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CREATING VALUE THROUGH SUSTAINABILITY: THE CASE OF MOTOGP AND DORNA SPORTS – MOTOGP AS A FORCE FOR SUSTAINABILITY: A POSITIVE ECOSYSTEM

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Abstract (100 words maximum): Sustainability has emerged as a critical priority in motorsports, a resource-intensive sector. This study examines how MotoGP, under the management of Dorna Sports, integrates sustainable practices to balance sporting performance, environmental responsibility, and economic value. By critically analyzing operations, brand perception, and stakeholder relationships, the research explores the impact of sustainability on MotoGP's operating model and public image. The findings highlight key innovations and initiatives that position MotoGP as a benchmark for sustainable transformation, offering valuable insights for the motorsport industry and the broader automotive sector.

Keywords: Sport Management, MotoGP, Dorna Sports, Motorsports, Sustainability, Innovation, Triple Bottom Line, Green Governance, Social Impact, Sponsors, Sustainable Marketing, Circular Economy, Brand Awareness, MotoE, Non-Endemic Sponsors, Sponsorship Strategy, Green Operations, Sustainable Logistics, Carbon Footprint Reduction, Calendar Optimization, Sustainable Practices, Freight Operations, Young Generations, Rebranding

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List of Abbreviation

Abbreviation	Definition
CE	Circular Economy
CSR	Corporate Social Responsibility
DE	Doughnut Economy
ESG	Environment Social Governance
ETW	Eco Transit World
EV	Electric Vehicle
F1	Formula 1
FIA	Fédération Internationale de l'Automobile
FIM	Fédération Internationale de Motocyclisme
FP1	Free Practice 1
FP2	Free Practice 2
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GP	Grand Prix
HVO	Hydrotreated Vegetable Oil
LE	Linear Economy
Q1	Qualifying 1
Q2	Qualifying 2
SBK	Superbike
SDGs	Sustainable Development Goals
TBL	Triple Bottom Line
UN	United Nations

1. Introduction

In recent years, sustainability has emerged as a critical priority across industries, reshaping the strategies and operations of organizations worldwide. As environmental, social and economic responsibility gain prominence, the sports industries, particularly high-profile, resource-intensive ones like motorsport, face unique challenges and opportunities in integrating sustainable practices. MotoGP, as one of the leading global motorsport championships, stands at the forefront of this transformation, balancing the thrill of high-speed racing with the broader necessity of environmental stewardship, social accountability and economic viability.

Dorna Sports, the organization responsible for MotoGP, has undertaken significant effort to incorporate sustainability into its business model. These initiatives aim not only to reduce the environmental impact of the championship but also to create lasting social value and ensure economic resilience, fostering a legacy of innovation and responsibility within the motorsport industry. Sustainability in this context extends beyond carbon footprints, encompassing issues such as diversity and inclusion, community engagement, technological advancement, and the promotion of safe, accessible, and equitable practices across the ecosystem.

The purpose of this study is to explore and critically analyze how sustainability, understood in its holistic sense, can be effectively integrated into MotoGP to maximize environmental, social, and economic value. By examining the championship's operations, brand perception, and stakeholder relationships, this study aims to provide a comprehensive understanding of how Dorna Sports can leverage sustainability as a strategic advantage.

Guiding this exploration is our central research question: *"How does sustainability impact MotoGP's operating model, public image, and overall value, and how can it contribute to creating a positive ecosystem within the automotive and motorsport industries?"*.

The findings from this research hold relevance not only for MotoGP and Dorna Sports but also for stakeholders across the motorsport and automotive sectors who are striving to balance performance with responsibility. By analyzing how MotoGP integrates sustainable practices, this study aims to highlight actionable insights that can drive further innovation, increase brand loyalty, and set new standards for environmental and social responsibility within motorsports.

2. Literature Review

2.1 Introduction to Motorsport

Motorsport is one of the world's most dynamic and technologically advanced sports, with the earliest races taking place in the late 1800s. These competitions, which began as speed and endurance tests to demonstrate the technological superiority of motor vehicle, swiftly grew into events of immense cultural and social significance, solidifying motorsport's position as a major component of popular and sporting culture worldwide. From the very beginning, the evolution of races has seen continuous technical innovation, driven both by the need for manufacturers to improve vehicle performance and safety, and by commercial demands.

When discussing motorsport and how the earliest competitions gave rise to this discipline, which has since become popular on a global scale, it is useful to understand what is meant by the term "motorsport." Over the years, this term has taken on a broader meaning, due to its evolution into a complex and diversified discipline which includes multiple categories of competitions. Given the absence of an official definition of motorsport, reference is often made to the one proposed by Angus, Aylett, Henry, and Jenkis who describe it as "*…competitive racing by equivalent machines on a frequent basis, on designated tracks and circuits. These machines include… motorcycles, moto-cross, karts, historic cars, drag, open-wheel, single-seat, sports, GT, Formula Ford, touring cars, rallying, sports compact, CART, IRL, and Formula One*." (Angus et al. 2007 cited in Dingle 2009). This definition reflects the diverse

nature of motorsport, which goes far beyond traditional car and motorcycle racing, encompassing a wide range of vehicles and disciplines. Additionally, as explained by the authors themselves, the term "motorsport" is composed of two elements: "motor," which refers to the construction and preparation of vehicles such as cars and motorcycles, and "sport," which refers to the entire infrastructure necessary for the organization and preparation of events (Dingle 2009).

As previously mentioned, motorsport is a sport characterized by the presence of various categories, or rather series, which involve both 4-wheel and 2-wheel vehicles. In reference to car racing, there are numerous forms of competitions. Starting with the most globally followed and prestigious, F1, followed by IndyCar which represents the highest class of American open-wheel car racing, and Stock Car racing, with NASCAR being the most prominent in the U.S. in this category. Still focusing on 4-wheel competitions, there are Rally, Drag Racing, Karts, Dune Buggies, Trucks, and many others. On the other hand, in terms of 2-wheel competitions, there are also several categories, with MotoGP being the most followed among SBK races, followed by Motocross, Quad bikes, and Snocross (Motorsport 2024). More specifically, each category can be further divided based on other elements such as the track that could be circuit racing or off-road, vehicle type, engine capacity, and manufacturer (Dingle 2009).

2.1.1 Motorsport: Market Overview

The evolution of motorsport has made it one of the most popular sports in the world, with millions of spectators following competitions across various categories. In 2023, the global motorsport market was valued between 5.5 and 7.2 billion dollars, with a compound annual growth rate (CAGR) of 7.2% predicted for the period 2024-2030, which is expected to bring the overall market value to around 25 billion dollars by 2030 (Market Research & Industry ARC 2024).

The global audience for motorsport has seen and continues to see significant growth, thanks to the increasing spread of television broadcasts, streaming platforms, and social media, allowing fans to follow races in real-time wherever they are, thereby expanding visibility and revenue worldwide. Among the categories contributing the most to this growth are car racing, such as F1 and NASCAR, as well as motorcycle races like MotoGP, which regularly attract millions of viewers each season. According to available data, it is estimated that in 2023 F1 attracted about 4.8 million viewers (Statista 2023), while MotoGP drew around 3 million (Dorna Sports 2023). As for social media presence, current data confirms that F1 reaches a digital audience of around 75 million followers (F1 social media 2024), while MotoGP has a slightly smaller audience, around 50 million followers (MotoGP social media 2024). These numbers demonstrate how the growing popularity of competitions such as F1 and MotoGP is one of the primary drivers of the racing industry's growth and development.

Another key factor is the increasing investment from sponsors and advertisers, who are increasingly drawn to the broad visibility and alignment of their brands with key concepts such as innovation, speed, and precision. Furthermore, since the beginning of motor racing competitions, technological advancements such as improvements in engine efficiency and aerodynamics have played an important role in the market's growth.

2.2 MotoGP and its Evolution

As we have mentioned, motorsport consists of various series, including both car and motorcycle races. In this study, we focus on motorcycle competitions, specifically MotoGP.

MotoGP, the world's premier motorcycle road racing competition, has played a crucial role in the evolution of motorsport. Its roots date back to 1949, when the FIM was founded and organized the first prestigious motorcycle racing competition under the name of the World Road Racing Championship (FIM 2024) which included categories for 125cc, 250cc, 350cc, and

500cc bikes. However, the official birth of MotoGP took place in 2002, following a rebranding process during which new technical regulations were introduced allowing four-stroke engines, while still permitting teams to choose a 500cc two-stroke engine, and increasing the engine displacement for the premier class to 990cc (Roberts 2019).

While the FIM is responsible for regulating sporting and technical rules, ensuring the safety and integrity of the competitions, Dorna Sports plays a fundamental role in the organization of MotoGP. A global leader in motorsport event management, Dorna Sports was founded in Spain in 1988 and became the organizer of MotoGP in 1991, holding the commercial and television rights ever since. The company is also distinguished for its technological development of audiovisual content (Dorna Sports 2024).

MotoGP represents the premier class of the World Motorcycle Championship, the most important motorcycle racing championship globally. Based on engine displacement and type, the world championship is split into four classes, each of which represents a step in the ladder of motorcycle competition (FIM 2022):

- **Moto3:** The entry-level class that replaced the former 125cc class, featuring motorcycles with 250cc four-stroke engines, producing 60 horsepower and reaching top speeds of up to 250 km/h.
- **Moto2:** The intermediate class, featuring motorcycles with 765cc four-stroke engines, producing 140 horsepower and reaching top speeds of 300 km/h.
- **MotoGP:** The premier class, featuring motorcycles with 1000cc four-stroke engines (since 2012) and producing 250 horsepower, reaching top speeds of 360 km/h. Because of these features, MotoGP is among the world's most technologically sophisticated and spectacular races.

- **MotoE:** The new electric class introduced in 2019, initially with bikes supplied by Energica, producing a maximum of 120 kW (160 horsepower) and reaching top speeds of 270 km/h. Starting from 2023, the electric bikes are supplied by Ducati, with a maximum output of 110 kW (150 horsepower) and a top speed of 275 km/h (Ducati 2023).

The combination of speed, technology, and human skill makes MotoGP a fascinating spectacle and a continuously evolving laboratory for the motorcycle industry.

Motorcycles Characteristics

The motorcycles used in the World Motorcycle Championship, in all classes, are exclusive prototypes designed specifically for racing and are not available for commercial sale. This distinguishes it from other motorcycle competitions like SBK, which is the world championship for mass-produced motorcycles that, on the contrary, can be purchased on the market.

Considering the exclusive prototypes used in MotoGP, they must comply with strict regulations established by the FIM (FIM 2024):

- **Engine:** Maximum displacement of 1000cc with a maximum power of 250 horsepower; only four-stroke engines with 4 cylinders. Each rider has 7 engines available for the season.
- **Weight:** Minimum allowed weight is around 157 kg.
- **Cylinder:** Maximum bore size of the cylinder is 81mm.
- **Fuel:** Maximum fuel tank capacity is 22 liters.
- **Aerodynamics:** The maximum width allowed for the upper part of the front fairing ("AeroBody") is 600 mm, while the maximum height of the upper part is 1250 mm.
- **Tires:** Until 2026, Michelin will remain the sole tire supplier for MotoGP, with a limited number of tires available for each rider per season.

Race Format

After describing the general characteristics of the MotoGP World Championship, it is important to outline the organization of a MotoGP Grand Prix.

MotoGP is organized according to a calendar consisting of a varying number of races each season. 2023 season, for example, consisted of 21 races, while last season feature 22 races. The Grand Prix takes place over the course of three days, which is why it is referred to as a "race weekend":

- **Friday:** Two free practice sessions (FP1 and FP2), with the first lasting 45 minutes and the second lasting one hour. All free practice sessions are used to determine access to Q2 for the top 10 riders.
- **Saturday:** The day starts with a morning free practice session and the double qualifying sessions (Q1 and Q2), each lasting 15 minutes, which determine the starting order for both the Sprint Race and the Grand Prix. In Q1, the riders with the slowest times from the free practice sessions participate, and the top two advance to Q2. In Q2, the top 12 positions on the starting grid for the Grand Prix are decided.

The Sprint Race, introduced in 2023, is a new race concept that is about 50% shorter than the Grand Prix. It contributes points to the world championship standings but does not affect the starting grid for the Grand Prix (Falcioni 2023).

- **Sunday:** It’s the race day. The day begins with a warm-up session of about 20 minutes, followed by the official race.

The MotoGP Grand Prix is held on circuits in 18 countries around the world, with track lengths varying from circuit to circuit, which influences the number of laps per race. Typically, the total race length ranges from 100 to 130 km, with a duration of 40-45 minutes.

Scoring System

Once the organization of the competition has been analyzed, it is important to understand how the performance of the drivers is evaluated. There is a scoring system according to which at each competition, points are awarded in descending order based on crossing the finish line to the top 15 drivers. Points that added with those obtained during the Sprint Race, go to define the score in the standings. At the end of the season, whoever scores the most points will be named world champion.

Drivers and Teams

To conclude, keeping the focus on the premier class, there are numerous teams participating in competitions each consisting of two drivers, with a total of 11 teams and 22 drivers. The teams differ between factory and satellite teams, and this difference is based on management, financing, and access to technology (Pinch & Reimer 2016; Allison 2024).

