

Essays on local currencies, development, and sustainable tourism

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Cycle XXXV — Academic Year: 2022-2023

Acknowledgements

Gratitude is the most beautiful flower that we can cultivate in the garden of our hearts. As I stand before this monumental achievement of completing my doctoral studies, I am humbled by the countless blessings that have adorned my journey.

First and foremost, I would like to express my heartfelt appreciation to my parents, Hildebrando Martins da Silva and Rosa Helena do Nascimento, and my sister Gabriela Nascimento da Silva, for their unwavering love, support, and encouragement throughout this endeavour. I am ever grateful for their steadfast belief in me and for their sacrifice to make this dream become a reality.

As I reminisce on the past three years, I am reminded of the kaleidoscope of cultures and diverse personalities that have colourfully enriched my life. To my classmates of 35 cycle and every member of the faculty at the Departments of Economics at the Universities of Siena, Pisa, and Florence, I thank you for the stimulating intellectual environment that challenged me to stretch beyond my limits.

To my family, my aunts, uncles, cousins, cousins, grandparents, and friends, without whom my life would be incomplete, I say thank you for being my rock and for always being there when I needed you most. To the land of my birth, Brazil, I am forever indebted to you for your vibrant and resilient spirit, which has impacted my life in more ways than words can express.

To my dear friend, Nicole Bentes, who has been a constant source of inspiration, support, and love, I express a heartfelt gratitude that mere words cannot fully convey. Your unwavering belief in me and your unconditional love have helped me overcome difficult times and kept me on track. Your kindness, wisdom, and sweetness have made my life infinitely better. I could not have reached this far without you, and for that, I will be eternally grateful.

Lastly, I express my gratitude to my esteemed advisors, Lionello Franco Punzo, Salvatore Bimonte, Carlos Costa, Leila Kebir, and Carmem Feijó, for their invaluable guidance, mentorship, and patience. You have instilled in me a passion for rigorous research and a tenacious spirit for excellence.

To all who have contributed to making this moment possible, I dedicate this work to you. May this fruition be a symbol of the many possibilities that await us when we dream, persevere, and express gratitude along the way.

Abstract: The past years brought challenges to humankind. This was not different to the tourism sector which needed to face travel restrictions and the perspective of changes in behaviour when travelling. As a consequence, this thesis aims to deal with new perspectives on tourism, addressing local development and well-being. This work is divided into three papers and brings three different propositions to improve local conditions and deal with visitors by using local currencies. The goal of local currencies is to allow money coming from out of the community to circulate in the local economy, possibly creating a virtuous circle. The first chapter treats the Maricá's case, a small city in Brazil that is implanting basic income for its inhabitants using oil royalties and a local currency called Mumbuca. It proposes a change in the engine of the city's economy, coming from oil to sustainable tourism, including tourism in the local financial framework. The second chapter proposes a balance in the negative externalities coming from visitors in favour of locals. To do so, it suggests a basic income coming from tourism, being paid through local currency. On the contrary, the last chapter proposes a kind of local cryptocurrency, based on cases in the literature and in specialized markets, in order to foment tourism and improve locals' well-being.

Key words: *Local Currency; Sustainable Tourism; Maricá; Basic Income; Cryptocurrencies*

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1. Introduction

Into the recent crises (e.g., the subprime crisis of the 2009, the pandemic covid-19 and the environmental crisis) and technological innovations like blockchain and the new 5G internet infrastructure, some industries needed to rethink their way to do business. This is the case of tourism, which faced a significant flow reduction in the past years, due to travel restrictions caused by health restrictions. Specialists are trying to figure out the new tendencies and, in particular, whether recent events are going to change visitor's behaviour.

In this context, this work intends to contribute to the tourism industry, without forgetting to abord social aspects. The goal is to propose three manners to do tourism supply in a sustainable way, always focusing on the region and its inhabitants: thus creating incentives for visitors, without harming residents. However, considering that the next three chapters are propositions and that there are no equivalent cases in the literature or in the "real world", adaptations had to be made. First, the literature's review has considered cases with similar characteristics, to study them and try to understand their successes and in case, their failures. Second, topics were added to our propositions, focusing on the social and local features, for instance, basic income, commons management, local currencies, and micro-finance. Third, schemes were drawn and modelled, in order to facilitate the visualization and its progress. Fourth, because of the lack of data, we decided to conduct interviews to show the feasibility of our proposals, as detailed in the methodological section.

The first Chapter begins with the case of Maricá. It is a small city in Brazil, that is paying out a basic income to part of the population, using oil's royalties of. Together with the basic income, other social policies are being implemented, where the municipality has been facing relative economic success. The paper maps the social initiatives in the city, drawing its local financial system. At the same time, it indicates the investments that have been made to change the drive of the local economy, considering that oil is a finite resource. Despite tourism being cited in the street interviews and in the interviews with local government representatives what could be seen is that the speech is different from the practice, at least until now. There is no explicit plan or coordination between local actors to change the engine of Maricá's economy. The article proposes to use the local financial framework to attract visitors and fund new local businesses.

In the second essay, the focus is on the balance between the externalities perceived by the residents. The literature on this topic points out that tourism could bring negative externalities and, in some cases, generates gentrification. Additionally, the benefits are recognised, in different intensities, by the locals. For instance, those who work directly with tourism are more benefited than the rest of the population who receive only indirect benefits, such as infrastructure and security. Thus, considering the local resources as a common property of the inhabitants, the report proposes a type of rent, coming from tourism to the *owners* of the tourist destination. It would be paid through a basic income to residents using a local currency, in order to guarantee the circulation of such a rent in the regional economy. Interviews revealed that visitors would be willing to pay a small fee if it is known that this would revert to the community.

The last study proposes a mechanism mixing local currencies and cryptocurrencies in order to foment tourism, facilitate transactions and fund residents. The chapter maps the blockchain and the cryptocurrency processes and compares them with the local currencies' aspects. Simultaneously, it brings in the case of regions and firms that intend to stimulate tourism and consumption by creating their own cryptocurrencies, listing their characteristics and the scheme proposed. As an alternative, the paper proposes a mechanism considering the cases, the cryptocurrency market behaviour, the literature on the topic and the local currency case on Maricá. This new structure is modelled in order to facilitate visualization. Concomitantly, interviews were conducted to measure the acceptance of a local cryptocurrency mechanism, by visitors and residents. This innovative structure was largely accepted by the respondents.

Hence, considering all three works, this thesis intends to contribute to sustainable tourism focusing on local development and social equality. Because of this, the proposals would be better implemented in poor locations that are starting to grow with tourism as in developing countries. In Brazil, for instance, there are some examples of fishermen's communities that turned into fancy destinations in the past years. Consequently, with the arrival of visitors, locals began to face disorderly growth, rising prices, and violence. This thesis aspires to cope with those situations.

This thesis is divided into this introduction; the methodology; the common literature review on the three articles (local currency and sustainable tourism); the first article "Local currency, basic income and sustainable tourism. A proposal to change the drive of Maricá's economy"; the second chapter on "Tourism, inequality, basic income, and local currency"; the third essay on "Local cryptocurrencies and tourism modelling a new mechanism to incentive the sector"; finally, the conclusion; the references and the annexes.

2. Methodology

This section is reserved to explain the methodology of the following articles and the PhD trajectory that enabled the creation of this work.

After one year of lessons at the university of Siena, I had the opportunity to do three summer school courses: Tourism and Crisis at the University of Lausanne, Switzerland; Wellbeing entrepreneurship development in tourism at the University of Florence, Italy; Sustainability perspectives: A focus on AI, energy and climate action at University of Florence, Italy. The first course focused on how the tourism industry could react to the crisis after the pandemic. The course enfolded new perspectives and tendencies in the sector. The second class brought the well-being perspective in tourism and the concept of slow tourism. The last lesson was related to sustainability and new technologies in the new world post-COVID-19.

As a complement to my studies at the University of Siena, I had the opportunity to visit Universities and be in contact with specialists in the tourism field. At Federal Fluminense University, Brazil, I was accepted as an intern for 3 months in order to study the case of the basic income in Maricá/RJ, under the supervision of Professor Carmem Feijó. This period there allowed me to write one of the papers in this thesis and conduct presential interviews with important actors in the area. Conversely, I was accepted into the University of Lausanne as a visiting student in the department of geography, tourism, and territory. I worked in the department for 9 months under the supervision of Professor Leïla Kebir and I had the opportunity to be in contact with their research and seminars. At the same time, this period put me in touch with the Swiss financial system and its clusters of cryptocurrencies (for instance crypto valley and Lugano), helping me in my article about local cryptocurrencies. My last period abroad was at the University of Aveiro/Portugal in the Department of Economics, Management, Industrial Engineering and Tourism under the supervision of Professor Carlos Costa for 3 months as a visiting student. In Portugal, I developed my data analysis, interpretation, and production skills for my articles.

Regarding the methodology of the articles, all works had interviews in order to create a database and analyse if the proposals would have acceptance or to understand the views of important actors in the region. The details of the methodology are below.

2.1 Methodology on the article "Local currency, basic income and sustainable tourism. A proposal to change the drive of Maricá's economy".

In this article were conducted two types of interviews. The first one was between 17 September 2022 and 19 September in the streets of Maricá in the state of Rio de Janeiro/Brazil. A questionnaire was elaborated containing 13 questions with 10 objective answers (list of possible answers) and 3 open answers (where the responders would cite freely anything). 30 random locals were interviewed by me. The goal was to perceive their thoughts about Maricá and tourism, the necessities, possibilities, and future

expectations. All the costs were paid by me, including transportation, alimentation, hotel and the printing of questionnaires. The number of respondents was limited to 30 due to budget limitations and the fact that I was working alone. The questionnaire used is in annexe 1.

Inversely, the second type of interview was conducted specifically with actors of Maricá city, considering their job, functions, or specialities. It opted to divide the interviews into two groups: civil servants of Maricá's government and private persons related to the culture and traditions of the city. On the local government side, the interviewees were Adalton da Motta Mendonça, secretary of the solidary economy, responsible for the management of the local currency Mumbuca and its local financial system as well as the payment of the basic income; Clauder da Silva Peres, secretary of inclusive policies, responsible for include marginalized people in the local economy and in the daily life of the community; Diego Maggi, management of information in the Darcy Ribeiro Institute. The institute is responsible for gathering and organising studies and social indicators about the city of Maricá.

On the community side, the private persons interviewed were Vilson Corrêa, president of the Maricá' fishermen association. He is the leader of a historical community of fishermen that is seated in the city since 1700; Cacique Jurema, the leader of the indigenous community in Maricá. She is responsible for representing one of the native people in the region; Dona Ilma, leader of the tapestry community in Maricá. She has an atelier and is responsible for teaching people in the region the art of tapestry.

The questions were asked between September 14, 2022, and September 16, 2022, and are available in Annex 2. The goal was to have the perception from the local government side and from the private side about tourism in Maricá and future possibilities do the region regards the end of oil.

2.2 Methodology on the article "Tourism, inequality, basic income, and local currency".

The proposed model considers a basic income coming from tourism, using local currency. The goal is to balance the negative externalities perceived by the locals. As far as the author has researched, no real-world cases have been found linking basic income, tourism, and local currencies. This makes this article innovative and purposeful, aiming to improve the well-being of the region. However, the lack of examples brings some difficulties in the analysis and in the implementation. Because of that, the author opted to use the mechanism of Maricá as an example. But instead of considering the oil royalties to pay the basic income, it was considered a tax coming from tourism. To sustain the model, a math model was drawn to facilitate the understanding of the proposal. At the same time, an interview was conducted in order to capture the propensity of visitors to accept and use the innovative mechanism. The literature review comes to unify the topic and brings more consistency to the mechanisms.

The interview was implemented online, through the website Qualtrics¹. The questionnaire was created on the 17th of January and was activated on the 20th of February and finished on the 11 of March. Were elaborated 9 questions, where the respondent could choose from 5 "I totally agree" to 0 "I totally disagree". The number of respondents varied between 288 to 244 per question. The difference exists because the program allowed the person to answer one question and not answer others. In this case, only the questions that the person wanted to reply to were computed. The questionnaire could be found in Annex 3.

2.3 Methodology on the article “Local cryptocurrencies and tourism modelling a new mechanism to incentive the sector”.

This article is different from the two others because despite being an innovative proposal like the second one, there are some study cases on which to base it, but without available data. Considering these facts, this work analysed all the cases of cryptocurrency and tourism available. Two of them were not implemented yet and all information about them was obtained through the internet. The one that was implemented seems a case of no success and its aspects were studied in order to avoid the same thing. Other cases were studied in order to have more robustness in the scheme. At the same time, it was attempted an interview with the responsible for the projects but no answer.

The proposition was drawn considering the cases of cryptocurrencies and tourism and the local currencies' characteristics. In order to support this model, a mathematical model was drawn, and interviews were conducted online to capture the propensity of people to use and accept the mechanism.

The interview was created on the 12th of January and started to circulate on the 16th of January until the 6th of February on the website Qualtrics. The number of respondents varied between 257 to 234 per question. The difference exists because the program allowed the person to answer one question and not answer others. In this case, only the questions that the person wanted to reply to were computed. The questionnaire has 8 questions, and the respondent could choose from 5 "I totally agree" to 0 "I totally disagree". The questionnaire could be consulted in Annex 4.

¹ See more in <https://www.qualtrics.com/>.

3. literature common to the three articles

As pointed out in the methodology, this part is reserved to common topics: Currencies, Endogenous money, and local currencies.

3.1 Currencies

The currencies as we know them nowadays have been facing some transformations. These transformations are mainly correlated to durability, fraud prevention, and migration to the digital means to offer financial incentives to the economy (Bordo, 2021). But their main functions remain the same as in the past, Stiglitz, and Walsh (2002): Unit of account; medium of exchange and store of value.

According to the authors, the first function is related to the possibility to value goods and services in the economy. This facilitates the comparison between all possible choices allowing the agents to choose the best for them. The second function, the most important one, came to replace the past trade among goods and services, giving more liquidity and facility to the economy. Because of this function, it is not necessary anymore to have the coincidence of desires in exchanging goods/services, to make a transaction. On the other hand, the third one is related to storing the wealth without losing value, giving to the agents more stability and prevision to make their plans.

Because of these characteristics, the currency has an important role in the capitalist system, being managed by the monetary authority in each country, Lietaer (2001). Nevertheless, due to the cyclical aspects of the capitalist economy that generates significant instabilities, such as the 1929 (great depression) and 2008 (subprime crises), some local monetary alternatives have been utilized in order to face those moments (Fare & Ahmed, 2017).

3.2 Endogenous money

The concept of endogenous money has been a topic of debate in the field of economics for several decades. Endogenous money refers to the idea that the money supply is determined by demand for credit, rather than by the actions of the central bank (Goodhart 1989). The origins of endogenous money theory can be traced back to the works of economists like Knut Wicksell and Joseph Schumpeter. Wicksell (1898) argued that the interest rate was determined by the interaction between real factors such as productivity and demand, rather than being set by the central bank. Schumpeter (1934) further developed this idea, arguing that banks create money by extending credit to borrowers, and that the money supply expands and contracts in response to changes in demand for credit.

However, theoretical underpinnings of endogenous money can be traced to the post-Keynesian school of economics. According to Lavoie (1984), post-Keynesians argue that banks play a crucial role in the creation of money, and that the money supply is endogenously determined by the interaction between the demand for credit and banks' willingness to lend. This view contrasts with the mainstream neoclassical approach, which sees money as a neutral intermediary that does not affect the real economy.

Nicholas Kaldor contributes to the theory of endogenous money, challenging the neoclassical view of money as a neutral and exogenous variable in the economy. Kaldor's version of the theory posits that money is not a commodity that is exchanged for goods and services, but rather a unit of account that is created by banks as they extend credit to borrowers (Fontana, 2018). According to Kaldor (1982), banks do not lend out existing deposits, but rather create new money in the form of bank deposits when they make loans, subject to their reserve requirements and the demand for credit. This means that the supply of money is determined endogenously by the demand for credit, rather than exogenously by the central bank's policy.

Kaldor's theory of endogenous money has several implications for macroeconomic analysis and policy. Firstly, it challenges the traditional quantity theory of money, which assumes a direct and stable relationship between the money supply and the price level. In an endogenous money system, changes in the money supply are driven by changes in demand for credit and can have real effects on the economy, such as affecting investment and consumption. Secondly, it suggests that monetary policy may have limited effectiveness in controlling the money supply and inflation, since the central bank can only influence the supply of reserves and the cost of borrowing, but not the quantity of money created by banks. Thirdly, it implies that a better understanding of credit markets and bank behaviour is essential for macroeconomic analysis and policy (Palley, 2002).

However, Kaldor's ideas on endogenous money have been subject to debate and further development in the post-Keynesian and heterodox economics literature (Howells and Bain, 2007). Some scholars have extended the theory to incorporate a greater role for the government and central bank in shaping the credit market and influencing the quantity of money. Others have emphasized the importance of financial instability and speculative behaviour in creating endogenous money cycles and crises. Nevertheless, Kaldor's contribution to the understanding of money creation and its relationship to the real economy remains significant and relevant to current macroeconomic debates (Wray, 2019).

One example in the context of Kaldor's theory of endogenous money is the concept of "helicopter money", which refers to the idea of injecting new money directly into the economy through measures such as government transfers or rebates to households (Buitier, 2014). This concept was famously proposed by economist Milton Friedman in the 1960s as a way to stimulate aggregate demand and avoid deflation.

In the context of Kaldor's theory, helicopter money can be seen as a way to directly increase the demand for credit and therefore stimulate the creation of new money by banks. By putting new money into the hands of consumers, the government can potentially increase their willingness and ability to borrow and spend, which in turn can

lead to expansion of bank deposits and credit creation. This is in contrast with traditional monetary policy tools, such as interest rate changes, which work indirectly by altering the cost of credit and influencing the demand for loans.

Nonetheless, the empirical evidence for endogenous money theory has been mixed. Some studies have found support for the idea that changes in the money supply are driven by changes in the demand for credit. For example, Kakes and Boeschoten (2010) found that the demand for credit was the main driver of changes in the money supply in the Netherlands between 1998 and 2009. Similarly, Bernanke and Gertler (1995) found evidence that banks' willingness to lend was a key determinant of credit and economic activity in the United States. On the other hand, other studies have found evidence that challenges the endogenous money view. For example, Bernanke and Blinder (1988) found that changes in the money supply were largely driven by changes in the monetary base, which is controlled by the central bank. Similarly, Goodhart (1989) argued that banks' willingness to lend was constrained by regulatory factors and other institutional constraints.

Hence, the concept of endogenous money has been a controversial topic in the field of economics. While some argue that banks play a crucial role in the creation of money and that the money supply is endogenously determined, others maintain that the central bank plays a dominant role in controlling the money supply. Empirical evidence for endogenous money has been mixed, with some studies supporting the theory while others challenging it. Further research is needed to fully understand the role of banks and the central bank in determining the money supply.

3.3 Local currencies

In the regional aspect, alternative local currencies were developed in the past years to face economic issues. These alternatives first appeared as temporary and complementary solutions to deal with massive unemployment, the collapse of the local industry, currency crises, solvency problems and wars (Fare & Ahmed, 2017). These movements are also correlated to the green and the alternative agenda aiming for more progress through sustainable development, Boyle (1993). Other important aspects according to David and David (1987) and Elkins (1993) are the improvement of self-reliance of the community and the inclusion of the informal sector in the economy.

The emergency of alternative currencies constitutes the complementary currency movement (CCM) and has as a characteristic the fact that these systems involve the use of the complementary currency together with the official currency, Lietaer (2001). These systems can be viewed as a social movement (Collom, 2005) and are characterized by the generation and circulation only within the boundaries of a geographic locality, North (2010). The local currencies can be divided mainly into three categories, according to Greco (1994): i) Local Employment and Trade System (LETS); ii) HOURS-based system; iii) Time dollars system.

Consistent with Greco (1994), the LETS system is the biggest type of complementary currency, and its best definition is "mutual credit" or "community credit". This is because it works as a cooperative (not-for-profit bank) where all participants have an account on the system and offer their services and products to gain credit to exchange for other products and services inside of the system. Normally, it is a digital system without the use of cash (in some cases, notes can be used too), and it is utilized to reduce the need to use the official currency, Aldridge, and Patterson (2002). The idea is to build a sense of community and incentive members to support each other reducing imports from out of the region in a transparent system with easy access to all.

Greco (1994) explains that the HOURS system is mainly based on alternative printed cash and is linked to 2, 1, 1/2 and 1/4 hours of work pegged to the official currency. This parity is purposely set above the minimum hourly wage in order to boost economic dynamism. The businesses and individuals that accept the alternative currency are listed in a magazine offering their services and goods, with a small amount being paid for the advertisement. At the same time, when it is accepted the structure receives a certain amount of the alternative currency, to participate.

According to Glover (1995), the idea of this mechanism is to raise the minimum wage in the community, help the unemployed to find a job, improve the local economy fomenting new and helping old businesses, decrease the dependence on imported capital and goods and to create aid trade with mutual benefits for the society. Some movements also provide loans, linked to the amount of alternative cash in circulation, to participating companies.

On the other hand, Greco (1994) points out that the Time Dollar system is related to helping members of the community and has its bases in a type of voluntary mechanism. The idea is that an individual gets credits for helping others and may exchange these credits for some type of service, at the base of one hour for one hour. According to Cahn (2000), unemployed, minors, elderly, youth, and disabled people have significant encouragement to participate, mainly because all hours of services are considered equal in the system. The Time dollar contributes to the social capital in the region and also reduces the social exclusion, Seyfang (2003).

Analysing the general case of the implementation of alternative currencies, Collom (2005) affirms that some preconditions are important to the success of the mechanism: a more heterogeneous population, a significant number of educated and young residents, a community more liberal and progressive, great income inequality and a considerable number of unemployment and self-employed residents. On the other hand, in specific cases, North (2010) concludes that important facts to a successful implementation are prior experience with local currencies, a solid business sector and well educated and progressive population. Comparing unsuccessful with successful cases, Ryan-Collins (2011), Graugaard (2012) and North (2013) found out that communities in isolated areas, with low population, and lower levels of household incomes, are more likely to be successful.

Nevertheless, some cases could not reach pre-set goals. As reported by North (2013), Ryan-Collins (2011), Blanc (2011), Kichiji and Nishibe (2008), and Williams et al. (2001), the main problems to be found were low publicity, lack of coordination and of

governance, problems of trust in the system, no government support, issues of professional and technical knowledge, absence of suppliers accepting the local currency, significant fees charged, insufficiency of discount to consumers, limited banking structure, the dependence on volunteer work.

4. Local currency, basic income, and sustainable tourism: A proposal to change the drive of Maricá's economy

Abstract: Maricá, as the largest recipient of oil royalties in Brazil, could implement a basic income for its inhabitants. This income is paid through a local currency called Mumbuca which is part of a local financial system, composed of a bank, an online payment company, a supervisor, and a fund. However, with the oil royalties comes the discussion about the future of the region after the depletion of oil. Investments in the local's well-being as well as in changing the engine of the local economy are considered by experts to be important for a sustainable transition. An analyse was made by interviews, field research and literature showing that despite the investment in social aspects the municipality of Maricá does not have a clear plan to turn into less dependent on royalties in the future. Some projects are in practice, mainly focusing on the social aspects, but other than these the rest don't seem to rely on the coordination of city agents. On the other hand, tourism was indicated by the majority as a good possibility for Marica's future. The sector is still small in the city, but the respondents see a potential in it. The main points to incentivize the tourism as mapped, were greater governmental attention, investment in the natural aspects of the city, creation of new attractions, more disclosure, and more infrastructure.

4.1 Introduction

The environmental crisis has been challenging all countries to change the way to induce the economy to grow. Practically all sectors of the economic structure are facing pressure for a change in processes, behaviours, and technologies to help mitigate the Ambiental issues.

Nowadays, besides worrying about economic growth and job creation, nation and cities are paying more attention to developing their economies in a sustainable way. In this sense, sustainable development means looking at the needs of the present society without compromising the resources and needs of the future generation (WCED, 1987). Because of that, the United Nations launched the sustainable development goals in 2015, aiming to reach better indexes in 17 areas by 2030 (United Nations, 2015).

In some way, this is what the city of Maricá, in Brazil, is trying to do. The city became the biggest recipient of royalties in Brazil from the oil exploration in its territory (Ribeiro et al, 2018) and is investing in social policies to improve well-being in the region. The main measure is to give a basic income to the population through a financial local system called Mumbuca. Other than that, the local currency and its mechanism are used to implement other public policies in different areas, functioning as a disseminator. For instance, incentives for solar panels, education, and popular restaurant.

Nevertheless, the efforts to make the city's economy less dependent on mineral extractions and to develop other industries to reach a more sustainable future seem limited. Despite the investment in education and in the technical training of local workers, the city is creating a logistical hub and a technological park to improve oil extraction and

to be inserted in the productive chain of this industry. The idea of deepening investments in the extraction sector, using the revenue from it could be problematic for the continuity of social policies.

According to the experts, as shown in the next sections, the present revenue coming from the extraction industry should be used, among other things, to minimize the region's economic dependence on the extractive industry. At first glance, it may seem contradictory to utilize the money coming from oil exploitation, for instance, to talk about sustainability. But the definition of royalties is linked to sustainable development, and it aims to compensate the next generations for the absence of the resource providing intergenerational justice (Neher 1990).

Hence, considering that the oil field of Maricá is finite, this article's goal is to map the direction of the investments, to understand the role of sustainable tourism in the city and propose a change in the city economy's engine. From oil exploration to sustainable tourism, using the mechanism implemented: the local financial system Mumbuca. To do so, the most relevant public policies in Maricá and Mumbuca's financial mechanism are mapped. At the same time, the natural and cultural potentialities of the city are raised through field research. To complete the analysis, interviews were conducted in two different ways: On the streets of Maricá with random people and with representatives of the local government and local leaders.

The present work is divided into 6 parts: This introduction; the Maricá's case and its financial mechanism; the possible future of Maricá, the analysis of the interviews, the conclusion, and references.

4.2 The present of Maricá

4.2.1 Maricá's case

Maricá is a city located in the state of Rio de Janeiro in southeast Brazil. Considering the last demographic census, in 2010, the municipality estimative for 2022 is 167.668 inhabitants (IBGE 2022)². It is far from the city of Rio de Janeiro 63 kilometres in a location called the "lake region", an important regional tourism destination that received more than 1 million tourists in the new year's holiday of 2022³. According to Ribeiro et al (2021), the percentage of people with occupation is 22% of the total population. The majority is working for the local government. On the other hand, the GDP per capita was R\$232.761,15⁴, in 2019, showing the importance of the royalties coming from the extraction sector, discussed below.

Regards to the reserves and production, Brazil is the 9th country in the world in oil production and the 15th⁵ in the number of oils reserves. Additionally, the federal constitution of Brazil guarantees profit sharing or financial compensation arising from

² See more in <https://www.ibge.gov.br/cidades-e-estados/rj/marica.html>.

³ See more in <https://www.cnnbrasil.com.br/nacional/cidades-da-regiao-dos-lagos-do-rio-devem-receber-mais-de-1-milhao-de-turistas/#:~:text=A%20seguir-,Cidades%20da%20Regi%C3%A3o%20dos%20Lagos%20do%20Rio%20devem,de%201%20milh%C3%A3o%20de%20turistas.>

⁴ See more in <https://www.ibge.gov.br/cidades-e-estados/rj/marica.html>.

⁵ See more in <https://www.worldometers.info/oil/brazil-oil/>.

the exploration of oil, natural gas, and water resources for the generation of energy in the national territory (Brazil 1988)⁶. According to the federal law 12734/2012, the royalties are the financial compensation to the Brazilian state, states and municipalities from the exploration and production of petrol, gas, and fluid hydrocarbons in their territories.

