

Report SustAInability

Team Name: EcoGenesis

Slogan: Shaping the Sustainable Tomorrow

Team Members: Barbara, Khola, Micha, Preskal Tadrous

Challenge Givers: TUM Venture Labs (Bastian Burger, Lucía Lara Vargas)

Introduction

In a world increasingly defined by technological innovation, startups have emerged as dynamic catalysts for sustainable development. Their agility and drive for innovation position them to integrate sustainability with business strategy effectively. Acknowledging the vital role of startups in addressing pressing environmental challenges, our project, in collaboration with TUM Venture Labs, seeks to help startups embed sustainable practices into their ecosystem. We aimed to use the transformative capabilities of Artificial Intelligence (AI) to support startups in their sustainable transition, ensuring that their innovations and offerings align with the imperative global pursuit of sustainability.

Challenge

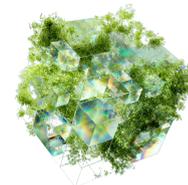
In the first step of this project, it was important to understand why there was an apparent gap in sustainability integration within startup practices, despite the pressing need to do so. It appeared that the majority of startups were not fully embedding these principles into their operations, even though environmental responsibility and sustainability are becoming increasingly important in the business world. This observation led us to conduct a series of targeted interviews with startups to first understand the reasons behind this disconnect and to understand the barriers preventing startups from integrating sustainability into their practices.

Process

Startup Interviews

In our interview process, we designed the questions in a way to extract meaningful insights that could guide the direction of our project. We conducted two rounds of interviews with a diverse group of participants, including four startup founders, a startup manager from TUM Venture Labs, and a specialist in sustainable startup investments. Our approach was centered on open-ended questions that allowed for a comprehensive exploration of each startup's unique challenges and perspectives on sustainability. From these interviews, several pivotal insights emerged.

First, it was revealed that a significant number of startups were not aware of existing tools for integrating sustainability, especially cost-effective solutions that can be integrated without necessarily affecting their growth. This gap in knowledge and resources underscored the need for accessible and effective tools tailored to startups' unique needs. Furthermore, the understanding and implementation of sustainability varied widely among startups. This



ranged from basic awareness to more sophisticated strategies. For instance, many startups are not fully aware of their carbon footprint or lack comprehensive strategies for sustainable operations. Thus, this highlighted the need for solutions that cater to different levels of sustainability knowledge and practice.

One of the biggest challenges is that startups face challenges such as limited budgets and time, and a lack of in-depth knowledge about sustainability. This issue is even more significant especially at the early development stages of startups, particularly when the main focus is on pursuing innovation and developing their products or services. These constraints make it difficult for them to adopt and measure the impact of sustainable practices.

Consequently, the willingness to invest in sustainability differed among the different startups, with some ready to allocate significant resources while others were more cautious due to financial limitations. Finally, the interviews revealed that startups typically begin to prioritize sustainability when seeking investment or when their product or services hit the market, as stakeholders' expectations - both investors and consumers - increasingly demand environmentally conscious operations.

So overall, the interviews revealed that startups do not inherently lack interest in incorporating sustainable practices into their business strategies and operations but rather due to resource constraints and a lack of clear direction. These insights were instrumental in shaping our project, as they helped us understand the practical challenges startups face and the kind of solutions that would be most beneficial to them.

Desk Research

In our journey to explore viable solutions for integrating sustainability into startup practices, we conducted extensive desk research that encompassed a thorough analysis of sustainability metrics and existing AI tools designed for assessing sustainability strategies, particularly in the startup sector. This exploration was essential to understand the landscape of current offerings and identify potential gaps that our solution could address.

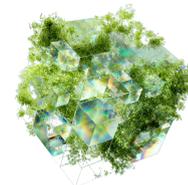
Through our research, we uncovered a variety of AI tools that offer a wide range of functionalities aimed at enhancing sustainability practices in different business areas. For instance, Cervest's EarthScan¹ provides an AI platform offering climate intelligence, while Aclymate² assists small and medium-sized businesses in carbon footprint assessment and emission reduction. Additionally, tools like Finch³ use machine learning to decode the environmental and social impacts of products, providing crucial sustainability information at the point of purchase.

