



# GREEN STARTUP TOOLKIT





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**SUSTAINABLE  
DEVELOPMENT  
GOALS AND   
GREEN STARTUPS**





## OVERVIEW

The Sustainable Development Goals (SDGs) are a collection of 17 interlinked global goals designed to be a blueprint to achieve a better and more sustainable future for all, adopted by all United Nations Member States in 2015. It aims to eradicate poverty and protect the planet for peace and prosperity of the people by 2030.

A goal for every individual and company is SDG 12 - Responsible Consumption and Production which arguably connects most of the SDGs. Sustainable consumption and production (SCP) is one of the overarching objectives of, and essential requirements for, sustainable development, together with poverty eradication and the management of natural resources in order to foster economic and social development. Fundamental changes in the way societies produce and consume are indispensable for achieving global sustainable development.

It is projected that by 2030 the world's population could reach up to 8.5 billion

and this will have an impact on what and how individuals and societies consume, especially when it comes to food, transportation, housing, consumer goods and leisure<sup>1</sup>.

The amount of materials consumed by people in order to live, has exploded in many parts of the world, highlighted by the fact that the global extraction of natural resources has tripled over the past four decades, rising to an enormous 70 billion tonnes in 2010 (UNEP). If current trends continue, then humans will need the equivalent of two Earths to support themselves by 2030.

Therefore, innovations and startups focusing on environmental, social, economic and governance are needed to support sustainable consumption and production. **The Green Startup Toolkit** is designed to be a guide for environmentally-conscious startups who are working on sustainable solutions as well as individuals who want to become eco-entrepreneurs.

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***Innovations and startups focusing on environmental, social, economic, and governance are needed to support sustainable consumption and production.***

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<sup>1</sup> Population 2030 Demographic challenges and opportunities for sustainable development planning. UN 2015

# THE GREEN STARTUP TOOLKIT

This toolkit was created in collaboration with colleagues from the United Nations Environment Programme (UNEP), the Asian Institute of Technology (AIT), and startup founders.

Designed to support founders and their startups at various stages of development, the Toolkit is structured as follows: Firstly, the Sustainable Consumption and Production (SCP), its values, and the requirements of starting up green businesses are discussed. Secondly, definitions of the green startup are explained and a step-by-step procedure is introduced as guide for starting up a green business toward sustainability. Finally, the most relevant business tools are provided to support the green startups.

The six main phases of the green startup implementation process from idea generation to

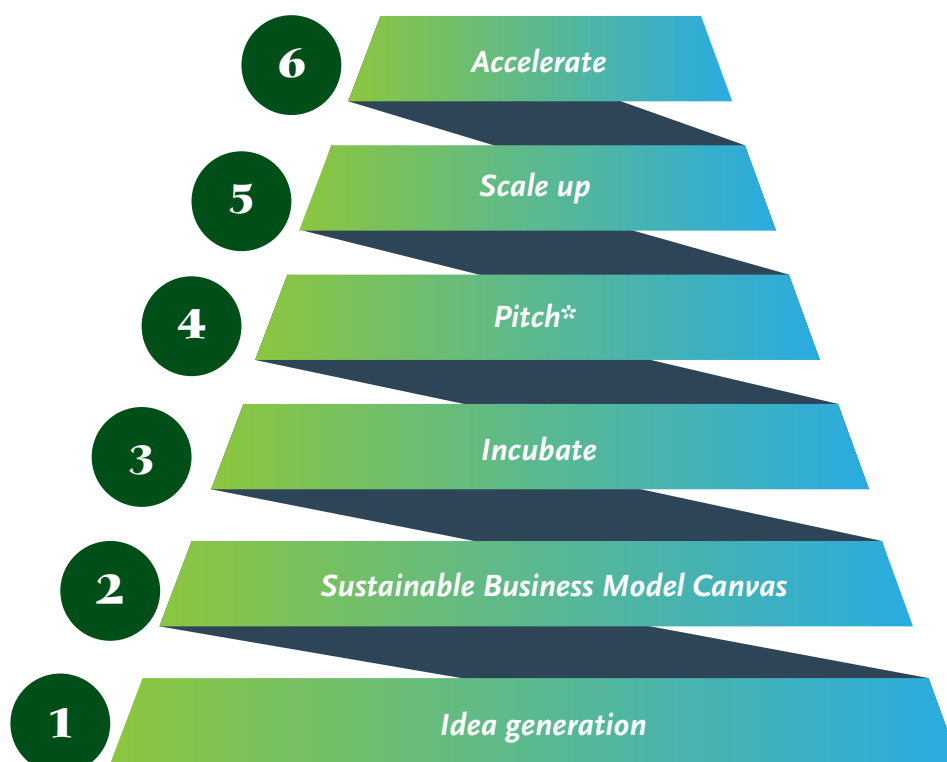
accelerate, as presented in the figure below, and will be discussed in detail as we go along.

## Objectives

- Introduce the concept of SCP and its value for global goals.
- Provide a step-by-step procedure to guide eco-entrepreneurs and green startups to adopt sustainable businesses.
- Introduce business tools which make the adoption of sustainable business easier.

*All the tools mentioned in this toolkit can be downloaded at [www.greenstartups.ait.ac.th](http://www.greenstartups.ait.ac.th)*

*We also provided tools with examples to guide the startup, which can be found from page 37 onwards.*



*The six phases of a green startup*

## DEFINING A GREEN STARTUP

*A green startup is an early-stage company designed to grow fast and address an unmet market need by delivering value to customers and in all its operations considers and implement the use of sustainable resources, reducing resource consumption, promoting recycling and environmental benefits, and uphold socially responsible policies.*

Commitment to sustainability has become an increasingly important part of modern business operating models, as consumers demand products and services that are not only high in quality but also reduces their adverse effects the environment. As a result, the sustainable business market is flourishing, providing a fertile place for green startups to take root and have a major impact on business and industrial practices.

Any startup can become a green startup by applying the concepts of this guide. Tech Startups and Social Businesses can use this toolkit to become a Green Startup. Existing companies can evolve into “*Green Companies*” as well or reboot themselves as a “*Green Startup*”, however this is not the main theme of this guide.



*Main key differences among eco startup, tech startup, and social business*

# IDEA GENERATION





If you want to be an eco-entrepreneur, the first thing that you need to do is to look for problems, it can be problems you have yourself. Three things that the best startups have in common are: they are something the founders want, they themselves can build, and these are worth doing no matter how challenging at first.

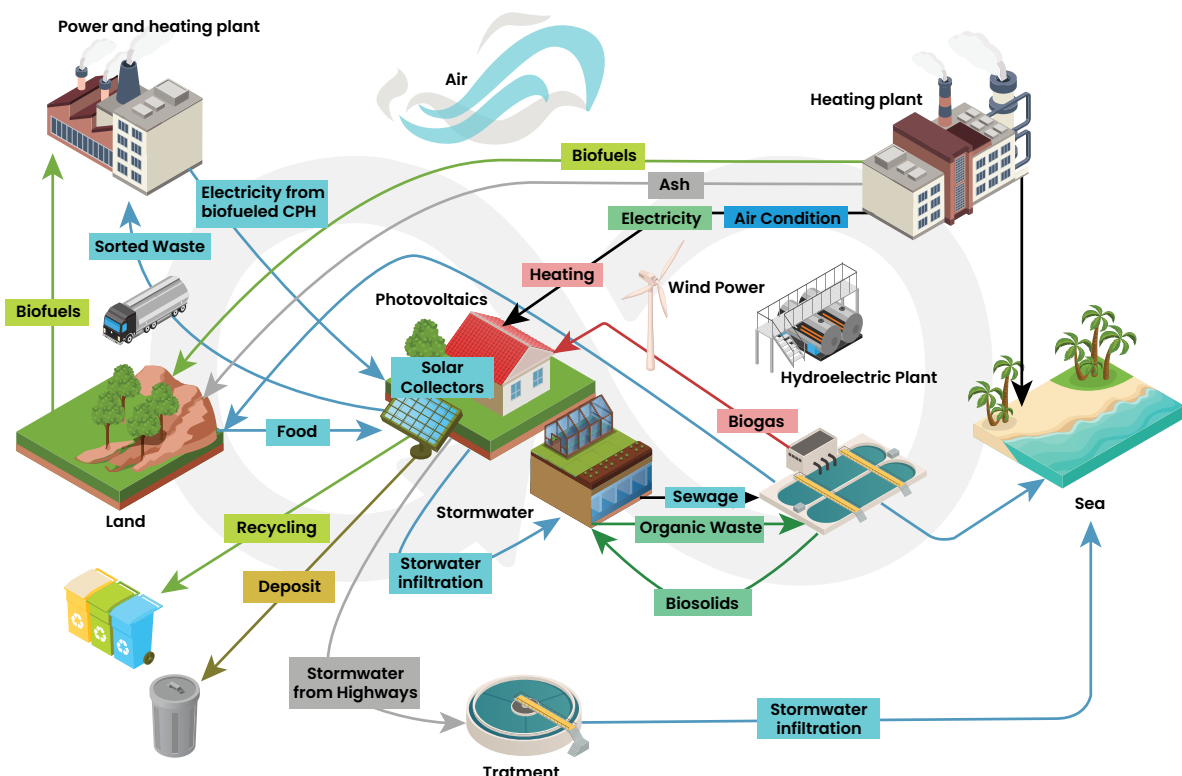
It will also help if you can look at the bigger picture. As it was mentioned in the beginning, at the heart of SDGs is the Sustainable Consumption and Production. UN Environment Programme defines Sustainable Consumption and Production (known as SCP) as “the use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of future generations.” SCP goes side by side with the Circular Economy (CE) which environmentalists are trying to push in order to change the current linear approach (take-make-dispose) that our society has been practicing. For example, if your problem is about not finding biodegradable straws available in the market then you can begin to consider creating one so that no

**Circular Economy (CE), defined by the Ellen MacArthur Foundation as “a systems-level approach to economic development designed to benefit businesses, society, and the environment.” CE is based on the three principles of: Designing out waste and pollution; Regenerating natural systems; Keeping products and materials in use.**

more turtles will ever experience having plastic straw stuck to their nose. But it’s not enough making biodegradable straws, how you package the straw to sell in the market should also come in biodegradable packaging.

