Workshop 2b Summary

About Workshop 2

On February 11, 2021 the Lab team convened the second of two sessions in the "Designing Potential Solutions" Bioplastics Workshop, bringing together 18 participants. The goal of this session was to dive deeper into potential solutions and find ways to make them successful. To do this we followed a "Create-Destroy-Create" model: we took the solutions that were created in the first session, discussed how to make the solutions fail, and then re-created the solutions to be stronger in light of the possible failures that were identified. The solutions that we looked at in this session were:

1. Bioplastic durable packaging reuse cooperative/sharing system
2. Ban on single-use bioplastics
3. Extended Producer Responsibility for bioplastics

System Traps and Opportunities

To "destroy" the solutions, we used to framework of system traps and opportunities from Donella H. Meadows' (2008) *Thinking in Systems*. Examples of traps and corresponding opportunities to counteract those traps include the following:

Traps	Opportunities
Policy resistance	Let go
Exploitation of the commons	Educate and exhort
Drift to low performance	Keep standards absolute
Escalation	Refuse to compete
Success to the successful	Diversification
Shifting the burden to the intervenor	Long-term restructuring
Rule beating	Design or redesign rules
Seeking the wrong goal	Reflect real welfare of the system

Table 1. System Traps and Opportunities (adapted from Meadows, 2008[1])

Participants were asked to identify traps that could make their solution fail, as well as corresponding opportunities that could change the solution in order to avoid or get out of the trap. The traps and opportunities were identified for each solution are summarized in Tables 2, 3 and 4.

Impact Model Canvas and SIMBIO Den

To "create" the solutions again, participants worked together to develop a pitch for their solutions by mapping the details of the solution onto an Impact Canvas, based on the Rhizome Impact Canvas[2]. The groups working on each solution then reconvened for a SIMBIO Den exercise, where each group was given 2 minutes to pitched their idea, followed by a 5 minute question period. Figures 1, 2 and 3 show the final Impact Canvases that were presented by each group.

What's Next?

This concludes our second Bioplastics 2 session workshop. Thank you for contributing your time and expertise to the Food Systems Lab and SIMBIO Project! Workshop 3 "Rapid Prototyping Potential Solutions" will take place in the spring, dates still to be announced. We hope to see you there!

Written by Nadia Springle. Edited by Tamara Shulman and Belinda Li.

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[1] Meadows, D. (2008) Thinking in Systems: A Primer (D. Wright, Sustainability Institute, Ed.). Chelsea Green Publishing.
[2] Kranenburg, D. (2017). Rhizome Impact Canvas.

Table 2. Bioplastic durable packaging reuse cooperative/sharing system – Summary of system traps and opportunities	
Traps	**Opportunities**
Response – Resistance and low participation in the program *Policy Resistance*	• Capitalize on existing sustainability cultures in communities that may be more receptive to the program • Create an aesthetic design and enhance the cool factor for consumers • Promote a culture shift towards reusables • Present the program as an opportunity for job creation in the service economy, which would be involved in cleaning, delivery, collection, etc.
Stakeholders – Dominant large companies are successful, but small companies are negatively impacted or cannot afford to participate Patent infrastructure creates a backlog of technology sharing *Success to the Successful*	• Incubation of small and medium sized businesses • Regulations to ensure that one company doesn't completely monopolize the space • Create exceptions for companies that have lower annual service rates • Have the government provide the service • On-site sterilization technologies getting cheaper and are more widely and easily available to companies • Rethink the patent infrastructure
Stakeholders – Escalating competition within the industry *Escalation*	• Build shared infrastructure for multiple companies to use • Put in place common industry standards • Enhance collaboration between companies (e.g. create a non-profit collective), and determine what parts of the program to either collaborate or compete on • Frame collaboration as an opportunity, because so many more things will be able to be shared if there is collaboration
Inventory – Dishes are not returned Dishes are not durable, getting stained or damaged *Drift to Low Performance, Rule Breaking*	• Education about the program • Collaboration across businesses to create multiple drop-off areas for dishes • Education within the industry on the diversity of materials and the benefits of using the right materials for the right use cases. • Designing containers that are for certain purposes (liquids, hot foods, etc.) • Put in place common industry standards for the types of cups and dish-ware that should be used
Equity and Accessibility – Not everyone has access to deposit centres	• Collaboration across businesses to create multiple drop-off areas for dishes
Materials – Source materials for dishes have negative social or environmental consequences *Exploitation of the Commons*	• Promote regenerative agriculture
Environment – The program has negative environmental impacts, such as generating lots of grey water from washing, and creation of waste at dishes end of life *Shifting the Burden to the Intervenor, Exploitation of the Commons*	• Regulations to ensure environmental protection