- **Factory Teams:** These teams represent the motorcycle manufacturers directly, as they are managed and funded by them. The riders have access to the latest motorcycles with the most advanced technologies and benefit from the best engineers and mechanics, receiving full support from the manufacturers. Currently, the main manufacturers are Honda, Ducati, Yamaha, Aprilia, and KTM.
- **Satellite Teams (or Independent Team):** These teams rely on agreements with the same manufacturers for the supply of motorcycles, either through purchase or leasing. Unlike factory teams, satellite teams do not have the most recent and advanced technologies but often have the previous year's models. However, this depends on the agreements; some satellite teams can obtain motorcycles that are very similar, if not identical, to those of the official teams. Among these are LCR Honda, Prima Pramac Racing, VR46, etc.

Today, MotoGP is considered the benchmark for technological innovation in the world of two wheels, with teams and manufacturers investing enormous resources in the research and development of advanced technologies.

2.3 MotoGP: A Key Player in Sports and Motor Industries

MotoGP plays a significant role not only in the sports sector but also in the broader motor industry. In a rapidly expanding global landscape, characterized by innovative technologies, new racing formats such as EV competitions, and increasing fan engagement, MotoGP stands out as one of the most influential motorsports.

MotoGP in the Sports Sector

In the realm of sports, MotoGP stands out for its ability to deliver thrilling, high-octane competitions while setting benchmarks in organizing large-scale international sporting events. It acts as a catalyst for uniting millions of fans worldwide, keeping the audience engaged season after season through its format of dynamic mix of team strategies, rider rivalries, and evolving race rules.

MotoGP is more than just entertainment; it is a multifaceted platform where athleticism meets engineering excellence. Its global reach, extensive media coverage, and devoted fanbase underscore its prominence in the sports industry. This influence is reflected in several dimensions of the sports world, including:

- **Economic Impact:** MotoGP significantly contributes to the economics of motorsports. According to an EY-Parthenon report commissioned by the FIA, the motorsport industry, including MotoGP, generates an annual gross output of €160 billion and creates 1.5 million jobs (FIA 2021). This numbers highlights the multiplier effect of these events on local and national economies. For example, the 2023 Portuguese Grand Prix in Portimão generated a direct economic impact exceeding €45 million, while the

2024 race is estimated to have impacted the Algarve region by €75-€87 million (Stilwell 2024). These events boost local economies, tourism, and create jobs, such as the 4,600 positions created during the 2022 Mandalika Grand Prix (Pertamina 2023).

- **Cultural Influence:** MotoGP elevates the profile of its riders, integrating them into the global sports iconography alongside athletes from disciplines such as basketball and football. Riders like Valentino Rossi, Francesco Bagnaia, Fabio Quartararo, and Marc Marquez have become household names, transcending the sport itself. Their marketability and widespread recognition bolster MotoGP's appeal, attracting new audiences and driving fan engagement.

In essence, MotoGP is a cornerstone of the sports industry, driving economic growth, fostering cultural connections, and advancing the presentation of sports on a global stage.

MotoGP in the Motor Industry

Beyond its role in sports, MotoGP plays a transformative role in the motor industry by serving as a testing ground for advanced engineering and technological innovation. Manufacturers such as Honda, Yamaha, Ducati, KTM, and Aprilia use the championship to develop and refine components that often find their way into mass-market vehicles. Innovations in areas such as engine efficiency, aerodynamics, braking systems, and tire technology are pioneered on MotoGP tracks before being adapted for road use (Moto Chronicle 2024).

The competitive nature of MotoGP accelerates the pace of technological advancements, with manufacturers constantly seeking marginal gains to outperform rivals. These innovations not only benefit racing performance but also translates to significant improvements in the safety, efficiency, and sustainability of consumer motorcycles. Key technological advancements born from MotoGP include:

- **Traction Control Systems:** Initially developed to improve power management and cornering stability in high-performance racing, traction control has become a standard feature in consumer motorcycles, enhancing safety and rideability (Datzinger 2024).
- **Engine Mapping and Electronic Torque Management**: These systems, which optimize engine response and adaptability under different conditions, have been refined in MotoGP and subsequently applied to production motorcycles to improve drivability and fuel efficiency (Datzinger 2024).

These advancements make street motorcycles more accessible, safer, and easier to handle, highlighting MotoGP's critical role in shaping the motor industry's evolution.

Moreover, MotoGP's impact extends beyond manufacturers, including Tier 1 component suppliers such as Brembo (brakes), Öhlins (suspensions), and Michelin (tires). For instance, Brembo's advanced braking systems, tailored for MotoGP's extreme demands, have directly influenced the creation of high-performance brakes for consumer vehicles, both motorcycles and cars (Brembo 2023).

In this regards, MotoGP's innovations into consumer markets are not limited to motorcycles. The championship's pioneering work in areas such as electronic stability systems, lightweight construction, and energy recovery technologies has also inspired advancements in the broader automotive industry, contributing to safer, more efficient, and environmentally friendly vehicles.

In essence, MotoGP is more than a sport competition; it is a dynamic innovation lab that bridges the sports and motor industries. By fostering a culture of constant technological advancement, MotoGP drives progress that benefits not only the sport but also the wider world of mobility. Its dual role as a premier sporting event and a crucible of engineering innovation underscores its unique and vital position in shaping the future of both industries.

2.4 Overview of Sustainability Frameworks

When we talk about technological innovation, it's important to clarify that it is not limited solely to motorcycle performance but also extends to a growing commitment to sustainability. In recent years, sustainability has increasingly taken on a priority role across various sectors, focusing on how business practices, through the unsustainable use of resources, generate environmental, social, cultural, and economic issues. The motorsports market is undergoing a transformation, balancing traditional racing formats with new trends in sustainability and digital engagement (Market Data Forecast 2024).

In this regard, it is opportune to define the concept of sustainability. As stated by the Brundtland Report, also known by the title *"Our common future"* from 1987, is understood to be "*meeting the needs of the present without compromising the ability of future generations to meet their own needs*." (World Commission on Environment and Development 1987). This definition, however, limits the concept of sustainability only to the environmental dimension, whereas it is necessary to consider the economic and social dimensions as well. According to this approach, sustainability implies "*welfare (environmental, social and economic), steady and preferably increasing, and the prospect of leaving future generations with a quality of life not inferior to the present one.*" (Treccani 2024). In support of this, the UN adopted the Agenda 2030 for Sustainable Development, setting 17 SDGs with 169 targets to eliminate poverty, reduce inequality, combat climate change and promote sustainable development by 2030. The SDGs provide a roadmap for achieving sustainability in measurable and actionable way, ensuring that organizations and industries contribute meaningfully to these global objectives.

To address the practical challenges of integrating sustainability into organizational practices, the two most relevant framework that have been developed are: Circular Economy and Triple Bottom Line. Each framework offers unique perspectives and tools for embedding

sustainability principles into the decision-making process, enabling industries to tackle key challenges and create long-term value.

2.4.1 Circular Economy

As sustainability shifts from a secondary consideration to a central objective across numerous sectors, including motorsport, traditional economic models face increasing scrutiny. The traditional economy, commonly referred to as the Linear Economy (LE), follows a "take, make, waste" approach. In this model, natural resources are extracted, used to create products, and eventually disposed of as waste at the end of the product's lifecycle. This system is built on large quantities of easily accessible and inexpensive materials and energy, prioritizing short-term production efficiency, frequently at the expense of long-term sustainability (D'Amato & Korhonen 2021). Although this approach was dominant during the Industrial Revolution and much of the 20th century, it has significant limitations, particularly in terms of environmental, economic, and social sustainability, as it disregards the inherent limitations of natural resources and the long-term impact of human activities on the environment. Challenges associated with this model include resource depletion, the generation of substantial waste, and negative impacts on global climate, which highlight the urgent need for a more sustainable economic framework.

The Circular Economy (CE) embodies an alternative economic model that seeks to optimize the use of natural resources while addressing the limitations of the traditional LE, which relies on the sequential processes of acquisition, utilization, and disposal of resources (Kirchherr, Reike, & Hekkert 2017). CE is a transformative framework designed to foster sustainable development by "closing the loop" of product lifecycles. This is achieved through strategies such as reuse, repair, recycling, and regeneration, which aim to minimize resource consumption and waste generation (Kara et al. 2022). By extending the lifecycle of materials and resources,

CE reduces environmental harm while fostering economic efficiency, resilience, and value creation (Geissdoerfer et al. 2017).

A pivotal feature of CE lies in its potential to decouple economic growth from the escalating consumption of resources. This is achieved through the application of strategies that prioritize product durability, reuse, repair, refurbishment, and recycling. By doing so, CE lengthens the lifespan of goods, diminishing the demand for raw material extraction and thereby significantly contributing to environmental sustainability. At its core, CE advocates for the design of products with greater longevity and ease of maintenance, which can be effortlessly disassembled, with their components readily recycled or repurposed (Baker et Brown 2024).

CE is guided by three main principles (Ellen MacArthur Foundation 2024):

1. Designing out waste and pollution: Products and processes are optimized to minimize environmental impact.
2. Keeping products and materials in use: Emphasizing repair, reuse, remanufacturing, and recycling.
3. Regenerating natural systems: Ensuring that resource extraction supports ecosystem renewal.

This approach mitigates the ecological footprint of manufacturing processes while curbing waste generation at its source. Furthermore, it stimulates innovation in both design and material selection, driving businesses to develop technologically advanced solutions that are in harmony with sustainability principles.

Within the framework of the CE, consumption patterns are reimagined: transitioning from personal ownership and exclusive use of goods to models of shared consumption, such as renting, leasing, and service-based transactions rather than the purchase of physical products.

These shifts not only lead to a reduction in waste but also foster more mindful and responsible consumption practices.

The transition towards CE necessitates systemic collaboration among a broad array of actors, including industries, governments, and consumers. Public policies play a pivotal role in facilitating this shift by introducing regulations that incentivize circularity and imposing stricter standards for waste management and recycling efforts.

Lastly, the benefits of CE extend beyond environmental gains, influencing both social and economic spheres. Circular practices hold the potential to create new employment opportunities and invigorate the economy, all while delivering substantial benefits in terms of greenhouse gas reduction and the conservation of natural resources (Sharma et al. 2021). By promoting a more equitable use of resources, CE can also contribute to a fairer distribution of wealth and the mitigation of social inequalities.

Overall, CE is not merely about incremental efficiency improvements but represents a radical transformation of production and consumption systems. This holistic vision, which integrates economic, environmental, and social considerations, provides a vital pathway towards a more sustainable and resilient future. In this context, the relevance of the CE becomes particularly evident in resource-intensive industries such as motorsport, where innovative applications are not only addressing environmental challenges but also redefining sustainability practices across the sector.

2.4.1.1 The Doughnut Economy (DE) Framework

While the CE framework lays a strong foundation for reimagining resource use and production systems to promote sustainability, the Doughnut Economy Framework extends this vision by integrating a balanced focus on social equity and environmental limits. By addressing the

limitations of traditional growth-focused economic models, the DE provides a more holistic lens through which to view sustainability challenges.

The DE model (Figure 1), conceptualized by Kate Raworth, represents a significant evolution in economic thought. It proposes a system that intertwines environmental sustainability with social equity, unifying both within a singular economic framework (Peeters 2022).

This framework visualizes a "doughnut" where the inner ring represents the minimum standards for a good life based on the UNs' SDGs (e.g., access to water, energy, and education), and the outer ring denotes the ecological ceiling (e.g., climate change, biodiversity loss), which must not be surpassed to maintain Earth's ecosystem stability.
The area between these boundaries, the "doughnut," signifies the safe and equitable space in which humanity can thrive.

Despite its growing impact, applying the model in the corporate realm remains challenging. The Doughnut Economics Action Lab strives to guide organizations in implementing strategies that avoid "greenwashing" and genuinely promote regenerative and distributive practices. However, hurdles persist, particularly in fully integrating social and environmental considerations into businesses' core operations. This demands continuous innovation and adaptation of corporate strategies.

Ultimately, the Doughnut Economy model not only provides a theoretical alternative to conventional economic approaches but also sparks practical changes toward sustainable and equitable economic systems (Eriksson 2022). This approach calls for a radical rethinking of corporate design and operations, inspiring organizations to explore new paths toward a more balanced and sustainable economic future.

The Doughnut model highlights two critical challenges:

1. The social challenge: ensuring that everyone has access to basic services such as food, water, education, and healthcare, in line with the UN's SDGs.
2. The ecological challenge: operating within the planet's ecological boundaries, addressing issues like climate change, biodiversity loss, and pollution to safeguard Earth for future generations.

The practical implementation of the DE model has been explored at the level of cities, regions, and nations, where various local governments and organizations are attempting to apply these principles to reshape their economic and environmental policies. This involves rethinking how economic activities can contribute positively to society without depleting natural resources.

The goal is to create a balance between human needs and the limits of our planet, fostering an economy that is truly sustainable and fair. This requires substantial innovation and a shift in business paradigms, moving the emphasis away from pure economic profit towards a more holistic vision that includes social and environmental benefits.