From 2017 until nowadays, Maricá became the most royalty's receiver in the country. This demonstrates the significant extraction and production within the municipality's boundaries, being responsible for 68,7% of the revenue of the city in 2018, Ribeiro et al (2021).

Hence, the city administration had a considerable increase in the available income, and it's started some public policies aiming at the social aspects. The first and main implementation was the basic income through the law 2448/13, named basic income Mumbuca. This legislation also created the popular bank of Maricá (Mumbuca bank), the local currency called Mumbuca and the city council of solitary economy, combating poverty and developing Maricá. In the beginning, it starts not taking into account two important principles of the basic income drawn by experts such as Parijs and Vanderborght (2006). The universality: It was limited to families that received one minimum wage and not to all city's population. Individuality: It was transferred to the head of the family and not to everyone in the house (Medeiros and Pires 2021).

In 2015 a change in the basic income mechanism occurred with the creation of law 2641/2015. The local government changed the name of the program to "Renda Básica Cidadania" targeting all inhabitants in steps, prioritizing the poorest. According to Rodrigues e Neumann (2021), from 2022 the basic income program in Maricá attends 42.000 people, 1/3 of the total population, that receives 170 local currencies monthly.

4.2.2 Mechanism for implementing public policies in Maricá.

Together with the basic income creation, the local legislature created a local financial system to implement it. The local currency, Mumbuca and the community financial institution, called Mumbuca bank are the main pieces of it. The Mumbuca bank has the function to operationalise the circulation of the Mumbuca currency. The local currency is managed by the Palmas institute (a pioneer in the implementation of local currency in Brazil) and the payment system is managed by the "E-dinheiro"⁷, linked by all community banks in the country Rodrigues e Neumann (2021).

Therefore, the local structure works as follows: Private companies are allowed to explore the petrol in the Maricá's territory, through concession. By exploring natural resources these companies must pay royalties monthly to the city. The royalties, among other things, are spent to give a basic income to the population through a local currency, by the local government. The Mumbuca bank concedes the money to the population with the management of the Palmas Institute, keeping the equivalent amount in Reais (Brazilian currency) in the bank for eventual withdrawals. The inhabitants receive the Mumbuca currency via a payment card that can be used in the establishment previously registered. When the individual buys a product or a service the transaction is performed

⁶ See more in article 20, § 1º

http://www.planalto.gov.br/ccivil_03/Constituicao/Constituicao.htm#art20%C2%A71

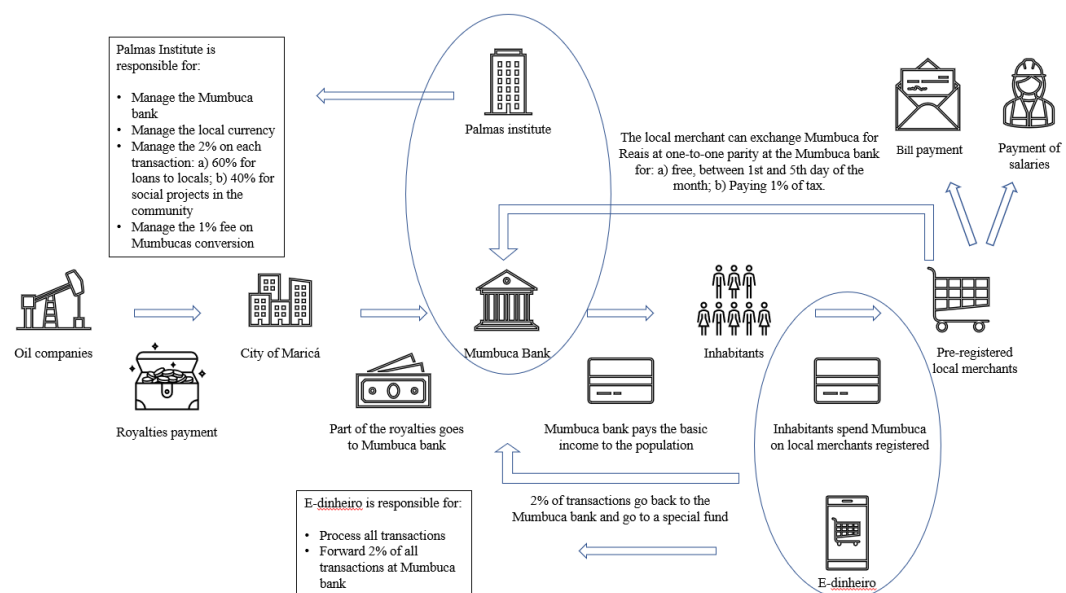
⁷ In English, e-money <https://edinheiro.org/>

by the "E-dinheiro", and the virtual money comes into the establishment account in the Mumbuca bank.

All the transactions are charged 2% and goes to a fund in Mumbuca's bank. 60% of the fund is reserved for loans, with zero interest rate, to the population. Local companies can use in working capital, financing of machinery, equipment and small renovations that improve production sites. Inversely, individuals can finance improvements to their homes. Besides the zero-interest rate, the loans work in the solitary perspective where the guarantor is a group of other inhabitants. The other 40% of the fund is used for social projects in the community.⁸

When the commercial establishments receive the local currency, they are allowed to exchange the Mumbuca currency for Reais. This operation could be for free, between the 1^o and 5^o of the month or, after that, paying 1% of the tax for it (Rodrigues e Neumann, 2021). On the other hand, they are stimulated to circulate the local currency and pay providers, workers, and bills (as from the local government). Nevertheless, only the merchants are allowed to exchange the local currency for the Reais. When the individuals receive the basic income, they are not allowed to transform it into the official currency. This could change in some specific cases addressed below.

Figure 1: Mumbuca's financial system



Source: Author

Analysing through interviews the Mumbuca system, Rodrigues, and Neumann (2021), found that a bottleneck in the reuse of Mumbuca currency. According to the authors, circulation is impaired when it reaches the hands of local establishments, mainly the bigger ones. The percentage of recirculation, - when the firms reutilize the Mumbuca in the local economy - by the bigger merchants was almost zero and around 6% by the smaller, between January and august 2020. In order to face this situation, the authors propose more incentives to keep the local currency, such as a mileage program, offers to

⁸ See more in <https://institutoedinheiromarica.org/mumbu-cred>.

convert Reais into Mumbucas and the creation of digital platforms to connect all system. Nevertheless, these data could have been affected by the pandemic when the population was instructed to stay home, and the firms were not allowed to open.

4.2.3 Mumbuca currency as an "umbrella" of local public policies

Besides the universal basic income policy, the community system and its currency also serve the implementation of other public initiatives. This structure is helping the local government to use the royalties in social policies focused on specific groups or areas, contributing to local development and well-being. They are analysed in the table below: Restaurante popular⁹; Mumbuca Futuro¹⁰; Mumbuca Ecológico¹¹; Mumbuca Indígena;¹² Renda Básica Jovem Solidário¹³; Renda Básica Gestante¹⁴; Programa de Amparo ao Trabalhador¹⁵; Programa de Amparo ao Emprego¹⁶; local Marketplace¹⁷.

Table 1: Local currency system programs

⁹ See more in <https://www.marica.rj.gov.br/2021/09/23/frequentadores-aprovam-o-cardapio-do-restaurante-municipal-de-marica/>.

¹⁰ See more in <https://www.marica.rj.gov.br/2019/08/02/abertas-inscricoes-do-mumbuca-futuro-para-alunos-do-9o-ano-da-rede-municipal/>.

¹¹ See more in <https://www.bancomumbuca.com.br/edital/mumbucred-ecologico.pdf>.

¹² See more in <https://www.marica.rj.gov.br/2018/03/02/economia-solidaria-faz-cadastro-para-o-cartao-mumbuca-indigena/>.

¹³ See more in <https://www.marica.rj.gov.br/2015/12/30/economia-solidaria-entrega-primeiros-cartoes-do-programa-jovem-solidario/>.

¹⁴ See more in <https://www.marica.rj.gov.br/2016/02/15/prefeitura-abre-inscricoes-para-renda-minima-gestante-atualizado/>.

¹⁵ See more in <https://www.marica.rj.gov.br/2020/03/28/auxilio-ao-autonomo-e-ao-informal-no-programa-de-amparo-ao-trabalhador-tem-regras-definidas/>.

¹⁶ See more in <https://www.marica.rj.gov.br/2020/05/14/prefeitura-detalha-criterios-do-programa-de-amparo-ao-emprego/>.

¹⁷ See more in <https://leisecamarica.com.br/noticia/40775/sou-de-marica-o-primeiro-marketplace-gratuito-da-cidade>.

Program	Target group	Goal	Value
Restaurante popular	All people	Democratizing access to a healthy and quality meal.	1 Mumbuca/Real for the breakfast and 2 Mumbucas/Reais for lunch
Mumbuca futuro	Young people enrolled in elementary and high school in the city	Pay for university education, start a business and help with the purchase of school supplies.	50 Mumbucas monthly to purchase scholar material and 1200 Reais per year to finance university studies or open a business
Mumbuca ecológico	Locals	Loans for installing solar panels at the residents' house or business.	100% financing of solar panels
Mumbuca indígena	Indigenous people who inhabit the Mata Verde Bonita village	To repair a historical debit with the indigenous population	300 Mumbucas monthly
Renda mínima jovem solidário	Young people aged 14 to 29	to offer professional qualification for young people	100 Mumbucas monthly
Renda mínima gestante	Pregnant	Provide minimum food conditions for pregnant women and children	85 Mumbucas monthly per one year
Programa de amparo ao trabalhador	Self-employed (formal or informal)	Payment of a minimum wage during the COVID-19 pandemic.	1045 Mumbuca convertible in Reais monthly
Programa de amparo ao emprego	Micro and small business workers in the city	Payment of a minimum wage for 6 months to face the COVID-19 pandemic.	1045 Mumbuca convertible in Reais monthly
Marketplace	City companies	Facilitate access to local products and business	Payments in Mumbucas or in Reais

Source: Author

Additionally, is possible to quote the fund in the Mumbuca bank coming from 2% of all transactions with Mumbuca currency that is used to loan the small firms, and inhabitants and to incentive social projects in the region. This amount is mainly used in 2 measures: Crédito Produtivo Solidário¹⁸, where the goal is to fund working capital, machinery, equipment, or productive inputs; Programa de Crédito para Melhoria Habitacional¹⁹, aiming to fund the purchase of building materials, furniture, and appliances. However, according to Rodrigues and Neumann (2021), from 3 million Mumbuca repassed by the E-dinheiro to Mumbuca bank due to the transactions in 2020, only 480.000 were granted as a loan to locals. The authors pointed out that this could be the effect of not knowing the lines of credit made available by the bank.

Given the considerable number of public policies utilizing the Mumbuca system, it's possible to notice its importance to the city. But not only in the number of measures but also in the social aspects of it to locals. According to the E-dinheiro (2020), there were 40.644 active accounts using the Mumbuca and 2.780 establishments accepting using the local currency.

This makes the system an important disseminator of social policies. This is because, once implemented, the mechanism has a low marginal cost if another public policy is inserted. In other words, since the financial local system is implemented, if the local government decides to create another policy to benefit some group, the implementation has a lower cost if compared with the situation where the scheme does not exist. Therefore, the financial local system Mumbuca could be considered an umbrella

¹⁸ See more in <https://institutoedinheiromarica.org/mumbu-cred>.

¹⁹ See more in <https://www.marica.rj.gov.br/tag/casa-melhor/>.

of the government initiatives in Maricá. Where the structure is the umbrella and some local public policies are below it, supporting and covering them.

Despite being important in the flow of money from oil royalties and embracing great numbers of public policies, the Mumbuca system does not encompass all local government initiatives. Some actions were taken out of it, for instance, the free buses²⁰ powered by electricity and hydrogen in partnership with a public university, the creation of solidarity fairs²¹ and community gardens²².

4.2.4 Public policies in Maricá and the need to diversify the economy.

Over the years, Maricá has been increasing the royalty's participation in its revenue due to the growing oil production in their area. It's coming from 7,5% in 2013 to 68,7% in 2018 of the total, according to Ribeiro et al (2021). In the same study, the authors analysed the percentage of the expenditures applied in what they called social aspects (social assistance, social security, health, and education) and urban aspects (Urbanism, housing, sanitation, and environmental management). Despite both aspects rise in absolute numbers, the first one dropped from 40% in 2013 to 33,37% in 2018 and the second raised from 22,83% in 2013 to 28,33% in 2018.

In addition to the local financial structure and its social policies, mentioned above, the city of Maricá also created a sovereign wealth fund, using part of the money coming from the royalties. Its intention is to save resources for future generations after reserves become exhausted and to protect the current generation from the immediate effects of resources resulting from oil²³. Besides this, the city is investing in eco-innovation as the free buses powered by electricity and hydrogen, free shared bikes, community gardens. These public policies could be seen as a way to turn the city into a more sustainable place.

Nevertheless, regarding diversification or the change of the engine of the local economy, pointed out below by Serra and Fernandes (2005), Duque (2008), Pacheco (2007) and Postali (2008) as important measures to implement using royalties, the result might be different. Analysing the main public policies of the Maricá government, including all in Mumbuca's system, it's possible to see only indirect effects on this topic. The table below shows all measures in Mumbuca's system, and the ones listed on the government website²⁴.

Table 2: Marica's programs

²⁰ See more in <https://diariodorio.com/vermelhinhos-onibus-gratuitos-sao-sensacao-em-marica/>.

²¹ See more in <https://www.marica.rj.gov.br/2018/06/08/inscricoes-abertas-para-1a-feira-livre-solidaria/>.

²² See more in <https://www.marica.rj.gov.br/2017/05/24/projeto-de-horta-comunitaria-avanca-em-marica/>.

²³ See more in <http://fundosoberano.marica.rj.gov.br/fundo-soberano/>.

²⁴ See more in <https://www.marica.rj.gov.br/>.

Measures	Description	Mumbuca's system?
Acordo com a UFRJ	Project with the Federal University of Rio de Janeiro to develop local entrepreneurs.	No
Aequor	Implementation of laboratories for revitalization and improvement of environmental sanitation in the city.	No
Auxílio recomeço	5,000 Mumbucas for people who have suffered losses due to floods or are at risk.	Yes
Bilhete Único universitário	Transport assistance for university students from the city who study in another region.	No
Empreende fácil	It aims to reduce the bureaucracy of the process of opening companies for the citizen.	No
Fomenta Maricá	Creation of emergency credit lines due to the COVID-19 pandemic, for small entrepreneurs with subsidized interest.	No
Habitar	The program aims to give the right to housing to the inhabitants. It covers the relocation of people whose homes are in risk areas, social leasing, improvements and regularization of the population's properties.	No
Hortas comunitárias	The local government borrows land and material for community gardens. The idea is to preserve the environment and distribute organic food.	No
Hub logístico	Construction of an airport and a port for the outflow of oil and natural gas production	No
Internship program	300 internship grants for students of the municipality worth 175 reais.	No
Marketplace	Facilitate access to local products.	Yes
Mumbuca ecológico	Loans for installing solar panels in your home or business.	Yes
Mumbuca futuro	Pay for university education, start a business and help with the purchase of school supplies.	Yes
Mumbuca indígena	To repair a historical debit with the indigenous population that inhabits the region.	Yes
Museu de personalidades	Creation of a museum of personalities who lived in the city: Darcy Ribeiro, Beth Carvalho, Maysa and João Saldanha	No
Parque tecnológico	It aims to implement infrastructure to support research, development and innovation in technology in Maricá	No
Passaporte Futuro	Payment of tuition, registration fee and teaching material for selected students in the areas of new technologies, pounds and a second language.	No
Passaporte técnico	Payment of tuition, registration fee and teaching material for selected students in the technical level of the high school.	No
Passaporte Universitário	Payment of tuition, registration fee and teaching material for selected students in various undergraduate and graduate areas, tax incentives for educational institutions and creation of an educational hub.	No
Programa de amparo ao emprego	Payment of a minimum wage for 6 months to face the COVID-19 pandemic.	Yes
Programa de amparo ao trabalhador	Payment of a minimum wage during the COVID-19 pandemic.	Yes
Renda mínima gestante	Provide minimum food conditions for pregnant women and children.	Yes
Renda mínima jovem solidário	To offer professional qualification for young people.	Yes
Restaurante popular	Democratizing access to a healthy and quality meal.	Yes
Vermelinhas	Free shared bicycles for the city's population.	No
Vermelinhos	Electric and hydrogen-powered bus for free for the population.	No

Source: Author.

Analysing this table is possible to reach the following inference: Or the main public measures have no correlation with the diversification of Maricá's economy, or they have an indirect effect on it. The indirect effect could happen through the investment in education or innovation that would allow inhabitants to undertake and be able to find jobs in different areas or open new businesses. On the other hand, some investments in infrastructure are to potentialize the scale of oil exploration, intensifying the city's dependency on it. There are no public policies aiming or fomenting directly at the change the local economy. According to the literature on the topic, discussed below, the lack of investment in the development of other sectors in the region could provide an economic collapse when the natural resources finish. This could harm the next generations and reverse all the benefits derived from natural resources.

4.3 Future possibilities for Maricá

4.3.1 Royalties and sustainable development

In order to understand the expenditures of the Maricá government and their public policies, this section addresses the financial benefits generated for the owner of the natural resources from the exploitation of it. In Maricá's case, the owner of the mineral deposits is the federal, state and municipal governments that concede to the private initiative the right to explore it, having royalties according to the amount extracted. This discussion is important to compare the investments that Maricá is doing and see if the expenditures are taking the city on a sustainable path.

In 1817, David Ricardo proposed an income coming from the land and the mines. The goal was to capture extra revenue for society. At that time, the monarchy governed the state and was the owner of lands and mineral resources. This would inspire the name royalties that came from the word royal and were paid to the king (Leal and Serra, 2002). The theoretical idea behind these compensations, according to Hotelling (1931), is that the royalties are a scarcity income, compensating its owner because it's a non-renewable source.

According to Silva (2003), minerals and fossil fuels are classified as non-renewable sources since they need some geological eras for their formation. The author pointed out the fact that non-renewable sources could be not exhausted depending on technological advances and the efficient use of the resources. On the other hand, renewable sources could be exhausted depending on the rate of their regeneration and the speed of their use.

Hence, exploiting the non-renewable resource now will avoid the next generations from enjoying them, creating an intergenerational disparity in favour of the present individuals. That is, the royalties are compensation for the no availability of the resource in the future for the next generations (Gutman, 2007). In this case, Solow (1974) believed that consumption per capita should be equal for all generations in order to guarantee intergenerational justice.

Thus, in order to do intergenerational justice, John Hartwick (1977) proposed that the income coming from natural no renewable sources should be invested in productive capital and human capital, generating jobs. The idea at that time was that productive capital and knowledge are not exhaustible. On the other hand, Postali (2008) advocate that society should use the extra income coming from royalties to diversify the drive of the economy and reduce the dependency on non-renewable sources. In this case, the goal is to perpetuate the benefits in the long run.

Serra and Fernandes (2005) believe that intergenerational justice could be promoted by the diversification of the economy and investment in other sectors different from oil and gas using the funds coming from the field exploitations. This would allow the minimization of the depressive effects on the local economy coming from the end of them or from a chock in the prices. These are the same thoughts of Duque (2008) and Pacheco (2007) that add that the development of new activities and diversification of the economy should be linked to the vocation of the region.

Nevertheless, the royalties are also important to repair the negative externalities coming from the extraction of the natural source. The increase in the population density, costs elevation, slums creations, disordered growth and environmental issues could deteriorate the well-being of the area (Schantz JR 1994; Leal e Serra 2002; Neto apud Ferraz & Pizzol, 2010).

However, intergenerational justice and negative externalities are not the only justifications for the existence of royalties. According to Johnston (1994), the world oil market is volatile with significant price changes in a short period of time. This would generate a problem in the revenue and in the state's planning. Therefore, the royalties are useful also to smooth out sudden changes in the commodity market through sovereign funds.

Given the theoretical aspects of the royalties and their goals, it's possible to link them to the guidelines of sustainable development. In consonance with Novaes et al. (2000) sustainable development involves the well-being of the present and future generations. To the first group, through income distribution and social quality of life improvement and to the second group through the economy, environmental and social sustainability. Along the same line, the United Nations utilises the definition of sustainable development as "the development that attends to the present necessity without harming the possibilities to the future generations of attending their own necessities" (WCED, 1987).

Thus, the exacerbating exploitation of renewable sources faster than it can recover and the exploration of non-renewable sources to generate economic growth turns into an issue for the next generations (Novaes et al., 2000). In order to avoid issues for the next generations, the UN elaborated on 2015, 17 goals to reach by 2030 regards to sustainable development. These aims are social, economic, and environmental. According to the website "They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests."

Analysing the public policies of Maricá and its expenditures, it's possible to reach the conclusion that there is no explicit plan to reduce the percentual of oil royalties in their revenue. As the specialists pointed out, the lack of a plan to replace the extracting sector could cause issues, in the long run, impacting the lives of future generations. In

other words, mapping and investing in a sector in which the region has a vocation is the way to develop a more sustainable future.

4.3.2 Sustainable tourism as a new engine for Maricá's economy

As was seen in the previous sections, the lack of a plan to change the economic engine of an oil producer region could bring problems in the future. In this part, the focus is on raising the history, traditions, cultural and environmental aspects of Maricá. Also, to characterise sustainable tourism and bring some examples of regions that chose to develop the tourism industry through royalties. The objective is to bring Maricá's potentialities in order to build a proposition for a future with less oil dependency fomenting sustainable tourism.

According to Dias and Júnior (2012), the history of Maricá started a long time ago, more precisely with the migration of the Taipú people from the Amazônia region in 4.200 BC. These people were considered the first horticulturists in the state and lived in the area until the arrival of the European colonizers. Today, there are 26 archaeological sites mapped in Maricá and many of them have not yet been researched (Dias and Júnior, 2021).

The arrival of colonizers brought new inhabitants to Maricá. According to the city records²⁵, the region started to be populated by Portuguese in the XVI century through the donation of lands to cultivate. The idea was to prevent other European nations from conquering the coast. Consequently, European settlement brought the imposition of its cultures and traditions. It was in the municipality that the priest José de Anchieta, when catechizing the indigenous people, supposedly operated a miracle of the multiplication of fish in the lagoon of Maricá, becoming a saint almost 430 years after the miracle²⁶.

Some centuries after, another European arrived in the city, but this time the focus was to map nature. As reported by the city's record²⁷, in 1832 the naturalist Charles Darwin visited a district of Maricá to study the Atlantic Forest. His studies on the region were part of the famous book "The origin of species". Using this famous character and his story, the region created a tourist attraction called "Caminhos de Darwin", where delimited trails can be made in the forests of the region. The goal is to show the possible paths that the scientist did and discover the fauna and flora of the region.

Another foreigner that was important to the Municipality's history was Madeleine Colaço. She was French but, was in Maricá that she developed an important technique in tapestry called Brazilian Point (Costa and Pereira 2018). She decided to live in Maricá in the 50s and with her knowledge of embroidery started to teach local people. She introduces to locals the art of tapestry and created a particular way to elaborate her art. This innovation allowed her to participate in exhibitions around the world and receives compliments and prizes for it (Costa and Pereira 2018). In 2020, this new way to make

²⁵ See more in <https://www.marica.rj.gov.br/marica/>.

²⁶ See more in <https://maricainfo.com/2014/04/02/marica-padre-jose-de-anchieta-e-a-pesca-miraculosa.html>.

²⁷ See more in <http://www.inea.rj.gov.br/instituto-estadual-do-ambiente-retoma-atividades-em-trilha-mapeada-por-darwin/>.

tapestry was listed in the city's historical heritage²⁸, but only a few locals know how to make the Brazilian point. After the death of Madeleine Colaço, this technic is at risk of despair.

Through the years, Maricá developed itself around fishing. This was possible because of the 46 kilometres of beaches and 6 different lagoons with 42,5 km² in total or 10% of the territory²⁹. In this sense, another important actor in the city is the community of fishermen. In accordance with the city records³⁰, it is dated from 1790 and is still there. Those more than 200 years of existence allowed them to specialize in fishing in swampy area territory, creating a particular way to do it, called "Pesca de Galho". This community turned into a historic-cultural heritage of the city in order to keep their traditions in to build fishing nets, canoes, their typical culinary recipes and their ways of fishing.

Still, in the cultural-historical aspect, the municipality has reserved a space for an Indian tribe, the "Aldeia Mata Verde Bonita". The local government ceded a portion of one of the six conservation reserves - which together make up 61% of the territory - to those indigenous people who fled an arson attack in a nearby³¹. Besides having the land, the members of the tribe have been receiving the "Mumbuca Indígena", a basic income intended for indigenous people cumulative with basic income Mumbuca. Apart from that, the community receive tourists, promoting cultural activities there such as games, storytelling, and traditional food. They also sell handmade crafts.

Regards to the natural aspect, aside from the 46 kilometres of beaches, 42 km of lagoons and 61% of the territory as a unit of conservation, the city has 42% of their lands as tropical forest. This allows a significant diversity of fauna and flora, waterfalls, rivers and rock formations. As cited in past sections Maricá is located in a famous local tourist destination called the "lake region", close to Búzios³², Arraial do Cabo³³ and Rio de Janeiro.

In respect of tourism, a recent survey was carried out by the secretary of tourism, secretary of development and the Darcy Ribeiro Institute (2000) to reconstruct the profile of the tourist in Maricá. A first result found was that the majority of visitors are from inside of the Rio de Janeiro State, 96%. Less than 1% is from abroad. most respondents had already visited the city on other occasions, 84,2%. Still, a significant part of visitors has low income. 47,8% of the visitors receive 3 Brazilian minimum wages per family and 28,5% between 3 and 5 minimum wages.

4.3.3 Sustainable tourism as an option for an otherwise extractive industry

According to UNWTO (2012), sustainable tourism can be defined as "tourism that takes full account of its current and future economic, social and environmental impacts,

²⁸ See more in <https://www.marica.rj.gov.br/noticia/arte-da-tapeçaria-do-espraiado-e-tombada-pela-prefeitura/>.

²⁹ See more in <https://www.marica.rj.gov.br/marica/>.

³⁰ See more in <https://www.conhecamarica.com.br/pontos-turisticos/80/comunidade-pesqueira-de-zacarias>.

³¹ See more in <https://opierj.org/mata-verde-bonita/>.

³² See more in <https://www.forbes.com/pictures/eglg45fmjh/buzios-brazil/>.

³³ See more in <https://www.lonelyplanet.com/brazil/the-southeast/arraial-do-cabo>.

addressing the needs of visitors, the industry the environment, and host communities". It takes an important part in the agenda of the UN's sustainable development goals by 2030, directly and indirectly. Mainly in the goals of inclusive and sustainable economic growth, sustainable consumption, and production (SCP) and the sustainable use of oceans and marine resources (UNWTO 2015)³⁴. Still, in consonance with the multilateral organism responsible for tourism, sustainable tourism should: Make optimal use of environmental resources, helping to conserve natural heritage and biodiversity; Respect the socio-cultural authenticity of host communities; help to build stable employment and income-earning opportunities and social services to host communities, and contribute to poverty alleviation.³⁵ Thus, it is treated as any other industry, but it is not.

In the United Nations Second Conference on Sustainable Development, Rio+20³⁶, the resulting document encourages investment in eco-tourism and cultural tourism as a way to improve the local economies, through also access to microcredit and finance. In this case, cultural tourism is understood as "it comprises tourist activities related to the experience of the set of significant elements of historical and cultural heritage and cultural events, valuing and promoting the material and immaterial goods of culture" (2006). The development of this type of tourism must occur through the appreciation and promotion of local and regional cultures, preservation of historical and cultural heritage and generation of business opportunities in the sector, respecting the values, symbols, and meanings of the material and immaterial goods of culture for communities (Brazil, 2010).