However, despite the availability of these advanced tools, we identified a significant gap in solutions that are specifically tailored to the unique challenges and scales of startups at different growth stages. Many of these tools focus on established businesses, leaving early-stage startups, often constrained by budget and resources, with limited options. Many tools also provide broad solutions, but there's a lack of tools specifically tailored to niche or

¹ <https://www.mitigasolutions.com/earthscan>

² <https://aclymate.com/>

³ <https://www.choosefinch.com/>



emerging sectors. Additionally, tools that seamlessly integrate with a broad range of existing business tools, such as CRM and ERP systems, were also seen as a critical need for startups. There's overall a clear need for cost-effective, scalable, and flexible solutions that can adapt to the changing needs of startups, regardless of their industry or growth stage.

Furthermore, we observed that many existing tools predominantly focus on environmental sustainability, with less emphasis on social or economic aspects. This indicates a potential gap in the market for tools that offer a more holistic approach to sustainability, addressing not just environmental but also social and economic dimensions. Moreover, our research highlighted the importance of developing tools that not only assess sustainability but also guide startups through compliance with evolving global regulations.

Our research also delved into the growing demands of investors and customers for sustainable practices. The increasing demand for sustainability from both customers and investors aligns with the findings from our startup interviews. For instance, customers, with 73% expecting brands to create positive change⁴, and investors, prioritizing environmental impact⁵, emphasize the importance of sustainability. This demand reinforces the trend we observed in startups, where sustainability gains prominence when seeking investment or entering the market. Startups should recognize that aligning with sustainability not only addresses global imperatives but also appeals to environmentally conscious consumers and investors, potentially contributing to their long-term success.

Solution Ideas

In response to the demand for sustainability and feedback from our research, we've brainstormed potential solutions tailored to startups. These solutions prioritize efficiency and clarity, requiring minimal time from startup members while providing clear benefits.

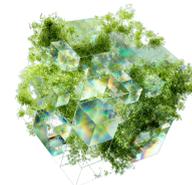
First, we considered a sustainability Advisor Chatbot that offers personalized sustainability guidance and recommendations, learning from interactions and adapting to emerging trends. Another idea included a customized toolbox that integrates specific AI tools, recommending them based on startup needs. Another idea was an AI with Personalized Tips that provides daily, or weekly sustainability tips based on the startup's field. Further ideas included a real-time Infographic that displays startup sustainability status with real-time data, a purchases analyst that calculates environmental consequences of startup purchases, and a design simulator that assists in sustainable product or service design. Finally, we considered a customized Sustainability Roadmap Generator that creates tailored sustainability roadmaps, considering industry, size, and practices.

To select the final solution, we considered research findings, deadlines, professor and challenge giver feedback, and the solution's alignment with the startup ecosystem. Our

⁴ https://www.ey.com/en_gl/consumer-products-retail/make-sustainability-accessible-to-the-consumer

⁵

<https://www.institutionalinvestor.com/article/2bswguw6e4as64146vqww/portfolio/investors-see-material-risk-in-ignoring-esg>



approach emphasizes adaptability, user-friendliness, and affordability, addressing the unique needs of startups and supporting their sustainability journeys.

Solution

In response to the imperative demand for sustainability, the valuable feedback from our comprehensive research, and the brainstorming of potential solutions, we selected the AI Sustainability Roadmap Generator “EcoPath” as our tailored tool to meet the unique challenges faced by startups.

Overview of the “EcoPath” AI Roadmap Generator

The AI Roadmap Generator is designed to offer startups a clear, actionable path to integrate sustainability into their business models. This sophisticated AI tool provides a personalized sustainability roadmap, tailored to the unique characteristics and needs of each startup.