Applying the DE to motorsport involves analyzing the environmental footprint of the industry (e.g., carbon emissions, material usage) while ensuring its economic and social contributions (e.g., job creation, technological innovation). MotoGP's alignment with the DE framework can demonstrate how an elite sport can operate sustainably without compromising its core values of competition and entertainment.

2.4.2 Triple Bottom Line

To ensure that every organization can contribute to achieving the SDGs, it is necessary to identify the major sustainability-related issues. One widely recognized framework for addressing these challenges is the Triple Bottom Line Framework (TBL), introduced by John Elkington in 1994. The TBL broadens the traditional view of organizational success, which

historically prioritized financial performance, by integrating two additional dimensions: social and environmental responsibility. This approach encourages organizations to evaluate their impact on People, Planet, and Profit, a concept commonly known as the 3Ps (Miller 2020).

- **People**: The social dimension emphasizes fostering equity, justice, and well-being for all stakeholders, including employees, customers, and the broader community. This involves promoting fair labor practices, reducing inequalities, and ensuring that operations contribute positively to societal welfare (Zak 2015).
- **Planet**: The environmental dimension focuses on minimizing environmental harm by reducing resource consumption, waste, and emissions. Organizations are encouraged to adopt sustainable practices, such as energy efficiency, responsible sourcing, and waste reduction, that respect ecological limits and contribute to environmental regeneration.
- **Profit**: Is redefined to include long-term economic value creation that aligns with social and environmental goals. Organizations are encouraged to pursue strategies that ensure financial sustainability without compromising their commitment to the other two pillars.

The TBL framework serves as a guiding principle for organizations seeking to align their operations with sustainable development goals by balancing the three pillars (3Ps). By shifting focus from short-term financial gains to long-term value creation, it promotes integrated decision-making and performance evaluation that benefits society, the environment, and the organization itself.

Over the years, the TBL has gained significant traction as a tool for organizations to evaluate their sustainability efforts across various sectors, identifying areas for improvement, and fostering resilience. In motorsport, its application is particularly impactful, identifying critical

areas for improvement, such as reducing the environmental impact of events, enhancing safety and inclusivity, and ensuring economic benefits for stakeholders.

For motorsport organizations like MotoGP, the TBL framework transforms sustainability from a cost to a strategic opportunity. By embedding it into their strategies they can innovate, build stronger relationships with stakeholders, and enhance brand reputation, elevate their brand reputation, solidifying their role as leaders in sustainable development while maintaining a competitive edge.

2.5 Application of Sustainability Frameworks in Motorsport and MotoGP

The integration of sustainability frameworks such as the CE and TBL into motorsport and MotoGP demonstrates how these concepts can address the sector's unique challenges. By aligning environmental, social, and economic priorities, these frameworks provide actionable strategies to promote innovation, reduce environmental impact, and enhance stakeholder value within the dynamic context of high-performance racing.

2.5.1 Circular Economy Framework in Motorsport: The Focus on MotoGP

Motorsport represents a domain where implementing the CE can have significant impacts. As an industry that traditionally operates on a linear model with high resource intensity and waste levels, motorsport is now challenged to reinvent its processes to become more sustainable. This transformation is driven by the pressing need to minimize reliance on virgin resources and extend product lifespans through intelligent design, facilitating easier disassembly and recyclability of components.

Exploring the various strategies and opportunities within the motorsport sector, particularly MotoGP, several initiatives are emerging that are shaping a more sustainable future without sacrificing the high-performance requirements:

1. **Sustainable Design and Manufacturing**: In motorsport, vehicle design and manufacturing hold significant potential for CE implementation. The adoption of durable, lightweight, and recyclable materials aligns with CE objectives, reducing waste while maintaining performance standards. MotoGP manufacturers have begun incorporating modular designs that enable the replacement of specific components rather than entire assemblies, significantly extending the life cycle of key parts.

   Advanced manufacturing techniques, such as additive manufacturing (3D printing), are also being explored. These methods minimize material waste by precisely depositing material only where needed, a practice gaining traction in creating lightweight components for motorcycles and support vehicles.
2. **Waste Management and Resource Recovery**: MotoGP generates substantial waste streams, including tires, lubricants, and composites. Addressing these through CE strategies is crucial. In this regard, MotoGP teams and manufacturers are adopting resource-efficient practices that address both operational and supply chain challenges. For example, critical materials such as aluminum and carbon fiber used in bike manufacturing are recovered and reprocessed. This reduces waste and lowers the environmental cost of raw material extraction.
3. **Transition to Sustainable Fuels:** Advancement in the implementation of non-fossil fuel represents one of the most impactful steps toward a CE model in motorsport. These biofuels and synthetic alternatives aim to achieve high performance while significantly reducing carbon emissions. This transition showcases how technological innovation can align with CE principles to achieve environmental benefits without compromising competitiveness.
4. **Optimized Logistics:** Logistics represent a significant portion of the environmental impact in motorsport, involving the transportation of equipment, teams, and

infrastructure across continents. MotoGP's logistics strategy incorporates CE principles by:

- Route Optimization: Reducing travel distances and fuel consumption by planning efficient transport routes.
- Efficient Freight Management: Using lightweight and reusable packing materials for transporting bikes and equipment.
- Local Sourcing: Encouraging teams to source materials and services locally whenever possible to reduce the carbon footprint associated with transportation.

Addressing the challenges posed by the integration of the CE into motorsport, particularly in MotoGP, reveals a series of significant obstacles that must be overcome to realize an effective transition to more sustainable practices:

1. **Performance Retention**: The incorporation of sustainable materials and circular practices without compromising the essential performance required in high-level competitions is crucial. This balance is necessary to ensure that environmental innovations do not negatively affect vehicle competitiveness and efficacy on the track.
2. **Costs and Logistics**: The adoption of new technologies and materials can be costly, and managing the logistics of recycling and remanufacturing can present considerable complexity in a dynamic racing environment. Coordinating these processes demands careful planning and dedicated resources.
3. **Regulations and Standards:** Navigating a regulatory framework that is constantly evolving represents a considerable challenge. Rules and standards can vary widely depending on regions and categories of motorsport, making a deep and up-to-date understanding of regulations essential for remaining compliant and competitive.

These challenges highlight the need for a holistic and well-coordinated approach to integrate the circular economy in an environment as demanding as motorsport.

This means that, whether in the motorsport, the circular economy not only offers a path toward greater sustainability but also stimulates technological innovation and opens new market possibilities. However, realizing these changes fully requires tackling significant technical, financial, and cultural challenges. Collaboration, investment in new technologies, and a shift in consumption models are crucial to overcoming these obstacles and fully exploiting the opportunities presented by the circular economy.

2.5.2 Triple Bottom Line Framework: Application in Motorsport

In the context of motorsport, the 3Ps of the TBL help to identify the main challenges the sector must address.

Considering the first pillar, **People** (Bloxsidge 2020):

- **Congestion**: Motorsport events can cause significant traffic problems in the cities hosting the Grand Prix, which are often unable to manage the influx of spectators.
- **Human Rights**: Some events are held in countries with serious human rights issues, as demonstrated by the controversies surrounding F1.
- **Labour Standards**: There is growing attention to labour standards, both for employees and the communities involved.
- **Driver Behaviour**: Motorsport can promote an image of speed and risk, indirectly encouraging dangerous driving behavior (Armstrong & Steinhardt 2004).

Considering the second pillar, **Planet (**Dingle 2008, Kravchenko & Nosov 2011, Powis 2016, Bloxsidge 2020):

- **Energy consumption**: Motorsport requires enormous amounts of energy, mainly derived from fossil fuels.

- **Water consumption**: Water is used extensively to control dust on dirt tracks and maintain green areas.
- **Waste management**: Events and teams generate large amounts of waste, such as used tires, oils, and broken parts.
- **Soil and water pollution**: Oil spills and vehicle washing can contaminate soil and water systems.
- **Noise impact**: Events are extremely noisy, both from the engines and audio systems.
- **Carbon emissions**: Despite the lack of comprehensive studies, it is estimated that F1 generated 256,551 tons of CO_2 in 2019, with 45% due to logistics and transport, 27.7% from business travel, 7.3% from event operations, 19.3% from facilities and factories, and only 0.7% from fuel usage (F1 Sustainability Strategy 2021).

Finally, considering the last pillar, **Profit** (Prosperity):

- **Event costs**: The high cost of hosting motorsport events can burden local economies, as these costs are often covered by local governments, raising concerns within the community (Sylt 2017).
- **Corruption**: The competition to host major events has led to controversial location choices, especially in countries that struggle to bear the high costs (Reid 2017).

Ensuring a balance between these three pillars is essential for the sustainable development of motorsport. Both the FIA and the FIM have adapted to emerging challenges by regulating their respective competitions, such as F1 and MotoGP, through the introduction of environmental regulations. For example, the FIM, in the 2024 edition of its environmental code, outlines its primary goal as promoting a culture of sustainability within global motorcycling by implementing sustainability programs aimed at maximizing positive impact (FIM 2024).

This commitment is reflected in the numerous recent developments aimed at reducing the environmental impact of motorsport. In recent years, the sector has embarked on a path of sustainable transformation, which is evident through various technological and organizational initiatives.

2.5.2.1 MotoGP's transition towards more sustainable practices

The transition of MotoGP toward sustainability reflects a comprehensive commitment to integrating environmental, social, and governance (ESG) principles into its operations. ESG frameworks are structured guidelines that enable companies and investors to develop sustainability reporting standards and evaluate risks across the three dimensions (Sollitto 2024).

While the TBL framework provides a theoretical basis for assessing social, environmental, and economic impacts, ESG criteria transform these concepts into measurable benchmarks that enable organizations, like Dorna Sports, to evaluate and communicate their sustainability performance to stakeholders.

These complementary frameworks encourage sustainable business practices, addressing the rising demand from consumers and investors for greater responsibility. Adopting ESG and TBL can enhance competitiveness and resilience, enabling organizations to navigate environmental challenges and regulatory complexities effectively (Ribeiro 2023).

Dorna's goal is to be "*the driving force behind motorcycling's sustainable transformation*" (Dorna Sports 2023). This vision extends beyond mere regulatory compliance, embracing a proactive and multifaceted sustainability strategy. Central to this effort are initiatives such as the "*Sustainable Strategic Plan"* and the "*Racing Together*" campaign, which serve as blueprints for achieving environmental, social, and governance goals. To illustrate the adaptation of motorsport organizations to sustainable practices, the following sections analyze

the key ESG measures implemented by MotoGP and Dorna Sports, supported by projects like "*RacingForTheFuture"* (Dorna 2023).

Environmental initiatives

MotoGP's environmental efforts focus on minimizing its ecological footprint while fostering innovation in sustainable mobility. Key initiatives include:

- **Adoption of Sustainable Fuels:** Aligning with global decarbonization goals, MotoGP has committed to using at least 40% non-fossil fuel sources in all racing categories by 2024, with a target of reaching 100% by 2027. This aligns with broader industry trends, as seen in F1's adoption of E10 biofuel and its pledge to achieve zero emissions by 2026. MotoGP's efforts aim to balance high-performance racing with environmental responsibility.
- **Introduction of Fully Electric Racing:** The launch of the FIM Enel MotoE World Championship in 2019, which achieved World Championship status in 2023, underscores MotoGP's dedication to electrification. MotoE showcases cutting-edge electric motorcycle technology and demonstrates the potential for zero-emission racing within a global competitive framework.
- **Carbon Footprint Reduction**: A detailed approach to measuring and reducing CO2 emissions is integral to MotoGP's strategy. This includes optimizing logistics, utilizing sustainable materials in bike construction, and implementing recycling and waste management protocols during events. These efforts resonate with the broader automotive industry's shift toward sustainability across the entire product lifecycle.
- **Sustainable Mobility and Logistics**: MotoGP has introduced fuel-efficient cargo aircraft, such as the Boeing 777-F, and employs electric scooters for event logistics. These measures contribute to reducing transportation emissions.

- **ISO 20121 Certification**: By attaining certification for sustainable event management, MotoGP highlights its commitment to improving the environmental, social, and economic impacts of its operations.
- **Race Circuit Sustainability**: Collaborating with circuit promoters, MotoGP promotes renewable energy usage, such as solar power, alongside sustainable waste management and reduced plastic consumption. Moreover, MotoGP actively participate in the FIM's "*Keep It Shiny and Sustainable" (KISS)* Program, where they exemplify these efforts (MotoGP 2022).

Through these initiatives, MotoGP sets a benchmark for environmental stewardship within motorsport, demonstrating that high-performance racing and sustainability can coexist.

Social Practices

MotoGP's social initiatives aim to engage communities, promote inclusivity, and foster talent development:

- **Community Engagement**: The "*Making a Difference Challenge*," in partnership with AWorld, encourages fans to adopt sustainable behaviors. This initiative has led to nearly 600,000 recorded actions, significantly reducing CO2 emissions, water consumption, and energy use.
- **Diversity and Inclusion**: Collaboration with the Aura Foundation advances opportunities for individuals with disabilities, while the launch of the FIM Women's Circuit Racing World Championship (WorldWCR) in 2023 underscores MotoGP's commitment to gender diversity in motorsport.
- **Talent Development and Social Inclusion**: The "*Road to MotoGP*" program nurtures young talent from diverse backgrounds, providing pathways to professional racing. These initiatives reflect a broader commitment to social equity and inclusion.

