

Fonterra Sustainability Challenge

Team For What It's Earth

Lance Zhang

Kelly Ding



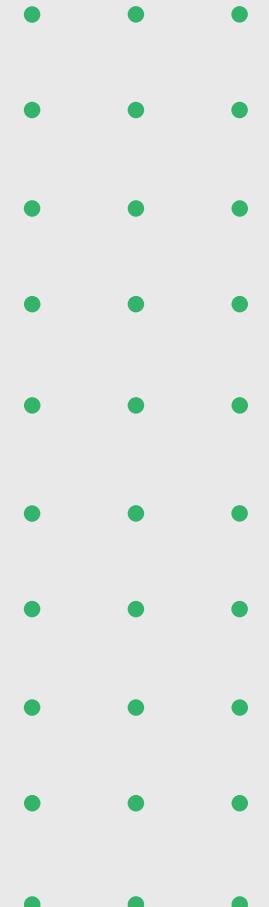
The Team



Lance Zhang
Bachelor of Software
Engineering (Honours)

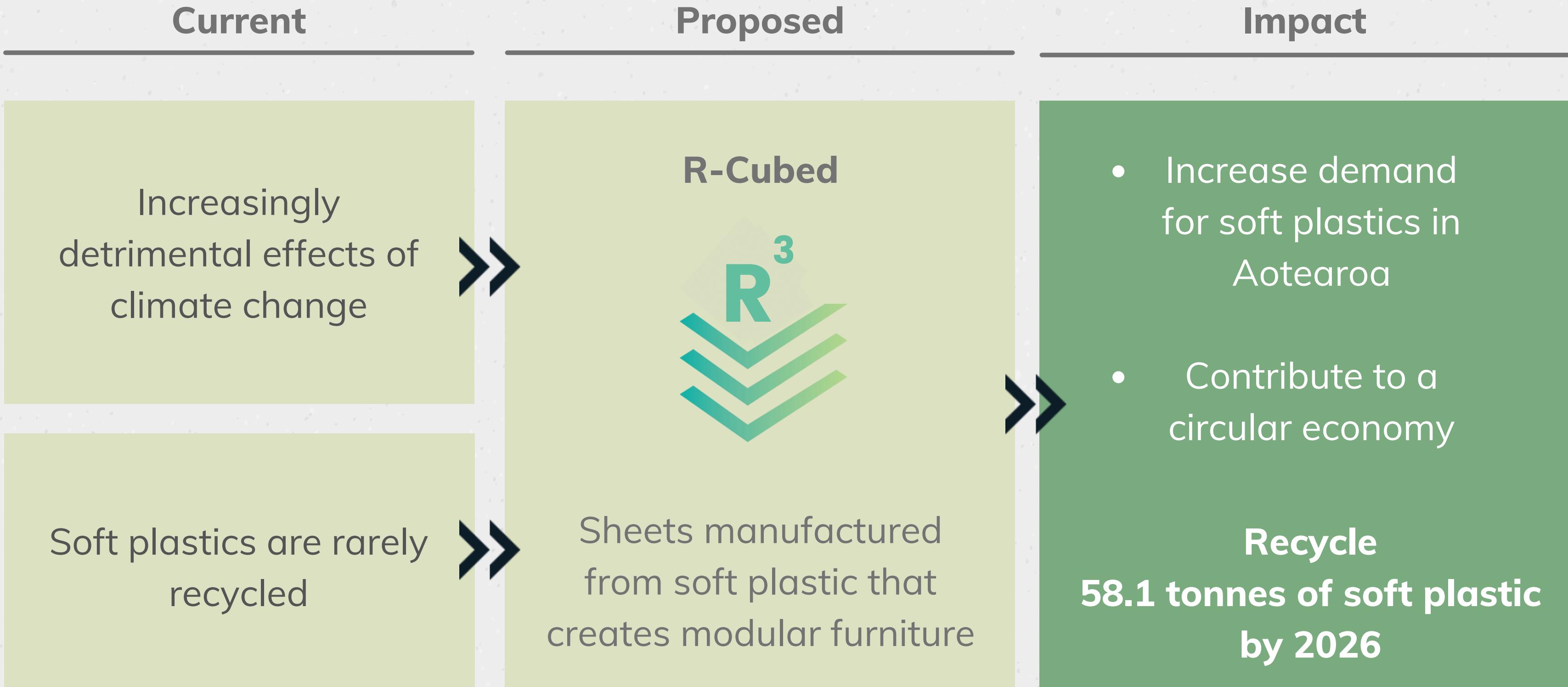


Kelly Ding
Bachelor of Laws and
Commerce



How can we
drive greater
demand for
recycled soft
plastics in
Aotearoa?

Overview



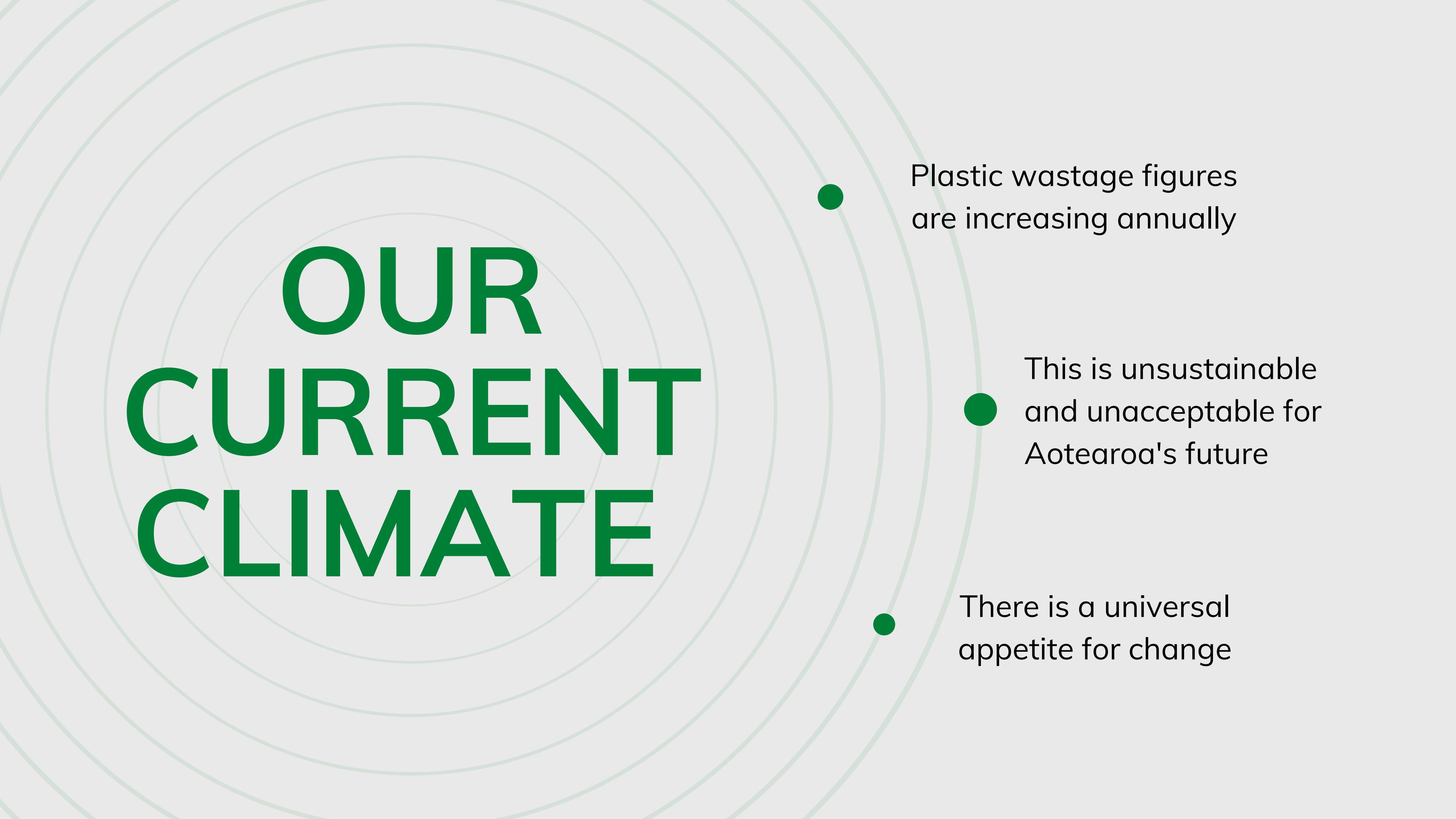
Analysis

Strategy

Implementation

Impact

Conclusion



OUR CURRENT CLIMATE

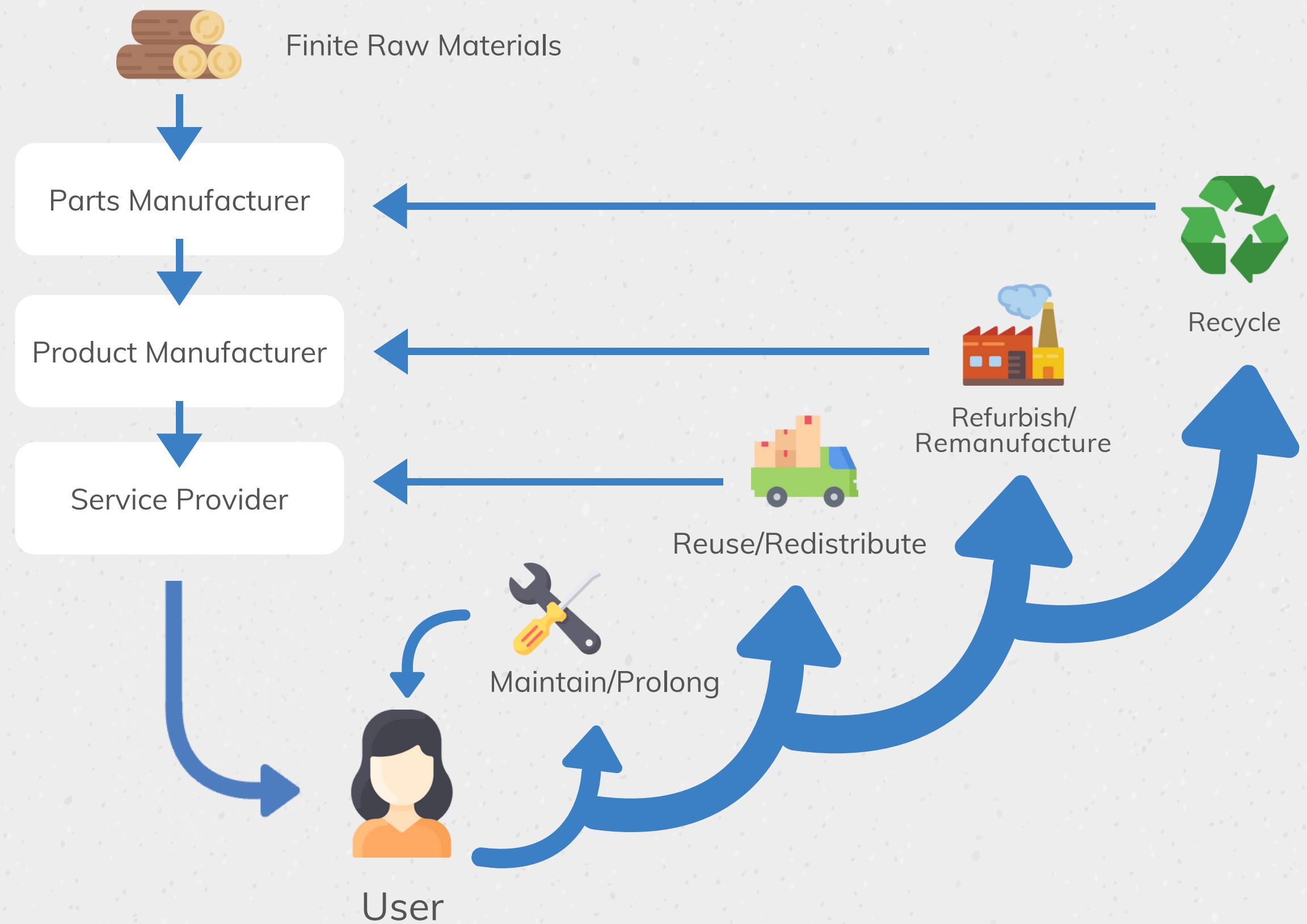
Plastic wastage figures
are increasing annually