Table 3. Single-use bioplastic ban - Summary of system traps and opportunities	
Traps	**Opportunities**
Response – Resistance and backlash in response to the ban *Policy Resistance*	• Change the paradigm and social norms around single use items, and promote reusable options • Innovate and invest in durable and reusable uses for bioplastics • Ban only unnecessary single-use bioplastics • Frame the ban from an environmental lens
Goal – The ban is a band-aid solution that does not solve the root issue it is supposed to address. *Seeking the Wrong Goal, Shifting the Burden to the Intervenor*	• Clearly determine what the purpose of the ban is, and who would be most affected • Conduct an assessment that determines the role of the ban, its impact on traditional use, and what other alternatives could address the problem • Maintain the Zero Waste Hierarchy by focusing on the higher levels without undermining the bottom points, and even treat the ban as an opportunity to also make the bottom points healthier
Logistics – There are logistical challenges to implementing the ban: • confusing and difficult to identify bioplastics • uneven regulations across jurisdictions • businesses dealing with a global supply chain *Drift to Low Performance*	• Harmonization of standards and regulation across jurisdictions and across the bioplastics sector • Harmonization up and down the supply chain
Exceptions – There are too many exceptions to the ban, which increases confusion *Rule Beating*	• Limit exceptions, design better rules about what products should actually be exempted.
Materials – The ban results in higher demand for alternative products and thus higher pressure on those alternative resources, e.g. glass, wood, paper Alternatives can also be unsustainable and harmful to the environment. *Exploitation of the Commons*	• Conduct a full life cycle assessment of bioplastics and alternative products • Explore and innovate other alternatives • Promote a culture shift towards reusable items instead of single use items
Stakeholders – The ban negatively impacts certain stakeholders such as small businesses, workers in the bioplastics industry, consumers Larger companies fare better under the ban because their cost of doing business is relatively lower than small companies *Success to the Successful*	• Support local innovation and locally produced items • Implement an alternate set up for small businesses
Food - The ban negatively impacts food safety and longevity *Exploitation of the Commons*	• Ban only unnecessary single-use items