Governance Measures

MotoGP has implemented robust governance practices to ensure transparency, ethics, and accountability:

- **Ethical Governance**: Updated policies address anti-corruption, anti-money laundering, and human rights issues, alongside strengthened cybersecurity and risk management systems.
- **Sustainability Strategic Plan (2021–2024)**: This comprehensive roadmap integrates sustainability into MotoGP's operations, prioritizing environmental impact reduction, gender equality, and responsible production and consumption.

These efforts will likely shape the future of the sport and the motor industry, making MotoGP a key player in the transition to more sustainable mobility, encouraging more eco-friendly behavior, promoting road safety education, workplace health, equality, and best supply chain practices.

In conclusion, MotoGP exemplifies how motorsport can balance thrilling entertainment with a responsible approach to environmental, social, and economic sustainability. This transformation is a vital step in aligning the sport with the global sustainability agenda while inspiring broader industry changes.

2.6 Sport Management and Sustainable Marketing

Building on the foundational frameworks explored in the previous sections, such as the CE, DE, and TBL, we observe how sustainability in MotoGP extends beyond operational efficiencies to deeply influence consumer engagement and brand positioning. These frameworks offer a systemic perspective, positioning sustainability as an integrated approach rather than a standalone goal. Within this context, sustainable marketing becomes a crucial tool

for driving motorsport's ecological transition and strengthening connections with fans and stakeholders.

In an innovation-driven environment like MotoGP, sustainable marketing aligns environmental, social, and economic considerations with technological advancements and strategic partnerships. This approach not only enhances brand positioning but also reinforces resilience and leadership in a globally sustainability-oriented landscape.

2.6.1 Definition of Sustainable Marketing

Sustainable marketing involves creating, communicating, and delivering value in a manner that preserves or enhances natural and human capital (Belz & Peattie 2012). It implies giving back to the planet at least a portion of the resources that have been taken by the company over time, requiring them to become deeply aware of the consequences of their actions.

Sustainable marketing ensures that economic pursuits are balanced with accountability for environmental and social impacts. This goes beyond simply appealing to consumer demands, it embodies a holistic commitment to responsible practices and innovative restitution.

From this realization, sustainable marketing is built on two foundational principles:

- **Responsibility:** sustainable marketing requires companies to redefine success beyond profit maximization, incorporating long-term accountability for societal and ecological outcomes (Kotler 2011). Companies are accountable for the broader implications of their actions, ensuring that social, environmental, and economic considerations are integral to their operations.
- **Restitution:** sustainable marketing calls for companies to move beyond merely reducing their negative impacts. It emphasizes adopting restorative practices, aiming to 'give back more than they take' from the environment and society (Belz & Peattie 2012).

This principle extends accountability to actively repairing the damage caused, striving to restore or enhance the resources consumed.

Sustainable marketing offers several strategic benefits:

- **Reputation and brand equity**: Sustainable marketing positions brands as ethical and transparent, offering a key differentiator in competitive markets (Ottman 2011).
- **Customer retention and attraction**: By addressing environmental and social concerns, sustainable marketing fosters customer loyalty and appeals new consumers, particularly younger generations who are increasingly concerned about the environmental and social impact of the products and services they purchase (Ginsberg & Bloom 2004).
- **Risk mitigation and regulatory compliance**: Proactively adopting sustainable practices helps companies navigate regulatory changes and avoid potential fines or costly adjustments (Lyon & Montgomery 2015).

A critical element in this process is credibility. According to Ginsberg & Bloom (2004), *"credibility is a cornerstone of sustainable marketing because consumers are quick to dismiss green claims that lack evidence. Companies must back their environmental claims with concrete actions and measurable results to maintain consumer trust."* Thus, credibility ensures that companies' sustainability claims are backed by measurable actions, reducing risks of greenwashing and fostering consumer trust. Without this, sustainable marketing initiatives risk undermining a company's reputation and consumer confidence.

Delmas & Burbano in "*The Drivers of Greenwashing"* (2011) explain that when companies fail to substantiate their green claims with real, measurable actions, they expose themselves to major reputational risks, especially given that consumers are increasingly informed and able to detect inconsistencies between corporate claims and practices.

2.6.2 Sustainable Marketing and Consumer Engagement

It is undeniably evident that brands which place significant emphasis on sustainability, both from an ESG standpoint and in terms of transparent communication regarding their environmental impact, are the ones that secure stronger customer loyalty.

As highlighted in a McKinsey-NielsenIQ study (2023), products with ESG-related claims consistently outperform their counterparts in market growth and retention. For instance, products featuring ESG-related claims saw a value growth of 28%, compared to a 20% increase for products without such claims. Furthermore, brands generating over 50% of their revenue from ESG-focused products reported a consumer retention rate of 34%. This highlights a strong link between sustainability, customer loyalty, and, ultimately, the overall growth potential of a brand.

Active participation further amplifies this connection. By involving consumers in initiatives like workshops, storytelling, carbon footprint tracking, and volunteering events, brands transform sustainability from abstract claims into tangible actions. Such initiatives foster a sense of shared purpose, deepening brand loyalty and elevating the consumer experience.

2.7 Sustainable Marketing and the Motorsport Industry: MotoGP

After defining sustainable marketing and examining how it serves as a catalyst for ecological transition and consumer engagement, it becomes crucial to analyse its specific applications within motorsport. Understanding how MotoGP can leverage sustainable marketing, not only to enhance its reputation and consumer engagement but also to minimize its environmental impact, is essential.

Sustainable marketing plays a crucial role in motorsport, as these competitions are highly focused on innovation. Over recent years, this focus has shifted toward sustainable advancements, where the emphasis extends beyond vehicle and circuit performance to address

environmental, social, and economic impacts. The complexity of introducing new developments in motorsport creates a unique challenge: innovations must not only perform but also align with sustainability objectives. Communicating these advancements effectively to fans is vital, as it ensures that the broader impact of such developments is recognized and appreciated. This is where sustainable marketing assumes a central role, bridging the gap between innovation and audience perception.

In particular, we will explore how sustainable marketing manifests in areas such as technological innovation, sustainable communication and branding, partnerships and sponsorships, and the social impact on communities.

Technological Innovation as a Sustainable Marketing Tool

Innovation is central to sustainable marketing in motorsports. It is capable of far more than just selling eco-friendly products. It can actively influence the technological development trajectory of companies. By driving innovation, sustainable marketing becomes a powerful strategic tool that fosters the adoption of cutting-edge, sustainable technologies (Birkinshaw, Anderson & Williams 2019).

In this regard, by showcasing advancements that minimize environmental impact, MotoGP not only enhances its reputation but also that of its stakeholders. Examples include:

- **Repsol's Biofuels:** MotoGP's collaboration with Repsol to test biofuels made of 40% non-fossil components demonstrates how technological innovation aligns with sustainability goals.
- **MotoE and Enel X:** The introduction of MotoE underscores electric mobility's potential, with Enel X using these races to highlight their charging infrastructure.

Such innovations are communicated effectively to position MotoGP as a leader in green mobility, drawing parallels to the successes seen in Formula E with brands like Jaguar, which

used the platform to promote its first fully electric vehicle, the I-Pace, while also introducing the Jaguar I-Pace Trophy, a racing series for electric SUVs (Formula E 2018). This example underscores the strategic value of motorsport as a platform for showcasing sustainable innovations and aligning brand identity with green mobility goals.

Communication and Branding Strategies for Sustainable Motorsport Marketing

In recent years, the communication and branding strategies within motorsports have shifted focus toward showcasing how organizations, teams, and partners are at the forefront of innovation, particularly in the realm of sustainable implementations. Indeed, all entities involved in motorsports are making significant strides to accelerate the ecological transition and reduce their environmental footprint. Thus, it becomes imperative to communicate these brands' commitment in a manner that positions them as advocates of positive, innovative change, actively engaging fans.

Organizations participating in zero-impact races can craft a narrative centred around the notion that the sustainable advancements seen on the track will eventually be integrated into the commercial vehicles of tomorrow. MotoE epitomizes these values, with the championship's primary objective being to achieve high performance through sustainable materials. Dorna's goal is to dismantle the perception that sustainable vehicles underperform when compared to traditional ones.

For MotoGP, platforms such as social media and dedicated events emphasize sustainability’s integration into racing. Initiatives like #RacingForFuture exemplify how competitions are not merely for entertainment, but more importantly, serves as a launchpad for innovations that will reshape our environmental impact (Dorna 2023).

In fact, motorsports have increasingly become the engine driving change across the entire motor sector in recent years. Consequently, those who organize these competitions take on the role of educating spectators on sustainability issues.

In terms of branding, partnerships have evolved radically. Green competitions are now fertile ground not only for sponsorships but, more significantly, for companies seeking to collaborate and showcase their innovations. These collaborations are jointly communicated through advertising campaigns and during events. For instance, Enel X enjoys high visibility through dedicated stands and information areas where fans are introduced to electric mobility solutions. The message is clear: sustainability is not just part of the future of motorsports but an integral aspect of everyday life.

Sustainable Partnerships and Sponsorships in Motorsports

Third-party companies that develop technologies and finance the competitions play a crucial role in sustainable innovations within motorsports. These companies are engaged through partnerships and sponsorships during events, with the goal of creating synergies that benefit both the partners and the environment.

Sustainable partnerships enable championships and teams to collaborate with companies that share ecological values, promoting technological innovations and sustainable practices both on and off the track. Taking the previous example of Repsol, MotoGP was the first to test biofuels containing 40% non-fossil-based components. This groundbreaking initiative demonstrates the mutual benefits of such partnerships: MotoGP enhances its reputation as a sustainability leader, while Repsol gains visibility and credibility for its innovative technologies.

Sponsorships, traditionally focused on financial support, have evolved into platforms for creating shared value. Companies increasingly view green sponsorships as opportunities to enhance their reputation, attract sustainability-conscious consumers, and demonstrate a tangible

commitment to environmental responsibility. For instance, the partnership between Enel X and MotoE illustrates how shared objectives can lead to effective campaigns, with Enel X leveraging the MotoE platform to showcase its electric mobility solutions, aligning with MotoGP's sustainability narrative.

These collaborations reflect the potential of motorsports as a testing ground for innovative technologies, fostering synergies that benefit both the industry and the environment. By aligning sponsorship strategies with ecological priorities, motorsports establish a model for demonstrating how competitions can drive sustainability in innovative and impactful ways.

Fan Engagement and Community Building in Sustainable Motorsport Marketing

At the heart of modern marketing lie community building and fan engagement. Through targeted engagement and community-building strategies, motorcycle competitions can promote sustainability messages and raise public awareness about eco-friendly practices.

Actively involving customers in a company's sustainable practices can significantly increase brand loyalty. By engaging their customer in eco-initiatives or seeking their feedback on environmental issues, companies are able to forge a stronger emotional bond with their audience, making sustainable marketing more effective (Vallaster, Lindgreen, Maon 2012).

Motorsports have a massive digital presence, with millions of fans following the competitions through social media, streaming platforms, and dedicated apps. These pages are leveraged to highlight the green initiatives undertaken by various competitions. Moreover, events have become unique opportunities to educate and inform spectators about environmental issues.

Beyond environmental sustainability, motorsports also offer visibility to corporate social responsibility (CSR) initiatives, involving fans in concrete projects that promote sustainability

on a global scale. These programs, often in collaboration with corporate partners and non-profit organizations, are advertised and funded through events.

One such example is the "*Two Wheels for Life"* program, which aims to help healthcare workers in four countries reach rural communities in Africa (Dorna Sports 2023). This program not only demonstrates MotoGP's commitment to supporting the world's poorest and most remote areas but also highlights how motorcycles can have a positive impact on society.

In conclusion, sustainable marketing emerges as an indispensable element in the evolution of MotoGP and motorsport at large, aligning the industry's innovation-driven nature with the global call for sustainability. By intertwining environmental, social, and economic considerations with technological advancements, strategic partnerships, and effective communication, sustainable marketing strengthens brand positioning and deepens consumer engagement.