This is unsustainable
and unacceptable for
Aotearoa's future

There is a universal
appetite for change

The Circular Economy

Minimise systematic leakage and negative externalities



Analysis

Strategy

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Conclusion

Plastics



Analysis

Strategy

Implementation

Impact

Conclusion

Plastics



Made of unsustainable materials such as coal, natural gases and crude oil which can take over 1000 years to decompose

They release toxins when decomposing, poisoning natural life core to our environment

Analysis

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Conclusion

Soft Plastics



Plastic types 1, 2, 5 are easily recyclable

Plastic types 3, 4, 6, 7 (soft plastics) are usually thrown into waste bins

Soft plastics are laborious and difficult to recycle

Problems

These are the challenges faced by New Zealand's current plastic economy

LINEAR ECONOMY

NZ currently operates a "take - make - waste" model

DEMAND AND SUPPLY

The supply for recycled plastic exceeds the demand

RECYCLING PROCESS

Recycling soft plastics is laborious and unprofitable



Analysis



Strategy



Implementation



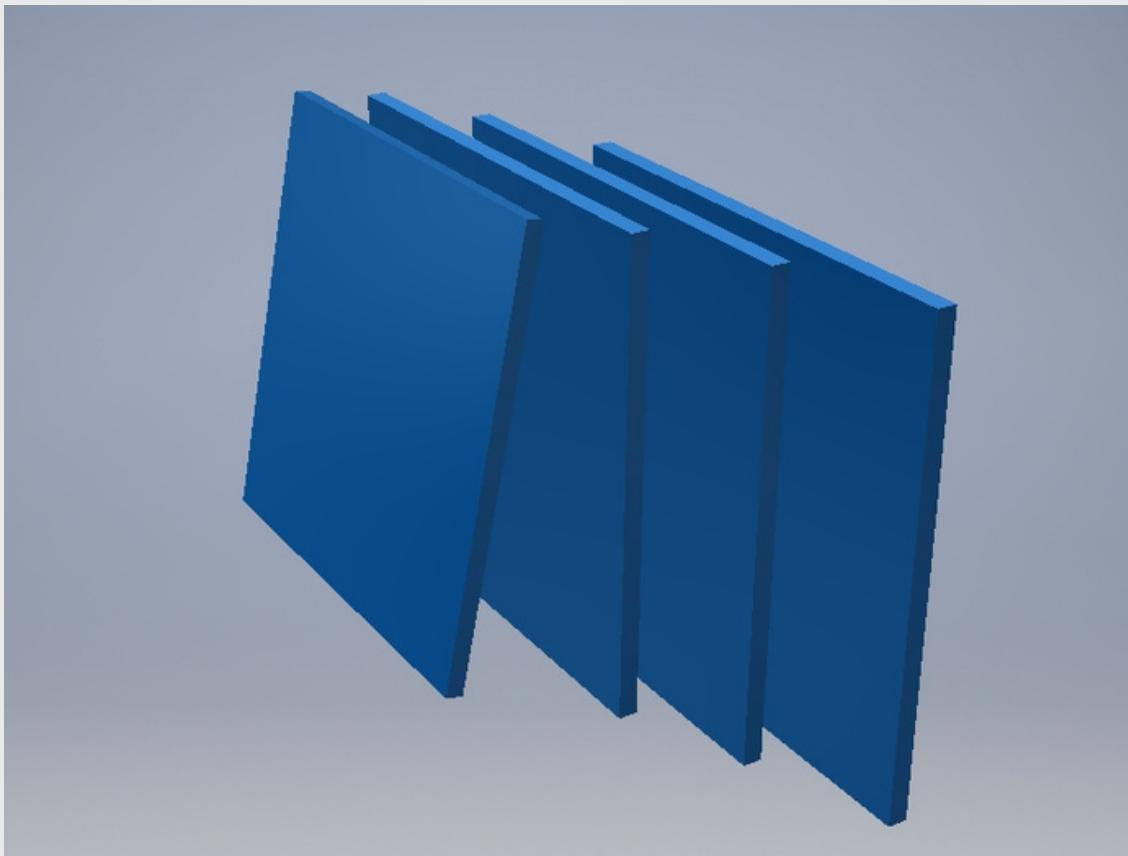
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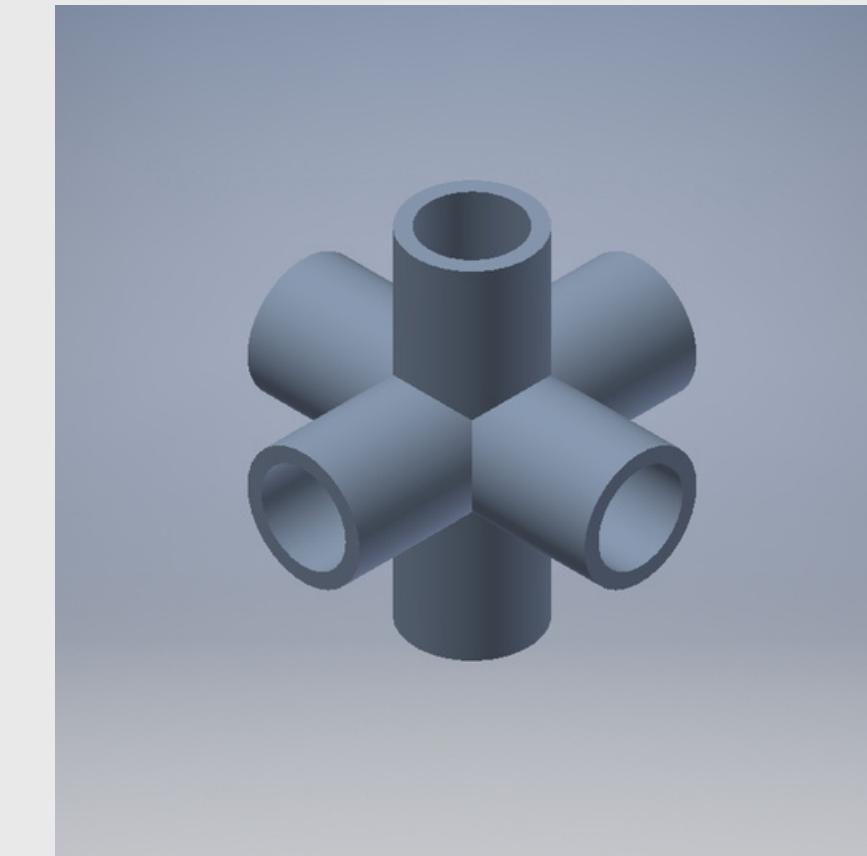
Conclusion

R-Cubed

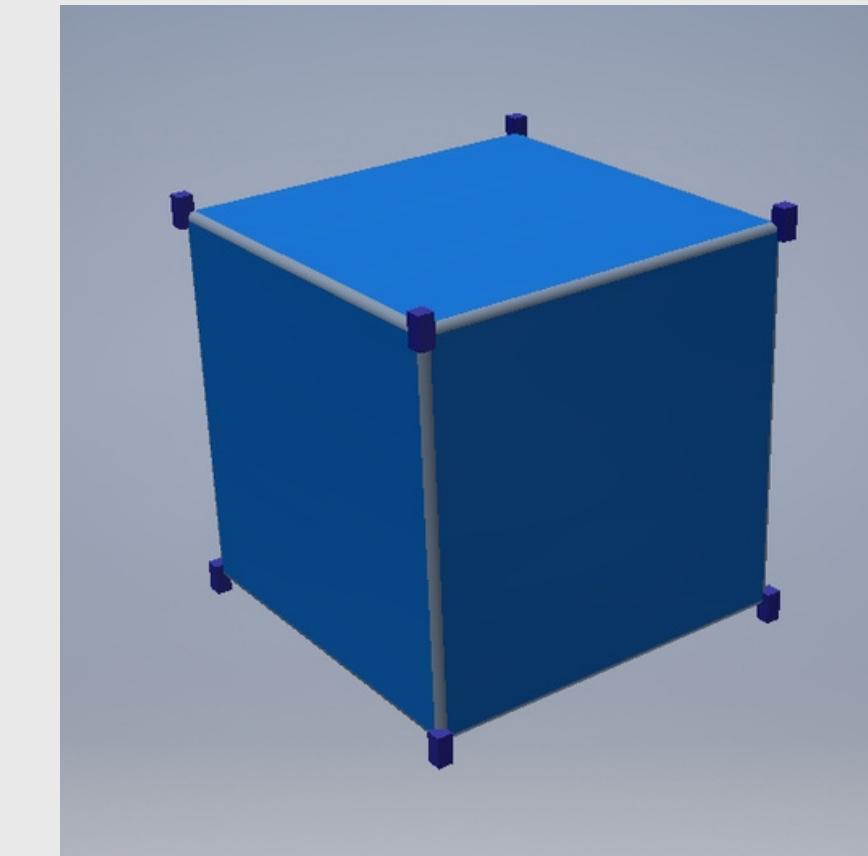
Modular furniture made from recycled soft plastic sheets