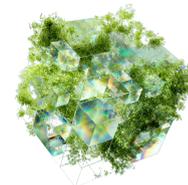
The journey begins with an extensive initial assessment that dives deep into the startup’s current sustainability practices, examining both internal operations and external impacts. First, an internal assessment is conducted focusing on the startup’s resource efficiency, human resource practices, and the environmental footprint of internal processes. In contrast, an external assessment follows by looking at the sustainability of the supply chain, environmental impact of products or services, and manufacturing processes. Using the data from the initial assessment, our AI algorithms process this information to create a customized sustainability roadmap. This roadmap is meticulously crafted, considering the startup’s industry, size, operational practices, and sustainability goals.

The roadmap is designed to be flexible, adapting to changes within the startup and external factors like market trends or regulatory changes. It assists startups in setting and pursuing both immediate and long-term sustainability goals. A real-time monitoring system tracks progress against the goals and KPIs set within the roadmap, providing startups with feedback and insights on their sustainability journey.

The tool integrates with the startup’s existing business systems, syncing with data platforms to update the roadmap based on the latest data. The roadmap generator learns and evolves based on feedback from startups, ensuring that the recommendations remain relevant and effective. Featuring an intuitive interface, the tool is accessible for startups of varying technical backgrounds, supplemented with support resources and guidelines.

Minimum Product Viable

To define the functions of the “EcoPath” MVP, we meticulously mapped specific problems encountered by startups, aligning each problem with a tailored solution and corresponding function, as summarized in Table 1. This meticulous mapping process ensured that the MVP



is directly addressing the real and tangible challenges faced by startups in integrating sustainability into their operations.

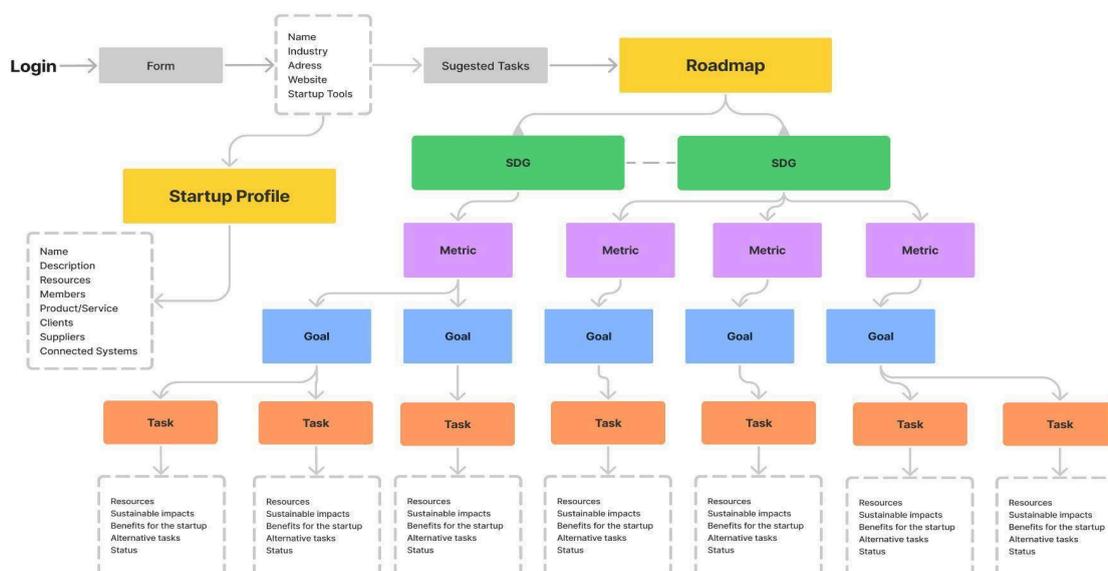
Table 1: Functions for the tool defined according to the startups problems and the assigned solutions.

