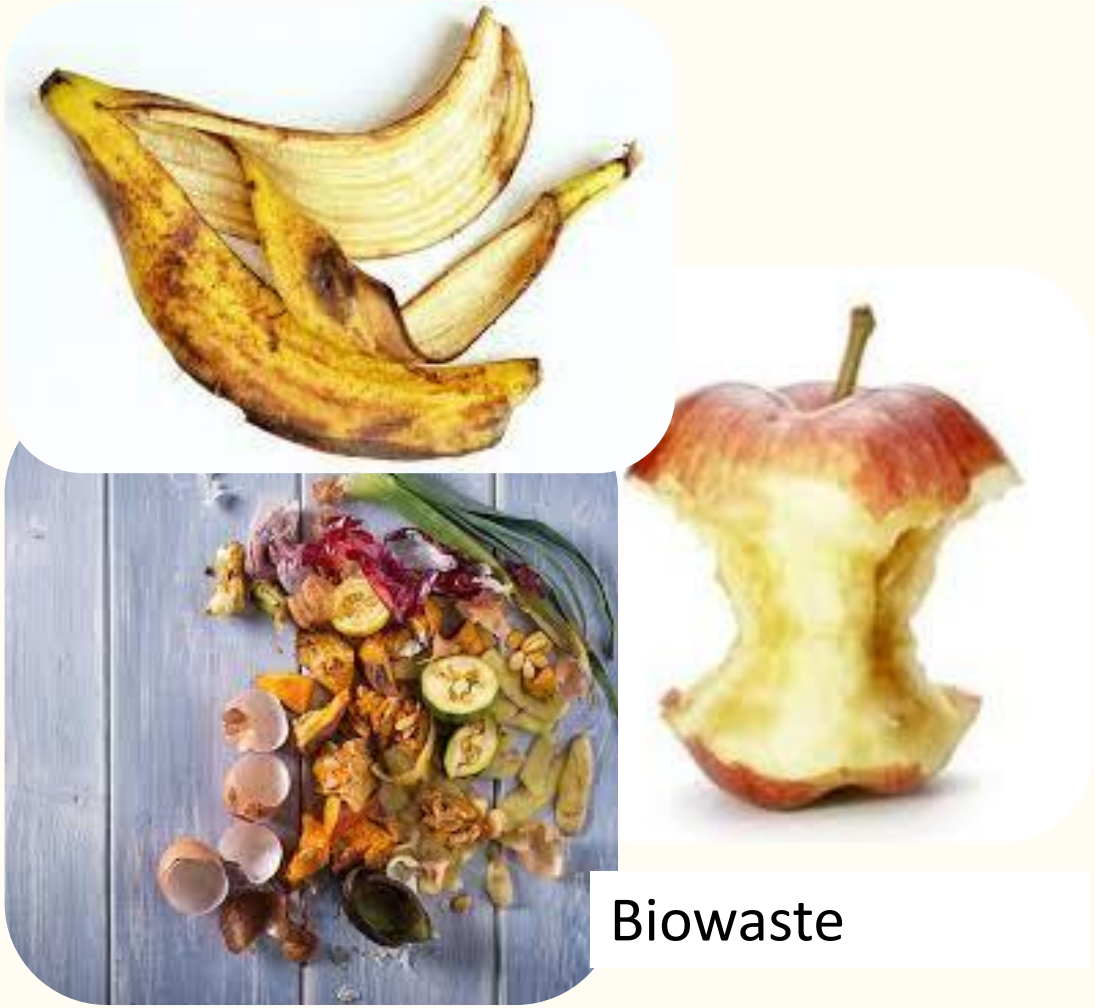
Image source: [Google Maps; commons.wikimedia.org; orangesmile.com]

Now, I'll tell you more about my research.

In which bin will you throw these items?

Recyclable waste



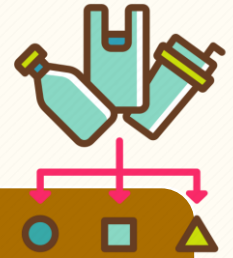
Biowaste

Image source: latrobe.edu.au

What happens with your waste?

You throw the waste

Waste truck collects it



It reaches a facility: separates useful and unwanted waste

Useful waste used for new products or compost

Unwanted waste burned to produce electricity and heat energy

What is this material?

PLASTICS!