Sheets



Fastening Mechanism



Cube

Analysis

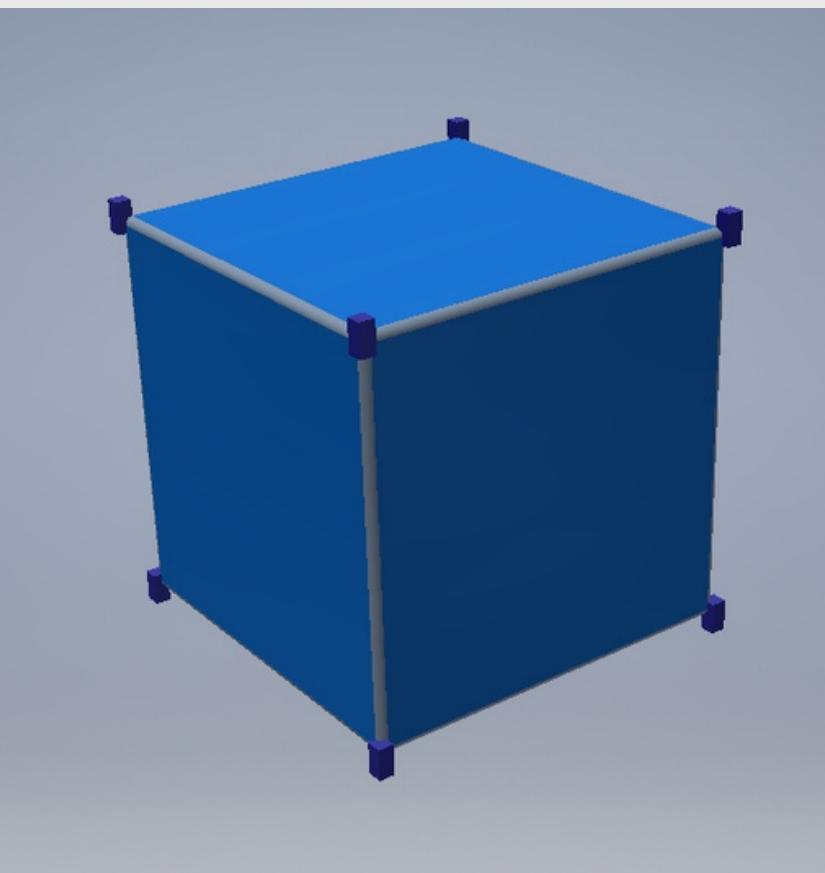
Strategy

Implementation

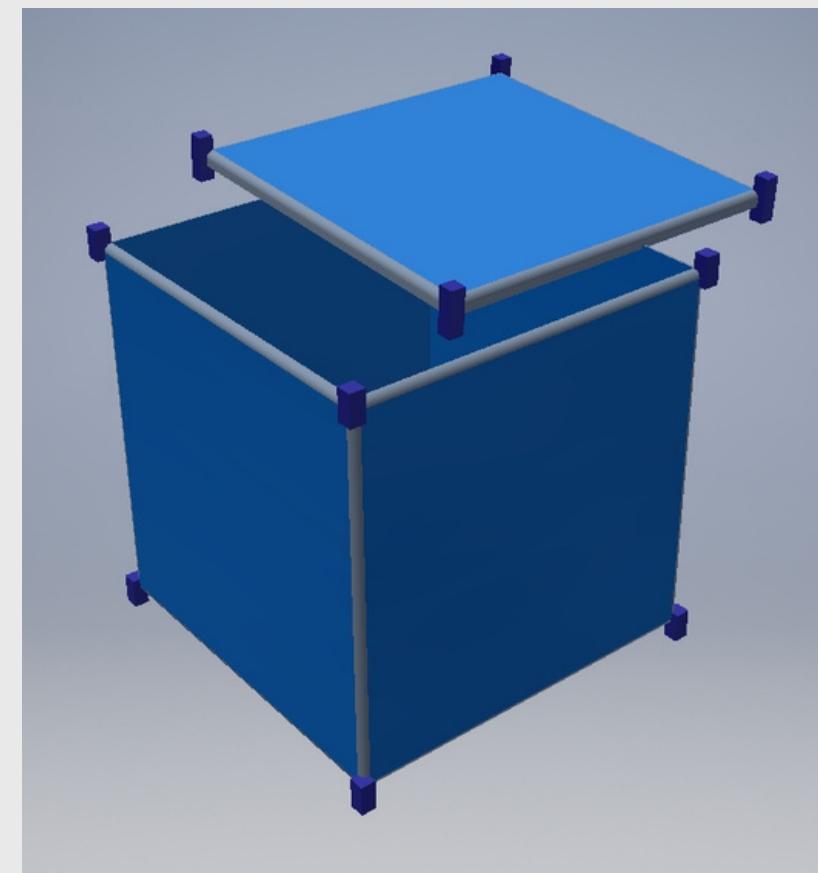
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Conclusion

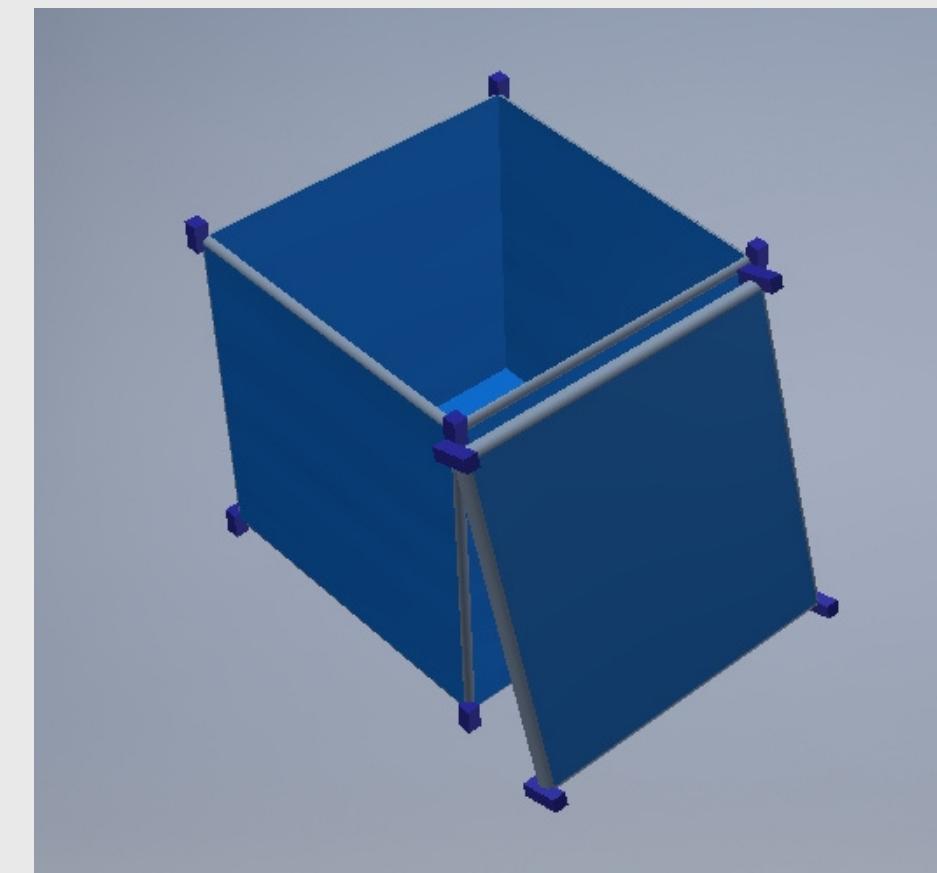
Variations



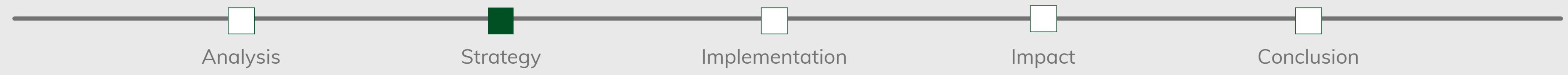
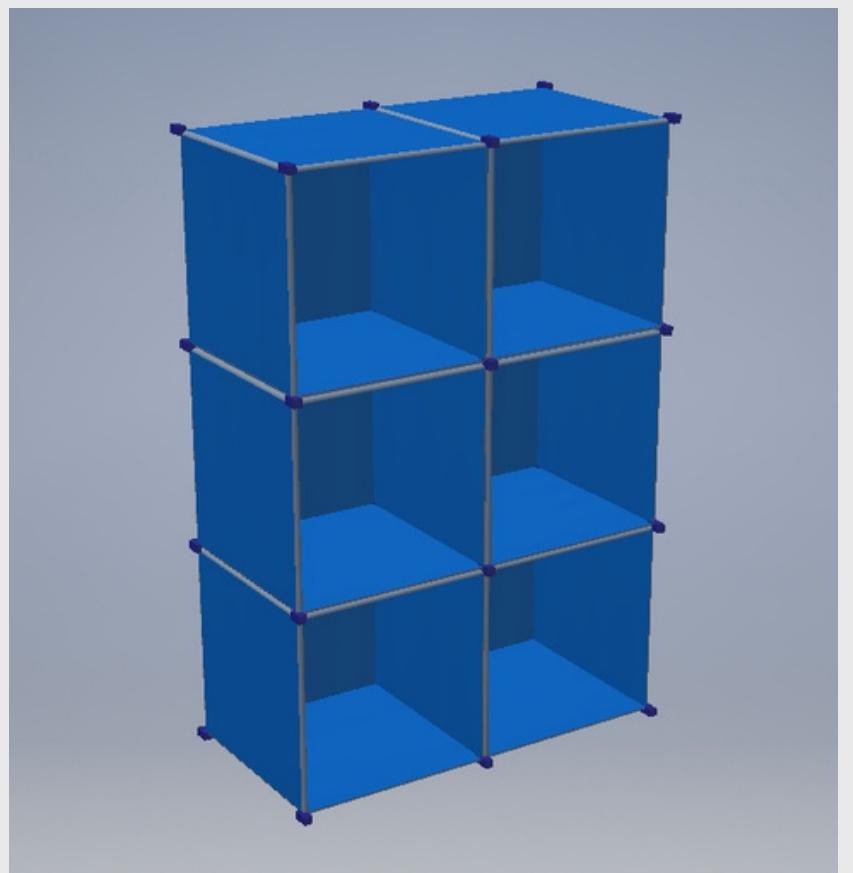
Cube Stool



