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„Climate Change and Its Effects on the Indian Caste System“

South Mumbai's heterogeneous perceptions and impacts of climate change and the levels of vulnerability in different cultural, social and political settings

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- Dedicated to all the beautiful people I have met in India -

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PART A – INTRODUCTION

1. INTRODUCTION TO THE PAPER

This paper has the purpose of identifying the current challenges of climate change for Mumbai and especially the different social, cultural and political classes. India is considered to be a land of diversity and extremes in terms of cultural, social and economic levels. Caste plays still a major role in social stratification and therefore, people of different castes face climate change and its impacts on very heterogeneous levels. The outcomes of this paper are based on ethnographic fieldwork I conducted in Mumbai with the aim to illustrate what effects climate change has on different communities in the city and what are the major differences in terms of perception, vulnerability and impacts. In terms of the threats and risks we are facing already because of climate change, the relevance of this paper should be self-explanatory.

However, to understand the demand on the discussion of climate change, the problem itself must be discussed first. According to the World Health Organization, there are about 150,000 deaths every year caused by climate change. The effects of climate change are global but more concentrated in the ‘global south’ and a cross generational context. Very often women and children are more affected and vulnerable to climate change. South Asia is, referring to the WHO, the worst affected society although they produce only tiny levels of carbon emissions. When South Asian people are confronted with climate catastrophes in their countries, they normally have to flee, what can be called a ‘climatic genocide’. (Urry 2011: 6).

The French scientist Jean-Baptiste Joseph Fourier made back in the beginning of the nineteenth century one of the most important findings and contributions in environmental research. He found out that energy on the earth is absorbed from the sunlight. This energy is then sent back into space. The energy sent back to the sun is infrared radiation and, theoretically, the planet should be frozen as a result, due to the differential between incoming and outgoing sunlight. However, he found out that the atmosphere of the earth absorbs some of the heat of the sun because the carbon dioxide (CO₂) in the atmosphere works like a mantle or blanket (Giddens 2009: 17).

Later on, new scientific steps have been taken in the investigation that the two most frequent gases of the atmosphere - nitrogen and oxygen – do not absorb heat. So-called greenhouse gases

such as CO₂, water vapour and methane absorb heat and produce the greenhouse effect, notably the effect that the heat from the sun is to a certain degree absorbed in the atmosphere. Without this effect, there would be no life on earth. This indicated that humankind is extremely dependent from the balanced energy and heat absorption (ibid, 17).

In order to measure the level of greenhouse gases in the atmosphere, the calculation parts per million (ppm) is used. One ppm is 0.0001 percent of the whole air. CO₂, the most diffused greenhouse gas and generally used standard of measurement, makes up only 0.04 percent of the composition of the whole air though (ibid, 18).

Since the last 150 years, there has been an extensive increase of greenhouse gases, most notably CO₂, and the average world temperature rose up to 0.74 degrees since 1901. While the CO₂ content in the air was always below 290ppm over the last 650,000 years, it reached 387ppm in 2008, with a constant rise of about 2ppm per year (ibid, 18).

Also the United Nations Development Programme (UNDP) documents that the effects of climate change are increasing on a global level, influencing most notably class, gender, ethnic and age inequalities (Urry 2011: 7).

In December 2009 the international community established some strategies in order to reduce CO₂ emissions at the Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC) (Care/ CIESIN/ UNHCR/ UNU-EHS/ WORLD BANK 2012: 10).

However, the most influential and authoritative body in the monitoring of climate change is the Intergovernmental Panel on Climate Change (IPCC) of the United Nations which was established in 1988. Its main efforts lie in the collecting and evaluating of scientific data. After the conduction of many impact assessments, the IPCC concludes that there are six possible scenarios of climate change. The most probable one is that temperatures will rise to four degrees by 2100, causing sea-level increase of 48 centimeters and a decrease in rainfalls of 20 percent in the subtropical areas, whereas lots more rain will occur in the northern and southern latitudes.

The overall goal of governments and international organizations is to avoid a global temperature rise of two degrees, although this target might not be achieved from the scientific point of view (ibid, 22).