Recyclable waste

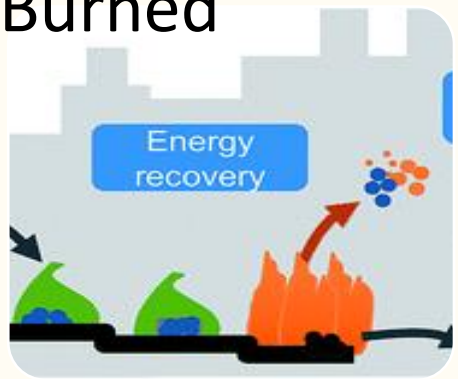
Biowaste

Image source: latrobe.edu.au

Know more about plastics

Recycled

Burned



What is the problem?

New kind of plastics - **Bioplastics**

Image source: totebagfactory.com; justmore.dk; tipa-corp.com

What are bioplastics?

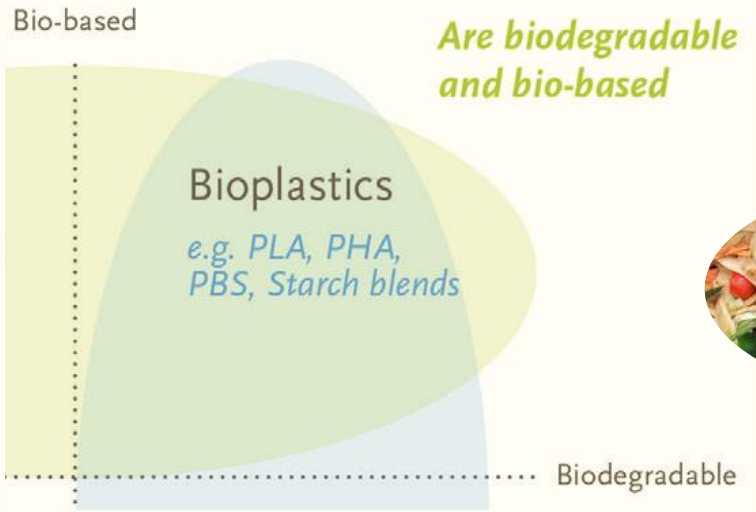
Conventional plastics

nearly all conventional plastics

e.g. PE, PP, PET

What are bioplastics?

Type 1



Conventional plastics

nearly all conventional plastics

e.g. PE, PP, PET

Biobased

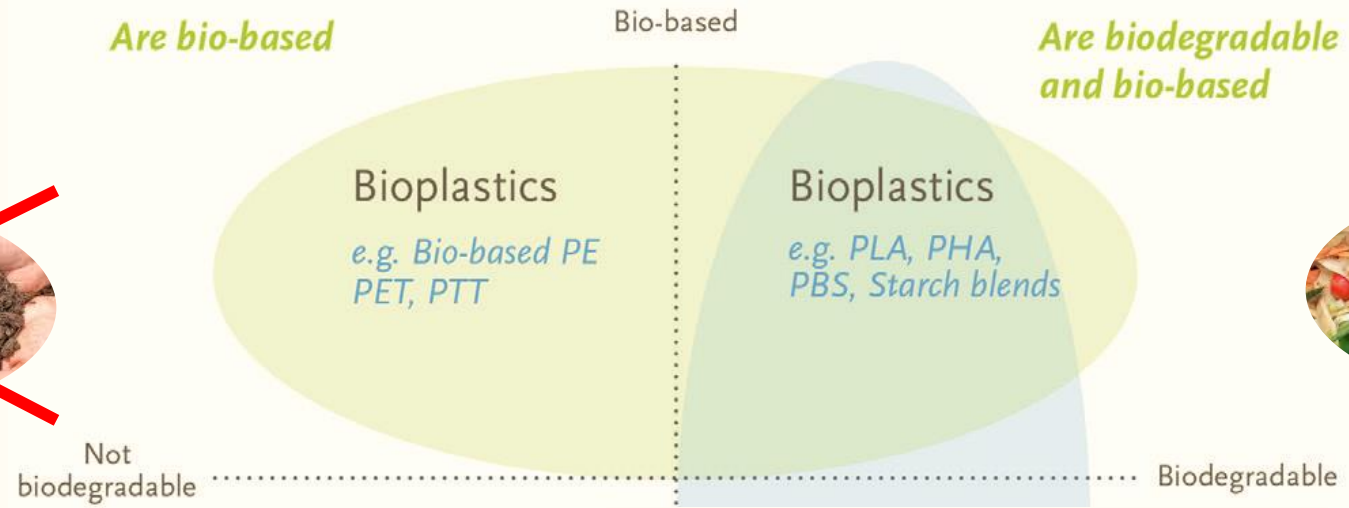
Wholly or partly made from biological origin materials

Biodegradable

BIOWASTE → Biodegradation → Carbon Dioxide + Water + Biomass

What are bioplastics?