In the same way, the eco-tourism should be aligned with the vocation of the municipality as described in the pages above. It denotes a segment of tourist activity that would use, in a sustainable way, the natural and cultural heritage, encourages its conservation and seeks the formation of an environmental conscience through the interpretation of the environment, promoting the well-being of the populations involved (Brazil, 2016).

The components of sustainable tourism previously discussed could be good options for diversifying Maricá's economy. Using the natural and cultural aspects of the municipality and elaborating a plan for the long-term considering the royalties coming from the extractive industry as some countries in the Middle East are doing could be a path.

For instance, in the case of Saudi Arabia, Waheed et al (2020) point out that investments in tourism and renewable energy were essential for the economy to grow. The authors recommend an increase in these investments to reduce the oil and gas dependency and to develop sustainably.

Qatar's case is different. Despite the country is trying to diversify its economy by investing in service industries, finance, knowledge-based sectors, and tourism, the result is not yet the desired one. Authors like Morakabati et al (2014), found out that the country's image is linked to being an un-safe place so that it loses tourists compared to Dubai and Abu Dhabi, despite great investment in the country's image and infrastructure. An example of this is the World Cup 2022.

The case of United Arab Emirates is probably the most notable on tourism. They are great producers of oil, but they invested significant amounts in infrastructure and in

³⁴ See more in <https://www.unwto.org/tourism-in-2030-agenda>.

³⁵ See more in <https://www.unwto.org/sustainable-development>.

³⁶ See more in <https://sustainabledevelopment.un.org/rio20/futurewewant>.

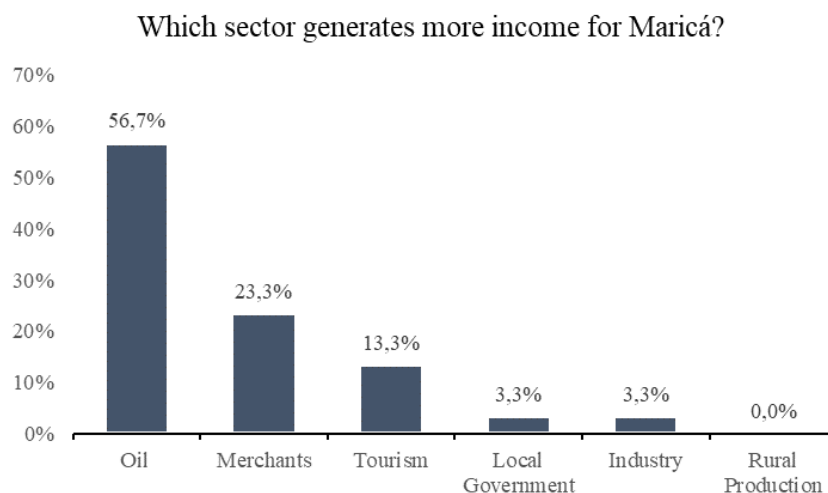
tourism. Investigating the investment in tourism in the region, Shadab (2018) found out that the country has been successful in the diversification of the economy through tourism and a significant part of the economic growth is due to it. However, the author points out the need for financial oil resources to invest in new projects not correlated. To the research, it's a strategic decision where to put the money to reduce faster the dependency on oil in the economy.

4.4 Interviews analysis

As explained, interviews were carried on understanding the opinion of the inhabitants and of some relevant actors in the city, regarding tourism and its future possibilities in Maricá. This part is divided into two: The first part is about the 30 interviews, randomly administered in the city centre. The questionnaire was structured in a way where the respondent would have limited options for their response and pointed out their preference. The second part is reserved for analyse of the open interviews with representatives of the local government and local community leaders. In this segment, the questions were made according to the interviewed always talking tourism, Marica's future, the oil industry, public policies, and new possibilities.

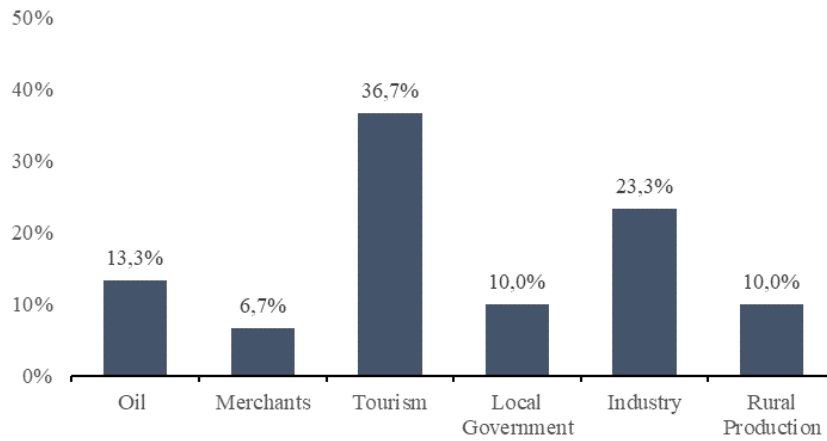
4.4.1 Structured interviews

The two first questions are related to the perception of the respondents about the engine of Maricá's economy. The first one tries to capture the perception about nowadays and the second about the possibility in the future. As it is possible to see, the respondents have a good idea about the process by which the city is passing and its relationship with the oil industry. The majority sees a potential, regards to tourism in the region.



Source: Author

Which sector could generate more income for Maricá?



Source: Author

The next two questions tried to capture the perception of the city's services and infrastructure in order to map possible bottlenecks for the development of other sectors.

Table 3:

Do you think the city services are:	Percentage
Good	46,7%
ok	36,7%
Great	16,7%
Bad	0,0%
Terrible	0,0%

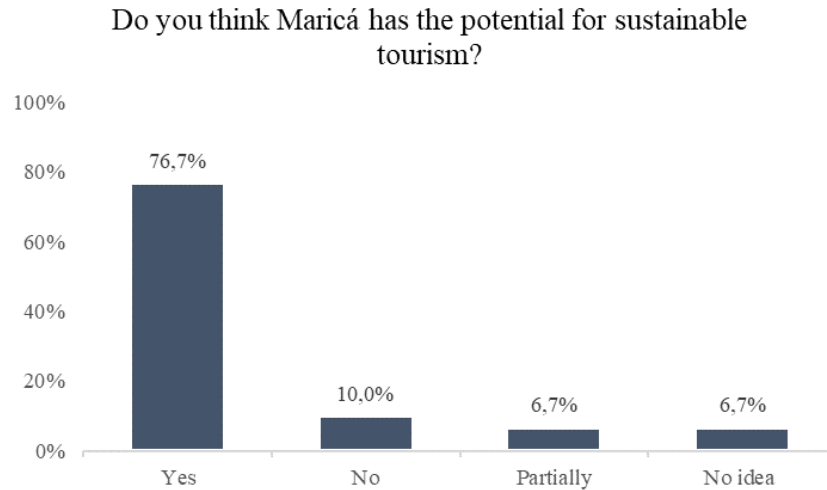
Source: Author

Table 4:

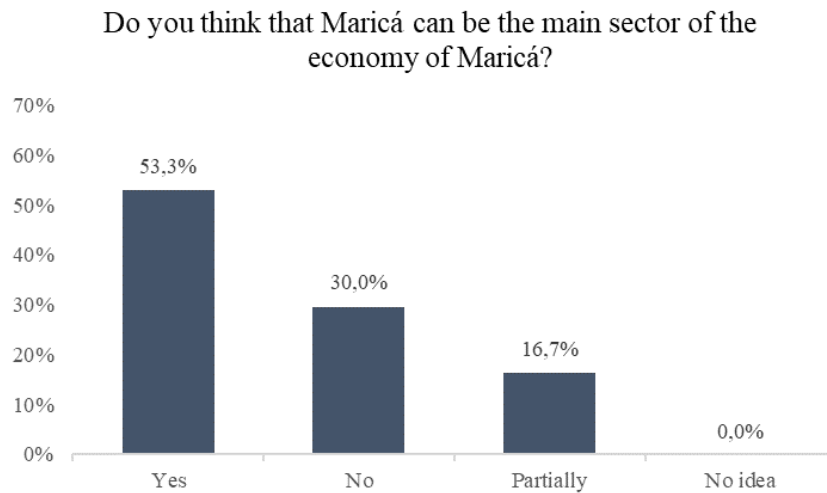
Do you think the city's infrastructure is:	Percentage
ok	46,7%
Good	33,3%
Great	6,7%
Bad	6,7%
Terrible	6,7%

Source: Author

Aiming for direct answers about the sector of tourism and the possibility of it having more participation in the city's economy, the next graphics show good prospects for the sector.



Source: Author



Source: Author

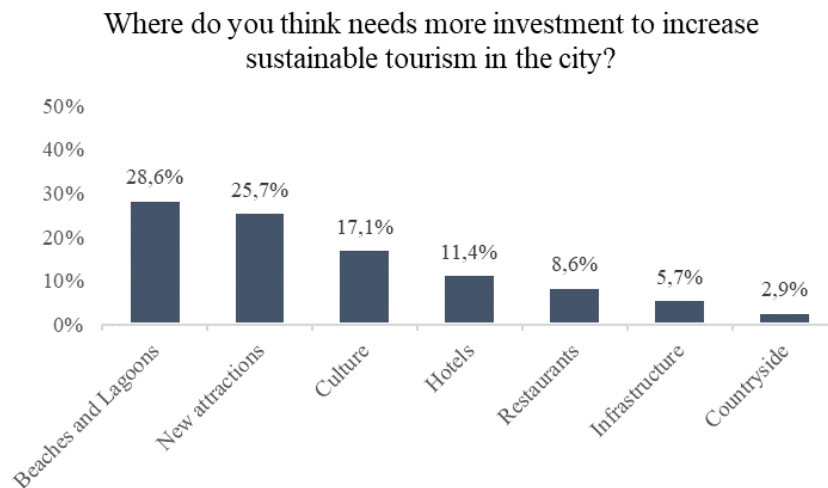
Among the 30 interviewed were asked the rate (from 0 to 10) that would give for the importance of sustainable tourism in local development and how much the local government invest in it. The table below shows the average of the answers.

Table 5:

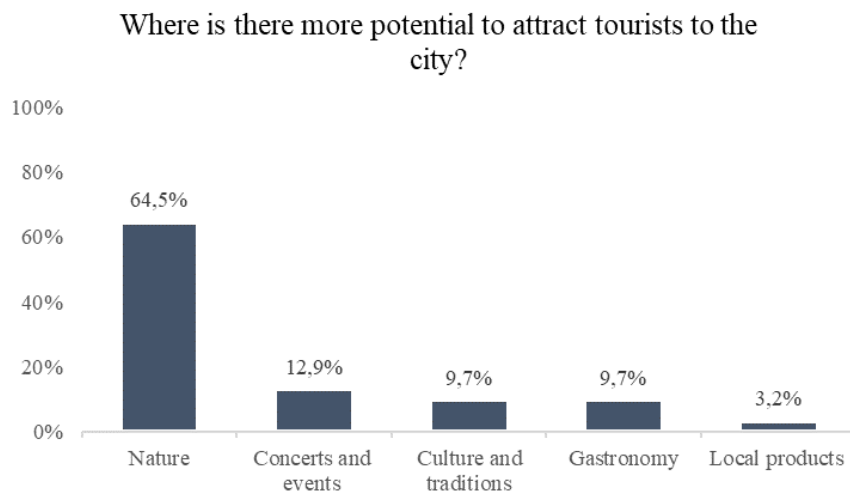
From 0 to 10, how much can sustainable tourism contribute to the local development?	8,2
From 0 to 10, how much does the local government invest in sustainable tourism?	6,5

Source: Author

The following query tries to get a feeling about the potential of the city regarding sustainable tourism.



Source: Author



Source: Author

Despite most of the inquiring being structured with limited possibilities, the three following questions were elaborated giving the freedom to the interviewed. The goal of this part is to try to capture unknown perceptions of the audience. They are going to be important to have subsidies to focalize the possible proposals for Maricá's tourism.

Table 6:

What tourist attractions do you know in Maricá?	Citation
Beaches	25
Lagoons	19
Waterfalls	8
Concerts	4
All of them	3
Trails	2
City lighthouse	1
Cinema	1
Indigenous village	1
Cave	1
Churches	1
Countryside	1
Paragliding	1
Mountain range	1

Source: Author

The first question brings up the fact that Maricá can be seen as an ecological destination. On the other hand, some governmental actions would be necessary in order to improve tourism. For example, investment in infrastructure and promotion.

Table 7:

What do you think needs to increase sustainable tourism in the city?	Citation
More government attention	8
More disclosure	7
More infrastructure	6
New attractions	4
Improvement of beaches and lagoons	3
Increasing the number of hosting	3
Improve security	3
Less pollution	2
Nothing	1
More events	1
No idea	1
More preservation	1
Invest in gastronomy	1
Shopping center	1
More jobs	1

Source: Author

However, when the topic is the negative externalities that tourism can bring to the locals, a significant part of the respondents brought the well-known problems in the literature.

Table 8:

What are the negative impacts that tourism can bring to the city?	Citation
Violence	9
Nothing	8
Pollution	6
Depredation	6
Lack of security	4
Trade collapse	1
Inequality	1
Gentrification	1
Disorganization	1
Accidents	1
Health impact	1
Overpopulation	1

Source: Author

4.4.2 Targeted interviews

As pointed out previously, in this part, the interviews were conducted with local leaders and public agents. The questions were made considering the agent and his or her area. The goal is to have the perspective from the public sector about oil royalties, tourism, local development, and well-being. The inquiry was constructed in a way to allow an open answer, giving the opportunity to the respondent to express his or her idea about the topic.

Solidarity Economy Secretariat

The secretary of the Solidarity Economy, Adalton da Motta Mendonça, was one of the responders. According to Maricá's website, this secretary is responsible for "formulating and coordinating projects for the economic development of the city and the fight against poverty. To this end, it builds strategies to generate production, distribution, consumption, and access to savings and credit based on the principle of self-management and collaboration between residents and local traders"³⁷. Answering the question "Considering that oil is finite and, consequently, Royalties, how to continue Maricá's income transfer and social inclusion policies in the future?", the secretary brought the overview of the social policies in Maricá and their goals:

“There are two answers that I always use as if they were key answers. All the social programs that we have in Maricá started before the contribution of oil royalties. Our way of governing already advocated social-oriented public policies. Zero tariff transport already existed, the solidary economy already existed as a federal law, and the national secretariat of the solidary economy already existed since the mid-2000s. The idea of focusing on local students is an example. Because we didn't have a university here, students had to travel to Rio de Janeiro. It was impossible. There was no incentive for students who passed the entrance exam. So, we implemented these public transport policies... We didn't have universities, development was linked to extractives' activities, and the city was always oriented towards fishing. We also had a lot of poverty and unemployment, and we were

³⁷ See in <https://www.marica.rj.gov.br/secretaria/economia-solidaria/>.

considered a dormitory city. So, these public policies that already exist in the way the party governs... We did this as a guideline for the government.”³⁸

The interviewed continues his answer explaining the role of the municipal budget:

“In 2013 we created the solidarity economy system, we created the municipal secretariat for solidarity economy, one of the first in Brazil that does not only aim at traditional economic development and so on. We created the idea of the Mumbuca bank. And we create... The magic idea is, there is no budget, we create small policies, but always emphasizing the social aspect. Then, in 2014, there is a small contribution, but the municipal budget grows a lot with the help of oil royalties. Subsequent governments continued the policies and deepened them.

It is important to say: It depends on the budget, yes. But it was not dependent on oil royalties. And our biggest concern is how we see the city's potential and its vocations for the post-oil royalty's future.”

The secretary divides the royalties into two phases. The first one where the government expand the social policies and the second is where there is more investment into capacitation and the development of the industrial sector:

Then we enter a second phase, starting in 2018 and 2019, which is to return to public policies not only for the solidarity city but to expand this to the post-royalty period. At that time, the then Minister of Science and Technology created the Institute of Science and Technology in the city of Maricá. We work with training, we invited the Fluminense Federal University to help us. We created the Fluminense Federal Institute, and all policies are now focused on replacing oil royalties. The idea is to have new forms of subsidies for public policies aimed at the solidarity economy.

Then there is the creation of mixed/hybrid industries (companies with the participation of the municipality), of traditional development. For example, COMPERJ (Rio de Janeiro Petrochemical Complex) stopped with the 2016 crisis. What do we think? We are going to make a port, ecologically clean and without carbon expenditure to provide a subsidy, in case COMPERJ returns one day. Because we are here in front of the two pre-salt oil fields. So, this is a thing of 10, 20 30 years... it's a vocation.

Regards to the city's potential and the sectors that could receive more government investment, Adalton point out that tourism could be a way:

“And how to take oil's vocation for the city's potential? With tourism. We have a coastline of 42 km in front of the ocean. Half of the municipality's territory is an environmental preservation area with mountains, massifs, and waterfalls... So, exploring this tourist potential and working with what we can do now, already anticipating post-oil development. So, the city's vocation for tourism is a first vocation, we treat it as a potentiality, so let's enhance it. With a solitary way of developing the poorest communities, we have 5 solidarity economy fairs and rural/community-based tourism. This weekend we have the event “Espiraído de Portas Abertas” (an event in a local neighbourhood). So, we have this old project that is community-based tourism, we have been working on this potential. And in the field of “mega” tourism, we have a relationship with the city hall to create a resort complex here. It is a Spanish company. The project has already been approved at the municipal level, there was an issue over the environmental issue. It was also approved at the state level... This resort would generate something around 10 to 11 billion to build. It was approved in the first federal instance and now only the second instance is missing. This would generate growth for the very large city, with all the risks and successes. The town could even become a magnet for tourism in the area. So, tourism would be one of the focuses. We are walking on it.”

Another potential that the local government aims to develop is the export of patents to other cities and states. The prefecture has created companies that invest in technology and innovation and hopes to profit from this in the future:

“We also want to “export” our model, for example, the case of buses with zero fares and zero emissions. Make its state and, who knows, federal. As a new matrix of human development, as a human right.... the solidarity restaurant that we already have, the zero-tariff transport that we already have. Anyway, as if it were a new post-oil and post-capitalism reality that we live in. For example, yesterday, a journalist published that Maricá is a “laboratory of experiences”. It is still a laboratory, but it is a reality. It's already a reality for a car manufacturer... of buses with zero emissions, green buses. It is a laboratory. We are using the resources that we have from oil royalties, and we see it as if it were an idea for the whole of Brazil”.

Answering "Is there a possibility of having the Mumbuca system together with tourism?" The Secretary highlights some possibilities:

“This is an experiment that we are doing. It just started, after the pandemic, rural and community-based tourism. I want the solidary economy to take the poorest people, from the fairs and play in these big events. The idea is to take these people who are beneficiaries of social programs from the city and put them, for example, in the local events. The merchants are registered, and we advise them to go to Banco Mumbuca, register, formalize their situation, and get legal advice to create a cooperative. Register as an Individual Micro Entrepreneur (MEI), buy a cell phone that can receive Mumbuca currency and let's circulate more and more. It's difficult, they are older people, with low income, and low education... so we close this cycle. The idea is to make the currency circulate more and more based on tourism, attracting tourists. The tourist will pay in reais, but the tourist can open an account if he wants to at the Mumbuca bank. This can make tourism a way to strengthen community-based tourism and Mumbuca beneficiaries”.

Entering more into the local financial system and its possible relation with tourism, the following question was elaborated "Is there any plan to attract tourists to use the Mumbuca currency?". The answer was:

“Yes, we have a plan. But it's more for local tourism. It's a plan that will start next year, which is the Mumbuca cash back. It's normal cash back. But it's an experience.

So, you would open an account and buy Mumbuca. Our application works by GPS, you can only pay if you have it in the territory. But we have to see this because we have to obey the Central Bank ordinances”.

The Darcy Ribeiro Institute

Complementing the local government's view, Diego Maggi, Coordinator of information from the Darcy Ribeiro Institute answered some questions about the Maricá and its local development. According to the institute's website, it "is a multidisciplinary autarchy that produces, assembles and organizes studies and social indicators on the city of Maricá, with the municipality and its population as its central point"³⁹.

When answering the question: "Considering that most of Maricá's social policies are implemented using royalties, how can these policies continue after oil? Is there a plan, a direction?", Diego brought up the general idea about the directions that the local government could be:

³⁹ See in https://idr.marica.rj.gov.br/sobre_nos/.

“There is no clear, drawn plan. There isn't a document with targets... There isn't one. But the entire management works with the idea of developing, of promoting dynamism and diversity of economic activity. Precisely to be independent of oil royalties.

I think that, if you take the projects from government departments, you can see some directions. Tourism would clearly be one of them. Another would be industrial development. More focused on green economy and technological innovation. The last one would be one more axis of integration of the oil and gas production chain. So, I think these are the 3 lines that you can see being drawn in municipal management. As I said, the thing is not integrated with a strategic plan and defined goals. But you can clearly see the convergence of the actions of some secretariats in these directions. Codemar (Maricá Development Coordination), for example, has a technology park project under construction to attract technological innovation start-ups and universities. At the same time, it has a museum circuit project (Darcy Ribeiro, Beth Carvalho, João Saldanha and Maísa). So, there is an investment by Codemar in this part of tourism. On the other hand, there is the resort and the port that are private capital, without money from the city but it tries to make this project viable. And you can also see an investment to bring the private sector into the oil and gas production chain. For example, the Maricá development department and the state development department signed a cooperation agreement to create a gas hub in Maricá”.

Regarding the city's investment to integrate itself into the oil production chain, Diego explained:

“The problem is that Maricá receives royalties for oil exploration but is not integrated into the production chain. The only thing we have of economic activity directly related to oil is the airport, which is managed by the city hall. It is different from other surrounding cities that have companies installed in the city and generate jobs, with activities to support oil extraction.

We know that it is a finite resource, but the management works with the idea that there is an oil station here, that we not only receive royalties but that we join the chain with the idea of being a first step. The objective is to achieve insertion in industrial chains independent of oil. It's trying to grab the opportunities that appear, and oil is one of them”

Related to the qualification of the locals, he believes that the city has significant work to do:

“The population here, on average, has low qualifications. Maricá is below the average for the metropolitan region of Rio de Janeiro. So, in fact, there would have to be a heavy investment in education and qualification if you want the population to benefit from this moment of economic development. The city hall has already realized this, so much so that one of the great social programs here is the university passport. In it, the city hall pays for the university education of the local population. But you see, for example, how educational indicators have been improving over time. But it is still a generational gap”.

In respect of the next step, he explains about the lack of data to measure the better direction to go:

For now, we are trying to measure the impact, but the problem is that we don't have the data yet... We have things spaced out and we still don't have clarity on the effects of the policies. The citizenship census, which the municipality is carrying out, aims to bring this data so that we can carry out an analysis.

If you only look at employment data (Rais⁴⁰ and Caged⁴¹), then it becomes clear. While the State of Rio de Janeiro was losing jobs very dramatically (during the pandemic), Maricá was generating. Here you can already see that in terms of economic dynamism... we can already see a relationship. From the moment you put money in the hands of the population... and it's only here, they can only spend it here.

⁴⁰ Annual List of Social Information

⁴¹ General register of employed and unemployed

Talking of tourism, Diego believes that Maricá has not yet reached its full potential:

“Maricá is at a point where it is not yet a very relevant tourist destination. Thus, people do not know Marica. And who knows is that captive audience, people who own or rent a house for the summer. The same people who come often. So, the city hall tries to promote some cultural and gastronomic events to change that.

We did a study together with the tourism department and we detected that the tourist from Maricá is from a lower class. You can't think of Maricá competing with neighbouring cities.

The growth of income in Maricá and the larger budget allowed the arrival of people from outside and these people from outside bring a demand for other types of products and services in the city. These people bring a demand for better restaurants and cultural events and stimulate new ventures”.

Diego cites the conclusions of his own article in which he compares the development process in Maricá through oil royalties. He compares Maricá with the neighbouring cities Campos, Macaé and Rio das Ostras which also obtained royalties:

“Macaé moved towards integrating the oil and gas industry and this even led to integration in other industries. Campos, the thing was much more commerce and services that serve the entire region. Rio das Ostras is similar to the case of Maricá where there was little integration in the oil and gas sector and little in tourism. Maricá still does not see the result.

In Maricá, we still do not see insertion in industrial production chains and tourism seems to have not yet taken off in terms of employment and income. Things are hazy, we still don't know where Marica is going”.

The Secretariat for Inclusive Policies

The last respondent from the government was the secretary of inclusive policies, Clauder da Silva Peres. According to Marica's website, the department "aims to act in the gaps caused by the intensification of social issues in the municipality. It promotes citizenship actions focused on the personal, economic, and social development of the population that lives in situations of social vulnerability on a daily basis"⁴².

When addressing the question: "How to ensure that the social inclusion that has been achieved does not regress over time?", the secretary explain the importance of the qualification:

“Today we are making a movement... we realize that we cannot only work with a curriculum, with paper. We must work with the person. Take this person to the employment contact and follow up with this person in the inclusion process. This is one of our perspectives. So that this person is trained, not only him but also the entrepreneurs who will deal directly with this person. Our thought for the future is to make that person really gain their autonomy, their independence so that they can also transit in the job market”.

Regarding the future of Maricá and in answering " What are the perspectives for the future of Maricá? Considering that oil is finite, how to maintain inclusive policies?" Clauder explains:

“Today, our authorities are promoting a process of industrialization of the city. Making the city self-sustainable. It cannot just depend on royalties. I think royalties are

⁴² See more in <https://www.marica.rj.gov.br/secretaria/politicas-inclusivas/>.

important elements of a process for the future. So, I believe that the sovereign wealth fund, now with the oil complexes... we have the zero-emission bus that will be built in the city, it will generate jobs”.

The Secretary explains Maricá's plan regarding to qualification:

“We have the “Qualifica Maricá” program, which is very important and brings us a high level of qualification in the workforce. We also have a partnership with Firjan (Federation of Industries of the State of Rio de Janeiro) that will offer several courses such as cutting and sewing, computer systems operator, application developer, building hydraulic installations, painting and masonry techniques, and advanced computerized modelling, among other things. For the choice of these areas, a study was carried out, looking at what the city is offering and what the government is offering.

The city itself is generating growth and at the same time providing conditions for people to place themselves in the job market. Although many individuals are employed because of the oil, I believe that many people from Maricá will be employed because of their expertise and ability to support themselves. We are also building a university campus in partnership with UFRJ to keep knowledge here”.

Maricá Tapestry Association

In this second part of the interview, the respondents are local leaders that are related to the traditions, culture, and history of the city. Their areas have relations with tourism in Maricá and in some aspects depending on it.

Representing the association of tapestry in Maricá, Dona Ilma answered a few questions. She learned the Tapestry technique directly from Madeleine Colaço, a great exponent that lived in Maricá and created an exclusive point called Brazilian point. Talking of the major buyers of the tapestry, she maps the market:

“Our products are sold to people who have more purchasing power. Usually, it's people from the outside. Here, in the neighbourhood, we even have some customers. But these are people who have had a summer home for many years. They are not permanent residents. The residents themselves, do not value much and do not know our work”.

Regarding tourism and answering the question: "Do you believe that if the atelier was in another city in the lakes region, such as Búzios, would it have more sales?" She is emphatic:

“For sure, because there are a lot of tourists there. Búzios is a city well-known worldwide. This street of ours, just because it is not a main street, and many people fail to know our work. Here, we have little visibility. If we had better disclosure by the government, many people would come. The only things that attract people here are the signs that the city has put up.