Problem	Solution	Function
They don't know what are the sustainability metrics they can pursue	Separated sections for each sustainability metrics	The AI takes their data and organize into this sections
They don't have time to research about sustainability	Short and concrete step-by-steps they can pursue without having to research	List of tasks
Pursuing sustainability can be resource demanding	Show the resources for each task	Categorize and filter the resources
They don't know the impacts and benefits of their actions regarding sustainability	Show the impacts and benefits for them	Show the impacts
They don't have strong motivations to keep seeking for it	We can give scores related to their goals	Scores on their profiles
The sustainability goals sometimes doesn't fit the startup goals	The startup can choose between the recommended steps which ones they will follow	The recommended steps are listed and the startup select
They don't have time to fill a big form or something to give us the information about the startup that the AI needs	The AI analyzes their existent systems where the information is	Connect and give access to their systems while creating the account
They are really busy during the day and don't have time to think about it	Remind everyday about the tasks	Notifications

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Based on the defined functions, we constructed the basic information architecture for "EcoPath". This architecture serves as the foundation of the tool, outlining how different components interact and providing a blueprint for the user interface and user experience design.

Figure 1: Information Architecture of the tool



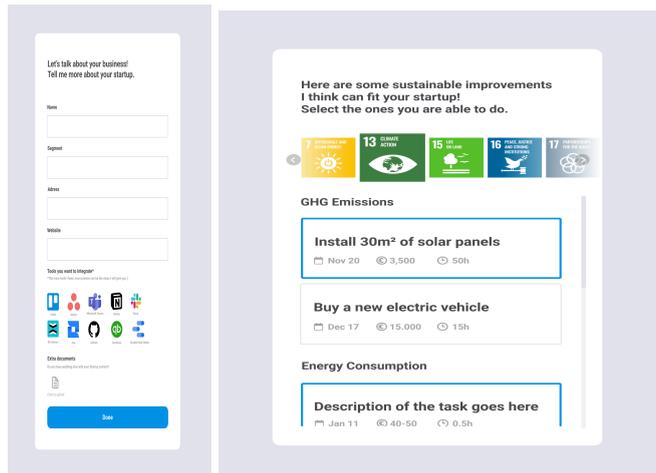
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Prototype Design

Utilizing the established information architecture, we developed the prototype of the AI Roadmap Generator following Nielsen's Usability Heuristics⁶ and User Interface Principles⁷. The prototype's design process was rigorous, ensuring that the tool is intuitive, user-friendly, and effective in addressing the sustainability needs of startups.

Figure 2: Form Screen of the Prototype



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The process starts with a form where startup founders input their data. This information serves as the basis for generating customized tasks aligned with the Sustainable Development Goals (SDGs).

⁶ <https://www.nngroup.com/articles/ten-usability-heuristics/>

⁷ <https://www.nngroup.com/courses/hci/>

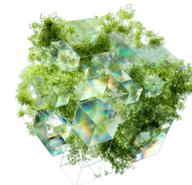


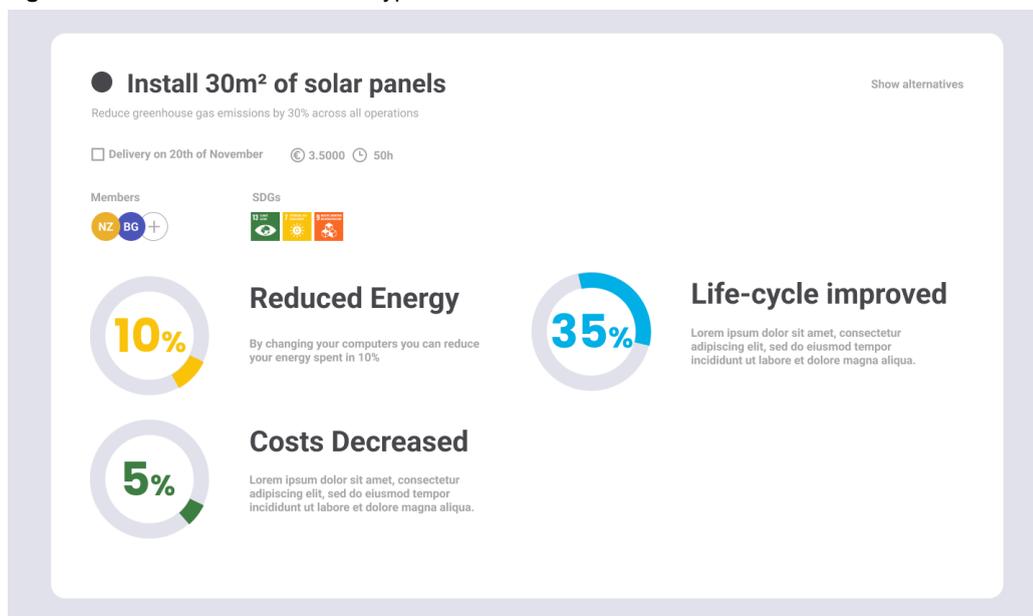
Figure 3: Roadmap Screen of the Prototype



