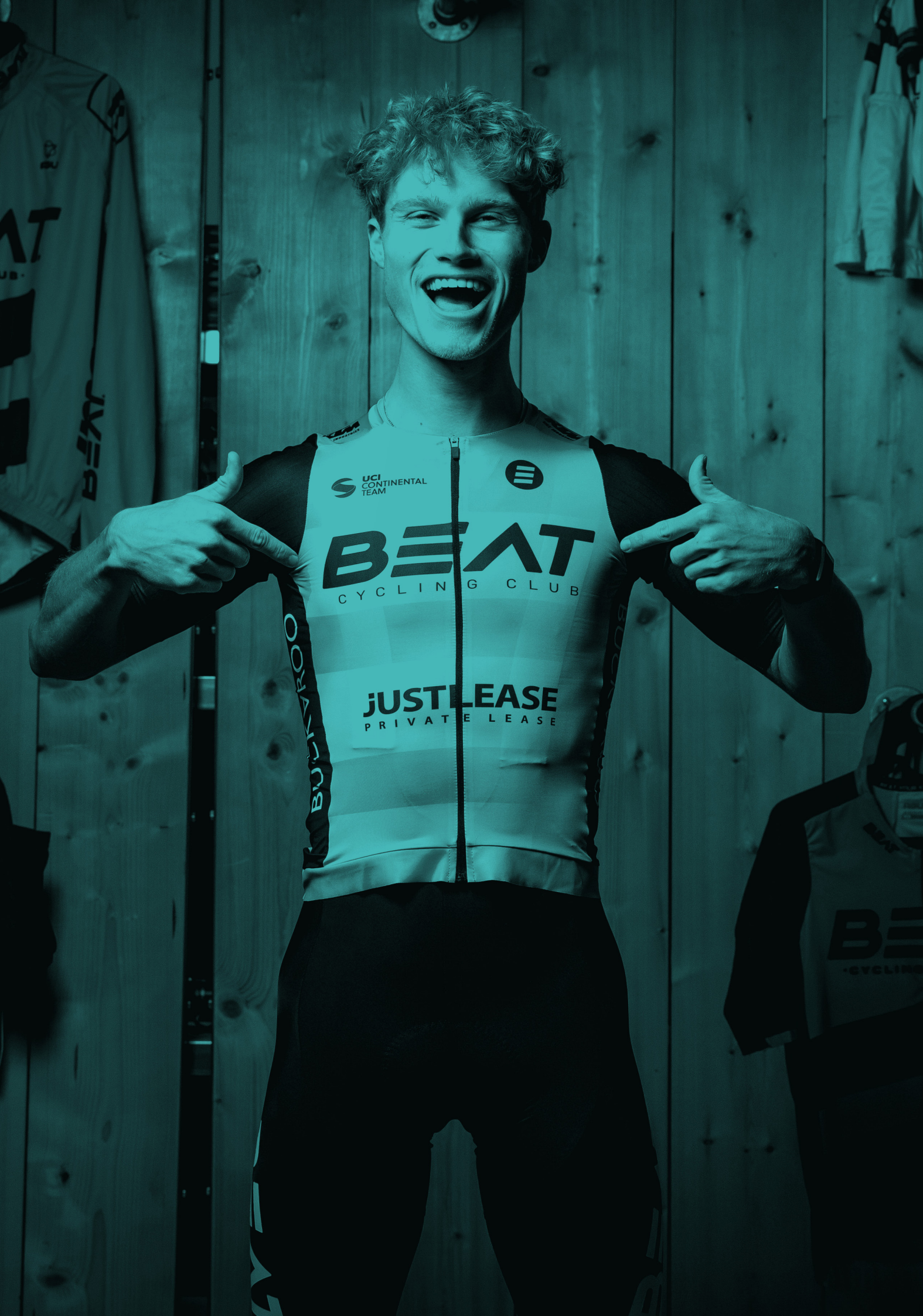




DESIGNING A SUSTAINABILITY STRATEGY FOR BEAT CYCLING CLUBS PROFESSIONAL TEAM

Twan van Schie
Graduation Project



Designing a sustainability strategy for BEAT Cycling Club's Professional team

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Master Thesis

MS. Strategic Product Design

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PREFACE

Dear reader,

Welcome to this thesis, the finalization of my education and my Master's in Strategic Product Design. In this thesis, I got to apply everything I have learned during my time at the university to combine two things that are very close to my heart: cycling and sustainability. When looking for a thesis subject, I asked myself the question: "What would your perfect thesis subject look like?" This is the result.

This project was not only my biggest one but also my hardest one. Encountering the weird situation in which I was almost completely burnt-out, this project taught me more than sustainability in cycling alone. I got to know myself much better and work in a way that is much healthier than before. As I received much help on this project, the people around me also provided me with much help for myself. I can't put into words how thankful I am for that, but I will try: The rest of this page is to thank these people around me.

Firstly, I want to thank BEAT Cycling Club for giving me the opportunity to work on this project. I particularly want to thank Edwin in this regard, for guiding me through it. It has been a dream come true to work on sustainability in professional cycling. I very much appreciate the confidence you placed in me and the freedom you allowed me to get to this end result on my own, in a healthy manner. On to a more sustainable cycling world!

Secondly, I want to thank Conny and Bart, for guiding me through the academic part of this thesis. I highly value your positive way of coaching and framing your feedback, motivating me to improve my thesis time and time again. Your genuine interest in me as a person and my energy levels through the project gave me the confidence I could make this project a success. I want to thank you for your patience in this project and the genuine and big smiles every time we ended a coaching session.

Next, I want to thank my parents. Your trust in me means the world to me. Thank you for always being there when I needed you in this project and for listening to everything I had to say. But also a big thanks for allowing me to take my time and my rest alone. Knowing that I could take this time and rest alone was very valuable. I could not have done this without you!

Lastly, a huge thank you to my friends. Thanks for all the laughs and the opportunity to relax and have fun. And thank you for also being there for me when I needed you, especially during this project. Your questions on my project and my health helped me grow into this project and helped me grow as a person.

Now it is time for the thesis. I hope you enjoy this document and that it can provide you with new insights. Enjoy!

Twan

EXECUTIVE SUMMARY

Though cycling as a transportation method is widely seen as a sustainable method, professional cycling and racing are not. Though the first calls for sustainable action are made and the first efforts start to appear, not much has changed yet in the complex world of professional cycling.

This report describes the design of a sustainability strategy and plan for BEAT Cycling Club, a continental cycling team. As an innovative organisation that was founded to break through the status quo in professional cycling the sustainability journey fits BEAT. As one of the first teams taking sustainability seriously, the strategy helps BEAT to increase the quality of their sustainability actions beyond the 'low-hanging fruits' they have been tackling already.

The difficulty of starting a sustainability project is tackled by using the systemic design framework of the Design Council (2021) to guide innovation with a complex system like sustainability. The internal feeling of responsibility for sustainability of BEAT Cycling Club can be tackled by designing a strategy through a continuously diverging and converging process.

To help understand the sustainability context for BEAT Cycling Club and to guide the direction of the strategy, a (fast-track) life-cycle analysis is conducted. The results of this analysis are a set of emission hotspots: the actions and areas where most of BEAT's emissions and environmental impact occur. These hotspots are used to further shape a strategy to tackle them.

This strategy is built through the design roadmapping methodology, resulting in a strategic and tactical roadmap. These are based on three horizons in which the role for BEAT in sustainability changes. These roadmaps are substantiated with a playbook that guides BEAT through the strategy and provides more detailed information about the steps that need to be taken. The playbook and roadmaps are not only strategic assets but are also important for BEAT to communicate their strategy with partners and other stakeholders.

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1.

INTRODUCING THE PROJECT



1.1 INTRODUCTION

“ THE BIKE IS PART OF THE SOLUTION. PROFESSIONAL CYCLING IS PART OF THE PROBLEM ”

This is the statement BEAT Cycling Club put out when launching its first sustainability awareness campaign and project. They sprung out as one of the very few professional cycling teams that even mention climate problems and an intent to start working towards solutions.

Professional cycling might be one of the most polluting sports in the world. Huge columns of cars travel the world to bring people and bikes to races, only to leave a trail of waste like water bottles, exhaust fumes and other trash. It does not only stick to cars but often includes many buses, trucks and often flights. All for the performance of the athletes and the entertainment of the fans.

While the bike is a theoretically sustainable mobility platform, professional racing has detached from this functionality. The quick conclusion is: the most sustainable cycling team does not participate in races. No bikes necessary, and no travel needed. No clothing, no food, no bottles and no wear and tear on material. Problem solved, right?

It's not. Though impactful, professional cycling fulfils many purposes: entertainment, marketing operations, health-inspiring practice, job availability and more. Professional cycling cannot and will not stop existing. So, how can we keep professional cycling around? How can we make sure professional cycling can sustain operations with as little or no impact on planet earth? Or, preferably, a positive influence!

This report explores this question in the context of BEAT Cycling Club, which by its own means set the first exploratory steps into more sustainable ways of operations. The roadmap towards an environmentally sustainable cycling team will be made: what is the route and which stages will we have to finish to win the race?

1.2 PROBLEM STATEMENT AND OBJECTIVES

The challenge mentioned, becoming a sustainable professional cycling team, is the heart of this thesis. The project set out with the question:

“What does a sustainable professional cycling team actually look like?”

This question was mentioned to set the basis for exploration, what are the elements that constitute a basis for a sustainable professional cycling team and how to these elements translate into barriers and enablers for a sustainable strategy.

Since so little seems to be known about sustainability in cycling, it will include mapping and assessing the current situation including the stakeholders, themes and possible directions. Ultimately, it will conclude in the design of a strategy, vision and roadmap for BEAT and broader cycling world/ecosystem.

In the context of professional cycling teams, sustainability is a very little explored subject. Though the first calls for change have now been put out into the world, solutions stay behind and changes that are being made stick to singular product solutions and tests.

To bring change to this situation, BEAT Cycling Club wants a strategy to work on becoming environmentally sustainable. In this case, the focus will be on environmental sustainability, dedicating social and economic sustainability to other projects.

One of the big issues at hand is the identification of impactful practices and turning those into an actionable strategy. In short, ‘What are the (biggest) sustainability problems and what and how and when do we need to change to tackle those?’

Though BEAT is a cycling club for everyone beyond their professional team, this graduation project will stick to their professional road team and generalizable professional cycling context.

The general lack of insight and lack of future direction will need to be solved in this project, but also repeatable for BEAT Cycling and other professional cycling teams in future years. Currently, understanding of how to organize and tackle complex and larger sustainability projects is a wish.

Assignment & Objectives

The operations of a professional cycling team are complex and encompass a broad spectrum of actions. I expect to find and deliver possible steps for BEAT to take to improve their way of operating. This includes the creation of insights in the problems to be tackled, and how easy/hard or urgent they are.

The steps that BEAT Cycling Club will have to make will need to be made clear and timeframed. BEAT Cycling Club will need a ‘script’ to work by and to live by. This should all be guided by a roadmap that maps the trajectory of BEAT Cycling Club in their sustainable efforts. The project brief for this thesis is added in Appendix A.



1.3 PROJECT APPROACH

In this design project, a foundation of diverging and converging activities will be the underlying framework to design a sustainability roadmap for BEAT Cycling Club (Simonse, 2017). Traditionnaly, the diverging and converging process is explained as the 'double diamond' model, as introduced by the British Design Council (Design Council, 2005). This model has been significantly changed in the most recent revision of the double diamond model. The Design Council has evolved the double diamond process into their systemic design framework (Design Council, 2021), as

shown in Figure 1. This framework has been build specifically in light of the sustainability challenges currently faced and taking into account the complexity of design projects encounter when tackling sustainability issues. Part of this framework is a renewed version of the double diamond, or design process. This new process will be the guideline for this report and is shown below.

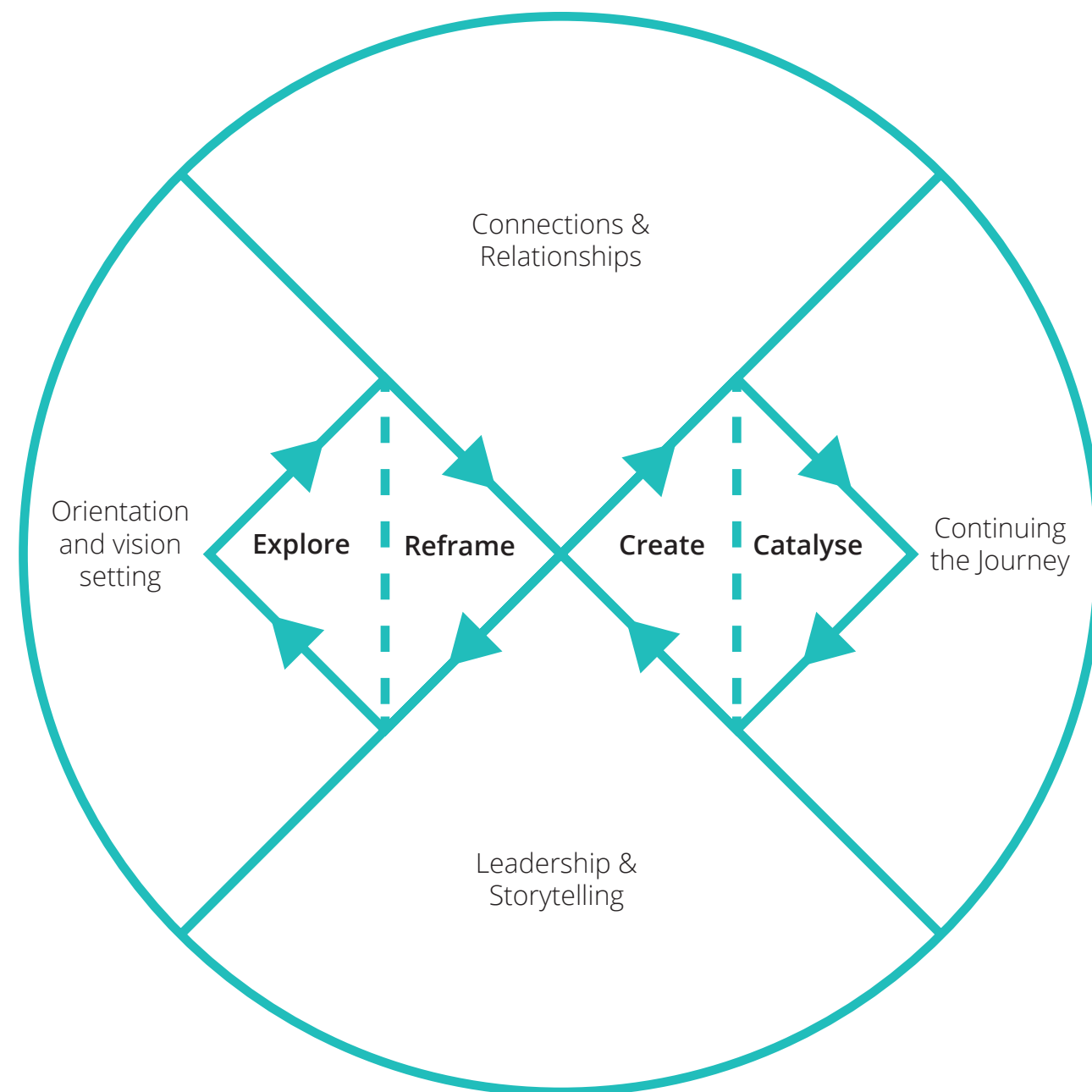


Figure 1. Beyond Net Zero - Systemic Design Approach

1.3.1 Report and project structure

With the readability of the report in mind, the report is structured in order of the design activities as previously described. Important to note that these design activities from the framework are not by definition meant to be a linear process. In the creation of this report, many steps forward and back have been made. If and when possible it will be specified in the report where such switches have been made.

This chapter of this report was to initialize the project. It sets the scene to create and understand the (personal) connections in this report and sets a first scope to start understanding the bigger system in the next chapters.



1.4 PARTIES INVOLVED



Delft University of Technology



BEAT Cycling Club

2.

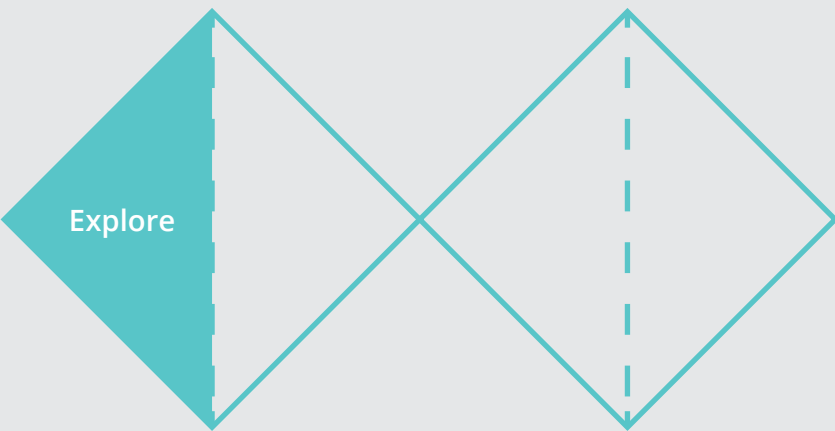
EXPLORE

SETTING THE CONTEXT AND THEORETICAL BACKGROUND

CHAPTER APPROACH

This chapter is part of the foundation for the rest of the project and report. As a diverging process (**explore**), it explores more deeply and widely what is happening in the context. The information necessary for formulating future visions is gathered here, like the discovery of problems and opportunities.

The goal is to gather information from different perspectives and do a first exploration of their connections. This will lead to a basis that allows easy identification of opportunities in the next chapter, where these will be substantiated to lay the basis for the roadmaps. Furthermore, this chapter also allows the reader of this thesis to dive a bit deeper into the world of professional cycling.



2.1 CONTEXT

This chapter treats the context of the project. The emphasis here will be on explaining all the context-specific knowledge that is necessary to understand this sustainability project in the world of cycling. The influences and traditions of the industry will be explained and BEAT Cycling Club as an organisation will be introduced.

Professional Cycling

Before, treating the (non-)sustainable elements of professional cycling, the context and competition levels need to be introduced. Every competitive level in cycling brings different conditions that influence environmental impact.

BEAT Cycling Clubs' first team is a professional cycling team focussed on, but not exclusively, road bicycle racing. Road racing takes place on closed-off circuits, organised all over the world. On a professional level, races occur on public roads that are closed off for the race.

Cycling teams travel around countries and continents to participate in these races based on a program that is dictated by their racing licence level and the agenda of their own choice. The racing licences, or tiers, are controlled by the Union Cycliste Internationale (UCI), the world-wide governing body in bicycle racing. This includes road racing, which this report touches upon most, but also a wide variety of offroad-, track- and speciality cycling. The UCI classifies professional road racing teams into the following tiers, in order of level. The description below is based on the male cycling teams since BEAT Cycling Club participates in this field. Women team classifications are similar but exclude a Proteam licence option.

1. UCI Worldteams (WTT)
This is the highest category in professional cycling, limited to a number of 18 teams. Teams can acquire Worldteam status by gathering points in a point system (UCI Cycling Regulations, 2023). Teams on this level have compulsory attendance for races that are WorldTour classified and a high level of certainty of attendance in lower categorised races that they apply to. The races participated by Worldteams are highly international and often are all around the world like the Tour de France and the United Arab Emirates tour (Union Cycliste Internationale, 2023).

2. UCI Proteams (PRT), sometimes called Pro Continental
UCI Proteams form the second-highest category of professional cycling. Proteams can participate in the abovementioned WorldTour races through wildcards, which can be earned by popularity, participation of famous riders or arbitrary selection by the UCI and organisations. Additionally, they have guaranteed access to races classified as ProTour races, like Paris-Tours and the Tour of Slovenia. Proteams often race internationally but participate in a lower amount of races that require extensive travelling.

3. UCI Continental Teams (CTM)
These are the third level of UCI-licensed racing teams that are considered 'professional' teams. Continental teams are excluded from races at the highest level (WorldTour) and have no opportunity to obtain wildcards. Often teams aim to promote to the ProTeam level to enable access to more races but are limited by budget requirements. They can compete in races designed for Proteams, with higher chances of acceptance if races are in their origin countries. Most races participated in by continental teams are single-day or stage races in and near their origin country countries within the continent. However, intercontinental participation occurs but for a selected number of times. Race calendars are dictated by own preference, but sponsorships and visibility for talent acquisition often also dictate calendars (Laverick, 2021). Examples of races are Ronde van Limburg (NL) and Tour du Jura Cycliste (FR) (Union Cycliste Internationale, 2023). Often, continental licensed teams express the wish to promote to Proteam to, for example, be allowed to attend more high-profile races (TDT-Unibet, 2023; Wielerflits, 2022).

All level teams have a similar general internal structure. The team is led by management staff, together with the performance staff. Furthermore, they employ a team of riders and additional support staff like physiotherapists. The higher the racing licence, the higher the number of athletes in employment must be and the higher the (minimum) wages are. The income for teams mostly comes from sponsorship and partnership deals. Often teams get named after their main sponsor(s). Examples of this are Team Jumbo-Visma (WTT), Lotto-Dstny (PRT) and VolkerWessels (CTM). Change of team names is often seen as sponsors change as, for example, Lotto-Dstny was previously named Lotto-Soudal and Omega Pharma-Lotto. Sponsor deals are often based on single-year contracts since the UCI Licences have to be renewed every year too (Laverick, 2021).

The introduced competition levels thus influence the behavior of the teams. Team size and travel strongly differ between levels while also strongly influencing environmental impact.



Stakeholders

Apart from the complexity of different levels of racing described before, the series of tasks that a team executes is complex too. A wide variety of people and organisations are involved in these action, all in different ways. To give the 'continental team' operations some substance, a list is shown below of the direct stakeholders in professional cycling. Some have been mentioned before and will be briefly reiterated here.