The government of Maricá need to have a greater interest in helping us. Mainly in terms of legalization. Tapestry is a very well-known work, known worldwide and it was created here in our neighbourhood, Espraiado. And it is in danger of dying. So, I think there should be a little more public interest in wanting to help us.

The law does not allow us to set up a cooperative. Because there has to be a minimum and we don't have that minimum because many people gave up. It is very difficult to sell a piece. When we sell a R\$2,000 piece, we have to divide it among 11. This is very complicated, we have to pay bills. People decided to go out to work, so nobody wants to do tapestry anymore. There was a project to teach the art of tapestry because the group was very small. The project lasted 3 months.

The tapestry makers are always willing to help. We have already offered to teach for free. The disclosure is made by us. When the city hall comes here, takes a picture, says it will help and that's all. Just put it in the newspaper.”

Regarding the tourism project "Espiraído de portas abertas", which happens in the neighbour, she criticizes:

“When this project was created, they only had locals. We stayed like this for 5/6 years, being led by Regina. But it got too tiring for her and she passed the project on to the city hall. After this project was handed over to the local government, strange people are coming to the neighbourhood, from other regions of Maricá to sell their products. Everyone comes to our neighbourhood. The project was not designed that way. It was created by the local community for tourists to come and discover our products. I mean, the city hall is helping strangers more than us in the project. For me, this project is not doing anything, honestly.”

She outlines how to improve the project and explains why she thinks inequality in the treatment:

“To improve, the city hall could make a tour, taking tourists to specific points. We always claimed a tour guide, taking tourists at every point. One day there could be a van that takes the tour group to see the other parts. Because today, the project takes tourists to a farm and people stay there, doing activities and never leave the place. And there are several spots here to be visited. The initial idea of the project was to go through the whole circuit, for example, the manioc planter selling manioc at his door. That was the intention of the project, but now it has been centralized.

A couple of vans could exist, centralized at certain points and periodically one of them goes around the tourist spots in the neighbourhood.

To date, nothing has improved. They are only on the main street and on the main farms. There gather more than 1000 people. There is inequality in the distribution of projects, some have a lot and others have very little to offer.”

Finally, when answering how she sees tapestry in the future, she is pessimistic:

“The tapestry will no longer exist. Whoever has a piece now, 10 years from now, will be worth a lot of money, because there won't be any more. But our expectation would be the opposite. From the initial group, formed in 2003, many people left because they had no incentive to continue making a living from art. The tapestry brought in very little money for those involved. They are expensive parts, and very difficult to sell.”

Maricá's fishing community

Another important institution in Maricá is the fishermen association. As previously discussed in the sections above, the fishermen's colony formed over 300 years ago and was an important driver of the city's economy for a period. Nowadays, fishermen are facing an issue that opposed them and the city hall. On one side, the local government wants to enable private foreign investment that aims to build a resort with shopping malls, golf courses, and thousands of houses. On the other side, the fishermen association want to avoid this enterprise because it foresees the displacement of fishermen and their colony and would be installed in an area of environmental preservation.

The president of the association, Wilson Correa, answered how is the interaction between fishermen and tourism:

“A lot of tourists come. We have a good relationship with tourism because it is a fishing community that comes from a long generation of more than 3 centuries. I always quote an interview that my uncle gave in the 50s,

saying that this lagoon is an industry. It gives thousands of jobs. But she is not cared for. There is still sewage in the pond. But in relation to tourism, we have a good relationship because we sell our fish fillet, and our shrimp to tourists, in the bar, and in the restaurant. We also have a fisherman's bar, to serve tourists.

We earn more from tourism than from agreements with the city hall. In summer it is very busy”.

Answering whether the increase in tourism in Maricá would bring more visitors to the fishing community, Vilson talks of the quality of visitors:

“It depends a lot on how the tourism will arrive. If you arrive through the resort (the foreign venture) it will be terrible, because it will have a very large negative impact. The resort encompasses everything here, they want this building of ours, but the building has been listed. We want our territory.

The increase in tourism can be good if done in an orderly fashion, but it can be bad because you never know who's coming. So, it depends”.

Regarding any plan to improve fishing in the lagoon, the association president is categorical:

“As far as I know, there is none. There are requests from associations, but there is no interest. There is no political will. I don't see the political will to improve the lagoon. Every day that we go fishing, we see a new shack on the edge of the lake. It's taken over by shacks on the edge of the lagoon, it's a disorderly growth. With faith in God, one day it gets better. With basic sanitation. The municipality is receiving a lot of money from royalties, and it may be that one day they will decide to carry out basic sanitation. They could do a lot more fishing. They do little, but for the money they have, they could do much more. It also has no plan for tourism that encompasses us”.

The voice of the Indigenous village of Marica

The indigenous head, Cacique Jurema brought the perception of the heirs of ancient people of the region about the interaction with visitors:

“There is a phone on Facebook. People call and book groups. The idea is to get to know the culture, upon payment of a fee. The indigenous people present their songs, their dances and give a lecture on how to live in the village and the Guarani culture. We do a walk in the Village and painting the visitors. The idea is to show who we are. Some of the activities we do for tourists are Tug of war and log racing”.

The head of the tribe explains why tourism is important and how to keep their traditions and culture even with the visitor's interactions:

“Tourism is important. Because there are some families here who work with handicrafts and make a living out of it. We receive a lot of tourists; we have a super full schedule. Every Saturday groups come. But like this, keeping our culture will always keep. We only speak Guarani among us, we don't speak Portuguese. And there's also our typical food, right?! Roasted fish with cornmeal farofa... I think it would be very important for people to come from abroad to get to know the culture in order to learn from it”.

Regarding the local government's support in receiving visitors, the indigenous leader pointed out a project with tourist guides of Maricá, but she seemed not very excited:

“So, they already looked for us, they already came here and saw what we offer. But that is in progress. Tour guides came... Only tour guides came from Maricá to be able to write

and offer packages. The people here in the Aldeia already have experience in welcoming tourists, outsiders will not know about our culture”.

Nevertheless, Jurema also talks about another project, the implementation of the Resort and shows their discontent with it:

“We received this project from the Spanish resort, but we are not in agreement with assigning land for this. We are going to fight for our right, which is land demarcation. For us, the first thing is land demarcation, then we could think about a project like this”.

4.5 Conclusion

The city of Maricá has been developing itself through a basic income paid with a local currency. The sources come from the royalties of oil paid by private companies to the local government. Over the years, oil production increased, enabling the city to be the largest recipient of royalties in Brazil. This allowed the deepening of social policies in the city, using the local financial system and its local currency.

On the other hand, the city's revenue turned very dependent on royalties, with 67% of it. This brings the discussion about the sustainability of social policies in the future when the oil is finished or diminished. In this case, specialists such as Postali (2008), Serra and Fernandes (2005) point out that the royalties should be used also to change the region's economic drive aiming to keep the level of well-being reached by the oil revenues.

Considering this scenario, this article aimed to map the public policies in the city of Maricá and understand which economic path the municipality is choosing to replace the oil dependency. At the same time, this work sought to understand the opinion of residents, local government and local leaders about sustainable tourism and its possibilities in the city. To do so, searches in books and specialized articles were made as well as interviews were conducted with locals, local government representatives and local leaders.

What the main policies implemented showed is that the focus is on the social aspect. In transferring income to the locals and consequently warming up the local economy through the local currency Mumbuca. On the other side, the policies that aim to change the economy's drive are few. Including, the goal to deepen dependence on oil, aiming to insert the city in the productive chains of this industry. For example, the creation of the logistics hub and the creation of the technology park. Others are focusing on give education to the residents, without specific sectors.

This goes in accordance with Adalton da Mota, the secretary of the solidary economy. He divided the royalties' investments into two phases. The first one was focused on the social aspect. The second one was to expand the benefits to the post-royalties' period investing in professional education, industries, and tourism. From another perspective, the civil servant, Diego Maggi, from the Darcy Ribeiro Institute, drew a similar scenario. According to him, the municipality of Maricá seems to move in three directions, despite it does not have anything documented and coordinated. These areas would be the integration of the city into the oil and gas chain, tourism, and green economy with technological innovation.

Likewise, most of the respondents identify the tourism sector as a great potential in Maricá. For instance, when they answer which sector could generate more income for Maricá pointing to tourism with 36,7%; If Maricá has potential for sustainable tourism, pointing yes with 76,7% and if tourism can be the main sector of Marica's economy, pointing yes with 53,3%. But despite the view about tourism potential in the city, the respondents don't see much investment in this sector by the local government, mentioning that from 0 to 10, 6,5 is the perception the investment in this field.

Similarly, this seems to be the opinion of the local leaders. They indicated a lack of coordination, lack of projects, lack of planning and even investments on which they do not agree, as in the case of the Spanish resort project that intends to displace residents.

Put differently, despite residents, civil servants and local leaders believing that Maricá has the potential for sustainable tourism, the actions in this sector are isolated. What is a consensus does not seem to be seen in the practice in the daily life of the city. The local government has no defined plan for this area and some actions seem divergent from the interests of residents.

4.5.1 A Proposal for sustainable tourism

Considering that Maricá has potential for sustainable tourism and this sector could be one of the main areas of the municipality, some issues should be faced to make this viable. For instance, the lack of a plan or direction for tourism. This is also depicted in the lack of government attention that was specified by most of the interviewees in the spontaneous mention question. The local government should define goals in a public document. To elaborate on these goals, civil society should have the right to build and participate. This participation would avoid judicial fights, being a democratic form of participation of the population and in line with what scholars think about the subject, such as Elinor Ostrom and Charlotte Hess. These public goals would contribute also to improving the lack of coordination between the agents, another issue pointed out. If everybody knows where to go, they could move in the same direction in a coordinated way.

The natural beauty of the city appears as a common consent among the respondents. When answered what has more potential to attract tourists, 64,4% cited nature. These capacities could be used to attract tourists, but as indicated in the interviews some improvements would need to be made. As an example, the beaches and lagoons were identified for 28,6% as places that need more investment. Is it possible to also quote the poor level of sewer that affects the city and consequently harms nature. According to Maricá (2022), only 12,4% of households have access to the sewage system.

Another useful tool to increase tourism would be to insert them into the local financial system. That is, allow visitors to buy the local currency, Mumbuca, digitally. The mechanism could work as a Cash Back program, as pointed out by the secretary of the solidary economy. However, other options are valid as loyalty programs, rewards programs, gifts to great buyers and progressive discounts on the purchase of certain currency values. The money used to buy Mumbucas goes to the Mumbuca bank to fund and part of it would be used to finance projects in the city and the other to keep the liquidity of the system. The visitors would have an application to access all services and products that they can buy in the city using local currency.

5. Tourism, inequality, basic income, and local currency

Abstract: The expansion of the research in the field of the commons brought about new opportunities to cope with older problems. Considering the territory as a common of the residents may help to plan and balance the benefits perceived from tourism. While the latter brings, in general, certain benefits such as more infrastructure, better public services and more jobs, it also generates negative externalities, e.g., congestion, higher prices, spatial segregation: and their distribution could be uneven among the residents. Only looking at economic benefits, a few groups of residents would enjoy them, directly or indirectly - owners or workers in hotels, restaurants, typical products outlets and handicraft stores, museums, and events. This chapter studies a mechanism to redress the inequality in the perception of those externalities, to avoid residents' exodus with the loss of their culture. The mechanism proposed is a basic income to locals, coming from tourism and paid out through local currency.

5.1 Introduction

Advances in communication with increased access to transportation contribute to changing global relations. The same is true, when we talk of tourism: unknown or faraway places get more accessible and become better-known to people. This movement brings more visitors and awakens tourism in places not well known, until recently. Nation-wide strategies of sustainable tourism have to deal with the sheer fact that tourism has a very strong Residents' connotation. The tourist visits a Destination, which gets, more or less, organized to receive her. The track she leaves behind, is important. There are other aspects to the Resident dimension: among them, is that once a place becomes a destination, it stays so for a while, until either the visitors and/or the residents (at least, some of them) decide to migrate elsewhere (Venice, Barcelona, the Centre of Florence), raising the key sustainability issue of preserving both Residents and their cultures, often the fundamental attractions for the place. On the other hand, the same Resident dimension relates to the uneven distribution of net benefits generated by tourism, which creates inequality in the sense of unequal accessibility to Residents' resources. Hence, an issue of redistribution and of fair treatment appears, which is the topic of this chapter.

Many of the "novel" tourist destinations end up obtaining rapid fame and quick development, quite often without any consistent planning. This brings many consequences for the residents: they might be positive, as more infrastructure services and jobs develop; or else they could be negative, for instance, an increase in traffic, congestion, pollution, prices, and mischaracterization.

Considering the tourist destination is a Commons of the residents, the increase in tourism affects their communities. The destination starts receiving new visitors often in a rapid and abrupt manner. However, visitors have different cultures, habits and in general do not develop any long-term relations with the visited territory. This affects various

groups of residents in different ways. Sometimes, corrections are deemed to be necessary since sharing of shortcomings tends to be uneven.

Residents' perceptions could be grouped into two broad areas: 1) Economic perceptions, with a relatively small group of entrepreneurs gains more with tourism compared to most residents; 2) Cultural perceptions, where Residents' area gets divided into places for "Tourists" and places for "Residents", due to price increases, congestion, mischaracterization, and other negative externalities, specifically due to tourism.

The former situation can be observed by taking into account the different benefits received. Residents running businesses directly correlated with the tourism sector (hotels, restaurants, souvenir stores, tourism guides, etc.) would benefit from greater income. Residents with jobs not directly correlated may receive certain indirect benefits, such as more infrastructural services, higher security levels, and general public services, despite possible other negative externalities. In this scenario, one residents' group benefits more than its complement, certain benefits accruing to everyone, while others only go to a particular group.

In an alternative scenario, negative externalities due to tourism keep residents away from the community's daily life and activities they used to undertake. High prices, traffic, mischaracterization of residents' cultures, congestion, and noises are among problems they encounter. Sometimes, such harms are in excess of the benefits brought by tourism. Serious problems in the long term arise. For example, this is the case of Venice, which is facing the migration of its population, at the same time with increase in the offer of hotel/Airbnb vacancies for visitors.

In order to cope with issues of segregation, higher prices, and inequality in the perceptions of net benefits – tourism flow's increase has to be guided according to a plan. This should involve the community, private actors as well as all spheres of government. Unfortunately, many destinations are growing in their tourism vocation so rapidly that organizing interaction between Residents and visitors is difficult. Moreover, other destinations are already consolidated. In these cases, alternative measures must be implemented so as to correct deviations from wellbeing, protecting territory and the community, with its culture.

This chapter intends to propose a mechanism functioning in parallel with the Commons management, supporting integration and perceptions of net benefits by residents. A form of Basic Income is our proposal. The main objective is to improve residents' wellbeing and preserve their culture. The focus is to answer the question: How to improve the well-being of residents in a fair way, without giving up tourism?

The chapter is divided into 5 sections. This introduction, the section dedicated to the territory as commons good and its management. The section related to the perception of externalities, coming from tourism to the residents – financial benefits and their positive and negative externalities. The last section is followed by the proposal of basic income coming from tourism for the residents and finally the conclusion.

5.2 Review of the Literature

5.2.1 Territory as a Commons

Commons refers to resources, such as land, water, and knowledge, that are shared and managed collectively by a community. The concept of commons has become increasingly important in understanding socio-economic and environmental issues, including the conservation of natural resources, the management of global public goods, and the provision of public services.

Before entering into these new ways of thinking of Commons, let's define them formally. The study of commons became known with the work of Elinor Ostrom, *Governing the Commons* (later the Author was the first woman to win the Nobel prize in economics, in 2009). Before Ostrom, some scholars have dedicated themselves to the same topic, e.g., Garrett Hardin (1968) with the work called "The Tragedy of the Commons", H. Scott Gordon (1954) in a book called *The Economic Theory of a Common Property*, and David Bollier, an activist and later a scholar on this theme.

The concept of commons has a long history, dating back to the medieval period in Europe, where it referred to shared grazing lands owned by communities (Berkes and Folke 1998). The enclosure movement of the 18th and 19th centuries, which led to the privatization of commons, sparked interest in the study of commons as a way to understand the social, economic, and environmental implications of this process. Garrett Hardin's "The Tragedy of the Commons" published in 1968, further popularized the concept and showed how the overuse and depletion of common resources could arise due to individual self-interest.

Initial studies have focused on understanding and elaborating ways to deal with this new concept. Thus, the earliest image of the commons was about something that sooner or later would undergo overexploitation, yielding a tragedy in the way of degradation. The idea was to study cases where commons had failed, exposing main causes, and proposing ideas to deal with them. Hence, the concept of the commons broadened, to become, in Ostrom's (1990) own words, "a type of good consisting of a natural or human-made resource system, whose size or characteristics makes it costly, but not impossible, to exclude potential beneficiaries from obtaining benefits from its use". In the same line of thought, Hess (2008), maintains that commons are system of resources shared by a group, which is vulnerable to dilemmas of confinement, excessive use, and social issues. Unlike a *normal* asset, they require management and protection.

The literature on commons highlights four central attributes of commons: (1) common-pool resources, (2) social norms and institutions, (3) collective action, and (4) self-governance (Cox, 2014). Common-pool resources are resources that are rivalrous but non-excludable, meaning that they can be used by multiple individuals without ownership or exclusive rights. Social norms and institutions such as rules, customs, and traditions, govern the use and management of commons. Collective action refers to the coordination of individuals within a group to achieve common goals. Self-governance involves the capacity of a community to manage and regulate their own affairs without external intervention.

The topic of commons employs various theoretical frameworks to analyse the governance of them. These include the tragedy of the commons, common pool resource theory, institutional analysis and development, and social-ecological systems theory (Poteete et al., 2010). The tragedy of the Commons framework emphasizes the role of individual self-interest and the need for external regulation to avoid overuse and depletion of common resources. Common pool resource theory focuses on the design of institutions to facilitate collective action and minimize free riding. Institutional analysis and development approach emphasizes the role of institutions in shaping social behaviour and outcomes. Social-ecological systems theory emphasizes the complex interplay between social and ecological systems in governing commons.

With the evolution of the topic, the scope of commons has increased, and the definitions are more open and could aggregate more aspects. As an example, Ramos (2016) considers that commons are resources we *mutually* depend on, for our survival and well-being. D. Bollier (2015) also listed a set of definitions:

"A social system for the long-term stewardship of resources that preserves shared values and community identity. A self-organized system by which communities manage resources (both depletable and replenishable) with minimal or no reliance on the Market or State. The wealth that we inherit or create together and must pass on, undiminished or enhanced, to our children. Our collective wealth includes the gifts of nature, civic infrastructure, cultural works and traditions, and knowledge. A sector of the economy (and life!) that generates value in ways that are often taken for granted – and often jeopardized by the Market-State."

The new direction commons took over the next years, brought about new opportunities and a novel understanding, even though the main characteristics and the importance of their interactions with Residents remained the same. In a territorial context, cities, and tourist destinations (historical sites, cultural landscapes, monuments) may also be considered as the commons of the Residents. This is the opinion of Cellini e Cuccia (2016) in their analysis of certain tourism destinations with the classification of the world patrimony by UNESCO. To these authors, tourist places are commons because their use may be subject to a certain degree of rivalry – when the use of the property by one person restricts the use of others, as is the case of congestion that some UNESCO sites do display, as for example Machu Picchu or Venice.

Hess (2008) goes further to classify tourism's resources as the cultural commons for the residents' shared history, culture, landscape, traditions, architecture, and the territory. This opinion is shared by Santagata, Bertacchini, Bravo e Marrelli (2011), maintaining that cultural commons are defined by the intersection of three dimensions: culture, space, and community:

"Refer to cultures located in time and space - either physical or virtual - and shared and expressed by a socially cohesive community. A Cultural Common is a system of intellectual resources available on a given geographical or virtual area and could be thought as the evolution of the more traditional concept of cultural district or cultural cluster. Ideas, creativity and styles of a community, traditional knowledge, credence, rites, and customs shared and participated productive techniques define a Cultural Commons. Some examples are the image of a city, a Resident language, the brand of Barolo wine, an artistic movement, user generated contents on the web, traditional knowledge held by indigenous communities, and the creativity expressed by designers' and artist's communities".

Considering the territory - in its broad sense: cities, landscapes, villages - as a Commons shared by residents, we can infer that these places face relevant challenges. To minimize potential negative effects and to preserve harmony in such places planning and managing interactions with tourism is necessary.

5.2.2 Commons management

After characterizing the commons and raising important points about them, the next step is to understand how they can be managed. Ostrom (1990) analyses the situations of the commons good through game theory, and she recognizes that, with rational behaviour on the part of agents, likely shortcomings would be a lack of cooperation and of strategies. On the other hand, the analyses of many cases show that a mix between public and private collaboration can generate successful management, with ample cooperation among all people and institutions involved.

In the same sense, Ostrom et al. (1999), Hess (2008), Wade (1987), Fehr and Leibbrandt (2008), Casellas et al (2018), and Henrich et al. (2005) believe that the inclusion of Residents' community in the planning and management of the commons is the best option, better than the case of isolated management by single individuals. This is because private economic agents would have interests different from those of the community, and/or because central governments may find it difficult to monitor and implement efficiently. In other words, there should be some harmonious coordination between all actors with a stake in the benefits and harms that the commons may generate. However, there may still be a preponderance of decisions by the Resident community.

Administration of the commons seems to be an alternative to either the bureaucratic rigidity of public management or the likely bias of private management. It is a third option, where the community of residents is the protagonist, and they would coordinate and cooperate for the wellbeing of all the Territory. This is also Mansfield (2018)'s views. Analysing the case of the management and planning of the tourist destinations listed as mankind patrimonies, as declared by UNESCO, he arrives at the important result: Resident communities must get deeply involved in planning, being the main propagators of their cultures. They have a direct interest in maintaining their lifestyles and in the benefits that exploitation of the tourist destination brings to them. In his study, besides measuring the management of goods, he also advocates the importance of immaterial goods, such as culture and traditions. They are the most important attractor for tourists. Mansfield's analysis has a circular component whereby the community should retain historical characteristics to attract tourism, and, at the same time, needs to protect themselves from the mischaracterization that excessive tourism can generate.

Showing real cases of commons' management, Ostrom (1990) proposes certain design principles. She enumerates actions observed in all known cases, which may have guided successful institutions:

“1. Clearly defined boundaries: Individuals or households who have rights to withdraw resource units from the CPR (common pool resource) must be clearly defined, as must the boundaries of the CPR itself.

2. Congruence between appropriation and provision rules and Resident conditions: Appropriation rules restricting time, place, technology, and/or quantity of resource units are related to Resident conditions and to provision rules requiring labour, material, and/or money.
3. Collective-choice arrangements: Most individuals affected by the operational rules can participate in modifying the operational rules.
4. Monitoring: Monitors, who actively audit CPR conditions and appropriator behaviour, are accountable to the appropriators or are the appropriators.
5. Graduated sanctions: Appropriators who violate operational rules are likely to be assessed graduated sanctions (depending on the seriousness and context of the offense) by other appropriators, by officials accountable to these appropriators, or by both.
6. Conflict-resolution mechanisms: Appropriators and their officials have rapid access to low-cost Resident arenas to resolve conflicts among appropriators or between appropriators and officials.
7. Minimal recognition of rights to organize: The rights of appropriators to devise their own institutions are not challenged by external governmental authorities. For CPRs that fire parts of larger systems:
8. Nested enterprises: Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises.”

Ostrom’s design principles give great importance to the community and its self-organization, not only in the management but also in daily life interaction and in the preservation of Resident culture.

5.2.3 Perception of tourism externalities

The tourism sector is responsible for a considerable portion of the GDP of many a country and region. This is the case of Spain, Mexico, and Morocco, where it accounts for 12%, 8%, and 7% of the GDP, respectively, according to the OECD⁴³. Going deeper, when we look at the participation of the sector in certain cities’ GDP, we can better observe its regional importance. Cities as Macau, Cancún and Las Vegas have, respectively, 50,3%, 46,8%, and 27,4% of the participation in the city’s GDP according to World Travel & Tourism Council⁴⁴. The importance of tourism in economic activity is greater when we look at the lower levels of destinations. Villages, districts, rural areas, and smallish territories could depend even more on the sector.

All this economic prosperity, besides bringing in new investments, more jobs, infrastructure’s services, and a general improvement in the provision of public services, might also harm the resident population, if not well planned. On one side, generated Wealth and Incomes may not be shared equally among all residents. In this sense, tourism would generate, directly, economic inequality. On the other hand, an accelerated

⁴³ See in <https://data.oecd.org/industry/tourism-gdp.htm>.

⁴⁴ See in <https://wttc.org/Portals/0/Documents/Reports/2019/City%20Travel%20and%20Tourism%20Impact%20Graphics%20Report%20Dec%202019.pdf?ver=2021-02-25-201320-033>.

economic growth, without proper planning, can bring about also negative externalities, e.g., more traffic, increased congestion, higher prices, more pollution, a degree of mischaracterization, and spatial segregation for the residents.

The portion of them having direct economic gains from tourism, are generally in better conditions to face those negative externalities, but what about the other inhabitants, those who don't benefit from it?

5.2.4 Tourism and its *economic* implications

In previous sections, the Territory was considered a common of the residents. Starting with this presupposition, the management, organization, and its benefits should be shared among them. That is, the Destination is a kind of immaterial property, where all contribute indirectly and directly to the residents' culture, traditions i.e., to keep the place as usual. Typical events and characteristics, e.g. residents playing cards in the main square, clothes hanging on drying lines, the houses' colours, typical markets, resident cuisine, festivals, architecture, and generally residents' traditions help to preserve Territory's uniqueness as they belong to the residents' way of life.

At this point, discussing the economic benefits that the tourism industry brings to the Territory, the sector is exploring a Commons of the residents. It is obvious that the tourist's arrival brings in more money and possibly some economic growth. But how are the economic benefits distributed among residents? Considering that the territory is an immaterial property of all of them - is this greater economic prosperity equally shared?

Clearly, the answer to those questions is that: no, tourism's economic benefits are not evenly shared. Owners of hotels, restaurants, bars, craft stores, parking, museums, and all those areas directly related to services and goods for visitors, win financially. *Indirectly*, it is possible to also account for those workers that have their incomes correlated with tourism. Hence, the scenario is of a system of common resources, where residents are the stakeholders, which is being explored by a sector gaining greater economic benefits compared to the rest of them.

Certainly, the tourism sector puts labour hours and effort into offering goods and services to visitors, but the exploitation of the territory should work as a permission of use and, consequently, the sector should reward the owners of the common good for this. This will be clearer when we talk about the distortions that the increase in tourism's flows would bring for the region, even leading to the exclusion of residents, like the classic case of Venice.

In order to study the situation more profoundly, it is convenient to define what inequality is. According to the dictionary Merriam-Webster, inequality is the quality of being unequal or uneven, such as social disparity, disparity of distribution of opportunity and lack of evenness. The World Bank (2009) sees inequality with a focus on the distribution of attributes, such as consumption or income related to the whole population. In other words, inequality encompasses everyone within a geographical boundary and could be considered as relative poverty of some sort. (This is unlike the concept of

absolute poverty, which focuses only on the part of the population that is living below the standards and basic needs and stratifies the characteristics from them.)

Specifying the economic inequality or the inequality of outcomes, United Nations⁴⁵ states that such a situation occurs when individuals do not possess the same level of material wealth or overall living economic conditions. That is, there is a disparity in the flux of the receipts of economic benefits, whether they are the fruit of labour, profit, or the fruit of inheritance. In our case, the economic flux coming from the tourism sector is not shared among all, either labour or profit.

Obviously, it is not to bring down those who are offering products or services, but indeed, but to raise economic benefits of the rest of the population who does not receive the same benefits while sharing their territory and cultures. That is, the issue is not to raise barriers or difficulties to the promotion of tourism, but to find a way to share its benefits in a fairer way, reducing the perceptions of inequality with the harmful effects it may cause in the medium and long term.