How does your idea fit in the bigger picture of SCP or CE? You want to create a biodegradable straw. It means that you are not creating more waste because your product will break down quickly and safely into mostly harmless compounds.

### Startups for Sustainable Lifestyles



Here are some examples of ideas from which you can take inspiration while thinking of your own sustainable business:

## ecoware®



Plates, cups, and utensils for parties and takeaways that are not plastic and will not produce more waste

<https://ecoware.in>

### **Solutions**

*Biodegradable & compostable products made from plants.*

## mylea



Leather materials that are not made from animal

<https://mycl.bio>

### **Solutions**

*Agriwaste converted into artificial leather*



Make reusable cups available in coffee shops, events, and parties

[http://ayacup.com/en\\_gb](http://ayacup.com/en_gb)

### **Solutions**

*Reusable cups that can be used anywhere with collection points*

It has become increasingly clear that sustainability benefits are not only for the environment and communities, but it has also been shown to have direct cost saving implications on the business

and its operations. Next, we'll talk about how you can integrate sustainability into your products and services.

# HUMAN-CENTERED DESIGN



**A**s a startup founder, you may be wondering how to actually create products and services that can help your company to become sustainable. You might find it helpful to incorporate a human-centered design approach. Human centered design is a methodology in which the human experience, desires, needs, and preferences establish the

foundation of the discovery process. The human-centered design approach helps to uncover the reasons and root causes of why a particular product, service, or solution may be important to a particular group of people. Oftentimes, the people, themselves, may be unaware that they have unmet needs, and human-centered design helps to uncover them.

## *Human-Centered Design Phases*

The human-centered design approach is iterative, which means that lessons are learned, applied, tested, and re-tested throughout the process. These broad phases each have specific methodologies within them, and it is common that there is a series of lessons learned, trials, and failures, and adjustments made throughout each phase of the process.

### **1. Ideation**

Information and knowledge gained during the inspiration phase is applied during ideation. Creativity and thinking broadly about possible solutions are critical during this phase of the process. We often spend much of our lives thinking from a rational and realistic approach, but during the ideation phase of the design process, creativity that allows us to expand beyond what is already known, will help us to design products and services to meet the core needs that were uncovered during the inspiration phase.

### **2. Inspiration**

During the inspiration phase, the founders listen, learn, and discover the fundamental needs of the customer. This process may involve in-depth interviews, direct observations, and

experiencing situations from the perspectives of the end users. It is also important to confirm with people within that population whether your insights and perspectives are accurate.

### **3. Execution**

Implementation is not a singular action. In fact, this phase involves cycles of testing, failing, learning, re-testing, readjusting, and adapting based on the insights gained. Rarely will the initial solution be the final solution. Rather, implementation is our opportunity to test our ideas based on the inspiration, and to adjust, and improve them along the way.

We call those learning and redesign phases “iterations”. The development of a highly valuable and functional product requires several of those iterations.

# HUMANITY-CENTERED DESIGN




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## *The humanity-centered design*

*approach can be thought of as an extension of the human-centered design process with an overlay of circular economic principles.*

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Recently, there has been a shift from human-centered design, from the perspective of the consumer, to humanity-centered design, which involves a more holistic approach that incorporates multiple stakeholders. Businesses have traditionally been established in what is known to be the linear economy. That is to say that the process includes extracting raw materials from the earth, manufacturing the product, consuming the product, and disposing of the product. This has also been known as the take-make-waste economy. The circular economy, to contrast, is one in which the life cycle of the product is extended, and once the initial use of the product has been completed, the materials are repurposed to be used in other products or applications, thereby reducing the adverse impacts on the environment. The humanity-centered design approach can be or sometimes in the same products such as for aluminium in aluminum cans. Aluminium as an element can be recycled unlimitedly, thought of as an extension of the human-centered design process with an overlay of circular economic principles. That is

to say, how can products and services be designed in such a way that the impact of the full product life-cycle (i.e. sourcing, manufacturing, consumption, reuse, recycle, repurpose) is considered in the initial design process. Questions to consider can be found below:

- *What are the implications that the product or service has on communities and society from the earliest stage of development?*
- *What communities may be impacted in identifying and collecting the materials?*
- *How might the extraction process impact the health of the people in those communities?*
- *How might the extraction process impact the environmental balance in the communities?*
- *What impact might the product or service have on communities once the product is no longer needed?*
- *Do our values, processes, and operations support the people and surrounding environments? In what ways? How might we improve?*

# SUSTAINABLE BUSINESS MODEL CANVAS



After generating the idea, the next step is to convert your idea into a viable business. In this regard, a business model canvas is useful for the startup founders to answer the questions under nine elements namely: Key Activities, Key Partners, Value Proposition, Customer Relationships, Customer Segments, Key Resources, Channels, Cost Structure, Revenue Streams. You modified the traditional business model canvas to include considerations for the impact on environmental, social and

governance issues in addition to the economical considerations and this model is called the **Sustainable Business Model Canvas (see Tool 1)**. This framework ensures the startup owners to reduce the negative impact on environment, society and governance while enhancing the positive impact on the same. By answering the following questions under 11 elements of the following diagram will provide you the overarching picture of your future business.



Another tool that can also help startups is the **Triple Bottom Line or People, Planet, Profit (see Tool 2)**. By using this tool, startups could to measure, benchmark, set goals, improve, and eventually evolve toward more sustainable

systems and models. It also illustrates that if an organization is only focused on profit-ignoring people and the planet-it cannot account for the full cost of doing business and thus will not succeed long term.

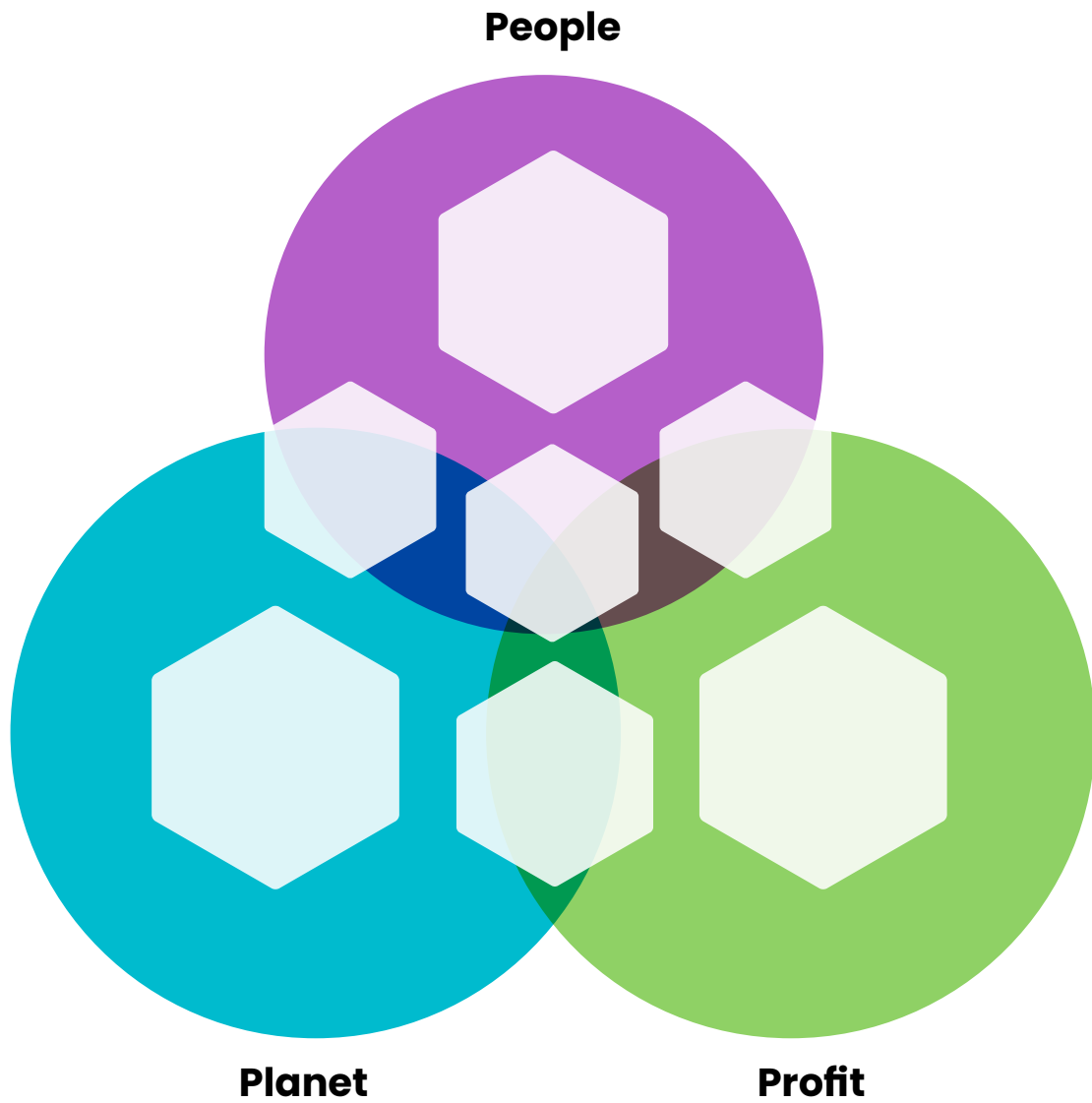
## TOOL 1: SUSTAINABLE BUSINESS MODEL CANVAS

This tool helps with the execution steps requirement to take your idea to market.

