

Tourism and Plastics in Marine Environments

A CASE STUDY ON THE BAN OF SINGLE USE PLASTICS ON ISOLE TREMITI, ITALY

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I hereby declare that this thesis is wholly the work of Bo Maeijer. Any other contributors have either been referenced in the prescribed manner or are listed in the acknowledgements together with the nature and the scope of their contribution.

Where I have consulted the published work of others this is always clearly attributed. Where I have quoted from the work of others the source is always given. A list of the references used, is included. An appropriate referencing style is used throughout. With the exception of such quotations this thesis is entirely my own work. I have read and understand the penalties associated with plagiarism as stated in the Student Charter.

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Abstract

Marine environments continue to be threatened by the growing problem of plastic pollution. As the largest economic sector, the tourism industry is a great contributor to this pollution. Millions of tourists coming to the Mediterranean region cause a substantial increase in the generation of waste which adds to the plastic soup. Multiple plans for interventions started around a decade ago and more policies focussing on waste reduction have been implemented or signed. One of these interventions is a ban on single use plastics, which bans all plastic utensils like cups, plates and straws. Replacing these disposable plastics by biodegradable plastics and reusable products is what the small island destination Isole Tremiti in Italy did when they implemented the ban on single use plastics. This thesis contributes to the literature by providing information on the implementation of an intervention like a ban on single use plastics and takes the influence and experience of tourists as actors on this policy arrangement into account.

Keywords: Plastic pollution, tourism, policy arrangements, marine environments, single use plastics, biodegradable plastics

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List of abbreviations used in this paper:

NGO	Non-Governmental Organisation
PAA	Policy Arrangements Approach
SUP	Single Use Plastics

Introduction

In the latest report by the WWF (June 2019) called 'Stop the flood of plastic', new facts have emerged about the plastic pollution in the Mediterranean region. Each year, the Mediterranean coastal destinations are hosting over 200 million tourists and during the tourism season, waste generation increases substantially at this region, (Dalberg Advisors, the team comprised of, Hamilton, & Freschi, 2019). Italy, for example, sees an increase of waste of up to thirty percent in their coastal areas, during the high tourism season. Also, in this Mediterranean region, Italy is the second runner up in mismanaging their waste and with approximately 178 litres of bottled water sold per person, per year, it is the biggest user of bottled water globally, (Dalberg Advisors, et al., 2019). However, according to the report by the WWF, some positive steps are taken and will be taken in banning single use plastics by the Mediterranean countries.

This paper will show a case study of a particular destination located in Italy called: Isole Tremiti. This archipelago is implementing a ban on single use plastics as an example of an intervention to reduce the plastic pollution. First there will be a literature review discussing the available literature on plastic and tourism in marine environments. Showing the impact of plastic on the oceans and the role of tourism in plastic production. Next, interventions on reducing the plastic pollution will be discussed followed up by the gap in literature. After the literature review, the scholarly relevance and the research questions will be explained and the theoretical framework and the methodology will show how the research was done. The last chapters of this thesis analyse the results of the case study, discuss them and give a conclusion.

Plastic waste in marine environments

Almost twenty years ago Murray, R., (1999) already stated that plastics are indispensable to modern life. The impact of this need for plastics is the highest in coastal environments but are also found at great depths in all oceans and continues to grow, (Murray, R., 1999), with plastics now representing 60 to 80 percent of marine litter globally, (Caric, H., & Mackelworth, P., 2014). Per square kilometre of the ocean, there are approximately 13000 floating pieces of plastic (Caric, H., 2011) and from surveys on the Adriatic Islands, it became clear that on a beach of 200 to 400 square metres, 100 to 2000 pieces of plastics bottles and polystyrene foam were found, (Caric, H., & Mackelworth, P., 2014). Plastics can be characterized as strong, durable, corrosion-resistant and cheap to produce, based on synthetic or semi-synthetic organic polymers, (Li, Tse, & Fok, 2016). After they are consumed, plastics tend to break into smaller pieces and when exposed to UV radiation plastics degrade even further, but they are in no possible way biodegradable, (Vikas, M., & Dwarakish, G.S., 2015). This exposure to UV radiation can be either via direct sunlight or in seawater, (Li, Tse, & Fok, 2016).

In the article of Li, Tse & Fok (2016) a distinction has been made between micro and macro plastics. Macro plastics are large plastic items and are generally defined as having a size of bigger than twenty-five millimetres. Since the beginning of the plastic production, these macro plastics have been reported in the marine environments. Coastal areas and oceans are mostly polluted by the macro plastics which is turning into a big global issue (Li, Tse, & Fok, 2016). Micro plastics, on the other hand, have

not been reported since the beginning of the plastic production but attention to these plastics has been increasing recently. These micro plastics are defined as smaller than five millimetres, everything in between the macro and micro plastics are called 'meso' plastics, (Lee, et al., 2015). The attention to the micro plastics has been drawn because they get more easily swallowed by organisms living in marine environments, (Li, Tse, & Fok, 2016).

The growing attention for micro plastics shows that marine pollution is not only an aesthetic problem but also has physical impacts. Sea turtles, sea mammals and birds are suffering from the waste floating in the oceans, (Caric, H., & Mackelworth, P., 2014). In their research in the Adriatic Sea, Lazar and Cracan (2011) found that of all stranded sea turtles, 35 percent had plastics in their bodies, which can cause death to these animals. In the table below of Lazar and Cracan (2011), the number of plastic pieces, the sizes and the occurrence of these pieces in the nineteen loggerhead sea turtles can be found. From this table it can be stated that soft plastics occur most in the bodies.

Type, size and occurrence of marine debris ingested by loggerhead sea turtle *C. caretta* ($n = 19$) in Adriatic Sea (N , number of debris pieces).

Marine debris type	N	Size (cm)	Occurrence (%)
Soft plastics	70	<1–16.0	68.4
Ropes	8	1.5–6.1	42.1
Styrofoam	3	<1–3.2	15.8
Monofilament lines	1	<1	5.3

Table 1. Type, size and occurrence of marine debris ingested by loggerhead sea turtle *C. caretta* ($n=19$) in Adriatic Sea (N , number of debris pieces). By Lazar, B., & Cracan, R., (2011)

But not only marine life suffers from the plastic pollution in the oceans. According to Barboza, Vethaak, Lavorante, Lundebye, & Guilhermino (2018), a high variety of fish that are important for human consumption are polluted with microplastics. Consumers get exposed to the toxic particles of chemicals these fish contain when they are consumed. So not only is the problem of plastics in marine environment harming marine life, it also increases the global risk of human diseases and health, (Barboza, L., et al., 2018) (Marcou, et al., 2016).

Tourism and Plastics in Marine Environments

Beaches, especially in the high tourism seasons, are popular places for foreign and domestic tourists and locals for leisure purposes. Using beaches for tourism brings positive impacts like income and employment but has also negative implications like the degradation of the beaches themselves because of pollution caused by waste that is left there by the users of the beach, (Araújo, M., & Costa, M., 2006). In their research in South Africa it was asked to tourists if they would return to a polluted beach. What was estimated from this research was that on a beach with more than ten items of waste per meter, 40 percent of foreign tourists and 60 percent of domestic tourists would not want to return to that particular place, (Araújo, M., & Costa, M., 2006). This shows a relationship between the aesthetics of an area, the beach in this case, and the arrivals and returns of tourists. This aesthetical issue is not only present because of the dumped waste by tourists on the beaches, plastics that are stranded along the coastline also play a role in the decreasing arrivals of

tourists, (Xanthos, D., & Walker, T., 2017). Bashir, N., (2013) also draws on this relation in his case of Ghana where he states that because of bad waste management, tourists see Ghana as a filthy country and are not encouraged to go back. But as marine litter not only comes from beaches but mostly comes from land-based sources, like rivers and drainage ditches (Vikas, M., & Dwarakish, G.S., 2015), the solutions for reduction and prevention of marine litter should be implemented in a wider area than only the coastal destinations, (Marcou, M., et al, 2016).

The previous section showed that tourism can be a cause of pollution on beaches, of which waste can end up in the oceans, but it also showed that because of this pollution a certain amount of tourists are not willing to come back to a polluted destination. To further investigate the impact of tourism on plastics in marine environments, other forms of tourism have to be considered. Besides land based tourism, like going to a beach for leisure purposes, cruise ships are a major source of marine pollution. Cruise ships are identified by the United Nations Environment Programme as one of the main contributors to marine ecosystem pollution, accounting for 2.6 to 3.5 kilograms of waste per person per day, (Caric, H., & Mackelworth, P., 2014), (Davenport, J., & Davenport, J., 2006). Even though cruise ships are only a small part of the worldwide shipping industry, this sector accounts for 24 percent of all waste coming from this industry, (Caric, H., 2011) (Caric, H., & Mackelworth, P., 2014). With these examples it can be concluded that tourism is a cause of marine pollution, but can it also be a victim of this pollution?