- **Team management**
Team management is responsible for keeping the team running during the season and over longer periods. They manage licencing, calendars, sponsorships and often the logistics, buildings and materials necessary to participate in a racing season.
- **Sports Staff**
The Sports Staff is responsible for guidance in the athletic performance of the team. They build the training schedules, attend to athletes' needs and play an important role in the design of the season calendar. They are responsible for talent/rider acquisition and scouting.
- **Athletes**
The athletes have a single goal to fulfil for the team: prepare to be in the best shape to perform to their best ability in races. Sometimes teams require their athletes to fulfil secondary roles and use their (social media) following for promotions and media engagement.
- **Commerce staff**
Outside of sponsorship money, teams gain income by selling merchandise and branded items as well as items that are provided by their partners. The 'shop teams' are often dependent on the popularity of the team and athletes for the number of sales they make.
- **Partners/Sponsors**
Professional sports are driven by sponsorship money and often material partnerships. In exchange for money or free materials, partners expect exposure and association (Lagae, 2015). Often this occurs by presence with logos on clothing and company items and branded posts on social media. Sponsors hope to gain the attention of potential new customers or new purchases, or sometimes just as brand builders as brands get recognised better by fans when represented on merchandise (Biscaia et al., 2014).
- **Race Organisers**
The races teams participated in are organised by external organisations. The organisations desire to organise an event that is attended to by as many high-profile teams as possible and that is entertaining to watch to attract sponsors, in a similar manner as sponsorships for teams function.
- **Fans**
Another income source for sports is fan-based income. Professional sports are entertainment based. Fans attend races physically or through broadcasts to support and teams or individual riders compete.
- **Media**
Building on the attention sports get from sponsors and fans, media attend professional cycling to provide coverage and insights of the race to their viewers/readers. Their opinions can influence the popularity of teams, riders and races.

As all these stakeholders have their own priorities and tasks to accomplish, they all will need to make different adjustments when sustainability changes are made. The opportunities and challenges that drive the change will be described next.

Sustainability in Cycling

To look at sustainability, let's also have a look at what sustainability efforts have been made already in (professional) cycling. General web-based searches yield little results in sustainability efforts or commitments made. Shown below are the efforts made in the professional cycling industry found.

Team Movistar & Team Deceuninck Quick-Step
Over the entire search, only two professional cycling teams were found that have openly published their footprint or carbon emissions. These teams were Movistar Team and Team Deceuninck – Quick-Step.

Team Movistar (WTT) published several online articles about its sustainability plans. They claim to "become the first top-tier cycling team 100% sustainable in its activities" (Movistar Team, 2020). Furthermore, they provide the reader with a carbon footprint number. They claim an equivalent of 175.000kg of carbon dioxide emissions every year and aim to offset these emissions in the next few years. One infographic is published that suggests that this calculation is based on only Scope 1 and Scope 2 emissions (ABARCA Sports, 2020). They state they will execute their sustainability plans through a 'set of actions already in place'. However, no specifications for these plans are published other than the commitment to 100% renewable energy sources by solar panels and switching to hybrid cars. This does not provide enough backing for the ambitions put in their publications. Since 2021, Movistar has not published any concrete information on sustainability plans. Upon contact request to collaborate or discuss these claims, no reaction was given.

Team Deceuninck – Quick-Step (WTT) has a similar history in sustainability practice. In 2020 they announced their ambition to become a carbon-neutral cycling team in a collaboration with the company CO2Logic, responsible for CO2 calculation, compensation and development of a program to change behaviour and culture (Deceuninck - Quick-Step, 2020). They have calculated their carbon footprint for 2020 to be 1.288.000kg of carbon dioxide equivalent. This is more than 8 times the impact of Team Movistar, who race the same races and operate on a budget that is

'only' 20% lower than Deceuninck – Quick-Step (Statista, 2022). The team has not provided any insight or transparency in these calculations and did not respond to requests to discuss doing so. They did publish a series of pledges. Since releasing the project, the team has only sparingly mentioned their sustainability project, often by auctioning products to support their tree planting project (Deceuninck – Quick-Step, 2021). The last update provided is the mark of 3000 trees planted as a compensation project (Quick-Step Alpha Vinyl, 2022).

Saint Piran and Instafund racing.
Two cycling teams were found that have a strategic positioning that is fully focused on sustainability for cycling teams. These are the Continental Men team Saint Piran (UK) and the Continental Women team InstaFund Cycling Team (US). Both teams openly carry out a call to the cycling community that there needs to be a change in attitude and action towards sustainability in professional cycling. They provide updates on their journey to become net zero (Saint Piran) and climate positive (InstaFund) respectively (InstaFund, 2019; Saint Piran, 2022). Neither team have published impact numbers other than progress stories, but aim to do so in the future.

Outside of professional cycling, the Shift Cycling Culture initiative can't be left out. Shift Cycling Culture is a network of players in the cycling industry that together signed a commitment letter to report and reduce GHG emissions. It has been signed by big players in the cycling industry like Specialized Bicycle Components, Rose Bikes GmbH and Schwalbe. Within this network, meet-ups, discussions and co-creation sessions are hosted to learn, teach and inspire (Shift Cycling Culture, 2021). A discussion panel on the role of the Union Cycliste Internationale and their role in sustainability yielded interesting results in which participants saw the role of the UCI as one that is very important in almost all fields that relate to cycling.

These examples show that there is an interest in sustainability in cycling but concrete action and transparency proves hard. This report will further explore what the barriers are that cause this behaviour.

Barriers in Literature

When looking for barriers to start working on sustainability in professional sports, many barriers found in literature relate to a shape of short-sightedness, called short-termism. Barriers found in literature are for example:

- Lack of funding
- Limited knowledge and desire about technology
- Insufficient staffing
- No sense of ownership
- Facility age

(Trendafilova et al., 2014)(McCullough et al., 2020)

To explain this, the world of professional sports, with the exception of several high paid athletes and top-level teams, is one where budgets are often well looked after to allow for a certain financial sustainability. The ability to 'splurge' on projects that are non-essential for sports performance is low. When the challenge of changing to a more environmentally sustainable way of operating arrives, a quick reaction is often that it is too expensive to operate more sustainably.

This problem is widespread through sustainability strategy and not exclusive to sports. It is often mentioned to be a form of short-termism. Short-termism is often characterized as "representing decisions and outcomes that pursue a course of action that is best for the short term but suboptimal over the long run" (Lavery, 1996). It lacks a view of the future and the returns that accompany that future. General sustainability is the ability of a firm to balance the short and long term without compromising its own or others' ability to meet future needs. Looking at these two definitions together shows an interesting opposition: the incorporation of future needs. Like professional sports, pacing your energy through time often leads to better results without blowing up your energy, or budget, right at the start (Bansal & Desjardine, 2014). The returns you get from a steady race are often better than lacking behind and trying to catch up all in the end.

In other words, organizational inaction regarding sustainability eventually leads to missing out on opportunities. Slawinski et al. (2015) presented a model in their framework about understanding failure in reduction of Green-

House Gasses (GHGs) which suggests that short-termism on sustainability issues not only leads to low comprehension of future implications of sustainability but also brings a lower likelihood of a company acting on sustainability. Knowing future impact of sustainability is thus key. In addition to knowing about the impact, understanding the sustainability program is a contributing factor to breaking barriers. Terms as 'green' and 'sustainability' that are not substantiated, nondescript and vague have as a result that they are misunderstood (McCullough et al., 2020).

To once again make the reference to high-level sports, investing in your training and development now to prepare for the future is important. Even in sustainability, the Olympic ideal that "participation is everything" applies (WWF & Green Sports Alliance, 2018).

As introduced with this topic, many barriers relate to this state of 'short-termism' and lack future vision. Some elements that can counter this are described next.

Enablers in Literature

The role of professional sports as an entertainment business is clear. Partly due to this visibility, the United Nations recognise sports as an important enabler of sustainability in their 2030 agenda (United Nations, 2015). This role as an enabler of sustainability is also an important motivation and reason to start sustainability programs.

Where other industries show trends of producing reports that show their efforts towards sustainability, the sports sector interestingly does not follow this trend (Cayolla et al., 2022). Cayolla et al. further mention three reasons to carry out a sustainability project:

- Perception of organisation by stakeholders improves
- Boosted diversity and inclusion in and around organisation
- Attraction and retention of human capital improves

They call sustainability initiatives doubly favourable: it promotes more sustainable behaviour as well as it improves links between supporters and organisations. Sports sector specific, the communication to stakeholders, making them aware of the sustainable initiatives an organi-

sation takes, was the most important success element of sustainability practices (Cayolla et al., 2022).

This improvement in stakeholder perception of the organisation goes beyond perception. Casper et al. (2014) found that environmental education actions of sports organisations may impact the environmental behaviour intentions of the fans. Additionally, awareness of sustainability initiatives is connected to a higher evaluation of these and other initiatives (Cayolla et al., 2022; Valeri, 2019).

This influence is not only for external perceptions of the organisations. The perceived organisational performance within an organisation also positively relates to the actions taken in corporate social responsibility. Employee satisfaction and identification with the organisation improve with sustainability initiatives (Jäger & Fifka, 2022).

Coming back to the short-termism barrier theme, eventual cost savings (including return on investment) and competitive advantages are associated with executed sustainability initiatives (McCullough et al., 2020). The funding topic has also been covered by Thormann

& Wicker (2021). They found that increasing the level of environmental consciousness is a method for sports organisations to help gain monetary support for these environmental projects by increasing the willingness to pay for sustainability by club members. Increased environmental consciousness and satisfaction with the club positively determined willingness-to-pay. Additionally, as a purpose-leading brand higher inclinations for sponsorships are often mentioned (Long, 2022).

This set of enablers answers both concerns that relate to internal as well as external barriers and should be used as reasons to tackle those barriers in sports.



BEAT Cycling Club

BEAT Cycling Clubs’ first team is a professional cycling team focussed on, but not exclusively, road bicycle racing. Professional road racing takes place on public roads that are (temporarily) closed off. The main focus for BEAT Cycling Club is competing in these road races, but BEAT also has athletes that compete in several other cycling disciplines like cyclocross, beach racing and track cycling. Most athletes combine road racing with one of the other disciplines. This report and thesis are executed and written with focus on the road cycling team division of BEAT.

Concept

BEAT Cycling Club operates differently than the traditional model that has been described before. BEAT Cycling Club is more than a professional team with sponsors, it is a cycling collective. Everyone can become a member of the club, disregarding experience, level or interest in cycling. What is different, is that BEAT brings this ‘club’ culture, also found in soccer and other sports, to cycling. The ‘first team’ of BEAT Cycling is a team with a UCI Continental Racing licence, aiming to promote into the higher racing leagues. Having a club next to this professional team is new for cycling and separates BEAT from its competitors at a professional level and from other publicly accessible clubs.

This ‘different’ model brings about several distinguishing features. BEAT operates under its own name, with its own identity, instead of that of its name sponsor. For BEAT it is undesirable to live by the grace of one or two big sponsors like the ‘traditional’ teams do. For these traditional teams, the sponsor also determines the clubs’ name, direction and plans. This new model is aimed towards a financially sustainable business model for the club, based on recurring memberships and a wide selection of highly committed partners. The fall of one partner does not mean the downfall of the entire team, like the very recent downfall of the B&B Hotels-KTM team (le Télégramme, 2022).

Company Structure

BEAT Cycling Club thus operates a different (business) model. The traditional model is shown in Figure 2, to be compared to the BEAT model, shown in Figure 3. Next to being a new financial model, it also provides new value to fans, that now often become club members. The club members get access to unique experiences and behind-the-scenes access and stories. One of these perks is access to discounted products sold by partners, who by sponsoring BEAT Cycling Club also gain access to their members. The difference between a

regular professional cycling team structure and BEAT Cycling Club is shown in the figures.. The BEAT model adds several value streams to the traditional model.

For BEAT Cycling Club, having this model means:

- No yearly cycle of changing team names
- Own name also means: own identity
- Mutual benefits for partners, members and the club through increased interaction.
- Financial Sustainability

In short:
In the traditional model, it is all about performing with athletes. The other side is marketing the performances through media to fans so the sponsors receive the desired awareness. The club structure turns the sponsor-based model into a community-based model. The big step here is that fans go from looking at the team from the outside to active participation in the club. This diversifies the financial model so partners are not the only contributors to the stability of the club.

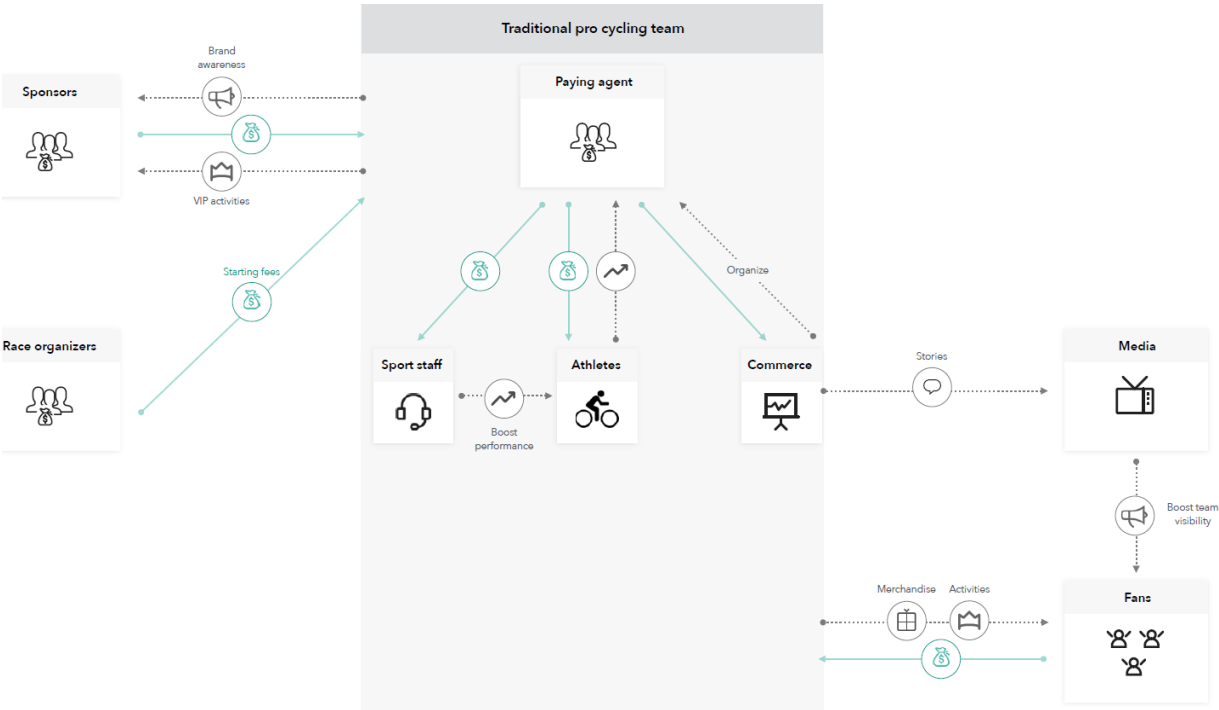


Figure 2. Business Model Traditional Professional Cycling Team

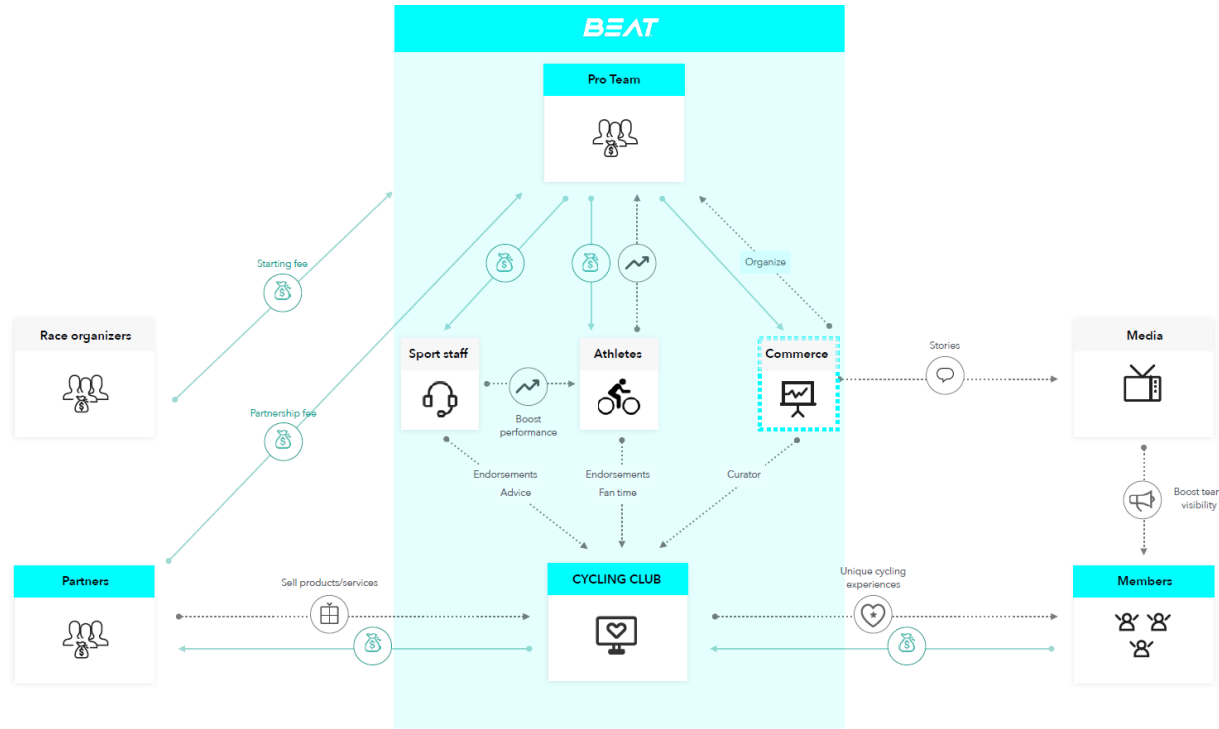


Figure 3. Business Model BEAT Cycling Club

DNA

Apart from having a different business model, BEAT Cycling Club has a unique DNA as a team in professional cycling. With DNA, the way of thinking and behaving is meant. What drives BEAT and its employees? These elements of BEATs behaviour will be discussed here.

BEAT consistently takes the approach of doing things slightly different than others in the full width of operations, not just the financial model. They openly speak about not wanting to conform to the status quo of cycling and they add athletes to the professional team that have different ways of racing than normal. An example can be found in former rider Jan Willem van Schip, a cyclist very much invested in innovating aerodynamic gain in races. He initiated a design challenge in which a new handlebar was designed and created, creating a big fuss in the cycling community (Algemeen Dagblad, 2021; Wieler Revue, 2020). Additionally, BEAT cycling initiated the first commercial track cycling team in 2017, innovating in the track cycling sport, outside of regular borders.

This vision and mission of non-conformity is both the starting place for a sustainability track as well as a motivation that should be taken into account for BEAT specific. An often recurring theme within BEAT is 'challenge the status-quo' or even rougher 'F**k the status-quo'. As previously introduced, the beating heart of BEAT, the new model in professional cycling, is a great example of this. In the own words of BEAT: "Often people don't execute Plan X because of reason Y. We often think, Plan X is not executed because people think reason Y applies, but is that really the case? We regularly go on and try plan X, see what it yields and then learn and tell the story" (internal discussion).

New Focus

This year, a new focus has been applied within BEAT. Together with a strategic partner, a review of activities and actions has been done and a new strategic direction for day-to-day operations has been defined. Part of this is the feeling of a 'restart': the previous year, both professional sports results have been lacking as well as a clear focus on the club. For this, internally, "BEAT = BACK" has been called out. The feeling of a restart to go back to chasing the original goals.

"Put some respect on our name"

This saying has been lent from the basketball scene in the United States to put the feeling into words for employees. BEAT. As a result, the performance staff has been reorganised to involve multiple personalities and plans to have more room to play on the strengths of the athletes.

More important is the realisation and renewed focus on the club structure. Instead of trying to do everything possible and imaginable, the focus has shifted to doing fewer things but always doing them properly. More involvement for the club and more club events are the big aim for the upcoming years.

Do Mentality:

All throughout BEAT as an organisation, a do-mentality can be found. With a small and manoeuvrable organisation, team members of BEAT could be identified as 'go-getters', that like to get their hands dirty and execute ideas and plans. Internally, employees often call it a 'start-up vibe' with quick and direct impact and interaction.

This can be found in the sustainability approach as well. For now, BEAT's first efforts into sustainability have been actions towards 'low-hanging fruit' solutions: change cars from fossil fuels to (renewable) electric, switch to recycled clothing material, eradicate single use water bottles. However no red line or structure in these actions has been introduced yet. The go-getter mentality internally works contagious, so is an important DNA point of BEAT to maintain.

On the page on the right, the internal motivators to work on sustainability for BEAT are shown.

MOTIVATOR 1: TAKE RESPONSIBILITY

Take OUR responsibility

BEAT states that as a cycling team, they have the pleasure to ride through all kinds of nature, in many locations. Forests, fields, mountains and coasts all alike. They love to see these locations thrive, before during and after we make 'use' of it. Currently, professional cycling is hardly a positive influence on the area's it goes through.

Moreover, cyclists are greatly dependant on the environmental conditions for their jobs. Races are noticeably getting hotter and the press mention the possibility cycling might look vastly different in a couple years due to heat and environmental influence. The fact professional cycling is wearing cooling vests is ironic, fighting against nature even harder then necessary. Heavy rains, heat waves and high water are dealbreakers for racing, we should to our part to prohibit those occurrences from happening more often, so we can keep racing.

"Climate change is a fact and we believe everyone should take responsibility for the actions they undertake. So we need to do this, even if it just about taking our responsibility. It's nice to be able to tell the story, but even if we would not be able to do that we should do the same." (BEAT Cycling Club, 2022)

MOTIVATOR 2: BEST KID IN CLASS

Don't be "het nicest kid in class" (The best kid in class)

From interviews and multiple observed conversations and discussions between management and marketing teams, it is clear BEAT does not want to be the 'best-behaved kid in class'. Sustainability is not something BEAT wants to boast about, but they do it because it is important for society. Sharing and transparency have been values from the start of sustainability for BEAT and they express the wish for this to stay and improve. Don't point to others for not doing things, but just do what BEAT stands for, is the wish.

BEAT amBEATie 2023 – BEAT = BACK & Club Growth

The external- and media focus on BEAT Cycling Club is often on professional riders and professional sports. However, the club was founded to not just be a professional team, but to be a club for everyone. As the internal focus for 2023 and upcoming years, growing the club and providing value for all members is a priority. By building and launching internal amateur teams, like the Granfondo Team and the Off-Road Team, an effort is put into work on the 'unique cycling experiences' that are mentioned on page 29 of this report as a value stream. Moreover, significant effort is put into work on internal systems to increase the conversion rate for new members for all activities. With new staff on board for this specific mission, BEAT hopes to grow its backing significantly.