Table 4. Extended Producer Responsibility (EPR) for bioplastics - Summary of system traps and opportunities	
Traps	**Opportunities**
Stakeholders - Relevant stakeholders are not included in the development of the program, and/or do not participate in the program once it is developed. Meanwhile, certain companies use the program as an opportunity to advance their own interests by influencing the program's development and policies, creating a conflict of interest. *Success to the Successful, Policy Resistance, Shifting the Burden to the Intervenor*	• Prioritize democracy and transparency in the design of the EPR program • Make efforts to include all relevant stakeholders • Structure the program so that companies pay into EPR, but do not control the program's direction and policies • Incentivize companies to participate, framing the program as an opportunity to combat greenwashing and stand out in the market • Include both residential and commercial sectors in the EPR program
Stakeholders - Stakeholders at the front and back ends of the bioplastics lifecycle are not connected *Shifting the Burden to the Intervenor, Drift to Low Performance*	• Communication and accountability between product designers/manufacturers and end of life companies • Incorporate a feedback loop so that the end-of-life challenges for collected EPR materials are provided to manufacturers with intent to change design
Funding - Misrepresentative allocation of resources collected by EPR program (e.g. funds collected do not go towards processing bioplastics) Participation levels in a single region or province/territory are not high enough to generate sufficient funding and improve end of life. Cost of the program is high and businesses cannot afford to participate (e.g. high flat fee regardless of how much materials are collected) *Rule Beating, Success to the Successful, Drift to Low Performance*	• Have an unpaid council of experts to determine how EPR funds are invested, at arms length from the people paid to be part of the stewardship body • More coordinated, broad collection system for all materials instead of just one material or product type • Coordinate a federal EPR effort that is experimented with at a provincial/territorial level • Structure the program so costs are not too high, use a variable fee instead of a flat fee
Collection - Low levels of bioplastic product collection due to consumer confusion and difficulties identifying and sorting bioplastics. *Drift to Low Performance*	• More coordinated, broad collection system for all materials instead of just one material or product type • Innovative product design • More consistent labelling and clarity of material type • Reinforce performance standards and even enhance the standards
System - System stays linear instead of becoming circular *Drift to Low Performance, Shifting the Burden to the Intervenor*	• Include incentives for product design to have successful end of life management • Frame the potential changes to upstream design as cost savings for manufacturers
Materials - Bioplastic material sources divert resources away from food supply *Drift to Low Performance, Exploitation of the Commons*	• EPR program incentivizes innovation in bioplastic production to use materials from waste rather than food products
Sector - EPR program focuses on small bioplastic sector and does not address larger problems in the current dominant plastics industry *Seeking the Wrong Goal*	• Challenge the conventional plastics industry and existing EPR programs too • Integrate single polymer bioplastics into existing EPR programs, rather than continuing to consider them as contaminants

Solution Name: Reusable Sharing Food Packaging Program

Purpose
What is the vision that this solution is trying to achieve?

- Minimize waste and environmental footprint while maximize sharing
- Target takeout and resto/cafe food packaging

Problem
What is the pain or challenge experienced by the target audience? Be specific.

- Compost is still ending up in the landfill despite the intention of it being recyclable - infrastructure updating
- There is lots of confusion - greenwashing what is actually good for the environment
- Micro- plastics, extraction, petroleum based products, resource wars and social implications on the communities
- Consumer guilt - cafe owners may be feeling pressure - the expense of disposable

Current Solution
How is the target audience currently solving this problem? How is this contributing (negatively or positively) to the Purpose?

- Bringing your own take out containers and bringing their own reusables
- Bringing your own tote bags to the grocery store
- Burdening the organic facilities - contaminating the recycling or compost received by the stream
- Restaurants are charging for takeout containers to defer consumers
- consuming items that have symbols to show that they are more environmentally friendly
- Slowly shifting the culture surrounding take out - shift to use plastics that are intended to be reusable

Key Solution
What is the thing that solves the target audience's problems?

Universal sharing system for a suite of container types

Universal sharing system - eliminates the consumer thinking about the recycling process - it becomes apart of routine and culture

Not putting the burdens on different coffee shops - minimize the burden on smaller shops

(Un)Fair Advantage
Why will this solution succeed?

- Creates jobs
- No longer responsible for the businesses paying for the waste
- Cheaper for the restaurants - significantly less amount of waste entering the different streams
- Need to make containers appear valuable so will not be thrown out

Unique Value Proposition
What single or multiple value propositions remove the problems faced by your target audience?

- Universality
- Its not a single use system
- Lower environmental and carbon footprint
- Eliminates the thinking for a lot of people

Partners, Channels, Outreach
How will the target audience find out about this solution? Which partners are critical to its success?

- Regulation
- Political will to support a regulation
- Some degree of buy in is needed - incentives - how much is the deposit? incentive to return it
- Consumer behaviour is shaped by the system
- Education - by restaurants
- Public health sector and education - what is safe? we have worked with them to show that the system is safe
- we need the public and restaurants to participate in this initiative
- Industrial dishwasher sites?
- Designers and manufactures, producers of materials

Target Audience
Who is experiencing the problem and benefits from the solution? There may be multiple.

