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CAPSTONE Project – Environmental Impact in Tulum, Mexico

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Executive Summary

The purpose of this document is to provide an overview of Tulum and the environmental, social and economic (ESG) challenges that are surfacing due to the rapid growth and the lack of governmental regulation. It also provides some potential alternatives taken by both public and private players in similar destinations.

Tulum, one of the most tourist destinations in Mexico, is facing an ecologic challenge due to the lack of infrastructure, government regulation and increasing presence of drug cartels. Although it is highly known as a sustainable and “eco-friendly” destination, the economic interests of both private and public decision makers and the accelerated growth of tourists, residents and investors are driving Tulum towards an ecologic and social problem.

Tulum

Tulum is located on the eastern side of the Yucatan Peninsula, in the Mexican state of Quintana Roo. The town, often called *Tulum Pueblo*, and the nearby Tulum Mayan Ruins are in the heart of the Riviera Maya on the Caribbean Sea. Tulum is approximately 45 minutes south of Playa del Carmen and 90 minutes south of Cancun by car. The Yucatan peninsula contains the largest underground freshwater system in the world, with the well-known underground rivers and cenotes, water-filled sinkholes formed by the collapse of limestone, which are one of the biggest natural attractions.

From 1990 to 2010, Tulum had a sustained population growth of 12% YoY. However, in the recent years there has been an accelerated growth, now having more than 200 thousand inhabitants and +3 million visitors per year and +400 hotels, as it was getting positioned as the preferred eco-tourism destination for US and EU markets. However, this branding has been called out as “Greenwashing” exposing its inconsistencies along with the huge impact that the development and growth has caused. “Greenwashing” is a term that’s grown substantially in the past decade. The term refers to false or misleading marketing tactics that businesses use to market themselves as environmentally sustainable/friendly without actually making investments into business practices that help them deliver on those eco-friendly promises.

Additionally, in 2018, the Mexican government announced an infrastructure project called “Tren Maya”, an intercity railway line stretching 950 miles around the Yucatan Peninsula, in a rough loop around the states of Chiapas, Tabasco, Campeche, Yucatan, and Quintana Roo, as well as the Tulum International Airport. Both projects are intended to be finished by the end of 2024. And are expected to increase the tourism in Quintana Roo by 25%.

As a result of this, the investments and development projects are accelerating even more. The main impact can be divided in three segments: economic, environmental and social. Each one has been raised and being considered within public and private initiatives that are currently in place. Due to the

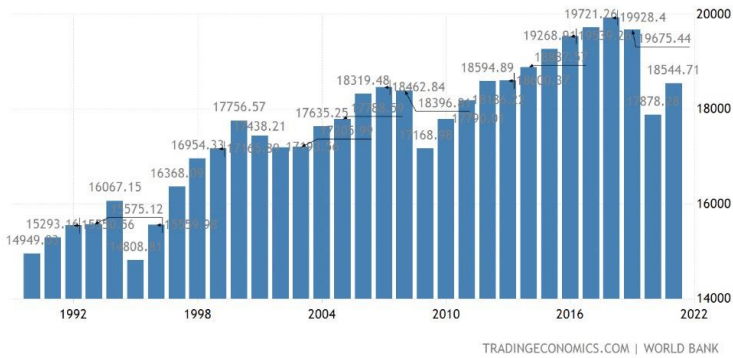
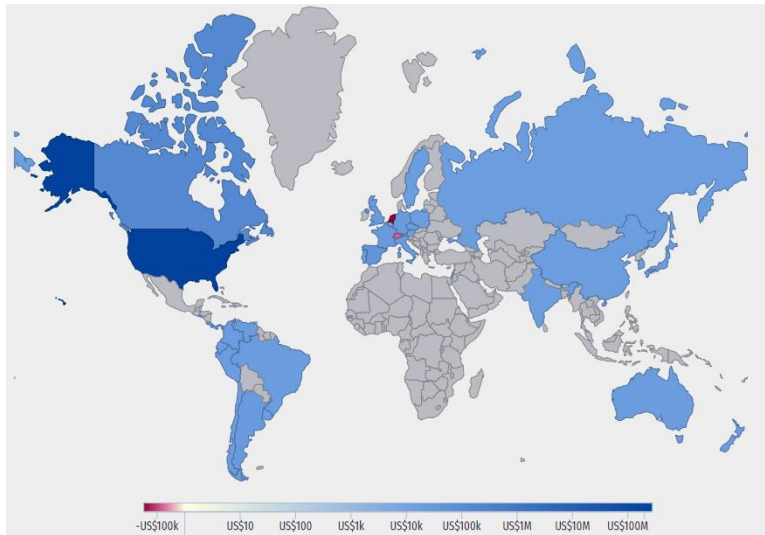
importance that tourism has in Mexico and the share that Tulum has, there is a strong interest in reducing the impact and becoming a real sustainable destination.