In the research by Marcou, M., et al (2016) in the Mediterranean it became clear that tourists are drivers of marine pollution in the Mediterranean, but also indirectly happen to be ‘victims’ of this pollution. In the figure below Marcou, M., et al., (2016) drew the scheme which includes tourism as a cause and victim. Intensive tourism activities partly add to damage to marine habitats caused by marine litter, which is also a consequence of the Mediterranean not having an appropriate waste management and environmental awareness. The consequences of these drivers and pressures are plastic contamination at the beaches and the sea, which causes a decrease in tourism. This results in tourists becoming a victim of their own actions.

The circle of tourism as driver or victim of marine pollution does not end at the ‘impacts’, in the figure the author drew a box called ‘responses’ showing solutions to the marine litter. Using tourism for clean-up actions creates an extra experience, which might attract tourism again. Also the reduction of

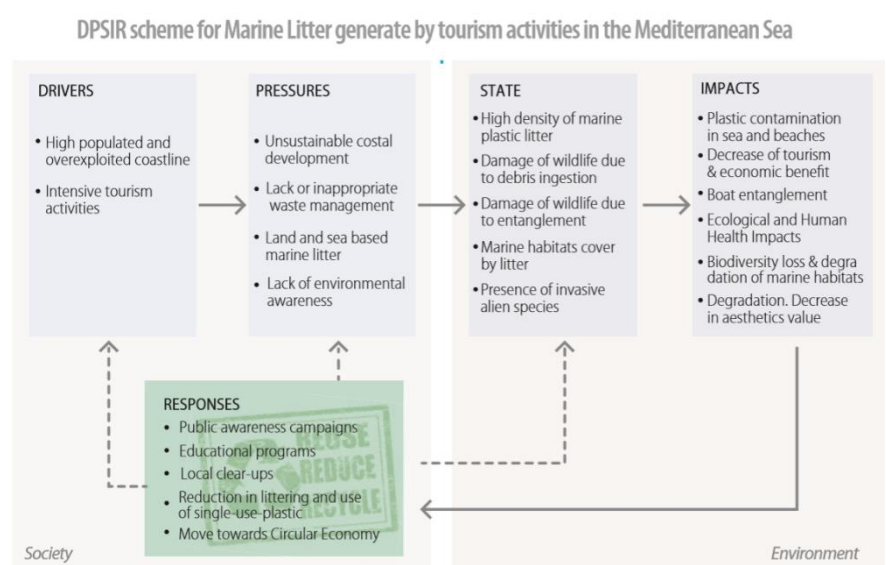


Figure 1. DPSIR scheme for marine litter on the Mediterranean Sea by recreational / tourism activities by (Marcou, M., et al., 2016)

single use plastics and moving towards a circular economy are added, but the question remains how destinations can live up to these intentions.

Interventions on plastic pollution reduction

The last part of this introduction will be dedicated to the interventions that took place in the past and will take place in the future in order to reduce the amount of single use plastics in the marine environments. The focus will be on policies and bans on plastic bags, microbeads and other single use plastics like tableware.

Plastic bags

Before 1973 countries were allowed to dump their plastic waste with ships into the oceans. With the MARPOL agreement in 1973 countries were not allowed to dispose their plastic waste at sea anymore, however it took until 1988 before the plastic ban was fully implemented. Now, according to Xanthos & Walker (2017), 134 countries stopped the disposal of plastics at sea. However, the marine pollution only worsened over time, even though there is a ban on plastic disposal at sea.

To create awareness on this growing plastic problem, multiple NGO's have monitored the marine pollution at different destinations. These impacts of macro plastics on the marine environments are well described and documented in literature, but Xanthos & Walker (2017) missed global policy studies about decreasing the plastic pollution.

Since 1991, countries try to ban the plastic bags from their countries (e.g. Germany and Denmark). Others have put levies on the use of plastic bags. These levies depend on multiple things like costs, frequency and/or the thickness of the material of the plastic bags, (Xanthos & Walker, 2017), (Clapp & Swanston, 2009). Another strategy of decreasing the use of plastic bags is by replacing them in stores by reusable bags. Bans on plastic bags are mostly implemented nationally, but in some countries different municipalities or cities work independently on their plastic bag policies, (Xanthos & Walker, 2017), (Clapp & Swanston, 2009). In the picture below, Xanthos & Walker (2017) created a map showing all the countries and their way of reducing the use of plastic bags.

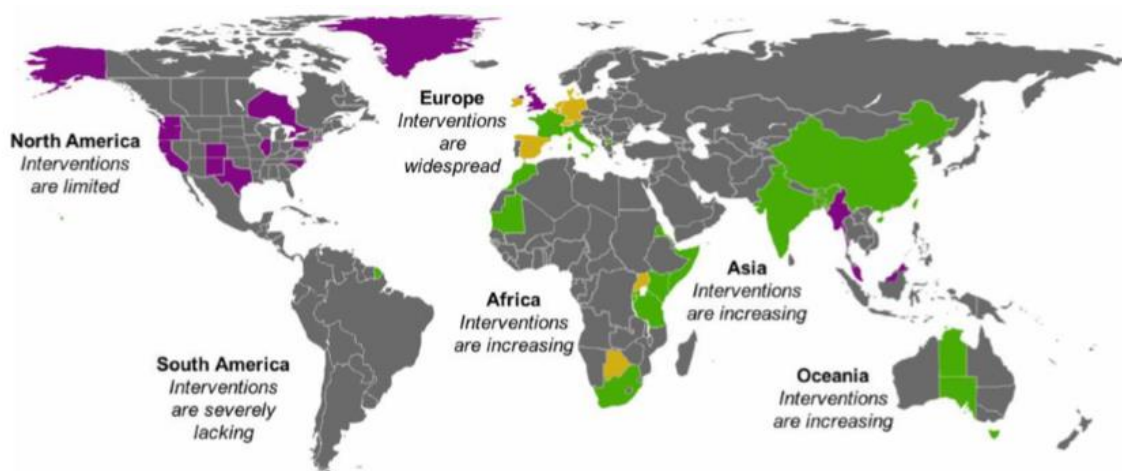


Figure 2. Phase out of lightweight plastic bags around the world. ■ Plastic bags are banned; ■ Taxes on some plastic bags; ■ Partial tax or ban (municipal or regional levels) – by Xanthos & Walker, (2017)

Microbeads

Another type of single use plastics are microbeads. Microbeads are called the 'primary microplastics' and are mostly used in the cosmetics industry, (Graney, G., 2016). In 2016, the Netherlands was one of the first countries to share their intentions to ban the microbeads, however, this has not evolved in a ban or a legislation. Other countries like the United States of America and the United Kingdom followed by implementing a legislation to control the use of microbeads (US) and planning to ban it (UK), (Xanthos & Walker, 2017).

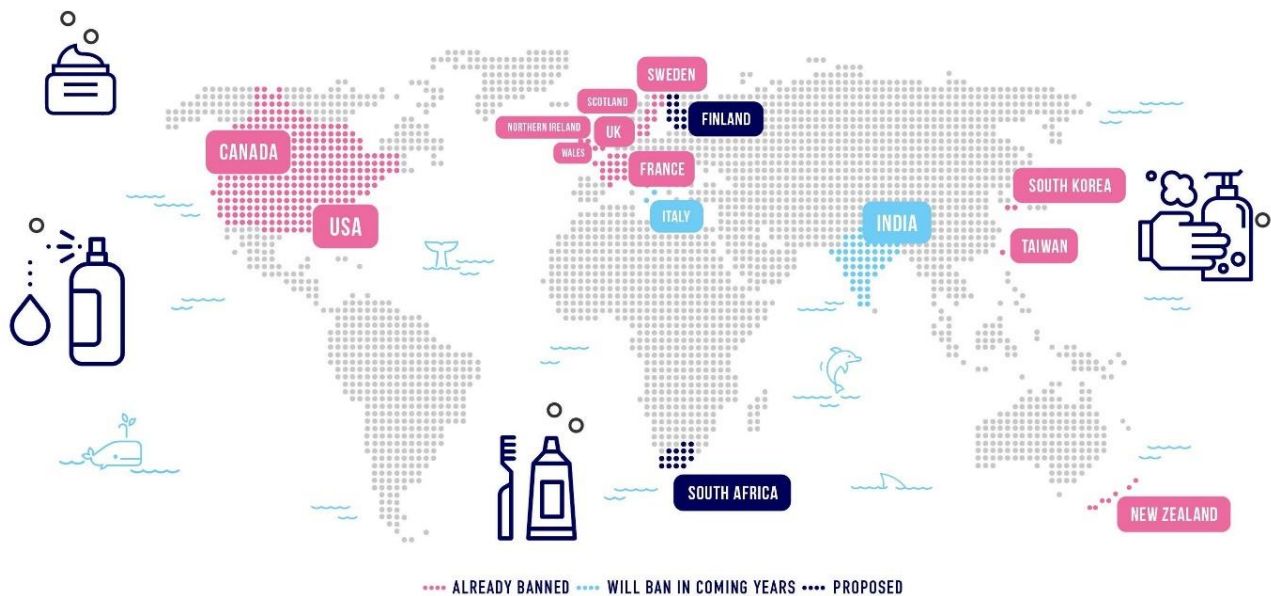


Figure 3. Since the beginning of Beat the Microbead (2012), 15 countries have taken steps to ban microbeads. – by: beatthemicrobead.org (2019)

According to the website of Beat the Microbead, from 2018 on multiple countries have implemented (partial) bans on microbeads. These bans can be on the sale, use or import of microbeads and is mostly focussed on the cosmetic and skin care industry, (Beat the Microbead, 2019). In the map above, the current results of the awareness on microbeads pollution can be seen, after the start of Beat the Microbead in 2012. Some countries in North-America, Europe and Asia already banned the microbeads. Others either put it on their agenda for the coming years or only proposed it. However, from this map it can be stated that there are some steps in the right direction, but the majority of the countries in the world still continue to use, import and sell microbeads in their products.