- Environment
- Target audience - food production and restaurants
- younger people using delivery and take out services
- Consumers and customers that are taking out - instead of eating in, using delivery services with single plastics
- Marginalized communities

Cost Structure
What are the resources you require for this solution? What needs to be funded?

- Materials for the container
- Who is funding? all restaurants and food services paying into the system
- Consumers pay in for the deposit - additional fee such as a recycling fee charged on cans
- Creation of a dishwasher site

Revenue & Contribution
Where will the resources for this solution come from?

Key Indicators & Impact
How will you know if this solution is working? How will you measure whether the solution is contributing to the purpose?

- waste audits - local and regional
- Pilot project for waste audits
- Picking up the garbage to see what what was still ending up in the landfill to measure the success

Figure 1. Reusable Sharing Food Packaging Program – Impact Canvas

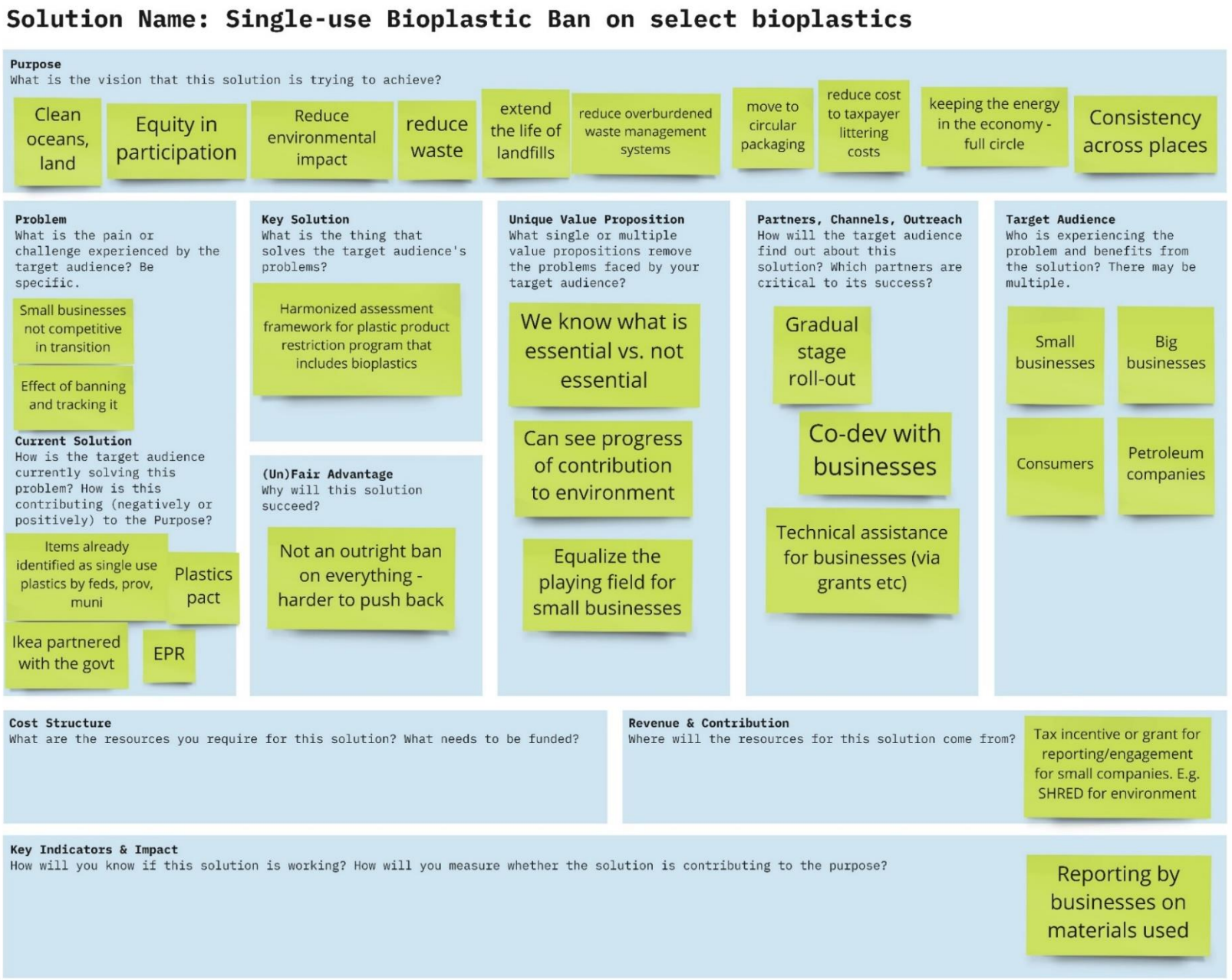

Figure 2. Single-use Bioplastic Ban – Impact Canvas

Solution Name: Extended Producer Responsibility for bioplastics (all, expand even?

Purpose
What is the vision that this solution is trying to achieve?

Create an extended producer responsibility mechanism that enables the producers of bioplastics to fund effective end of life management, with feedback loops for opportunities and gaps in end of life to inform upstream design

100% circular economy

3 pillars: Design out waste. Regenerate waste. and?

Waste prevention and avoidance

Short term high cost, at the end it saves money

Problem
What is the pain or challenge experienced by the target audience? Be specific.

- Manufacturers /producers: Disconnection, lack of viable end of life solutions
- Bioplastic producers are asked to be more accountable than manufacturers of other products
- Funding not going to end of life management solutions, as much as it could

Current Solution
How is the target audience currently solving this problem? How is this contributing (negatively or positively) to the Purpose?

- Getting support to figure out downstream
- Continued effort toward product design
- Paying for field testing at compost facilities
- Patchwork research by producers on end-of-life management
- Paying for third party certification of appropriate end of life management

Key Solution
What is the thing that solves the target audience's problems?

- EPR program for all bioplastics