Economic

Firstly, from an economic perspective, Tulum's tourism boom has generated significant revenue and employment opportunities. According to a report by Forbes, the town's tourism industry witnessed a staggering growth rate of 76% between 2013 and 2021, attracting both domestic and international visitors. The influx of tourists has led to the emergence of new hotels, restaurants, and businesses, fueling economic development.

However, this growth has also contributed to rising property prices, making it more challenging for locals to afford housing.

The surge in demand for housing, driven by investors and tourists, has led to skyrocketing real estate costs. Locals, particularly those with lower incomes, find it increasingly difficult to afford housing in the town. This poses a threat to the social fabric of the community and raises concerns about the displacement of local residents. A study by the Yucatan Times highlights the disparity between the booming luxury real estate market and the lack of affordable housing options for locals. Table 1 shows the increase in real state properties from the last 30 years, showing how Tulum



has been spotted as a top investment destination, coming with an accelerated increase on land and consumable prices. Table 2. Show the country source for mentioned investments and its average, with US leading the investments with a total investment of \$277 MM USD in 2022.

Environmental

Secondly, the rapid expansion of Tulum has had adverse environmental effects on its fragile ecosystems. Increased construction of hotels, resorts, and infrastructure has put a strain on these delicate environments. As a result of the unchecked growth, 80% of the 10,000 cenotes across the Yucatan Peninsula are polluted. A study by the United Nations University found that the pollutants include illicit drugs, pharmaceutical chemicals, personal care products, and pesticides. Pit latrines, septic tanks, and leaking sewer lines combined with limited wastewater treatment systems. This was caused by the lack of infrastructure and the fact that, up to 80% of Tulum's resorts don't have adequate sewage, and many of the new construction projects aren't being connected into an existing network that can sustain the current population. The majority of the waste water is dumped into the swamps or the ocean, and a bulk of the trash ends up in open aired landfills (pictured in the google image search screenshot below). Said trash proceeds to decay, rot, and seep into the ground water. Plus, they are on top of sand dunes, which are crucial for preventing erosion.

On this topic, The 700-mile coast of Quintana Roo has been eroded at a rate of 1.2 metres a year, with some parts losing up to 4.9 meters a year, according to Mexico's tourism ministry. Beaches are disappearing, and some are only maintained artificially with sand dredged from the seabed. Often, they are little more than strips of sand, no wider than a dirt road. Sometimes the strand has completely vanished, leaving waves breaking against the walls of swimming pools, restaurants and houses.

Unchecked development has led to deforestation, pollution, and damage to coral reefs, threatening the long-term sustainability of the region's natural resources. The destruction of mangroves and loss of natural habitats have disrupted the local flora and fauna, posing threats to biodiversity. The expansion of hotels, resorts, and infrastructure has encroached upon previously untouched areas, resulting in irreversible damage to the environment. Algal blooms have also plagued the coast of the Riviera Maya, a phenomenon that scientists have linked to warming sea temperatures. The beachfront along the coast is frequently lined with mounds of rotting black seaweed. In Tulum, the seaweed is often stacked high in piles with workers shoveling it on to wheelbarrows on the shore and hotel owners despairing over where to put it all.

Social

Thirdly, the growth of Tulum has resulted in social challenges for the local communities. As more tourists flock to the area, there has been an influx of foreign investors and workers, leading to a shift in the social fabric. Local communities face the risk of displacement and loss of cultural identity. This transformation has raised concerns about the preservation of indigenous heritage and the ability of locals to benefit equitably from the economic opportunities generated by tourism.

According to the statistics, 36 percent of Tulum's population lived below the poverty line in 2018, well before the pandemic changed the face of the town. By 2020, that figure had reached a shocking 58%- a huge increase in such a short period of time. Of those below the threshold in 2018, 7.1 percent were

classed as being in extreme poverty. Again, by 2020 that figure skyrocketed to a heartbreaking 23.1 percent.

Furthermore, the surge in tourism has put strain on Tulum's infrastructure and public services. The town's roads, sewage systems, and waste management facilities were not designed to accommodate such a rapid increase in population and visitor numbers. An article in Mexico News Daily highlights the challenges of inadequate infrastructure, overcrowding, and traffic congestion, affecting the quality of life for residents and visitors alike.