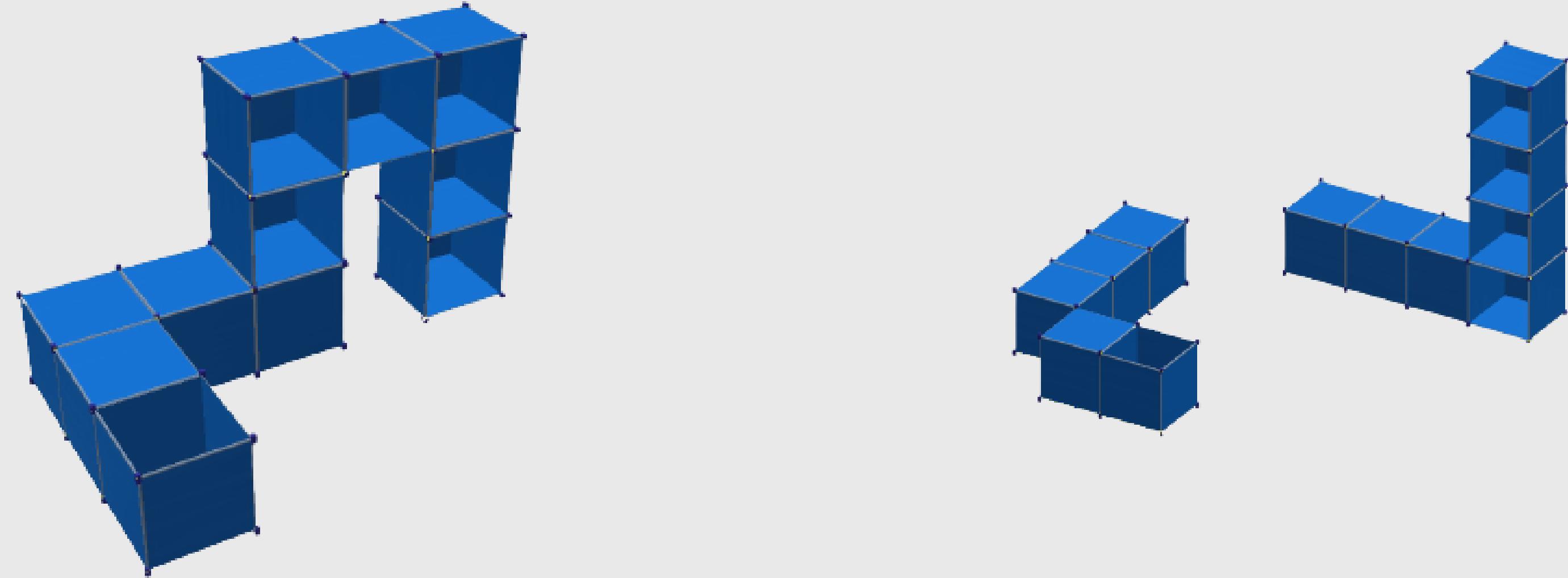
Storage Cube



Shelf



Variations



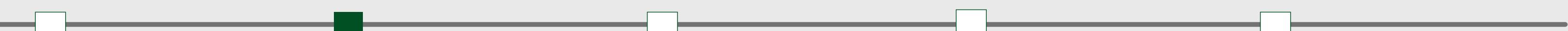
Recycled Soft Plastics



Soft plastics are collected

Plastics broken down

Melted and moulded into new hard plastic sheets



Analysis

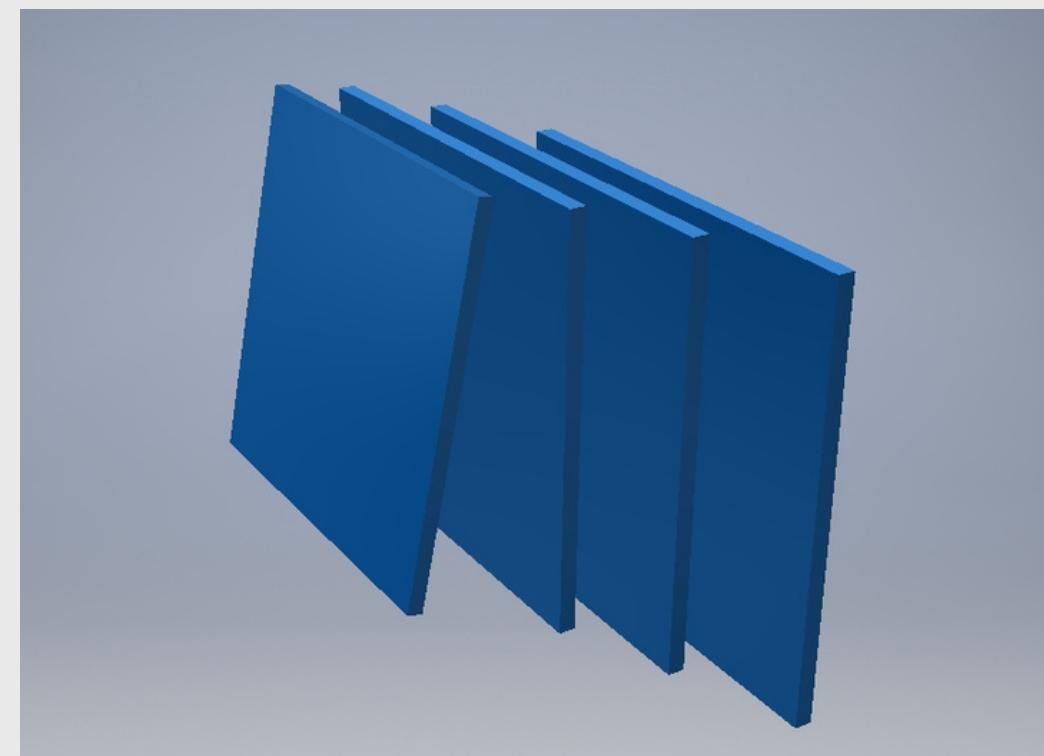
Strategy

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Recycled Soft Plastics



- 50cm x 50cm x 2cm
- >200 grams
- Strong and durable



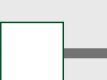
Analysis



Strategy



Implementation



Impact

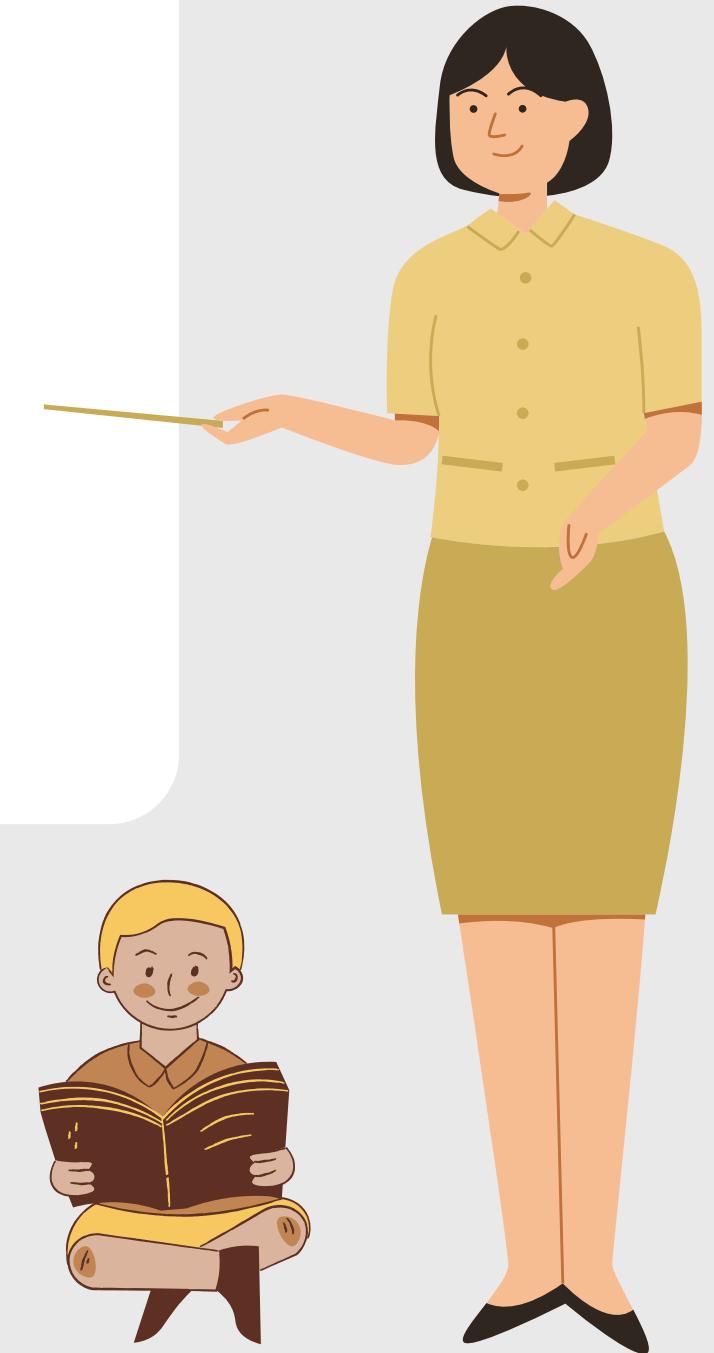


Conclusion

Customer Personas

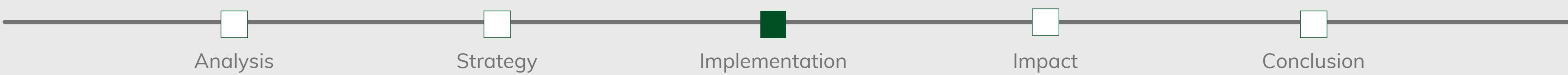
**They seek furniture that
is...**

- Inexpensive
- Flexible
- Has sufficient storage space
- Compact
- Creative design

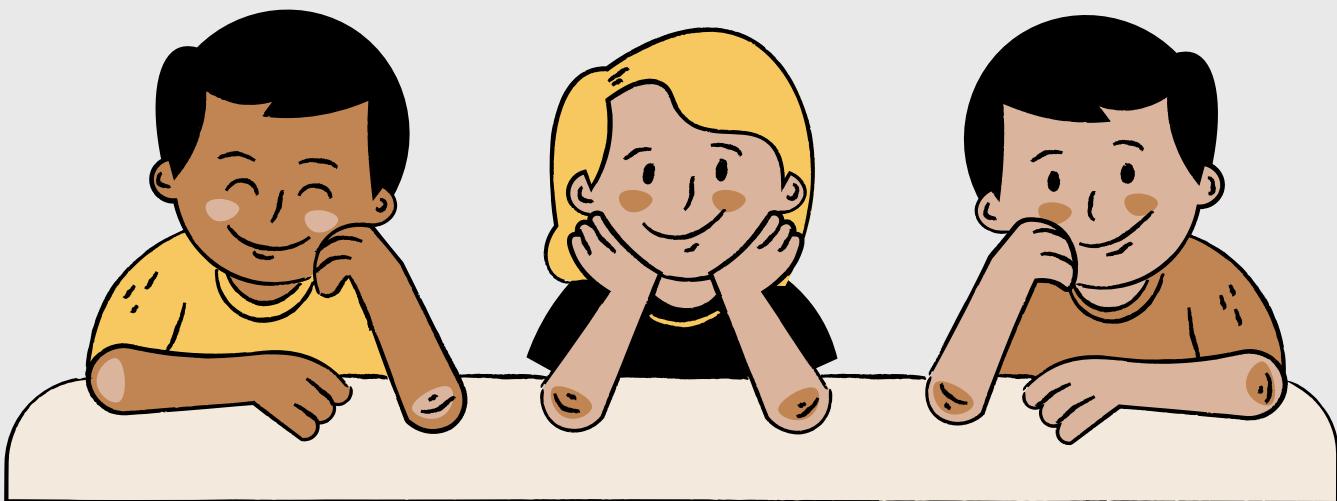
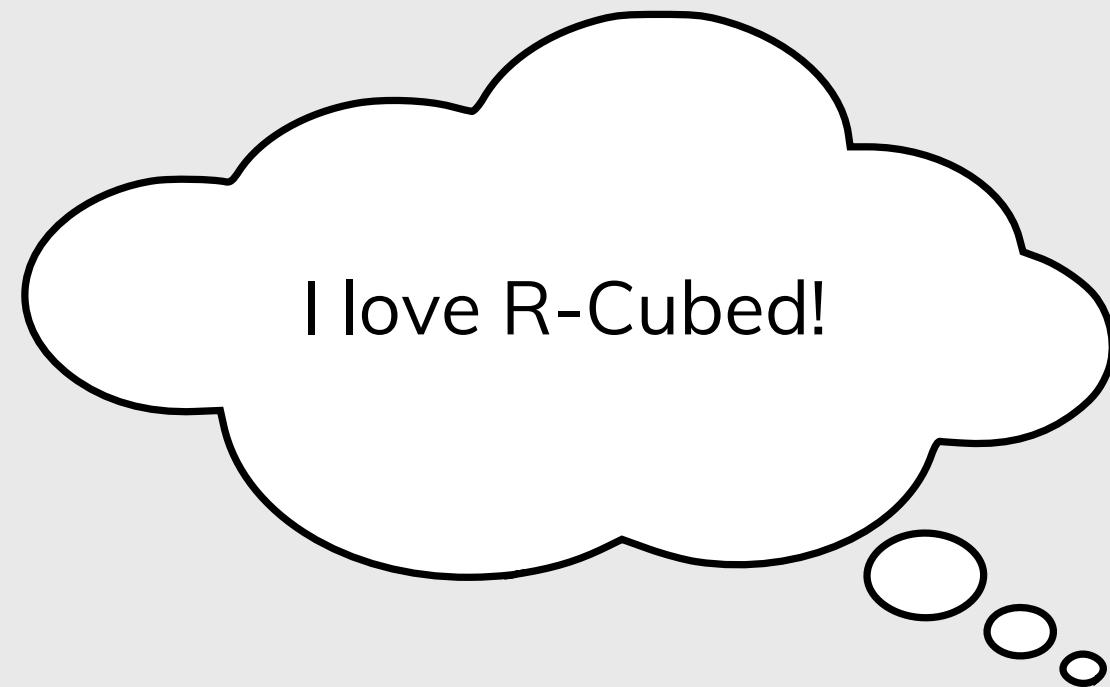


Other customers

- Other educational institutions
- Households
- Workplace Offices
- Public areas (parks, gardens etc.)