Other single use plastics

Where Beat the Microbead (2019) only focusses on microbeads and Xanthos & Walker (2017) add plastic bags, none of them is focussing on interventions on other single use plastics like straws, cups, plates and cutlery. However, according to Schnurr, et al, (2018), since 2012 a ban on straws has been implemented on Miami Beach, Florida. After Miami Beach other beaches and counties followed in Florida. However, the first city in the US to completely ban plastic straws was Seattle in 2018. The first state in the US to introduce a bill on the use of straws was California, forcing restaurants to only give straws when the customer asks for it. This bill was

signed in 2018 and implemented in 2019. Consequences of this policy are fines up to 1000 US dollars and sometimes even some time in jail, (Schnurr, et al, 2018). Of course, the US was not the only country to ban straws from consumption. Countries in Europe like the UK or countries like Costa Rica have banned straws at county or national level. Besides these intentions to reduce the amount of single use plastics that enter the oceans by banning plastic straws, there is also some opposition to these imposed bans. People with disabilities for instance, are dependent on drinking with a straw or people who just do not see the change banning plastic straws might bring, (Schnurr, et al, 2018). These opposers to the bill think the plastic problem is too big to only focus on banning plastic straws. However, plastic straws are seen as the 'gateway plastics' in order to change the behaviour and mentality to also ban other single use plastics, (Schnurr, et al, 2018).

Other single use plastics are: cutlery, cups, plates and stirrers. In the article by Schnurr, et al, (2018), they highlight a few countries that already made plans for the future of their single use plastics use. France, for instance, created a law that will start from 2020 that replaces all the single use plastics by biodegradable or compostable plastics. Also, Taiwan will ban all single use plastics from 2030 and starts with increasing the prices of disposable plastics starting from 2025 so five years in advance of the total ban, (Schnurr, et al, 2018). The government of the Seychelles implemented a ban on the commercial use, import and sale of plastic cutlery, plates and cups already in 2017, (Schnurr, et al, 2018). However, retailers were still allowed to use their stock of SUP until January 2019, (Laurence, D., 2019).

In these last paragraphs of this literature review it became clear that there are already a few interventions implemented or on the agenda to be implemented in the near future, in order to reduce marine litter caused by single use plastics. However Xanthos & Walker (2017) state that the pollution of the marine environments only worsened over time, even though more interventions were implemented. Also, as all these policies are relatively new (all within this last decade) and some of them have not even started yet, it is difficult to see the results in the long-term. Many countries lack a proper implementation strategy, even though the plastic bag policies are in place already for a long period of time, (Xanthos, D., & Walker, T., 2017). This lack of implementation strategies is also visible in the available literature on interventions on single use plastics reduction. There is little literature available on the effectiveness and the implementation of the interventions introduced, (Xanthos, D., & Walker, T., 2017), with also a focus on the adaption of the actors and their influences on these interventions.

Research Questions and Scholarly Relevance

Of all economic sectors in the world, tourism is the largest, but as tourism, or mass coastal tourism in particular, include lots of different actors and services and is intertwined with other industries, it is a difficult sector to manage or to limit its impacts, (Davenport, J., & Davenport, J., 2006). It ranges from large multinational organisations to small local enterprises who all have a stake in tourism. As mass tourism in coastal environments is increasing exponentially it is important to find ways to reduce the amount of plastics ending up in the oceans as much as possible. As stated in the beginning of the literature review, plastics in marine environments is a growing global problem with tourism as a cause and a victim. And the growing importance and numbers of interventions to reduce the amount of single use plastics in the marine environments, but the lack of literature about the implementation of these interventions and their effect on actors are reasons why this research is scholarly relevant. The internal goal of this research is understanding the policy arrangement of the ban on single use plastics implemented on the Tremiti Islands. The external goal of this research is to add to the research on the solution of the plastic pollution in marine environments, to be more precise: to add to the better understanding of the implementation of bans on single use plastics in general.

Central Research Question:

To what extent are the structures between actors, resources and the rules of the game affected by the discourse around the ban on single use plastics?

I will answer this central research question by using some sub questions. These sub questions will, combined, provide the answer to the central research question.

Sub questions

1. How is the policy arrangement of the ban on single use plastics implemented?

With this question I want to find out how clear the ban on single use plastics is communicated to the actors on the islands. To what extent are the actors adapted to the ban and aware of its rules and consequences.

2. To what extent are tourists and tourism providers (e.g. restaurants) affected by the ban on SUP?

With this question I want to learn about the experience of the tourists and their providers. To what extent are the experiences of the tourists affected by the ban (positively or negatively) and to what extent are the services of the tourism providers affected by the implementation of the ban.

3. What resources, actors, rules of the game and discourses are needed to implement a ban on single use plastics?

This question is necessary in order to understand the used framework for this research. Which resources are used and which resources should be used according to the actors on the islands. Which actors are involved in the implementation and what are the ideas about the ban on single use plastics? And, what are the rules of

the game of the implemented ban? Also, this last question adds to the external goal of this research.

The Policy Arrangements Approach

In this research the Policy Arrangements Approach (PAA) will be used as the theoretical framework. Policy arrangements can be defined as the organisation and temporary stabilisation of the content of a policy domain, (Lamers, Van der Duim, van Wijk, Nthiga, & Visseren-Hamakers, 2014) (Arts, Leroy, & Tatenhove, 2006). With policy arrangements, the structural transformations in political domains in contemporary societies are being tried to capture, (Arts & Tatenhove, 2006). According to Liefferink (2006): *“The overall objective of the policy arrangements approach is to analytically link changes in day to day policy practices to broader, structural changes in contemporary society.”* – (Liefferink, 2006, P. 45).

These structural changes in contemporary society can be explained by the growing awareness on plastic pollution in marine environments. Newly introduced interventions in order to reduce the marine litter like a ban on single use plastics are examples of new policy arrangements. These measures or interventions are created because of the structural changes in this contemporary society.

In order to become a policy arrangement, the policy actions need to be ‘institutionalised’. Institutionalisation is the process of the gradual stabilisation and structuration of these policy actions, (Boer, van der Zouwen, Roza, & van den Berg, 2007). This means that after a policy arrangement is institutionalized, there is a balance between all the different dimensions of the policy arrangement. However, after the institutionalization of the policy arrangement, it can still be challenged by, for example, changing power structures, new problem domains or new ways of solving problem domains. This means that even though the policy arrangements are somehow stabilized they are constantly subject to change, (de Boer et al., 2007).

Dimensions

PAA works with four different dimensions which are: actors, resources, rules of the game and discourse, (Lamers et al, 2014) (Arts, et al., 2006). Actors in this model are those with their networks that are involved in the policy domain. The role and the positions of these actors are identified by this dimension, (Anyango-van Zwieten, N., et al., 2015). These actors have a certain amount of influence and power between every actor. This power refers to the implementation of resources that can be used to determine policy outcomes. So power and resources are connected as actors need to have resources to be able to have power, (Anyango-van Zwieten, N., et al., 2015). The resources can be, for example, money, knowledge or facilities.

The rules of the game are formal procedures to strive towards policy decision making and are also the actual rules of (political) interaction. The last dimension, discourse, refers to the ideas of involved actors. These could be norms and values, or a particular problem, (Arts, et al., 2006).

As you can see in the figure (4) below, the four dimensions of policy arrangements are interwoven. When a change in one dimension occurs, a change in the other dimensions will follow. Also, a change in one of the dimensions often causes a change in policy arrangement, whether this was a deliberate intervention or unintended, (Arts, et al., 2006).