In regards to the income per person, despite of the increase of the minimum wage in Mexico (represented in the chart below, the inflationary crisis and specifically, the increase cost of living in Tulum, has deteriorated the access to goods and services for the majority of the local population



Government and public initiatives

As a result of the exposure of these challenges in Tulum, the government has started implementing specific initiatives, like:

1. Implementing Sustainable Development Policies: Establishing and enforcing policies that prioritize sustainable development practices. This includes regulations on construction, waste management, and water usage to minimize environmental impact and promote responsible growth.
2. Protecting Natural Areas: Creating protected areas and nature reserves to safeguard Tulum's unique ecosystems. These areas will be managed to limit human activity, preserve biodiversity, and provide educational opportunities for visitors and locals alike.
3. Promoting Responsible Tourism: Collaborating with tourism stakeholders to encourage sustainable tourism practices. This involves promoting eco-friendly accommodations, supporting local businesses and artisans, and educating tourists about the importance of environmental conservation.
4. Strengthening Infrastructure: Investing in improving and expanding infrastructure to support the growing population and tourism demand. This includes enhancing waste management systems, upgrading sewage treatment facilities, and developing efficient transportation networks to reduce congestion and minimize environmental impact.
5. Engaging Local Communities: Involving local communities in decision-making processes, ensuring their voices are heard and their concerns addressed. This can foster a sense of ownership and promote sustainable development that aligns with the needs and aspirations of the local population.

Private initiatives

1. **Sustainable Tourism Certification:** Hotels, resorts, and tour operators can pursue sustainable tourism certifications such as EarthCheck, Rainforest Alliance, or Green Key. These certifications demonstrate a commitment to environmentally friendly practices, resource conservation, and community engagement.
2. **Eco-friendly Accommodations:** Private investors can develop eco-friendly accommodations that prioritize sustainability. This can include using renewable energy sources, implementing energy-efficient practices, employing green building materials, and incorporating water-saving measures.
3. **Responsible Supply Chain Management:** Businesses in Tulum can focus on sourcing products and services from local suppliers and artisans to support the local economy. This reduces transportation-related carbon emissions and promotes community development.
4. **Conservation Partnerships:** Private entities can establish partnerships with local environmental organizations and conservation groups. By providing financial support or collaborating on conservation projects, private initiatives can contribute to the preservation of Tulum's natural resources and biodiversity.
5. **Community Engagement and Employment:** Private businesses can prioritize hiring local residents, offering fair wages, and providing training and development opportunities. This fosters community engagement, enhances local livelihoods, and reduces social disparities.
6. **Waste Reduction and Recycling:** Private initiatives can implement waste reduction and recycling programs within their establishments. This involves proper waste management, segregation, and promoting recycling initiatives to minimize environmental impact.

Conclusion

In conclusion, collaboration between private companies and the government is crucial to effectively reduce the environmental and social impact in Tulum. By working together, they can leverage their respective strengths, resources, and expertise to achieve sustainable and responsible development in the region.

Private companies can bring innovation, investment, and industry-specific knowledge to the table. They can implement eco-friendly practices, develop sustainable infrastructure, and support local communities through responsible tourism and employment opportunities. Private initiatives can also contribute to raising awareness, promoting conservation, and fostering a culture of sustainability among visitors and residents. On the other hand, the government plays a critical role in setting policies, regulations, and standards for sustainable development. They have the power to enforce environmental protections, allocate resources, and ensure compliance with sustainability practices.

Key areas of collaboration can include:

1. **Policy Development:** Private companies can actively participate in shaping policies and regulations related to sustainable development. Their insights and practical experiences can inform effective and practical policies that balance environmental protection, economic growth, and social well-being.
2. **Public-Private Partnerships:** Joint initiatives between private companies and the government can be established to address specific environmental and social challenges. These partnerships can involve resource sharing, knowledge transfer, and collaborative projects focused on conservation, community development, and sustainable tourism practices.
4. **Education and Awareness:** Government and private companies can collaborate on educational campaigns and awareness programs to promote sustainable behavior among tourists, employees, and the local community. This can involve workshops, training sessions, and public outreach initiatives to foster a sense of responsibility and environmental stewardship.

By combining the resources, expertise, and influence of both private companies and the government, a comprehensive and holistic approach to reducing the environmental and social impact in Tulum can be achieved. This collaboration will not only help preserve the region's natural beauty but also ensure the long-term viability and prosperity of Tulum as a sustainable tourist destination.

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