User Personas



Demographics

- Primary and intermediate schoolchildren
- Diverse in characteristics such as ethnicity and socioeconomic status

Needs

- Storage for their belongings
- Shelving for their books and for displaying their creations
- Chairs to sit on when doing classwork

Wants

- Furniture that has a playful or fun element

Analysis

Strategy

Implementation

Impact

Conclusion

Use Cases



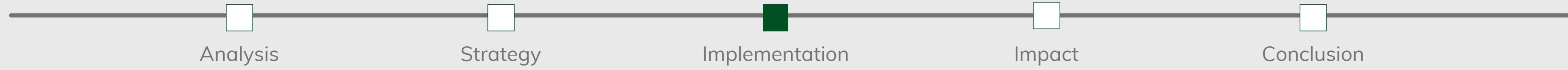
9 AM – Mrs Mason's students piece together a storage cube for their belongings

10 AM – The students make themselves a seat for silent reading time

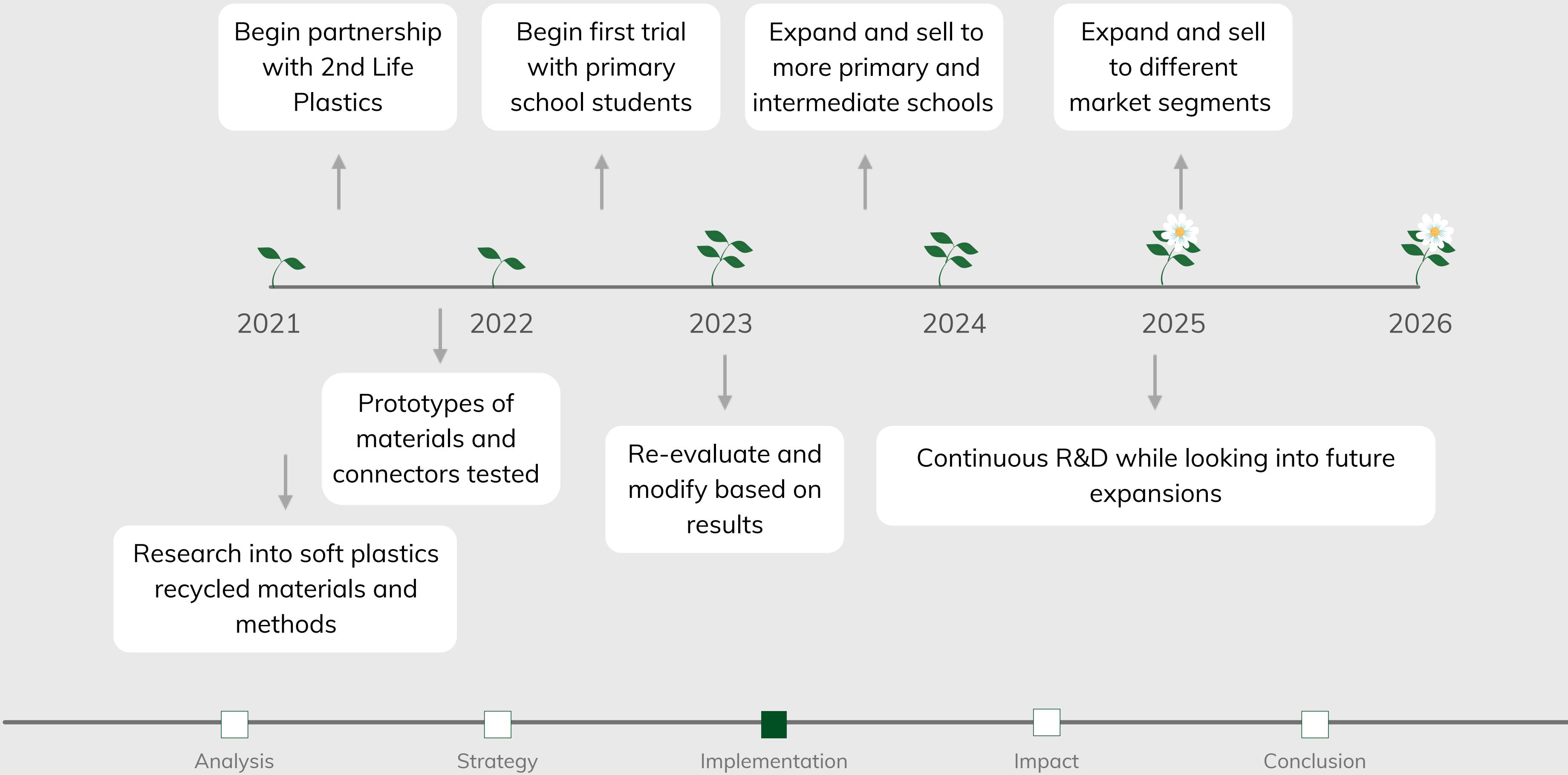
1 PM – Mrs Mason builds a new shelf, to store today's books and to display her student's artwork

2 PM – Her students join together their seats to make a group seating area

3 PM – Mrs Mason disassembles the sheets and stores them compactly in the cupboard, ready for tomorrow's use



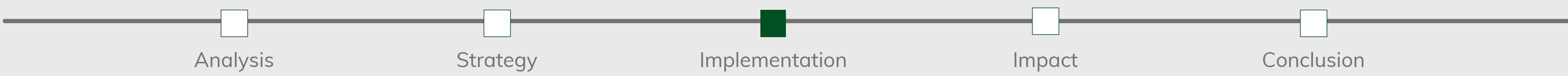
Implementation Timeline



Integration

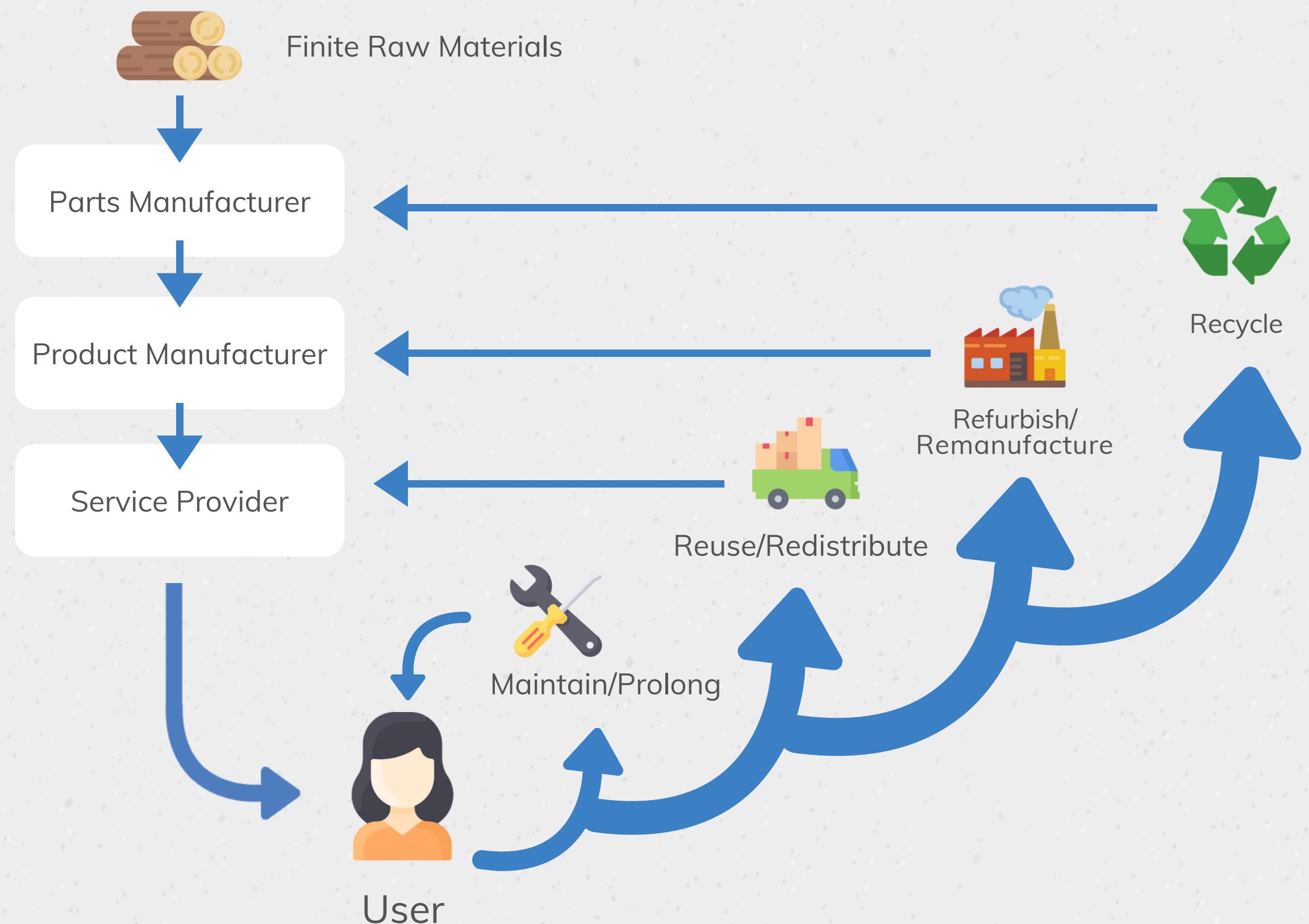


Soft Plastics Recycling Scheme



The Circular Economy

Minimise systematic leakage and negative externalities



Analysis

Strategy

Implementation

Impact

Conclusion

Environmental Impact



Maintain/Prolong



Reuse/Redistribute



Refurbish/
Remanufacture



Recycle

Durable Soft Plastic sheets

Sheets and Cubes are easily able to be reused

Damaged Sheets can be replaced, forming new Cubes

Soft Plastic Sheets can be melted down and recycled



Analysis



Strategy



Implementation

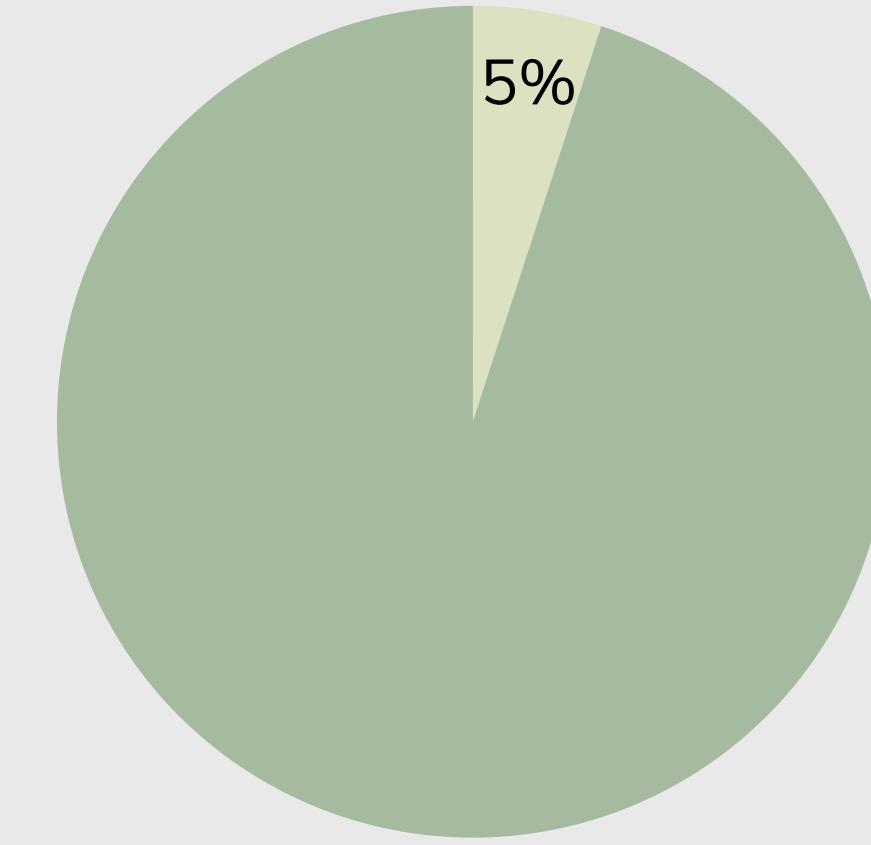


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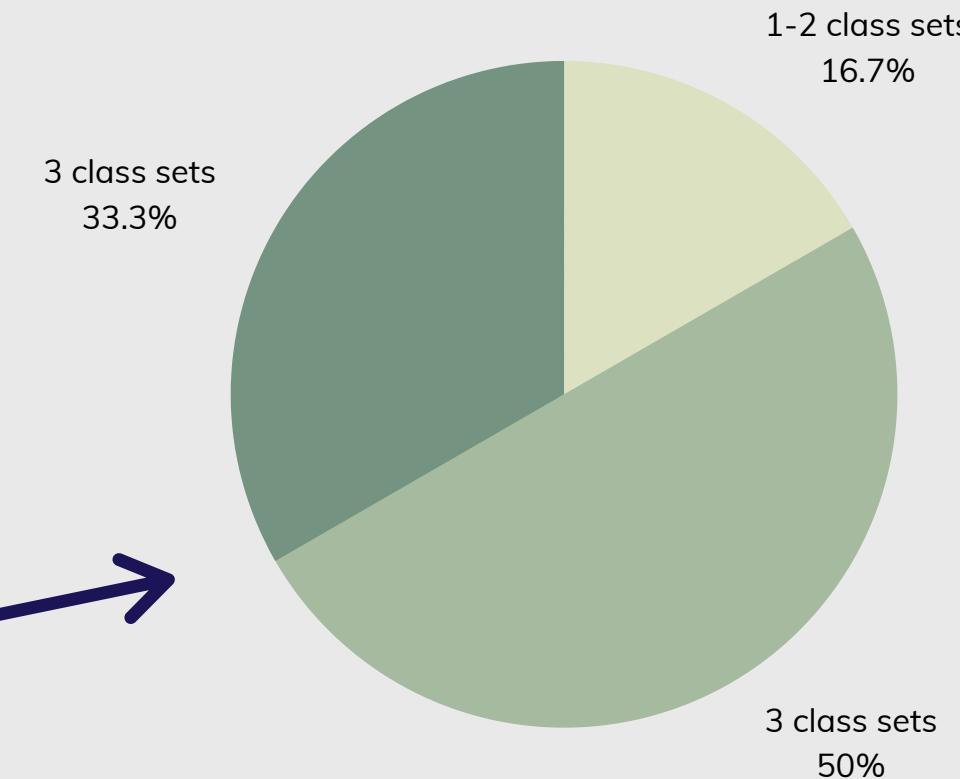
Conclusion