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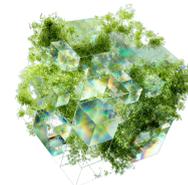
The algorithm then uses the input data to suggest possible tasks based on the SDGs. Founders can then select tasks that best fit their business, ensuring that the roadmap is both realistic and personalized. After task selection, the AI generates a roadmap, determining which SDGs are relevant for the startup. Within each SDG, specific metrics and measurable goals are outlined, along with necessary tasks, resources required, and delivery dates.

Figure 4: Task Screen of the Prototype



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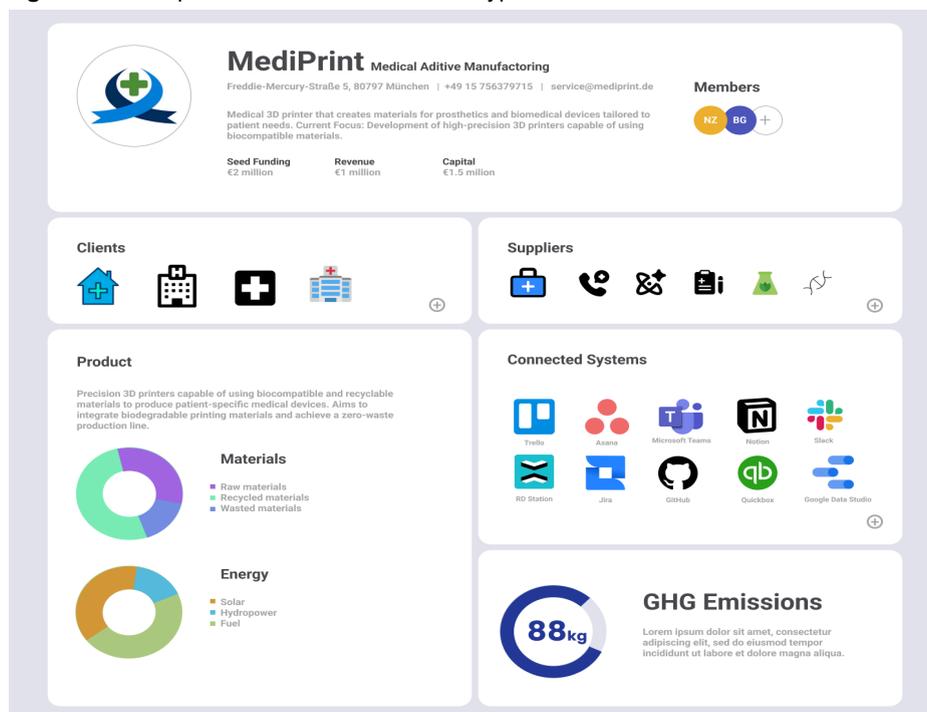
Clicking on each task reveals a detailed description, including the resulting benefits and impacts on the environment and society, highlighting the importance of each action. If the



task is considered not suitable, an alternative can be generated, to ensure feasible and suitable tasks.

The algorithm also creates a dynamic profile for the startup, which can be updated by the team or automatically based on completed tasks. This profile encompasses various aspects of the startup, offering insights into the real-time impact of their activities.

Figure 5: Startup Profile Screen of the Prototype

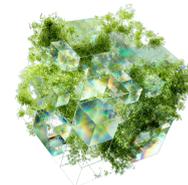


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This prototype seamlessly integrates with the AI Roadmap Generator tool, enhancing its functionality and user experience. The MVP and prototype represent the practical realization of the tool's concept, aligning with the comprehensive assessment, dynamic roadmap creation, continuous monitoring, and feedback mechanisms outlined earlier. The combination of the initial comprehensive assessment with the dynamic, tailored tasks and roadmap ensures that the tool is not only comprehensive but also adaptable to the unique needs and growth trajectory of each startup.