Looking in detail at the situation of a touristically interesting region, the unbalance in the capture of economic benefits may become even more accentuated depending on the region's development level. To illustrate this, let's observe the example of two traditionally fishery villages in Brazil: Trancoso, located in the south of the Bahia State, and Jericoacoara, in the State of Ceará. Until the '80s, those places were poor communities of fishermen without energy or any sort of infrastructure. The arrival of the first visitors awakened tourism as both villages enjoy beautiful beaches and exuberant fauna and flora. Nowadays, Trancoso and Jericoacoara are synonymous of luxury hotels and restaurants. A long distance from their even recent pasts.

Clearly, tourism brought development to those places, e.g., with the evolution of the either region, some of the residents changed professions and have begun to offer services to tourists, others stayed in their profession to indirectly benefit from the new markets. This is the nice side of the story. On the other side, with boats, buses and the huge number of cars bringing in visitors, housing and food prices have become extremely high in particular for those working in low-paid jobs. Moreover, with new hotels and luxury shops, the ancient atmosphere has changed and today the settings resemble to two chic, rustic villages. Despite the efforts of the resident community to preserve the major points of interest and significant buildings with their own historical format, most of the environment has changed.

Results of such processes are all similar in many regions, which are experiencing rapid tourism development if they do not elaborate a systematic governance plan: historic residents are gradually expelled because they cannot support rising prices; the few remaining get removed from their daily life. Eventually, the region gets divided into "places for tourists" and "places of residents", mischaracterizing resident culture and traditions.

In the longer term, such a phenomenon, globalized, would bring tourism to its end, since there will be no more residents' cultures, traditions, or even resident persons historically living there. All regions would be transformed into "places for tourists", with

⁴⁵ See in https://www.un.org/en/development/desa/policy/wess/wess_dev_issues/dsp_policy_01.pdf.

higher prices and no more cultural identity. Because, on one side, the small portion of residents who obtain direct financial gains from tourism may be more interested in short-term profits than the supposed harm that tourism can bring in the medium and long term. On the other side, the rest of the residents that could face the deterioration of the resident culture and the territory could not be organized to face the situation. These unbalances of interests could be dangerous for the community. To avoid all this, it is essential to develop plans to achieve balanced tourism, safeguarding the quality of life and the well-being of residents.

5.2.5 Tourism and non-economic harms (e. g. negative externalities)

Besides the partition of net economic benefits from the tourism sector, another important factor exists for the Territory and for the residents in the perception of benefits. Benefits are not economic and could be non-economic benefits or harms, positive and/or negative externalities. According to OECD (2002)⁴⁶, an externality refers to situations where the effect of production or consumption of goods and services imposes costs or benefits on others that are not reflected in the prices charged for the goods and services provided.

Analysing the growing fame of some tourist destinations in Italy, Cuccia, Guccio e Rizzo (2014) found that this phenomenon could affect them in a negative way. One result of their analysis is that there could exist an overestimation from the tourism sector, as they start to offer more accommodation and other hospitality services. In the short term, prices in the real estate market see a significant increase, while in the middle and long term this fame may end, possibly resulting in a crisis due to the excessive number of accommodations.

In the general case, Cafiso, Cellini e Cuccia (2015) conclude that an abrupt increase in tourism can bring heritage decay, congestion problems, higher crime levels, and the need for infrastructure renewal. These harms may be caused by the lack of policies at the regional level, and by passive management that could only act after the problems were perceived. Also, along this line of thought, Frey, and Steiner (2010) point to other negative externalities such as real estate speculation, generating asymmetric income transfers, rising prices for basic products and increased probabilities of terrorist attacks.

In the case of Santiago de Compostela, Santos e Cabrera (2014) alert to the fact of the multiplication of “shops for tourists” and the decrease of residents’ establishments, affecting their lives. According to them, a macro-planned master plan is needed, reconciling the church, the public sector, the private sector, and residents to mitigate the problems encountered, making tourism more sustainable. Similarly, Pezua and Valencia (2006), in the case of Machu Picchu, points out that the non-limitation of visitors generates over-visitation and consequent deterioration of archaeological resources. The

⁴⁶ See in

<https://stats.oecd.org/glossary/detail.asp?ID=3215#:~:text=OECD%20Statistics,goods%20and%20service%20being%20provided.>

huge number of visitors also brings about disorderly urban growth, an increase in pollution, lower quality of services, and animal exploitation.

The visitors' increase would also bring positive externalities for the region. This was the conclusion found by Cuccia (2012) for Val Di Noto, Sicily, Italy. The region is considered a cultural district and, together with the nomination by UNESCO as a World Heritage, saw an increasing number of visitors. According to the author, this brought an increase in restorations in buildings and churches and economic overflow for the sector of agriculture and construction. In the case of Hadrian's Wall, Mason, MacLean, and De La Torre (2003) found that the increase in tourism and the professionalization in receiving visitors brought important benefits to the area. Among them, are education, improvement in the transport system, creation of new financing funds for residing producers, and the preservation of cultural resources.

As we can see in the literature, the interaction between tourism and Territory may bring both negative as well as positive externalities to the local community. What happens, depends on concrete cases and the consequences of those externalities may change with time and among sectors. No destination can avoid external influences, though they can be minimized in the negative cases or maximized in the positive ones, with the active participation of residents and higher self-organization.

Without an evaluation and policies to cope with the effects of the growing tourism flows onto the common resources, the consequences in the medium/long run could be tragic. The mischaracterization of the place, the expulsion of residents from the region due to excess of negative externalities, and loss of local cultures are real possibilities.

5.3 Equalizing the perception of economic benefits and externalities among residents

As can be seen, the utilization of the commons as a tourism destination could bring different perceptions along with the residents and the community. On the one side, the economic benefits coming from visitors tend to be concentrated in a specific group, which offers services or goods. On the other side, the externalities coming from tourists are shared among all residents and territory. If externalities are positive, this can result in an improvement of the general wellbeing of the society; when they are negative, the deleterious effects may be felt in the medium and long term, which may culminate in the deterioration of the common.

In order to minimize the negative externalities and potentialize the positive ones it is essential to elaborate a plan and organize the community, including those in the management and organization. This is the opinion of Cafiso, Cellini e Cuccia (2015) analysing the general case, Mason, MacLean e De La Torre (2003) with Hadrian's wall, Pezúa e Valencia (2006) with the Machu Picchu, Jimura (2011) with Ogimachi, Moreschini (2015) with Val d'Orcia, Li e Wu (2016) with Fujian Tulou and Buzio e Re (2015) with Piedmont. However, in most cases of rapid growth in tourism, the territory is not ready for its consequences. This can either be because of lack of priority or because the rate of visitors grows faster than the resident organization.

But, for the inequality perceptions of benefits the case is more complex. Even with a plan and organization it could be difficult to fairly share the benefits arising from the exploitation of the common good. A specific action could be necessary to face this problem and to modify the natural path of distribution.

Hence, in some cases, we could face two problems: A) the lack of coordination and the consequent lack of control in the negative externalities and B) the inequality in the economic distribution among the residents. In both cases an alternative intervention could be necessary: This correction would be led by the resident government with the involvement of residents' representatives (of residents and of private entities). The implementation, as we will be discussed in the next topic, would use the resident government's fiscal and bureaucratic capacity to coordinate and share the benefits fairly, reconnecting the daily life of the residents with the territory and moving the local economy.

5.4 A proposal: Basic income for residents

The proposal of this work is to share the benefits from tourism in the territory among the residents. To do so, the local government would have an important role to coordinate and lead this process through the implementation and distribution of a basic income to the residents.

According to Parijs and Vanderborght (2017), a basic income is a regular income paid in cash to every individual member of society, irrespective of income from other sources and with no strings attached. An important point is the delimitation that the word "society" brings. The dictionary Merriam-Webster⁴⁷ considers a society "a part of a community that is a unit distinguishable by particular aims or standards of living or conduct: a social circle or a group of social circles having a clearly marked identity". This mean of the word society fits perfectly into the concept of the Commons as territory. This is as well the opinion of the authors that believe that the recipients of the basic income must be the members of a particular defined community.

The second relevant point of the definition of basic income is the fact that this is a regular income. This creates predictability and helps in the financial organization of recipients, warming the local economy from time to time. The other significant point of is the payment to every individual member of the community. Here, there is no distinction among individuals that work or individuals that are the head of the family. However, it need not be uniform and be restricted only to adults (who could receive more according to the number of children), varying according to the age and to the area of the territory (areas more impacted by tourism and the periphery could receive more, as a form of redistribution in backing of the less favoured).

Another important characteristic is the lack of restriction related to other forms of income. That is, the idea that the beneficiary of the basic income can cumulate it in

⁴⁷ See in <https://www.merriam-webster.com/dictionary/society>.

combination with other sources of income. This happens in order not to affect, for example, the supply of job offers in the region, in case there was any restriction for working people or to affect other income distribution or poverty elimination programs in the area.

The cash payment means that basic income should not be paid with goods, foods or any other instrument that limits the purchasing power of individuals. The argument here is that the payment in cash is less bureaucratic and less subject to pressures, lobby, and waste through misallocation. However, there is concern that the money will be spent on luxury goods and products that contribute to the increase of violence or that are addictive. In the case of cash payment, Parijs and Vanderborght (2017) recognize that the artifice should not be embraced dogmatically and should be evaluated on a case-by-case basis.

The most contradictory and controversial assertion by the defenders of basic income is that it must be paid to all, regardless of where the income comes from or the patrimony of the family. The argument is that it could be a difficult task to prove that someone is poor, because of the bureaucratic system, ignorance, shyness, or shame from the requester. Regarding the bureaucratic system, the rule could be used in some way that opens space for arbitrariness and clientelism. It could also elevate the administrative cost through the monitoring and implementation of sanctions. Nonetheless, separating the society into those who do not need it and those who need help from the government could create prejudice and a feeling of humiliation.

5.4.1 Implementing a basic income for residents.

In order to implement the system of basic income from tourism, some assumptions should be made. The first one is that the basic income will be paid according to the geographic limitation of the territory and to individuals that have fiscal residence there, and not just permanent residence or were born there. The second assumption is that the local government will be responsible for managing and organizing transfers from the tourism sector to residents. The third premise is that basic income will be paid to all individuals with fiscal residence in the location, without discrimination. The fourth is that the amount of payment will be deposited every month in the form of a local currency and can be used in previously registered residents' establishments. The idea behind the local currency is that the receivers would only spend their basic income in the territory, supporting the local economy. This would be similar to the case of Maricá (discussed in another chapter in the thesis), where the local government pays a basic income to inhabitants through a local currency called Mumbuca. (In the latter case, the source of basic income is not tourism but oil royalties.)

The first presupposition is based on the rights of residents that live their lives in the territory. Since they share the territory, which is part of the common good, they have the right to receive a compensation for the use of its resources (the basic income). The idea is that the compensation allows people to use and to explore the place where they

live. It could be seen as a form of rent, where the stakeholders (the residents) share their place with visitors in exchange for value.

Regarding the organization and implementation, the use of the public infrastructure of the local government could minimize costs since it already exists for other purposes. The juridical organization of the government to implement a type of tax under tourism should also be considered. The mechanism would work through fees paid by the tourist in hotels, parking lots, intercity buses, trains, and boats. This money will go to a fund administered by the local government and will be reserved only for the purpose of providing a basic income to the residents. The local government will be responsible for the payment of this benefit, registering the beneficiaries in the system, passing the local currency on to residents, registering the establishments where the basic income can be used and exchanging merchant local currencies for cash. The creation of a financial local system would help in the specialization of tasks, for instance, a local bank to administrate the fund and the payments through a digital card in the account.

The third assumption considers that all residents are stakeholders of the common good. So, despite possible differences in wealth and occupation, harms coming from the negative externalities of tourism are shared among all residents. The main recipients are adults, but children are eligible through their parents, where they could receive a part of the value. Additionally, the elderly could receive more benefits since they are probably more affected by the negative externalities and naturally face a decrease in their income and an increase in their expenditures.

In this case, there will be a transfer of income coming from the sector of tourism to all residents, including for those who work with the industry and already receive benefits. The idea is to award the legal residents a rent or a fee for the right to use their property, the commons. The higher the number of visitors, the higher is the amount of money received for residents. It could be considered as a type of protection or compensation against growing visitation and its possible harms.

The last presupposition could be considered the most controversial together with the fact that the proposed distribution is for everyone and not just for the poorest. The monthly payment will help to boost the local economy in a constant way and bring predictability for all actors. On the other hand, payment in local currency aims to bring residents into the territory's life, preserving culture and avoiding the creation of "places for tourists" and "places for residents". Moreover, local currency tied to the local economy would bring more prosperity to the territory. It would work like a pact where residents receive the basic income to be used in residents' establishments, those previously registered by the local government. This benefit, at the end of the month, could be exchanged for money by those merchants or they could circulate it by paying government bills, salaries, or suppliers.

5.4.2 Criteria for implementation of the basic income through local currency

The system would be led by the local government but with the collaboration of representatives of residents and local private initiatives. The role of the public administration would be elaborated to the list of residents with fiscal addresses in the territory, register them in a system, create and administer a fund where all the money from the fees will go, distribute the basic income, register the residents' establishments eligible for accepting the local currency, collect the local currencies from establishments and give them the correspondent money. Furthermore, a council composed of residents, representatives of the local private sector and the local government would be elected. The council of residents would be responsible for refining the criteria for receiving the basic income, defining the value between different ages (children, adults, elderly), defining the establishments eligible for the local currency, and defining possible uses for the fund's money.

The way to collect the fee would be by the means of transport used by tourists and hotels. Regarding modes of transport, parking lots, intercity buses, trains, boats, and airplanes would have a differentiation of prices for residents and non-residents. For example, when paying for a parking lot, the machine will give the possibility to the resident to insert a code, previously registered by the local government. This would charge a different price or would not charge anything at all. The same principle applies for intercity buses, trains, or airplanes, where while buying the tickets, the resident inserts a code and automatically receives a lower price compared to non-residents. This difference between the two types of prices would be the fee that goes to a fund managed by the local government. The island of Sardinia⁴⁸ already implements this system, in order to facilitate the movement of residents, where the residents have different prices to leave and return to the island. On the other hand, for accommodation in hotels, Airbnb, and hostels a kind of nightly fee would be charged, which only the non-residents pay, and the residents could be free of payments if they prove that they live there.

Figure 1: Local government tasks:

local Government
Create the fund
Manage the fund according to the committee's premises
Pay vouchers to residents every month
Register residents in the territory's transportation system, parking lots and hotels
Paying voucher money to the owners of local establishments

Source: Author

As the initial proposal for those eligible to receive the local currencies, the eligible local establishments should comply with predetermined criteria. For example, a property owned by a resident for predetermined years, sell or fabricate local products, foment the local culture, offer a service related to tourism, employ a certain number of residents,

⁴⁸ See <https://www.mobyline.com/offers/sardinia/deals-for-sardinians/>

restaurants that cook traditional dishes, local museums, traditional and local events, or local with artisanal goods. These criteria could be concomitant or excluding, being the responsibility of the local council to elect them. As well as values, ages, ways of distribution of the basic income for residents, the council also could decide to reserve a percentage of the fund to reinvest in the community, to save a predetermined amount to be used in case of natural disasters in the territory. They could also change in values according to the seasonality of tourism in the region or invest some part of the money in education, local preservation, or financing local entrepreneurs.

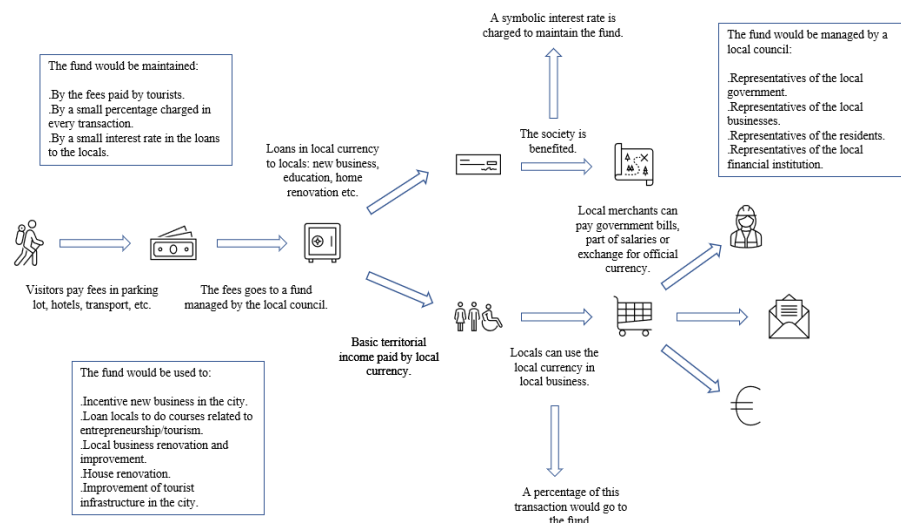
Figure 2: Local council tasks

Local council
Choose the value of the voucher
Deciding on differences in values between residents
Decide whether part of the fund will be reinvested in the territory
Deciding on how to use some of the money
Deciding on the criteria of the establishments

Source: Author

The benefits of the implementation of this system could be the compensation for the exploitation of the territory, warm the local economy through a circular system, reduce the negative externalities coming from tourism, bring the residents to daily life, preserve the residents' culture, increase a sense of community, organization, and Resident pride. However, this same system could also bring a decrease in tourism due to increased expenditure by tourists to pay the tax, internal conflicts to administer the fund and the criteria of payments, lobby increase and politicization and long-term goal changes.

Figure 3: Basic income mechanism: From tourism to local currency



5.4.3 A mathematical model for the basic income

In order to draw the mechanism and make it comprehensive, a math model was elaborated. The aim is to clarify the variables and their dependents.

$$\text{Local currency: } rE_{(a,g)} = \text{TBI} + \text{LL}$$

Where: r is the percentual chosen by the local council in the visitors' payment; E is the visitor expenditure; a is the local attractivity regards to tourism; g is an exogenous variable regards to the global economy; TBI is the territorial basic income; LL is loans to locals

$$\text{Local fund mechanism: } F = rE_{(a,g)} + t\text{TBI} + i\text{LL}$$

Where: F is the fund; t is the percentual chosen by the local council in each transaction; i is the interest rate chosen by the local council

$$\text{Local merchants' mechanism: } M = (1-t)\text{TBI} + \$$$

Where: M is the merchants' revenue; $\$$ is the "normal" expenditure in the official currency.

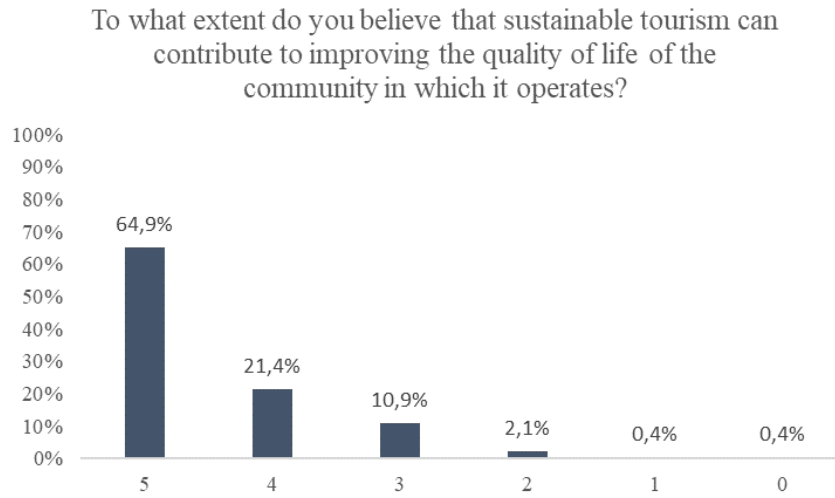
$$\text{Society equation: } S = N_{(G,T,A)} + P_{(G,T,FA)} + \text{TBI} + F - rE_{(a,g)}$$

Where: S is the benefit perceived by the society; N is the negative externality coming from tourism; P is the positive externality coming from tourism; G is the government action; T is the type of tourism; A is the collective action of the society

5.5 Interview analysis

As explained in the methodology section, it was conducted an online questionnaire in order to capture the perception of random people about the scheme proposed in this article. The questions were elaborated on considering the aspects of the mechanism and have a range between 0 to 5. Where 5 means I totally agree with the affirmation and 0 is I totally disagree. The interviews were conducted online, and the number of respondents varied between 285 and 244, as indicated in the tables below the respective graphs.

The first question was a contextualization, to understand the perception of the respondents about the relationship between sustainable tourism and the community:



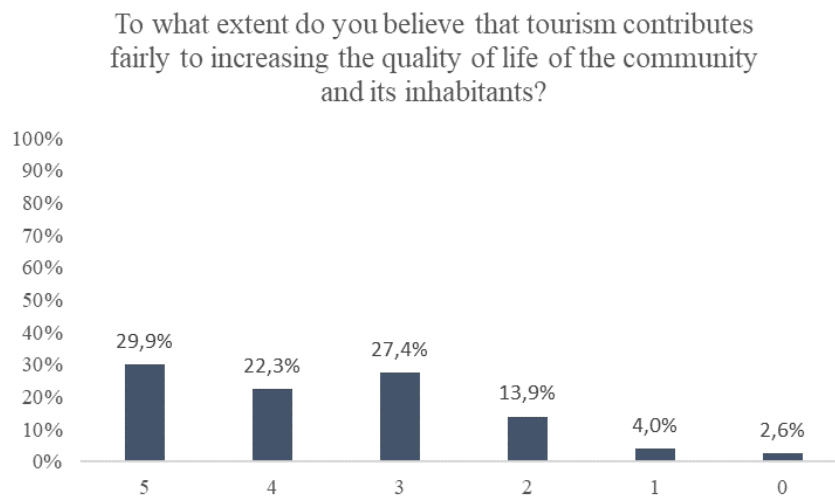
Source: Author

Table 1:

Average	4,47
Standard deviation	1,16
Respondents	285

Source: Author

On the hand, when the inquiry was about the fairness of the distribution of the quality of life between the locals, the result was more split:



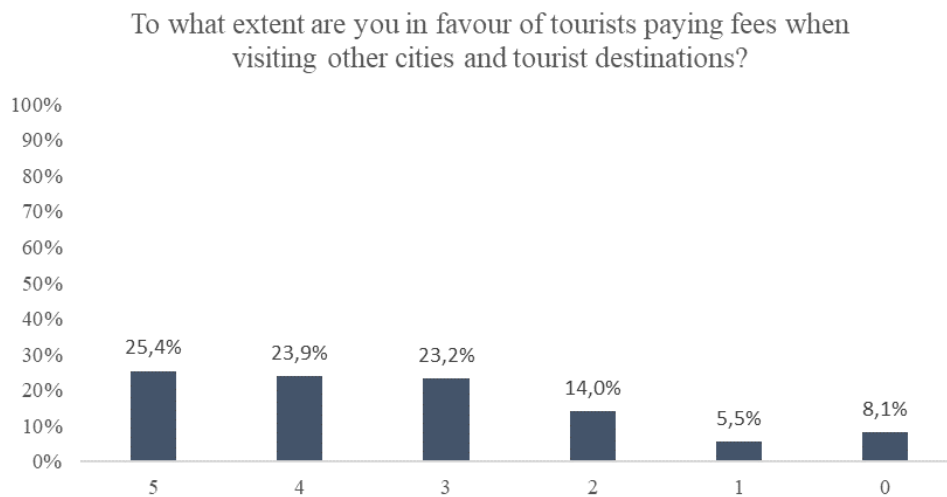
Source: Author

Table 2:

Average	3,53
Standard deviation	0,59
Respondents	274

Source: Author

When talking about a possible fee paid by the visitors to hit a destination, the result was even more split, if relatively low average:



Source: Author

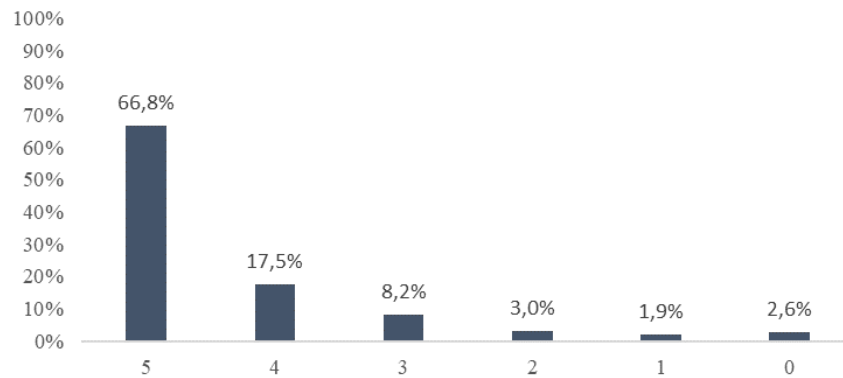
Table 3:

Average	3,25
Standard deviation	0,47
Respondents	272

Source: Author

However, when asked if the visitor would be willing to pay a fee, knowing that this amount would be reverted to locals, the perception changed:

To what extent would you, as a tourist, be willing to pay a small fee (for example, 2 euros) knowing that this money would revert to the local community?



Source: Author

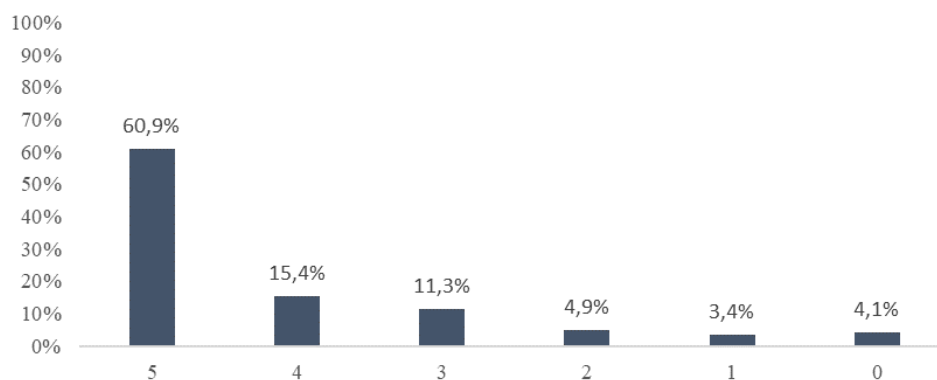
Table 4:

Average	4,37
Standard deviation	1,19
Respondents	268

Source: Author

Question number 5 introduces the concept of compensation to locals and the average is still high:

If this small fee (say 2 euros) were accumulated to generate a small income for people living in the tourist destination as a form of compensation. How much would you be willing to pay it?



Source: Author

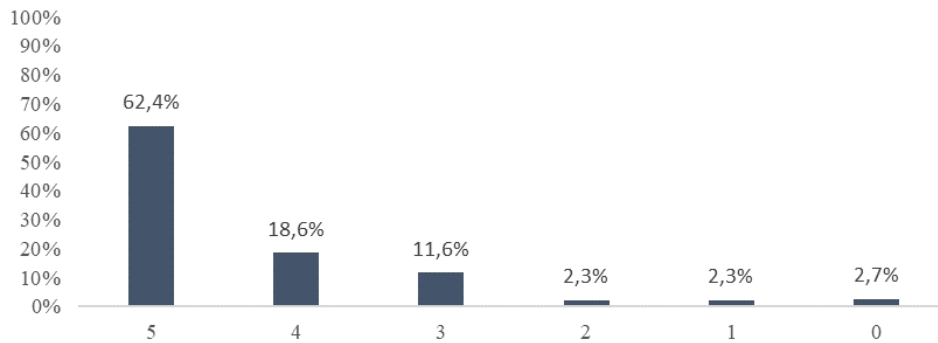
Table 5

Average	4,13
Standard deviation	1,07
Respondents	266

Source: Author

The next inquiry brings one aspect of the proposal, the fund that would be used to loan to locals and enterprises:

If, in addition to generating extra income for the community, this small fee (say 2 euros) also provided low-cost loans for new local ventures and professionalization of residents, to what extent would you be willing to pay it?