 <b>KEY PARTNERS</b> <ul style="list-style-type: none"> <li>• Who are our key partners?</li> <li>• Who are our key suppliers?</li> <li>• Which key resources are we acquiring from our partners?</li> <li>• Which key activities do our partners perform?</li> <li>• Does our supply chain use sustainable means?</li> </ul>	 <b>KEY ACTIVITIES</b> <ul style="list-style-type: none"> <li>• What key activities do our value propositions, distribution channels, customer relationships and revenue streams require?</li> <li>• Do our activities include sustainable operations?</li> </ul>	 <b>VALUE PROPOSITIONS</b> <ul style="list-style-type: none"> <li>• What value do we deliver to the customer?</li> <li>• Which one of our customers' problems are we helping to solve?</li> <li>• What bundles of products and services are we offering for each segment?</li> <li>• Which customer needs are we satisfying?</li> </ul>
 <b>CUSTOMER RELATIONSHIPS</b> <ul style="list-style-type: none"> <li>• How do we get, keep and grow customers?</li> <li>• Which customer relations have we established?</li> <li>• How are they integrated with the rest of our business model?</li> <li>• How costly are they?</li> </ul>	 <b>CUSTOMER SEGMENTS</b> <ul style="list-style-type: none"> <li>• For whom are we creating value?</li> <li>• Who are our most important customers?</li> <li>• What are the customer archetypes?</li> </ul>	
 <b>KEY RESOURCES</b> <ul style="list-style-type: none"> <li>• What key resources do our value propositions, distribution channels, customer relationships and revenue streams require?</li> <li>• Are these resources from renewable sources?</li> </ul>	 <b>CHANNELS</b> <ul style="list-style-type: none"> <li>• Through what channels do our customer segments want to reach?</li> <li>• How do other companies reach them now?</li> <li>• Which ones work best?</li> <li>• Which ones are most cost-efficient?</li> <li>• How are we integrating them with customer routines?</li> </ul>	
 <b>COST STRUCTURE</b> <ul style="list-style-type: none"> <li>• What are the most important costs inherent to our business model?</li> <li>• Which key resources are most expensive?</li> <li>• Which key activities are more expensive?</li> </ul>	 <b>REVENUE STREAMS</b> <ul style="list-style-type: none"> <li>• For what value are our customers really willing to pay?</li> <li>• For what do they currently pay?</li> <li>• What is the revenue model?</li> <li>• What are the pricing tactics?</li> </ul>	
 <b>ESG BENEFITS</b> (Environmental, Social, Governance) <ul style="list-style-type: none"> <li>• How might our products or service contribute to the quality of the surrounding community?</li> <li>• How will our company benefit people's lives?</li> <li>• How might our products or service contribute to the environment?</li> <li>• How might our products or services contribute to greater biodiversity?</li> </ul>	 <b>ESG IMPACTS</b> (Environmental, Social, Governance) <ul style="list-style-type: none"> <li>• How about our environmental impact in terms of our operations? ex: the energy our company takes in and the waste it discharges, the resources it needs, and the consequences for living beings as a result?</li> <li>• How our social impact addresses the relationships our company has and the reputation it fosters with people and institutions in the communities where we do the business?</li> <li>• How about governance or the internal system of practices, controls, and procedures of our company adopts in order to govern itself, make effective decisions, comply with the law, and meet the needs of external stakeholders?</li> </ul>	

## TOOL 2: PEOPLE, PLANET, PROFIT

This tool helps the team generate ideas to address hotspots or strategic changes in the value proposition.





# INCUBATE



**C**ongratulations! You just moved from idealization and development of your Sustainable Business Model Canvas and People Planet Profit (PPP), now it's time to consider incubation. There are hundreds of incubation centers out there, which one is the right fit for your green startup?

An Incubation Center provides a collaborative program designed to help new startups succeed by providing workspace, seed funding to mentoring, and training with the sole purpose of helping entrepreneurs grow their businesses.

Most startup incubators are non-profit organizations run by the government, universities or public and private entities.

One example of a startup incubator is the Entrepreneurship Center at the Asian Institute of Technology (AIT), Thailand. The Center provides an incubation program for its students, staff, and alumni to take their idea into

a scalable solution for the benefit of the society. As AIT supports the SDGs, the Center prioritizes startups that are green and socially responsible.

During the incubation period, you start to improve your prototype which means your idea comes to life so you can learn from it. You need to build a model of what you think your concept should look or feel like in order to get feedback from potential users to improve, change, or worse, abandon your idea and start over again.

**Here, four methods for prototyping your product idea toward success:**

1. *Shape our ideas*
2. *Continue refining our ideas*
3. *Test our ideas and see if you need to pursue it*
4. *Reduce risks of failure*

**Four main prototyping methods:**

Creativity is an important skill that you need to develop while prototyping. It's a cliché but you must really think outside the box. It might help to apply one or all of the following tools on the next pages.

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**During the incubation period, you start to develop your prototype which means your idea comes to life so you can learn from it.**

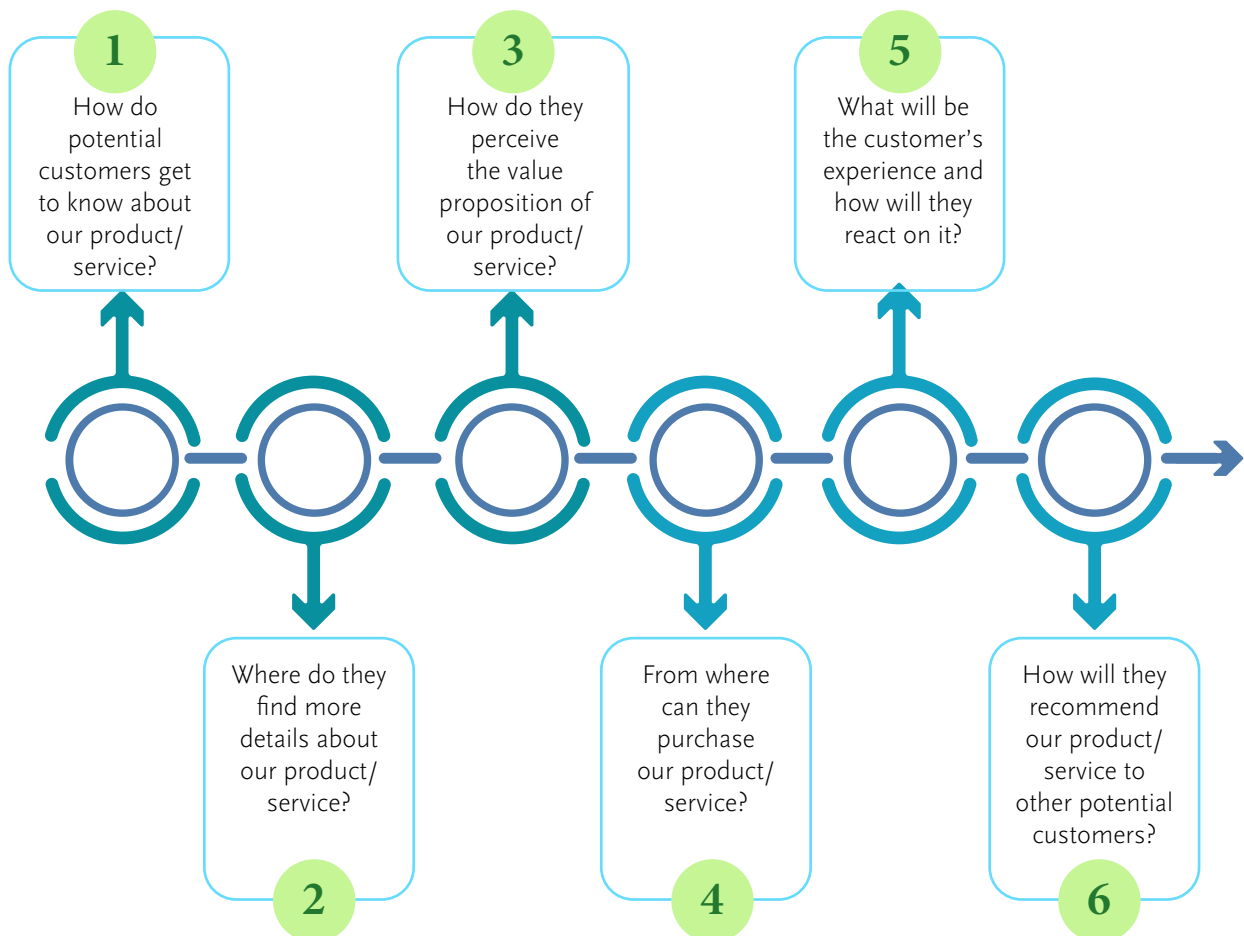
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## TOOL 3: CUSTOMER'S JOURNEY MAPPING FOR PROTOTYPING YOUR PRODUCT