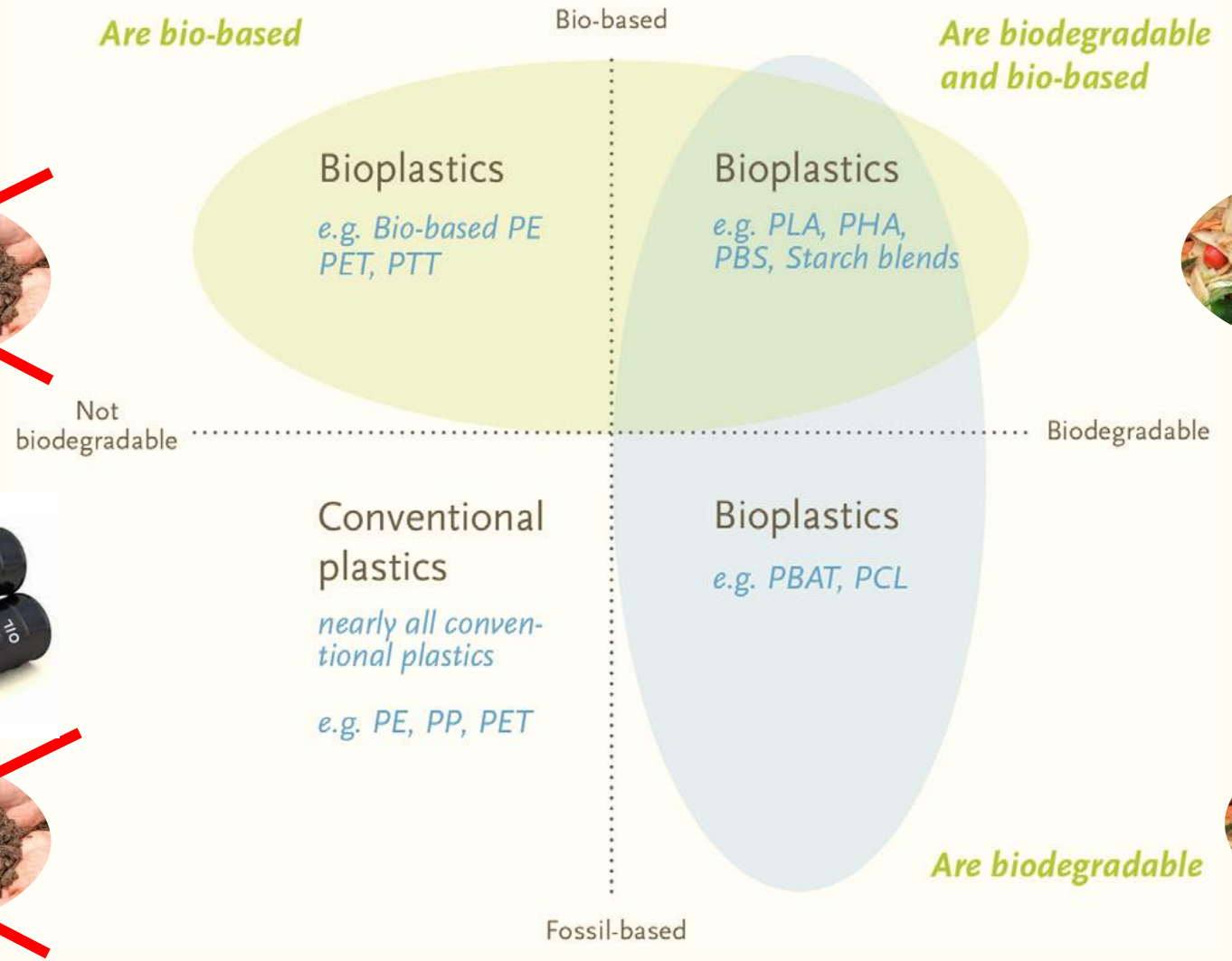
Type 2



Type 1

What are bioplastics?

