THAILAND CLIMATE TECH STARTUP HANDBOOK

Entrepreneurial Edition

Department of Climate Change and Environment
Ministry of Natural Resources and Environment

WHAT

This **Handbook** is an add-on to the **Thailand Climate Tech Startup Guide (the "Guide")**, a collaborative initiative by the Department of Climate Change and Environment (DCCE), the Global Green Growth Institute (GGGI), and Beacon Venture Capital (BVC), which aims to provide an overview of the market potential of climate innovations, key players, challenges and opportunities, as well as recommendations on strengthening Thailand's climate tech ecosystem and empowering startups to address climate change effectively.

WHY

Designed to visualize the steps and overall journey of a climate tech startup, this **Thailand Climate Tech Startup Handbook** aims to **inspire the next generation of climate entrepreneurs**, driving forward Thailand's sustainability and climate resilience agenda. Thailand's climate tech sector has the potential to significantly contribute to the country's Nationally Determined Contributions (NDCs) towards **Net Zero GHG emissions by 2065**.

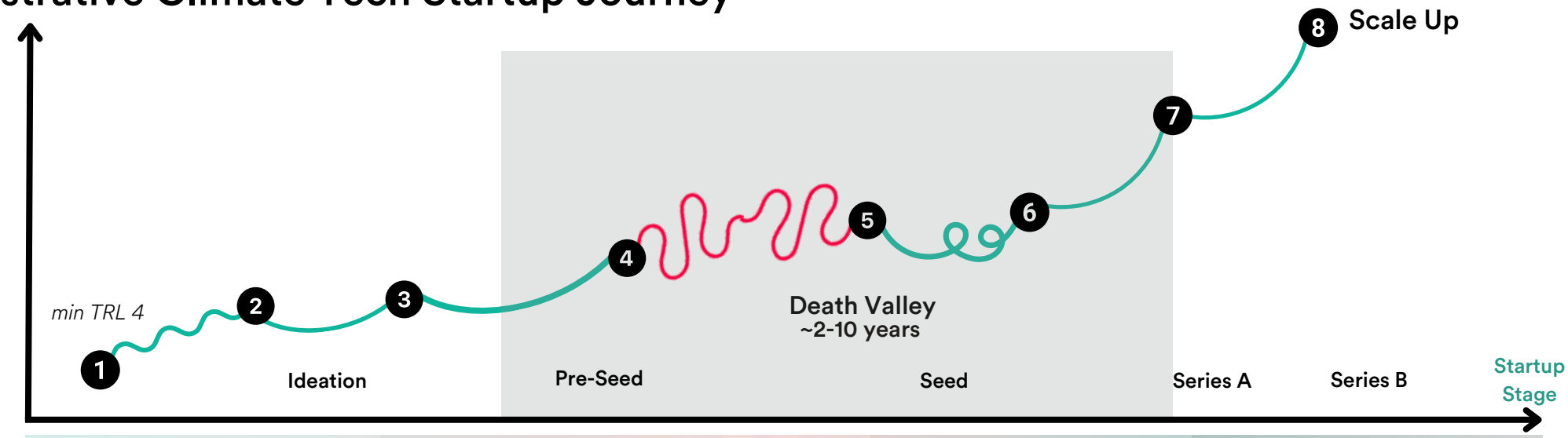
WHO

Startups, unlike larger corporations, can swiftly pivot and respond to new challenges and opportunities, allowing them to experiment with novel ideas, develop cutting-edge technologies, and scale solutions rapidly. **Climate tech startups**, in particular, have the potential to significantly impact sustainable development by introducing disruptive innovations that reshape markets and encourage established companies to adopt more sustainable practices. Globally, climate tech startups play a crucial role in **driving innovation and accelerating solutions to mitigate climate change**.