The sustainability projects are not directly related to or born from these ambitions but have the possibility to aid in the goals. Where possible, connections to this goal could be explored for the sustainability practise of BEAT Cycling Club.

Current Scope BEAT Sustainability & BEAT The Waste

In 2021, BEAT first spoke out about sustainability in professional cycling. They started the national championships in white pants, which, according to the unwritten rules of cycling fashion, are not accepted. This was done to raise attention to their outfits, with T-shirts that were made out of recycled base material, previously

little seen in cycling. Additionally they launched a project with a company called Wasteboards.

Throwing away or breaking water bottles in professional cycling is common. Wasteboards used broken and old drinking bottles to press a skateboard and do something with the waste material. However, the big pointer for this project was that this was a 'solution' to bring attention to the problem. It was also a way to show commitment to start working on sustainability, from which this graduation project was born. This project marked the start of BEAT and its sustainability projects.

They continued their work with more projects they now sometimes call 'low hanging fruits', problems and solutions that are easy to recognise and start working on. Most noteworthy is the step to systematically driving with electric cars, a first in the worldwide industry (Hommes, 2023). These solutions are great, though BEAT is looking for a more structural way of tackling sustainability.

The scope, for now, has been set to start sustainability on the road team of BEAT Cycling Club. The reason for this first scope is because this currently is the area where the most impact for BEAT seems to occur, as will be further substantiated in this report. Since the most operational effort and budget move towards this and since this team for now is an important element for partners, it is a good starting point. It also is the most publicly visible project, which allows for a wider influence than only own operations.

The actions described in the section on the page on the right serves multiple puposes. Next to helping in exploration, they also aid in working on **Connections & Relationships**, an important process in a design project that is focussed on systemic sustainability problems. Sharing skills and information builds on networks that are important for any future steps.



Observational Studies

As part of context exploration and information gathering, a variety of field studies has been done in multiple forms. The purpose of these studies and visits varies greatly and their timing in this project differs greatly too. They are introduced here, stated with the planned and unplanned purpose of the studies. The report will further elaborate on these findings where they are used and refer to them in their respective chapters.

To better understand the context of professional cycling:

- General observation at the BEAT headquarters. By being present at BEAT headquarters, I developed a thorough understanding of the day-to-day operations. Task division, usage of resources and general tendency to behave (un)sustainably slowly became clearer.
- Visiting Race days. I visited two racedays, one on Continental level and one of World-Tour level. BEAT Cycling Club participated in both. These days provided insight in the overall purpose of the Continental team, as well as insights of the usage of resources, tools, cars and the stress and circumstances operated under. Intended for problem identification, the race days helped more by providing further insights to the operations of running a Continental Cycling team. Detailed sub-problem identification occurred often, for example the usage of plastic bottles, but are to be interpreted as general themes for the scope of this thesis.

To understand sustainability for BEAT Cycling Club:

- Season and sustainability kick-off for Athlete Team and performance staff. I got to join the kick-off of the cycling season for the cyclists and performance staff. Additionally I got the time to further introduce the concept of a sustainability effort in cycling to the team. In a setting based on open-dialogue and some prompts towards co-creation I mostly used this meeting for two purposes:
 1. Creating awareness, much similar to starting to go through a marketing funnel.
 2. Gather information about the current state of sustainability support and 'DNA' within BEAT.

Insight were written down and later used as input for the generation of clusters and topics to be discussed. Based on post-session reaction, this session very much succeeded in its purpose to create awareness. The level of involvement and support afterwards was noted not only by me but repeatedly mentioned by the team and attendants.

To gather detailed information for solutions to problems in the strategy.

- Participation Brainstorm More2Win organisation. I got to participate in a conversation and brainstorm with strategic sports organization More2Win. This session took shape as a co-creation session on what the main impact area's are on which BEAT Cycling Club has influence. Brainstorming with the professionals of More2Win resulted in the initial identification of the impact scope that lies beyond internal operations. This external influence was then called Scope F (Fans).
- Interviews and discussions. Several interviews were conducted during this project to further explore the background information in this topic. The interviews were informal and unstructured in the form of open dialogue. The interviews were guided by the topics previously identified and described in this report, with the goal to deepen personal knowledge and understanding. Interviews were conducted with:
 - o Erik Bronsvoort (Founder Shift Cycling Culture initiative)
 - o Utrecht University Project Group Sustainability tracking in Cycling
 - o Benjamin Barrett (Sustainability Manager UCI)
 - o Kees Kerstens (Founder ESG Monitoring company Salacia)
 - o Michiel Kort and Jonathan Verdonck (Circularity Consultants at Rebel Group, multiple sessions).
- Several participations to industry 'meet-ups' to spot trends. Most noteworthy are the Sustainable Mobility in Sports Conference by NOC-NSF and the Green Claims meet-up from Shift Cycling Culture.



Theoretical Background

Sustainability Methodology in sports

As global warming and local sustainability challenges grow, calls for action have been made throughout the world. The initiatives taken before and the background of BEAT have been mentioned in the sections before. How can these insights be translated into steps towards sustainability?

As the challenges grow, the most well-known starting points for sustainability are the 2015 Paris Climate Change Agreement and the Sustainable Development Goals by the United Nations. The common denominator in these initiatives is the call for action to limit global warming. To accelerate the actions and investments the call for sustainable methodologies has been made.

This (sub)chapter treats the methodologies possible and necessary to work on these sustainability projects. The availability of sustainability programs is wide and is treated differently by all sources. Some offer full methodology programs with step-by-step guides, while others focus more on a pledge/commitment and community than the specifics of the steps to achieving set goals.

In light of the role of sports, several efforts have been made to create methodologies in addition to methods applicable to a wider range of organisations. An overview matrix has been generated of a selection of suitable methods and frameworks that could apply to professional sports. This matrix is added in appendix C.

Though all methods differ, they often find similarities in their setup. To create a methodology best fitting to BEAT Cycling Club and professional cycling, elements from different methodologies will be taken and if necessary adapted and sharpened. The common denominators in these methodologies that form the backbone of a methodology are:

1. A goal
2. A step-by-step methodology
3. A set of principles and guidelines
4. A necessity for Green House Gas (GHG) Assessment, sometimes with an additional calculation tool.
5. Optional: A verification requirement or commitment

Identifying Hotspots

As stated in almost all sustainability methodologies, the necessity of a greenhouse gas assessment is mentioned. This first assessment can both be used as a baseline emission assessment as well as a tool to identify the most polluting activities and products for BEAT Cycling Club. In this thesis, the methodology chosen to approach this hotspot identification is by doing a adjusted version of a fast-track Life Cycle Analysis. The goals and further methodology of this process are discussed in the next chapter.

3.

REFRAME

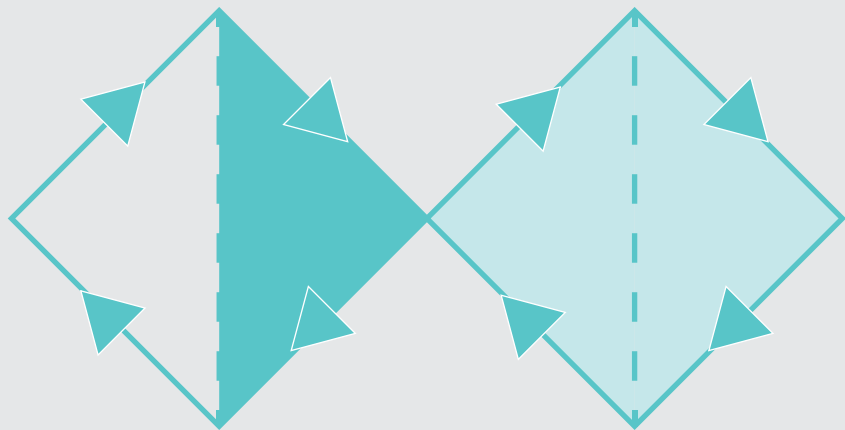
BREAK LINE OF THINKING AND REWORK FINDINGS INTO
A BASIS FOR DEVELOPING

CHAPTER APPROACH

This chapter is mostly a process that fits the activities classified as **Reframe** in the methodology of the British Design Council. It is used to break out of the line of thinking of the previous chapter. The first findings from the previous section can be reworked as a basis for the first iteration of the design.

Here, we synthesize the insights and reframe them into a basis for the next chapter. This, for example, are the value drivers produced. Opportunities and challenges will arise that can be used and solved.

The LCA and the process of clustering to the first versions of the roadmap are a result of the synthesis in this chapter. The creation of those products however happens in an iterative cyclus that better fits the later stages of the design process as described here. As it is iterative, and looping back is encouraged, this is not a problem. Some designs in their final iterations of the Create and Catelyse phases are shown here already, to aid the description of the information synthesis.



3.1 LCA

LCA Introduction

To set a course for a sustainability roadmap, a way of prioritizing and categorizing actions needs to be developed and used. Part of the accepted sustainable governance of a company is the yearly reporting and assessment of a company's greenhouse gas emissions. For corporate reporting, the GHG protocol is the most widely adapted protocol to follow. In product design, a Life Cycle Assessment (LCA) is similar tool, but here used to assess the associated environmental impact of a product from cradle to grave. Often, this is done in terms of a CO₂ equivalent emission number.

For this thesis, a fast track form of such an assessment will be conducted to identify the emission hotspots. These hotspots are useful datapoints for the further development of a strategy and accompanying roadmap. The

fast track nature of this assessment is due to limitations in time and data availability/quality, as well as the purpose of this assessment: identify hotspots.

While general talk in cycling is that the expected impact of a professional cycling team is due to the amount of travelling involved and the amount of bikes, parts and bottles used, this assessment should clarify and confirm or deny these industry assumptions.



Material & Method

Goal and scope

Goal

The goal of this LCA-like analysis is not to compare several (design) alternatives, but to identify hotspots in the GHG emissions of BEAT Cycling Club. Identification of those hotspots is necessary to properly include these hotspots in the design of a sustainability roadmap. This roadmap will attempt to improve the environmental characteristics of the operations of BEAT Cycling Club and should target the most harmful practices with a fitting urgency.

Additionally, a secondary goal can be identified. This goal is less important and could be better disclosed as a benefit. This benefit is that with this assessment, a first ‘test’ is run with the data available and the scope chosen. Finding out what difficulties arise when collecting data and what scope is both feasible and accessible is an important insight for the yearly GHG Assessment BEAT Cycling Club aspires to conduct and will need in the future.

Scope

This fast-track assessment is not yet a full and official assessment because of the previously mentioned purpose of identification of emission hotspots. Where an LCA is a methodology normally used to evaluate the environmental impact over the lifecycle of products, here it will be altered and used to assess the environmental impact of an organisation over a yearly cycle of activities and running this organisation.

For this iteration of this assessment, no comparative scenarios are yet introduced to align with this assessment’s goal which, for now, sticks to the identification of hotspots. Having produced this document, however, does allow for the easy production of hypothetical scenarios in the production of a future strategy.

LCA’s regularly include the full life cycle of products from cradle to grave. In the case of the operation of an organisation, instead of a production or product-based LCA, the hypothesised impact will be mainly in Scope

3 activities. Examples of this are purchased goods, travel and distribution. Furthermore, lack of insight into the exact end-of-life scenarios of products, the end-of-life is kept out of scope for this assessment. Further data inclusions and assumptions will be annotated in the following chapters.

Functional Unit

The function of BEAT Cycling Club for this assessment is defined as follows:

“Running a continental cycling team for one season”

This functional unit was chosen with future emission reporting in mind, where yearly reporting will be expected. Since this reporting is the main reason for BEAT Cycling Club to start collecting data, this is the starting point.

However, using just this functional unit does not include, for example, the number of races, locations or riders in this functional unit. These numbers vary considerably between years and teams, so direct comparisons will not be valuable. Even though race calendars are different, this functional unit offers an approach to compare teams overall. To better be able to compare growth related to emissions and climate impact, I propose a secondary functional unit in this study that complies more with the regular methodology in LCA reporting and allows better comparison:

“Running a continental cycling team per race kilometre for one season”

The inclusion of ridden race kilometres allows for comparison between teams or seasons since the growth of teams, race selection and efficiency are now reflected in the functional unit.

System Boundaries

In Figure 4, a simplified visual is presented for the system boundaries of this assessment. Roughly, this assessment includes two categories:

- 1. Travel and Logistics
- 2. Purchased Goods

As previously introduced, this assessment

takes shape in the form of an LCA but has the characteristics of an operational GHG assessment. As a result, the elements that are in the system boundaries are not the traditional ‘cradle to grave’ or ‘cradle to gate’ boundaries considering the operational focus of BEAT Cycling Club as an organisation instead of a product focus.

Ideally, the system boundaries do include the end-of-life and energy use. However, this is an assessment that fits better with the regulations of the GreenHouseGas Protocol, for an organisational assessment, rather than a product lifecycle assessment. Taking the purpose of this assessment and the time available for data collection, this assessment is a scope 3 assessment. Scope 1 and 2, company-owned facilities and vehicles and purchased energy are for now excluded. In the figure below, a more detailed overview is provided of the items that are included in the scope and their categorization. A more detailed

scoping figure, including all items included and excluded in the assessment, is added in Appendix B.

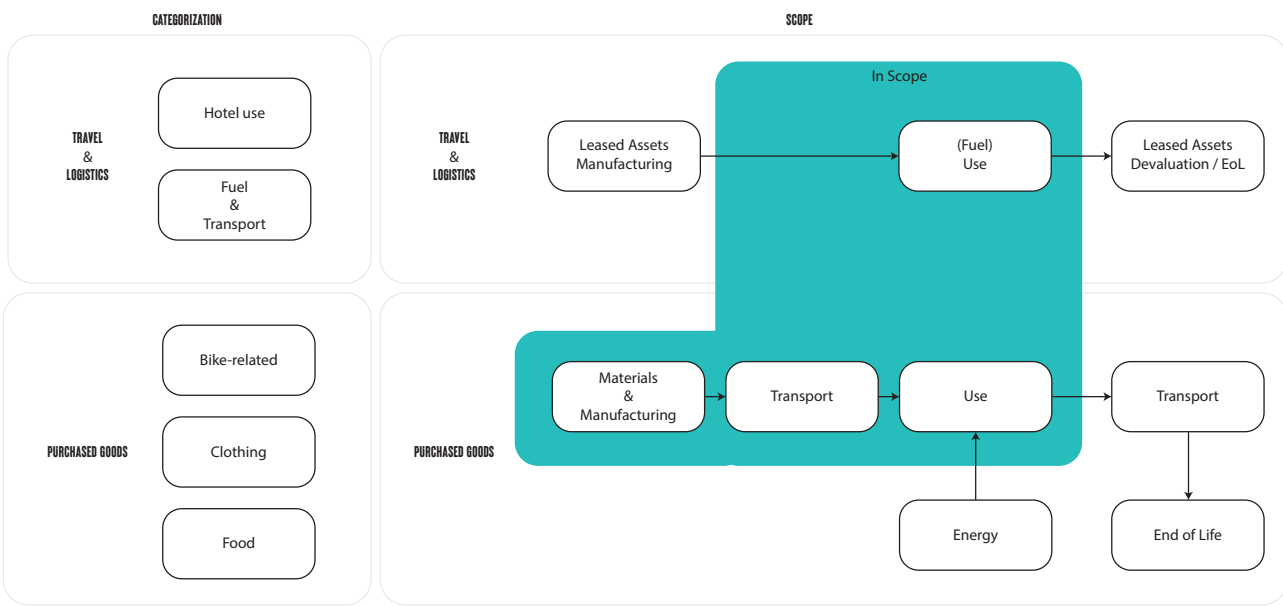


Figure 4. Categorization and Scope

Calculation Tool

For the calculations, a modified version of the IdeMat 2021 LCA calculation tool is used. The biggest modifications are in the categorization methodology. The LCA tool is originally optimized for product LCA calculation, where this calculation focuses on the operations of an organisation. The previously described categorization replaces the original Materials & Manufacturing – Transport – Use – End of Life with the abovementioned categories. This not only makes the calculation more fitting, but it also allows for results that are better interpretable.

Additionally, instead of a traditional Bill of Materials, a quantification tab has been added to the model. This tab was added to allow a complete inventarisation of data that allows for multiple types of data, for example, passenger. km.

Inventory analysis

With the number of different kinds of data collected and used in this assessment, it was necessary to often rely on the use of proxies for the quantification of the data. Those proxies are briefly introduced in this chapter but for all proxies and data use, the calculation file is accessible.

Data collection and Quantification

In this section of the fast-track assessment, the quantification of activities and goods involved in the operations of BEAT Cycling Club will be explained. Assumptions and simplifications will be described and clarified.

Purchased Goods

In this section, all goods bought for the acquisition of property by BEAT Cycling are Included. In this section, three sub-categories were instituted:

1. Bike-related goods
2. Clothing related goods
3. Food-related goods

These categories form the big components of the operation of a professional cycling team for BEAT Cycling.

Bike related goods

Bikes are essential for the operations of the professional Cycling Team. High-performance road bikes are complex products with a high number of components. Trek Bicycles conducted a detailed LCA of their high-performance road bike, the Trek Madone (Trek, 2021). This is the most detailed and comprehensive assessment of a road bike publicly available right now and very close in specification to the bikes used by BEAT. This calculation is used as a substitute value for the exact bikes used by BEAT Cycling Club. The subdivision of impact as calculated by Trek is further used for replacement parts, which are replaced more often than a full bike, in the calculations.

Additionally, the 'usables' are involved in a simplified way. Instead of a big number of different lubricants, detergents and maintenance goods, three categories have been made to simplify this: oils, soaps and assembly goods. The average product weight from packaging at BEAT Cycling headquarters has been used as quantification for each subcategory.

Clothing

For the clothing category, the clothing packs the athletes receive have been slightly simplified for calculation. Weighted average weight, measured on a scale or as provided by the supplier, of clothing items has been coupled to material and production processes.

Food-related items

Food-related items have been categorized by their functionality (by brand). Substitutes for complex ingredient compositions have been used by extrapolating the biggest ingredient categories for this approximation. Known categories of high volume purchase, like water bottles, have been treated separately. Less clear categories have been treated as average, like 'dinner portions'.

Transport of items

Taking the goal of this fast-track assessment, identifying hotspots, into account. The transport of items from the category purchased goods to BEAT Cycling Club has been explored in this calculation too. Travel distance is taken from the location of the suppliers to the BEAT Cycling Club headquarters. Though not expected to be of significant impact, this category was included in this analysis for completeness considering the easy access to data for this category.

Travel & Logistics

Travel of employees and athletes related to races and other events have been taken into account in a separate category. Travel by plane, train and boat has been taken by approximation of travelled kilometres, based on race schedules. Fuel use for vehicles has been taken by exact volume amounts if known but approximated for the category 'rider cars' based on race distance and participation averages. Hotel nights are taken into account.

All vehicles under operation by BEAT Cycling Club are under lease by a sponsorship lease deal. According to the Asset-specific method

that the GHG-Protocol prescribes, asset-specific fuel use should be taken into account. Since this emission source is expected to be of significant impact, it is included in this assessment. For this fast-track assessment, the emissions associated with the manufacturing of the car are not included. This subject is further treated in the discussion and recommendation chapters.

End of life

The end-of-life of purchased and leased goods has not been taken into account in this fast-track assessment. The data accessible within the time scope of this assessment was too little and of too low quality to be quantified. An expected end-of-life scenario has been added to the quantification of data to give an expected indication of the end-of-life scenario but not be quantified.

Results

Total impact

The calculated total emission for BEAT Cycling Club is 79t CO2 (equivalent). However, it should be noted that, on average, an uncertainty percentage of 46% was present due to the fast-track nature of this study. Taking this into account, the low- and high points of this study are 42t and 116t of CO2 equivalent emissions, respectively. This is shown in Figure 5 below.

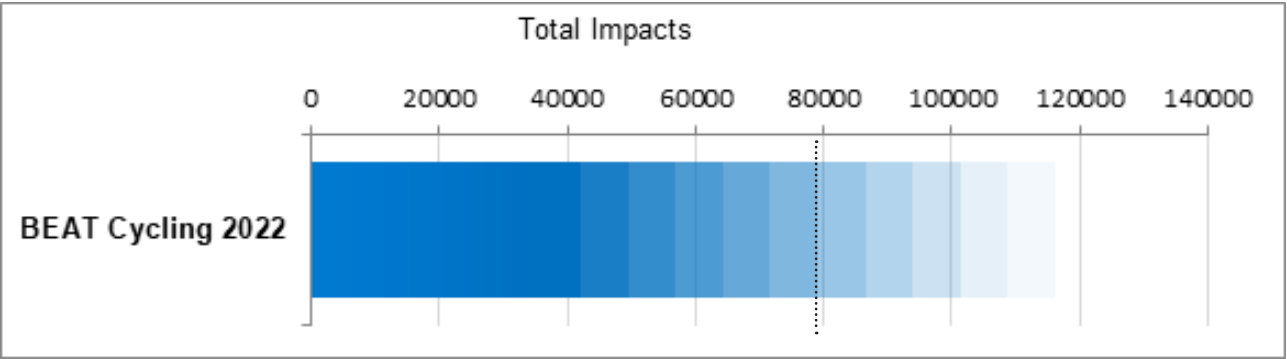


Figure 5. Total Impact in kg CO2 equivalent. The black dotted line is the midpoint calculation.

If categorized, the division of impact is mostly shared between Purchased Goods and Travel & Logistics. Their percentual share of emissions are 26.88% and 72.92% respectively. Lastly, the transportation of goods has an estimated share in emissions of 0.20%, as visualized in the figure below.