Size of the Pie



2,121 primary and composite schools

5% of schools want to purchase R-Cubed



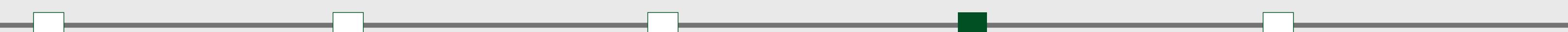
Each school wants to purchase
R-Cubed for 3 classrooms



3 class sets \times 106 schools = 318 class sets

1 class set = 280 sheets of R-Cubed and 320
connectors (30 seats and 20 stand-alone shelving units)

**318 class sets = 89,040 sheets and 101,760
connectors**



Analysis

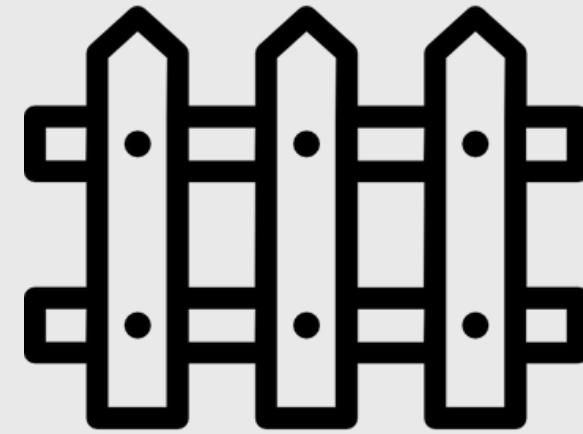
Strategy

Implementation

Impact

Conclusion

Size of the Pie



1 FuturePost fence post

Dimensions = 2.7m x 0.2m

Volume = 0.34m^3

Equivalent to 550 plastic bags = 3.5 kgs of soft plastic

1 R-Cubed seat

6 sheets = $0.5\text{m} \times 0.5\text{m} \times 0.02\text{m} \times 6 = 0.03\text{m}^3$
8 connectors = $0.1\text{m} \times 0.1\text{m} \times 0.1\text{m} \times 8 = 0.008\text{m}^3$
Total Volume = 0.038m^3

Equivalent to 37 plastic bags = 0.23kgs of soft plastic

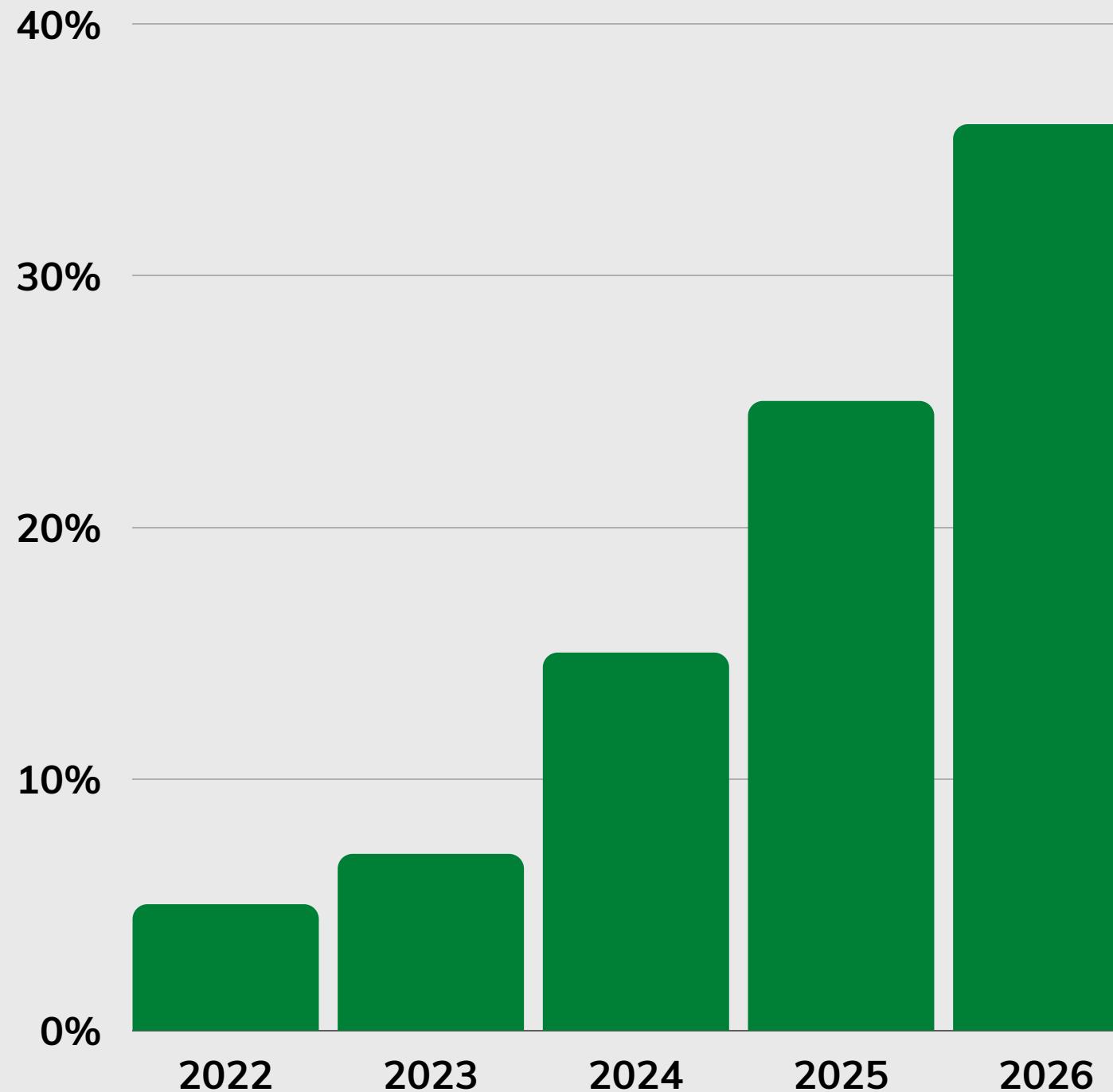
1 R-Cubed shelving unit

5 sheets = $0.5\text{m} \times 0.5\text{m} \times 0.02\text{m} \times 5 = 0.025\text{m}^3$
4 connectors = $0.1\text{m} \times 0.1\text{m} \times 0.1\text{m} \times 4 = 0.004\text{m}^3$
Total Volume = 0.029m^3

Equivalent to 28 plastic bags = 0.18kgs of soft plastic

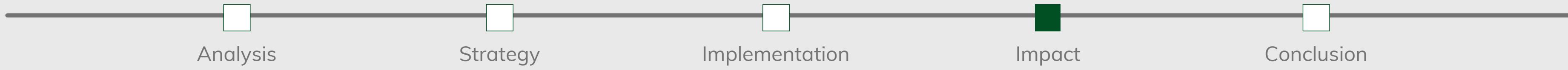
318 class sets = 3.3 tonnes of plastic

Size of the Pie

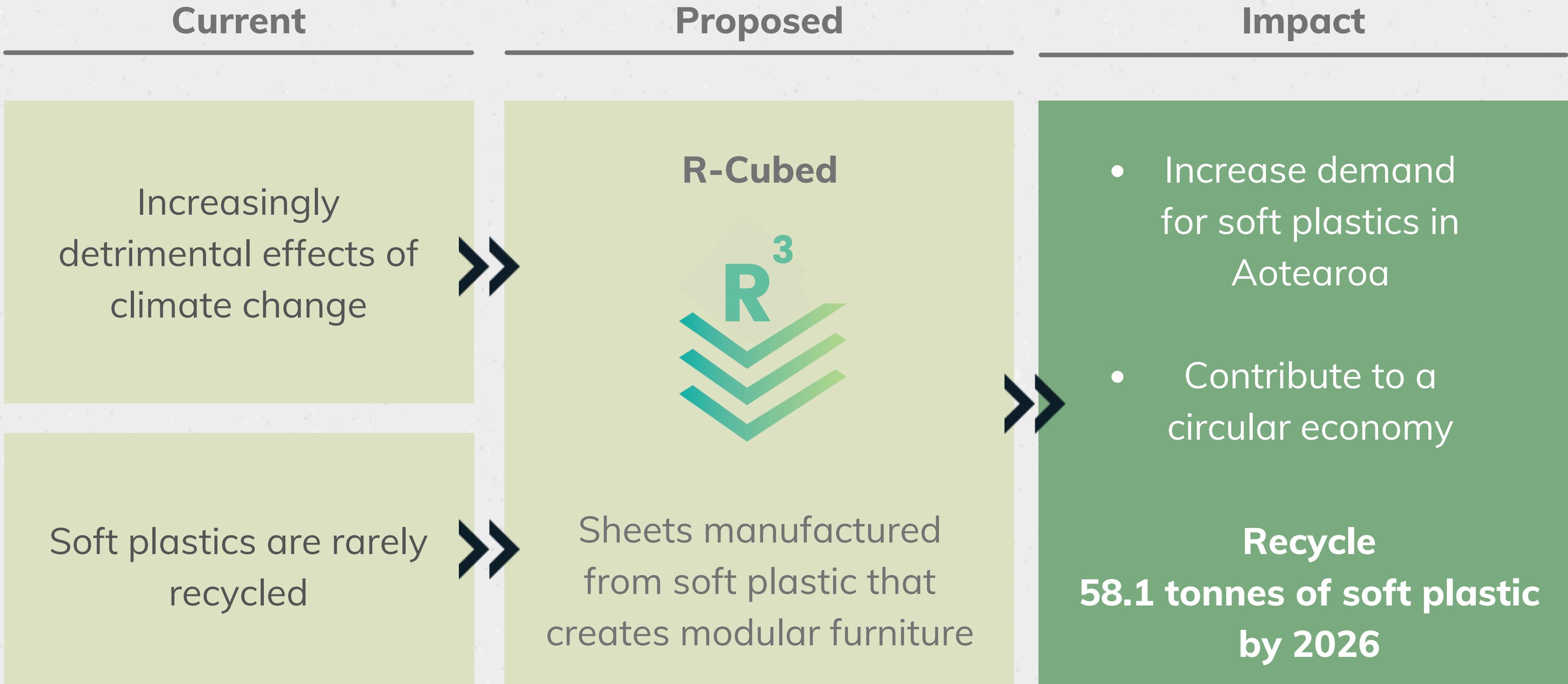


YEAR	SCHOOLS' DEMAND	VOL.
2022	5%	3.3T
2023	7%	4.6T
2024	15%	9.9T
2025	25%	16.5T
2026	36%	23.8T

By 2026, 58.1 tonnes of soft plastic
will be given a second life



Overview



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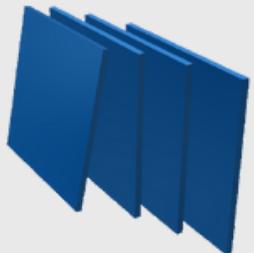
Impact

Conclusion

2022 Estimated Revenue Breakdown

Key Assumptions

- \$400 per m³ + 20% markup = \$500 per m³
- Class set discount rate = 25%
- 2 sheets and 2 fasteners will need repairing