Source: Author

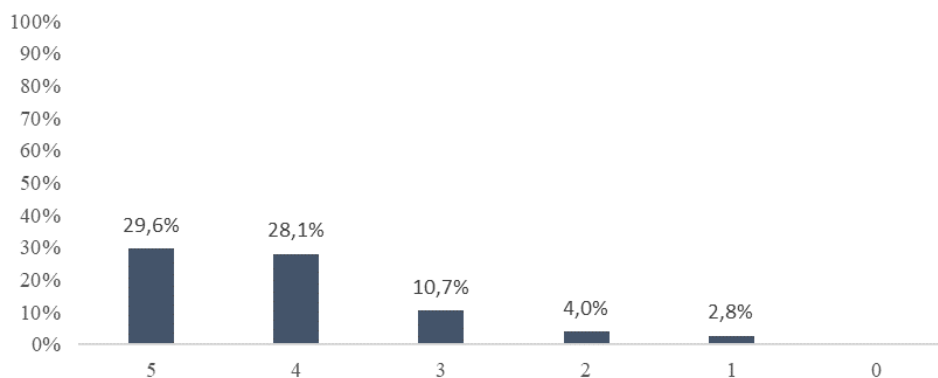
Table 6:

Average	4,28
Standard deviation	1,11
Respondents	258

Source: Author

Nevertheless, when the topic was the shared management of this fee, the audience seemed not so convinced:

If this small fee (say 2 euros) is managed by the community together with the local government and local traders, to what extent do you believe it would be well managed and used?



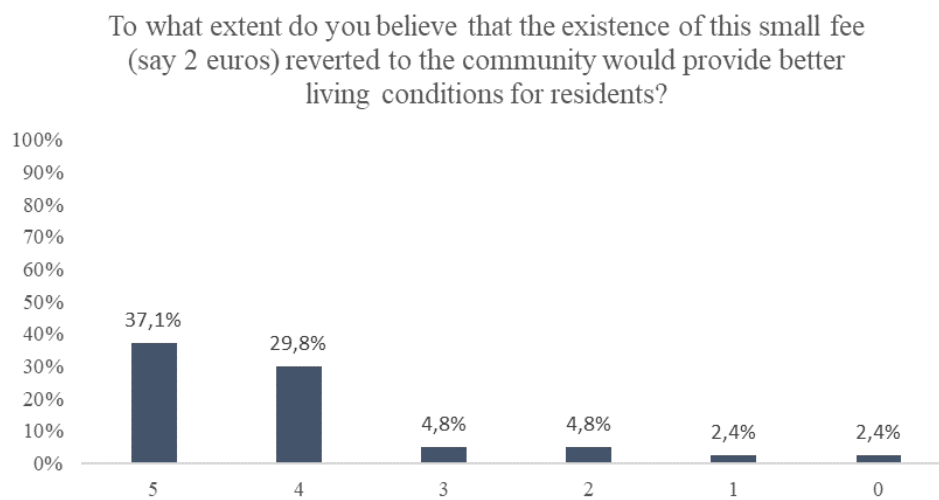
Source: Author

Table 7:

Average	3,53
Standard deviation	0,52
Respondents	253

Source: Author

The last two questions were about the wellbeing and the increase in tourism in the region:



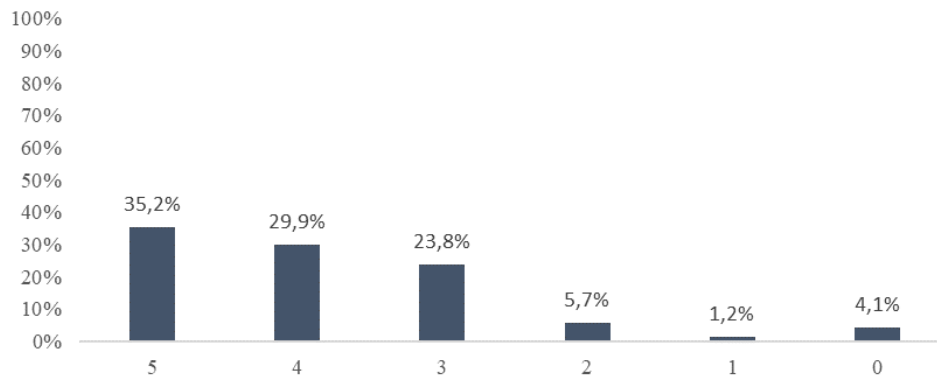
Source: Author

Table 8:

Average	3,87
Standard deviation	0,69
Respondents	248

Source: Author

To what extent do you believe that the existence of this small fee (say 2 euros) reverted to the community would improve tourism in the region?



Source: Author

Table 9:

Average	3,80
Standard deviation	0,67
Respondents	244

Source: Author

5.6 Conclusion

Tourism activity affects the territory in many ways. It could be positives or negatives and could be shared by all residents or for part of them. Considering the territory as a Commons, the positives externalities could increase the residents' well-being, but the negative externalities could end up if the local culture and keeping residents away from everyday life in the region.

With the assumption that the territory is a common good and it is an immaterial property of the community, the exploitation of tourism in the region could be unequal for the residents. On one side exists particulars that offer services or goods for the visitants and have direct gains from it. On the other side, predominantly perceive the negative aspects of this activity. What this means is that the common good exploitation generates more benefits for a small portion of residents.

The main purpose of this work is to balance the perceived benefits and avoid cultural mischaracterization and exodus of residents affected by high prices and other ills. For to do so, it proposed a type of compensation for the residents coming from tourism exploitation. This compensation would work as a "right to use" and would benefit all tax-residence residents in the region equally, through a local currency. This local currency would be used only in the residents' establishments and would be from a fund managed by a local council and operated by the local government.

This fund would be fed by the different prices charged to tourists and residents in different goods and services. This mechanism would bring more organization, decision power, and conscience on the side of the residents. Also, it would help to keep alive the Residents' culture, by bringing residents back to local life and preventing them from leaving the location.

Additionally, the interviews conducted with random respondents showed significant support for the main measures in the proposed scheme. The key points in the inquiry were the loan mechanism for education, professionalization, and new ventures; the compensation aspect and the fact that the fee paid by the visitors would be back to the community in some way.

From a social point of view, this basic income would bring more equality and at the same time would warm the local economy through the circular mechanism. In the middle term, it would help to balance the perceptions of negative externalities and in the long term, be responsible for sustainable tourism.

6 Cryptocurrencies and tourism: modelling a new mechanism to encourage the sector

Abstract: The increase in the transactions with cryptocurrencies around the world brings new opportunities for innovations and new business in all fields of economics. In the tourism case, some destinations intend to use this means of payment in order to increase the number of visitors and recover from the economic downturn caused by the pandemic. Some territories are already creating an enabling environment for blockchain-related business development, aiming to attract companies, workers, and people linked to cryptocurrencies. These mechanisms have a certain similarity with the scheme of the local currencies, mainly considering some characteristics such as defined geographic space, recovery from a crisis, promoting the local economy and funding its participants.

Based on the study cases, the literature on cryptocurrencies and local currencies, and interviews conducted, this article aims to model a new proposal for the improvement of the tourism sector. To do so, it's using a local currency and cryptocurrency scheme together.

Key words: Cryptocurrencies; Tourism; Local currencies; Blockchain

6.1 Introduction

The advance of new technologies brought new ways of interaction between consumers and firms, thus contributing to innovation. Cryptocurrencies are a new instrument of payment, and, being a sort of endogenous money, they could significantly change both the financial system and our interactions with it.

At the same time, certain companies, cities, and countries are starting to see them as a means to attract investments, new consumers, and to develop some sectors, for instance, tourism. The implicit idea is to create and stimulate new markets with smaller transaction costs (compared to traditional markets), thus allowing consumers to save money.

Cryptocurrencies are a relatively new scenario in the economy and authorities are trying to understand and regulate them. Some agents believe that it will be the future of the means of payment and will contribute to a revolution in the way of consuming. This is what Thailand's government believes. They announced the launch of a government plan to stimulate tourism through cryptocurrencies⁴⁹.

These politics in the direction of the popularization and incentive of Cryptocurrencies can bring both opportunities and challenges to the sector. The effects of these new measures could significantly change the tourism environment. In fact, this is what the government of Thailand intends, to build a new environment for the tourism sector. To do so, they aim to create their own cryptocurrency and digital wallet and

⁴⁹ See more in <https://www.bloomberg.com/news/articles/2021-11-28/thailand-lays-groundwork-for-crypto-tourism-to-revive-industry>.

guarantee acceptance around the country, according to Governor Yuthasak Supasorn, the head of tourism in Thailand in an interview with Bloomberg in November of 2021⁵⁰.

The city of Madrid seems to think in the same way and is also working on a plan⁵¹. The idea is to create their own cryptocurrency to promote tourism in the region and serve as a means of financing companies in the sector, also contributing to customer loyalty. The mechanism is still incipient and is the result of joint forces of the tourism private sector. The main goal is to establish itself as a crypto-friendly destination creating synergy between the agents of the sector.

Analyzing the facts above, this paper aims to map and understand the possible effects of the implementation of cryptocurrencies in the tourism sector. After this step, the goal is to build a hybrid model considering the similarities between the tourism crypto plans and local currency schemes. This model would be supported by the literature and the interviews about the topic.

The paper is divided into five parts. This is the introduction; the literature review, considering the cryptocurrencies as a type of endogenous money and comparing it with the local currencies; The study cases (Madrid and Thailand's plans) where will be analyzed the possibilities and measures of the plans; The modelling proposal for the tourism sector, considering a "local cryptocurrency" scheme. The conclusion, and the references.

6.2 Literature's Review

6.2.1 Cryptocurrencies

The financial crisis in 2008 besides generating economic retraction brought also less confidence in the financial system due to moral hazard-related behaviors, Tonkiss (2009). This environment was conducive to the emergence of cryptocurrencies and their decentralized system, the Blockchain, Farrell (2015).

But not only this fact was important to the rise of the blockchain and the cryptocurrencies nowadays. One of the effects brought by the pandemic was more frequent interaction with the internet⁵². Firms and public institutions adopted remote work and started to offer a wider range of services and online interactions, anticipating the trend towards greater digitalization of services. Following this trend, people's computer interaction with cryptocurrencies raised significantly⁵³. Not only because of the greater exposure to the world wide web but also because it was categorized as a safe means of transactions due to the high contagiousity of the virus, Boguslavsky et all (2021).

⁵⁰ See more in <https://www.bloomberg.com/news/articles/2021-11-28/thailand-lays-groundwork-for-crypto-tourism-to-revive-industry>.

⁵¹ See more in https://www.vozpopuli.com/economia_y_finanzas/criptomoneda-turismo-hoteles-madrid.html.

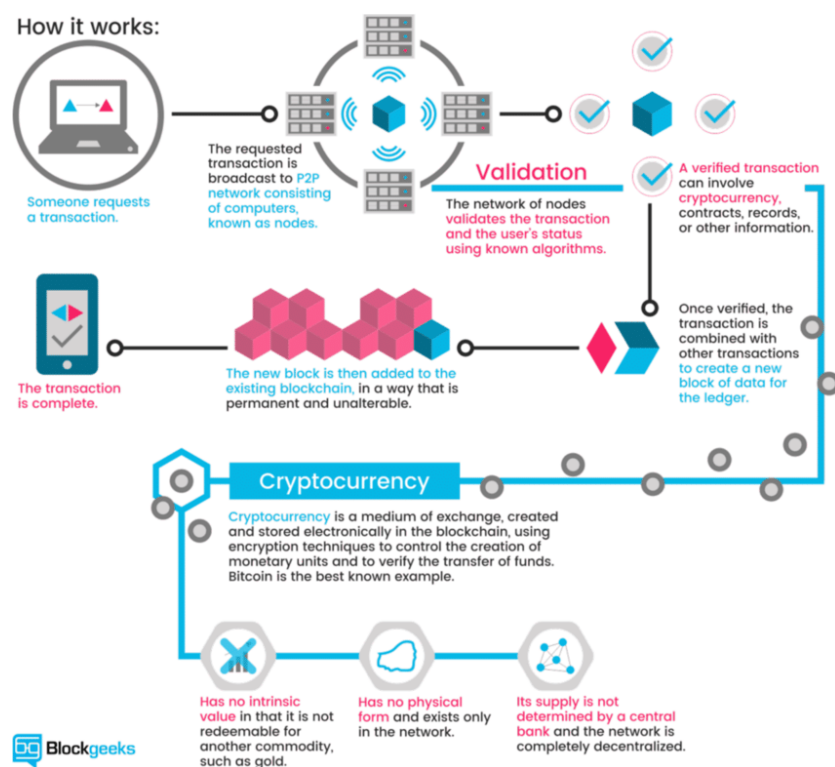
⁵² See more in <https://www.pewresearch.org/internet/2021/09/01/the-internet-and-the-pandemic/>.

⁵³ See more in <https://www.intuition.com/wp-content/uploads/2021/02/COVID-19-%E2%80%98Net-Positive%E2%80%99-For-Crypto-Currencies-2.pdf>.

In the blockchain system a central authority doesn't exist to validate the transactions. Instead, the users, individually, validating it. Taking a step back, this mechanism could be seen as a virtual ledger where all cryptocurrency transactions are processed, Narayanan et al (2016). A user that has a virtual wallet (in the blockchain) and cryptocurrencies in it, can negotiate in the system. Other users can validate the transaction through a mathematical code, receiving a reward for it (normally, a cryptocurrency credit in their wallet). Consequently, there are only two ways to get cryptocurrencies. One is by validating transactions in the blockchain, the operation called mining. The second one is buying in the market, using traditional currencies in order to obtain cryptocurrencies.

In other words, a person who wants to do a transaction in the blockchain with cryptocurrencies sends a request to the system, where the miners will work on it to validate through a complex code. This action happens in places called nodes and is where the miners compete to decode faster the algorithm and validate the transaction to receive the reward. After the process of validation, the transaction is added to the others forming a block of transactions. This block is added to the blockchain in a permanent way and the transaction is complete.

Figure1: Crypto scheme



Source: Alexandre Lieure on Herd behaviour and information uncertainty: Insights from the cryptocurrency market.

However, the blockchain not only serves to maintain the cryptocurrency market. It also serves to process data and digitalize it for instance in the case of the cheese consortium Fontina DOP, in Italy. The implementation aims to digitize the entire

production chain, making the data immutable and available in real time for the operators and final consumers⁵⁴.

Talking about the crypto market, while the financial market has a range of different traditional currencies, cryptocurrencies span a group of virtual currencies that are composed of many types of them, for instance, Bitcoin, Ethereum, Litecoin, Cardano, Dogecoin, etc. Besides the name, liquidity, value, and acceptance, another important differentiation among them could be that some of them fluctuate freely while others are pegged to a less volatile good, such as gold or the dollar, Fatás (2019). The former group brought fame to the whole category, once its fluctuations in a short period became famous for occupying newspaper covers. The latter group is called Stablecoins and doesn't have the same fame as the previous one, because it is less volatile. This type of cryptocurrency is important to the development of this work, so it is reserved a subsection to talk about it.

The main characteristics of a cryptocurrency, according to Fatás (2019) are i) decentralization, where there is no supervisor or central authority regulating the transactions. This allows negotiations to happen in all parts of the world at the same time; ii) Anonymity⁵⁵, where all transactions are analyzed through complex mathematical codes. The miner doesn't know who is doing the transaction, he or she does only know what is being negotiated; iii) No transaction cost or very low transaction cost⁵⁶. In this case, the transactions are made by the miners, and they receive a reward in cryptocurrencies, to make the system work. Hence, the persons who are negotiating are not obliged to pay a fee to have their transaction validated but they may pay a percentage in order to have their transaction to proceed quicker than others.

Nevertheless, because of its characteristics, the monitoring and supervision of the transactions are more challenging than the traditional system, Spithoven (2019). This creates opportunities for countries, companies, and individuals to avoid sanctions and flee off controls, Senner and Sornette (2019). These are e.g., the cases of Iran⁵⁷, which suffers a significant economic embargo because of its nuclear program; North Korea⁵⁸, and recently Russia⁵⁹.

In the first case, the Iran authority recognized cryptocurrency as a means of payment, allowing and stimulating activities with virtual coins in order to be able to negotiate barrels of oil abroad, out of supervision, according to the New York Times (2019). The case of North Korea is more complex, and allegedly the government of that country uses cryptocurrencies to fund its military nuclear program through online piracy, BBC (2022). As for Russia, the large and recent sanctions by the West because of the war in Ukraine are affecting the economy. Because of this, its citizens are buying

⁵⁴ See more in <https://www.italianextdop.it/green-blockchain-applicazione-nella-filiera-lattiero-casearia/>.

⁵⁵ In some cases, this anonymity is relative, and experts can discover who is doing the operation according to the amount of value negotiate and some characteristics of it.

⁵⁶ This is one of the criticisms of the cryptosystem. The majority of the operations take more time than they could take in the traditional financial market. And, to make it faster, you should expend some percentual of the negotiation to attract miners to resolve your algorithm in a shorter time.

⁵⁷ See more in <https://www.nytimes.com/2019/01/29/world/middleeast/bitcoin-iran-sanctions.html>.

⁵⁸ See more in <https://www.bbc.com/news/world-asia-60281129#:~:text=North%20Korean%20cyber%2Dattacks%20have,of%20digital%20assets%2C%20investigators%20found.>

⁵⁹ See more in <https://www.cnn.com/2022/03/11/russians-liquidating-crypto-in-the-uae-to-see-safe-havens.html>.

cryptocurrency to invest in properties in the middle East and to preserve their wealth against the huge devaluation of the Russian currency, CNBC (2022).

Nevertheless, the attractiveness of the cryptocurrency market is not only related to escapes from economic sanctions. In Central America, another country that has regulated Cryptocurrency is Cuba⁶⁰. According to the reportage, the main goal of the country is not only to escape from the economic sanctions imposed by the United States but also to facilitate the nationals abroad to send money to the country, without incurring into high financial taxes.

Another recent case of legalizing and stimulating cryptocurrency is El Salvador. In September of 2021, the country legalized Bitcoin as the official coin together with the US dollar⁶¹. In this case, beyond the central goal (that was to escape from the international financial system and its taxes, according to the reportage), other sectors benefited indirectly. For instance, the tourism sector. As a result of the "Bitcoin's law" in El Salvador, the Minister of tourism has reported that the sector had an increase of 30% after the regulation⁶², despite it doesn't explain the way that the calculation was made.

According to Price Waterhouse Cooper (2021), Bitcoin may be used in the country to with debts, without limitation in any transaction; it is accepted as payment for goods or services; Pay tax; Pay any previous obligation expressed in US dollars. Also, the accounting standards will continue to use the US dollar as the reference currency and the government will provide a system that will allow users to make an automatic and instant conversion of bitcoin into US dollars.

Another important characteristic of the cryptocurrency system is its consumption of energy. The mining, the main part of the process in the blockchain, requires computational infrastructure and the spending of a significant amount of energy, Farrell (2015). Some examples were used by the Energy & Commerce Committee Chair, where the consumption of energy to mine one Bitcoin can provide more than 70 days of electricity for a house in the US and more than one week in the case of the mining of Ethereum⁶³. However, apparently is easy to solve this ecological issue. The high consumption is due to the way to code, called "proof of work". This method requires big quantities of computers in order to make sure that the transactions are safe. The solution would be to use the "proof of stake", which would reduce the energy expenditure by 99%⁶⁴. This approach makes the miners put their coins as collateral to validate the transactions. Wrong or inaccurate information leads to penalties.

Related to the regulatory aspects, the main financial institutions in the world are seeing the emergence of the crypto market with caution. The main regulators and central banks are studying, understanding, and warning about the risks involved in those operations. This is the case of the International Monetary Fund⁶⁵, the European Central

⁶⁰ See more in <https://www.euronews.com/next/2021/08/27/cuba-becomes-the-latest-country-to-authorise-and-regulate-cryptocurrencies-like-bitcoin>.

⁶¹ See more in <https://www.nytimes.com/2021/09/07/world/americas/el-salvador-bitcoin.html>.

⁶² See more in <https://elsalvadorinenglish.com/2022/02/21/el-salvadors-tourism-has-grown-by-30-since-the-bitcoin-law/>.

⁶³ See more in <https://www.forbes.com/sites/tedknutson/2022/01/20/crypto-energy-consumption-enormous-but-it-neednt-be-congressional-panel-hears/?sh=311f411e4abb>.

⁶⁴ See more in <https://www.theguardian.com/technology/2022/mar/29/bitcoin-reduce-energy-consumption-climate-groups>.

⁶⁵ See more in <https://blogs.imf.org/2021/12/09/global-crypto-regulation-should-be-comprehensive-consistent-and-coordinated/>.

Bank⁶⁶ and the Federal Reserve⁶⁷. In the specific case of El Salvador, where the country recognized the Bitcoin as an official tender in 2021, the World Bank⁶⁸ rejected to help it in the implementation. The institution claims the lack of transparency and the environmental impact, as the reasons. The reaction of the International Monetary Fund⁶⁹ was even more incisive. The organization urged the nation to reverse the decision arguing that this measure could bring instability, inflation, and a general impoverishment.

As signaled by the Australian Central bank (2021)⁷⁰ and Senner and Sornette (2019) cryptocurrencies are not capable to replace fiat currencies yet, although could be complementary. The main reasons for it are that the digital currency fails to meet the 3 basic requirements of official currencies: They are not widely accepted as a means of payment. Failure in the function of a medium of exchange; They have large fluctuations in the price, meaning that their purchasing power is not maintained over time, reducing their effectiveness as a store of value Failure in the function of store of value; They are not commonly used to measure and compare prices, despite some businesses may accept cryptocurrencies as payment. Failure in the function of units of account.

Nonetheless, some central banks and financial authorities are working to enter in the crypto market through the central bank digital currency (CBDC). These are the cases of the Federal Reserve⁷¹, the Swiss Central Bank⁷² and the European Central Bank⁷³. According to Carapella and Flemming (2020), the CBDC can serve as an interest-bearing substitute for commercial bank deposits, having the potential to affect central banks' wider policy objectives, either by acting as a new monetary policy tool or through its effects on the portfolio choices of households and the probability of bank runs.

Besides being innovative itself, this means of payment is also contributing to the emergence of new products and services on the internet. This is the case of the Metaverse⁷⁴ and the NFTs⁷⁵, which use cryptocurrencies to process their transactions. The former, together with the cryptocurrency, is what specialists calling as web3 meaning the third phase of the internet, one focused on virtual and augmented reality to create a new online environment, Forbes (2022). Meanwhile, the latter is a digital asset that represents real-world objects and is sold on internet space, Forbes (2022).

Despite the general distrust and the significant fluctuation of the main cryptocurrencies, the market has 10.397 different currencies (Statista, 2022), an

⁶⁶ See more in

<https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220425~6436006db0.en.html>.

⁶⁷ See more in <https://www.federalreserve.gov/newsevents/pressreleases/bcreg20211123a.htm>.

⁶⁸ See more in <https://www.bbc.com/news/business-57507386>.

⁶⁹ See more in <https://www.bbc.com/news/world-latin-america-60135552>.

⁷⁰ See more in <https://www.rba.gov.au/education/resources/explainers/cryptocurrencies.html>.

⁷¹ See more in <https://www.federalreserve.gov/central-bank-digital-currency.htm>.

⁷² See more in <https://www.reuters.com/technology/switzerland-tests-digital-currency-payments-with-top-investment-banks-2022-01-13/>

⁷³ See more in

<https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210714~d99198ea23.en.html>.

⁷⁴ See more in <https://www.forbes.com/sites/bernardmarr/2022/04/25/how-the-metaverse-will-change-cryptocurrency/?sh=3a3460624fe4>.

⁷⁵ See more in <https://www.forbes.com/advisor/investing/cryptocurrency/nft-non-fungible-token/>.

estimation of 106 million⁷⁶ people using it and an estimation of \$16 trillion⁷⁷ of transactions in 2021.

6.2.2 Stablecoins

For the continuation of this work, the stablecoins are an important point, since they can maintain their valor through time by being paired with fiat currencies or a basket of goods. Despite this type of cryptocurrency is not the focus of this article, their particularities will be important for the model proposed in the following pages. Hence, the main characteristics of these digital currencies are highlighted in this section.

Stablecoins are monetary liabilities similar to bank deposits and money market funds; there are even some parallels to e-money (World Economic Forum, 2022) According to Hong Kong Monetary Authority (2022), Stablecoins be divided into three categories: Algorithmic, fiat-backed and crypto-backed. The Algorithmic one operates in non-custodial arrangements using smart contracts. The value of the digital asset backing an algorithmic stablecoin depends on the stability of the stablecoin itself. This is commonly referred to as endogenous backing. Afterwards, the stablecoin peg is maintained by arbitraging between the backing coin and the stablecoin.

The crypto-backed type is classified by the Deutsche Bank (2022) as sustaining their pegs based on a pool of reserve assets of at least equal value to the total amount of the stablecoins outstanding. They depend on digital assets as collateral.

On the other hand, the most fixed and most negotiable, responsible for 91,7% of the 145 billion in transactions of stablecoins, in 2022, are the fiat-backed type (S&P Global, 2022). In consonance with the World Economic Forum (2022), the issuer of a fiat-backed stablecoin maintains the stablecoin's 1:1 peg with the fiat currency by holding reserve assets of at least equal value to the total amount of stablecoins outstanding.

In spite of the name "stablecoin", this type of cryptocurrencies is subject to some fluctuation. The case of TerraUSD in May of 2022 is the most iconic case and spread chaos in the crypto market. This coin was backed by the algorithm way and lost nearly \$18 billion in market value in less than five days (World Economic Forum, 2022). But the problem didn't finish there, this situation generated panic in the market and other coins, not related to the algorithm's way of backing, suffered from heavy redemptions, affecting the parity.

However, the fiat-backed type of stablecoin is considered safe, despite the systemic risk (contagious as in the case of TerraUSD) and fraud in the collateral (less collateral than the minimum). on the contrary, the crypto-backed and the algorithm way are considered more volatile (Deutsche Bank 2022).

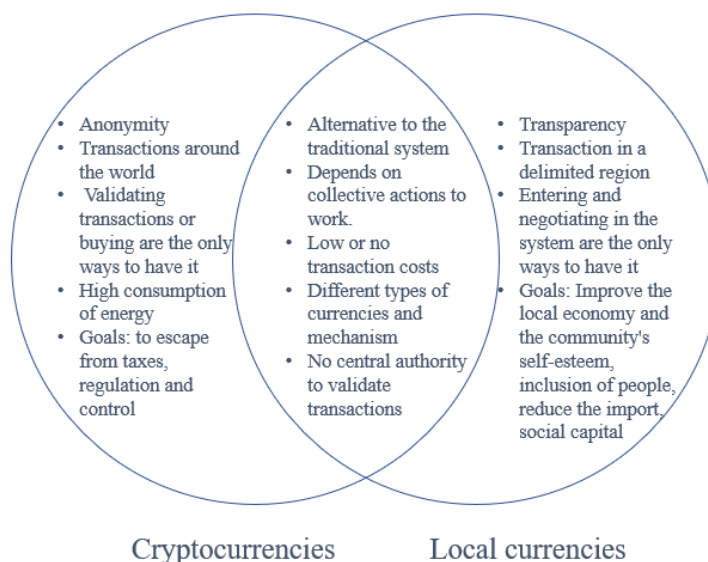
6.3 Local currencies x cryptocurrencies

⁷⁶ See more in <https://explodingtopics.com/blog/blockchain-stats>.