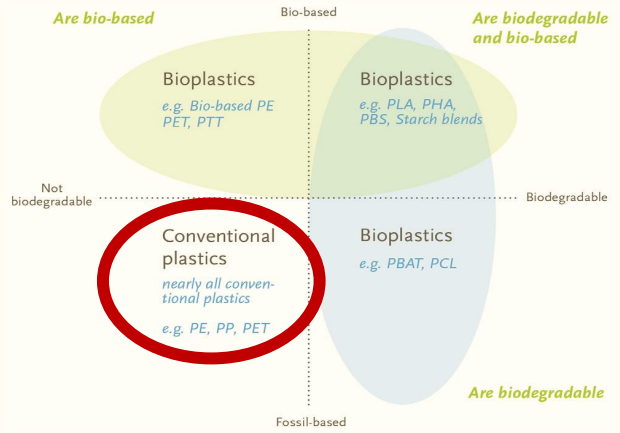
Type 2



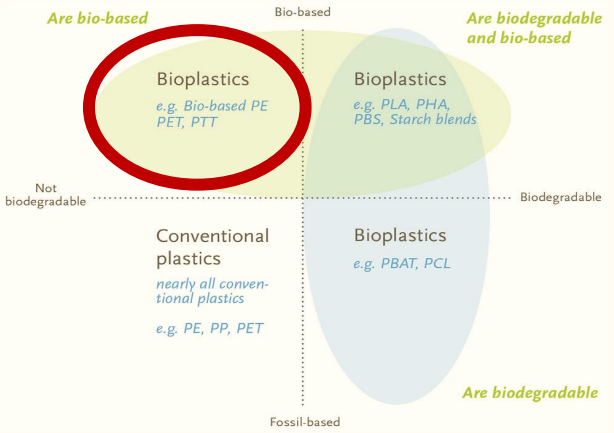
Type 1

Type 3

Conventional plastics



Bio-based non-biodegradable

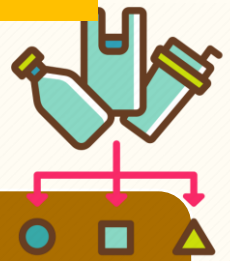


What happens with your waste?

Works for it!

You throw the waste

Waste truck collects it



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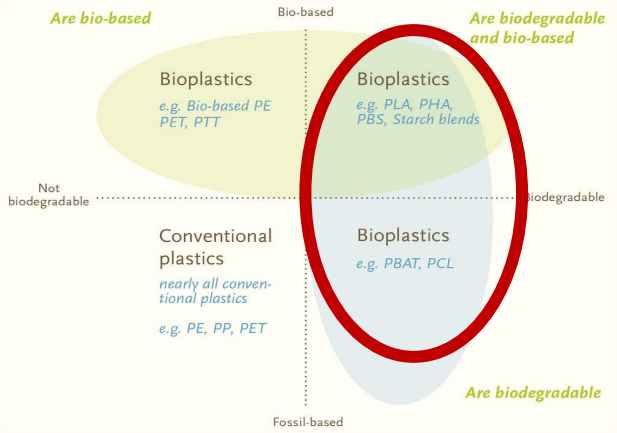
Biodegradable plastics



What happens with your waste?

You throw the waste

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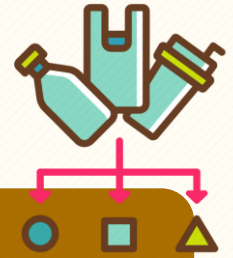


It reaches a facility: separates useful and unwanted waste

Useful waste used for new products or compost

BURNED FOR ENERGY!

Why does it matter?

- Lots of energy & resources used to make this plastic.
- So, we need to make most of it before burning them.
- Therefore, recycling is better than burning them.

But where should you throw them?

Should they be thrown in the plastics bin, as they are plastic?

Should they be thrown in biowaste bin, as they are biodegradable?

Why is it important?

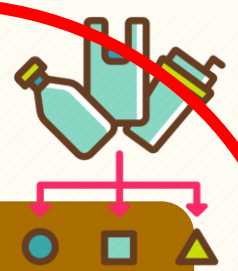
To avoid repeating mistakes done with conventional plastics!

What happens with your waste?

You throw the waste

Waste truck collects it

It reaches a facility: separates useful and unwanted waste



Useful waste used for new products or compost

Unwanted waste burned to produce electricity and heat energy

My PhD

Goal: To capture biodegradable plastics from waste stream via waste collection and sorting.

Objective 1

TASKS:

- See if the machines we have can separate this new plastic.
- What challenges can be there?
- What can we do about them?

RESULTS USE:

Update existing separation machines, when required.

Objective 2

TASKS:

- Where should we throw this waste?
- See different combinations to choose best option.

RESULTS USE:

Provide information to make informed choice.

What you learned today?

What happens to your waste?

Bioplastic: A new kind of plastic and its different types.

Challenges with bioplastic waste management.

An intro to my PhD.

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