- Funding stream going towards developing, incentivizing, creating end of life processing solutions.
- Democratic decision making for where EPR funding gets invested
- Clarity of solutions to consumers

(Un)Fair Advantage
Why will this solution succeed?

Timely

All stakeholders who are affected by the use (or misuse) of bioplastics will be involved in the EPR program and it will work to satisfy their needs

Universal buy-in (better than a ban)

Unique Value Proposition
What single or multiple value propositions remove the problems faced by your target audience?

- Connects product design and EOL management through feedback
- Enables a direct line of communication between manufacturers and end of life managers
- support for branding materials
- Facility upgrades
- EPR program can speak on behalf of the whole industry
- it's a new body, potential to have a positive vibe for the public (more so than the maligned compostables industry)
- Provides a lobbying voice representing compostable bioplastics producers. (e.g. we don't have a CPIA for compostables)

Partners, Channels, Outreach
How will the target audience find out about this solution? Which partners are critical to its success?

- Producers fund it
- Communicated via magazine articles, advertisements and webinars

Target Audience
Who is experiencing the problem and benefits from the solution? There may be multiple.

- Broad: end consumers, business owners, producers
- The manufacturers and producers
- all Canadian producers
- Organics processing facilities
- First Nations
- All three levels of government
- Major international players

Cost Structure
What are the resources you require for this solution? What needs to be funded?

Initiation of an unbiased body, potentially funded via governmental grants

Long term, funded by producer fees

Existing funds being collected by EPR programs that have overlap can be re-routed towards the new EPR program

Revenue & Contribution
Where will the resources for this solution come from?

Paid for by producers

Conscious capitalism - Capitalism that is willing to incorporate socialist ideals!

Small fee across all actors across the lifecycle

Key Indicators & Impact
How will you know if this solution is working? How will you measure whether the solution is contributing to the purpose?

Effective, high (90%+) diversion rate of compostable bioplastics to organics processing.

Funds comprehensive, peer-reviewed, open-source research on end of life management effectiveness

Figure 3. Extended Producer Responsibility for Bioplastics – Impact Canvas