HOW

Climate tech ranges from technology that helps to **reduce or prevent greenhouse gas (GHG) emissions in the energy, transport, food & agriculture, industrial processes & manufacturing, retail & lifestyle, to digital platforms for tracking emissions and trading carbon credits.**

1) Illustrative Climate Tech Startup Journey



Tech/ product dev (CTO)

Validate Idea	Identify Market Size	Research Target Customers	Build MVP Secure 1st pilot customer	Test, Test, Test	Create Product Roadmap	Crossing the Chasm
Find problem-solution fit	Know your TAM, SAM, SOM	Collect feedback to refine pain points	Build the prototype to demo with a willing-to-buy customer	Gather feedback from your users	Communicate product vision and necessary adaptations	Scale up from early adopters to mass market

Business (CEO)

Focus on product-market fit — Focus on financing and business development — Focus on operations and team

Self Funded/FFF/Research Grants | Angel Investor | Accelerator/B2B Clients | CVC Funding | Strategic Partnership

Supporting Organizations*

Self Funded/FFF/Research Grants	Angel Investor	Accelerator/B2B Clients	CVC Funding	Strategic Partnership
CU iHub/KX/iNT/CMU Step	NIA	DEPA Matching Fund	Beacon/BanpuNext/etc.	PlugAndPlay
R&D Grants from MHESI/NSTDA/PMUC	Delta Angel Fund	New Energy Nexus	Innopower	Hong Kong Science Park
TED Fund	Wavemaker Impact	Innospace	Climate Tech Coalition	

Admin & Legal

Review patent database
To ensure your intended IP is novel

Design IP Strategy
To secure patents and/or licensing

Get Incorporated
Discuss and write team norms among the founding team members in the early days of incorporation

Stakeholder Agreement
If you have an early investor, get familiar with board and executive roles, create a stakeholder agreement with all parties

Financial and Legal Plan
Find an accountant, a financial advisor and a legal advisor

Get ready to study company valuation, share pool, and dilution agreement for upcoming fundraising rounds

Technology Transfer
Legal process is essential for commercializing R&D to become IP asset of your startup

Human Resources
When scaling up, study laws and regulations regarding staffing

*Illustrative only, not a comprehensive list

TAM = Total Addressable Market
SAM = Serviceable Available Market
SOM = Serviceable Obtainable Market

MVP = Minimum Viable Product
FFF = Friends, Family, Fools

Source: TamCalc, KCX Lab

Technology Readiness Level (TRL)

	Basic Technology Research			Technology Development		Field Demonstration			Deployment
	TRL 1	**TRL 2**	**TRL 3**	**TRL 4**	**TRL 5**	**TRL 6**	**TRL 7**	**TRL 8**	**TRL 9**
Technology Readiness Level	Scientific research at the lowest level of tech readiness	Technology concept and/or application formulated	Analytical and experimentally critical function and/or characteristic proof of concept	Component and/or breadboard validation in laboratory environment	System/subsystem model or prototype demonstration in a relevant environment	System prototype demonstration in an operational environment	Actual system completed and qualified through test and demonstration	System completed and qualified for deployment	Actual system proven through successful mission operations
Status	Exploring basic scientific ideas — no tangible product yet.	You've framed an idea about how your technology could work but haven't tested it yet.	You've started testing the concept on a small scale in controlled conditions. Concepts demonstrated analytically or experimentally.	You've created a working prototype under lab conditions. Key elements demonstrated in laboratory environment.	You've tested the technology in conditions similar to where it will operate.	The technology shows promise in real-world conditions but is still a prototype.	Your technology operates under real-world conditions at scale.	Your technology is market-ready but needs certification.	Your technology is successfully operating in real-world conditions.
What to do	• Conduct extensive research to understand the problem your technology will solve. • Document fundamental principles and evaluate the feasibility of addressing the issue. • Attend conferences or workshops to gather insights into similar technologies.	• Develop a rough theoretical model or sketch. • Assess the problem-solution fit. • Research existing patents and technologies to ensure originality.	• Build small-scale experiments or simulations to test core principles. • Collaborate with academic institutions or labs for testing support. • Analyze risks and unknowns in your technology.	• Build a functional prototype and run experiments. • Identify critical performance metrics like energy efficiency, durability, and scalability. • Begin drafting intellectual property (IP) strategies.	• Transition testing from labs to real-world-like environments. • Partner with industry players for pilot testing. • Prepare documentation for regulatory approvals.	• Develop a larger-scale prototype. • Run pilots in operational environments (e.g., a solar farm or industrial setup). • Collect detailed data to refine performance and reliability.	• Build and deploy a pre-commercial prototype. • Collect feedback from stakeholders, such as pilot customers or partners. • Finalize the system architecture and functionality.	• Conduct rigorous testing for regulatory and industry compliance. • Establish manufacturing and distribution systems. • Engage early adopters for feedback.	• Monitor performance metrics in live settings. • Collect user feedback to identify areas for incremental improvements. • Scale operations and marketing for broader adoption.
Outcome	A documented concept or hypothesis, literature review, related articles	A conceptual design backed by theoretical models.	Proof that your idea works, at least in a lab setting.	A working prototype validated for functionality.	Confidence in the technology's performance in semi-realistic settings.	Demonstration of technology under near-operational conditions.	A robust prototype proven to work in real-world settings.	A fully validated system ready for commercialization.	Commercial success and widespread deployment.