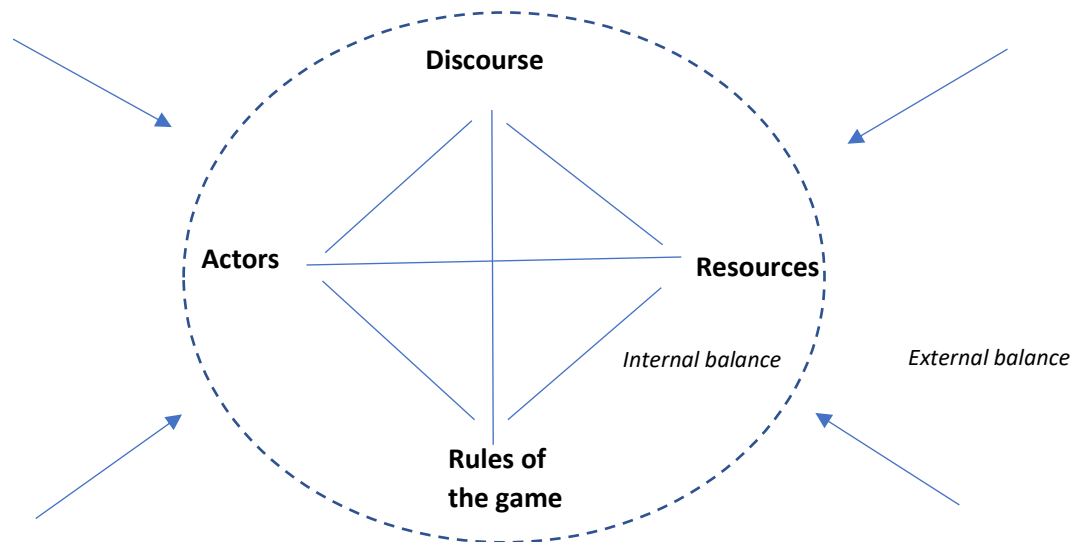


Figure 4. PAA theoretical framework

But not only a change from the inside can lead to a change in policy arrangements, this can also be caused by a change from the external. After a change, a chain of reactions will affect all the other dimensions. Important here is to wonder how a change, that originates from an innovation, in one of the four dimensions will an influence on the other dimensions, (Arts, et al., 2006).

Methodology

This research into tourism and plastics in marine environments contained a case study focussed on an island destination located at the eastern coast of Italy, a small archipelago located in the Adriatic Sea, north of the Gargano Peninsula, called 'Isole Tremiti'. The archipelago consists of three main islands: San Nicola, San Domino and Capraia, (Tremiti Islands, sd). The islands are car free (only the local inhabitants are allowed to drive a car on the islands) and can be reached by ferries departing from the Italian coast. The archipelago is part of the Gargano National Park, which is a protected marine reserve.



Image 1. Location of Isole Tremiti

For an archipelago quite unknown like the Isole Tremiti it is interesting to learn about why this particular destination chose to completely ban the so called 'single use plastics'. With this, all plastic plates, cups and utensils are meant, starting from the first of May 2018, (Coffey, 2018) (Local, 2018). Actors who are not obeying to this new law risk getting a fine between 50 and 500 euros. Archipelago's mayor Antonio Fentini, implemented this direct rule to prevent the amount of plastic particles in the water around the islands to increase, as there are already high levels of these particles found, (Coffey, 2018). A research by Greenpeace showed the levels of plastic in the ocean around the Tremiti Islands. 2.2 plastic pieces per metre cubed of water were found and it turned out to be mostly polyethylene which is used for the production of single use plastics like plastic bottles, bags and packaging, products that are used a lot by tourists, (ISMAR, 2017).

The discovery of 2.2. pieces of plastic per metre cubed of water around the Tremiti Islands is worrying. This is because it is significantly higher than the average of Italy, which is 0.52 pieces per metre cubed of water. It is also worrying as the archipevalo lies within a protected marine reserve, (ISMAR, 2017) (Coffey, 2018). Unlike the plastic utensils that are banned, plastic bottles are still legal. However, Antonio Fentini argues that he would like to see a change into the use of glass bottles in the future, (Coffey, 2018).



Image 2. Plastic bag sticking to a fin of a dolphin

The central and sub research questions are answered through a qualitative case study research. The reason for choosing for a qualitative research instead of a quantitative research is because of the opportunity that it gives to go more in depth into the subject. The case study took place in May of 2019 and the data was collected in two weeks of time. For the interviews with the stakeholders, semi

structured interviews are used. A list of 10 to 20 questions, depending on which stakeholder to ask, gave a clear structure to the interviews, but as these questions were open and semi-structured, there was a nice possibility and freedom to go more in-depth in the insights of the interviewees.

In this case study research a distinction has been made between three types of interviews. First there are the 'expert interviews' which contain an interview with a company focussing on plastic waste in Italy called: 'Zero Waste Italy' and an interview with the municipality of the Tremiti Islands. Secondly, interviews are done with the so called 'tourism providers', like the ferries or restaurants. And last but not least, I did some interviews with tourists on the islands. I started contacting the stakeholders by sending out emails, with not many responses as a result. Only Zero Waste Italy responded to my emails and was willing to do an interview by telephone. On the islands I approached every tourist I saw to ask them about their opinion and experience on the ban on single use plastics. For the tourism providers I went to their locations and asked them if they had time to do an interview or whether I had to come back some other time. As the level of English on the islands was very low, I brought a local translator with me to be able to start conversations with the restaurants and ask my questions. I asked my questions in English and the translator translated these into Italian and vice versa for the answers of the tourism providers. I was able to interview an employee of the ferry company on my way to the islands.

Also, participant observations were used as this was a perfect way to research the ways in which the ban on single use plastics is communicated to the public and how they implement and live up to the ban. I used the ethnographic method, which is a qualitative approach to retrieve findings from a detailed analysis of field observations of the actions and behaviours of the actors involved, (Barthet, M., & Dixon, S., 2011). This method of observations gives the opportunity to not only listen to what the actors say, but also to observe what the actors do and how they behave, (Barthet, M., & Dixon, S., 2011). Two important activities of the ethnographer are according to Emerson, Fretz, & Shaw (2011): (1) getting to know the actors involved in a social setting by personally entering it and (2) while participating in the social life, writing down what he or she observes or learns to, in the end, get a written record of what has been experienced and observed. So an ethnographic approach to observations means participating in a unfamiliar social world and creating a written record of that social world, (Emerson, R., et al, 2011). However, this writing down of observations should be done in the way that is the 'best' description of a particular observation. But as there is not one right way of writing an event down, the descriptions are rather written from a person's perception and interpretation. So one can write something about a particular event and someone else can write about the same event but differently and still both descriptions are possible and valuable, (Emerson, R., et al, 2011). This ethnographical approach is also used in the findings section in order to describe the situation as I experienced it.

Using a camera to visualize the amount of plastics in the sea and the resources used, waste bins etc. and making notes of the observations gave a clear overview of what resources are used and how actors act within certain situations.

After asking for permission, the interviews were recorded and later transcribed into written words. For the thematic analysis of the initial findings, these interviews were coded into themes, by giving labels to events, approaches and actions (Petty et al., 2012). By using open coding, also known as inductive coding, the themes were established during the coding of the interviews, instead of creating the themes before the coding. In this way, all important codes and themes were easier to pick up and all important facts were included instead of ignored. After reading and rereading the interviews, I identified multiple codes like 'signs of the ban', 'tourism experiences' and 'alternatives to plastic'. These codes were later abstracted in broader and more conceptual themes. This coding and the creation of themes is done in the data analysis by constantly comparing the differences and the similarities in the data, (Petty, et al., 2012). So from the big amount of codes coming from the data set, a small number of overarching themes was created. However, as I used the policy arrangements approach in order to write my interview questions, the data gathered were also in the direction of the PAA framework. This means that even though I used inductive coding, the data was already formed in the way of the framework which developed in the themes of the findings. In the results section, these themes will be further elaborated.

Besides these different interviews, participant observations were also done. These were written down carefully every day and recorded visually by camera. These written observations are coded in the same way as the interviews with the same overarching themes. This in order to be able to back up the interview statements with what I saw during my observations.

The ban on SUP on Isole Tremiti, Italy

Internal Balance

In this section of the report the results of the case study on the Tremiti Islands, Italy will be shown and explained according to the policy arrangements approach and the corresponding themes that emerged from the data set. From the codes, five different themes and one 'core' theme were created, these were considered as the most relevant and overarching for this research. As mentioned before, these findings are based on the expert, tourist and tourist operators interviews and on the observations of the islands. Quotes from the interviews and observations will be used in order to substantiate the findings.

Background of the ban (*discourse*)

This analysis starts with the 'core theme' and provides some background information on the ban and its implementation. In order to understand the ban on single use plastics on the Tremiti Islands as a policy arrangement, it is important to know why and how this policy got implemented on these particular islands in Italy.