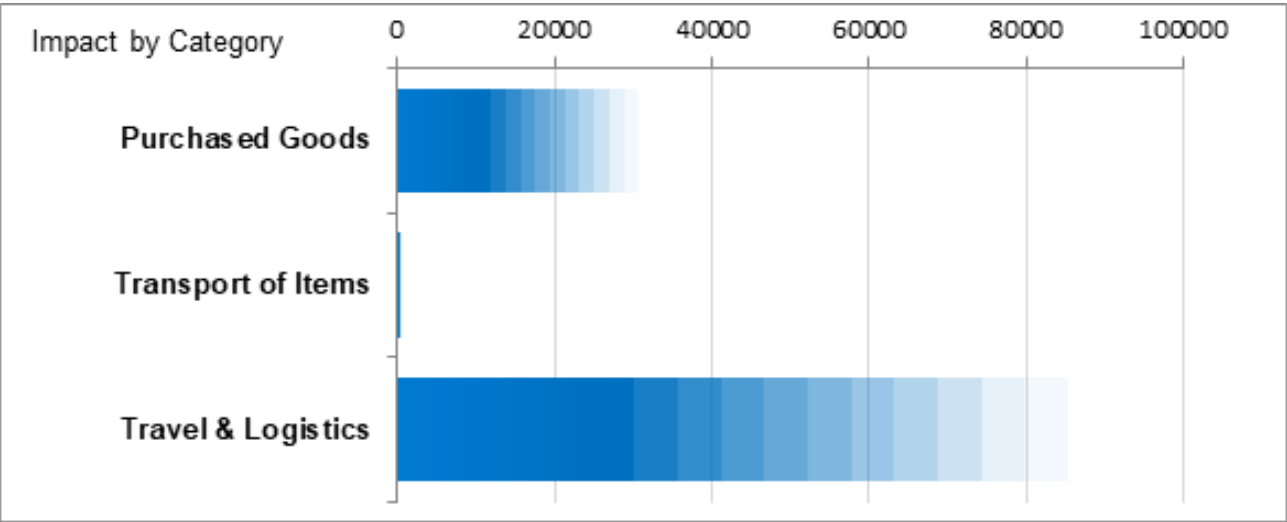


Figure 6. Impact by Category in kg CO2 equivalent.

Within the categories, the biggest emission contributors can be identified. For the purchased goods category, 4 contributors formed roughly 85% of this category. These items are the bikes, the (spare) wheels and the lunch and dinner portions provided. These contributions are visualized in the figure below.

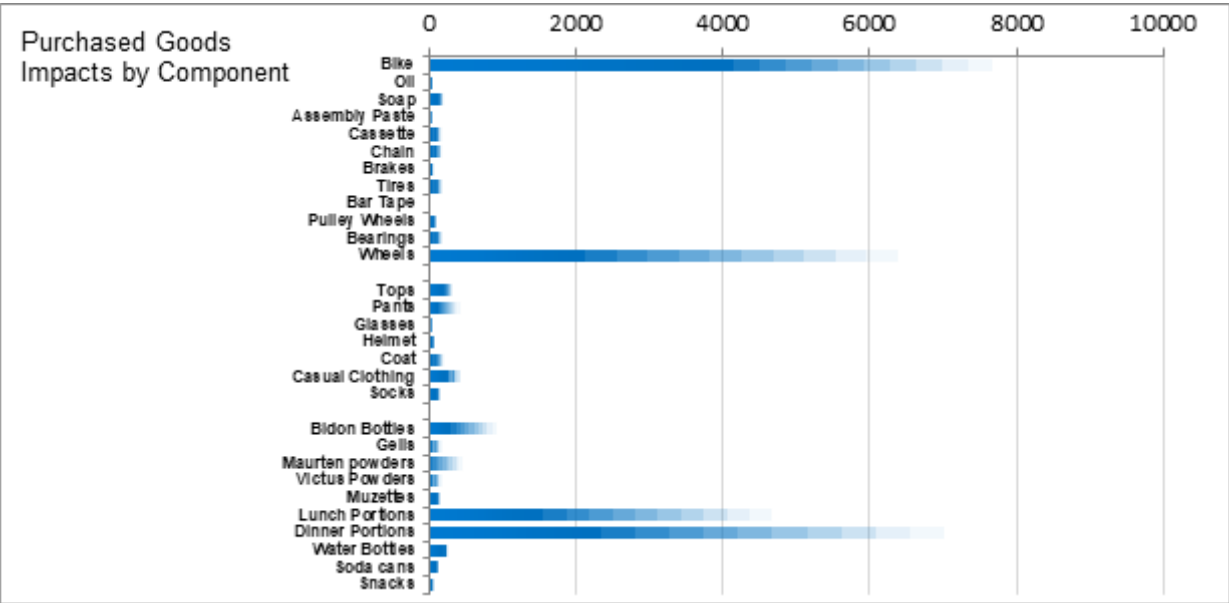


Figure 7. Impact per item in Purchased Goods Category, in kg CO2 equivalent

Though the smallest category overall, the transportation of items has 2 big contributors to the impact within this category, which overall accounts for 0.2% of emissions. The shipping of Maurten food items (gels and powders) accounts for a cumulative 76.1% in this category. The items following the Maurten food items are the bikes, accounting for 11.2% of the shipping category.

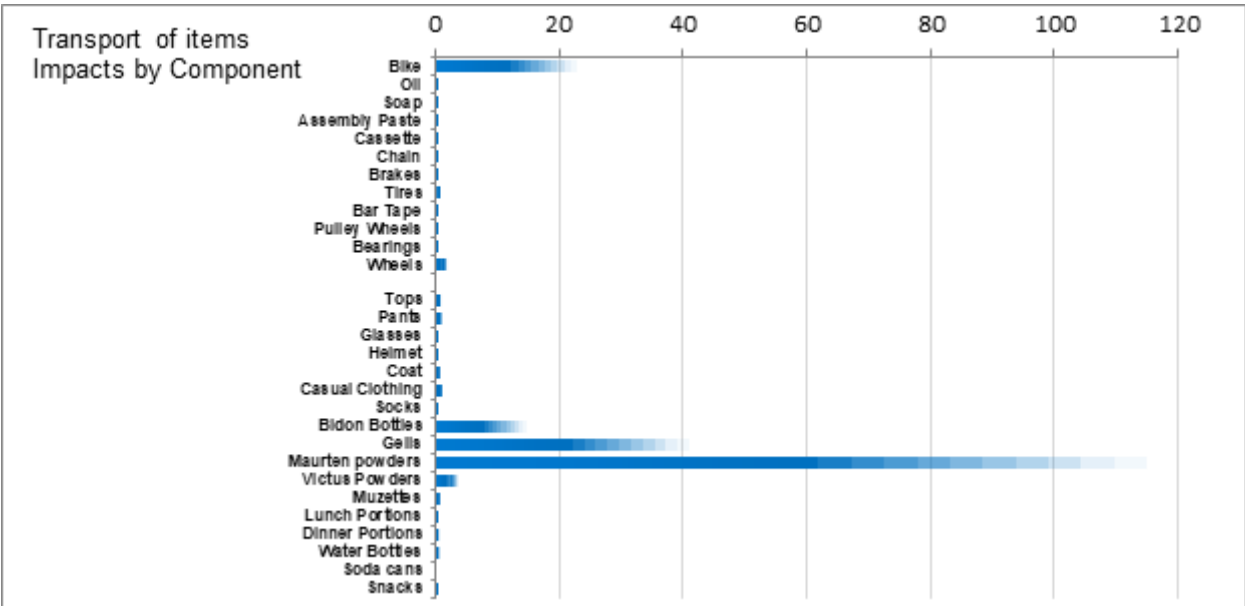


Figure 8. - Impact per item in Transport of Items Category, in kg CO2 equivalent

Within the biggest emission category, Travel and Logistics, the combined energy input for road vehicles is the biggest contributor. The team cars, rider cars and truck and camper account for a combined CO2 equivalent of 35.6 tons CO2, or 61.8% of this category. Rider Cars have the biggest impact within the road vehicle group. Following, the flights account for 30% of this category, with boat travel and hotels completing the total impact. Figure 9 shows these elements.

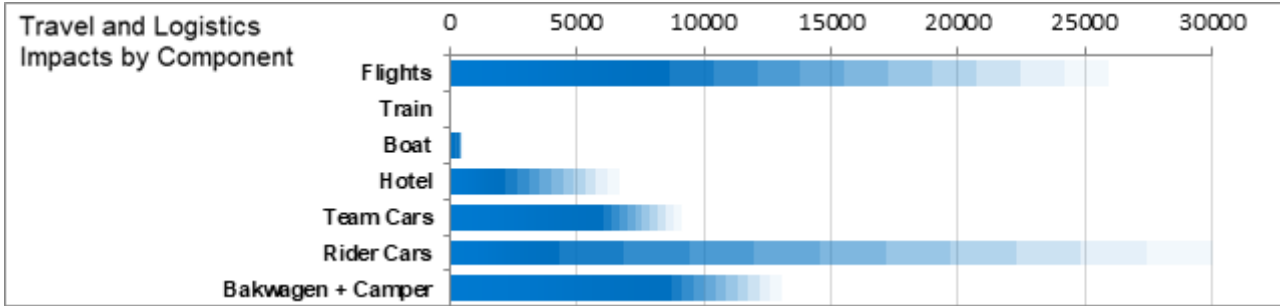


Figure 9. Impact by Item in Travel and Logistics Category, in kg CO2 equivalent

Impact per ridden kilometre

Looking at the second functional unit proposed in this assessment: “Running a continental cycling team per ridden race kilometre for one season”, the calculated impact per ridden race kilometre comes to 1.12 kg CO2 equivalent.

Discussion

Based on this assessment of the impact of BEAT Cycling Club we can identify a first set of emission hotspots and a first indication of their proportions.

Firstly, the overall division between categories is interesting. Travel & Logistics forms the biggest impact by more than double the share of ‘purchased goods’. Connecting these insights to the goal of lowering the environmental impact of BEAT Cycling Club, a good direction could be to prioritize solutions in this Travel & Logistics category.

This share of emissions does not come as a surprise, since one of the biggest operational tasks for BEAT is to participate in races, to which a big part of the organisation travels for approximately 63 races a year. The biggest impact within this category are the road vehicles, of which the team cars are hybrid gasoline cars, but all other are diesel-fueled cars. What is interesting, is that these road vehicles are the biggest contributor in this category despite the fact that their construction and devaluation are not taken into account in the scope of this assessment. Including these is optional, according to the GHG protocol,

but desired. This is highlighted by it being the biggest influence on the emission of BEAT Cycling Club, even excluding this information.

Taking into account that the combined emission caused by flying is caused by, in total, about 20 return trips, the impact of flying per instance is very high. Flying exceeds the team cars and the trucks in its emissions. The emission of travel by boat, compared to flying and total road vehicle usage, is relatively low. However, the usage of boats in this analysis was low. Looking at the boat as a replacement for other transportation should thus be done with caution.

When looking at the transport of purchased goods, the impact is practically negligible. As shown in the results, several products make up most emissions of this category but account for no hotspots in emission identified.

The Purchased Goods category accounts for roughly a quarter of the emissions of BEAT Cycling Club. The wheels and bikes represent almost half of this category. This could be attributed to their size and number for a cycling team, but also due to the fact that

they are carbon fibre products (Trek, 2021). A relatively high impact here was expected and the bikes have been a topic of discussion on sustainability in cycling before. Less expected was the impact caused by the meals provided for athletes and staff on race days. They account for over a third of this category. Lunch and dinner combined thus exceed the assembled new bikes purchased each year as an unexpected result. This surprise makes it an interesting topic to bring to attention. The fact that people eat food can not be changed, but the way food is treated can be taken into account in organisations.

Furthermore, interesting results can be found in the bidon bottle assessment. In the full scope of emissions, the bidon bottles only account for 0.8% of emissions. Still, the bidon bottles are often the subject of discussion on sustainability in cycling. The emission impact of bidon bottles might be low, further impact here is not visible. Traditionally, bidon bottles were thrown away on the roadside during races. The local impacts created by this behaviour are not reflected in this calculation.

The GHG protocol asks to account for environmental emissions for objects in full in the year of purchase of the products. An LCA takes into account the number of products per functional unit. An exemplary discussion point is the accounting for the bikes and wheels used. For BEAT Cycling Club, bikes are often used for one year and then sold to a second owner. It could be argued that due to the lifetime of a bike, only part of the life-cycle emissions of a bike are accounted to the team. However, BEAT Cycling Club is a decision-maker that every year orders many bikes. The GHG protocol requires reporting in which the organisation takes full accountability for the impact of a purchase in the year of purchase. For this calculation, the latter option is used, to match the mentality that BEAT Cycling Club has mentioned for their sustainability action, to take responsibility. This topic is, however, an important subject of discussion for validation, as further explained in the next section.

As previously mentioned, the end-of-life emissions for these purchased goods are not taken directly into account in this assessment. Not enough information was available to calculate this impact but it brought about internal discussions, like the one described above.

The impact per ridden race kilometre in this study is now just an individual number that cannot be compared to other data or be used as a comparison number. It is however a valuable base number for future referencing.

Validation

To validate the scope of this assessment and to provide further insights into the identified hotspots and their origin and the possibilities to lower these impacts, validation sessions have been scheduled, but not yet executed, with two experts.

- Benjamin Barret
Sustainability Consultant for the Union Cycliste Internationale and IEMA (International Executive Master of Auditing) member. Combining his insights into developing assessments and the cycling industry from the UCI perspective will help develop this assessment.
- Erik Bronsvoort
Sustainability manager in a sports context and writer of the book 'From Marginal Gains to a Circular Revolution'. Knowledge about circularity and in-depth knowledge about sustainability in bikes particularly is an interesting lens to reflect on this assessment.

Validation was executed to spot inconsistencies and verify elements like the scope. The general attitude towards this calculations was positive in both scope and quality of the conducted LCA. Since very few calculations have been done, it was commented that going beyond just scope 1 and 2 was valueable and that this is a good basis for further tracking practices. Further recommendations are added on the following page.

LCA-based Recommendations

The general recommendation of this assessment is to use the identified hotspots and their share of total emissions as a guideline to prioritize action in the sustainability strategy of BEAT Cycling Club. They should be used as guides and references. They should be used to inform and not to blindly follow. In this assessment, many elements rely on the responsibility (not) taken by an organisation like BEAT Cycling Club. Examples of responsibility topics are:

- Food. As treated in the discussions chapter, the provided lunches and dinners form a significant share of emissions for BEAT Cycling Club. The fact people need food cannot be changed, so eliminating food is not a realistic option. Lowering emissions by food by making different choices like plant-based diets could be a solution space for BEAT Cycling. The way reporting is now set up, however, would allow organisations to tell riders to bring their own lunch. This would yield lower emissions for the organisation but would not bring about change. It is recommended that BEAT Cycling Club takes a second look at their operations in light of this observation and sets clear boundaries on how far its accountability spreads.
- The fact that the inclusion of manufacturing and devaluation of leased assets is optional in the GHG protocol incentivises leasing objects for companies that want to report lower emissions. In light of this observation, manufacturing and devaluation of leased items should transparently be added to the assessments and taken responsibility for in any further assessments.

Furthermore, an important recommendation is in light of the overall goal of this GHG assessment. The goal of identifying emission hotspots to set priority and inform a sustainability strategy and roadmap is good but it should not be the only method to identify emissions. The example of bidon bottles having a local impact that is not reflected in these emission numbers, for example.

The impact per kilometre is a very interesting metric to use for comparison between years or organisations and should be used for that in the future. Furthermore, it could also be used slightly more dynamically for planning purposes. Race calendars could be modelled with race participation, distance and travel beforehand and the change in expected impact could help decide which races to ride or skip if sustainability motives are taken into account while planning.

3.2 DEMONSTRATOR: THE IMPACT OF FOOD

As introduced in the previous chapter, food is a significant contributor to BEAT Cycling Clubs environmental impact. As a means of demonstration, this section highlights a way to lower the impact of food for BEAT Cycling Club.

The food-related impact is the impact caused by the food before, during and after the races that is provided by BEAT to the athletes. The estimated share of food is roughly 10% of the total impact in the LCA presented. Within the food category, most impact is caused by the meals provided to the athletes on race days, mostly post-race meals but also including breakfast and dinner in hotels. Dietary change can play a significant role in reducing the impact of agriculture on global warming potential (Meyer & Reguant-Closa, 2017) and should thus be explored for these meals provided by BEAT.

In collaboration with the team dietician, better insight was generated into what meals BEAT provides and how. The most important takeaways for the food provision as currently used:

- The team dietician provides each rider with a post-race meal, often prepared and eaten in the team bus/camper directly after the race.
- On race days where riders come from home and go home immediately after the race (Close-to-home races), BEAT does not always provide breakfast and dinner but does provide a recommendation for the macronutrients taken in.
- On all other race days, where BEAT resides in hotels, breakfast and dinner are often provided by the hotel or race organisation. BEAT requests the caterers to provide a nutritional meal that fits the athletic needs of the riders in accordance with the team dietician.
- In addition to the provided meals and race food, supplements are provided by BEAT. Examples of this are providing extra food like protein-rich dairy before rest/sleep.

To further explore the possibilities to make a change in these actions, the next section will provide some background and theory on sustainability in food choices and food choices for athletic performance.

Sustainability and Food

In a brief overview, the next section will explain the relationship between sustainability and food choices. When considering sustainability in food, the production and transportation of the food influence the associated emissions. A common finding is that vegetarian meals have a considerably lower environmental impact than meat- or animal-based meals (Takacs & Borrión, 2020). The notion that the production of animal proteins are associated with higher Greenhouse Gas emission than plant-based alternatives is further acknowledged by Reguant-Closa et al. (2020). With this, they have the highest improvement potential. These alterations in diet are thus the most interesting to look at in this scope. Other phases of the catering supply, like storage and preparation, seem to have lower improvement potentials than changing diet composition (Takacs & Borrión, 2020).

To provide an estimation of the difference in impact between dinner meals regarding sustainability, the study of Takacs et al. (2022) provides some insight. Comparing 13 meals, they did a Life Cycle Analysis. Vegan meals had the lowest Global Warming Potential (GWP) in kg CO₂ equivalent. Vegetarian meals had, on average, an impact that is 3 times higher than the vegan alternative, where meat-based meals had a 13 times higher impact. What should be taken into account is the context of this study, given BEAT exists in the context of high-performance sports. Meals in this study were selected as a meal portion and not meant to be consumed with the primary goal of consuming a certain amount of calories, protein or other nutrients. In sports, this exact goal and composition of the meal are more important.

This protein intake is a more important subject for athletes than for the average person. The protein intake recommendation for athletes is about 150% to 250% higher than for non-athletes. Apart from increased intake, the protein quality is often mentioned as important. Protein quality is the relative

composition of amino acids present in a protein, of which athletes require higher quality. (López-Martínez et al., 2022) Considering that protein also forms the biggest difference in environmental impact, it becomes apparent that this subject is an important focus to look at for a changing diet.

Duality of sustainability and health

The choice for animal-based protein is often made with the argument that the protein quality and amino acids completeness is best achieved with animal-based protein. Reguant-Closa et al. (2020) mention several studies that treat this statement and suggest that plant-based alternatives can provide both high efficiency and low environmental impact. They do mention that whole intact protein from animal sources could work better than isolates in plant sources. Recommended is a reduction in animal protein, replaced by an increasing plant-based strategy to lower the environmental impact. It should be kept in mind that an increased overall protein intake compared to non-athletes stays important for athletes.

Novel alternatives that are more environmentally friendly are interesting to use as supplements, even though protein quality generally is lower in plants than in animals. They bring other advantages that help with oxidative stress in exercise and can still supply enough protein to the athletes when meals are composed properly (López-Martínez et al., 2022).

The change for BEAT

Where is this highest improvement potential for BEAT? The food consumed during the race is mostly plant-based and is the hardest to change for BEAT Cycling Club due to its limited influence on the composition of sports nutrition in the short term. Little is known about the exact impact of this pre-packaged nutrition's impact. For the impact for BEAT in this demonstrator, it would be better to look at a known food element: the meals provided.

For this example we use a day during a multi stage race, in this case the equivalent of stage 1 in the ZLM Tour of 2023, 202.5km flat terrain. In accordance with the dietitian of BEAT cycling, the most important subjects are the consumed calories and the division between fat, protein

and carbohydrates, which should be 20%, 10% and 70%, respectively. Protein intake is also determined by a 1.6g/kg body weight rule of thumb.

The main meals provided, as introduced before, are:

1. Breakfast
2. Race nutrition
3. Post-race meal
4. Dinner
5. Protein before bed

Dinner and post-race meals are similar in composition.

To take a look at the difference a vegetarian meal could make in regards to a meat-based meal for BEAT, the calculations of Takacs et al. (Takacs et al., 2022) are used. A beef chilli and a vegetarian chilli are compared, in which the beef is replaced by a meat alternative and an increased amount of legumes.

The comparison in this study needs to overcome two clear difficulties:

- For the meals that are known to be suitable for BEAT, no study data exists about their environmental impact.
- For the meals that are compared in the study by Takacs et al. (2022), it is not known whether the meals form a representative meal for BEAT Cycling Club.

To bridge the gap between these challenges, the nutritional values of macronutrients (carbohydrates, fats, protein) were calculated for both the meals used in the study as well as a recipe known to be used within BEAT Cycling Club. Using a food composition calculation tool (Cronometer), the compositions shown in Figure 10 are calculated. Slight differences are noticed in the three macronutrients but are deemed sufficient for the scope of this study, which is to create a demonstrator for the environmental impact that sketches a possible improvement. Furthermore, they fit the distributions of macronutrients as known to be good by the known meal for BEAT, the wraps.