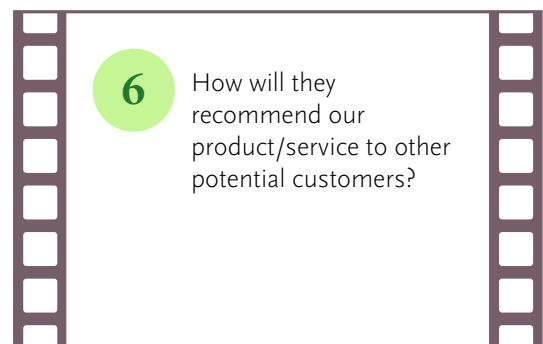
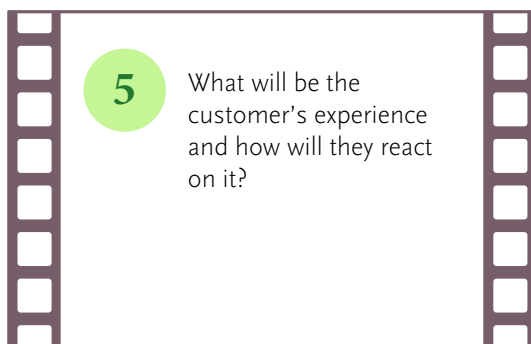
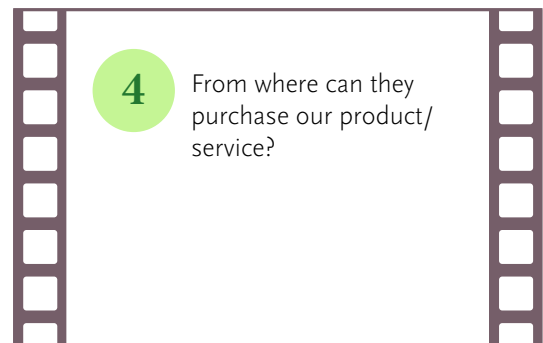
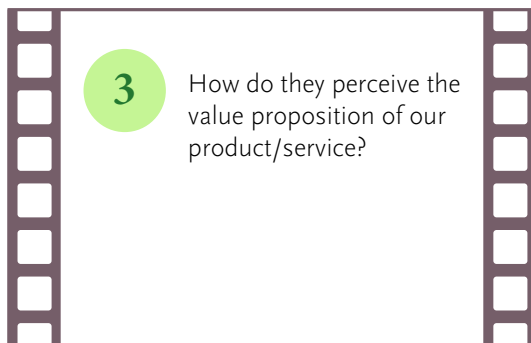
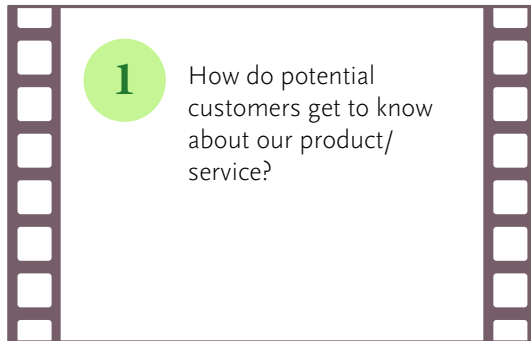
Understand your user's problems by mapping from how they will know that your product/service exists to how they would recommend it to others. In this case, you can predict your potential customers' journey with your product/service. You can make a collection of different journeys of many customers and finally you can develop your prototype by considering those journeys. Here we suggest some steps for you to understand the customer's journey. You can add more steps into this journey to get it in more detail.

<b>Name of your product:</b>	<b>Brief description:</b>
<b>Who is this for?</b>	<b>What are you trying to learn?</b>



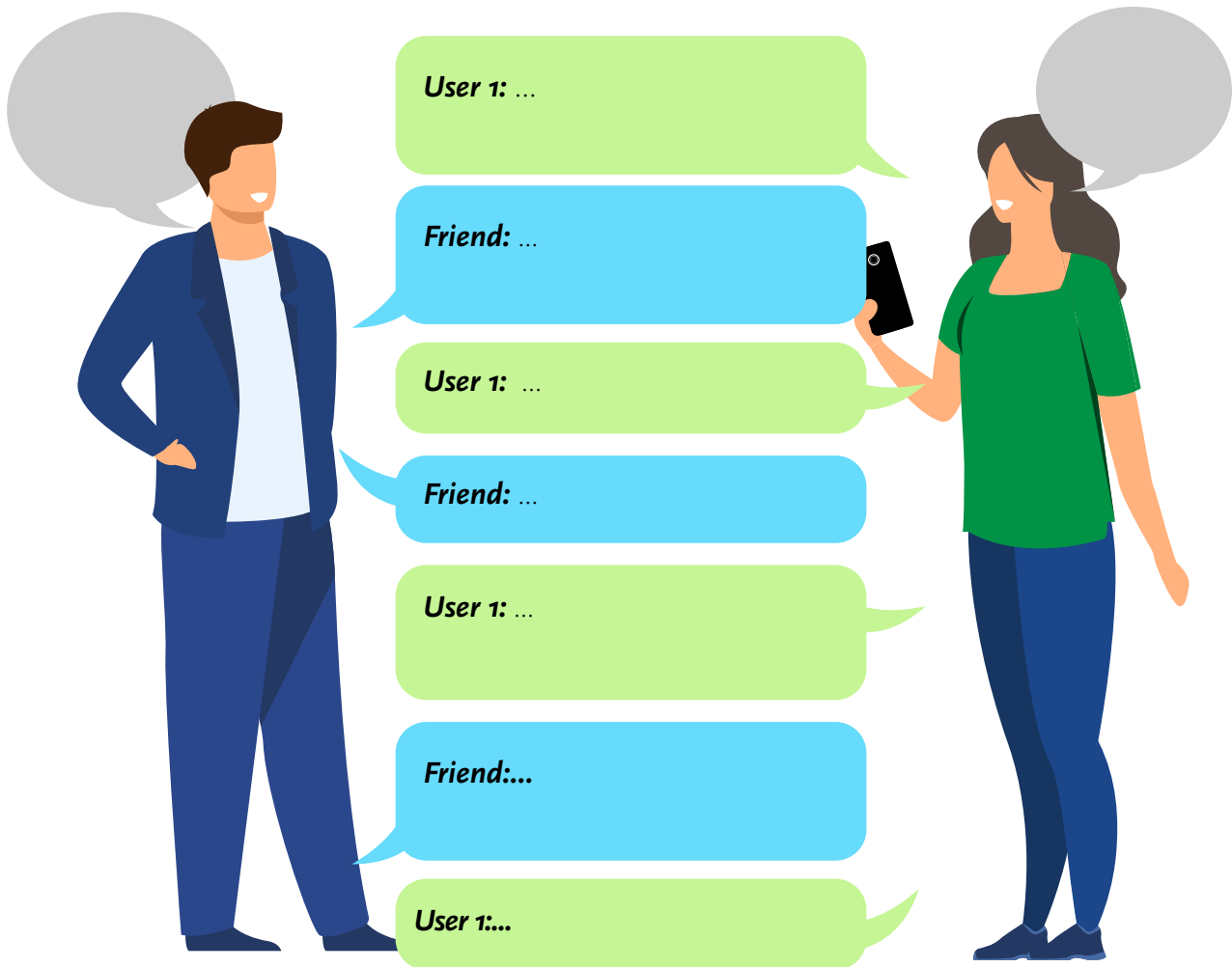
## TOOL 4: STORYBOARDING

Illustrate in detail the user and the context in which they use your product/service. This allows you to collect more details on who they are, who are with them, where they are, the expressions on their faces, how they handle the product. Here we suggest some steps for you to understand the customer. You can add more steps into this storyboard to get it in more detail.



## TOOL 5: ROLE PLAYING

Go through the experience before the user goes through it. This helps you to relate to the users and build empathy for them as well and retain loyal users. In this case, you can predict customers' conversations about the product/service with their friends or the other potential customers.



## TOOL 6: PHYSICAL PROTOTYPE

You can make a physical prototype starting with a Minimum Viable Product (MVP) that has just enough features to get user feedback.

Often a so-called MVP prototype is created. Such a prototype only includes the absolute essential features of the product. Its simpler and of lower

cost to build such a prototype and sufficient for a first round (or iteration) of testing.

Following figure is an example of MVP launched by a green startup called Wastic which produces eyewear using recycled plastic bottles.

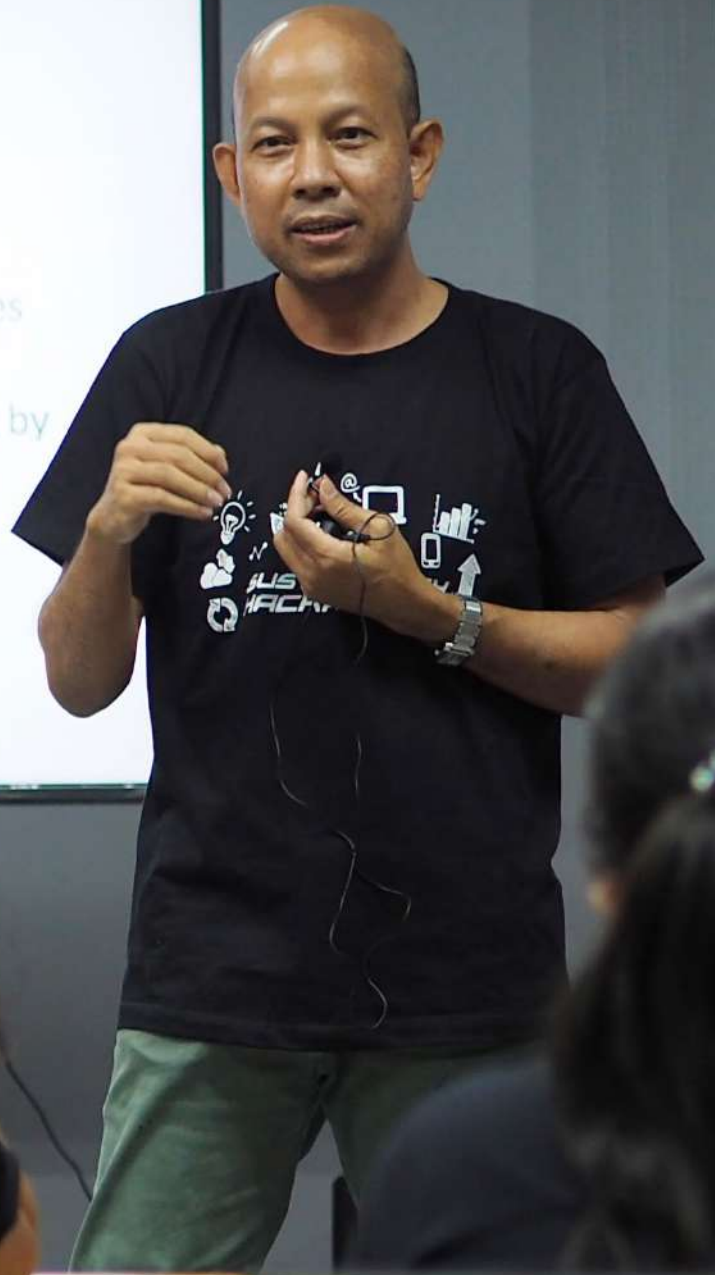


### START WITH MINIMUM VIABLE PRODUCT (MVP)

**An MVP is a version of a product that has just enough features (only the core functionality) that can be used to demonstrate your initial product (from your idealization stage) to the potential investors. One of the reasons startups fail is because they launch product customers and no one needs. The purpose of building an MVP is to get the minimum version of the product to the market. This way you'll get to know whether it has any value at all. If your target market likes your product, you can start making money right way while making further adjustments and improvements based on the feedback from your first customers, the early adopters.**