Individual Sheet
\$ 2.50



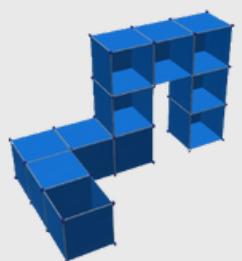
$\$2.50 \times 318 \times 2 =$
\$1,590



Individual Fasting Mechanism
\$0.50



$\$0.50 \times 318 \times 2 =$
\$318

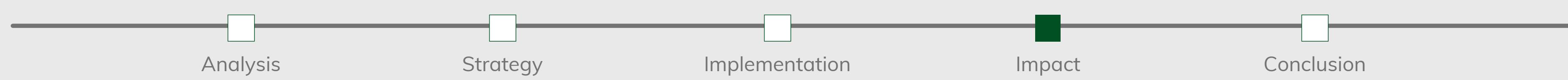


Discounted Classroom Set
(280 sheets and 320 connectors)
\$573



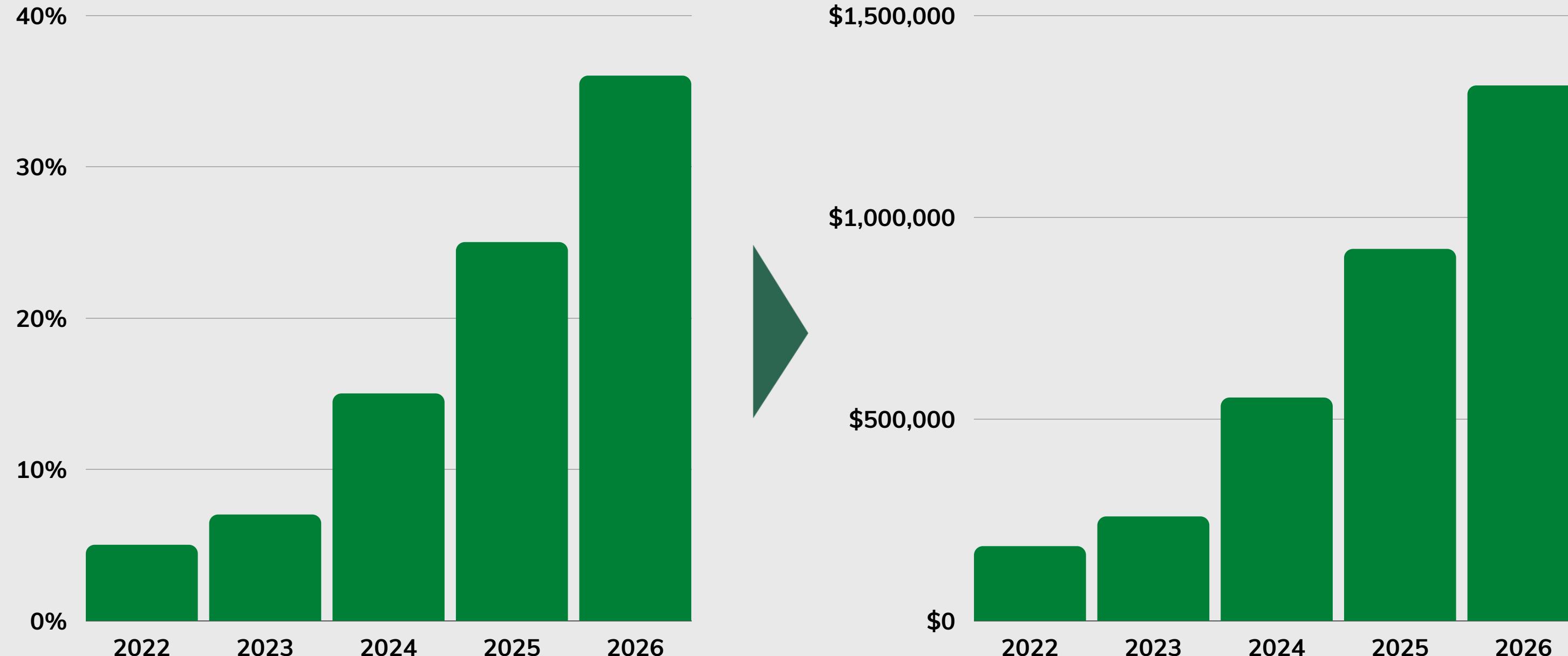
$\$573 \times 318 \text{ classroom sets} =$
\$182,214

Y22 Total Revenue = \$184,122



Estimated Revenue Breakdown

Key Assumption
• YoY revenue growth = YoY demand growth



YoY Growth in Demand

YoY Growth in Revenue

Analysis

Strategy

Implementation

Impact

Conclusion

2022 Estimated Cost Breakdown

EXPENSE

	\$
Cost of materials consumed	2,761.82
Processing fee (to 2LP)	46,030.50
Marketing	3,000
Labour fee	120,000
PPE adjustments (one-off)	25,000



Y22 Total Cost = \$191,792

Key Assumptions

- Based on Replas (a similar Australian manufacturer), the cost of materials is 75% of revenue
- 2LP provides the materials, but R-cubed uses 2% non-soft plastics material
- Processing Fee is 25% of revenue
- Labour Fee is for 2-full time worker

Analysis

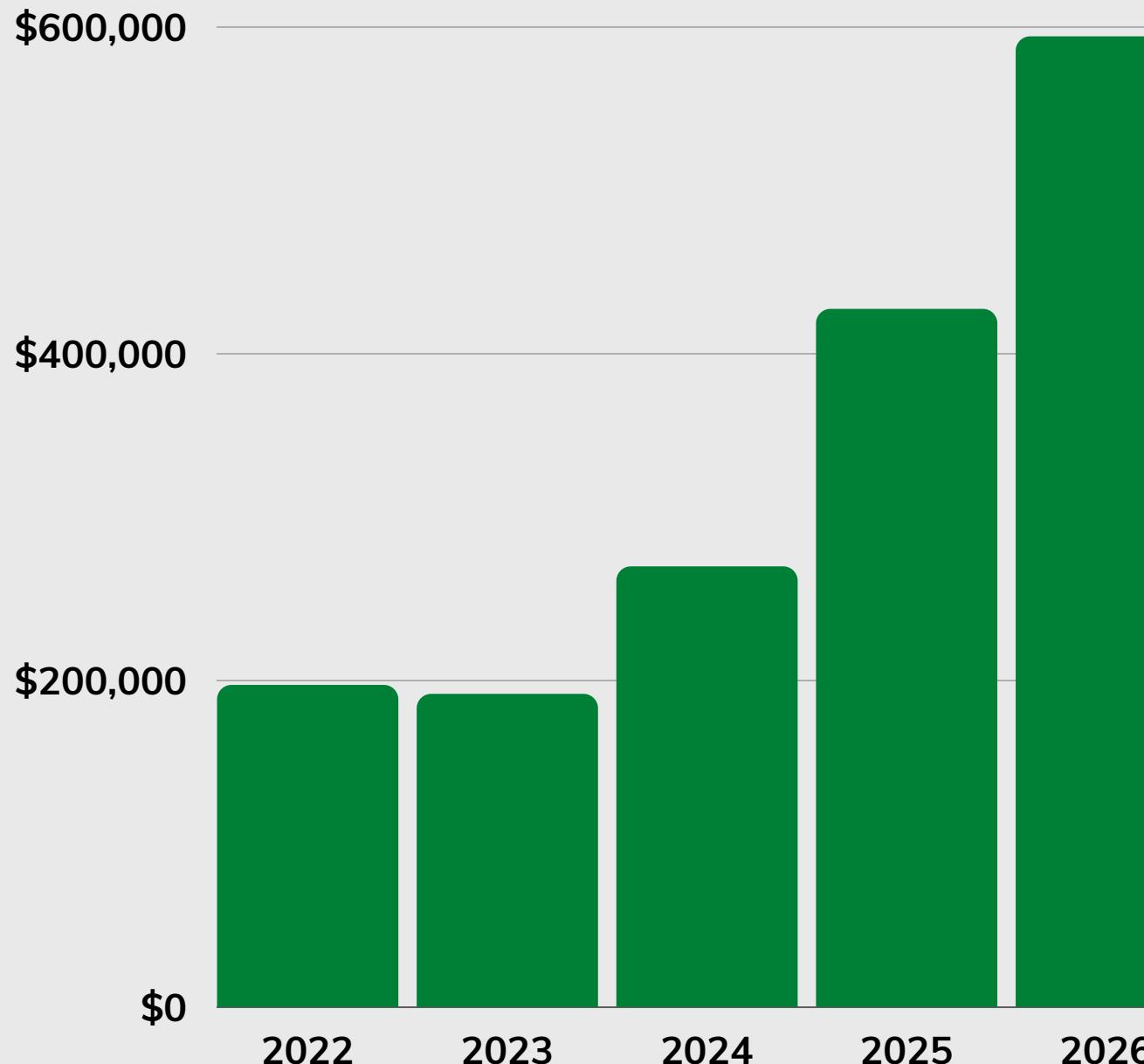
Strategy

Implementation

Impact

Conclusion

Estimated Costs Breakdown



2023 EXPENSE

	\$
Cost of materials consumed	3,867
Processing fee (to 2LP)	64,450
Marketing	3,000
Labour fee	120,000

Total

2024 EXPENSE

	\$
Cost of materials consumed	8,285
Processing fee (to 2LP)	138,083
Marketing	3,000
Labour fee	120,000

Total

2025 EXPENSE

	\$
Cost of materials consumed	13,809
Processing fee (to 2LP)	230,150
Marketing	3,000
Labour fee	180,000

Total

2026 EXPENSE

	\$
Cost of materials consumed	19,855
Processing fee (to 2LP)	330,917
Marketing	3,000
Labour fee	240,000