2) How to be a Climate Tech Startup Founder

Wheel 1: Why do you want to become a startup founder?

Anyone can become a venture builder if they develop the proper skill set, but more importantly, you need the right mindset. But first, everyone in the founding team must have a strong why. Why is this pursuit so crucial to you to take a few, or maybe even up to ten years of your life?

Some of the answers may be:

- to obtain financial freedom
- to effect change in the world
- to not regret on your deathbed
- to seek adventure and meet new people

Talk about your WHY, expectations, commitment, and contributions among your team to align on this critical part.

Wheel 2: Builder Mindset

The entrepreneurial mindset can be developed. It is about the need to

1. Embrace failure as a teacher—it's how you learn and grow.
2. Pivot and adapt when challenges arise. Think of obstacles as opportunities in disguise.
3. Empathize with your team and customers—it's the secret sauce for building solutions that truly matter.
4. Collaborate over compete—saving the planet is a team sport!

Be proactive and be agile to start your venture, to build a great team, and to become a great leader.

Wheel 3: Skill Set

Climate Science and Sustainability
Founders need a deep understanding of environmental challenges, such as decarbonization, renewable energy, and adaptation technologies.

Leadership and Collaboration
Building diverse teams and partnerships requires clear communication, vision alignment, and the ability to inspire commitment.

Be proactive to 'make things happen' and have clarity about your vision — what you want your business to be, and to hone your pitch. Be able to recognize gaps in resources

Project and Financial Management
Skills in budgeting, fundraising, and resource allocation ensure sustainable growth and effective use of limited resources.

Wheel 4: Tool Set

Product Toolset

Lean startup with product development understanding, prototyping tools such as hardware or software that could simulate and showcase your value.

Business Toolset
Grant and funding sources, knowledge about investment rounds and share vesting, business and market analytics and development tools to make your case. Know your financial feasibility to minimize burn rate while focusing on the right spending in each stage of your startup.

Regulatory and IP Knowledge Toolset
Navigating environmental policies and protecting intellectual property ensures long-term viability. For deep technologies, equip your team with the knowledge of patent filing and patent strategy, licensing in and out, and how to search for other technologies you may want to advance your current product.

5.3) How to Get Started (Pre-Seed Stage)

Defining the right problem is challenging.

If you have an Engineering/Ph.D./Tech Background:

You have technology that you have been developing or targeting. You also have a good understanding of the research field, its updates, and connections within your field of work.

It's time to validate how your solution would be valuable to anyone. Start looking for applications in the B2B arena and build your first prototype.

If you have a Business Background

You might not have much tech knowledge but you know the customers' carbon emissions pain points. Look for a big enough pain point to have a strong value proposition to the market.

If you are not already working in a corporate or industrial setting, you might have limited insights on what problems there are in this scale. Talk to people, find more insight, research your way to the big enough problem that caught your attention.

Gather insights to validate your product idea

Send emails, attend industry events, book meetings and interviews. Have your assumptions and interview questions ready, then talk to many people to validate it. Make a list of target users and reach out to them. The more, the merrier. Aim for 50-100 interviewees. Spend 2 months in this process just talking to people. This is the cheapest way to learn and to build your nerve as an entrepreneur. If you start building the whole product right away, you might end up spending too much time and effort building the wrong thing. Use the 'customer journey' or other empathy toolbox to find where the real pain point is for your technology, and what is the first minimum thing you could offer them.