Business Model

Following our prototype development, we collected ideas on a viable business model. Our business model for the "EcoPath" is designed to be scalable, adaptable, and accessible to startups at various stages of their growth. Based on our comprehensive research and targeted interviews with startups, we have tailored our business model to align with the evolving needs of startups at various stages of their development. Our approach recognizes the distinct challenges and opportunities that startups encounter as they grow, particularly regarding time and financial constraints.



We've found that startups in their early stages often operate under significant time and budget constraints. To address this, we aim to adopt a freemium model, offering basic functionalities of the tool for free and without any financial burden. This approach ensures that even the most resource-constrained startups can begin integrating sustainability into their business models from the outset. The free version will focus on providing fundamental sustainability guidance and actionable tips, enabling these startups to lay a strong foundation for sustainable practices.

As startups progress and mature, their needs and capacities evolve. Our interviews indicated that once startups reach a stage where they're engaging more with customers and investors, the demand for demonstrable sustainability practices increases significantly. At this stage, startups are more likely to benefit from and seek out the advanced features of the AI Roadmap Generator. Therefore, our premium subscription tiers will cater to these more established startups, offering in-depth analytics, customized sustainability strategies, and comprehensive integration with business systems. The premium service is designed to support these startups in meeting the higher expectations of their stakeholders, including investors and customers who increasingly demand robust and transparent sustainable practices.

This tiered approach to our business model not only supports startups at different stages of their journey but also ensures a sustainable growth model for our tool. Early-stage startups benefit from essential services without financial strain, building loyalty and familiarity with our platform. As they grow and their needs become more complex, they are more likely to transition to our premium offerings. This strategy ensures a steady growth trajectory for our platform, supported by a user base that expands and evolves alongside their sustainability journey.

Future Possible Implementations

In the future, we plan to expand the functionalities of the AI Roadmap Generator to include more advanced predictive analytics, deeper integration with a wider range of business tools, and enhanced customization options. We also envision incorporating blockchain technology for transparent tracking of sustainability practices and achievements.

Another area for future development is the integration of industry-specific modules, catering to the unique sustainability challenges and opportunities in various sectors. This will allow startups in niche markets to benefit from tailored guidance and support.

To keep startups engaged and on track with their sustainability goals, our tool will feature a notification system that provides timely tips and reminders. These notifications will be based on the startup's roadmap progress and goals, offering relevant and actionable advice. The aim is to make sustainability a habitual part of the startup's operations, with regular prompts that encourage sustainable practices. Furthermore, we plan to incorporate the Sustainability AI Advisor chatbot feature. It would offer immediate, personalized advice and support to startups, responding to their queries and providing guidance on implementing their sustainability roadmap. Future enhancements to the chatbot will focus on improving its AI



algorithms for more nuanced and context-specific advice and integrating it more deeply with the roadmap generation process for a seamless user experience.

Conclusion

We would like to conclude this report by noting that this collaborative effort with TUM Venture Labs has led to significant steps in empowering startups to integrate sustainability into their business models. Through the innovative use of AI, the AI Roadmap Generator can emerge not just as a tool, but as a comprehensive guide and partner for startups in their journey towards sustainable practices.

Our approach revealed the unique challenges and varying levels of sustainability integration among startups. By addressing these challenges through “EcoPath” and its associated services, we aim to make way for a more sustainable future in the startup ecosystem. The tool's adaptability and the freemium business model make it accessible and practical for startups at different growth stages, ensuring no startup is left behind in the sustainability journey.

By equipping startups with the right tools and knowledge, we are not only contributing to the global pursuit of sustainability but also fostering a new generation of businesses that prioritize environmental and social responsibility as core elements of their operations and culture. The journey of EcoGenesis and TUM Venture Labs hopefully proves to be a testament to the potential of collaborative innovation in shaping a sustainable tomorrow.