Beef Chilli			
Nutrition Information			
	Per 1 full recipe	%Reference Intake RI	
Energy	2917.1 kJ / 696.7 kcal	35 %	
Fat	21.6 g	31 %	
Of which Saturates	8.4 g	42 %	
Of which Mono-unsaturates	0.3 g		
Of which Poly-unsaturates	0.3 g		
Carbohydrate	89.9 g		
Of which Sugars	6.3 g		
Of which Starches	82.2 g		
Fibre	4.8 g		
Protein	34.8 g	70 %	
Salt	0.4 g	7 %	
Vitamin C	17.4 mg	22 %	
Vitamin A	44.2 µg	6 %	
Calcium	64.4 mg	8 %	
Iron	5.1 mg	37 %	
* Reference Intake Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.			
Per Serving <div><div></div></div>			
Full Info at cronometer.com			

Vegetarian chili			
Nutrition Information			
	Per 1 full recipe	%Reference Intake RI	
Energy	3275.2 kJ / 782.3 kcal	39 %	
Fat	25.1 g	36 %	
Of which Saturates	8.3 g	41 %	
Of which Mono-unsaturates	0.2 g		
Of which Poly-unsaturates	0.3 g		
Carbohydrate	97.2 g		
Of which Sugars	4.8 g		
Of which Starches	84.6 g		
Fibre	5.2 g		
Protein	32.9 g	66 %	
Salt	1.4 g	23 %	
Vitamin C	10 mg	12 %	
Vitamin A	23.3 µg	3 %	
Calcium	69 mg	9 %	
Iron	5.3 mg	38 %	
* Reference Intake Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.			
Per Serving <div><div></div></div>			
Full Info at cronometer.com			

Wraps			
Nutrition Information			
	Per 1 Serving — 494g	%Reference Intake RI	
Energy	2920.9 kJ / 697.6 kcal	35 %	
Fat	16.3 g	23 %	
Of which Saturates	7.3 g	36 %	
Of which Mono-unsaturates	0.3 g		
Of which Poly-unsaturates	0.7 g		
Carbohydrate	98 g		
Of which Sugars	36 g		
Of which Starches	0.8 g		
Fibre	10.4 g		
Protein	36.7 g	73 %	
Salt	3 g	50 %	
Vitamin C	18.5 mg	23 %	
Vitamin A	121.7 µg	15 %	
Calcium	45.7 mg	6 %	
Iron	1.7 mg	12 %	
* Reference Intake Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.			
Per Serving <div><div></div></div>			
Full Info at cronometer.com			

Figure 10. Nutrition information comparison between meals. Produced with Cronometer.

The difference in Global Warming Potential (GWP) between beef- and vegetarian chilli found by the research of Takacs et al. (2022) was very big, partly to be explained by beef being the most impactful meat (Meyer & Reguant-Closa, 2017; Takacs et al., 2022). The vegetarian chilli had a GWP of 0.44 kg CO2-eq, whereas the beef chilli had a roughly ten times higher impact with 4.97 kg CO2-eq. When chicken-based meals in the study were compared to meals without meat alternatives but other substitutes, they had an impact that was between 3 and 7 times higher (0.78 kg CO2-eq compared to 0.27 kg and 0.11 kg (vegan)). In both meat meals, the meat was the biggest contributor to the GWP.

When comparing cow milk to alternative soy milk, the impact is clear too. Cow milk is associated with 3.15 kg CO2-eq, compared to 0.98 kg CO2-eq for soy milk (Poore & Nemecek, 2018).

To provide a calculation that demonstrates the possible impact of switching to vegetarian meals, the following assumptions are made:

- Two meals are provided per race day that fit the above-described opportunity to be altered.
- One of those meals is beef, the other meal is chicken-based.
- Each rider, on average, gets the same portion size.
- For 500g of yoghurt, 1L of cow milk is used. A similar protein content is achieved with 1L of soy milk as a substitute.

The difference in emissions per athlete per day and per season is shown in Figure 11 and 12.

	Animal-based (in kg CO ₂ -eq)	Plant-based/vegetarian (in kg CO ₂ -eq)
Chilli-meal	4.97	0.44
Chicken-meal	0.78	0.27
Evening Protein	3.15	0.98
Total per athlete per race day	8.90 kg CO ₂ -eq	1.69 kg CO ₂ -eq
Avg # of races per athlete per year	33	
Athletes	15x	
Total number of meal-sets	495	
Total impact per season (total meal sets x emission per athlete per race day)	4405 kg CO ₂ -eq	837 kg CO ₂ -eq

Figure 11. Impact comparison between animal- and plant-based race day diet

Taking this example, a total of 3568 kg CO2-eq could theoretically be saved by switching the recovery meal, dinner and evening protein with plant-based alternatives. This is just shy of 5% of the total estimated emission of BEAT cycling club in 2022. This decrease can be achieved by just changing the choices made in just a few ingredients chosen.

The change in this demonstrator is easy and thus easy to follow:

- Swap out meats for a meat substitute/ alternative. In the Netherlands, they are widely available.
- Supplement the meal with some protein rich vegetables like legumes when the meat alternative does not provide enough protein.
- Swap dairy for plant-based dairy.

These 3 small switches made a big difference in the impact caused by the meal. For proper results the team dietician should do research into the exact and detailed nutrient compositions of the meal.

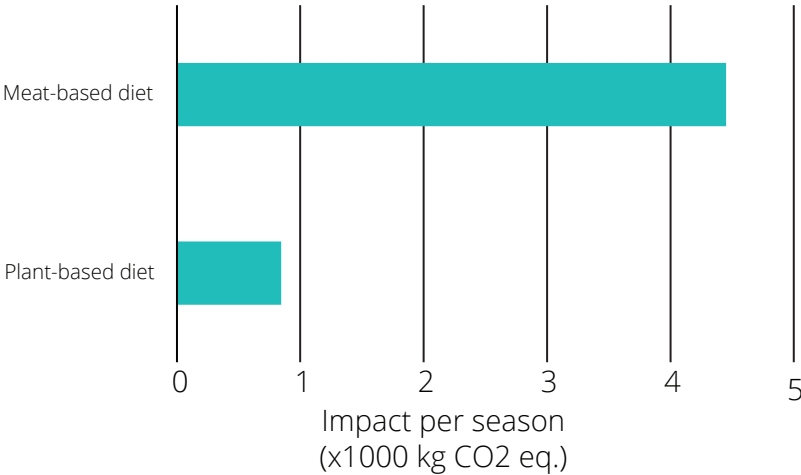


Figure 12. Impact comparison between animal- and plant-based race day diet



3.3 ROADMAPPING

This chapter treats the creation of the roadmaps in this thesis. After introducing the scope, the end results will be presented first, after which further explanation will follow.

As described in the project brief in Appendix A, BEAT Cycling Club was specifically looking for a roadmap for the future. With this, they wanted both a vision and a strategy to work on sustainability. The design roadmapping theory of Simonse (2017) is a perfect fit for this. Design roadmapping combines the elements vision and strategy and helps communicate this to BEAT Cycling club for both internal and external use.

Scope explanation

As explained in this report, this project focuses on the professional cycling team of BEAT Cycling Club. Though initially scoped to only include the operations of this team, the scope for the strategy, vision and roadmaps is slightly larger, including some club elements like the shop and clothing. The reason for including those themes is that they are an essential asset for BEAT to keep on running the continental cycling team and generate both revenues as well as exposure and fandom. Thus considering their opportunity for strategic usefulness, they are included in the vision and roadmaps. To keep the scope of the full project both feasible and detailed where it matters, the elaboration on those topics will be more superficial.

3.4 ROADMAPPING THEORY

In this project, BEAT Cycling Club is looking for a sustainability strategy. This strategy is meant as guidance over time, for the future. By definition, strategy is a look to the future to, for example, stay relevant, be prepared, know what to do and create consensus within an organization. A good strategy not only provides guidance over time, but also for dynamic development of the goal and context, as also stated by Simonse (2017).

To link this chapter to the project approach as mentioned in the introduction of this thesis, the process of design roadmapping as will be executed further on in this thesis, perfectly fits into the iterative loop of **Create** and **Catalyze**, where interventions and ideas are found that help move towards the goal by prioritizing certain actions. Accordingly, these findings converge to show what the new future vision looks like and to tell the story, with room to iterate between these two often. (Design Council, 2021).



As a methodology for the roadmapping process in this project, the methodology of Simonse (2017) is used. Her methodology describes 3 phases, which contain underlying diverging and converging activities:

- The Value Mapping phase. The first phase in the roadmapping process is valuemap-ping. By using (trend) research and obser-vation insights, value drivers can be created and eventually transformed into a future vision, through the future visioning process. The value drivers building the vision are the benefits that come from value wishes that express a desired end state and fulfills the identified dilemmas in research.

The value mapping phase shares similari-ties with the roadmap elements introduced by Phaal & Muller (2009), called 'strategic perspectives'. They create the 'why' and describe the purpose of the roadmap ele-ments. This includes the needs, the drivers and the general strategy.

- The idea mapping phase seeks to further solve problems identified and play into future expectations. In a design roadmap that is technology or product based, this often involves a clear method of technology scouting to diverge the future opportuni-ties. Other than that, this phase treats the possible solutions, mapped over time.

Phaal & Muller (2009) describe this in more detail in their segment labelled Design, Development & Production Perspectives. These perspectives in the roadmap de-scribe the form, function and performance of the more tangible systems that need to be developed to respond to the future vision and the 'why'.

- Pathway mapping. In this phase of the design roadmapping process, the empha-sis is put on answering 'how' to respond to the identified solutions and visions of the previous phases. It involves linking the elements previously identified and tuning

the constraints within how they need to be solved. Furthermore, the visualization here comes into play.

As before, Phaal & Muller (2009) have a similar perspective to this phase that is an element of their roadmap. The Technology & Research perspective in their cases also answers the "how" question and treats the knowledge-based research outcomes, the financial constraints and the partnerships and resources needed to executed the roadmap elements.

As roadmapping could be seen as a visualiza-tion methodology for strategies, it should be noted that the visualization is not the main goal, but is necessary to facilitate communica-tion of the strategy and to reflect the content (Kerr & Phaal, 2015). By making the roadmap(s) tempting to look at it invites the reader to take in the information and make complicated strat-egies less daunting.

Additionally, it should be noted that though the roadmaps are rooted in a future vision and scenario and their accompanying strate-gy, the future will not always be as planned. A roadmap can be an evolving document that is adjusted with the identification of new develop-ments or information (Ahola et al., 2010).

Two Roadmaps

Two roadmaps will be created in this thesis, a strategic and a tactical roadmap. The strategic roadmap is meant to communicate the story of the innovation strategy and vision. The tactical roadmap elaborates on this with details for execution and showing cross-functional elements of the vision and strategy.

In context of BEAT Cycling Club. The goal of the roadmaps is to embody the future vi-sion and strategy for both internal use as well as external communication purposes. It should systematically describe the envisioned opportunities, progress and future and the steps to be taken to arrive there.

ROADMAP DUURZAAMHEID

HORIZON 1

2025

HORIZON 2

2027

HORIZON 3

"BEAT Cycling Club wil onderdeel zijn van duurzame oplossingen, niet onderdeel van het probleem."



TRANSPARANTE VERHALENVERTELLER

- ▶ BEAT Cycling Club gaat door met het verbreken van de status quo in de stugge wielwereld. Door te werken aan transparantie en het delen van informatie timmert BEAT aan de inspiratie van anderen, een echte voorbeeldploeg op duurzaamheid. Door een goed systeem achter de schermen kan BEAT dynamisch maar gestructureerd aan de slag met duurzaamheid. Dit betekent dat naast een nieuw ritme er wordt gewerkt aan impact hotspots die prioriteit ontvangen. Er blijft veel ruimte voor het grijpen van kansen die zich aanbieden en het aanpakken van 'laaghangend fruit', de dingen die zonder extreme moeite veranderd kunnen worden. De interne structuur en cultuur is essentieel, maar resultaten mogen extern gevierd worden. Het systeem bereidt ons en onze partners al voor op de volgende fase.

- ▶ In plaats van duurzaamheid 'doen', is BEAT nu duurzaam in het DNA. Dit DNA toont zich en vormt een inspiratiebron voor andere teams, renners van de club en de industrie. Als groeiende organisatie is BEAT Cycling Club een interessante partij om te steunen, onderscheidend van de rest van het peloton. De partnergroei helpt nu ook specifiek met het halen van duurzaamheidsdoelen. Duurzaamheidspartnerships werken vanaf nu twee kanten op. BEAT helpt hun partners met duurzaamheid en biedt een platform voor partners om hun innovatie te zetten. BEAT is niet bang om een pilotploeg van nieuwe technologie te zijn en werkt hierin actief samen met partners, zoals de materiaal sponsors. De impact die BEAT nog niet duurzaam heeft gekregen wordt nu gecompenseerd.



ENTHOUSIASTE SAMENWERKER



AMBEATIEUZE INNOVATIE PUSHER

- ▶ Achter de schermen heeft BEAT z'n eigen duurzaamheids programma inmiddels heel strak op orde. Dat is echter geen reden om te stoppen met innoveren en werken aan duurzaamheid. De innovatie van BEAT maakt het voor anderen mogelijk om eenvoudig te volgen. Professioneel wielrennen moet volgens BEAT vanaf nu onderdeel van de oplossing van het klimaatprobleem worden als zichtbaar voorbeeld voor de maatschappij. BEAT jaagt deze verandering hard aan en maakt statements om verandering te bewerkstelligen. Volledige Circulariteit en de material flow vormen de laatste grote uitdagingen voor BEAT zelf, waar hier de focus op ligt.

WERKWIJZE

Dynamisch en Systematisch

Durven een pilotploeg te zijn en samen te werken

Blijven innoveren

FOCUS

Kansen Pakken

Structuur

Begrip

Inspireren

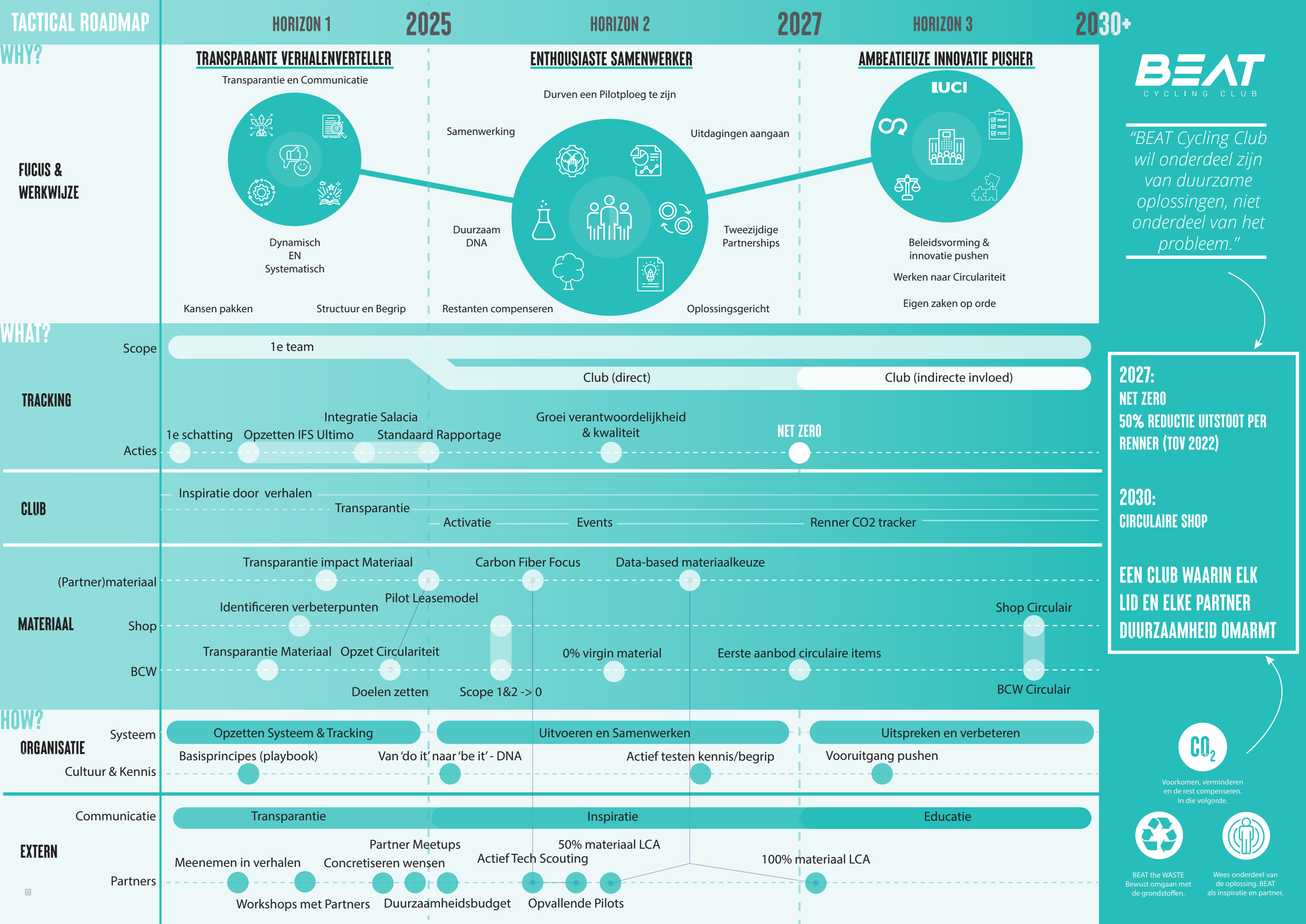
Samenwerken

Proberen

Effortless

Awareness

Circulariteit



Cluster Insights

To create a foundation on which the roadmaps and the vision can be built, the wide variety of insights, dilemmas and wishes identified throughout the project need to be clustered and ordered. In the case of this roadmapping procedure, this is done by the following steps:

First of all, as explained previously, throughout this project all ideas, stories, observations, etc. are captured. Some of these insights automatically could be formulated as strategic value opportunities, whereas others were more trend-like or formulated as dilemmas or problems.

From these, categories and themes could be created that relate to each other or show patterns. As proposed by Simonse (2017), these are created as Value Wishes.

Value wishes in this case describe a desired end-state or dilemma. After having created these value 'wishes' these can be turned into value drivers, as explained in the next section. The value wishes and drivers are shown in Figure 13.

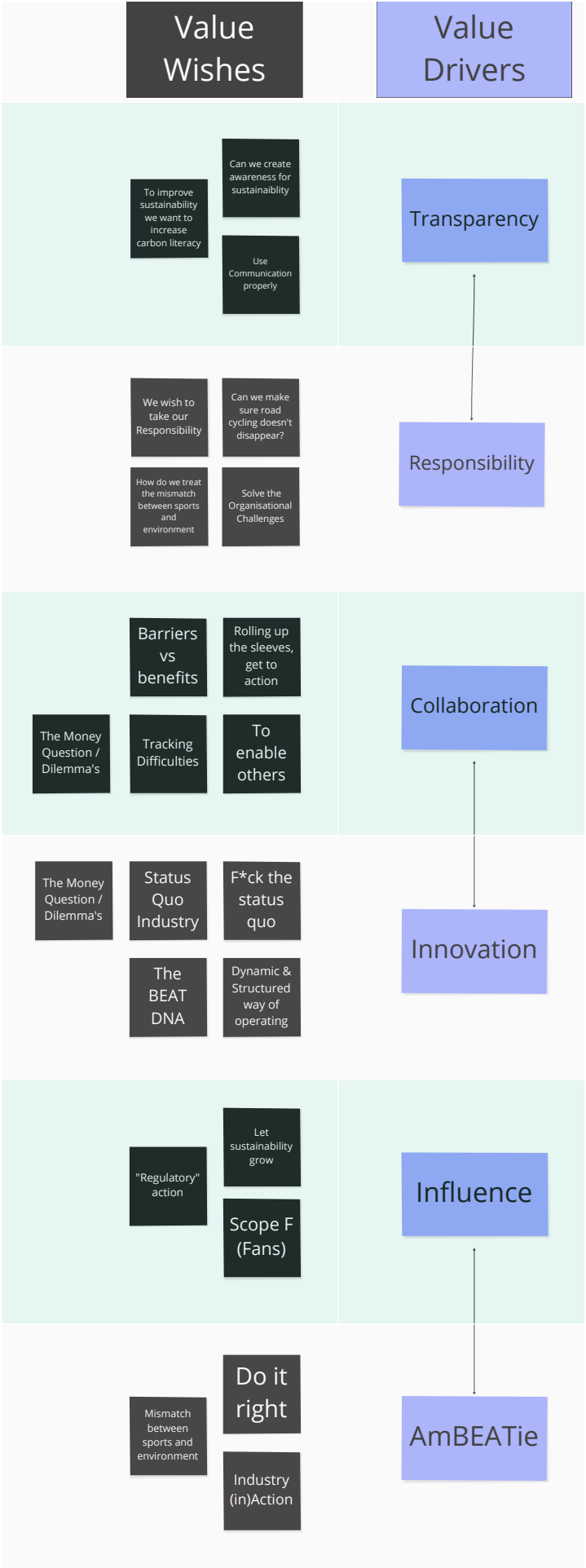


Figure 13.
Value Wishes and
Value Drivers

Vision

The most important part of this roadmap is the general strategy for BEAT Cycling Club, this strategy is reflected in the vision for BEAT in each horizon. To arrive at these horizons and visions, the Future Visioning steps as described by Simonse (2017) are followed.

First of all, value desires and wishes were written down. The concluding desires and wishes are shown in the previous section in Figure 13. These value desires eventually describe a desired end state in which the value fulfils a dilemma or fits in a solution or opportunity space.

Some of these value wishes were written down explicitly as a wish, some were identified as “ideas on how users and organisations are” (Simonse, 2017) and taken from insight clusters or implicit knowledge gained throughout the project.

These value wishes were eventually combined to value drivers after categorization. These value drivers form the basis for the three horizon visions. And the general vision for the role of BEAT. These value drivers are:

COLLABORATION

Sustainability can't be done alone and it would be a waste if everyone has to invent the wheel simultaneously and individually. Having a connection to transparency, collaboration as a value driver emphasizes that sustainability is a topic that BEAT believes is an industry problem, not an individual problem, like for example poor athlete performance. A sustainability program should enable others to progress and is not a competitive advantage for just 1 team. It fits the DNA of BEAT of ‘roll up your sleeves’.

INNOVATION

Innovation as a (value) driver lies at the heart of BEAT. Originating from an innovation of the traditional business model in professional sports, BEAT internalized not conforming to the status quo as their personality. It fits the methodology with which BEAT kickstarted its sustainability journey: by capitalizing on opportunities and working in a dynamic fashion. The need for structure in innovation as a wish rises as the sustainability plans grow and this corresponding strategy develops further.

TRANSPARENCY

Show what BEAT is doing, the good, the bad and the ugly. Being transparent helps to create awareness and eventually enables others to follow or to get inspired. Transparency is essential to fight greenwashing and allow people from outside the organisation to see and comment on what you are doing. Transparency keeps you sharp and allows to explain differences between organisations or projects.

INFLUENCE

Influence builds upon value drivers of transparency and collaboration and originated from similar wishes and dilemmas but has a different focus. This dependency on previous drivers is reflected in the ambition to spread sustainability as a topic in cycling. The influence meant in this value is aimed at multiple targets. First of all, the influence on others, the industry and competitors, is meant, by showing what is possible and asking for change. Closely related to the influence on regulation and being the voice of sustainability. Lastly, influence is relevant in the scope of influence on fans and people watching cycling races.