3. Methodology and Research Design

Starting from our central research question, this is further examined through four case studies, each addressing a specific aspect of sustainability within MotoGP. Each case study is designed around a targeted research question, allowing for an in-depth analysis of diverse facets of sustainability. Specifically, the thesis investigates:

1. **ESG Practices in MotoGP**, with a focus on MotoGP's environmental strategies, social impact initiatives, and governance practices. This case study will assess the current situation in Dorna and how emission reduction policies, diversity efforts, and ethical management contribute to building a sustainable business model for Dorna Sports, responding to the question, *"What Environmental, Social, and Governance (ESG) practices has Dorna Sports implemented in MotoGP, and how do these contribute to promoting sustainability on a global sporting scale?"*

2. **Creating Value for Sponsors through Sustainability**, analyzing the evolution of sponsorships in MotoGP that reflects the championship's ongoing adaptation to broader economic, social, and technological shifts. Initially rooted in partnerships with industry-specific brands, MotoGP gradually attracted a diverse range of global sponsors as its popularity grew. Over time, the championship transitioned from a focus on technical alliances to forming collaborations with consumer brands that aligned with its expanding global appeal. More recently, sustainability has become a key driver in MotoGP's sponsorship strategy, helping to enhance its brand image, attract new sponsors, and deliver added value to existing partners. This approach underscores MotoGP's role as a forward-thinking championship, integrating innovation and sustainability to strengthen relationships with sponsors and stakeholders. This case addresses the question "*How has MotoGP's sponsorship strategy evolved from industry-specific alliances to a sustainability-driven model, and in what ways has this transformation enhanced the championship's ability to attract diverse sponsors, align with global trends, and create shared value for stakeholders?"*
3. **Making MotoGP's Operations More Sustainable**, examines MotoGP's environmental impact, focusing on freight operations as the most significant source of emissions. Through an evaluation of the championship's logistical inefficiencies, the study proposes an optimized calendar and explores sustainable alternatives such as rail transport and digital logistics solutions. Framed within the Triple Bottom Line framework, the analysis highlights the environmental, economic, and social benefits of addressing freight-related challenges while aligning MotoGP's operations with broader sustainability goals. This case seeks to answer "*What logistical and operational strategies can MotoGP adopt to reduce its environmental footprint, while aligning with sustainability objectives and maintaining economic and social balance?"*

4. **MotoGP as a Force for Sustainability: A Positive Ecosystem** examining how Dorna Sports fosters a sustainable and integrated ecosystem within the MotoGP. This case study will focus on business sustainability, highlighting efforts to ensure fairness, accessibility and rider safety as critical factors for MotoGP's long-term success. Additionally, it explores Dorna's rebranding strategy, which leverages technology and sustainability to redefine the championship brand identity, enhance fan engagement, and attract younger generations. It adresses the question *"How does Dorna Sports use sustainability to create an integrated ecosystem, redefine MotoGP's brand identity, and engage younger audiences?"*

Research Design

The research design follows a mixed-methods approach, incorporating both qualitative and quantitative data collection and analysis. This methodology ensures a holistic and scientifically grounded exploration of sustainability within MotoGP, incorporating both empirical data and theoretical foundations presented in the literature part.

Following the literature review, we conducted interviews with key figures at Dorna Sports to develop each specific case study. These included the Chief Sporting Officer, Senior Operations Director, Director of members of ESG team and Director of Technology. The interviews provided valuable insights into the decision-making processes, challenges, and strategic goals associated with MotoGP's sustainability initiatives. Additionally, a survey was carried out to collect quantitative data targeting both motorsport and MotoGP fans, as well as individuals who do not follow motorsport. The survey aimed to measure awareness and engagement with MotoGP's sustainability initiatives, offering insights into how these efforts shape public perceptions and involvement.

4. Case Study 4: MotoGP as a Force for Sustainability: A Positive Ecosystem

As already widely discussed, sustainability is a crucial element for the future of motorsport, with implications that extend far beyond simply reducing emissions or adopting environmentally friendly practices. In the introductory group part of this thesis, the concept of sustainability was examined from a broad and holistic perspective, embracing environmental, economic and social dimensions. In the previous case studies prepared by my colleagues, the focus was mainly on environmental sustainability aspects, delving into ESG practices implemented in the MotoGP context and initiatives aimed at optimizing championship operations to reduce their ecological impact.

This section aims to broaden the perspective of sustainability in its integrated and multidimensional manner. It will analyze how MotoGP, under the leadership of Dorna Sports, is working to build a positive ecosystem in which the different dimensions of sustainability are intertwined and mutually reinforcing. The focus will be on business sustainability, highlighting Dorna's dedication to promoting fairness and accessibility within the industry, alongside the unwavering commitment to rider safety, both of which are critical to the championship's long-term success and viability.

Additionally, this section will explore Dorna's ambitious rebranding initiative, which leverages new technologies and sustainability as strategic tools to redefine the MotoGP brand identity, enhance fan engagement, and appeal to younger generations.

This approach highlights how sustainability is not only a goal, but also an opportunity to ensure the success and relevance of the championship in the global motorsport context**.**

4.1 Dorna's role in promoting sustainability within the MotoGP ecosystem

Dorna Sports has embarked on a path of transformation that goes beyond simply managing sporting events, but rather plays a crucial role in promoting sustainability within the MotoGP

ecosystem. This vision, as articulated in the 2023 ESG Annual Report (Dorna Sports 2023), demonstrates a multifaceted approach to sustainability. It goes beyond environmental concerns to adopt a holistic framework that ensure the economic feasibility and long-term viability of the entire racing system. By doing so, Dorna ensures that the MotoGP championship aligns with global sustainability objectives while maintaining its economic and operational viability. This approach reflects an acute understanding of the evolving market landscape, where corporate sustainability is no longer a secondary concern but a fundamental determinant of long-term success.

The Global Reporting Initiative (GRI 2024) underscores the necessity of a stable financial foundation for organizations to support broader environmental and social initiatives. Without such stability, the company's capacity to support sustainable practices across its operations is significantly limited. By achieving this balance, Dorna fosters the creation of shared value, a concept that enhances stakeholder well-being while minimizing negative externalities.

Applying the TBL framework (Elkington 1994) enables Dorna to create shared value by linking business success with broader societal and environmental benefits. The company has positioned MotoGP as a global benchmark for sustainable innovation, leveraging the sport as a platform to pioneer new technologies, promote green practices, and cultivate an ethical sports culture. This vision is reflected in its strategic initiatives, which are built on interconnected pillars that mutually reinforce one another. This marks a shift towards a new paradigm in sports management, ensuring a balance between technological progress, sport competitiveness, ethical responsibility and sports safety and integrity.

The interview with Corrado Cecchinelli, MotoGP's Director of Technology, provides valuable insights into Dorna's holistic and integrated approach to sustainability. Cecchinelli emphasizes that the organization's efforts are not just theoretical abstractions but are actively embedded

within the operations of the championship. Their goal is to foster an environment where technological advancement, environmental responsibility, and sportsmanship coexist, ensuring the championship's relevance and longevity, and setting a new standard for sustainability in the global sporting arena.

4.1.1 Economic Sustainability in MotoGP: A Key Pillar of Dorna Sports' Strategy

Economic sustainability, stands as the cornerstone of Dorna Sports' strategy for the MotoGP championship, reflecting a commitment that goes far beyond the mere pursuit of immediate profits. By fostering an ecosystem where competitiveness is economically beneficial and sustainable for all stakeholders involves, including manufacturers, sponsors, and commercial partners, Dorna aims to maintain the championship's appeal, secure its growth, and safeguard its longevity in an increasingly challenging economic landscape.

Financial Dynamics of MotoGP Teams

The financial demands of running a MotoGP team vary significantly, especially between satellite and factory teams, due to the complexity of variables involved:

- **Factory Teams:** backed by manufacturers like Honda, Yamaha, and Ducati, they bear the brunt of the championship's financial demands due to their direct involvement in motorcycle development. The total cost of running a factory team can exceed €50 million per year[1], encompassing expenses related to R&D, technical upgrades, personnel, riders' salaries and motorcycles' costs. For instance, investment per motorcycle is considerably higher, typically ranging from €3 million to €4 million (Falcioni, 2023).

[1] Derived from analyses and projections provided in articles focusing on the financial structures of MotoGP teams.

Moreover, top-tier riders compensations represent a substantial portion of the budget. Marc Marquez is reportedly set to earn between €10 million and €12 million annually under his new Ducati contract for the 2025 season (Allevato 2024).

- **Satellite Teams:** they operate under markedly different financial conditions. These teams lease motorcycles and technical support from manufacturers, allowing them to compete in MotoGP without the need for extensive R&D investments. For example, the cost of leasing a fully equipped motorcycle ranges between €1 million and €2 million per rider per season (Falcioni 2023). However, their budgets remain constrained compared to their factory counterparts, with annual operational costs estimated at approximately €15 million per season (Ezpeleta 2024).

Cost-Management Strategy

This financial disparity between teams underscores the need of implementing a robust cost-management framework to maintain equitable competition within the championship.

Unlikely other sports that have adopted formal cost limitations, F1, for instance, which has implemented a formal cost cap of $135 million per team for the 2023 season (FIA 2023), MotoGP operates without a defined budget cap. However, Dorna has developed a carefully structured cost-management strategy, aimed at making MotoGP financially accessible and attractive to a broad spectrum of participants. This strategy emphasizes fairness and accessibility, ensuring that financial disparities among teams do not distort competitive balance. As noted by Cecchinelli, *"success in MotoGP should not be determined by the size of a team's budget, but rather by the skills, strategies, and technical expertise of each individual teams".* This philosophy underscores Dorna's unwavering commitment to fostering a championship that is not only competitive and equitable but also dynamic and engaging for both participants and fans.

To ensure this financial sustainability and competitive balance across the championship, Dorna has effectively implemented stringent cost-control measures. These initiatives are designed to create an economically viable environment for all teams, from independent satellite to factory-backed giants. The framework relies on three primary pillars: financial subsidies, concessions, and strict regulations.

1. **Subsidies: Ensuring Participation and Viability**

   Dorna plays a crucial role in maintaining the financial stability of independent teams by subsidizing up to 50% (approximately €7 million per season per team) of the operational costs for independent teams (Ezpeleta 2024). Additionally, the organization directly covers the cost of Michelin tires for all teams, alleviating an additional operational expense (Abiye 2024).

   Manufacturers such as Ducati, Aprilia, KTM, and Honda also benefit from Dorna's financial contributions. For every motorcycle supplied to a satellite team, these manufacturers receive a compensation of €1 million per bike (Abiye 2024). This incentivizes manufacturers to support satellite teams, enhancing the competitiveness and diversity of the championship.

   A hallmark of Dorna's financial approach is its egalitarian model. In MotoGP, all teams receive the same bonus, regardless of their historical performance or results. This democratic system promotes fairness and inclusivity, unlike F1, where bonuses are distributed based on the teams' past achievements, favoring dominant constructors.

2. **Concessions: Incentivizing Performance for New or Struggling Manufacturers**

   Dorna has introduced a set of concessions designed to level the competitive playing field and encourage innovation, particularly for manufacturers who may struggle to compete at the highest level. These concessions are granted based on a points system tied to each manufacturer's performance in the constructors' standings (Figure 2).

Manufacturers are categorized into four groups (A, B, C, or D) depending on their points percentage (Figure 3), with the category impacting the number of tires available for testing, wildcard entries, test days, engine allocations, and aerodynamic development opportunities (Dorna Sports 2024).

The concession system operates with two evaluation windows, allowing manufacturers to either gain or lose concessions more quickly based on their performance.

Starting in 2027, all manufacturers will begin the season in Rank B. Teams will then be reassessed mid-season (summer 2027), and could either move up or down in rank, gaining or losing access to more or fewer concessions depending on their performance (Dorna Sports 2024).

3. **Strict Regulations: Enforcing Cost Control and Competitive Fairness**

MotoGP's regulatory framework imposes stringent measures to control costs and prevent financial or technological imbalances from distorting competition. This includes:

- Restriction on the number of engines each team can use during a season. For example, according to the latest regulations, each rider is allowed to use a maximum of six engines per season a limit that increases to seven if the number of Grand Prix races exceeds twenty (Dorna Sports 2024).
- The standardization of technology in MotoGP, specifically through the implementation of unified engine and chassis management software, plays a pivotal role in leveling the competitive field. This software, collaboratively developed by all manufacturers, oversees critical aspects of motorbike performance, including engine management and chassis dynamics. By standardizing it, Dorna ensures that no team can gain a competitive edge solely through the use of costly, high-performance software. As a result, success in racing is determined more by applied

engineering and riding skills than by technological superiority that may be beyond the reach of some teams (Cecchinelli 2024).

This technological parity ensures that every manufacturer has a fair opportunity to compete for victory. Moreover, these measurements not only make racing costs more predictable but also transform them into strategic investments that can offer tangible returns in terms of both competitiveness and brand image (Gardin 2024).

By fostering a more equitable and balanced competitive environment, Dorna not only enhances the diversity of teams in the championship, but also stabilizes the participant base, making the competition more resilient to economic fluctuations. This dynamic makes the series more attractive to a broader range of sponsors and partners, further securing its long-term viability (Cecchinelli 2024).

Safety and Sporting Integrity

The long-term viability of MotoGP and its business sustainability relies on more than just economic strategies, but it also demands an equally robust commitment to safety and sporting integrity, which are cornerstones of MotoGP management, reflecting Dorna's dedication not only to protecting riders but also to upholding the ethical and competitive values of the sport. These principles are vital for maintaining the interest and trust of fans, sponsors, and manufacturers, solidifying MotoGP's reputation as a showcase for cutting-edge technology and safe, fair racing.

In collaboration with the FIM, Dorna has prioritized rider safety as an integral component of its sustainability strategy. By introducing stringent technical regulations, integrating advanced crash detection systems, and continuous innovation in protective gear, MotoGP has developed a comprehensive framework to safeguard riders while enhancing the sport’s long-term viability.