Since May 2018 a ban on single use plastics has been implemented on the Tremiti Islands. According to news articles, the idea for this ban (the discourse) came after the publication of the Greenpeace Italy report about the Tremiti Islands. This report showed that the amount of plastic particles found in the sea surrounding the islands was significantly higher than in other parts of Italy, (ISMAR, 2017). This report is one of the many studies into plastic waste as the concerns about plastic waste are growing in the scientific literature, (Haward, M., 2018). Not only the scientists are worried about the plastic particles in the oceans caused by human actions, the European Union agreed upon a ban on single use plastics in 2019 in all European Union member states, (Rankin, J., 2019). However, the Tremiti Islands are already ahead of this policy as the implementation of the European ban fully starts in 2021 and the policy on Tremiti is already implemented since May 2018.

So it can be stated that the municipality of the Tremiti Islands was ahead of other European destinations. Interesting thing to add to these reasons of implementation: in the interview with the municipality they stressed the fact that they chose this ban after finding lots of plastic waste left by tourists in the woods on the islands: *"We usually found plastic in the woods, like plastic bags and inside of them plastic cutlery, plates and glasses because of the picnics of tourists near the coast and afterwards throwing the garbage away in the woods."* – Municipality of Isole Tremiti. This quote shows that the report by Greenpeace was not the only eyeopener for the municipality to decide on this ban, it was also the experience of finding waste in their woods and on the beaches, caused by tourists.

In order to ban all the single use plastics, there need to be other alternatives for people to use instead of the SUPs. The municipality promotes the use of biodegradable or compostable plastics and makes sure that all restaurants on the islands switch to using compostable plastics: *"From an environmental point of view and for plastic pollution prevention, it is necessary to pay more to buy biodegradable products."* – Municipality Isole Tremiti, 2019. In the interview it thus became clear that the municipality sees the compostable and biodegradable plastics as the

alternative to disposable plastics. This is the second discourse, the paper is focussing on.

The implementation (Rules of the game)

Now it is clear why the ban was implemented on the islands, it is important to look at how they did it and what rules it contains. This theme is all about the implementation of the ban on the Tremiti Islands and its rules of the game. While reading news articles about the ban, it became clear that there are some single use plastics banned and that there is a fine attached to it, but I was curious about the details of this ban. The interview with the municipality gave me some clear answers about the policy around this ban. To start with, plastic bags are banned in the whole of Italy already since 2011. Only biodegradable plastic, paper or cloth bags are allowed, (Bardelline, J., 2011). Besides this nationwide ban Isole Tremiti decided to ban more single use plastics. Local people and tourism providers are allowed to finish their stock of single use plastics so that they do not have to throw them away. After this, they are only allowed to use a biodegradable version of cutlery, plates, straws, coffee stirrers and cups. Bottles however, are still allowed but in the future the municipality would like to see a change to glass bottles.

A good example of this opportunity to finish the plastic stock and then switching to biodegradable plastic was observed at the local supermarket, where in the first week of the research period, single use plastic products were still available and in the second week were switched to biodegradable plastics. I did the following observation on the 24th of May, 2019: *“I went back to the supermarket to check whether or not the plastic they sell was biodegradable. They changed the whole shelf from SUP to biodegradable as they still had some plates with the same brand as I saw before, but now they mostly had biodegradable.”* This observation shows that the ban definitely has an effect on the local stores.



Image 3,4,5: Compostable plates, cups and cutlery in local supermarket on San Domino, Isole

Another question to ask: what are the consequences for not obeying to this policy? After reading the news articles about the policy, it became clear that there is a fine attached to using single use plastics on the islands since May 2018, (Coffey, 2018).

However, I wanted to know specifically how much this fine is, when they give a fine to someone and how they control this policy. From the interview with the municipality and the new articles, it became clear that this fine could vary between 50 and 500 euros, but how they decide on this was not clear. Also they say that they control the ban by monitoring the tourism organisations by sample controls, but from interviews with the tourism organisations themselves it became clear that in the past year no checks were done: *“No. they don’t control it. If someone finds you with it you have to pay a fine, but there is no one that controls it.”* For the tourists, the municipality has implemented a warning before giving a fine. So when tourists are caught using a single use plastic, they will first get a warning by informing them about the policy, when still disobeying after this warning a fine will be the final measure.

The biggest struggle in implementing the policy according to the municipality was creating awareness amongst the local people and making them change to compostable options: *“it was difficult to change the local people’s minds to use compostable instead of disposable plastic”*. This was according to the municipality because of economic matters as compostable plastic is more expensive.

The experience of tourism operators (Actors)

Another dimension of the policy arrangements framework are the actors. One of the most important actors involved in this policy arrangement of the ban on single use plastics are the tourism operators. With this the local restaurants, hotels, dive shops, everything on the islands designed for tourists and visitors are meant. The ferries however, are not included in this policy as they are operating from the mainland and adhere to the policies of, for example, Termoli. This became clear in the interview with an employee of the ferry company Tirrenia, who operate between the port of Termoli and Isole Tremiti. So the ferries operating between the mainland and the islands are allowed to provide tourists with single use plastics like cups and straws.

The municipality stated in the interview that they informed the local people and businesses on the islands about the ban by posting it on their website, but when I interviewed multiple hotels and restaurants it became clear that this was not the way in which the tourism providers found out about the ban. Some quotes about how they found out: *“from people to people as it is a small island”* or *“Informed from people to people.”* However, even though no restaurant became aware of the ban through the municipality, they all were aware of it and fully adapted to it.

The tourism operators did not feel very different about their services as before the implementation of the ban. From the interviews it could be concluded that the changes needed in order to obey the ban, were not big enough to affect their services in a negative way. When I asked about the role of the municipality in adapting to the ban, the overall outcome was that the municipality has not enough money to help the restaurants etc. so the tourist operators had to adapt to the ban by themselves: *“No, nobody received help by the municipality. It is something we need to do by ourselves.”*

Some do experience some downsides of the ban regarding their services. As the municipality already predicted when they experienced some difficulties in making the local people use biodegradable plastics, one of the downsides for the tourism operators was replacing plastic by biodegradable plastics as it is more expensive

and harder to get. Maybe an even more important downside of using biodegradable plastics for the restaurants is that it is not as strong as the normal single use plastics. One restaurant owner told me about the downsides of biodegradable plastics as it melts when putting too hot contents in it: *“We went from plastic to compostable plastics. But I don’t like the little biodegradable coffee cups as they melt when they are in contact with hot contents.”* Also, another owner told me she moved from plastic stirrers to wooden ones, this to the dissatisfaction of the Italian consumers as it *“changes the flavour of the coffee”*. Something that is very important in the Italian culture. The last example is about the plastic ice cream spoons. The critiques regarding the biodegradable spoons were about the hygiene. As the biodegradable spoons are not wrapped separately in plastic, customers find them unhygienic.

However, most of the tourism operators are excited about the ban or see the positive effects of it on the island and are willing to cooperate with it. A lot of the interviewees grew up on the island and see what tourists and ignorant people do to it and want to protect it: *“I speak to the tourists and tell them about the danger of plastics, I grew up here and I want to protect the island.”* Also, only the positive effects are seen for the tourists. There should be less plastic on the islands so it would be better for tourists to enjoy. Also: *“I don’t think that people decide to not come here or come here because of a ban like this. I think people visit a place for other reasons. It’s not a priority for a tourist.”*

Resources (Resources)

The fourth theme of this research is called ‘resources’, also one dimension of the policy arrangements approach. Resources are needed in order to implement a particular policy, but according to the municipality they did not need a lot of resources for the implementation as the local people and tourism organisations had to adjust to the policy by themselves. However, they argued that the implementation of the ban needs time. Organisations and people on the islands need time to use up their stocks and to adjust mentally to the ban.

However according to the tourists on the islands and the tourism organisations, the ban does need some resources in order to make the implementation work. Resources like facilities to leave your trash or signs to create awareness were examples of what they would expect to see. One of the observations I did on the islands was about waste bins. There are only a few spread over the islands and most of them are full (with water bottles). An observation of May 20th, 2019: *“At another spot (close to Cala delle Rondinelle), there were huge pieces of polystyrene floating in the sea. At this small piece of inland water the amount was very high and after five minutes of picking up I already collected a lot of waste. After collecting the polystyrene from this spot, I had to walk all the way back to the village to find a waste bin to throw it away..”* This observation shows that it is difficult to find waste bins



Image 6: Waste bin near the beach on San Domino, Isole Tremiti

outside of the San Domino Villaggio. Also on the 22nd of May 2019: *“Lots of bins are full of waste for a few days now. Also lots of plastic bottles in normal waste bins..”* This observation shows that the waste bins that are on the islands are not emptied regularly. This observation can be substantiated by some quotations from the interviews with multiple tourists about the facilities that they would expect regarding the ban: *“As there were not that many places to leave your rubbish and those places that were there were full. Also, they are full with water bottles. Outside the supermarket they had four bins for separation, but they seemed to be used incorrectly. Most people do not know what they should do.”* And: *“But during our walk, nowhere to put your litter..”* This shows that even though tourists are willing to throw their waste away in a proper way, they are often not able to do so. It might be the island tried to improve this situation by placing two big separation boxes for tourists on the island of San Domino, but both are far away from the tourism spots.