Total

Analysis

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Conclusion

Projected Revenue/Cost

\$1,500,000

\$1,000,000

\$500,000

\$0

2022

2023

2024

2025

2026

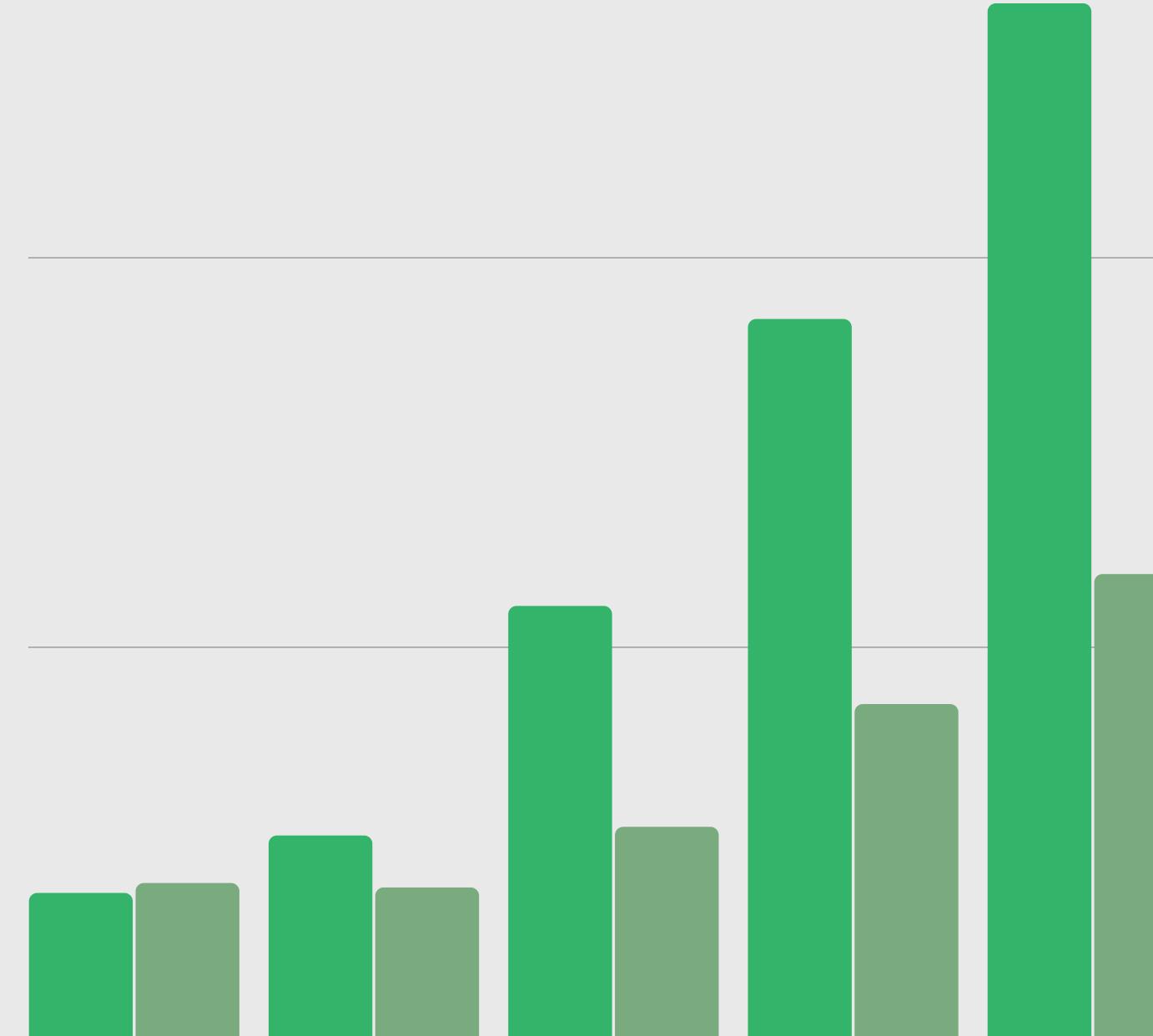
Analysis

Strategy

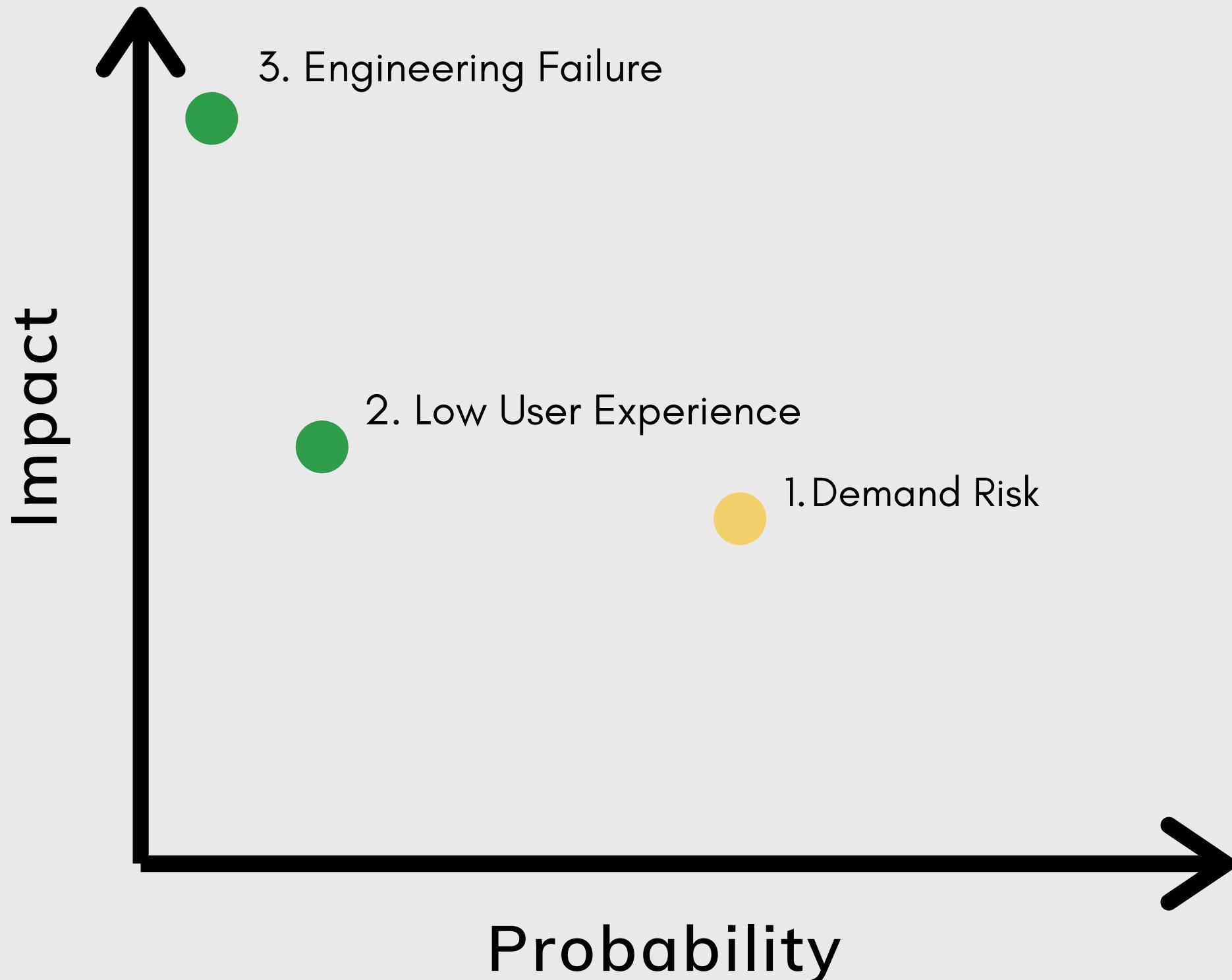
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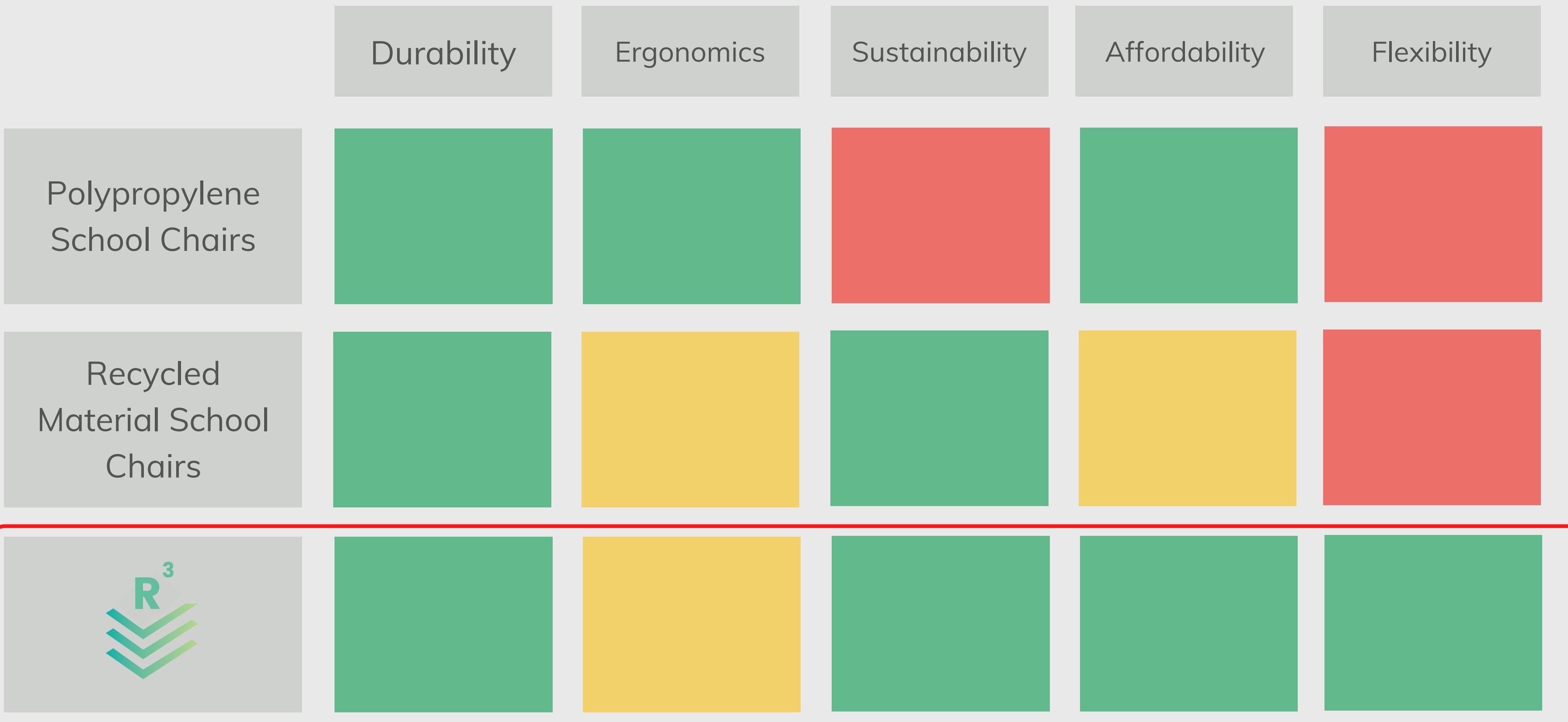
Risks and Mitigations



Mitigations

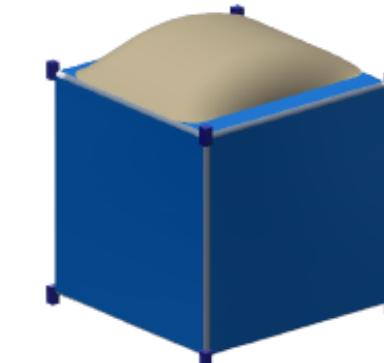
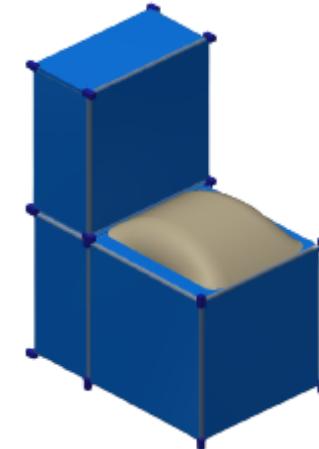
1. Trialing with different schools.
Implementing Stop-Go system to measure and get a feel for demand as we navigate through school environment.
2. Trialing with different schools.
Do frequent user interviews, surveys to get an idea of weak points of the product, enhance and modify accordingly.
3. Early experimentation with designs and frequent consultation with furniture, design and soft plastic recycling experts.

Competitors



Ergonomics

Cushions



Special Panels

- Panels modified to be seats can be put in place
- Panels will be two rods with fabric in between them rather than plastic
- Allows for more comfortable seating that moulds to the user

Metrics For Success

Customer Satisfaction

- Qualitative feedback
- Information regarding customer satisfaction is important to ensure the product is satisfying customer needs, and to discover potential improvements to be made to increase the adoption of this product in more schools (i.e. to increase public acceptance/embracement of this product)
- This can be collected through usability testing, customer feedback, surveying schools, etc.

Sustainable Impact

- Quantitative feedback
- Carbon emission indicators
- Amount of wastage
- How long is the full life cycle of the product?
- How sustainable are the material components of the product? (what % of the inputs are soft plastic?)
- Collected through research into materials and statistics throughout time, impact vs time.

Breadth of Use

- Quantitative feedback
- Breadth of use
- Growth in the number of customers/users
- Growth in the diversity of customers
- This is collected through gathering statistics on sales numbers as well as user surveys

Frequency of Use

- Quantitative Feedback
- How often are customers buying this product after their initial purchase?
- Do schools want to buy more of the furniture after trialing it in classrooms?
- Collected through gathering statistics

Future Expansions

Product Expansion

Research and Development into:

- More sustainable materials
- Better ways of processing soft plastics
- Increasing quality and experience for users
- Increasing durability of product
- Experimenting with different thicknesses to create a durable yet cost-effective material

Market Expansion

Expansion into:

- High Schools
- Workplaces
- Public parks
- Homes/Commerical Retail space