RESPONSIBILITY

Take our responsibility. This was the original motivator stated by BEAT Cycling Club at the start of the sustainability projects. Caring about the climate and having realised that cycling needs to change are the most important values for BEAT. As an underlying wish that cycling stays in existence for BEAT and for generations to come, this value driver embodies the desire for change.

AMBEATIE (AMBITION)

Aim for the stars. Pressing on the importance placed on the sustainability efforts, ambition as a value rises from the wish to go faster and place more importance on sustainability. Doing things right and aiming for results drive this value which, preferably, also applies as something that should infect the entire cycling industry. BEAT can use its voice to speak up and challenge governing bodies like the UCI.

Of these value drivers, three distinctive pairs can be created that fuel the vision of BEAT and the three horizons that, in order, can treat all value drivers for BEAT. These pairs are also visualized by the connecting lines in Figure 10. The process of translating insights gathered into a set of values that drive a vision and a multi-stage strategy has been iterated several times, sculpting the value drivers into the set described before. This iterative process of creating hand-written roadmaps helps in understanding the underlying values of the insights and getting to the core of clusters. The most noteworthy iterations have been related to the translation of a roadmap that is fully aimed at improving the organisation of BEAT Cycling Club to include the scope and influence it has on outside organisations and people.

General Vision:
Being part of the solution, not the problem.
The general vision for BEAT Cycling Club is themed 'being part of the solution'. Being part

of the solution does not only reflect on the own transformation BEAT is willing to undertake and explore, it also emphasises a role for BEAT in the bigger picture of sustainability and competitive cycling. Building a platform for sustainability in which inspiration and collaboration with the cycling industry, partners and competitors are central is the overarching theme of the 3 horizons that accompany this vision in more detail for the roadmap.

Three horizons were created. These horizons are formulated independently and seem to stick to their timeframes as indicated. However, they are not mutually exclusive, as generally visualized in Figure 14 below. Foundations for new horizons are built before and the influence and completed horizons impact the next horizon as well.

The horizons are built upon the value drivers mentioned before and written as a 'role description'. These roles are the way in which BEAT will primarily operate in this horizon.

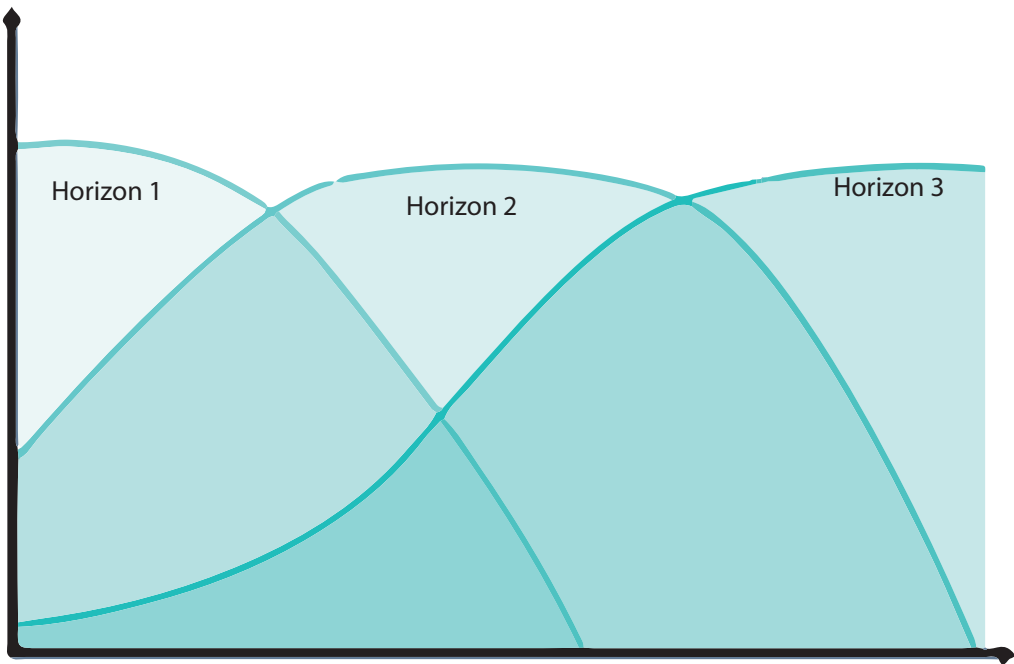


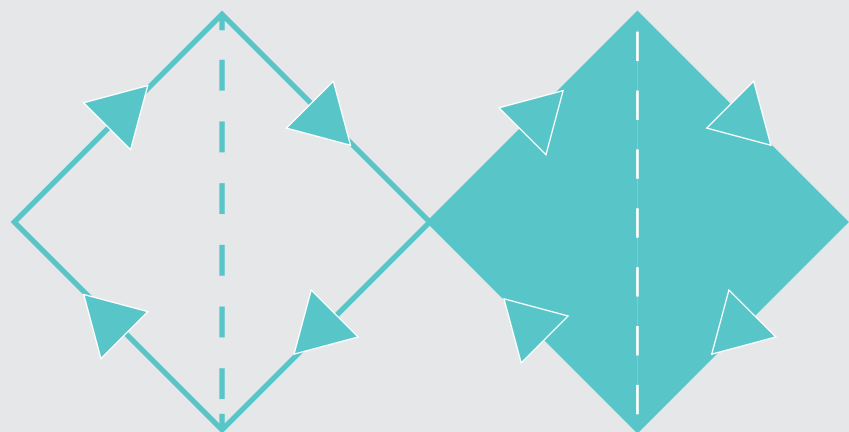
Figure 14. Overlapping Horizons

4.

CREATE & CATALYSE

CHAPTER APPROACH

This chapter combines two of the important phases of the process: **Create** and **Catalyze**. In this chapter the focus will be more on the ‘results’ and their argumentation. It described the result of the generated interventions and ideas, as well as how they combine into the design. The roadmap and playbook were developed in a most iterative manner, testing and changing things on the go while taking the end result and goal in mind. The end of the catalyzation marks the current vision and the current versions of the roadmaps and the playbook.



4.1 ROADMAPPING HORIZONS

This section contains the further explanations into the horizons and their elements that form the vision of the roadmap. Furthermore, other design elements of the roadmap will be explained and detailed, like the visual design and timepacing.

Horizon 1 - Transparent Storyteller

The goal in this horizon is to keep the momentum of sustainability efforts for BEAT going, while improving the internal efforts. In the theme of ‘getting your own home in order’, it is important to keep working on structure of BEAT. The roadmaps and playbook of this project are the first step, but efforts should continue by building structure and working on the identified hotspots from the LCA. There first efforts are still very innovative steps in the status quo cycling world and thus interesting to tell about.

Dynamic & systematic
Since sustainability is relatively new for BEAT Cycling Club but it has been expressed that they want to increase efforts, taking opportunities that arrive is very important. The newness of the project brings certain limitations to the organisation, like a limited budget or available hours of work. Because of this, ‘taking opportunities’ is one of the actions tied to this horizon. Being open and available to dynamically respond to opportunities that organically arrive allows for the possibility to keep working on sustainability without much organisation and planning effort. (New) partners that offer solutions to sustainability problems should be embraced and given a podium to tell the story. Meanwhile, BEAT can keep working on building its sustainability practice behind the screen. Improving processes like GHG accounting is important to prepare BEAT for the next horizons in which own initiatives will play a bigger role. This does not only improve efficiency but also internal knowledge of the situation and opportunities at BEAT Cycling.

Transparency
Though implemented with limited resources, the steps BEAT will take in this horizon are still very innovative for the cycling industry. The role BEAT has as a professional sports organisation with the accompanying exposure can be used here. To create awareness for sustainability efforts and improve the carbon literacy of the industry, any story can and should be told transparently. This is the phase in which organisations can learn from wins, but also from clear losses in the transition. Since most actions for BEAT are new too, sharing stories transparently also allows for a peer-checking mechanism in

which mistakes can be identified from outside of the organisation, also for BEAT to learn from.

Responsibility
Taking responsibility was the initial motivator to start sustainability efforts for BEAT. This horizon is the first chance to start working on this wish. Taking responsibility for BEAT’s actions by working on the structure, understanding and culture to develop new ways of working for BEAT and the industry. As stated before, keeping this to themselves at first, but talking about it externally is the first step.



Figure 15. Horizon 1 Visualization

Horizon 2 - Enthusiastic collaborator

The second horizon is meant to start when BEAT has completed the steps from the first horizon and got its internal operations structured and fully involved with sustainability. Instead of actively having to think about every sustainability action with much effort, sustainability is now part of the BEAT DNA and requires less effort. BEAT is expected to grow as an organisation and professional team in this phase, with this growing team, exposure grows too. BEAT is now a source of inspiration for the industry.

Collaboration

With the growth of BEAT, the ecosystem of partners also grows. This growth, partly made possible by the distinguishing sustainability projects of BEAT now supports these projects both with financial as well as professional resources. In return, BEAT helps its partners develop sustainability programs as well. Providing insights and experience, BEAT becomes a co-creator of sustainable products and

programs. With collaboration, barriers can be turned into benefits and opportunities within the ecosystem of partners that BEAT has collected. This ecosystem allows for a form of cross-pollination and inspiration.

Innovation

As described above, BEAT becomes an innovation partner to its sponsors and network. These partnerships can take shape in many ways. In all scenarios though, BEAT will be happy to be a 'pilot team', willing to try and experiment. The ability for BEAT to openly test new solutions with their visible professional team, as well as their matured club with thousands of members. This way, BEAT gets to benefit from their strengths and distinguishing club features to help themselves and their partners to improve.



Figure 16. Horizon 2 Visualization

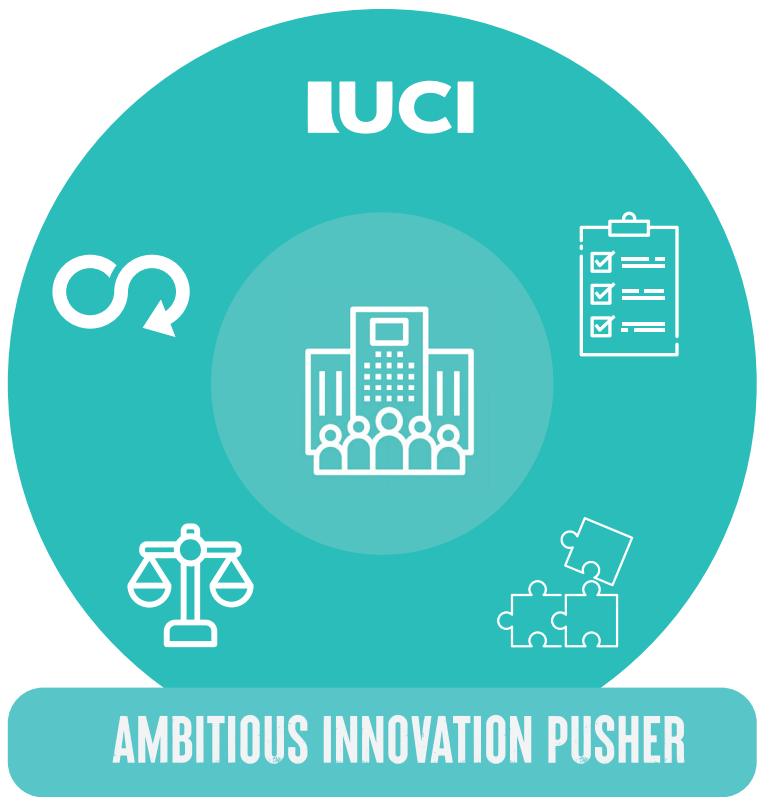


Figure 17. Horizon 3 Visualization

Horizon 3 - Ambitious Innovation Pusher

This horizon is the furthest from now. When the previous horizons have been executed correctly, BEAT and its network have now made significant steps in sustainability and reduced their impact on the climate. Though internally, BEAT is now ready to keep on tackling the last problems, the hardest projects remain and take shape in projects that are less focussed on impact reduction, but also at a model that is sustainable at its core. A more circular approach to sustainability will now need to feed the efforts of BEAT Cycling Club and the ecosystem.

Influence

On the other side, BEAT has established itself as the leading team and front of sustainability in cycling. This leadership position can be used to push innovation in the industry by shifting the focus to influencing others. Internal projects will run throughout the industry but for the most significant developments, governing organizations like the UCI will need to take a firm stand. BEAT will use its position of influ-

ence to take its stand and openly challenge decision-makers and industry to move forward most ambitiously.

AmBEATie / Ambition

From now on, professional cycling, at least within BEAT, must be able to be identified as part of the solution for sustainability, not part of the problem. However, this is not a reason to stop. BEAT expresses its ambition to keep innovating and improving. As mentioned above, the hardest problems will remain and the aim should be to solve these to. Do it right. Doing it right might mean improving on solutions that have been implemented before, taking it to the next level and increasing responsibility.

Goal and Target Audience

Establishing the goal of the roadmaps and their target audience is the first essential step. As described in the project brief, the initial purpose of the roadmaps was to inform BEAT Cycling Club behind the screens and provide a reference point for now and the future. As the project developed, a shift in purpose slowly emerged that links to the insights gathered that treat transparency and communication, as explained above.

Furthermore, meetings with the main partners that sponsor BEAT Cycling Club also showed their interest in publishing the goals and roadmaps publicly to show BEAT's plans and progress and allow outsiders to comment and aid BEAT. Since these wishes also were part of the basis for the overall visions for the three horizons and aligned with the next steps, the

roadmaps were further iterated to take in mind stakeholders and readers from outside the organisation.

The strategic roadmap fits this purpose best, showing the vision and direction intended without going into tiny details that, by itself or without the playbook, might need further explanation to be properly understood. The biggest iteration shifts working towards this new target audience are the tone of voice and level of context explanation in the descriptions, contents hardly changed since they were already built from and aligned with the vision.

Timepacing

The 3 horizons are time-bound, for indication. The timeframes are divided as follows:

Horizon 1: 2 years (approximately)
Calendar Years 2023 and 2024

Horizon 2: 2 years
2025 and 2026

Horizon 3: 3+ years
2027 to 2030+

These years were chosen for several reasons. First of all, the duration of horizons was chosen to not be too long. BEATs wish was to get some concrete steps in the strategy to work on. By keeping the horizons relatively short, the ambiguity of descriptions and visions could be kept low and practical.

Secondly, these horizons are aligned with the internal BEAT 5-year strategy. Most noteworthy, BEAT had already put into words that they want to be 'fully sustainable' by 2027. Though initially this was a goal without meaning or understanding in what they meant with it, it helped with prioritizing the BEAT internal changes towards the first 2 horizons in this case. The terminology 'fully sustainable' has been adjusted by using the descriptions from the horizon. Sub-goals in the tactical roadmap, like 'reaching net zero' have been aligned with the BEAT internal strategy that needs these milestones for other plans in the 5-year strategy.

Additionally, these 2-3 year time periods were chosen to allow for optional course adjustment. Sustainability technology and policy is a rapidly evolving area. To allow for the dynamic but structured methodology introduced in the first horizon, timeframes and planning shouldn't be too strict and too far ahead and allow for course adjustment.

Finally, the reason for choosing full calendar years can be tied to the racing seasons for professional cycling teams. Racing season align pretty well with the regular calendar year. Though some preparation for new seasons is started in the last quarter of a year, most teams treat seasons as calendar years.

Visual Design Strategy

Though producing a visual artwork is not the main goal of a roadmap, it is important that the visualization reflects the content and facilitates a vessel for the communication of the contents (Kerr & Phaal, 2015). An additional benefit is that an appealing roadmap design can be tempting to look at and look less daunting.

As part of the roadmapping methodology of Simonse (2017), analogies and metaphors that fit the vision and theme were identified. Examples of this are the visualisations of the road-book for the Tour de France, see Figure 18. A multi-stage design is basically what the road-maps convey. The map overview is the general theme and the stage descriptions visualize the challenge to overcome per race. This analogy is however so often used in cycling, that the value of the comparison diminishes and might be interpreted as a gimmick.

Instead, a more traditional, stylized overview of the most important topics was chosen. To increase visual attractiveness and break overwhelming lists of points. Big elements are placed that contain simplified icons that cover the main points of each horizon. For visual coherency, these elements are placed in both roadmaps.

Initially, the tactical roadmap was a collection of data points with no clear direction or relationship. Based on the theory of Kerr & Phaal (2015), an important reiteration was done.

Without changing too much on the visual content and to avoid losing content-related detail, some minor detailing was put towards the three factors: Structure, Relationship, and Direction.

Structure-based, a layout that is more fitting with the roadmap framework of Phaal & Muller (2009) was implemented, separating the 'Why', the 'How' and the 'What', as explained in the roadmapping methodology. To show relationships, crosslinks have been added to the most noteworthy interdependencies and influenced factors. On the right, the conclusions and goals have been prioritized, aligned with the purpose they have in the roadmap. Direction has been subtly added to the roadmap by utilizing a gradient that grows opacity in the direction of time.

Themes and Topics

For the tactical roadmap, a set of themes and topics have been selected to treat. The reason for selecting these themes will be further explained in the explanations of the playbook in the next section.



Figure 18. Tour de France overview map (left) and stage overview (right). Retrieved from www.letour.fr

4.2 PLAYBOOK THEORY

In addition to the roadmaps, which provide a centralised overview of the sustainability strategy, BEAT was looking for a way to guide implementation beyond a strategy. To fit that need, a 'playbook' will be produced.

By just providing a roadmap, chances are that the nuance behind the strategy disappears and that the implementation of the strategy might not come to fruition. To substantiate the roadmaps, a 'playbook' is added to the design and deliverable for BEAT Cycling Club.

A playbook, originates from sports as a "book containing a team's plans for a game" but is also defined as "a set of rules, suggestions, or methods that are considered to be suitable for a particular activity" (Cambridge Dictionary, n.d.). It will provide background information and explanation to the pointers on the roadmap.

Inspiration for the basis of this playbook comes from multiple sources that created a playbook or similar information book to substantiate a strategy or aid implementation. Examples of this can be found in:

- Graduation Thesis of Anna Vinke, a (former) fellow student at the TU Delft Faculty of Industrial Design Engineering, who created a campaign book (Vinke, 2023).
- The nlmtD Green Venture Building playbook. A playbook meant to explain an innovation process of Dutch company nlmtD. I was partly responsible for the production of this playbook in the job role of a former intern for nlmtD (nlmtD, 2022).
- The 1.5C Business Playbook, a playbook meant to mobilise CEOs, board members and managers to prepare for a sustainability transition (Johan Falk et al., 2020).
- The social innovation playbook. A very practical playbook aimed at improving project development needing social change (European Commission, 2020).

The goal of the playbook is to substantiate the strategy from the roadmaps and to provide more insights into their content as well as into the execution of specific steps. Furthermore, this insight and background should help BEAT staff members understand sustainability and

its value to the organization.

As the roadmaps are built up on the relevant themes, company sections and projects that are identified, these subjects should also be represented in the playbook. Additionally, the playbook should give a complete picture of sustainability for BEAT Cycling Club.

Goals

The playbook has several goals it needs to fulfil:

First of all, it is meant to provide background information about sustainability and with that inspire the reader to comply and sympathise with the plans and visions presented further in the roadmap. To do this, the roadmap takes inspiration from the way that often is described as the 'marketing funnel', in which the following stages follow each other: awareness, consideration, conversion, loyalty and advocacy. Though normally used in a context in which potential customers need to pass through the funnel for the best results for a company, it does describe a process in which something new is introduced that a potential customer/reader needs to be convinced by. A similar model is the AIDA funnel, containing the stages of Awareness, Interest, Desire, and Action.

The playbook is set up to walk through this process. By first creating awareness by introducing the problems and solutions space to be followed by reiterating why this proposition is interesting. The book follows with a more descriptive version of what is possible to create desire and helps in the first steps of getting into the action by explaining the visions and steps to be taken.

The book has been tailored for the reader to consider how this book fulfils the goals of the abovementioned steps. A quick explanation with some assumptions is provided here.

First of all, the choice for a book. The format of a (physical) book was chosen to make the

barrier for picking up the book as low as possible. Not another e-mail with a pdf or a link in a social media post. This book is meant to be something different from that what I observed to be the normal way of operations at BEAT Cycling Club. Having a book that you can just pick up and scroll through makes it different.

To help this scrolling behaviour, the AIDA funnel works well and has been implemented in multiple ways. An example can be found in the structure of the book. The book opens with some general, easy texts with a lot of visuals to

capture the readers' attention. Only further on in the book, detail emerges and more detail is given.

The book is not meant to be an expert's guide, but for anyone that needs to know about or work on the BEAT sustainability project. A tone of voice that is direct and to the point, like the BEAT Cycling Club DNA, was chosen to appeal to the reader. This book describes all processes but does not make them complicated and keeps difficult explanations at an easily understandable level.



4.3 THE PLAYBOOK

The following section will go into further detail on the contents of the playbook and their explanations. These explanation will be given per subject of the roadbook.

INTRODUCTORY PAGES - THE WHAT & THE WHY

The playbook opens with Chapter 1 ‘The what and the why of sustainability’. These pages are meant to inspire and capture the readers’ attention, as well as introduce the topic of the book. First, the what is introduced by briefly explaining climate change and the role of sustainability: “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations Brundtland Commission, 1987).

What follows is the vision BEAT presents in this playbook. This vision is a general representation of the three horizons but provides a look at a sustainable future for BEAT in a couple of ways. One of those is framing the vision as

“being part of the solution” for sustainability problems. As the introduction of this thesis described, cycling can be an amazing way to sustainably transport people, but professional cycling currently is just part of the problem. Changing that, the status quo in professional cycling, that is the vision for BEAT Cycling Club.

Tying this to the horizons is the last statement on this page. This emphasizes that BEAT envisions a future in which working together is essential. Sustainability is not meant as a competitive advantage, but as a project that should be worked on by everyone.

HORIZON 1

Horizon 1 is the product of the wishes of BEAT when formulating and discussing this graduation thesis and making the first sustainability steps: understanding sustainability for BEAT and what they are doing. Like all methodologies, this is an important step to take. This horizon, as described in this report, helps BEAT navigate its first steps into sustainability and create some structure, while transparently communicating this with the world.

This is emphasized by a quick comparison of the changes that can be made by moving on from ‘low hanging fruits’, like BEAT tackled

sustainability up until now, to a structurally sustainable club. Examples are made out of insights gathered during the project, typical BEAT terminology like “breaking the status quo” and elements of the horizon.