Image 7: Separation box for waste of tourists, San Domino, Isole Tremiti

Another resource tourists would expect to see on the islands and before arriving at the destinations are signs to warn people about the ban. An observation of when I travelled to the islands on the 14th of May, 2019: *“I don’t see any signs of the ban on single use plastics at the port of Termoli. There are some small shops where you can buy a ticket or get information about the islands, but there is no information about the ban. Also while boarding the ferry, there is no sign of the ban. On the boat there is a safety video shown but no video or anything about the ban to inform tourists.”* A tourist stated in her interview: *“I would expect signs at the port and on the ferry they could do a video. They could raise awareness so quickly. But also, when you are booking a hotel it could say: you are coming to a plastic free place, please limit how much you bring. And all that sort of things, like before you get here.”* The tourism organisations agree on this as well, there are signs needed in order to properly inform tourists about the ban: *“Maybe in the ferry they should already show some information about it. Show it on signs, at the harbour etc. to show to tourists that there is a ban. They have to inform people.”* Starting at the ferries with showing videos about the ban would only work if the policy of the ferries would also change to banning the single use plastics as they are now still allowed to provide tourists with single use plastics. Right now, there are only signs spread over the island saying ‘Do not litter’.



Image 8: Sign saying: *“let us not spoil the wonderful islands by abandoning waste”* – San Domino, Isole Tremiti

However, talking to the tourism operators and observing the accommodations, made clear that the island inhabitants already thought of some alternatives to the single

use plastics: “*The first accommodation where I stayed provided only paper cups*”- 14th of May, 2019. Also the owner of a cocktail bar on the island showed that she replaced their plastic straws by straws made out of bamboo and pasta. She said that the bamboo ones were more expensive than the plastic ones, but these are reusable. The pasta straws are for single use but very cheap to buy. Other restaurant owners said they replaced plastic cups with glass, paper or biodegradable plastic cups. Also plastic ice cream spoons and drink stirrers are replaced. Some use biodegradable, some use wood.



Left: Image 9: Biodegradable ice cream spoons in local restaurant, San Domino, Isole Tremiti



Right: Image 10: Alternatives to plastic straws: Pasta (left) Bamboo (right), San Domino, Isole Tremiti

External balance

Experience of tourists (*Actors*)

This theme is about the experience of the tourists regarding the ban on single use plastics implemented on the Tremiti Islands. Even though the tourists are included in the ban as they risk getting a fine when using single use plastics on the islands, they do not belong in the internal part of the policy arrangement of the ban on single use plastics. The next section will elaborate on this external part of the policy arrangement.

The first question I asked to every tourist was: *How do you feel about plastic waste present at coastal destinations?* Some reactions were: *“It is horrible, it is absolutely horrible”* and *“I think it is awful how much plastic is in the oceans”*. After I asked why it bothers them so much reasons like aesthetics were very important. *“When you walk around and see a beautiful spot and you also see plastics floating around, that is just ugly”*. And *“One time, we were on a rock and there were cigarette buds left in a hole in the rock, used like an ashtray.”* *“Watching the waves and then seeing the pieces of polystyrene floating and the bottles. That’s depressing.”* So, according to the tourists on the islands, their experience can be affected by plastic waste in an aesthetic way.



Image 11 Pieces of polystyrene near Cala Rondinelle, San Domino, Isole Tremiti

Also, a lot of tourists were bothered by the plastics because of its consequences: *“The beach, I think, is one of the most impactful places of plastics. Birds eat it or turtles can get caught into plastics nets.”* And *“Yes, but it is more the greater impact on the world and the wild life as we have seen turtles that have eaten plastics and therefore cant dive down anymore. Yes it is terrible when you see it washed up on the beach but it is much bigger than that.”* These quotations from the tourist interviews show that the impact of plastic waste at coastal destinations is much more than only the ugly pictures. Tourists highlight the disastrous consequences of plastics on the marine environments and its marine life.

However, even though all the tourists I interviewed had an opinion about plastic waste, none of them were aware of the ban on single use plastics implemented on the islands. In the interview with the municipality, they stated that tourists should find out about the ban from the tourism organizations, but both single travellers as tourists coming to the islands with a big group were not informed about the rules on the islands regarding plastic waste. Only one Italian tourist told me he was aware as it was his second time on the island and he talked with some local people about it: *“I came to know about the ban of plastic on the island when talking to some “locals” while I was on vacation here.”* Also, another tourist got a message from a relative who saw a news article about the ban, when he was already on the islands for a few days. When I told one couple about the ban, a few days later she came to me and I

asked her if she noticed something about the ban that could inform tourists about it and she said: “Absolutely not”. All the interviewees were very surprised about the fact that the island banned single use plastics as there were no signs of it at all. This shows that, according to the municipality, everyone on the islands should be aware of the implemented ban, but in practice this is most of the time not the case.

When I asked if the ban would affect their experience, the answer was no. As they were not aware of it in the beginning, shows that it would not affect their experience: *“no not really, we are already very aware of it to not throw something away in the nature, so it would not affect our experience on the island”*. However, when I told the interviewees about the consequences of using single use plastics on the islands, they told me that it would affect their experience. As there is a fine attached to the ban, tourists would like to be informed about it. The fact that they are not informed and, at the same time, risk getting a fine bothers them: *“As there is a fine attached to the ban, tourists should be informed about the ban.”* And *“If they find you using a SUP? That would bother me, as I have one in my backpack but I am using it for two weeks. And if someone came along and fined me for it that would really bother me as I was not informed about it.”* The tourists agree with each other that they should be informed about the ban: *“It is incredible that they are putting a fine on the use of SUP on the islands but not informing visitors about it. So yes it would be nice to be informed about policies like these.”*

So even though the experience of the tourists is not very much affected by the ban on single use plastics, they are bothered by the fact that they are left out from the information about the current policies. The ban includes everyone on the islands, but according to the policy arrangements framework, the tourists are not part of the internal balance as they are not informed.

The solution to pollution? (*Balance*)

This last theme and section of the results is about all dimensions of the policy arrangement together. In order for a policy arrangement to work, it should be fully institutionalised and the dimensions should be in balance. So I asked to my interviewees, whether or not they see this ban as the solution to the pollution of the islands by plastic waste. With this question I got a variety of answers varying from a solid no to a maybe to a solid yes. What we maybe can all agree upon is that this ban on single use plastics implemented on these small islands is a step in the right direction of a world without plastic pollution. However during the interviews, some interesting thoughts were shared, which I will elaborate in the next sections.

Mentality

One returning factor in the interviews when I asked about the solution to plastic waste was the ‘mentality of the people’: *“There is often a lack of mentality to bring the litter all the way back to throw it away, I guess the mentality of the people should change first.”* Mentality of the people was also something with which the municipality was struggling the most while implementing the ban: *“It was difficult to change the local people’s mindset to use compostable instead of disposable plastic which is more expensive to buy. We need to make people understand that from an environmental point of view and for a plastic pollution prevention it is necessary to*

pay more for the biodegradable plastics.” A tourist gave me this interesting insight: “I guess plastic is really in our lives, it is a way to store things, to keep things fresh. It is not the fault of the plastic that has been thrown into the sea. It is the people who are the issue here. So if you ban it, I do not think it will solve the problem. There should be good alternatives first.”

What all interviewees agreed upon was that this ban might help to create awareness about the plastic problem if well informed about it. One woman with whom I spoke multiple times on the island told me that *me* telling about the ban created some kind of awareness to her: *“It made me much more aware of what there was on the island after our conversation. Noticing things that should not be there, like little shampoo bottles etc. You telling me made me much more aware of what was present on the island. It was like an eyeopener to me.”*

Compostable plastic as THE alternative

As much as the municipality of Isole Tremiti is proud of the change from single use plastics to 100% biodegradable plastics and it is definitely a step in the right direction, I would like to share a different view on these compostable plastics. As I already highlighted the downsides of the compostable plastics for the shops and restaurants and their services to their customers, I would also like to share some information about compostable plastics that I got from the interview with an employee of Zero Waste Italy. He gave me some insights that should be taken into account when implementing a ban on single use plastics and promoting the use of compostable plastics.