Technical Regulations for Safety

In 2024 Dorna have introduced stringent technical regulations to improve on-track safety (FIM 2024). One significant measure involves reducing aerodynamic loads, which can destabilize motorcycles during high-speed cornering and straight-line braking (Dorna Sports 2024).

By 2027, this regulation will be further tightened, with an additional 50mm reduction of the aerodynamic. Additionally, engine power will be decreased from 1000cc to 850cc, a significant step aimed at curbing top speeds, making the sport safer, more efficient and sustainable (Dorna Sports 2024). In this regard, these measures aim to keep track speeds within the limits of human reaction capabilities, thereby significantly reducing the risk of high-speed accidents.

MotoGP's New Crash Detection System

Complementing these regulatory measures, in 2024 MotoGP has introduced an advanced accident detection systems that leverage real-time telemetry and sensor data to identify crashes instantaneously (Cecchinelli 2024). By integrating these systems into the regulatory framework, MotoGP creates a safety ecosystem where technology and regulation work hand-in-hand.

Protective Gear Innovation

While regulations and detection systems aim to prevent accidents, advanced protective gear serves as the riders' ultimate safeguard. The innovation in airbag-equipped suits, capable of deploying in under 20 milliseconds (Red Bull 2017), is critical in protecting riders during crashes. Similarly, helmets undergo rigorous high-impact and rotational force testing, ensuring that riders are safeguarded from traumatic brain injuries.

By prioritizing these aspects, Dorna not only mitigates the inherent risks of motorsport but also reinforces MotoGP's commitment to sustainability as a holistic concept, one that integrates technological innovation, ethical conduct, and human welfare to ensure the long-term success

and credibility of the championship, promoting a sport that is sustainable in terms of both spectacle and sporting ethics.

This comprehensive business sustainability framework, when combined with the environmental insights explored by my colleagues, underscores Dorna's commitment to fostering a truly positive ecosystem. These interconnected efforts position MotoGP not only as an exhilarating and competitive championship but also as a transformative force in motorsport, achieving a seamless balance between thrilling entertainment, ethical leadership, and forward-thinking innovation.

4.2 MotoGP: Redefining Brand Identity and Fan Engagement

To fully understand how Dorna Sports promotes sustainability within the MotoGP ecosystem, it is essential to explore the MotoGP brand's identity, including its recent rebranding and the transformative efforts encapsulated in it.

4.2.1 A Legacy of Speed and Adrenaline

Historically, MotoGP has been synonymous with speed, adrenaline, and cutting-edge technology, appealing primarily to a loyal niche of motorcycle enthusiasts. The 2022 Global Fan Survey revealed that MotoGP has always been perceived as an exciting, competitive, entertaining, world-class, and unpredictable sport (Figure 4) qualities that underscore its position as a leader in motorcycle racing (Dorna Sports 2022). Its solid fan base has traditionally been concentrated in Europe, which accounts for 65% of its audience. However, Asia and, to a lesser extent, the Americas are emerging as key growth markets, reflecting MotoGP's increasing global appeal (Chart 1) (Dorna Sports 2022). This geographic distribution highlights the championship's reliance on its European core while signaling opportunities for expansion in other regions.

Despite the strength of its loyal following, 65% of fans have followed the championship for over a decade (Dorna Sports 2022), MotoGP faces significant challenges in diversifying its fan base and competing with other motorsport leagues, particularly F1. Unlike MotoGP, which remains closely associated with a specialized motorcycle culture, F1 has successfully transcended its niche origins to attract a mainstream and diversified audience (Chart 1 and 2). This success is exemplified by F1's innovative media strategies, such as the Netflix docuseries "*Drive to Survive"* (2019) and *"Senna"* (2024), which have reinvigorated its appeal among younger generations.

In contrast, MotoGP, which limits its reach to a smaller and more homogeneous fan demographic (Chart 2), struggles with the aging demographic of its fan base, as illustrated by recent surveys conducted by Dorna:

- The 2022 Fan Survey reported an average fan age of 36 years and 4 months, based on a sample size of 109,676 respondents (Dorna Sports 2022).
- The 2023 Fan Survey reported an average fan age of 45 years and 3 months, according to a sample of 12,056 respondents (Dorna Sports 2023).

These statistics underscore the urgency for MotoGP to rejuvenate its fan demographic and implement targeted strategies to engage Millennials and Gen Z, to sustain its position in an increasingly competitive motorsport landscape.

4.2.2 Sustainability as a Catalyst for Younger Generations

Sustainability, as we have analyzed so far, has become a central theme for many industries, including motorsport, and consequently is became crucial factor for attracting and retaining new generations. Today's younger generations, particularly Millennials and Gen Z, have grown up in an era where the climate crisis and environmental issues dominate the global debate. These

demographic groups tend to support companies and brands that demonstrate a tangible commitment to reducing their ecological impact (Wood 2022).

In this regard, understanding how MotoGP is perceived by younger generations in terms of sustainability becomes a critical factor for the championship's long-term relevance and appeal.

The findings from our recent internal survey, of a sample of 102 respondents, provide valuable insights on the current perception of sustainability within MotoGP and highlight significant challenges in communication and awareness:

- Among non-motorsport fans (48 respondents), 58% were unaware of MotoGP's sustainability initiatives implemented in motorsport in recent years (Chart 3), despite 67% acknowledging the importance of sustainability in sports and entertainment (Chart 4). Furthermore, only 15% of non-motorsport fans believed that increased sustainability efforts would definitively attract new fans (Chart 5), underscoring a skepticism that MotoGP must address through more impactful outreach and education strategies.
- Among motorsport enthusiasts (54 respondents), awareness of MotoGP's sustainability programs was modest. Only 16 respondents (30%) were somewhat familiar with initiatives undertaken by Dorna Sports (Chart 6). This lack of awareness exists even though 33% of enthusiasts believe MotoGP is taking necessary steps toward environmental sustainability, though with room for improvement (Chart 7).

This disparity between MotoGP's tangible actions and public awareness underscores an urgent need to refine its communication strategy and redefine MotoGP's brand identity

4.3 The Rebranding: A Transformative Vision for MotoGP

Recognizing the urgency of a transformation, Dorna Sports is undertaking a strategic rebranding initiative to modernize MotoGP's image and ensure its continued relevance in a competitive entertainment landscape. The objective of this rebranding is to modernize

MotoGP's image, making it resonate with a broader and younger audiences (Pentagram 2024), while anchoring the sport firmly in contemporary societal values such as environmental stewardship, inclusivity, and technological innovation. This bold initiative underscores MotoGP's commitment to evolving beyond the traditional perceptions of motorsport, embracing a future-oriented ethos.

Visual Rebranding: The New Face of MotoGP

Until late 2024, MotoGP's visual identity was anchored by its iconic logo, which featured a stylized checkered flag, characterized by a color palette dominated by red, black and white (Figure 5). However, recognizing the need to align its visual identity with its evolving values, Dorna, in collaboration with the renowned Pentagram Design Studio, launch a rebranding campaign (Dorna Sports 2024). The redesign, with a new sleek and minimalist logo (Figure 6), aim to modernize the brand while retaining its association with speed and competition (Figure 7), reflecting the championship's forward-thinking approach (Pentagram 2024).

4.3.1 Sustainability: The Cornerstone of MotoGP's Rebranding

At the heart of MotoGP's rebranding lies a dedication to sustainability, extending far beyond environmental initiatives to encompass economic and social dimensions. As evident in the '*Racing for the Future'* initiative launched in 2024, MotoGP aims to position itself as a global benchmark for sustainable motorsport, setting new standards for environmental responsibility while fostering inclusivity and resilience within its ecosystem (Figure 8).

Sustainability has thus become a central element of the new MotoGP brand identity, reflecting the growing expectations of a new generation of fans. To strength this message MotoGP must adopt a dual-focused approach:

- Position itself as a pioneer of responsible change in motorsport, showcasing its leadership in environmental and social innovation.

- Engage a younger audience, for whom sustainability is a fundamental factor in supporting brands and events.

This targeted communication strategy is not merely about attracting attention but is deeply rooted in the mission to educate and engage fans, fostering a greater awareness of the critical role sustainability plays in the future of motorsport. It seeks to delve deeper, fostering a genuine comprehension and appreciation for the significant progress MotoGP is achieving in building a more sustainable and equitable racing ecosystem.

To effectively reshape perceptions of sustainability among younger generations, Dorna must implement a focused and impactful communication strategy, leveraging digital platforms to their fullest potential. In this regard, Dorna and Pentagram's goal is to invest in digital campaigns that not only illustrate technological advances towards greener fuels and lower emission, but also tell an emotional narrative related to sustainability, showing motorsport's positive contribution to the fight against climate change and inequality (Dorna Sports 2024).
By directly involving riders, influential figures for young audiences and with the adoption of a more dynamic and engaging language on social media, Dorna is trying to amplify its reach and perceived value in the promotion of green initiatives, accessibility and inclusion.

4.3.2 Strategies for Transforming the Fan Experience and Engage with Younger Generations

As part of its comprehensive rebranding and the dawn of a new era, Dorna Sports is implementing a diverse array of innovative strategies aimed at transforming the MotoGP fan experience. These initiatives are designed to cultivate a deeper emotional connection between the championship and its audience, with a particular focus on capturing the interest of younger generations (Dorna Sports 2023). By seamlessly integrating on-track activations with cutting-

edge digital innovations, this dual approach not only amplifies engagement but also delivers memorable, immersive experiences.

On-Track Initiatives

MotoGP's on-track activations are carefully designed to immerse fans in the high-octane world of motorcycle racing, delivering unforgettable experiences during race weekends. These events cater to a diverse audience, with a specific focus on engaging younger fans through interactivity and proximity to their favorite riders.

- **Fan Zones**: Interactive areas featuring merchandise stalls, gaming simulators, and live meet-and-greets with riders. These zones are particularly popular among younger attendees, as highlighted in the 2023 Fan Experience Report (Dorna Sports 2023).
- **Tissot Sprint**: Introduced in 2023, this shorter race format has resonated with younger viewers, who appreciate its fast-paced, high-energy dynamic.
- **Interactive Events**: Activities such as the *Rider Parade*, *Hero Walk,* and *Track Invasion* provide rare opportunities for fans to connect directly with their favorite riders. However, despite their popularity, 16% of surveyed fans in 2023 reported being unaware of these opportunities, highlighting the need for improved communication (Dorna Sports 2023).

Digital Initiatives

Recognizing the growing importance of the digital domain, MotoGP is making significant strides in leveraging technology to attract and retain fans. These digital strategies aim to meet the expectations of digitally native younger audiences, offering interactive, personalized, and on-demand content that enhances their connection to the sport

- **Social Media Engagement:** MotoGP is developing a robust presence across major social media platforms, including Instagram, Facebook, TikTok, YouTube, and Twitter, tailoring its content to the strengths and demographics of each platform:
- **eSports Championship:** The MotoGP eSports Championship taps into the rapidly growing gaming industry, offering an immersive and competitive platform for younger, tech-savvy audiences. This initiative mirrors the intensity and excitement of on-track racing, providing fans with an opportunity to experience the thrill of MotoGP virtually. It is particularly effective in attracting gaming enthusiasts who might not traditionally engage with motorsport.
- **MotoGP App and VideoPass:** MotoGP's digital tools provide fans with unparalleled access to the championship:
  - The MotoGP App delivers real-time updates, detailed race statistics, and exclusive content, catering to fans seeking instant and comprehensive insights.
  - The VideoPass offers live streaming of races, on-demand content, and an extensive archive of past events, ensuring fans can stay connected to MotoGP at their convenience. These features make the sport accessible to a global audience, breaking down barriers of geography and time.

This rebranding goes far beyond a mere aesthetic update, but encompass a profound shift in communication, engagement, and values, aligning the championship with the expectations of a digitally savvy and environmentally conscious generation (Pentagram 2024).

This holistic approach ensures that MotoGP continues to resonate with both loyal fans and new generations. By continuing to evolve its brand identity and embracing the interconnected dimensions of sustainability, Dorna is striving solidify the championship's position as a leader in contemporary motorsport.

5. Limitations

This study provides valuable insights into MotoGP's sustainability efforts and offers actionable recommendations; however, it is important to recognize certain limitations that have influenced the scope and depth of the analysis.

Firstly, the heavy flooding in Valencia at the end of October significantly disrupted the organization of the final races, which subsequently affected the planned schedule for conducting interviews with key figures at Dorna Sports. This unforeseen event posed challenges in obtaining primary data essential for the in-depth analysis of the individual case studies, limiting the comprehensiveness of the research.

Secondly, another limitation is represented by the lack of direct engagement with the various stakeholders involved in MotoGP's ecosystem. This absence of interaction restricted our ability to gather diverse perspectives and insights from key groups such as sponsors, teams, riders, and partners. Consequently, our analysis primarily relies on secondary data and the information provided by Dorna Sports, which, while valuable, may not fully encompass the multifaceted dynamics and viewpoints of all stakeholders. Additionally, during the limited number of interviews we were able to conduct, certain requested data were not available, as they were still in the process of being compiled and finalized. This constraint hindered our ability to access complete and up-to-date information, which posed challenges for a thorough analysis of the case studies.