Your questions should entail the customer's problem, how big it is, how often they face it, and how much it costs for them to find a possible price range for your product solution. Learn more about the empathy framework such as in the design thinking process to really understand the customer/user.

Starting to work in a team effectively

Forming a team needs an open conversation about a shared vision and how would you work together. Set up a document of team norms early in the process and keep it open for revising. Founding team break-up is common in the startup space. The open conversation can prevent any assumption that could cause conflict later and help in setting up a new culture together as equal founders.

Start to plan for your MVP (minimum viable product) based on the insights you gained. Those interviewees could be your first customer.

Plan for the patent filling process.

Scan labs and research for a climate technology that would fix this customer problem. The technology transfer unit in the university could be the contact point at this stage.

Ideation & Pre-Seed Stage

Seed Stage

Early & Growth Stage

5.4) How to Secure Your 1st Customer & MVP

Go back to your list of interviewees. Send them the one-pager of your solution and the expected benefits to them. See if they would want to do a pilot project with you.

To get funding and other credentials, you might need to get incorporated.

You also need to learn about creating a Shareholder Agreement. Talk among founders about shares and vesting schedule. Make a commitment and establish milestones before moving forward. This will be your first signed contract.

An MVP (Minimum Viable Product) is a version of a product with just enough features to attract early adopters and validate a business idea. It allows startups to test core functionalities and gather feedback from customers to refine the product with minimizing time and resources spent before committing to a full-scale product launch.

Get to the right people who have authority in procurement.
Otherwise, joining an accelerator could help you land a B2B customer if you work with them early on.

Early stage accelerator
Green Rocket VC
New Energy Nexus
Wavemaker Impact

Early stage angel investor
Delta Angel Fund

**There are not many climate tech accelerators in Thailand. You might want to look abroad too.*

Pitching leads to lots of good questions and feedback that you can use to refine further.

Deck should consist of (maximum 10 slides)

- *Problem*
- *Solution*
- *Market*
- *Finance*
- *Team*
- *Call to action*

If you could land the first pilot project with a paying customer, be sure to make a rigid scope of what you want to deliver in what time frame to the team you work with. Document all the agreements to prevent overcommitment and out-of-scope requests.

This is the second contract you will sign.

Grants for MVP build : NSTDA/ Mahidol iNT/ TED Fund

Deepen your understanding of your customers—their roles, motivations, challenges, and desired outcomes—and use tools like the Value Proposition Canvas to do so.

Focus on building an MVP with one key feature to validate your market, gather customer feedback, and avoid overinvestment or over-hiring. Manage cash wisely because it is oxygen for your startup.

Ensure your solution effectively solves the problems of the paying customers and establishing a scalable, profitable business model.

Note: This document does not provide a comprehensive list of organizations for funding or support. Please search online and network to be most updated.

5) How to Build Traction & Develop Product Roadmap

To secure the next investment round, you need some proven projects or customers to build your credentials in the pitching. This stage might take a few years in deep-tech to pivot and gauge the impact. This phase is about finding more early adopters.

Business Model

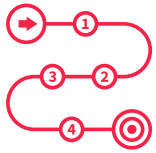
Startups are mainly about business models. This phase allows you to pivot and validate your impact for business valuation. A quick recognition of a failing business model or unmet product-market fit allows for effective pivots, improving success chances, but this ability relies on available cash reserves.

Select talented people in your team to help you grow, as no founder has the superhuman ability to excel in every area of the business. Business minded and goal-oriented product managers who can prioritize and convey product application to customers are important for this stage as they can translate deep technology to build successful business cases.

Fund: DEPA and NIA Matching fund, Hong Kong Science Park

Technology Development

A product roadmap is important to plan and communicate. Investors and teams require a clear reasoning behind every decision you make. They also need a solid understanding of your vision and plans for the future. This helps reduce their concerns and boosts their confidence in you as a founder. When they know you're following a clear, systematic approach rather than just taking risks and hoping for the best, they are more likely to trust your leadership.