As good as the shift from plastics to compostable plastics already is, this interviewee would have liked to see promotion for reusable items first. In his opinion, restaurants etc. should always make use of reusable products instead of focussing on using compostable plastics: *“In my opinion, they should always first consider using reusable materials and if there is a case where it is not possible to use these, then they should use compostable plastics. But unfortunately now, they are only promoting 100% biodegradable plastics.”* Why this is unfortunate is because of the way the biodegradable plastics are handled. According to the interviewee of Zero Waste Italy, compostable plastics are only right when they are handled properly. What is meant by this, is that it should be thrown away properly with the compostable waste. If biodegradable plastics end up in the ocean by human actions, it is still a disaster for the marine environments: *“When the compostable plastics end up in the sea they are still not environmentally friendly. Yes, they degrade faster than normal plastics, but it will still take time. This depends on the amount of sunlight, the type of water, etc. It depends on too many factors.”* So by the time it is degraded properly, it can already be, for example, in the bodies of marine life.

This is why policies like a ban on single use plastics should also consider promoting reusable materials instead of only promoting the use of compostable plastics. Also, it should be controlled properly to make sure that no compostable plastic ends up in the sea, which is partly the case of the mentality of the people and their awareness about the plastic problem.

Discussion

The PAA Framework

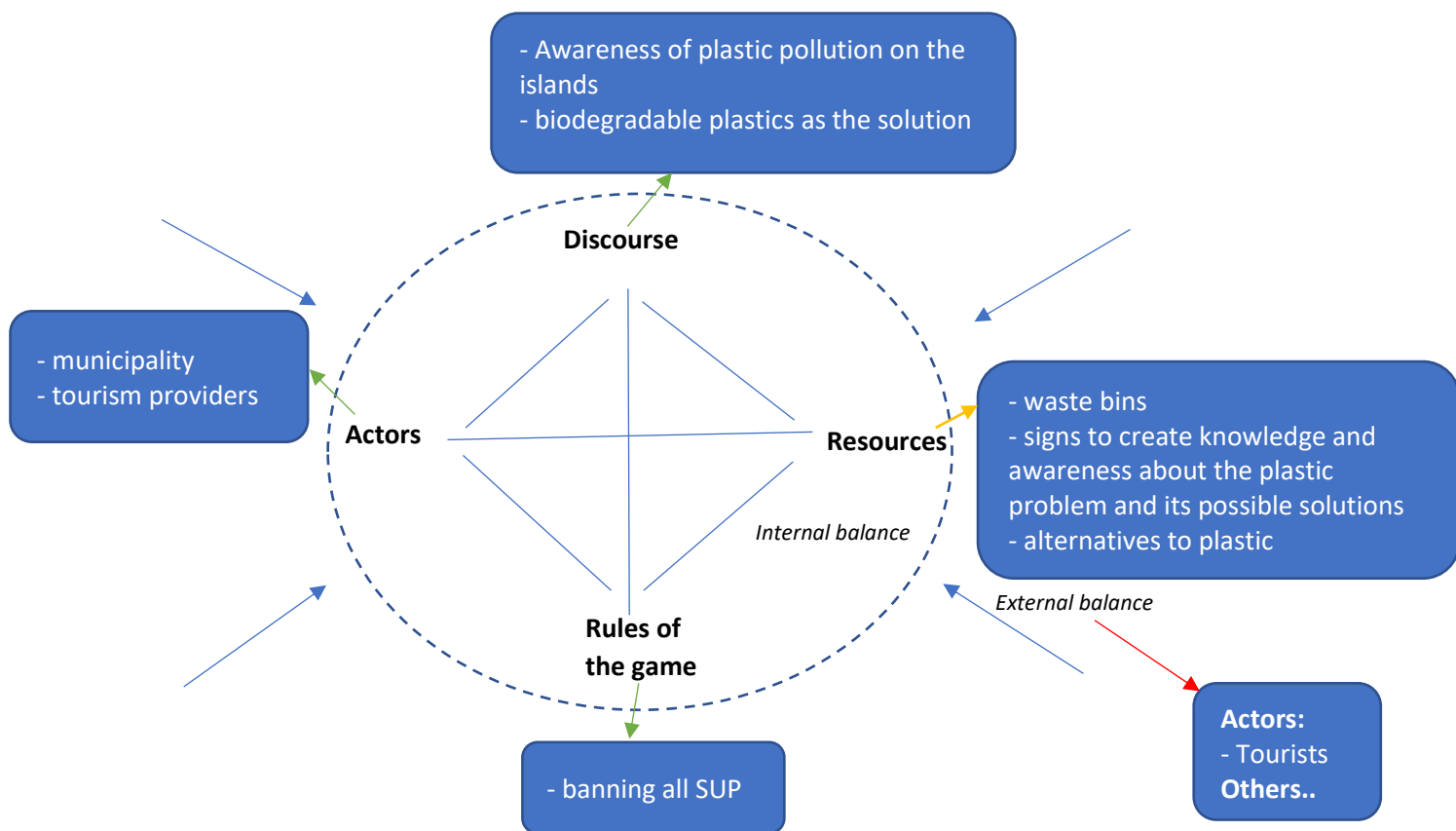





Figure 5: PAA theoretical framework of Isole Tremiti. With  being fully institutionalized;  being partly institutionalized and  being not institutionalized

This figure shows a visualized result of the collected data in the policy arrangement theoretical framework of the Tremiti Islands about the ban on single use plastics. However there could be some questions marks drawn on the lines between some of the dimensions as it is not sure if they are fully connected and in balance in real practice. The connection between the 'rules of the game' and 'resources' is not very clear as, according to the interviews and my observations, there are some resources like waste facilities and signs missing in order for the implementation of the ban to properly work. Also, there are probably more actors or external factors that influence the policy arrangement of the ban on single use plastics implemented on the Tremiti Islands. In the figure, the coloured arrows show the level of institutionalization of the different dimensions. It shows that the rules of the game are clear and all the internal actors are aware of them. Also the rules of the game are connected to the discourses. The external part, however, has a big influence on the framework as tourists are actors with a large influence on the situation of the islands. These are not institutionalized as they are not well informed about the current policy.

In the next part I will discuss some of the limitations of my research on the Tremiti Islands and share some suggestions why further research in this topic is needed.

Limitations

Just like in many other researches, this case study brought some limitations that may have influenced the outcome of the data, but also gives an opportunity for further research about which I will talk later.

One of the most important limitations was 'time'. For this research I had only a small period of time to collect data on the islands. This caused me to not be able to do many interviews with, for instance, tourists. This was also because of the fact that my research period was not in the high season and as a result of that not many tourists already come to the islands. Also, because in this period of time, not every restaurant or tourism operator was opened, which gave me less opportunities for interviews. If I would have been able to stay longer, I would have been able to conduct more interviews and observations and get more in contact with the local people which would have given me more opportunities regarding data collection.

Also, as I do not speak Italian, the language was sometimes a bit of a barrier between me and the interviewee. This language barrier caused not being able to go really in depth into the questions all the time. However, I got help from a local Italian who translated every interview for me, but this still limited the in-depthness of the answers to the level of his English expertise.

The last limitation that I would like to discuss is the external balance part. As I was only able to research the tourists as an 'external', there are probably more external factors that influence the policy arrangement on the Tremiti Islands, which are now not included.

Suggestions for further research

From these limitations I would like to make some suggestions for further research into this topic. As plastic pollution is not a new topic but still very present and an increasing issue worldwide, it is important to keep searching for new possibilities to reduce the amount of plastics in the sea and to keep testing implemented policies regarding the reduction of plastic waste. In the face of the coming European Union law about the ban on single use plastics it is important to research the pitfalls in order to implement properly.

Also, it would be good to research the possibilities for other destinations (outside the EU) to see whether or not a ban like this would be an idea for, for instance, non-island destinations or bigger destinations where mass tourism occurs. I would like to suggest more research into the alternatives to plastics as we have seen that compostable plastics are not always the best alternative. And last but not least, more research is needed in the ways to inform people about different policies, which ways are most efficient and which ones create awareness about the problem.

So I would suggest more research into the implementation of a ban on single use plastics as the alternatives to SUPs given are not the best solution to the plastic problem and this case study showed that a lot of factors, like the actors and the resources should be taken into account in order to make an implementation work.

Conclusion

To conclude, it can be stated that the plastic problem is an increasing worldwide problem, of which the solution is hard to find, (Murray, 1999). There are some initiatives spread around the world and policies implemented or ideas for policies, but nothing yet to cure the world from its plastic pollution, (Xanthos & Walker, 2017). However, on the Tremiti Islands they are trying to create a better livelihood by banning all single use plastics, to keep plastics away from the islands and their surrounding waters. However, for the implementation of this ban on single use plastics to work, there are a lot of resources, rules and interactions with actors needed.