Regarding the survey, a notable limitation is that the majority of responses were obtained from individuals of Italian nationality, which introduces a potential geographical bias. This may affect the survey's generalizability and limit the representativeness of the findings on an international scale. Lastly, the public perception component of the research, measuring how sustainability efforts are recognized by the general public, presents its own challenges. Since

the sample may include individuals with varying levels of familiarity with motorsport, there is a risk that general public perceptions may be less informed or influenced by other factors, such as media representation or personal environmental awareness. This may limit the precision with which the public's understanding of MotoGP's sustainability role is captured.

6. Conclusions

MotoGP is undergoing a significant transformation, led by Dorna Sports, to solidify its position as a leader in global motorsport through an integrated approach to sustainability and innovation. This evolution, initiated few years ago, reflects an ambitious vision that combines technological advancement, environmental responsibility, and a strong commitment to inclusivity and audience diversification. However, despite notable progress, critical areas remain that, if addressed, could amplify the positive impact of the championship even further.

From an environmental perspective, MotoGP has demonstrated a concrete commitment through initiatives such as the introduction of renewable fuels, sustainable tires, and support for electric mobility with MotoE. These efforts position the championship as a benchmark for the automotive sector, showcasing how sport can act as a testing ground for innovative ecological solutions. Nonetheless, significant challenges persist, including managing emissions related to spectators and improving the precision of impact measurements for sustainability initiatives. Dorna must enhance its evaluation metrics and clearly communicate its results to strengthen the credibility of its actions and avoid perceptions of inconsistency or inauthenticity.

From a social standpoint, MotoGP stands out for projects like the Women's World Championship and the "Two Wheels for Life" charity, which highlight how sport can promote gender inclusion and social progress. However, to further expand its impact, Dorna could intensify communication efforts regarding these initiatives, providing tangible examples of its commitment to global communities. Additionally, addressing internal disparities, such as the

gender pay gap, remains a critical priority to ensure equity and transparency within the organization.

MotoGP's sponsorship strategy is another strength, with partnerships with brands like Michelin and DHL reinforcing the championship's alignment with sustainability and innovation values. However, the current approach could benefit from greater diversification, engaging brands from sectors such as lifestyle, fashion, and finance to broaden its audience and attract new generations. Simultaneously, Dorna must avoid partnerships that might appear contradictory to its declared values to maintain the authenticity of its message.

A central element of MotoGP's transformation is its recent rebranding, which, through a new logo and targeted digital communication, aims to modernize the championship's image. This rebranding is not merely aesthetic but strategic, aiming to engage Millennials and Gen Z audiences that prioritize sustainability and social responsibility. However, engaging these demographic groups requires a more compelling and incisive narrative that highlights MotoGP's contributions to environmental and social progress, leveraging digital platforms to forge an emotional connection with its audience.

Looking ahead, MotoGP has the opportunity to establish itself not only as one of the most competitive and spectacular championships in the world but also as a model for positive transformation in the sports sector. Further diversifying sponsorships, improving transparency and communication of its initiatives, and investing in inclusion, digital innovation, and social sustainability are essential steps toward achieving this goal. With a strategic and integrated approach, MotoGP can combine its passion for speed with a concrete commitment to global progress, becoming a benchmark for both motorsport and broader societal development.

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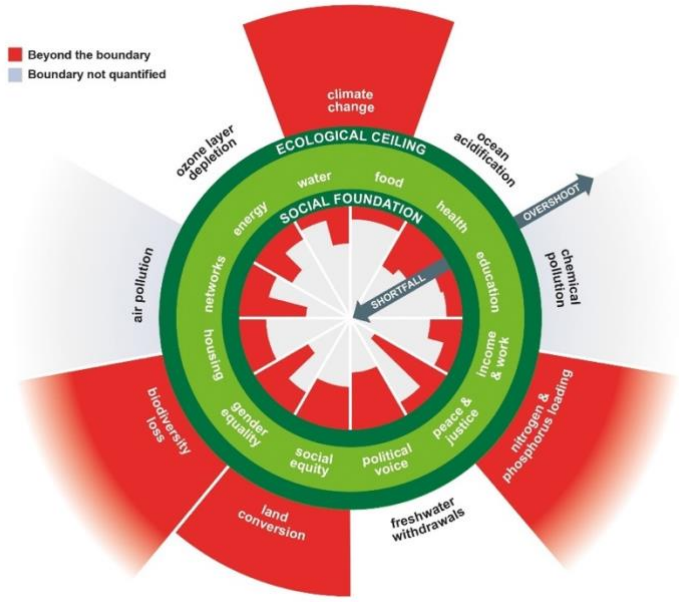
8. Appendices

8.1 Appendix 1 – Figures

Figure 1 - The Doughnut Economy (DE) Framework



Sources: Raworth 2017, World Economic Forum

Figure 2 – MotoGP's manufacturer concession system

RANK	PERCENTAGE OF POINTS	TEST TYRES	PRIVATE TESTING	GP CIRCUIT TESTING	WILD CARDS	ENGINES X SEASON	ENGINE SPEC	AERO UPDATES
A	>=85%	170	Test rider only	3 circuits	0	7 or 8	freeze	1
B	>= 60% < 85%	190	Test rider only	3 circuits	3	7 or 8	freeze	1
C	>= 35% < 60%	220	Test rider only	3 circuits	6*	7 or 8	freeze	1
D	<35%	260	FREE	Any GP circuit	6*	9 or 10	free	2**

Sources: MotoGP's website (Dorna 2023)

Figure 3 – Example of MotoGP concession system

New MotoGP™ concession system

RANK	Percentage of points	Test tyres	Private testing	GP circuit testing	Wildcards	Engines x season	Engine spec	Aero updates
A DUCATI	>= 85%	170	Test rider only	3 circuits	0	7 or 8	Freeze	1
B -	>= 60% < 85%	190	Test rider only	3 circuits	3	7 or 8	Freeze	1
C KTM aprilia	>= 35% < 60%	220	Test rider only	3 circuits	6*	7 or 8	Freeze	1
D HONDA YAMAHA	< 35%	260	Free	Any GP circuits	6	9 or 10	Free	2**

* Wildcards not subject to engine specification freeze. A maximum of three wildcards before the summer test ban and a maximum of three wildcards after the summer test ban are permitted.
**Must discard a previous aero specification.

Sources: MotoGP's website (Dorna 2024)

Figure 4 – Word Cloud Map

Sources: MotoGP Fan Survey Report (Dorna 2022)

Figure 5 – Evolution of the MotoGP logo

Sources: Pentagram's website (2024)

Figure 6 – MotoGP new logo explanation

Sources: Pentagram's social media: Instagram

Figure 7 – MotoGP tradition values meet modernity

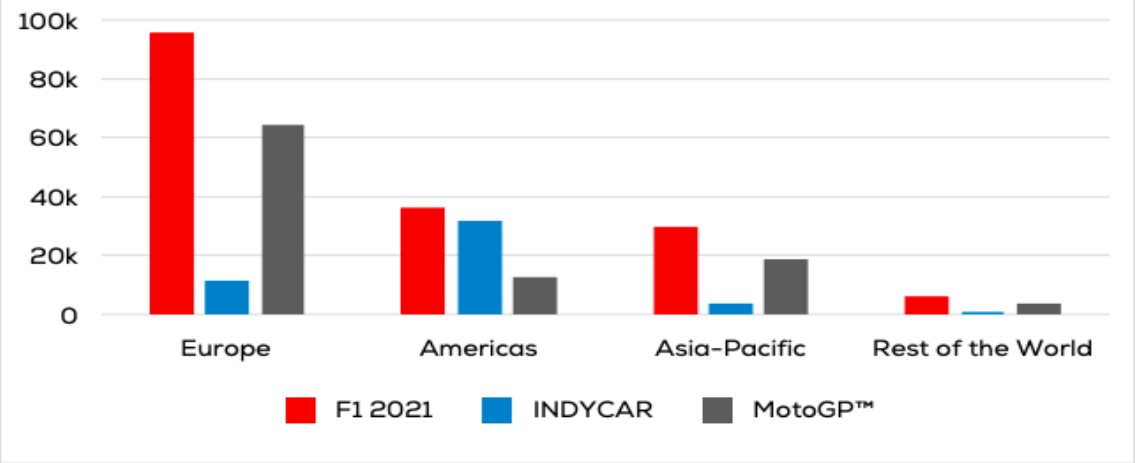
Sources: MotoGP's social media: Instagram

Figure 8 – MotoGP "*Racing for the Future" Initiative*

Sources: MotoGP's website (2024)

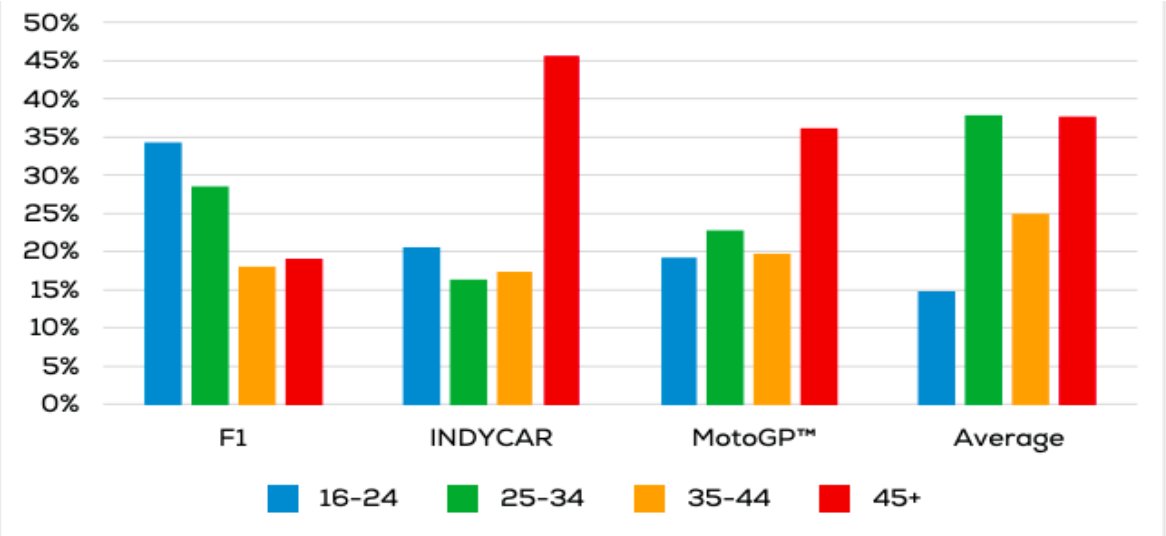
8.2 Appendix 2 – Charts

Chart 1 – Regional audience distribution across motorsport categories



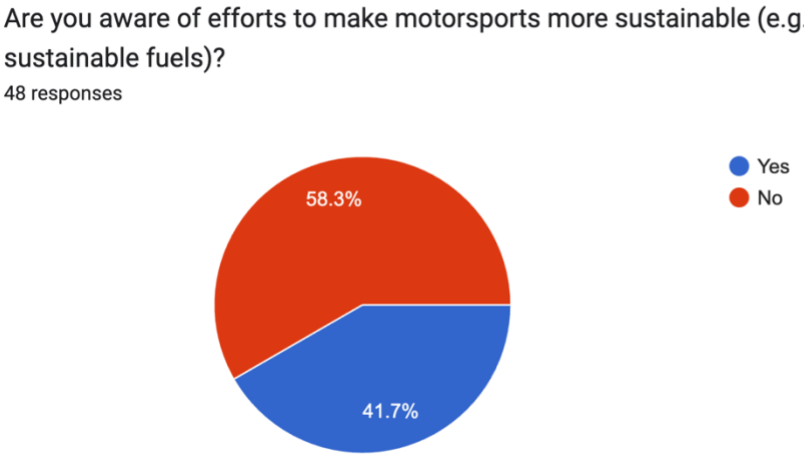
Sources: MotoGP Fan Survey Report (Dorna 2022)

Chart 2 – Age group distribution of fan engagement across motorsport categories



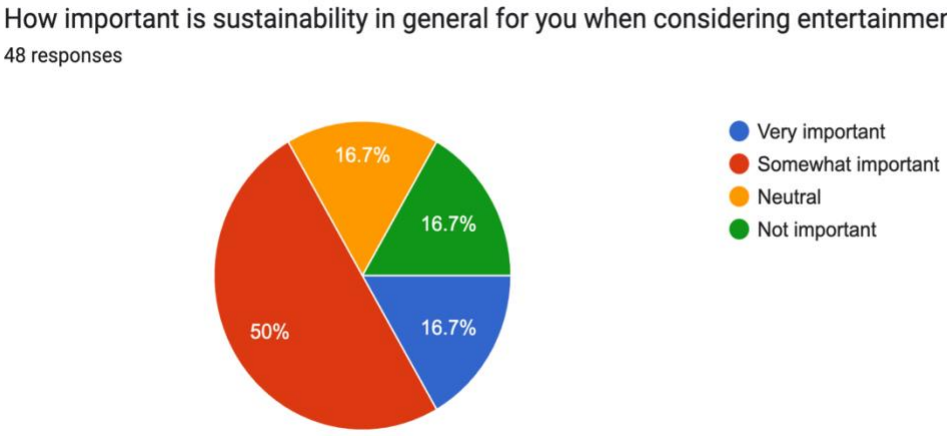
Sources: MotoGP Fan Survey Report (Dorna 2022)