A product roadmap will help you avoid too much scope expansion in your first few projects along your pivoting journey. Learn to not let the customer ask for something too costly from initial agreements or something that they do not really want. Do not overpromise and tear your team apart. Prioritize and agree on the most important functions.

Toolset: Agile Management

Legal

Start filing patents and build on one another over time or license in some parts that could strengthen your product offering. Please consult with the IP office; they should have legal and IP advice services to help all the researchers who are not as keen in this arena.

In a rapidly evolving industry like climate tech, where solutions must scale quickly to meet global demand, having strong a IP protection can be a significant asset in negotiations with investors, partners, and customers. Additionally, it can open doors to licensing opportunities and collaborations, which are crucial for accelerating growth and maximizing impact. Ensuring IP rights are well-managed also supports the long-term sustainability of the business model.

Patent Tip: Filing patents could take a year to take effect. The earlier you start, the better.

Ideation & Pre-Seed Stage

Seed Stage

Early & Growth Stage

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6) How to Scale Up

Congratulations! You have overcome the challenges of idea validation, MVP, and securing the 1st customer for a new deep tech venture. Now, the next challenge is how to scale up, which requires both operational efficiency and funding from the right investor.

Choosing the right investor

Fundraising can be daunting for many founders, often feeling like a never-ending cycle of pitching to reluctant investors. The right investor should be a long-term partner who aligns with your vision and adds value beyond just financial backing. It is essential to carefully consider what you need from an investor.

Ask questions about the investor's expectations, experience, and involvement in your industry. Are they hands-on or prefer a passive role? How many investments have they made, and what's their track record? Their network and experience can be just as important as their capital, so it's vital to assess whether they can help connect you to clients, provide mentorship, or sit on advisory boards.

	Early Stage (Series A)	Growth Stage (Series B)
Key Focus	• Scaling the product and expanding the market.	• Optimizing and expanding operations.
Activities	• Scale operations, marketing, and sales efforts. • Hire additional team members and establish a company culture. • Expand product offerings or improve technology. • Secure larger funding rounds (Series B, etc.)	• Expand into new markets (geographically or demographically) • Diversify revenue streams. • Focus on operational efficiency and profitability. • Establish partnerships and strategic alliances.
Challenges	• Managing rapid growth without compromising quality. • Competing in a larger, more competitive market.	• Managing resources effectively at scale. • Retaining market share against established competitors.

Tips:

Startups need to continuously search for business models that are both profitable and scalable. It's almost impossible for founders to have a perfect business model right from the beginning.

Many startups fail because they expand too quickly. One crucial factor to consider is rising costs. If you increase costs without simultaneously scaling your customer acquisition strategy or generating revenue from those customers, you will never achieve profitability.

Climate Tech Startup Landscape in Thailand 2024

Startups

Advanced GreenFarm
AltoTech
CHOSEN
Enapter
Evolt
Full Circle Biotechnology
GideonOne
ION Energy
Inno Green Tech
ListenField
PAC Corporation
Ricult
UMT (Muvmi)

Academia

BCGeTEC
CMU Step
CU iHub
KX Knowledge Xchange
Mahidol iNT
VISTEC

Public Sector

BOI
DIPROM
NXPO
UNESCAP

Grants

DEPA Matching Fund
NIA
NSTDA
TED Fund

Networks

Climate Tech Club
True Digital Park
Thailand Startup Association
Innovation Club Thailand
Carbon Markets Club
Thailand CCUS Consortium
TVCA

Media

Techsauce

Venture Capital

ADB Ventures
Atlas Capital
GreenRocketVC
Innospace
Radical Fund

Venture Builders/ Incubators/ Accelerators

AIS The StartUp
FinLab
GGGI
LowCarbon.Earth
New Energy Nexus
Second Muse
She Loves Tech
SPACE-F
Thailand Accelerator
Thai Startup Association
Wavemaker Impact

Corporate Venture Capital

AddVentures
BanpuNEXT
Beacon Venture Capital
B.GRIMM Power
ExpresSo
Innopower

Impact Investors

Asia Sustainability Angels
Bamboo Capital Partners
Katapult
Planet Rise
SEAF

Angel Investors

Angel Investor Network in Action
Delta Angel Fund