# PITCH

- Q & A by Juries: 2 minutes
- No extension is allowed, except otherwise agreed by the Juries.



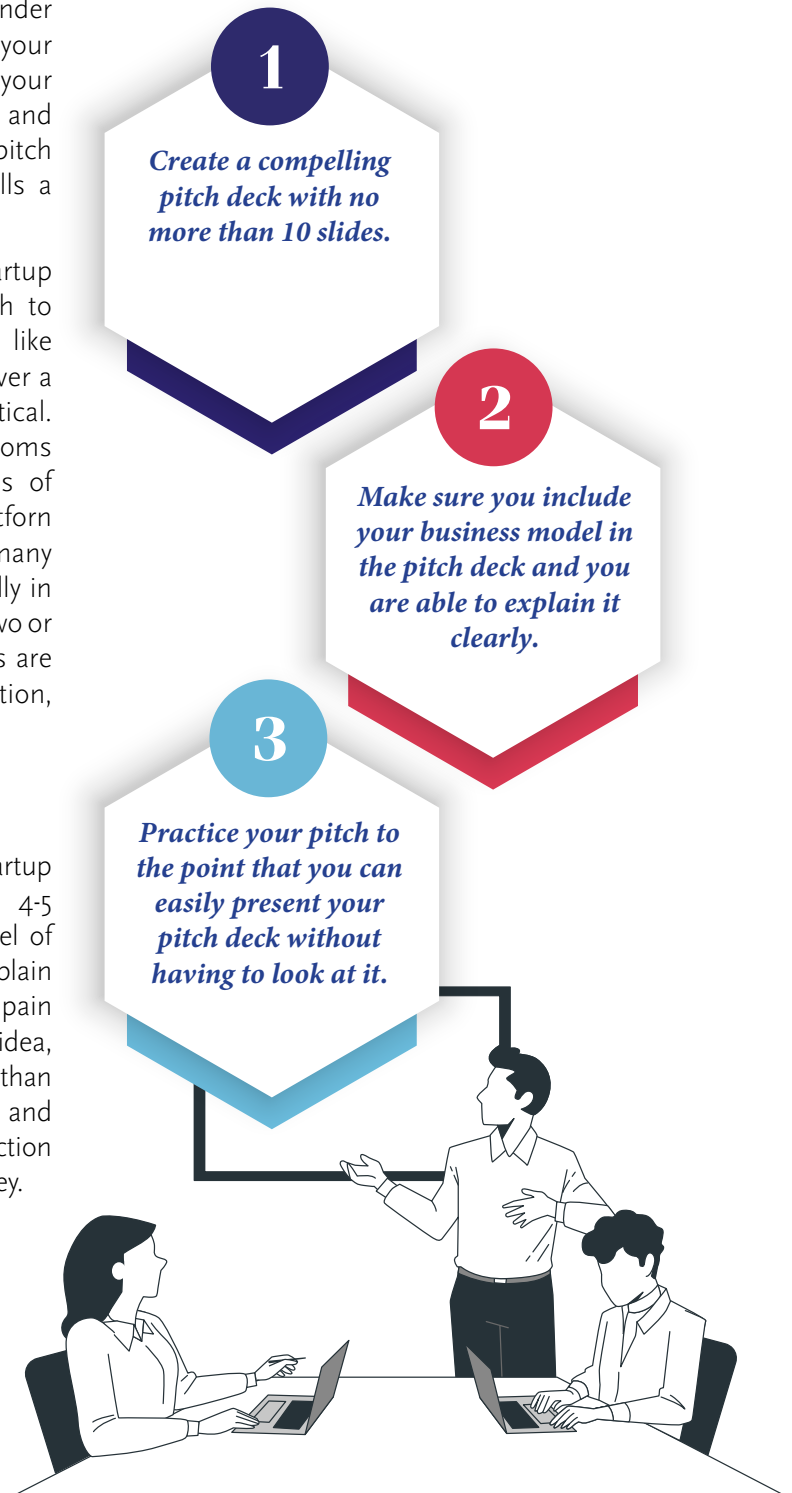
The whole startup experience will not be complete without joining a Pitch Competition. Every startup founder needs to be prepared for pitching. Pitching your idea/startup will help validate whether your solution is good or not, get expert feedback and attract potential investors. Learning how to pitch properly is one of the most important skills a startup founder needs to develop.

There are two kinds of pitch a green startup can consider, pitch competitions and pitch to investors. Although both have similarities like both require a short duration of time to deliver a presentation but they are definitely not identical. Pitch competitions take place in large rooms with dozens or sometimes even hundreds of people and nowadays also online via platform such as ZOOM or Microsoft Teams, and many competitors while investor pitches are usually in small conference rooms or offices with only two or three potential investors. Pitch competitions are conducted locally in your academic institution, country as well globally.

### ***How to Ace Your Pitch?***

Most of the pitch competitions require the startup to present their idea in 4-5 minutes with 4-5 minutes question and answer from the panel of judges. During the 4-5 minutes, you must explain your idea and execution plan, what customer pain you solve, why is now the right time for you idea, your solution, why your solution is better than your competitors, the benefits, environmental and social impact, as well as the financial projection and how you and the investor will make money.

### ***Three steps to success***






## TOOL 7: PITCH DECK

Your minimal pitch deck should contain the 10 slides below. You can have more but do not make it too complex. Remember, your pitch is typically 4 to 5 minutes. You may keep additional slides in reserve to support your Q&A session. Those could be slides that address anticipated questions. Always use this rule “Never put a term or a number or a claim onto a slide that you cannot explain and defend!!!”

*Slide 1*

What is the problem?




*Slide 2*

What is our solution?



*Slide 3*

Who is our customer?



*Slide 4*

What is our product?



*Slide 5*

What is our impact?



*Slide 6*

Who are our partners?



*Slide 7*

What is our competitive advantage?



*Slide 8*

Who is the team?



*Slide 9*

Who are our competitors?



*Slide 10*

What support do we need?



# SCALE UP





**A**fter starting up your eco-business based on its business model, the next step is to scale it up. However, this is a critical step which allows enhancing business model canvas the positive impacts while overcoming the challenges of the business. Oftentimes, the business processes change dramatically during this phase, as some operations that worked when a company is small needs to be changed or become more formalized once the business begins to scale up. Processes that may have been more flexible in the early stages will necessarily become more formalized in order to meet the expectations of the market. The team might need to focus on particular parts of the business in order to ensure that key processes are developed (e.g. logistics, human resources, marketing). In the early-stage of a startup each team member often does everything. However, this will change, and roles and responsibilities must be defined very clearly. In the process of green business model scaling up, it is necessary to have some conditions to achieve scaling up and it can be approached through by giving the main focus