⁷⁷ See more in <https://complyadvantage.com/insights/cryptocurrency-transaction-volumes-grow-567-as-focus-turns-to-defi/>.

Even though local currencies and cryptocurrencies are different in certain aspects, for instance, transparency/anonymity in the transactions and their main goals, these alternative systems share some similarities. The image below shows the common and different points of these mechanisms.

Figure 2: cryptocurrencies x Local currencies



Source: Author

These general similarities are accentuated in either case studies below, in which two regions aim to create a cryptoplan to incentive the sector of tourism in a delimited region.

6.4 Case studies in tourism

In the economy, technological innovations contribute to modifying the industry environment. Some of them are considered disruptive, as when they transform the market by reducing costs in the production, bringing in new consumers, or even allowing the creation of new products or services, Schumpeter (1942). In this sense, cryptocurrencies could be considered a disruptive innovation in the tourism sector. First, they can be used as an alternative system to the traditional financial system, helping to reduce the transaction costs coming from the financial intermediaries. Second, in some cases, it can be seen as a way to fund companies in the sector (the case that will be explained below). Third, this new mechanism can bring new consumers from new markets that want to avoid regulation or want anonymity.

In the following two case studies, cryptocurrencies are considered an innovation capable of transforming the environment of the tourism sector. In the case of Madrid, the plan would be led by private initiative and has a strong correlation with the development of the local companies through self-financing and customer loyalty through discounts and benefits. Thailand's case would be led by the public sector and the focus would be to reach new consumers and new markets through the facilitation and reduction of the tourist expenditures in the country, using the local cryptocurrency.

Another pioneer plan is the Irishcoin⁷⁸. This plan aims to improve tourism in Ireland through the creation of its own cryptocurrency. The mechanism was launched in 2014 and offers discounts to local businesses who pay with the local cryptocurrency. Despite not being a Stablecoin and having significant fluctuations of price (see table 1), this digital currency reached the mark of 39,3⁷⁹ million units. The total amount that can be mined is 64 million and the expectation is to reach this value in 7 years, according to the official information on the website.

Figure 3: Irish coin

Year	USD	High	Low
2019	-17.8%	\$ 0.000904	\$ 0.000645
2018	-80.2%	\$ 0.163	\$ 0.000583
2017	+402.9%	\$ 0.0114	\$ 0.0004
2016	-23.4%	\$ 0.00107	\$ 0.0000832
2015	+73.5%	\$ 0.00201	\$ 0.000251

Source: <https://cryptorank.io/price/irishcoin>

Despite the main goals of the previous case, new visitors could bring more income to the locals, contributing to spreading the richness coming from the virtual market. That is, also creating the opportunity to provide new services and products in this niche. Nevertheless, this new mechanism can also drive to accentuate spatial inequality, separating locals that don't have access to the crypto market from the visitors that are able to use it. Or else, financial inequality, considering that the facilities of the acceptance of the crypto could bring richer people and increase the prices of products and services for the locals.

Despite "intends to utilize the promotional aspects of tourism, providing the coin as a discount token vehicle, a tourist organizational branding opportunity, and for the promotion of the Irish tourism industry among the Irish diaspora in the US, Ireland, and globally." It is not clear the improvements for the Irish tourist industry, coming from the Irish coin.

6.4.1 Madrid's case: private-public partnership led by the private sector.

Madrid is one of the major cities in Europe, with 6,7 million⁸⁰ inhabitants in 2021. Regarding the tourism sector, before the pandemic the city has received 10,4 million

⁷⁸ See more in <http://www.irishcoin.com/>.

⁷⁹ See more in <https://cryptorank.io/price/irishcoin>.

⁸⁰ See more in

<https://www.macrotrends.net/cities/22549/madrid/population#:~:text=The%20current%20metro%20area%20population,a%200.9%25%20increase%20from%202019.>

visitors, generating 78% of the occupancy in hotels⁸¹. With the COVID crisis, the estimation is that the city lost 42%⁸² of visitors in 2020. In order to cope with this, the local government created the "Madrileña"⁸³, aiming to encourage to know the city and its attractions.

Nevertheless, another option was formulated to face the low numbers arising from the pandemic crisis. Madrid announced a plan to transform the city into a crypto-friendly destination⁸⁴. But this plan comes from the private sector.

The plan consists of a joint force of actors in the tourism sector, mainly companies from the hospitality sector. They are part of a group called Alliance of Hotel Chains for the Digitalization and Sustainability of Tourism⁸⁵ and they are working together with Madrid Fintech⁸⁶ to implement the crypto plan. To do so, the organizers created the Madrid Fintech Tourism Commission, a group that will coordinate and establish guidelines for the creation of a local cryptocurrency. The aim of the plan is to fund the industry and its participants, incentive the tourism sector and loyalty the customer to the service.

Mad Fintech was created to be a cluster between companies that develop activities in Madrid. The company aims to revolutionize the financial services, collaborate with the innovations in the associate companies, and incentive Madrid to be recognized as an important financial innovation center in the world. This firm would be responsible to create the technical conditions and guarantee the normal operation of transactions of the local Cryptocurrency in Madrid, providing the necessary conditions for the circulation of the virtual coin.

Madrid crypto inspiration: The Helysia

According to the formulators, the local cryptocurrency of Madrid will be based on another virtual currency, created in the south of Spain, called Helysia. This digital currency was created by a firm in the well-being tourism sector and aims to capitalize it for future investments and expansions.

Hence, to better understand the idea behind the Madrid cryptocurrency, it is necessary to contextualize the implementation of the Helysia currency. According to its creators, the Helysia virtual currency has as a goal to stimulate a sense of community

⁸¹ See more in <https://www.madrid-destino.com/en/madrid-in-numbers>.

⁸² See more in <https://www.caixabankresearch.com/en/sector-analysis/tourism/loss-tourism-business-major-blow-spanish-economy>.

⁸³ See more in <https://hospitality-on.com/en/tourism/tourism-relaunch-major-european-metropolises-madrid>.

⁸⁴ See more in https://www.vozpopuli.com/economia_y_finanzas/criptomoneda-turismo-hoteles-madrid.html.

⁸⁵ See more in <https://www.smarttravel.news/nace-una-alianza-cadenas-hoteleras-la-digitalizacion-la-sostenibilidad-del-turismo/>.

⁸⁶ See more in <https://madfintech.es/>.

around the company. For this, its focuses on strengthening 4 pillars⁸⁷: Product, Spaces (related to expansion plans), permanent technological/digital development, and progress and development of a prosperous community culture.

The objective is customer loyalty, through discounts and promotions and self-finance without using the financial market. As explained by The Hammam Al Ándalus, the agency responsible for the project, the sale of the digital currency represents a right to redeem it in services and products, considering that: the agency obtains financial resources for the aims previously established in its plan; the consumer benefits from the services and products offered through discounts and exclusive offers, which will be greater in accordance with the number of Helysia crypto possessed by the user.

The participants are treated in a different way from the usual consumers and have access to exclusive advantages. The benefits are divided into categories, and they depend on the number of investments made by the consumer. On the other hand, the program does not guarantee liquidity and only provides for the exchange of the token for cash only in the first 14 days after the purchase. After that, the customer cannot redeem the money. Despite this, the company indicates the commercialization of Helysia in the cryptocurrency secondary market.

Regarding legal aspects, the entity responsible for the financial market in Spain, the CNMV, has been allowing financial funds to invest in crypto⁸⁸ and also gave the Helysia currency its approval⁸⁹ to operate. But despite these favorable endorsements, the regulator has been limiting the operation of cryptocurrencies in the country, for instance, regulating the publicity⁹⁰, preventing the trading of cryptocurrency derivatives⁹¹, and requiring reports on the risks of trading with virtual currencies⁹².

Considering Madrid's case, the implementation of the cryptocurrency would pass from the individual company to the collective and collaborative perspective, in which the virtual currency would offer benefits to the consumers in all companies participating in the consortium. These firms would have the access to the virtual currency by selling their products and services or through the fintech that will manage the money and would finance projects from the associates' companies, according to future rules. At the same time, this coin would be negotiated in the secondary market around the world and would fluctuate freely.

⁸⁷ See more in https://hammamandalus.com/wp-content/uploads/2020/08/Presentaci%C3%B3n_EN.pdf?_ga=2.90146328.2000805528.1650978917-1234310912.1650978913.

⁸⁸ See more in <https://www.economista.es/divisas/noticias/11213369/05/21/La-CNMV-permite-a-los-fondos-invertir-en-criptomonedas-aunque-advierte-de-los-riesgos.html>.

⁸⁹ See more in <https://es.cointelegraph.com/news/helysia-was-born-to-grow-and-expand-raul-lozano-general-director-of-hammam-al-andalus>.

⁹⁰ See more in <https://www.cnmv.es/portal/inversor/Publicidad-Criptoactivos.aspx>.

⁹¹ See more in <https://www.lainformacion.com/empresas/cnmv-prohibe-binance-vender-derivados-criptoactivos-espana/2865815/>.

⁹² See more in https://www.bde.es/f/webbde/GAP/Secciones/SalaPrensa/NotasInformativas/22/presbe2022_19.pdf.

6.4.2 Thailand's case: Private-public partnership lead by the public sector

Thailand has 66,7 million⁹³ inhabitants and the tourism sector was responsible for 21,9%⁹⁴ of the country's GDP in 2019. In the same year, the nation received 39,9 million visitors, generating 80% of occupancy in hotels⁹⁵. The COVID emergence put the country in difficulty, mainly because of the 95%⁹⁶ of reduction in international flights. Before the pandemic, international tourism was 33% of the visitors and in 2021 (COVID period) it dropped to 3%⁹⁷.

In contrast to Madrid's case, the plan to face the economic crisis arising from COVID is led by the public sector. Thailand's case⁹⁸ has the public as the main supporter and developer. In order to implement the plan, the government has been giving the first step in order to the regulation of digital assets.

Despite not accepting yet crypto as means of payments⁹⁹, the government elaborates a decree on digital assets, creating the ideal conditions to typify them. The decree on Digital Asset Businesses, B.E. 2561 (2018) (the "Digital Asset Decree")¹⁰⁰ specifies the new type of assets and guarantees that any business operator who wishes to conduct any activity regarding Digital Assets must take this regulation into account. In parallel, the country's central bank has been developing its own digital currency¹⁰¹. It will be divided into two categories: the "retail" currency, used by the public and companies, and the "wholesale" currency, used by financial institutions. In addition to developing expertise on the subject, the objective is to reduce the taxes coming from the international transfers and facilitate the access to small companies into the international market.

At the same, the government (through the Thailand authority of tourism) has been elaborating a plan together with the private initiative to incentive the acceptance and the use of cryptocurrencies when purchasing products and services in the tourism sector¹⁰².

⁹³ See more in

<https://tradingeconomics.com/thailand/population#:~:text=Population%20in%20Thailand%20is%20expected,according%20to%20our%20econometric%20models>.

⁹⁴ See more in

[https://pt.knoema.com/atlas/Tail%3%a2ndia/topics/Turismo/Contribui%3%a7%3%a3o-Total-em-Viagens-and-Turismo-ao-PIB/Contribui%3%a7%3%a3o-Direta-ao-PIB-percent-partilhado#:~:text=In%202019%2C%20contribution%20of%20travel,\)%20for%20Thailand%20was%2021.9%20%25](https://pt.knoema.com/atlas/Tail%3%a2ndia/topics/Turismo/Contribui%3%a7%3%a3o-Total-em-Viagens-and-Turismo-ao-PIB/Contribui%3%a7%3%a3o-Direta-ao-PIB-percent-partilhado#:~:text=In%202019%2C%20contribution%20of%20travel,)%20for%20Thailand%20was%2021.9%20%25).

⁹⁵ See more in <https://www.ceicdata.com/en/thailand/hotel-occupancy-rate-and-average-room-rate-monthly>.

⁹⁶ See more in <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/reimagining-travel-thailand-tourism-after-the-covid-19-pandemic>.

⁹⁷ See more in <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/reimagining-travel-thailand-tourism-after-the-covid-19-pandemic>.

⁹⁸ See more in <https://www.bloomberg.com/news/articles/2021-11-28/thailand-lays-groundwork-for-crypto-tourism-to-revive-industry>.

⁹⁹ See more in <https://www.bloomberg.com/news/articles/2022-03-23/thailand-bars-use-of-cryptocurrencies-as-a-method-of-payment>.

¹⁰⁰ See more in https://www.sec.or.th/EN/Documents/EnforcementIntroduction/digitalasset_decree_2561_EN.pdf.

¹⁰¹ See more in <https://mgroonline.com/stockmarket/detail/9650000003195>.

¹⁰² See more in <https://www.thansettakij.com/business/515915>.

The idea is to create a website, called Thailand Holideals¹⁰³, with special offers and prices aggregating all participant's companies and their services and products. The project would help provide new experiences to the Thai tourism industry. Including stimulating decision-making on travel and income distribution for the basic economy, leading to a greater dynamism of the country's economy, according to the authorities in the interview.

Regards to the tourism crypto plan, the goal is to create a conducive environment to attract rich people, in the words of the governor of the Tourism Authority of Thailand (TAT): "There are people who have become wealthy from holding digital currencies and they may want to use the wealth they have accrued."¹⁰⁴ In this new environment, Thailand's authority intends to create its own cryptocurrency and its own wallet to facilitate the regulation of the entrance of the assets in the country.

The expected effects coming from the implementation of the crypto plan in the country are to reach a higher level of tourism spending with a lower number of tourists. This affirmation was corroborated by Yuthasak, the head of the plan in Thailand:

"If Thailand is looking to recover about 80% of its pre-pandemic tourism revenue in 2023 but with half the number of foreign tourists' arrivals, we saw in 2019, we can achieve that by getting someone like Russell Crowe¹⁰⁵ or a crypto holder like Tim Cook¹⁰⁶ to travel here."

In the same way that it intends to change the tourism environment with the incentive of cryptocurrencies, the country's government also intends to change the visitor's profile and, consequently, the interaction between them and the local companies. For instance, in order to facilitate the travel of Russian¹⁰⁷ tourists in the country, the government announced that will enable those travelers to use crypto in the country¹⁰⁸.

6.4.3 Madrid's case x Thailand's case

Comparing the two cases above is possible to observe that they have similarities and also particularities that make them unique and innovative. The figure below brings the main characteristics of them.

Figure 4: Madrid x Thailand

¹⁰³ See more in <https://holideals.tourismthailand.org/>.

¹⁰⁴ See more in <https://www.bloomberg.com/news/articles/2021-11-28/thailand-lays-groundwork-for-crypto-tourism-to-revive-industry>.

¹⁰⁵ Hollywood famous actor that invests in cryptocurrencies (<https://bitcoinprofitrecension.com/russell-crowe-bitcoin-revolution-review-scam-or-legit/>)

¹⁰⁶ Co-founder and executive of the company Apple which invests in cryptocurrencies (<https://www.nytimes.com/2021/11/09/business/dealbook/tim-cook-cryptocurrency-apple.html>)

¹⁰⁷ The country has been affected by economic embargoes by many countries for their military invasion of Ukraine.

¹⁰⁸ See more in <https://timesofindia.indiatimes.com/business/cryptocurrency/blockchain/authorities-in-thailand-consider-accepting-cryptocurrency-from-russian-visitors/articleshow/90150731.cms>.

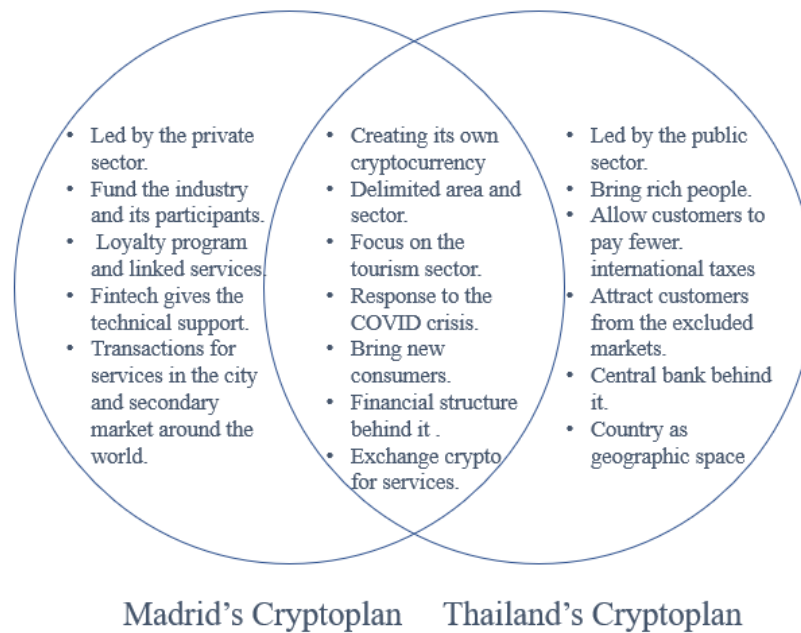


Figure 2. Source: Author

Although different, the two cases have direct similarities with the local currency cases reviewed in the literature, such as: Recover from a crisis, incentive the economy (through the tourism sector), exchanging local (crypto)currencies for services and goods, geographical area as a parameter and depends on the local actions and local coordination to be successful.

6.5 Modelling a proposal for the "local cryptocurrency" in the tourism sector

This article is taking into consideration that the cryptoplans are new, without data and with a little academic literature correlating cryptocurrencies, tourism, and economic improvement in a delimited region. Because of this, this work utilizes the similarities among the local currencies, cryptocurrencies and the cryptoplans (Madrid and Thailand's case) to better understand the possible effects in the tourism sector and in its regions and to propose an alternative plan for it.

Vandervort et al (2015) proposed a local currency system utilizing Bitcoins to foment loans to local businesses. Despite being a different case, mainly because this mechanism utilizes a volatile currency not created by the community, it is possible to draw some conclusions and adapt them to the mechanism proposed below. For instance, considering the conclusion that the Bitcoin system would need fiduciary care and that it could generate a significant risk of collapse into the community. Also, considering the risk in the mining system where there was not created by the local representative. These are important starting points to propose a model considering cryptocurrencies as a local currency.

The modelling proposed in this article, so-called "Local cryptocurrency for tourism", takes into consideration the creation of a local cryptocurrency (as the plan of

Madrid and Thailand announced). Additionally, this digital coin would be linked to the official currency, being a Stablecoin (Euro, for instance). Mainly because one of the goals of this type of plan would be to improve the local tourism sector and not bring instability to it. Talking about the goals, they would be a mix of the local currency goals and the Madrid's and Thailand's case: Improve the tourism sector and the economy, foment local business and local initiatives, expand payment options, bring new consumers, loyalty to the customer to the services, allow the visitors to pay fewer financial taxes and create a sense of community.

The creation of the local Stablecoin would be done by the local responsible (group of firms from the local tourism sector, as in Madrid's case, or government, as in Thailand's case). Initially, this entity would mine a certain amount to start the process, as in the case of the Irishcoin¹⁰⁹, which mined the amount of 4,5 million of cryptocurrency. Hence, after selling this initial amount, the money would go to a fund, managed by the local committee, and aimed to give loans to the participants. Therefore, it would only have two ways to acquire the local cryptocurrency: Buying initially from the local responsible (the cryptocurrency mined) or mining in the blockchain (validating the transactions in the system).

Regarding the management and loan scheme, in the local currencies case, these subjects were diagnosed as important to the success of the plan. In the general case of no success, the lack of governance, coordination, government support, issues with professional and technical knowledge and the absence of trust in the system and limited banking structure were determinants. In order to avoid these situations, the program would have a financial institution responsible for the emission and technical issues related to cryptocurrencies (fintech, local bank, or the central bank). On the other side, the system would create a council composed of representatives of the tourism sector, local government, inhabitants and the financial institution to decide on the criteria for loans, investments, promotion, marketing and goals in the long term. The participants would pay a small fee to deal with the bureaucratic costs and to have the financial and technical support.

In this mechanism, the participants (inclusive, workers) would have the possibility to get loans without or with lower interest rates (compared with the traditional financial system), avoid the payment of taxes for each transaction when customers pay with a card and have new clients coming from the cryptocurrency market, avoiding the international taxes from the financial system.

Running a mathematical model of local currencies, Boik (2014) found out that the mechanism of non-profit loans in the local system could contribute to the increase in employment in the region. Examining a specific case, with predetermined conditions and assumptions, the author concludes that the local currency mechanism could reshape the local economy and diminish income inequality.

Figure 5: Local cryptocurrency scheme

¹⁰⁹ Cryptocurrency to local economy. See more in: <http://www.irishcoin.com/developers-monors/>.

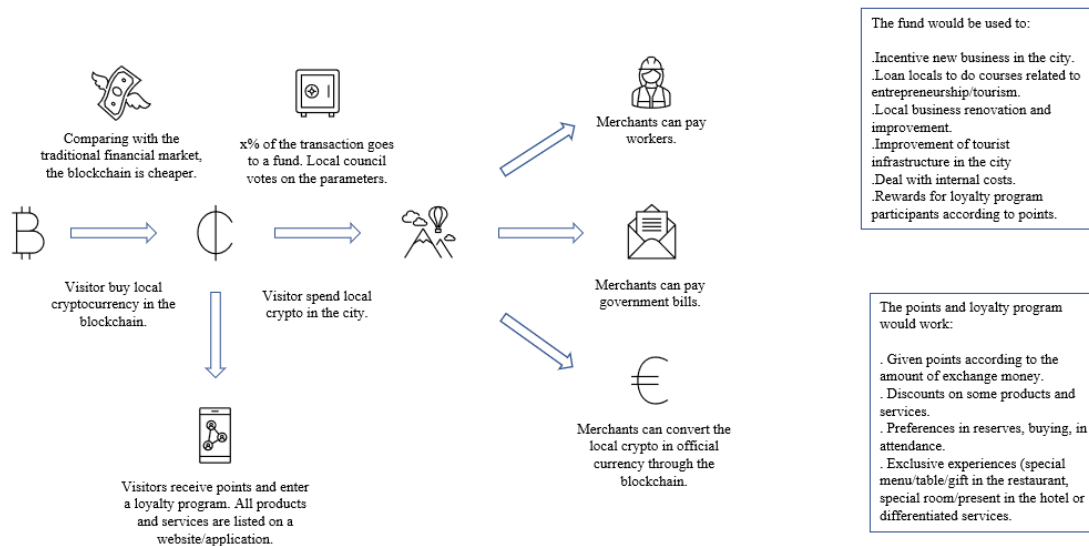


Figure 3. Source: Author

On the other side, the participant companies would list their products on a website/application, giving special offers to whom pay for their goods or services with the local cryptocurrency. This mechanism would work in two ways: discounts on goods and services and a loyalty program considering the number of transactions in local cryptocurrency from the customer. The loyalty program could give rewards taking into account the level (number of transactions that would have punctuations) of the client.

Once the firms sell their goods and services in exchange for the local cryptocurrencies, they would be stimulated to pay their suppliers and part of the salary of their employees. Besides keeping the digital coin circulating, would have an incentive for the employees to access the local tourist attractions, bringing the residents to know the region. Another possibility for companies and employees that are owners of local cryptocurrency is to sell in the secondary (blockchain) market to have the official currency.

In this local cryptocurrency mechanism, the publicity of the digital coin and the discounts on products and services would be essential. First, it was diagnosed in the local currency literature, discussed in the previous sections, that the lack of publicly was one of the reasons for its not having success. Second, the publicity would influence the acceptance of the cryptocurrency (another cause of no success in the literature) because would bring more consumers and participants. This would generate, according to Vandervort et all (2015), more engagement and cohesion in the community around the local cryptocurrencies system.

Figure 5: Local cryptocurrency scheme 2

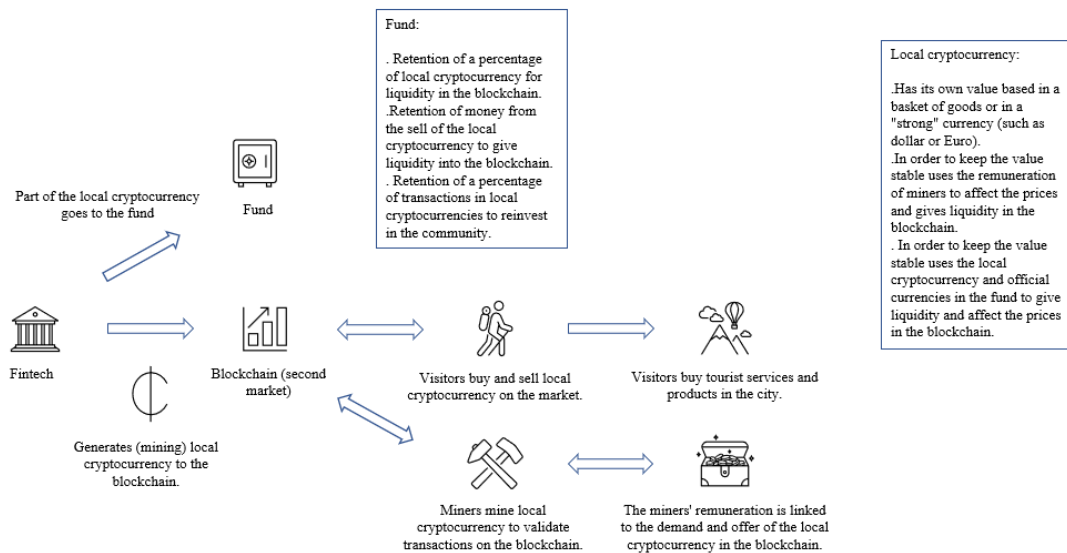


Figure 4. Source: Author

Concerning the case of mining, like all cryptocurrencies, the system would need it to process the transactions in the blockchain. The mining could be done around the world, rewarding the person who is helping the system with a predetermined amount of the local cryptocurrency. The miners would use this cryptocurrency in the region to enjoy the discounts on goods and services or they could sell it in the secondary market for a tourist that intends to visit the region or to a resident that wants to buy locally at better prices. The benefit to the miners is that they would exactly know how much they are going to be rewarded because they are mining a Stablecoin that fluctuates not much and that there is liquidity in a specific region (visitors would want to buy and local businesses would accept it).

Additionally, the Stablecoin model would be the fiat-backed model, where a significant part of the paired asset is collateral in the fund. This would dampen fluctuations, bringing more security and stability to the local financial ecosystem and its tourists. Moreover, the protocol that would be used is the proof of stake, asking for collateral from the miners to avoid the expenditure of energy. This is one step to guarantee the sustainability of the mechanism.

The main benefits for each agent are summarized in the tables below.

Figure 7: Mechanism benefits

Tourists	Workers
Discounts on goods and services locally	More job opportunities
Rewards for transactions: loyalty program	More access to the local tourism
Less transactions fees in the traditional financial system	Access to a low-cost loans
Anonymity	Sense of community

Participant companies	Local government
Access to a low-cost loans	More tourists in the region
New consumers	New business coming from the crypto market
More publicity of their good and services	More economic development
More sales	Higher collection of indirect fees

Miners
Stable reward from their work
Double liquidity: spend in the local or sell in the secondary market

Table 2. Source: Author

These are the expected benefits, considering the literature and the study cases, in the implementation of the local cryptocurrency model for the tourism sector.

6.5.1 Mathematical model of the "local cryptocurrency" proposal

In order to enable and make the local cryptocurrency proposal easier to visualize a simple mathematical model was created. The idea is to draw the mechanism and its variables.