Since this horizon is the first one and requires immediate action, it has been slightly further worked out and introduced, in the playbook as well. The pages describing this follow next.



Figure 19. Playbook pages 8-11. Introductory pages



Figure 20. Playbook pages 18-19. Horizon 1

STRATEGY PAGE

Since one of the big themes of the first horizon is to create a structure and a clear way of working for BEAT, this is first characterized by a series of overarching topics. More detailed structuring by theme will be discussed further in the booklet but the overall theme of the horizon is characterized by a threefold of pages:

- One Goal
- Three Themes
- Four Steps

These subject are intended to be the main references of any sustainability action or Campaign for BEAT and could be used as a kind of mantra for any employee to repeat when working on sustainability.



One Goal

To reiterate the vision and goal, a central principle of operations is offered to the reader of the playbook. This central principle is the mantra that prioritizes actions and emphasizes that a hierarchy of importance in messages is present. The principle used is as follows:

Avoid → Reduce → Offset

This is a slightly simplified version of the hierarchal approach as proposed by the United Nations in their Sports for Climate Action Framework (Sports for Climate Action Framework, 2016) and as supported by the UCI (Union Cycliste Internationale, 2021). The simplification made includes taking the proposed 'Report' step from this mantra. This element will be extensively covered further in the booklet and is thus left out to keep this section in a 'to-the-point' tone of voice. The importance of considering offsetting or compensating as a mitigation step that receives less priority then avoiding and reusing has historically been neglected or has been unclear (Stevenson, 2020). For that reason it was included in this first section of the playbook. The fit with BEAT Cycling Club and the importance of 'one goal' is characterised by embedding sustainability into the DNA of employees.



Figure 21. Playbook pages 22-23. Strategy page explanation.

THREE THEMES

To categorize the actions taken in the sustainability strategy for BEAT Cycling Club, three theme's are introduced in the playbook:

- Emissions
- Waste
- Influence

They are meant to help provide overview of the themes that are important for sustainability as well as to provide labels for projects to help communicate and understand the projects done. This is deducted from the insight cluster 'actions taken' in which I made multiple observations and notions that treat the current actions from BEAT. Noteworthy in this case is the outspoken desire from BEAT for assistance in the understanding of their actions and the variety of actions taken by them and others. The concrete actions taken are often mostly opportunistic and not organized or targeted by a theme. This makes some of the sustainability efforts random and unorganized.

Several theme categorizations were considered for BEAT. As guided by the IOC sustainability guidelines, resource efficiency (for BEAT called 'waste' for reasons of familiarity), Emission and Education (here in the broader way of direct and indirect influence) form the main themes of starting a sustainability program in sports (IOC, 2018). This guidelines was followed since it was specifically designed for a sports context where other contenders were more focussed on the company structure.



Figure 22. Playbookpages22-23.Threethemeeplanation.

EMISSION



WASTE



INFLUENCE



FOUR STEPS

There are four steps that form the foundation of BEAT Cycling Clubs sustainability program. These steps account for this project, as well as for any future sustainability actions or projects. As with the build-up of the playbook, these steps are based on the 10-step program as introduced by the International Olympic Committee (2018). Taking into account methodologies that require a lower number of steps and are more concise, like The Toolbox (11th Hour Racing, 2021) and adjustments from the UCI (Union Cycliste Internationale, 2021). The conciseness of having just 4 steps aid in remembering and understanding the points made and is a way of ‘dumbing down’ the information.

This resulted in the following 4-step overview:

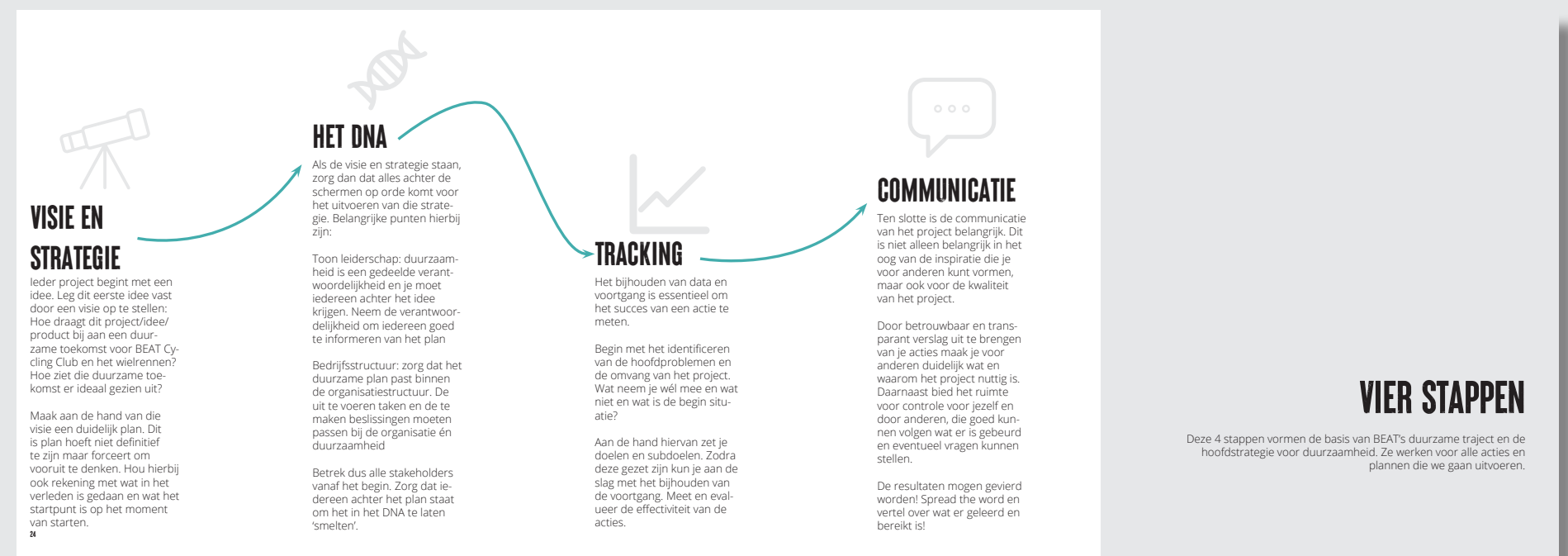


Figure 23. Playbook pages 24-25. Four Steps Explanation

1. Vision and Strategy

A combination of IOC steps 1 and 2, “Assessing your starting point” and “Define your vision and strategy”. This step is meant as check of the starting point and careful consideration of the goals and necessary strategies. To improve chances of success, an action or programme should fit properly with the central purpose of the organisation and the general heading, as well as challenge it. Conscientious thought should be put in at the start of the project.

2. The DNA

Inspired by step 3, 4 and 5 from the IOC-proposed steps, “the DNA” step captures the necessary background action that should be taken when engaging in sustainability practices. “Demonstrating Leadership”, “Establishing Effective Governance” and “Engaging Stakeholders” are important background systems that need to be embedded in the core of a project. Establishing good leadership in a project enables the inclusion of context factors other than those taken into account with the overall goal and vision from step 1. In explanation, these steps are so closely related that they are often combined in other literature as well (IOC, 2018; Union Cycliste Internationale, 2021).

3. Tracking

‘Execution’ is an implicit step in this four-step method. During this execution, the third step – Tracking – is of importance. Tracking combines step 6, 7 and 8 from the IOC methodology. This starts before execution with the identification of most impactful practices and priority setting. Vision and strategy can be adjusted accordingly. Making objectives and targets from the identified priorities allows for targeted tracking of impact. Tracking takes preference over measuring afterwards since it allows adjustments in the set course.

4. Communicate

The final steps is to share the story. As reflected in the future visions for BEAT, the impact potential is bigger than just own actions and functioning as a source of inspiration and information for others increases impact. Furthermore, it forces transparency and good practice in execution.

STARTING POINT AND MAIN PROBLEMS

Since this playbook with accompanying roadmaps is to kickstart bigger sustainability projects and to tell the story where this sustainability journey comes from, it also states the work done. Part of this is the starting point, which starts with the results of the fast-track LCA. Accompanied by a disclaimer on the accuracy of the calculation emphasizing the fast-tracked nature along with a scope disclaimer, this page illustrates the division of impact area's.

Additionally, a first rough but safe estimation of total impact is mentioned, accompanied with an estimation of how many trees would be needed to compensate for this. This has been added to give a first indication to the readers of the playbook but is also accompanied by a disclaimer that states that planting trees is not the ultimate solution.

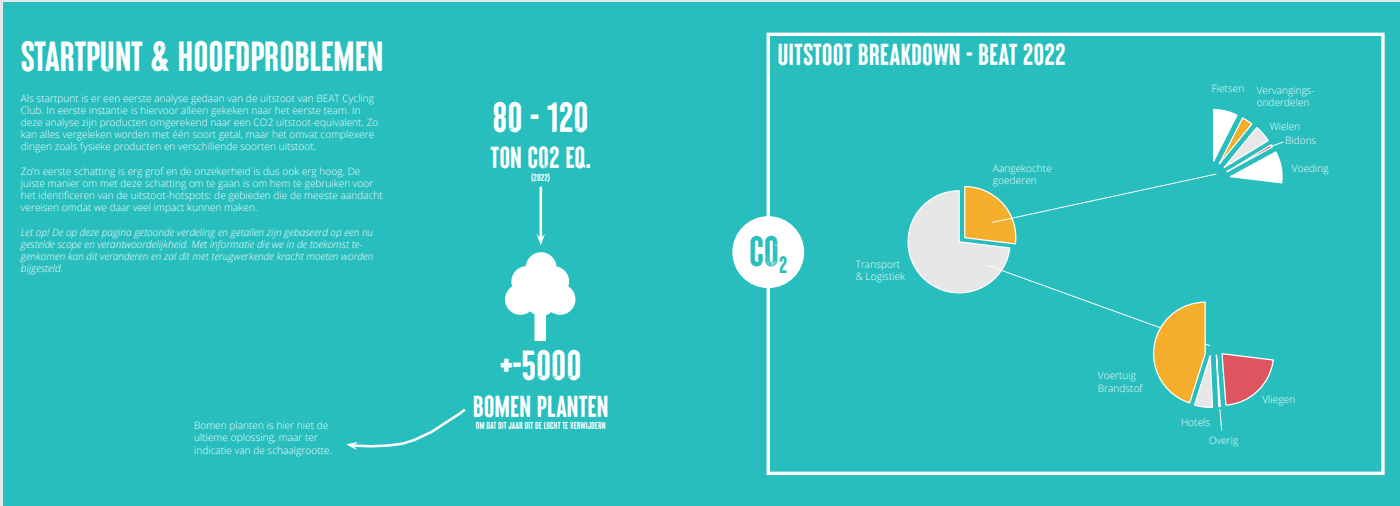


Figure 24. Playbook page 26-27. Starting Point emissions

The other theme's, waste and influence, of BEATs sustainability program are also mentioned. As a starting point, the importance of the themes is restated on this page. Several initial challenges are mentioned, labelled as opportunities that have been mentioned in the roadmaps. Additionally, good practise starting points like working on an own clothing label that has a sustainable origin and goal and the fact BEAT is already an example team in the professional cycling scene.

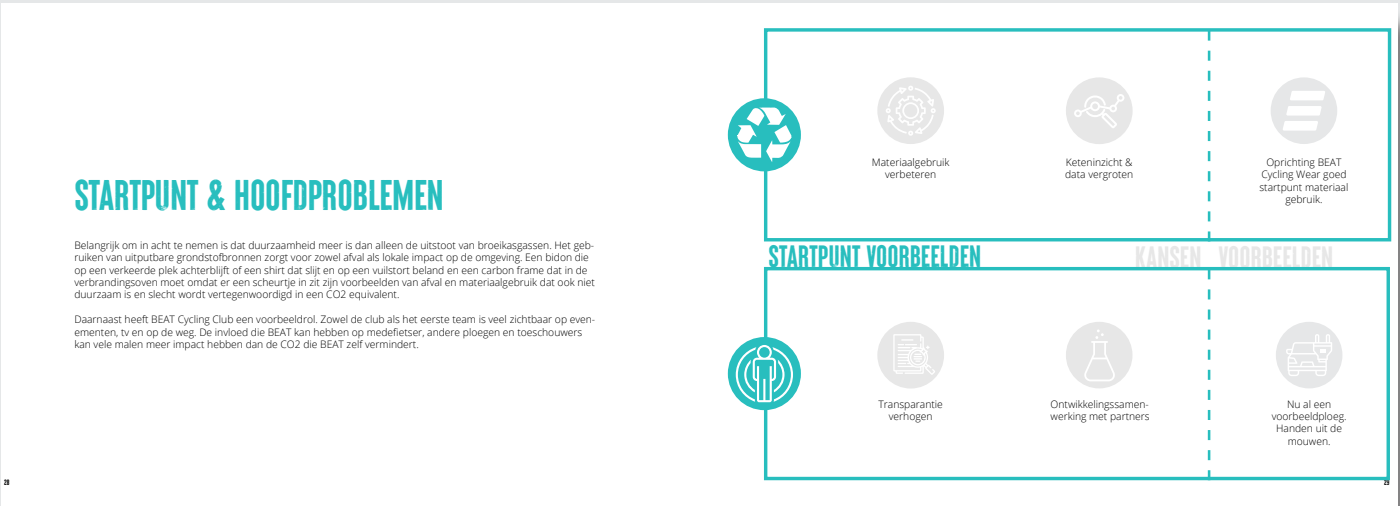


Figure 25. Playbook page 28-29. Starting Points Waste and Influence

HORIZON 2

In addition to the previous introduction to the horizon in this document. In the playbook, explanations have been added about the themes growth, partners & club and extra text about working together, meant to inspire.

Growth and Partners & Clubs are added to emphasize that with the growth of BEAT and their partners, changes will occur that need to follow the right sustainability steps and that this should not be forgotten. An extra page has been added to emphasise the importance of working together and to illustrate the possibilities and goals of this horizon.

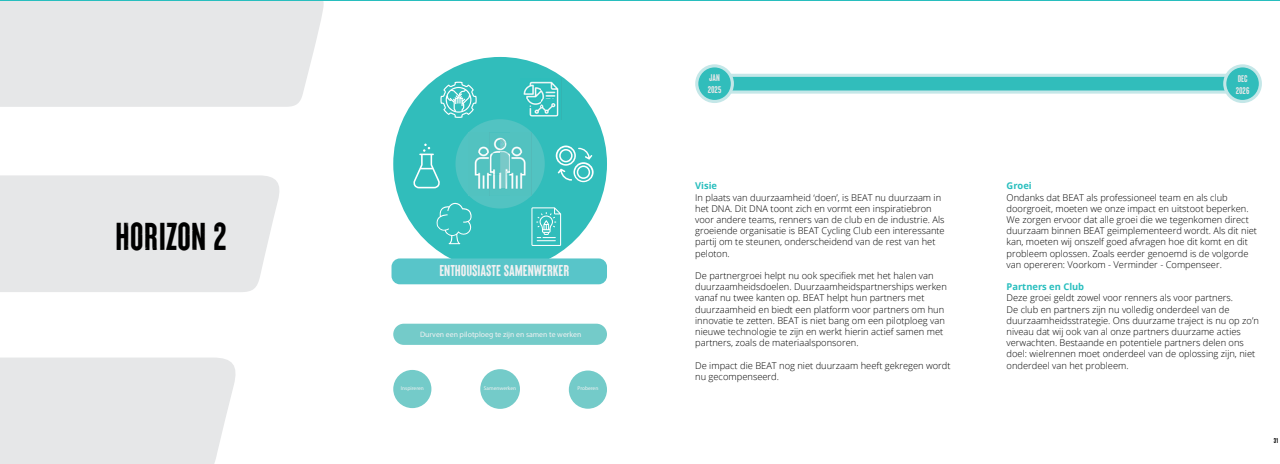


Figure 26. Playbook page 30-31 - Horizon 2



Figure 27. Playbook page 32-33 - Horizon 2 extra page

HORIZON 3

Horizon 3 has a similar setup to Horizon 2. Meant to elaborate on the contents of the vision for this horizon, the general direction is substantiated with some explanation and two separate pages for the main themes Circularity and being an innovation pusher.

These pages accentuate the vision of aiming at those topics in a way that is most ambitious and meant to inspire. By providing an example of the topic and the way to treat it (in good and bad situations), they are meant to help understand the topics in a deeper sense.

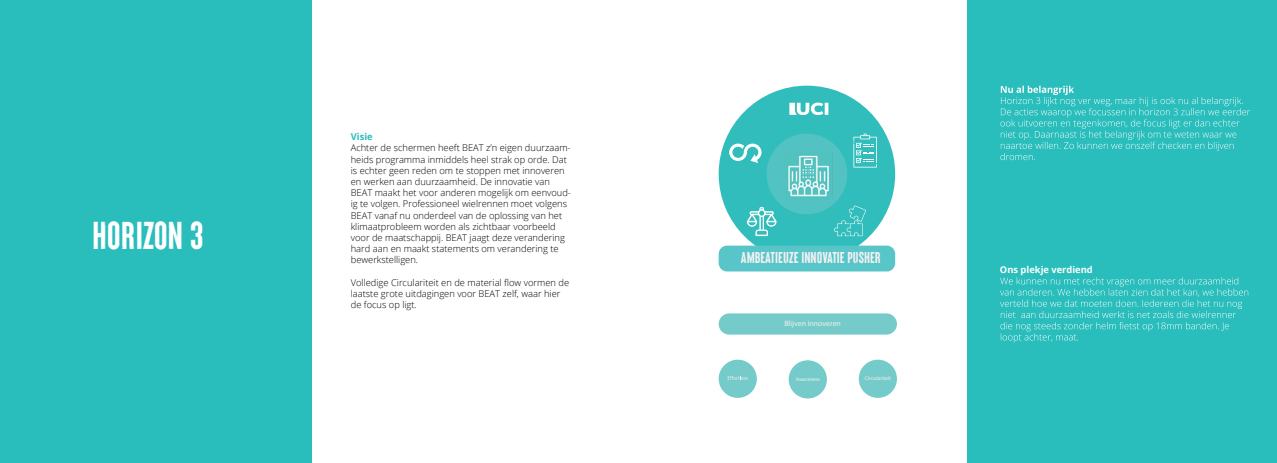


Figure 28. Playbook page 34-35 - Horizon 3



Figure 29. Playbook page 36-39 - Horizon 3 extra pages

Circularity

This horizon tackles the topic of circularity. With circularity, a system that aims to minimize waste and maximize the efficient use of materials and products by keeping them in circulation for as long as possible. Products designed with the end of their use fase in mind and a clear next option for the product or materials to be used. Generating no or as little as possible waste is thus seen as an ultimate solution and goal in this horizon for several themes.

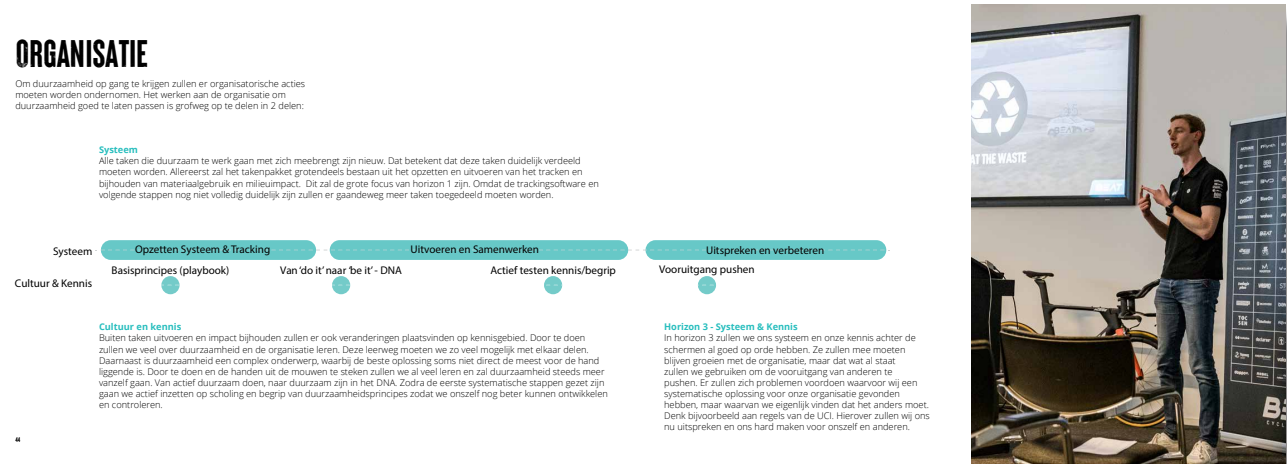
ORGANISATION

Since sustainability is a new topic to BEAT, organisational challenges will arise. The most important challenges here will occur in this phase when sustainability is new, so Horizon 1. To emphasize that setting up a system for tracking and gaining insights is important, this is the main organisational focus and will get a dedicated plan.

Furthermore, a clear task division is necessary and thus mentioned on this page. According to own experiences and opinions, BEAT currently is in a phase that is similar to that of a start-up that needs to behave as a scale-up . As a result, all staff is very busy (probably burdened with more than they should). BEAT staff mentioned that every task they get extra is often a task that they can't and often won't execute. Fitting

in sustainability thus means dividing tasks and preferably making someone responsible for running the strategy. It might be necessary to increase the size of the team to execute it properly.

Ultimately, sustainability practices other than innovation will become more and more embedded in the day-to-day and more time can be allocated to education and external influence. After a system is in place, the sustainable DNA and active testing of knowledge and understanding are added to make sure internal development does not come to a halt. This topic however is mostly added to make sure that the first horizon is used for building a structure to build upon.



TRACKING

The chapter about tracking in the playbook treats several questions about the future of sustainability tracking for BEAT Cycling Club. A first assessment has been made in this thesis. More regular assessment and reporting will need to be integrated in the operations of BEAT Cycling.