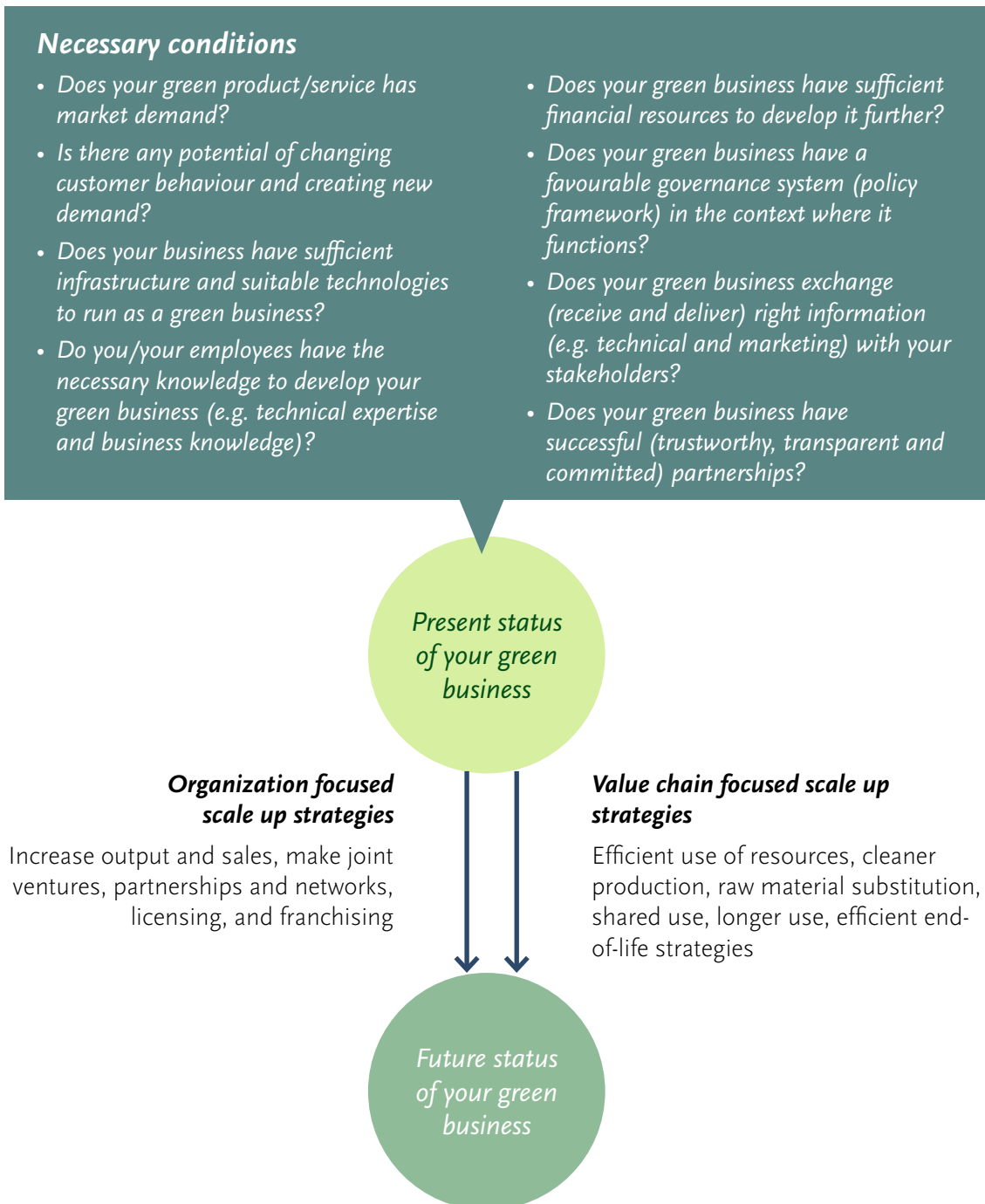
towards the company or the value creation (CSCP, 2014; GIZ, 2015).

In order to scale up the startup, it is essential to have market demand and behavior change, technology and infrastructure, education and training, financial frameworks, governance systems, information provision and partnerships and communication. For an example, it is impossible to scale up your green startup without having the market demand for the green product or services that you sell. When these prerequisites are available, you can follow company focused scaling up strategies including organic growth, acquisitive growth, dissemination, joint ventures, partnerships, franchising, smart networking, licensing and mergers. Or you adopt value chain focused strategies including efficient use of resources and cleaner production, product substitution, efficient use of products and services, shared use of products and services and efficient end-of-life strategies.

## TOOL 8: SCALE UP

Scaling up the business can be approached through three main phases. First, you can assess the present status of the green business by answering the questions related to the necessary conditions. Then, you can determine what should be the future status of the business. In the third phase, entrepreneur can select one or more

strategies to achieve that future status. When selecting the strategies, you can refer the present status and business model canvas to identify. The following tool depicts the summary of the discussion of scaling up your green startup (CSCP, 2014; GIZ, 2015).



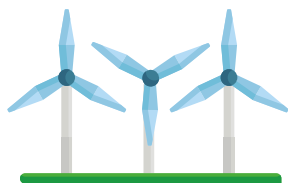
**ACCELERATE**



The United Nations Environment Programme (UNEP) Regional Office for Asia and the Pacific has been implementing a project to support entrepreneurs developing innovative business solutions that enable sustainable lifestyles in Asia and the Pacific. This project, Low Carbon Lifestyle Accelerator supports startups that make sustainable goods and services more readily available from low carbon mobility options, to products that reduce plastic waste, to solutions that reduce the carbon footprints of our lifestyles, in different ways as follows.

- *Helping startups gain access to better technology, talent, business networks and funding.*
- *Connecting with distinguished industry leaders, investors, partners and service providers.*
- *Unlocking true potential of startups and growing their business models.*
- *Sharing valuable knowledge and guidance, and your gateway to subject matter experts.*

**Focus areas**



**Low carbon energy**

Can you cut the amount of energy we use in our everyday lives? Can you help make the switch to a cleaner source of energy? This category is for you.



**Low carbon mobility**

Electric vehicles, non-motorised transport, shared mobility – or surprise us with your ideas to help us get from A to B more sustainably.



**Plastic waste prevention**

Reuse, sharing, upcycling, extended product lifespans, sustainable materials – the options to reduce plastic waste are endless!

**This program supports green startups in:**

- *Video production: A professional video that tells your story to grab attention online*
- *Partnerships: Industry mentors will help you develop your business strategy, network, and provide technical know-how. You will be invited to a demo day to pitch to investors, and a policy dialogue to share your experiences as an entrepreneur with policymakers*
- *Bootcamp: Meet your cohort and delve into topics that can help you scale*
- *Fundraising: All entrepreneurs will get a chance to pitch their solution to Asia’s leading investors - whether that helps you invest in prototyping, build up your marketing, keep your staff on board, or stock up on inventory to prepare for demand*

**For more information, visit**

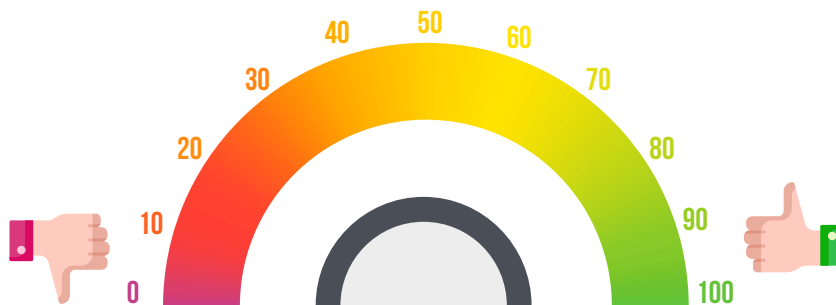
**[www.greenstartups.ait.ac.th](http://www.greenstartups.ait.ac.th)**

# GREEN STARTUP METER



The Green Startup Meter is a bonus tool that we have added in this Toolkit to help founders to measure their startup's level of sustainability. It helps the whole team review the company's practices and ways in which it can move even closer to meeting its sustainability goals.

The unit of the Green Startup Meter are Green Points. With zero Green Points at the lowest and 100 Green Points at the highest. In the table below you need to write the green points you get with the maximum, positive or negative, Green Points indicated in the right column.



*Check the answer that best reflects the practices that are currently being used in your business*

**1. Use of environmental friendly materials**

<i>Life of the product</i>	<i>Select</i>	<i>Green Points</i>
<i>Biodegradable</i>		2
<i>Recyclable</i>		2
<i>Reusable</i>		2
<i>End of life more than 5 years</i>		2
<i>Can be converted into other useful products</i>		2
<i>End of life less than 5 years</i>		-1
<i>Product ends up in landfill</i>		-2
<b>Total</b>		

**2. Use of toxic materials / chemicals**

<i>Toxic materials /chemicals</i>	<i>Select</i>	<i>Green points</i>
<i>Toxic materials</i>		-2
<i>Organic solvents</i>		-2
<i>Acids/ Bases</i>		-2
<b>Other toxic elements</b>		
		-1
		-1
<b>Total</b>		



### 3. Transportation

<i>Mode of transport</i>	<i>Select</i>	<i>Green points</i>
<i>Electric vehicles</i>		2
<i>Mobile Robots / UAVs</i>		2
<i>Human powered transportation</i>		1
<i>Public transport</i>		2
<i>Railway service</i>		2
<i>Air transport</i>		1
<i>Gasoline vehicle</i>		-2
<b>Other modes of transport</b>		
		1
		1
		-1
		-1
<b>Total</b>		

### 4. Employee Mobility

<i>Mode of transport</i>	<i>Select</i>	<i>Green points</i>
<i>Private electric / Hybrid vehicles</i>		2
<i>Company pickup service</i>		2
<i>Human powered transportation</i>		2
<i>Public transport</i>		2
<i>Railway service</i>		2
<i>Private gasoline vehicle</i>		-2
<b>Other modes of transport</b>		
		1
		1
		-1
		-1
<b>Total</b>		

### 5. Use of efficient equipment / commodities / techniques / operations

	List of Products	Select	Green points	
<b>Saves Power</b>	LED lamps		2	
	5 star rated air conditioner		2	
	IOT controlled electrical appliances		2	
	Solar panels		2	
	Use of cloud services for higher computational operations		2	
	Wind Turbines		2	
	<b>Other power efficient equipment / techniques</b>			
				1
<b>Saves Water</b>	Water efficient faucets		2	
	Water recycling unit		2	
	Rain water harvesting		2	
	<b>Use of other water saving ways</b>			
				1
				1
<b>Reduce waste</b>	100% paperless operations		2	
	Stop utilization of one time use plastic		2	
	Separation of organic, inorganic and food waste		2	
	Convert organic waste to compost		2	
	<b>Other techniques to reduce waste</b>			
				1
				1

	<i>List of Products</i>	<i>Select</i>	<i>Green points</i>
<i>Increase productivity</i>	<i>Reward for employees on efficient use of resources</i>		1
	<i>Locally available materials are to be used for all possible office activities</i>		1
	<i>Suppliers/Collaborators, involved should be green certified</i>		1
	<i>Occasionally working from home should be encouraged</i>		1
	<i>Provide fresh fruits at people's desks</i>		1
	<i>Other methods to increase productivity</i>		
			1
			1
<b>Total</b>			