Chart 3 - Results from the survey



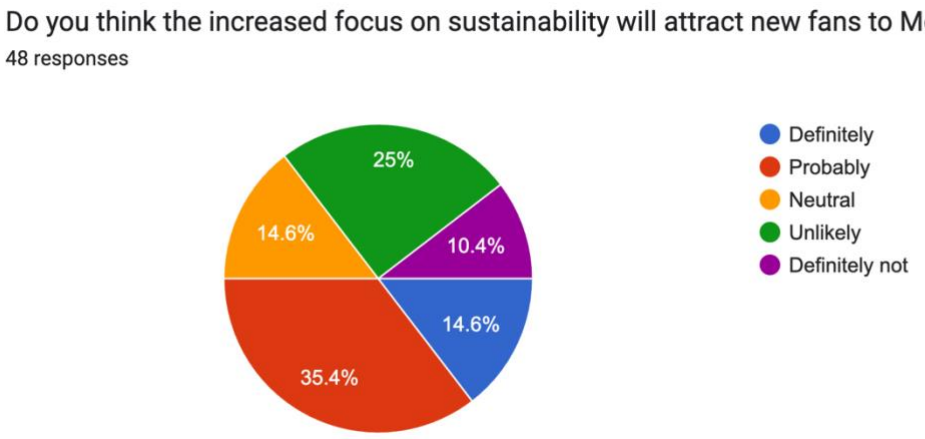
Sources: Author Survey (2024)

Chart 4 - Results from the survey



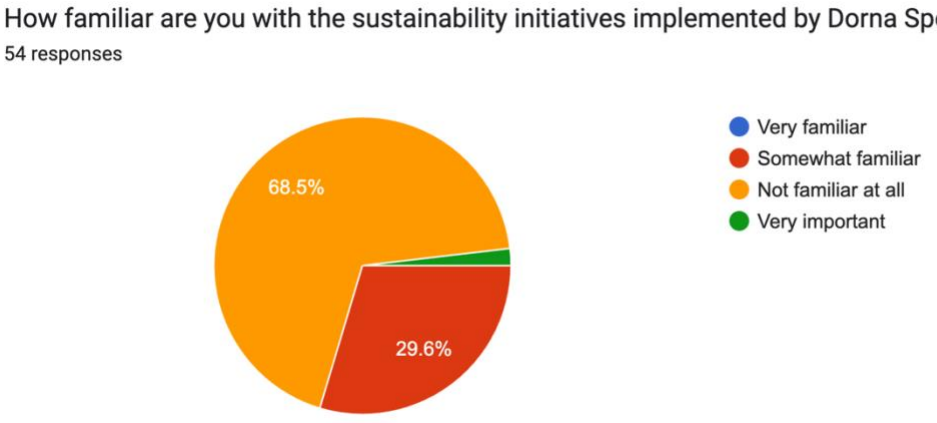
Sources: Author Survey (2024)

Chart 5 - Results from the survey



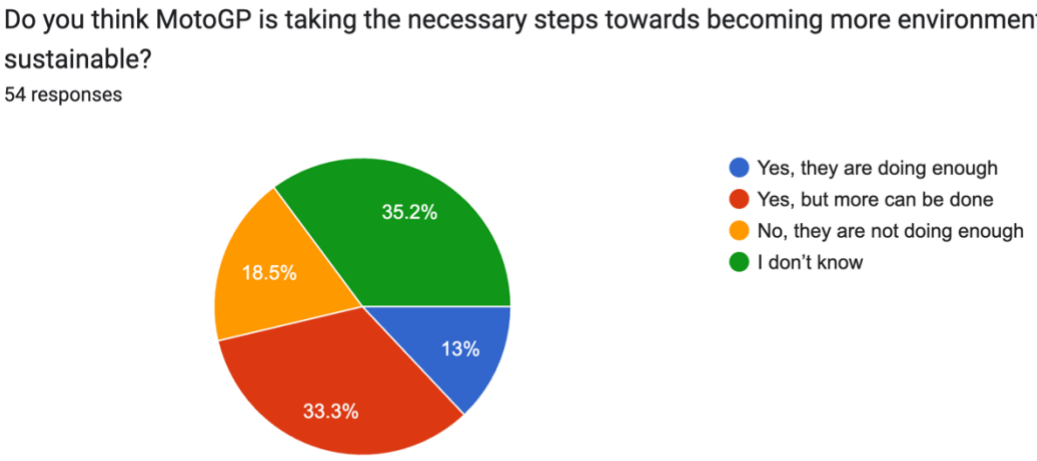
Sources: Author Survey (2024)

Chart 6 - Results from the survey



Sources: Author Survey (2024)

Chart 7 - Results from the survey



Sources: Author Survey (2024)

8.3 Appendix 3 – Survey Questions

Introduction:

Thank you for participating in this survey about MotoGP and sustainability! This survey aims to understand fans' perspectives on the sustainability initiatives in MotoGP, their awareness of Dorna's efforts, and how MotoGP compares to other motorsports in terms of environmental impact. Your responses will contribute to academic research on environmental sustainability in MotoGP and will help shape its future direction. This survey will take approximately 5 minutes to complete.

First of all:

1) **Do you follow motorsport (MotoGP, Formula 1, SBK, NASCAR, etc) regularly?**
    - Yes
    - No

Based on this question there will be a different survey for those who answer “yes” and those who answer “no”.

Survey for those who answer NO:

SECTION 1: **General Perceptions of Sustainability**

1) **How important is sustainability in general for you when considering entertainment or sports?**
    - Very important
    - Somewhat important
    - Neutral
    - Not important

2) **Are you familiar with the idea of reusing and recycling materials to reduce waste in sports or other industries (Circular Economy, ESG practices, etc.)?**
    - Very familiar

- Somewhat familiar
- Not familiar

3) **Do you think sustainability is an important issue in motorsport, even if you don't follow it?**
   - Yes
   - Maybe
   - No

4) **Are you aware of efforts to make motorsports more sustainable (e.g., using electric vehicles, sustainable fuels)?**
   - Yes
   - No

5) **Do you believe that electric vehicles or alternative fuels can play a key role in reducing emissions in high-performance sports?**
   - Yes
   - Maybe
   - No

6) **How familiar are you with the environmental impact of motorsports like MotoGP and Formula 1?**
   - Very familiar
   - Somewhat familiar
   - Not familiar

7) **What do you think about electric vehicles being used in high-performance sports like MotoGP and Formula 1?**
   - A great innovation and crucial for the sport
   - A good addition, but not essential
   - Indifferent
   - It distracts from the traditional races
   - I don't like it

8) **Do you think electric vehicles could eventually replace traditional gasoline-powered vehicles in high-performance sports? (Select one)**
   - Yes, in the near future
   - Yes, but not for many years
   - No, I don't think it will happen
   - I'm not sure

9) **Do you think sustainability efforts (e.g reducing carbon footprint, using sustainable fuels) make the sport more appealing to you?**
   - Yes, much more appealing
   - Somewhat more appealing
   - No difference
   - Somewhat less appealing
   - Much less appealing

10) **Do you think the increased focus on sustainability will attract new fans to MotoGP?**
   - Definitely
   - Probably
   - Neutral
   - Unlikely
   - Definitely not

11) **Do you think MotoGP should play a role in educating fans about environmental issues?**
   - Yes, they have a responsibility
   - No, their role should be focused on racing
   - I don't have an opinion

Survey for those who answer YES:

SECTION 1: **General Motorsports Engagement**

1) **Which motorsport series do you follow regularly? (Select all that apply)**
    - MotoGP
    - Formula 1
    - WorldSBK
    - Formula E
    - MotoE
    - Other (Please specify)

SECTION 2: **Fan Engagement with MotoGP**

2) **How long have you been following MotoGP?**
    - Less than a year
    - 1-5 years
    - 6-10 years
    - More than 10 years

3) **How would you rate MotoGP compared to other motorsports in terms of sustainability?**
    - Much more sustainable
    - More sustainable
    - About the same
    - Less sustainable
    - Much less sustainable

4) **How would you rate your level of interest in MotoGP?**
    - Casual fan
    - Avid fan
    - Occasional viewer

- Not a fan, but interested in motorsports

5) **How often do you watch MotoGP races per season?**

- Every race
- Most races (70%)
- Some races (35%)
- Rarely (10%)

SECTION 3: **MotoGP and Sustainability**

6) **How important is sustainability in your perception of motorsports?**

- Very important
- Somewhat important
- Neutral
- Not important

7) **On a scale of 1 to 5, how important is it for you that MotoGP prioritizes sustainability?**

- 1 (Not important)
- 2
- 3
- 4
- 5 (Very important)

8) **How important do you think sustainability efforts are for the future of MotoGP? (Rate from 1-5)**

- 1 (Not important)
- 5 (Very important)

9) **How much do you think MotoGP's commitment to sustainability influences your support of the sport?**
    - A great deal
    - Somewhat
    - Very little
    - Not at all

10) **Do you think MotoGP is taking the necessary steps towards becoming more environmentally sustainable?**
    - Yes, they are doing enough
    - Yes, but more can be done
    - No, they are not doing enough
    - I don't know

SECTION 4: **Dorna's sustainability initiatives**

11) **How familiar are you with the sustainability initiatives implemented by Dorna Sports in MotoGP? (Select one)**
    - Very familiar
    - Somewhat familiar
    - Not familiar at all

12) **Which sustainability initiatives in MotoGP are you aware of? (Select all that apply)**
    - Racing for the Future program
    - MotoE (electric motorcycle racing)
    - Use of synthetic fuels in MotoGP by 2027
    - Environmental impact reduction in race events
    - Others (Please specify)

13) Where did you hear about these initiatives? (select all that apply)

- Official MotoGp channels (e.g., website, social media, etc)
- During race broadcasts
- Word of mouth (Family&Friends, etc)
- Other (please specify)

SECTION 5: **Opinion on MotoGP's Future and Sustainability**

14) MotoGP plans to transition to 100% non-fossil fuel by 2027. How do you feel about this?

- Very positive
- Somewhat positive
- Neutral
- Somewhat negative
- Very negative

15) What do you think about MotoE as part of MotoGP's sustainability strategy?

- A great innovation and crucial for the sport
- A good addition, but not essential
- Indifferent
- It distracts from the traditional MotoGP
- I don't like it

16) How well do you think MotoGP is balancing sustainability with maintaining excitement in the sport?

- Excellent balance
- Good balance
- Fair balance
- Poor balance
- No balance at all

SECTION 6: **Fan Engagement with Sustainability**

17) **Do you think sustainability efforts (e.g reducing carbon footprint, using sustainable fuels) make the sport more appealing to you?**

- Yes, much more appealing
- Somewhat more appealing
- No difference
- Somewhat less appealing
- Much less appealing

18) **Would you be more likely to attend a MotoGP event if it were certified as a "sustainable event" (e.g., carbon neutral, minimal waste)?**

- Yes
- No
- Maybe

19) **Do you think the increased focus on sustainability will attract new fans to MotoGP?**

- Definitely
- Probably
- Neutral
- Unlikely
- Definitely not

20) **Do you think MotoGP should play a role in educating fans about environmental issues?**

- Yes, they have a responsibility
- No, their role should be focused on racing
- I don’t have an opinion

SECTION 7: **Comparison with Other Motorsports**

21) **How do you think MotoGP's sustainability efforts compare to other motorsports (e.g., Formula 1)?**

- MotoGP is leading the way
- MotoGP is making good progress but is behind some other sports
- MotoGP lags behind in comparison
- Not sure

22) **Formula 1 also aims to use 100% sustainable fuels by 2026. How does this affect your view of MotoGP's goal to use sustainable fuels by 2027?**

- MotoGP is keeping pace
- MotoGP is behind
- MotoGP is ahead
- I wasn't aware of Formula 1's efforts

SECTION 8: **Future Directions**

23) **How do you see the future of MotoGP in terms of environmental sustainability?**

- Very optimistic
- Somewhat optimistic
- Neutral
- Somewhat pessimistic
- Very pessimistic

24) **Would you be willing to pay a premium for tickets to MotoGP events if it ensures the event is carbon-neutral?**

- Yes, absolutely
- Maybe, but it depends on the cost
- No, I wouldn't

25) **Please share any additional thoughts or suggestions on how MotoGP and Dorna can improve their sustainability efforts. (optional)**

- (Open-ended question)

SECTION 9: **Demographics**

26) How old are you?

- Under 18
- 18-24
- 25-34
- 35-44
- 45-54
- 55 and over

27) What is your gender?

- Male
- Female
- Non-binary
- Prefer not to say

28) Where are you from?

- (Open-ended question)

Thank You!

We appreciate your time and valuable input. Your insights will help shape the future of sustainability in MotoGP and motorsports overall.