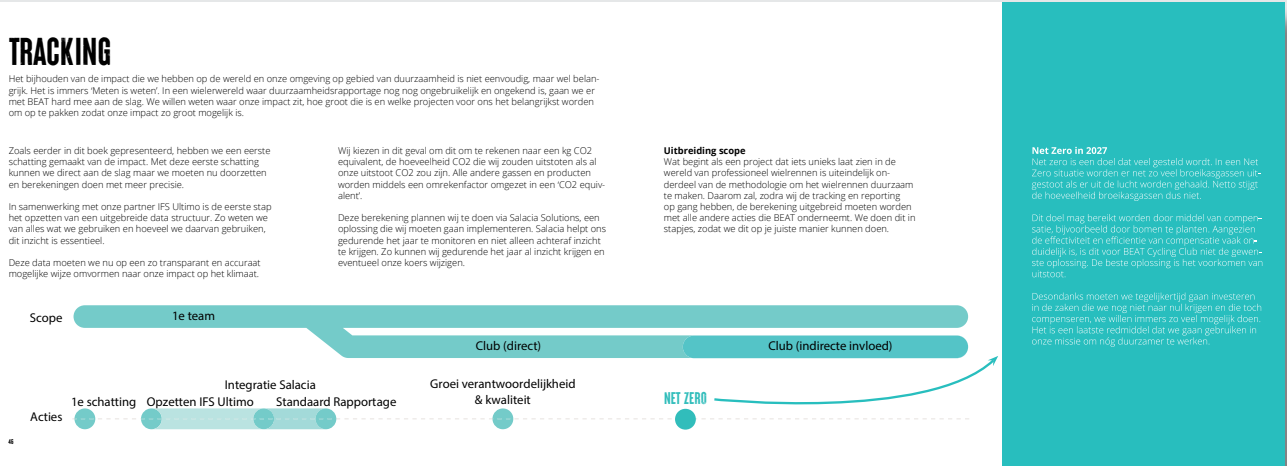
The chapter describes a couple steps and shifts that will aid in setting up reporting and assessment for BEAT Cycling Club.

First of all, one of the encountered difficulties while performing the LCA was getting access to reliable and accurate inventory / asset data. Considering the purpose of the LCA, this was not an issue, but for the future this should change. The integration of new partner IFS Ultimo and their Asset Tracking software has been added to the roadmap. This software is getting implemented in BEAT Cycling Club to improve the logistics and inventory of BEAT Cycling Club. It perfectly fits the goal of improving the collection of data for sustainability as well. It has been recommended and already set in motion that with the implementation of IFS Ultimo, sustainability tracking will be kept in mind and will be prepared to work with the next steps for BEAT.

One of these next steps is the yearly and regular performance of these calculations. In this project many methodologies and their calculators have been considered for the future, as explained in the methodology chapter. In this consideration, the free-to-use calculators often had very limited functionality and the professional calculators are out of budget for BEAT Cycling Club.

Upon mentioning this problem within internal discussions a quick brainstorm session was set up. As a result, a plan was made to investigate the opportunity to approach Salacia Solutions, a scale-up company from one of the initial founders of BEAT Cycling Club, Kees Kerstens, to explore possibilities to collaborate. Salacia Solutions specializes in ESG tracking and reporting and provides a platform that would be able to be set up in a fitting way of BEAT by means of a club partnership.

The actual implementation was discussed with Salacia Solutions and would fit the scale and resources of BEAT Cycling Club. The implementation of the Salacia Platform and integration of the IFS Ultimo software is left as a task to be executed in the near future .



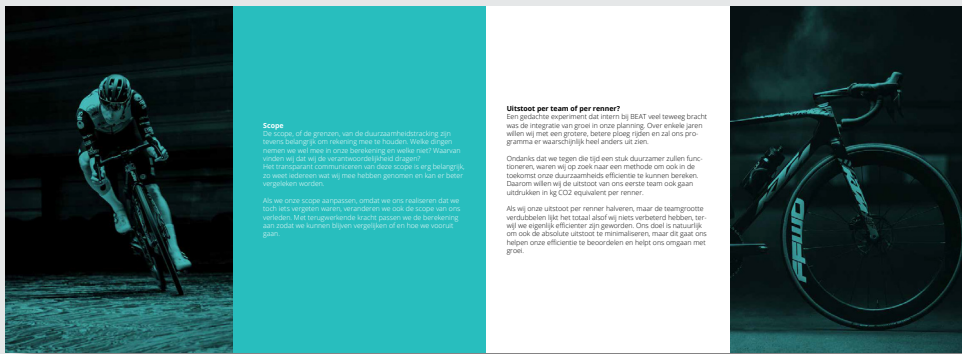


Figure 32. Playbook page 48-49 - Tracking

Net Zero

Part of this chapter, see previous page and figure 28, has been dedicated to the topic Net Zero. Net Zero before 2040 is formulated as one of the main goals in the United Nations Sports for Climate action framework (United Nations, 2016), to which almost all sports related programs refer (Union Cycliste Internationale, 2021).

As described before, BEAT set ambitious goals in their 5-year planning and wants to reach this goal by the end of 2027. For this goal, we take the definition that the UN provide: “net zero means cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere, by oceans and forests for instance” (United Nations, 2016).

Since this definition leaves a lot of room for interpretation in the ‘cutting greenhouse gas’ metric, an additional reduction goal was set for BEAT Cycling Club. In the framework from the UN they also suggest a 50% reduction of emissions by 2030 in comparison to a base year, which for BEAT could be the year 2022 with the calculation done in this report.

This suggestion is also added in two ways. First of all, as an intermediate step, an emission reduction of 50% per rider was added vor 2027. As introduced before, growth in organisation size is expected for BEAT Cycling Club shortly after 2022/2023. Having an intermediate reduction goal per rider helps beat to both keep track of sustainability progress as well as efficiency while growing.

A 50% absolute reduction was added for 2030, to comply with the wish of the UN framework. After the storm has settled of growing the organisation while improving sustainability efficiency, lowering the absolute impact of the organisation is an important next step. In this timeframe it better fits the context and situation BEAT will find itself in.

Scope

The playbook treats growth of the scope of emission tracking. By emphasizing that since responsibility is an important theme this growth will happen and that the impact of the club will need to be assessed in the future too. A reason for only starting this assessment in the future is to first make sure that all systems, as described above, are in place.

Additionally, changes in scope are mentioned. Changing the scope of assessment is allowed, as long as it gets paired with transparency, reason and good communication. Backtracking the changes to previous years for fair comparison has been introduced as a point of consideration.

As final scope-related point, growth and an additional functional unit are mentioned. As BEAT grows, the number of athletes will grow too. When the number of athletes grows but the environmental efficiency of BEAT improves too, the cumulative emissions will look similar. Though the goal will need to stay to reduce and avoid as much as possible, to compare BEAT cycling between years, a different functional unit can be used. This has been further explained in the LCA chapter and added as information for BEAT in the Playbook.

PARTNERS

Partners are one of the most important elements in the organisation of BEAT Cycling Club. They form one of the main forms of financial income for BEAT Cycling Club. The way they are embedded in the organisation fits the overall model of BEAT: not just one or two main partners that cover all expenses, but a wide variety of partners that support BEAT but also support the club. The partners support the club by offering their products and services at a discounted price for the members of the club.

Working on sustainability can help BEAT and partners to further work on building a model that takes the traditional open-loop partnership model, to a closed-loop partnership. In a closed-loop partnership model, the partners are not only serving BEAT, but BEAT is also able to provide services back. In this case, working on sustainability together opens up new opportunities for partners and is a new benefit for them to bind to BEAT Cycling Club.

At the same time, BEAT must stick to their values. BEAT historically only has chosen partners that believe in the BEAT ideology, but also only partners that BEAT deems ethical. Gambling parties have been denied partnership, despite offering sponsorship. Additionally, sustainability has been set as one of the important goals for BEAT. To continue commitment, partners need to be asked to share their sustainable ambitions with BEAT. Stance should be taken to those partners that don't have sustainability in their priorities.

Furthermore, this timeline asks for the delivery of LCA data from partners that deliver products. Asking first and demanding later, this information helps the accuracy and fidelity of sustainability reporting for BEAT as well as it forces partners to gain insights into the most important impact areas of their products.

BEAT is not only able to help partners by facilitating cross-pollination and facilitating and organizing workshops that fit the mission and vision of BEAT, but they could also help justify sponsorships and make general partnerships interesting. Partners in sports choose sponsorship most often for exposure. This exposure is much more valuable if it fits with the norms and values of both team and partner. Since the partner's commitment is important for the growth of BEAT's sustainability program, this timeline is initialized early and prepares for and focusses on the second horizon, in which collaboration, technological advancements and structural budgets and pilots are central.

In a first evaluation round, in which the playbook draft was presented to the main partners of BEAT, partners reacted enthusiastically to the opportunity to get a copy of the playbook. The general opportunity identified was for the partners to further explain and justify sports sponsorship by highlighting shared values. Additionally, it would help explain sports sponsorship to their colleagues that don't have the passion and love for sports that they share.

This feedback led to the slight adjustment of some of the content of the playbook. Some highly detailed ‘behind-the-screens’ descriptions were moulded in a more story-like tone of voice.

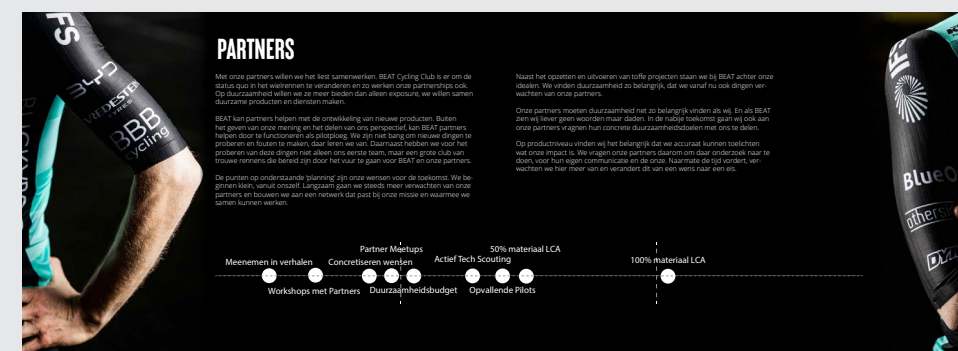


Figure 33. Playbook page 50-51 - Partners

COMMUNICATION

The communication page in the booklet elaborates on the main themes that communication practices will encounter. First of all, it emphasizes transparency as an important factor. Showing how BEAT operates and what exactly is done, calculated and worked on both helps with countering greenwashing as well as provides a platform for feedback and others to learn. Transparant communication does not only helps spread knowledge for others: people can also come back to BEAT and comment on actions taken. If done and formulated positively, this feedback can help BEAT improve their program.

Furthermore, the playbook tackles the role of communication. It will be further emphasized in the page and explanation about the first team, but BEAT has a role and an opportunity to inspire people. A way to inspire is by showing what is possible and proving that there are alternatives to the status quo. Additionally, explanations should be offered to explain why the actions BEAT takes are better.

A quick, but important note is added about the framing of sustainability communication. As part of their DNA and as a wish of how they want to tackle sustainability, like the DNA point “Don’t be the best in class” earlier in this report, the focus in communication should be positive. Emphasizing positive communication on sustainability keeps it interesting. It forces BEAT to stick to their own actions and not point the finger to others who are not (yet) working on sustainability.

Lastly, an extra note on greenwashing is made in the playbook. As mentioned before, for BEAT, sustainability is about taking responsibility because it is their responsibility, not because it is good for marketing. Greenwashing is a difficult topic, a difficulty for example is that the people responsible for the communication are not the people that now about the intricacies of correct terminology. Because of that the book refers to the proposal for Green Claims Directive of the European Union (2023). This new directive contains directives and recommendations that will need to be followed in the near future when communicating about sustainability.

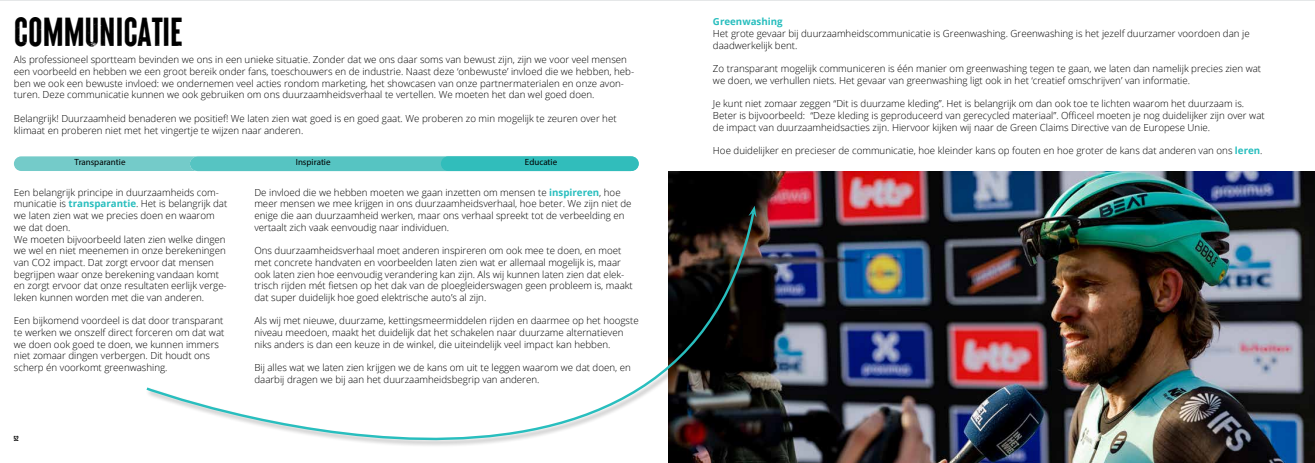


Figure 35. Playbook pages 52-53 - Communication.

THE FIRST TEAM

A separate page was added for the first team. Though not represented by a line on the roadmap with specific plans. The first team is one of the important elements of BEAT. Aside from athletic performance, one of the functions of this team for BEAT is exposure to ‘the outside world’. This exposure plays an important role for BEAT by communicating and showing what BEAT is and representing that at the highest level. This representation is a form of communication, but not added in the ‘communication’ part of the roadmap and playbook.

The page reiterates the importance of the first team as a showcase of what BEAT can do sustainably and what innovation is possible.

Furthermore, it emphasises that the members of the first team understand sustainability. Understanding sustainability leads to better behaviour which in turn leads to better ambassadors for BEAT and sustainability.

External pressure and perceptions have been found to be one of the strongest influencing factors on the adaption of ecological management by sports events (Mascarenhas et al., 2021). The first team can thus be a force for good. Lastly, it states once more that carbon literacy and understanding about the why and what of sustainability is important, to create valuable athletes that represent something that they care and know about.



Figure 34. Playbook pages 54-55. The first team.(Image source: ZwierImages)

BEAT CYCLING WEAR

Beat Cycling Wear is the own clothing label that BEAT Cycling Launched with the 2023 season. The label was launched as a way to support the club and further tailor the offered clothing to the club members and first team riders. Additionally, the other main reason for launching the label was having more influence on the production process, especially with regards to sustainability.

The label was launched with a line of cycling clothing that are produced with a recycled polyester. This is a start, but BEAT Cycling Wear should make similar steps to what BEAT as an organisation has taken. The playbook offers an outlook on these steps for BEAT Cycling Wear to follow, so it can better support the sustainability mission as well as the professional team and club.

First of all, note is made about working towards transparency and chain influence. Currently, no information is given or known about the source of the recycled material or the processes used to produce the clothing. The risk of greenwashing currently is very high for BEAT Cycling Wear and for this product and the practices introduced in the communication chapter, tied to the Green Claims Directive of the EU need to be taken into consideration.

To help envision the possibilities of BEAT Cycling Wear, the label is explained as an opportunity to show what is possible and to execute ambitious plans. Starting with transparency and aiming for full circularity.

A slight emphasis is placed on circularity because BEAT has a unique opportunity due to the circumstances of operations. Firstly, BEAT clothing is almost exclusively sold to members of the club, to which BEAT stays in close touch. This close relationships is a big enabler for circularity, since it is easy to set up a chain in which clothing comes back to the manufacturer after use. To iterate on this idea, an idea of the early days of BEAT has been introduced to spark ideas and inspire out-of-the box thinking for the reader of the playbook: a clothing lease model. Though it is very important to carefully consider all circumstances in such a model to make it actually sustainable, it could be a direction for BEAT to explore. The most important opportunity here is tied to the ease of use in returning materials, the biggest challenges the quality of returned goods and actual return numbers.

CLUB AND SHOP

The Club and the Shop were added as elements to the roadmap and the playbook. Though they don't directly fit the initial scope of the professional team, they are relevant to them. The club elements relate back to the previously explained points on influence and communication. Furthermore, the club is also a responsibility for BEAT, if they want to keep working on sustainability, they will need to tackle the club's impact as well. The place in the roadmap for the club is mostly to keep BEAT aware of this and plan for the future.

The shop also needs to plan for the future. Here too, the addition to the playbook has been made as a reminder that there is much to win on several elements of BEAT Cycling Club as an organization beyond the operations of a continental cycling team. Lowering current impact and working towards circularity have been added as points on the horizon after starting this section with the identification of points of improvement. The club and the shop will have to undergo a process that is similar to the process the continental team is going through.

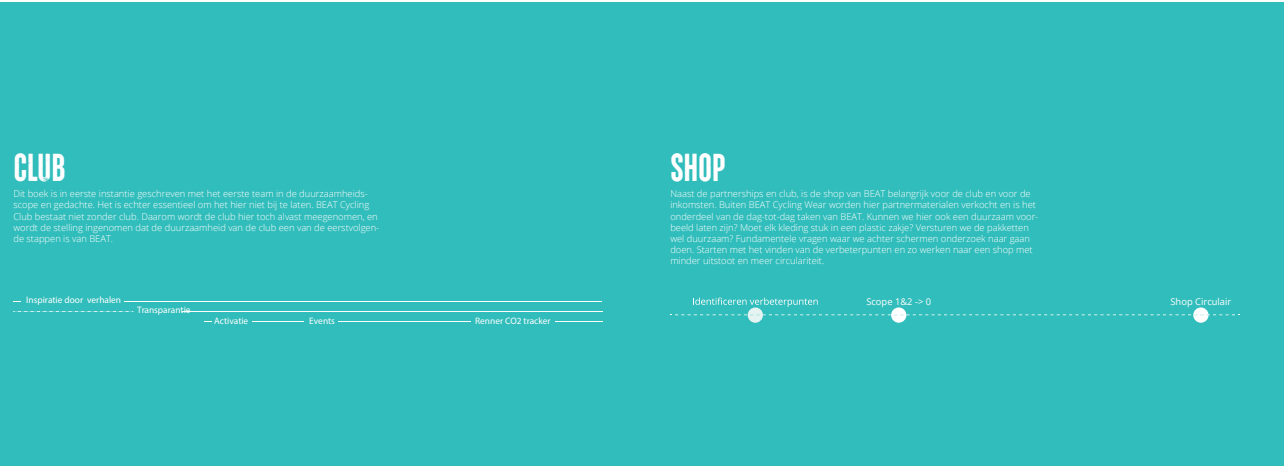


Figure 37. Playbook pages 58-59. Club and Shop

BEAT CYCLING WEAR

Als uitbreiding van de club heeft BEAT een eigen kledinglabel gelanceerd: BEAT Cycling Wear. Dit kledinglabel is er niet alleen om de club te ondersteunen, het is er ook om kleding te produceren die voldoet aan al onze eisen. Meer invloed op de keten, meer invloed op het design en dat betekent ook zelf de verantwoordelijkheid ervoor dragen.



De eerste generatie wielkleding is gemaakt van gerecycled polyester. Voor alle kleding nieuw materiaal produceren is zinloos, er is genoeg materiaal waar dit ook van kan. Een fijn startpunt voor BEAT. Het is nu zaak om door te pakken op BEAT Cycling Wear en de principes die hier in het boek toegelicht zijn toe te passen op BEAT Cycling Wear. We moeten gaan controleren of dat wat we doen écht onze meest duurzame oplossing is en hoe we dit kunnen blijven verbeteren. BEAT Cycling Wear is wederom een platform om te kunnen laten zien wat er mogelijk is, maar dan moet het écht goed zijn. Het belangrijkste speerpunt is dus door te beginnen met krijgen en geven van transparantie en vervolgens structureel door te blijven werken naar de ultieme wielkleding.

Circulariteit
Het eindpunt op deze huidige roadmap is 'BEAT Cycling Wear' Circular. In een circulaire economie zorgen we ervoor dat alle grondstoffen onderdelen en producten na hun levensduur opnieuw ingezet kunnen. Zo wordt hun waarde zo veel mogelijk gebruikt en eindigt een product eigenlijk nooit op een vuilstort eindigt. Circulariteit betekent bedenken waar materialen vandaan komen, maar ook waar ze na gebruik weer naartoe gaan en vraagt om verantwoordelijkheid. De unieke mogelijkheid ligt open voor BEAT om hier verantwoordelijkheid te nemen, we kennen onze leden namelijk goed. Denk bijvoorbeeld aan leasemodellen voor kleding, waarbij we zeker weten dat wij ook alle gebruikte kleding weer in kunnen zamelen en de kleding een nieuw leven kunnen geven. Of een beloning voor het terugbrengen van je kleding. Het liefst maken we van oude kleding weer nieuwe kleding, dus werken we hard aan processen die dat mogelijk gaan maken.



Figure 36. Playbook pages 56-57. BEAT Cycling Wear.

5.

CONTINUING THE JOURNEY

RECOMMENDATIONS AND REFERENCES

5.1 RECOMMENDATIONS

Throughout this report, several recommendations have already been given. Most of these are provided in the light of how to execute the vision and strategy presented. Two recommendations that rest are presented here in brief form.

- First of all, the nature of sustainability asks for adaptability. The strategy presented in this thesis does not aim to be followed word-for-word without considering changing contexts. Novel technology, regulations and insights will develop that are not integrated in this strategy. Allowing dynamic change of plans will aid the sustainability mission of BEAT Cycling Club that now tackles a complicated problem with limited resources.

- Secondly, reflecting on feedback from stakeholders that were presented with the Playbook, a recommendation has been given to develop the playbook as a product that helps partners to sell their sponsorships. Aiming for sustainability is a common denominator for many partners for BEAT and helps partners identify with BEAT on more levels. To help understand colleagues and outsiders that don't resonate with just professional sports, an innovative sports organisation that pushes sustainability is more understandable and helps boost image and impact.

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5.3 IMAGE ATTRIBUTIONS

All images in this report, if not stated differently, are attributed to:

- Stephan de Goede Photography, the official photographer of BEAT Cycling Club.

All figures are produced exclusively for this report.