## 6. Contribution to environmental cause ?

	<i>Programs ( Services/ Products/ Donation)</i>	<i>Select</i>	<i>Green points</i>
	<i>Clean Seas Campaign</i>		2
	<i>National Forest Foundation</i>		2
	<i>BREATHLIFE</i>		2
	<i>Other programs</i>		
			2
			2
<b>Total</b>			

## 7. Significant Contribution to the Sustainable Development Goals












	Select	Green Points
<b>GOAL 1 NO POVERTY</b>	<input type="checkbox"/>	1
<b>GOAL 2 ZERO HUNGER</b>	<input type="checkbox"/>	1
<b>GOAL 3 GOOD HEALTH AND WELL-BEING</b>	<input type="checkbox"/>	1
<b>GOAL 4 QUALITY EDUCATION</b>	<input type="checkbox"/>	1
<b>GOAL 5 GENDER EQUALITY</b>	<input type="checkbox"/>	1
<b>GOAL 6 CLEAN WATER AND SANITATION</b>	<input type="checkbox"/>	1
<b>GOAL 7 AFFORDABLE AND CLEAN ENERGY</b>	<input type="checkbox"/>	1
<b>GOAL 8 DECENT WORK AND ECONOMIC GROWTH</b>	<input type="checkbox"/>	1
<b>GOAL 9 INDUSTRIAL, INNOVATION AND INFRASTRUCTURE</b>	<input type="checkbox"/>	1
<b>GOAL 10 REDUCED INEQUALITIES</b>	<input type="checkbox"/>	1
<b>GOAL 11 SUSTAINABLE CITIES AND COMMUNITIES</b>	<input type="checkbox"/>	1
<b>GOAL 12 RESPONSIBLE CONSUMPTION AND PRODUCTION</b>	<input type="checkbox"/>	1
<b>GOAL 13 CLIMATE ACTION</b>	<input type="checkbox"/>	1
<b>GOAL 14 LIFE BELOW WATER</b>	<input type="checkbox"/>	1
<b>GOAL 15 LIFE ON LAND</b>	<input type="checkbox"/>	1
<b>GOAL 16 PEACE, JUSTICE AND STRONG INSTITUTIONS</b>	<input type="checkbox"/>	1
<b>GOAL 17 PARTNERSHIPS FOR THE GOALS</b>	<input type="checkbox"/>	1
<b>Total</b>	<input type="checkbox"/>	
<b>GRAND TOTAL GREEN POINTS</b>		

# THE TOOLS WITH EXAMPLES



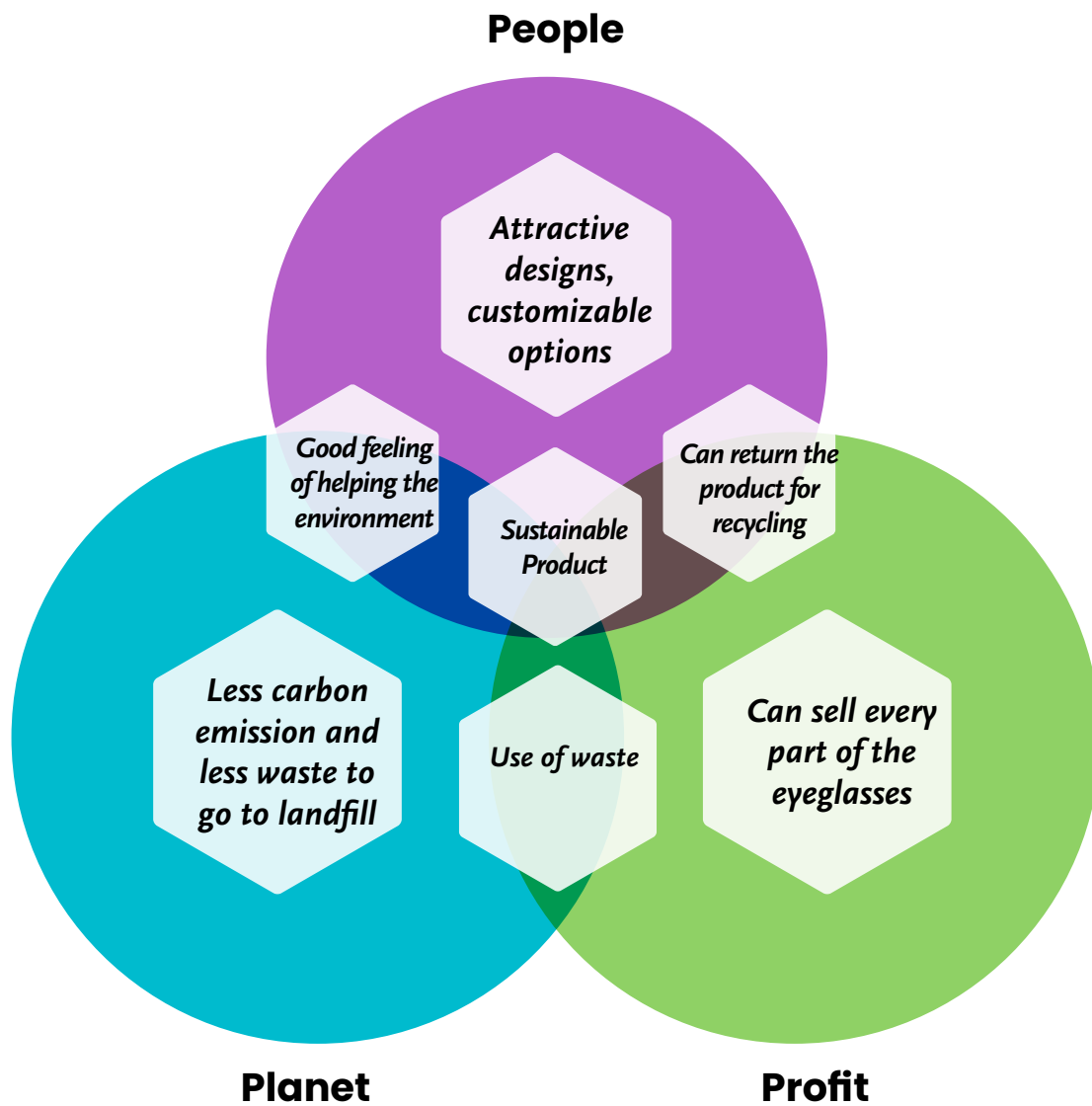
## TOOL 1: SUSTAINABLE BUSINESS MODEL CANVAS

Tool 1 is discussed here with an example of green startup, Wastic which is making eyewear out of recycled plastic bottles.

 <p><b>KEY PARTNERS</b></p> <ul style="list-style-type: none"> <li>• Lens manufacturers</li> <li>• Mould manufacturers</li> <li>• Plastic caps suppliers</li> <li>• Organizations distributors</li> </ul>	 <p><b>KEY ACTIVITIES</b></p> <ul style="list-style-type: none"> <li>• Design</li> <li>• Marketing</li> <li>• Networking</li> <li>• Management</li> <li>• Logistic</li> </ul>	 <p><b>KEY PROPOSITIONS</b></p> <ul style="list-style-type: none"> <li>• Eco-friendly products and package</li> <li>• Waste reduction</li> </ul>
 <p><b>KEY RESOURCES</b></p> <ul style="list-style-type: none"> <li>• Organization</li> <li>• Staff</li> <li>• Network of collaborators</li> <li>• In-house optometrists</li> <li>• Network of Independent Optometrists; Asia Optometric Congress</li> </ul>	 <p><b>KEY RELATIONSHIPS</b></p> <ul style="list-style-type: none"> <li>• Dr. Bell, with 20 years of experience eyewear designer and optometrist; President of Thai Optometrist Association</li> <li>• Dr. Amis, polymer scientist</li> <li>• Dr. Le, green polymer chemist</li> </ul>	
 <p><b>CHANNELS</b></p> <ul style="list-style-type: none"> <li>• Retail shop online (e.g. Facebook, Instagram, Twitter and LINE MyShop)</li> <li>• E-commerce platform (e.g. Lazada)</li> </ul>	 <p><b>CUSTOMER SEGMENTS</b></p> <ul style="list-style-type: none"> <li>• People in between the age of 18-40 years</li> <li>• People who care about the environment</li> <li>• People with demand of eyewears</li> <li>• People whose lifestyles are exposed with the sunlight and normally wearing sunglasses</li> </ul>	
 <p><b>COST STRUCTURE</b></p> <ul style="list-style-type: none"> <li>• Production</li> <li>• Marketing compensation</li> <li>• Equipment distribution</li> </ul>	 <p><b>REVENUE STREAMS</b></p> <ul style="list-style-type: none"> <li>• Sales</li> </ul>	
 <p><b>ESG BENEFITS</b> (Environmental, Social, Governance)</p> <ul style="list-style-type: none"> <li>• Marine ecosystem</li> <li>• Human health economy</li> </ul>	 <p><b>ESG IMPACTS</b> (Environmental, Social, Governance)</p> <ul style="list-style-type: none"> <li>• Reduce plastic waste</li> <li>• Prevent leakage to the environment raise awareness</li> </ul>	