Local cryptocurrency price equation:

$$r_{(C,M)}\Theta = \$ \quad r > 0$$

$$r_{(C,M)} = C - M \quad C \geq 0, M \geq 0$$

$$C_{(\$,P,E)} = -\$ + P \pm E$$

Cryptocurrency fund mechanism:

$$F_{(T,\$, \Theta)} = T + \$ + \Theta$$

$$L = aF_{(T,\$, \Theta)}$$

Where:

r is the range chosen by the local council; Θ is the price of the local cryptocurrency; $\$$ is the price of the dollar, Euro or a basket of good; C is the demand of the local cryptocurrency; M is the miner remuneration in the blockchain. E is a variable to summarize social and economic factors that affects the tourism (such as income, oil price etc).

Points and loyalty mechanism:

$$P = I + G + K + E$$

Where:

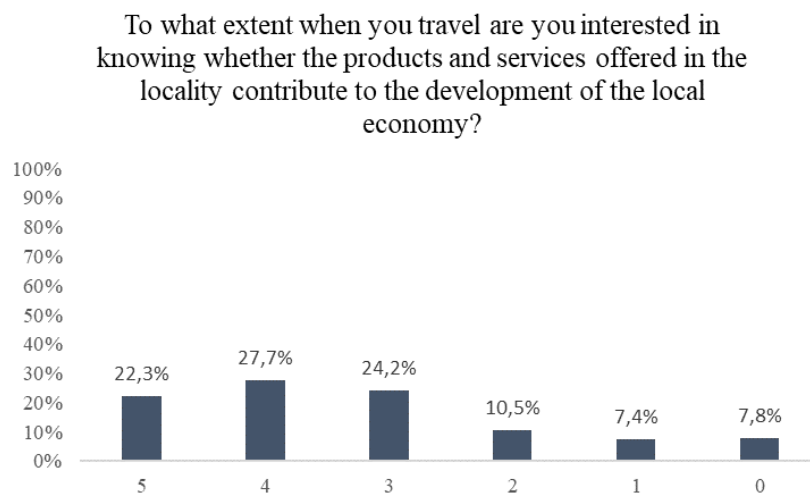
P is the promotions, discounts, and loyalty program in the city; F is the fund managed by the local council. T is a percentage of the transactions with the local cryptocurrency. L is the loan to locals. a is the parameter chosen by the local council to fund locals and merchants. I is the idle capacity and discounts (considering the low marginal cost of the industry, ex restaurants, hotels and museums). G is the gifts given to the participants of the loyalty program (financed by the local crypto transactions). K is the preference for customers from the loyalty program into reserve activities, special queues, special spaces etc. E is the exclusive experiences to those who pay with the local cryptocurrency.

6.6 Questionnaire and interviews

As presented in the methodology section, in order to support this model, was made an online questionnaire to understand the propensity of acceptance of a random sample of persons to the mechanism proposed in this model. The interviews were conducted online, and the number of respondents varied between 256 and 234, as indicated in the tables below the respective graphs.

The questionnaire is divided into 8 questions and has 6 options for answers. Where the answer "5", means that the interviewed totally agreed with the statement and "0" means that he or she totally disagree with it. The numbers in between those are the scale of intensity of the answers.

The first question aspires to observe if the visitor takes into consideration the precedence of the products and services locally.



Source: Author

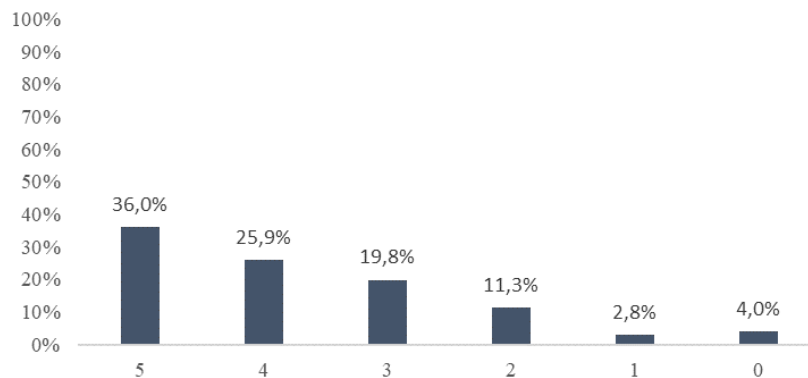
Table 1:

Average	3,23
Standard deviation	0,47
Respondents	256

Source: Author

The second inquire intends to capture the relationship between the visitor and local products and services. The goal is to find out if fomenting the locals would be a way to attract visitors.

To what extent do you agree with: "For me, the contribution of a product or service in improving the lives of inhabitants is a factor in choosing to buy it."



Source: Author

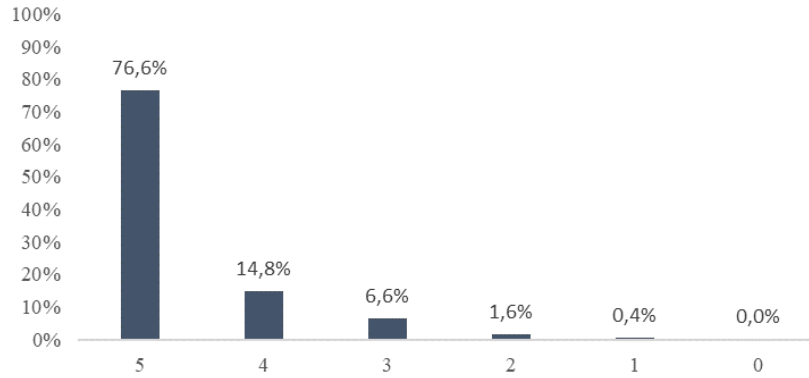
Table 2:

Average	3,69
Standard deviation	0,64
Respondents	247

Source: Author

On the other hand, the third interrogation brings the idea of common governance, utilized in some cases of common management Ostrom (1990), Hess (2008) and Cuccia (2012). The average is elevated, showing that shared management could be a good solution for the structure proposed.

To what extent do you believe that government, merchants and the population working together can contribute to more sustainable tourism that benefits the locality?



Source: Author

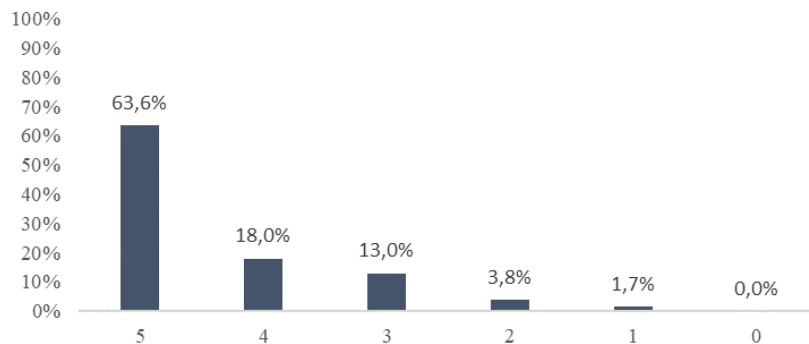
Table 3 :

Average	4,66
Standard deviation	1,38
Respondents	244

Source: Author

The fourth examination started to draw to the responders some mechanisms used to fund the locals. In this case, the average is high, pointing out the accordance with the strategy.

To what extent do you believe that encouraging inhabitants to be entrepreneurs and investing in their education and professional training can contribute to sustainable tourism and local development?



Source: Author

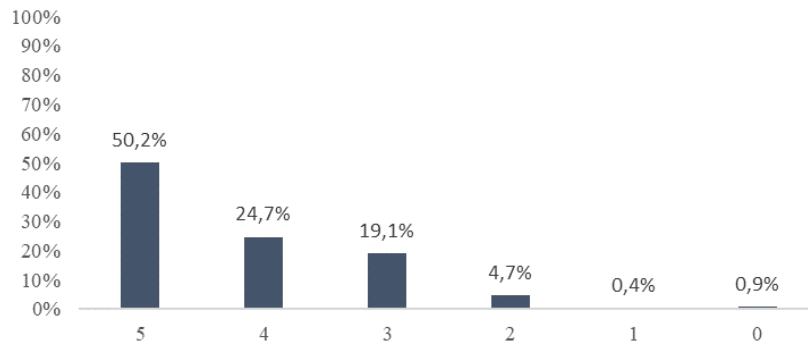
Table 4:

Average	4,38
Standard deviation	1,12
Respondents	239

Source: Author

At this moment of the questionnaire, an attempt was made to perceive how open to innovations visitors would be. The big average could give subsidies for the implementation of the local cryptocurrency mechanism.

To what extent do you believe that a tourist destination that invests in technological and financial innovations can provide more convenience for visitors and make tourism more sustainable?



Source: Author

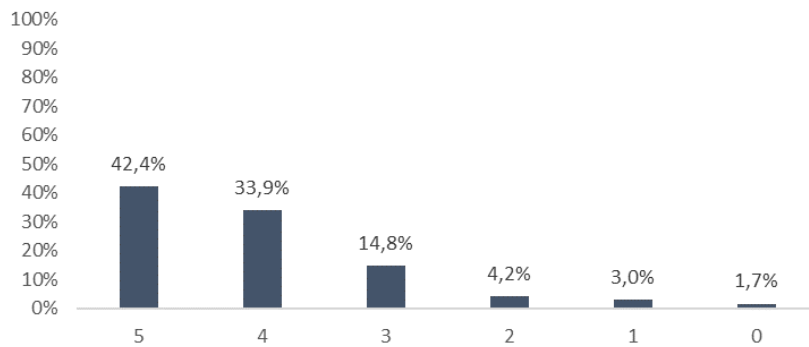
Table 5:

Average	4,17
Standard deviation	0,89
Respondents	235

Source: Author

The sixth question comes to introduces the composition of the proposal from the visitor's side. The positive answers, in this case, were significant, with 4,03 of 5 on average.

If, when travelling, there is a way to purchase products and services and directly contribute to the development of the community using a mobile application. To what extent would you be willing to use this mechanism?



Source: Author

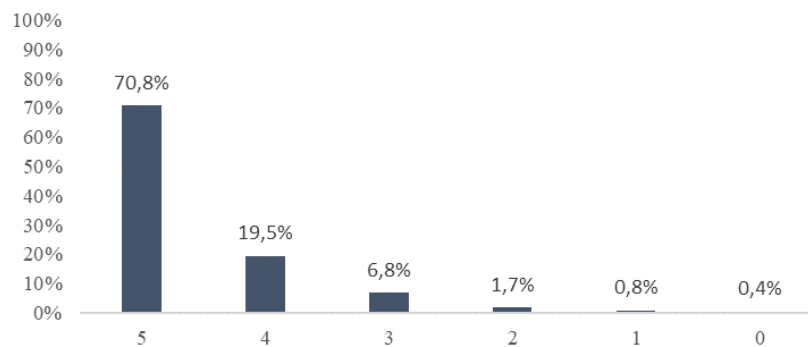
Table 6:

Average	4,03
Standard deviation	0,87
Respondents	236

Source: Author

The next inquiry introduces the concept of discounts and promotions to attract visitors, making them save money with this innovation. On this point, the average was high showing that responders are willing to use it in such conditions.

If that same mechanism, in addition to helping to develop the community, helps to save money, offers discounts and increases payment methods. To what extent would you be willing to use it?



Source: Author

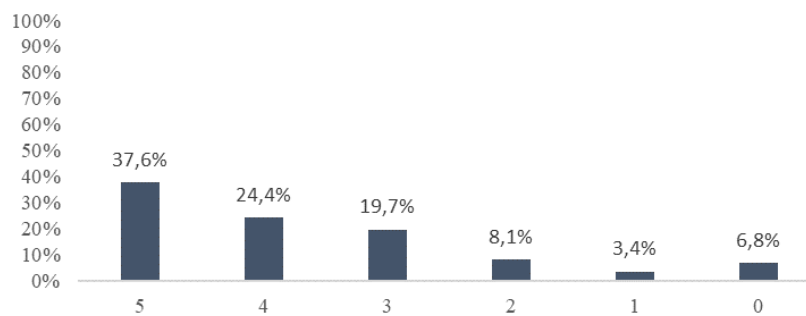
Table 7:

Average	4,56
Standard deviation	1,27
Respondents	236

Source: Author

The last question brings straight the mechanism of local digital currency and tries to capture the propensity of the responders to use it in order to have financial benefits and help to improve local wellbeing.

To what extent would you be willing to use a local digital currency, through a mobile application, that offers discounts, and exclusive local products and that is managed by the local community with the objective of promoting the development of the region



Source: Author

Table 8:

Average	3,64
Standard deviation	0,66
Respondents	234

Source: Author

As is possible to analyse, the average of the answers was significantly positive and was in consonance with the proposal formulated. Mainly if is considered questions with a high reply percentual. This could be an indication that the local cryptocurrency system could work.

6.7 Conclusion

The capitalist system produced important crises in its history. In order to face these moments and revert the economic scenario, some programs were created, among them, the ones coming from the social movements and collective actions. These mechanisms are correlated to the lack of trust in the traditional financial system and in the government's capacity to deal with recessions.

One significant social movement, created to deal with complex economic situations, was the local currency movement. Despite its different mechanisms and types of currencies, the aim is not only to improve the local economy but also to incentive the social aspects such as self-esteem of the community, social capital, inclusion of minorities and the solidarity among the residents. The case of cryptocurrencies is a little bit different. Even though it was created as a response to the financial crisis in 2008 and it depends on the collective action to work, there are no social goals behind it. But, although the differences, the cryptocurrency market bears similarities to the local currency market: there is no central authority to validate the transactions, they have low or no transaction costs, work complementarily with the official currency and have different types of coins and mechanisms.

Then, considering the similarities in these alternative currencies, the literature available and the implementation of some cases (Thailand's, Madrid's, and Irish cases), this article aims to model a hybrid mechanism to stimulate tourism. To do so, it's taking into account the reasons for the success of some local currencies, the characteristics of the cryptocurrencies and the design of some practical cases that will be implemented.

Compared with the study cases, this article proposes a system more focused on the social side. For instance, it gives more focus to the employees and locals through access to loans and access to the local attractions. Also, in this modelling is important the circulation of the local cryptocurrency, incentivizing the payment of part of the salaries and government bills in the local cryptocurrency. Additionally, adopting Stablecoin (fiat-backed with the right amount of reserves) in a per-to-stake way could not only guarantee certain stability to the system and its participants but also save drastically reduce energy consumption. Other than that, the creation of the local council is important to bring the feeling of belonging to the community and improve participative management.

The above measures are based on the literature on the local currencies and consider the reasons in the cases of success and failure of the implementation of these alternative coins. Additional measures such as publicity, loyalty program, discounts, and website concentration on products and services, come from the study cases and from the literature on it.

Furthermore, the interviews section brought answers consistent with the functionalities of the proposed local cryptocurrency. For instance, when the responders pointed out 4,56 of 5, on average, that would be willing to use the mechanism considering that they could save money, help the community, and have more options for payments. Another significative manifestation was the average of 4,17 of 5 saying that agreed that investments in technological and financial innovations would provide more sustainable tourism and more convenience for visitors.

Moreover, when the aspect pointed out was the improvement of the local's well-being through the mechanism, the averages were high. as an example, the encouragement of locals to have more education and more training could contribute to sustainable tourism and local development, with 4,38 of 5. Another high average was the question about the participative management of the community bringing benefits to locals, with 4,66 of 5.

On the other hand, the possible challenges coming from this modelling proposed are: the adherence of companies and society to the mechanism; the problem knowledge and trust from the average person related to the crypto market; the deficiency of the coordination between the agents; and the insufficient liquidity in the secondary market. The first two situations could be minimized through the publicity, education and conscientization of the community. The coordination issue could be approached by the local government as the goal of the administration, elaborated as a local law.

On the other hand, the lack of liquidity could be faced by the financial institution behind the local cryptocurrency. When the financial company mine the first amount of cryptocurrency, instead of selling everything, it should keep a pre-established value of the digital coin to be able to offer liquidity to the market when it needs. Another way to approach the issue is in the miner reward mechanism. In this case, the miners receive more local cryptocurrencies to mine if there is no liquidity in the secondary market and less local cryptocurrency if the market is liquid. This operation would be activated depending on the fluctuation of a pre-established band linked to the price of an official currency (Euro or Dollar, for instance) or to a basket of goods.

As with any new and innovative system, the approach of cryptocurrencies as a local currency needs more studies. The data to analyses the effects of these measures are important to understand the next steps and future research. For this reason, the implemented cases and the future implementations could play a key whole, together with dialogue between government, civil society, and academia.

7 Conclusion

The advanced in technology and the challenge of humankind with climate change and the pandemic affected all sectors of the economy. Consumers have shown a change in their behaviour and firms should adapt to it. This is not different in tourism, where the travel restrictions and sustainable agenda have imposed significant changes in the way to visit other regions.

Therefore, this work abords the theme of sustainable tourism, considering the interactions between visitors and locals and the local development without losing its culture and traditions. At the same time, this thesis has a social perspective, proposing mechanisms to compensate or foment locals to have better wellbeing. Hence, this study proposes three schemes to deal with three different situations: change the engine of the local economy towards sustainable tourism; balance of negative externalities perceived by locals; Deal with new technological and new tendencies to promote sustainable tourism.

The article entitled "Local currency, basic income and sustainable tourism. A proposal to change the drive of Maricá's economy" suggests a mechanism using the existing local financial system to promote sustainable tourism in the city. The scheme utilizes a loyalty program, application, discounts, and local currency to circulate income and attract new visitors.

In order to understand the perception of inhabitants and some actors of Maricá, it was conducted interviews in the region. The responders pointed out that Maricá has the potential for sustainable tourism despite needing some investment and governmental attention. At the same time, the interrogation with governmental representatives showed that the local government considers tourism as one of the main sectors to deal with the transaction of oil royalties, despite without a clear plan or direction of investments. On the other hand, the inhabitant's representatives identify that the governmental speech is far from action regarding tourism. They recognized the city's potential for tourism, but they mention isolated initiatives and a lack of coordination in this area. Hence, all actors seem to agree that Maricá could develop the tourism sector, but some action should be taken, and the mechanism proposed deals with that.

Likewise, the paper "Tourism, inequality, basic income, and local currency" deals with sustainable tourism. But, in this case, it tries to balance negative externalities coming from visitors through a mechanism that aims to pay a basic income to locals to compensate them. The scheme could charge a small fee from visitors in parking lots, hotels buses and museums, as a right to use the tourist destination for the benefit of their owners. This structure would work as in the basic income in Marica's case, but instead of the royalties, the source of the income would be tourism.

Hence, in order to evaluate the propensity of visitors to pay the small fee and visit a region with this apparatus were conducted interviews. They revealed that the responders are not convicts that tourism promotes fairly increase in well-being; They would be willing to pay a small fee when travelling knowing this amount would revert to locals

either in the form of financing or an extra income; They also believed that this small amount would help to improve the quality of life in the region as well as improve tourism.

In the case of "Local cryptocurrencies and tourism modelling a new mechanism to incentive the sector", the focus is to bring new visitors using the new technology available. However, this innovative framework considerer also the community which is inserted and proposes a structure where locals participate and have benefits from the increase of tourism. To do so, the approach uses characteristics of local currencies and cryptocurrencies to build a local financial environment and to facilitate the transactions of this new local digital currency. Hence, together with the local cryptocurrency and its financial local system, discounts, the lowest rates, a loyalty program, and special offers for visitors using the local coin, are designed to attract new travellers. Nonetheless, the community aspect is addressed through the fund managed by locals, which is fed from the number of transactions and is reverted to the region, according to a committee of representatives.

Therefore, it was organized questions to understand the perception of random people about some features of the proposition. When asked about coordination between agents in benefits to the community, the majority revealed that this would be an important factor to them. Also, they answered that encouraging new ventures and training and educating the local population could contribute to the growth of sustainable tourism and local development. Both are the case of the fund that aims to fund and foment locals. Conversely, when the topic was new technologies and financial innovations, on average, the responders agreed that this would be good for visitors and the tourism industry. Besides, when inquired about an application that would help to buy local products and services and offers discounts, the respondents pointed out, on average, that would use it.

Considering all three papers and their analysis, it's possible to conclude that despite their innovative aspect, some characteristics of the proposals are being used in other ways, either in the literature or in practice in other industries. The adaptation made to encourage sustainable tourism and contribute to local development finds support in the analysis and designs of the proposals. Because of this, these possibilities could help the tourism sector to deal with new trends and new demands from society.

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9. Annex

Annex 1

Name: _____ Age: _____ Local () Date: _____ Sex: _____

- 1) In your opinion which sector generates more income to Maricá's economy?
 oil Merchants Tourism Local government Industry Rural sector
- 2) In your opinion which sector could generate more income to Maricá's economy?
 oil Merchants Tourism Local government Industry Rural sector
- 3) Do you think that the services in the city are:
 Great Good Medium Bad Terrible
- 4) Do you think that the infrastructure in the city is:
 Great Good Medium Bad Terrible
- 5) Do you think that Maricá has potential for sustainable tourism?
 yes No More or less I don't know
- 6) Do you think that tourism could be the main sector in Maricá?
 yes No More or less I don't know
- 7) From 0 to 10 how much do you think that tourism can contribute to the sustainable development of Maricá?
 10 9 8 7 6 5 4 3 2 1 0
- 8) From 0 to 10 how much do you think that the local government invest in sustainable tourism in the city?
 10 9 8 7 6 5 4 3 2 1 0
- 9) Where do you think that should have more investment in order to improve the sustainable tourism in the city?
 Restaurants New attractions beaches and lagoons Culture Infrastructure Hotels Rural area
- 10) Where do you think that has more potential to bring visitors to Maricá?
 Nature Culture and traditions Local gastronomy Concerts Handcraft
- 11) What do you think that should be done to improve sustainable tourism in Maricá?
- 12) Which tourism attraction do you know in Maricá?
- 13) What are the negative impacts that tourism could bring to Maricá?

Annex II

Questions for Cacique Jurema (Indigenous tribe)

- 1) How does the interaction between the indigenous tribe and tourists work?
- 2) Does the tourism is a important part of the income for you?
- 3) Do you have a place in any market in Maricá?
- 4) How would be possible to improve tourism without losing traditions and culture of the you?
- 5) Is there any support from the local government to improve tourism here? Any plan?
- 6) Is there any plan to build hotels here?
- 7) How to use the indigenous culture and traditions to bring more income to the tribe?
- 8) Is there any plan to build a restaurant here?
- 9) Is there any governmental polices to help you to receive visitors?
- 10) Do you think that Maricá has potential for tourism?
- 11) How could the indigenous people contribute to improve tourism in Maricá?
- 12) Do you think that the social improvement in Maricá reach the tribe?
- 13) How do you see the tribe in the future?
- 14) What is the importance of the local government to the future of you°

Questions for Dona Ilma (Tapestry)

- 1) Who are your biggest buyers?
- 2) Do you think that with the increase in tourism could you sell more?
- 3) For instance, if your store were in Búzios, do you think that you would sell more?
- 4) How long takes to a tapestry be ready to sell?
- 5) Do you think that the local government initiatives are working?
- 6) How is it possible to improve these initiatives?
- 7) is the fact that the tapestry is a cultural heritage from the city contributes for tourism?
- 8) How is possible to keep the tapestry tradition in Maricá?
- 9) Is there any incentive to young people learn tapestry?
- 10) Do you think that Maricá has vocation for tourism?

11) How do you see the tapestry tradition in the future?

Questions for Vilson Corrêa

- 1) How is the interaction between the fishermen community and tourism?
- 2) Does the tourism important for you?
- 3) Do you think that the tourism improvement in Maricá could bring more visitors to the fishermen community?
- 4) Do you think that the fact that the fishermen community is Maricá's cultural heritage brings benefits?
- 5) Do you participate in any market in Maricá?
- 6) Is possible to develop sustainable tourism in this area?
- 7) Is there any plan to improve the lagoon in order to have better fishery conditions?
- 8) How do you see the fishermen community in the future?

Questions for Social Inclusion secretary

- 1) How to keep including socially after the royalties?
- 2) Is the tasks in the secretary complementary to what is happening in Maricá?
- 3) Is there any partnership between your secretary and the ones responsible to the basic income implementation?
- 4) How does the inclusion of locals work?
- 5) How is possible to keep the social inclusion reached through time?
- 6) Is there any capacitation plan to include?
- 7) Is there any specific sector that is the focus of the program?
- 8) We are talking about job inclusion, and what about the social inclusion?
- 9) Considering that the oil ins finite, how to keep the policies in Maricá?
- 10) What are the perspectives of Maricá in the future?
- 11) Do you think that the new labour can be insert in the subsidies industries?
- 12) Is there any link between the social inclusion in Maricá and tourism improvement?

Questions for Diego Maggy (Darcy Ribeiro Institute)

- 1) How to keep the social policies after the oil era?
- 2) is there any plan or direction?
- 3) is there any sector to focus the economic development?
- 4) Considering the social improvement in the city, what is the expectation about the the employment in the Maricá?
- 5) What is the next step of Maricá?
- 6) And regards to wellbeing? Is there any recommendation in this area?

Questions for Secretary of solidary economy

- 1) How to continue the income transference and social inclusion after the royalties?
- 2) How is the task to include socially people in Maricá?
- 3) is there any possibly to have the Mumbuca system together with tourism?
- 4) Is there any plan to attract visitors using Mumbuca currency?

Annex 3

The following questions are part of an academic research that aims to contribute to local well-being through tourism. The inquiry is elaborated in English and Portuguese and it brings options from 0 to 5. Where 0 is "I don't agree" and 5 is "I totally agree".

- 1) To what extent do you believe that sustainable tourism can contribute to improving the quality of life of the community in which it operates?
- 2) To what extent do you believe that tourism contributes fairly to increasing the quality of life of the community and its inhabitants?
- 3) To what extent are you in favour of tourists paying fees when visiting other cities and tourist destinations?
- 4) To what extent would you, as a tourist, be willing to pay a small fee (for example, 2 euros) knowing that this money would revert to the local community?
- 5) If this small fee (say 2 euros) were accumulated to generate a small income for people living in the tourist destination as a form of compensation. How much would you be willing to pay it?
- 6) If, in addition to generating extra income for the community, this small fee (say 2 euros) also provided low-cost loans for new local ventures and professionalization of residents, to what extent would you be willing to pay it?
- 7) If this small fee (say 2 euros) is managed by the community together with the local government and local traders, to what extent do you believe it would be well managed and used?
- 8) To what extent do you believe that the existence of this small fee (say 2 euros) reverted to the community would provide better living conditions for residents?
- 9) To what extent do you believe that the existence of this small fee (say 2 euros) reverted to the community would improve tourism in the region?

Annex 4

The following questions are part of an academic research that aims to contribute to local well-being through tourism. The inquiry is elaborated in English and Portuguese and it brings options from 0 to 5. Where 0 is "I don't agree" and 5 is "I totally agree".

- 1) To what extent when you travel are you interested in knowing whether the products and services offered in the locality contribute to the development of the local economy?
- 2) To what extent do you agree with: "For me, the contribution of a product or service in improving the lives of inhabitants is a factor in choosing to buy it."
- 3) To what extent do you believe that government, merchants and the population working together can contribute to more sustainable tourism that benefits the locality?
- 4) o what extent do you believe that encouraging inhabitants to be entrepreneurs and investing in their education and professional training can contribute to sustainable tourism and local development?
- 5) To what extent do you believe that a tourist destination that invests in technological and financial innovations can provide more convenience for visitors and make tourism more sustainable?
- 6) If, when travelling, there is a way to purchase products and services and directly contribute to the development of the community using a mobile application. To what extent would you be willing to use this mechanism?
- 7) If that same mechanism, in addition to helping to develop the community, helps to save money, offers discounts and increases payment methods. To what extent would you be willing to use it?
- 8) To what extent would you be willing to use a local digital currency, through a mobile application, that offers discounts, and exclusive local products and that is managed by the local community with the objective of promoting the development of the region?