The central research question of this thesis regarding this implementation was: *To what extent are the structures between actors, resources and the rules of the game affected by the discourse around the ban on single use plastics?* This question is answered by using the following the sub questions:

1. *How is the policy arrangement of the ban on single use plastics implemented?*
2. *To what extent are tourists and tourism providers (e.g. restaurants) affected by the ban on SUP?*
3. *What resources, actors, rules of the game and discourses are needed to implement a ban on single use plastics?*

As we have seen in the case study, the municipality of the Tremiti Islands implemented the ban on single use plastics as a reaction to the growing amount of plastic particles found in the seas surrounding the islands and in the woods on the islands. From people to people this policy started to spread and tourism operators adapted to the ban by changing their services to biodegradable or reusable products. However, these alternatives are more expensive and not as easy in use as the disposable plastics which causes some discomfort for the tourism providers and the customers.

For a person not obeying to this relatively new policy a fine up to 500 euros can be the consequence, which is not always seen as fair by (mostly) tourists as the implementation lacks resources to create awareness amongst visitors of the islands.

In order to be able to make a policy arrangement work, all four dimensions should be in balance. This means that they (rules of the game, discourse, actors and resources) are all connected and act upon each other. However, in a policy arrangement, it is also important to keep the external balance in mind. This can affect the internal balance of the policy arrangement. For the internal balance it can be concluded that the discourse on the awareness of the pollution caused by plastics is well connected to the rules of the game (banning all SUPs) and well connected to the actors internally involved like the restaurants. However, the discourse on promoting the biodegradable and compostable plastics as the best alternative for disposable plastics can be challenged. The actors involved do use biodegradable plastics and as resources they are available, however it can be concluded that biodegradable plastics might not be the only good solution to the plastic problem as these plastics need to be handled properly and in the right way. So even though changing to biodegradable plastics is a step in the right direction, there are some rules attached to it in order to make sure they are not still harming the environment.

Also, there are resources missing like signs to inform visitors about the ban. This causes the tourists not to be part of the internal balance of the policy arrangement but to be part of the external influences. As tourists do influence the situation at the islands by their actions, but are not (well) informed about the current ban they are seen as external.

A policy arrangement is an arrangement when it is fully institutionalized. In the case of the Tremiti Islands, it can be concluded that the policy arrangement of the ban on single use plastics is only partly institutionalised as I found these gaps in the implementation of the ban and in the connections between the actors (external tourists) and the rules of the game and the resources. However, internally, the ban is almost as good as institutionalised as the tourism operators are well adapted to the rules.

So not the solution to pollution?

What can be concluded from this research is that the ideas and the awareness on the plastic pollution are present at the Tremiti Islands and the first steps in the direction of pollution reduction are there. However, because of more external factors it is difficult for a small destination like this to really change the situation. Regarding the implementation of this ban, it could be a solution for other destinations around the world to raise awareness and to reduce the usage of single use plastics. However, I do want to stress the importance of finding new alternatives to plastics instead of only promoting biodegradable plastics as these need proper care in order to be sustainable.

For the available literature, this research is just a tiny piece on the road to the solution of the plastic problem, but it is a bigger part of the literature about the implementation of interventions like this ban on single use plastics. What can be learned from the Tremiti Islands is that implementation, awareness amongst all the actors involved (internal and external) and using the right resources are very important in making a ban on single use plastics work.

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Image References

Front image: Own picture (May, 2019)
Image 1: *Wikipedia Tremiti Islands* https://nl.wikipedia.org/wiki/Tremitische_Eilanden
Image 2: Immediato.net (2018) <https://www.immediato.net/2018/04/29/plastica-vietata-alle-isole-tremiti-multe-500-euro-trasgressori/>
Image 3: Own picture (May, 2019)
Image 4: Own picture (May, 2019)
Image 5: Own picture (May, 2019)
Image 6: Own picture (May, 2019)
Image 7: Own picture (May, 2019)
Image 8: Own picture (May, 2019)
Image 9: Own picture (May, 2019)
Image 10: Own picture (May, 2019)
Image 11: Own picture (May, 2019)

Appendix

Interview questions

Tourists

Plastic waste research (Tourists on ferries and islands)

With these questions I (student of Wageningen University, NL) would like to get an overview of the thoughts about the ban on single use plastics implemented on Isole Tremiti.

1. How do you feel about plastic waste present at coastal destinations?
2. How did you become aware of the ban on single use plastics implemented on Isole Tremiti?*

**If the interviewee cannot answer this question because he/she was never aware of this policy tell them first the following before letting them answer the remaining questions:*

As a reaction to the growing appearance of plastic particles in the sea surrounding and damaging the Isole Tremiti, the policy makers of the islands decided to implement a ban on single use plastics. This means that plastic utensils like plates, cutlery, straws etc. are banned from the islands since May 2018. Anyone using these products on the islands risks getting a fine.

3. What do or did you expect of the islands regarding the policy? E.g. no waste on beaches, signs to warn people about the ban.
4. To what extent did these expectations meet reality?
5. In what way did the ban affect your experience of the islands?
6. At what moments did the ban appear to you? E.g. Sitting at restaurants, going to the beach.
7. In the future, would you prefer to be better informed about similar policies? – Why?
8. Do you think a ban on all single use plastics is the way to protect the (marine) environment of the islands from degradation? – Why?

Tourism operators

Interview questions ferries

These questions are formulated with regard to the implementation of the ban on single use plastics on Isole Tremiti:

1. Is your company still allowed to provide single use plastics to customers or do the ferries belong to the policies of the islands?

If the ban also accounts for the ferries operating between Termoli and Isole Tremiti:

2. What single use plastics did you use?
3. What did the policy makers do to help replace the single use plastics with environmental friendly options?
4. What did have to do yourself to replace all single use plastics?
5. In what way are you affected by the ban on single use plastics?

6. To what extent do you think that this ban is helping the islands' tourism towards a better future?

If the ban does not account for ferries operating between Termoli and Isole Tremiti:

7. What single use plastics do you provide to customers that could be carried on to the islands?
8. Do you think that in order to prevent the islands from environmental degradation caused by plastic waste, the ban on single use plastics should start at the ferries? – Why (not)?

Interview questions restaurants

1. Are you aware of the ban on single use plastics implemented on these islands?
2. How did you become aware of the ban on SUP?
3. What SUP did you use before the implementation of the ban?
4. How did this ban affect your services?
5. Did you get any help by the municipality to adapt your services to the ban?
6. To what extent does this ban affect the experience of tourists?
7. Is this solution also good for other destinations or does it only work for small island destinations like these?

Municipality

Interview questions municipality

1. What was the situation on the Tremiti Islands before the implementation of the ban on SUP?
2. Who were involved in this decision making?
3. Why, in the end, did you choose to implement this ban?
4. What resources were used / needed to implement it?
5. What changes were needed in order to implement the ban?
6. What went easy and what went difficult?
7. Have other measures been considered besides the ban?
8. How did the municipality help tourism organizations remove plastic and how did the municipality inform tourism organizations and how are they currently informing tourists coming to the islands?
9. How do you control the ban?
10. As some restaurants still had plastics in their stock, what did the municipality decide to do with these stocks? – are they still allowed to finish their plastics?
11. What are the consequences for those found using SUP?
12. One year has passed since the implementation of the ban
 - what problems have been encountered?
 - can results already be seen?
 - are there any changes regarding tourism arrivals?
14. Will this ban be the solution to pollution of marine environments?

Interviews

Name	Date	Formal / Informal
Tourist 1 & Tourist 2 (English)	May 16 th 2019	Formal
Tourist 3 (French)	May 20 th 2019	Informal

Tourist 4 & Tourist 5 (Dutch)	May 22 nd 2019	Formal
Tourist 6 & Tourist 7 (American)	May 24 th 2019	Informal
Tourist 8 (Spanish)	May 20 th 2019	Formal
Tourist 9 (Italian)	May 21 st 2019	Formal
Restaurant 1	May 14 th 2019	Formal
Restaurant 2	May 22 nd 2019	Informal
Restaurant 3	May 22 nd 2019	Formal
Restaurant 4	May 23 rd 2019	Informal
Restaurant 5	May 23 rd 2019	Formal
Restaurant 6	May 23 rd 2019	Formal
Ferry company Tirrenia	May 14 th 2019	Informal
Municipality of Isole Tremiti	June 1 st 2019	Formal
Zero Waste Italy	May 13 th 2019	Formal

Codes and themes

Codes

1. Signs of the ban
2. Waste bins
3. Availability of SUP
4. Aesthetics of the islands
5. Polystyrene
6. Compostable / biodegradable plastics
7. Policy
8. Tourism experience
9. Effect on tourism operators
10. Background ban
11. Resources
12. Mindset
13. Solution
14. Alternatives to plastic
15. Municipality influences
16. Ban awareness
17. Ban experiences

Themes:

1. Ban background (discourse)
2. The implementation (Rules of the game)
3. The experience of tourism operators (Actors)
4. Resources (resources)
5. The experience of tourists (Actors)
6. The solution to pollution? (Balance)