## TOOL 2: PEOPLE, PLANET, PROFIT

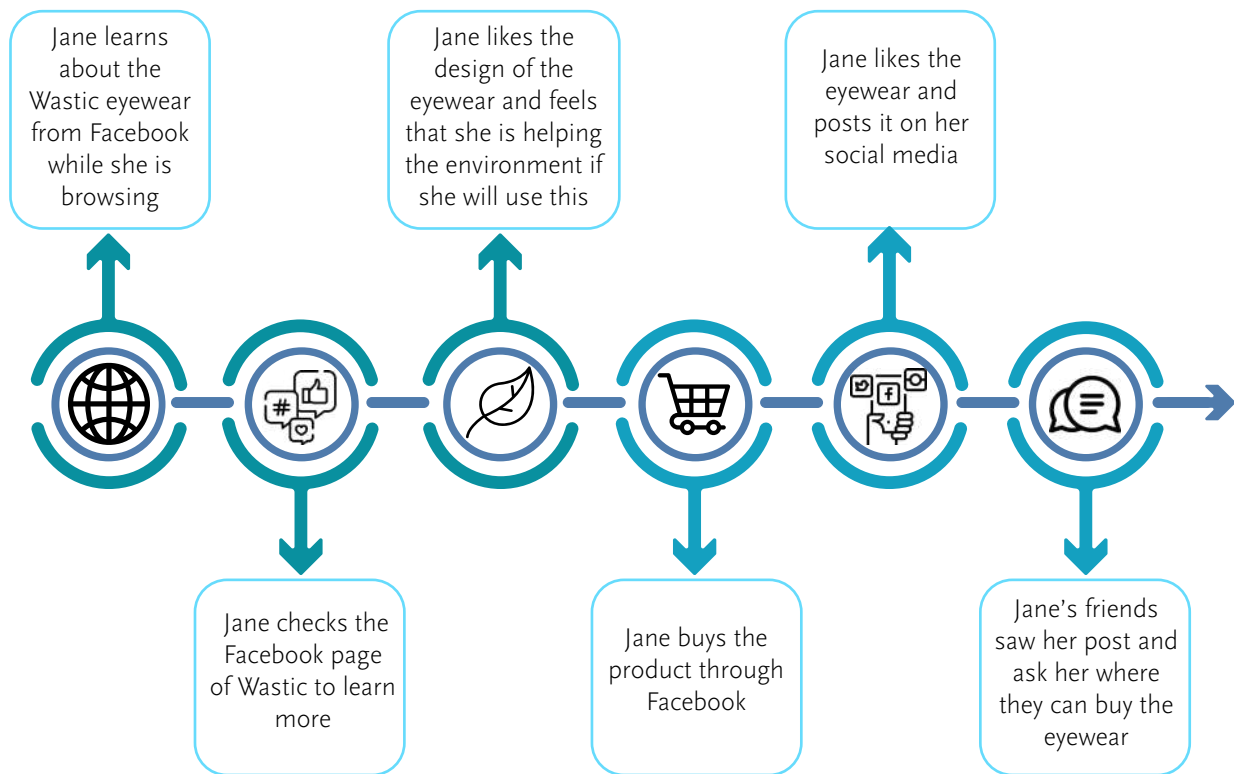
Tool 2 is explained through an example of green startup, Wastic which is making eyewear out of recycled plastic bottles.



### TOOL 3: CUSTOMER’S JOURNEY MAPPING

<p><b>Name of your idea:</b> Wastic</p>	<p><b>Brief Description:</b> Upcycled eyewear that can be customizable made from 100% recycled plastic bottle waste</p>
<p><b>Who is this for?</b> For environmentally conscious people who are looking for recycled that is reasonably priced</p>	<p><b>What are you trying to learn?</b></p> <ul style="list-style-type: none"> <li>• Will people use this solution?</li> <li>• Can we sell our products in major eyewear shops?</li> </ul>

Jane is one of the potential customers of Wastic eyewear. This is the predicted journey of Jane with Wastic eyewear.





## TOOL 4: STORYBOARDING

Jane is one of the potential customers of Wastic eyewear. Here is a predicted story of Jane purchasing the product of Wastic by using few storyboards.



Jane learns about the Wastic eyewear on Facebook while she is browsing



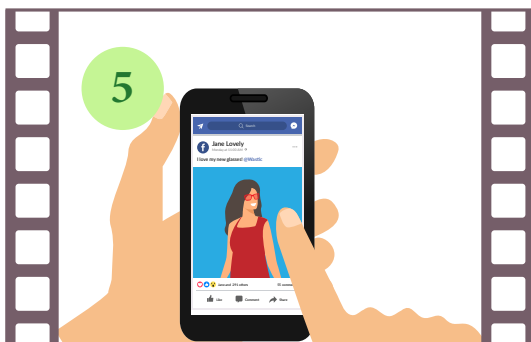
Jane checks the Facebook page of Wastic to learn more



Jane likes the design of the eyewear and feels that she is helping the environment if she uses this



Jane buys the product through Facebook



Jane likes the eyewear and posts it on her social media



Jane's friends saw her post and ask her where they can buy the eyewear

## TOOL 5: ROLE PLAYING

Jane is one of the customers of Wastic eyewear. Here is a predicted conversation between Jane and her colleague about the product of Wastic.



## TOOL 6: PHYSICAL PROTOTYPING

This is an example for the MVP of Wastic eyewear.



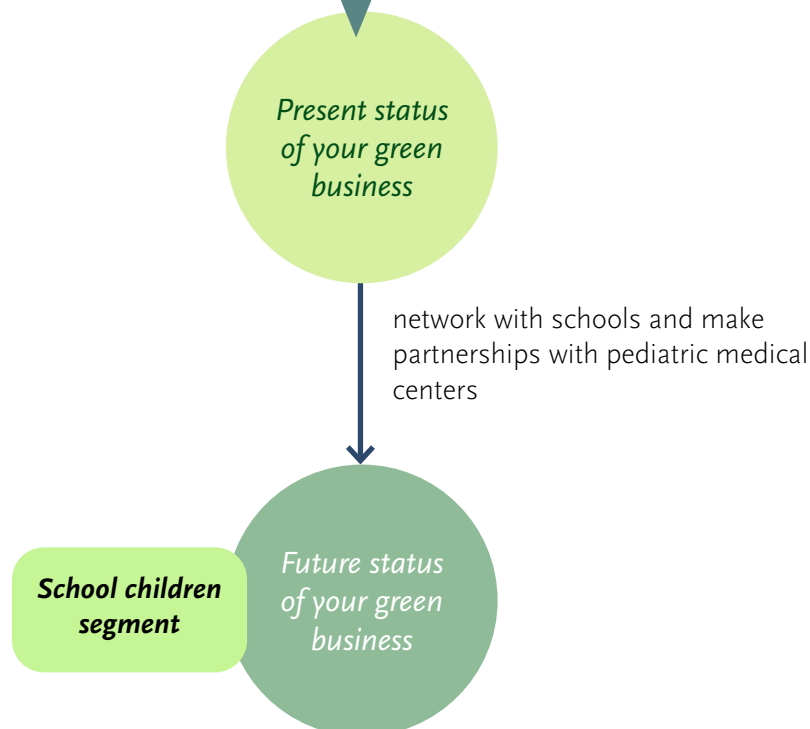
## TOOL 8: SCALE UP (EXAMPLE)

Here we assume that, after sometime, Wastic, the eyewear manufacturer from recycled plastic bottles will be able to establish as a startup and they will find a favourable position under necessary conditions of the green startup. Then, they may identify the potential of market demand for their product among school children who is not in their target customer group at the present situation and

Wastic wants to penetrate this new market segment in future. In order to achieve that, Wastic can network with schools to organize eye health camps for children and make partnerships with pediatric medical centers to promote the recycled eyewear. However, this is only an organization focused scale up strategy and Wastic can apply other strategies as well in order to achieve the future plan.

### Necessary conditions

- Does your green product/service has market demand? **Yes**
- Is there any potential of changing customer behaviour and creating new demand? **Yes**
- Does your business have sufficient infrastructure and suitable technologies to run as a green business? **Yes**
- Do you/your employees have the necessary knowledge to develop your green business (e.g. technical expertise and business knowledge)? **Yes**
- Does your green business have sufficient financial resources to develop it further? **Yes**
- Does your green business have a favourable governance system (policy framework) in the context where it functions? **Yes**
- Does your green business exchange (receive and deliver) right information (e.g. technical and marketing) with your stakeholders? **Yes**
- Does your green business have successful (trustworthy, transparent and committed) partnerships? **Yes**



# References

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An accomplished researcher in the field of Chemistry and Biomedical Engineering, Professor Dieter Trau is also an entrepreneur who is the holder of numerous patents and founder of several life-science and medical companies. He is currently the Dean of School of Engineering and Technology at the Asian Institute of Technology (AIT) and Director of AIT Entrepreneurship Center. Before coming to AIT, Prof. Trau was an Associate Professor with tenure and Associate Head Research in the Biomedical Engineering Department of the National University of Singapore (NUS). He earned his engineering degree in Chemical and Bioengineering from the FH Aachen University of Applied Sciences, Germany, in 1994 and a PhD degree in Chemistry from the Hong Kong University of Science and Technology in 2001.



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Having established himself as a scientist in forest carbon modeling and management over the last 20 years, Professor Nophea Sasaki is very passionate about technologies, technovation and sustainability. After joining AIT in 2016, he has developed digital technologies to connect farmers and local guides to sustainability users, and to alert and monitor the changes of any land use near real time at speed and scale. He won Google's Next Step Award for his technovation in 2019. He is known for his Hackathon organizing skills, effective digital marketing skills and ability to pinpoint the problems clearly. Before joining AIT, he was Associate Professor at a Japanese University, a Researcher Scholar at Harvard University, Max Planck Institute for Meteorology, Imperial College London, and Adelaide University. He co-founded three green and tech startups.



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Dr. Lakesha K. Ransom earned her doctorate in Human Resource Development, with a minor in Strategic Management, and a master's in Comparative and International Development Education, with emphasis in Public Policy and Educational Psychology from the University of Minnesota. In addition, she is a certified home energy auditor in the US state of Minnesota. Dr. Ransom has over twenty years of leadership experience in the educational, corporate, not-for-profit, and governmental sectors. She currently advises start-ups globally, teaches courses in entrepreneurship and the circular economy, and serves as Enterprise Engagement Director at the Asian Institute of Technology in Bangkok.

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