The effects of climate change will most probably cause floods in coastal cities such as Mumbai and especially the poorest people of the world will suffer the most from these impacts:

'The IPCC says that resource-based wars could dominate the current century; coastal cities could become flooded, provoking mass destitution and mass migration, and the same could happen as drier areas become more arid. Given their location and lack of resources, the poorest parts of the world will be more seriously affected than the developed countries.' (ibid, 22)

In 2015, researchers and the international community have noticed that the emerging of climate change and its intensity are faster than predicted some decades ago. There is a worldwide notion that we are standing next to a tipping point because the safe levels of atmospheric greenhouse gases are lower than expected and the global CO₂ emissions are increasing continuously. Even today it is approved that the efforts in the reduction of emissions were taken too late and too little into account, facing the emerging changes of weather and climate (ibid, 12).

However, measures and regulations of the United Nations are not legally binding for its member states. Therefore, it can only be proposed as recommendations to countries to reduce their emissions. The legal power of implementing laws and binding quotas and regulations in order to reduce emissions have only the national governments.

Climate change is perceived as a global crisis and the anthropogenic nature of the current trends of change shows that we are living in a period of change. Climate change affects not only nature, but is also combined with a variety of social meanings that change too. It is not only about prediction, but implies also social responsibility, sustainability and the question how to deal with future generations. As Anthropology deals with the livelihood of different people and communities, we have to look at different places and circumstances and the lives of different people. Two key words are *geographical location* and *human experience*. These play a crucial role in defining the way how people are connected with nature and climate. The task for anthropologists is overall to work on the human impacts of climate change. Because of new realities of global connection coming from climate change, there are new theories in anthropology about locality, sociality and connectivity that show that climate change in the end potentially contributes to a refashioning of Anthropology itself (Adger 2010: 113).

When environmental conditions change due to climate change, many people will lose their access to place on a global scale. As a result, their cultures are diminished and endangered. The identity and belonging to the place of settlement, community, social and emotional support groups or place will be deeply shaped by the impacts of climate change (ibid, 113).

Hastrup (2013) argues that in the last 200 years there was a strong impact of humankind on nature with the emerging of intense industrialization and human activities in many parts of the globe. Although there were more than 10,000 – 12,000 years of agricultural development, it can be argued that over the last decades, human activities shape the nature and the climate more than ever. Through the exponentially growing world population and urbanization, the impacts of human environment are visible nearly everywhere. Through the last 200 years of intense industrialization, the global population grew exponentially. There is urbanization and human activity everywhere in the world and somehow it seems that everything has become part of a human environment. When nature rebels, the human environment is highly vulnerable and so climate change could also cause the end of humanity because there is no way to isolate the climate and its change from the human world (Hastrup 2013: 270).

Climate change is perceived as a global crisis. It affects not only nature, but is also combined with a variety of social meanings that change too. It is not only about ‘prediction’ but implies social responsibility, sustainability and the question how to deal with future generations as well (ibid, 269).

The problems for international investigations and negotiations on climate change lies in the circumstance that hazards alone do not necessarily create disasters. The emerging of disasters is dependent from the respective context in which the hazard occurs and these contexts are constantly changing in terms of natural resource exploitation, economic development stages, social processes, warfare, corruption, food prices, trade mechanisms and dependencies and the overall effects of globalization (O’Brien et. al. 2012: 17-18).

As the climate is extreme hybrid, we have to deal with it and try to live with respect to nature. That may sound unsophisticated and one cannot simply claim humans as destroyers of nature, but it is about recognizing the impacts of climate change on a social, political, cultural, natural, religious, local and global level.

Mumbai is, referring to the WHO, one of the worldwide most affected cities due to climate change because more than sixty percent of the land is reclaimed and the high population density of the city. When people are confronted with climatic catastrophes like in 2008, they seem to be quite helpless because neither politics nor important institutions are taking serious steps towards. The monsoon becomes stronger every year and many coastal parts of the city get flooded during this period. First and foremost, people in slums have to migrate or flee although in most of the cases they will not find a new home and live on the streets of the city. When they come back they can be lucky and find their homes undamaged, but in most cases they are

damaged. The problem is that slum-dwellers are considered as worthless by politics because they are representing lower classes and so they do not get any help from the state or people from other classes. Due to the rapidly increasing population of the city, a social, political and economic security for people living in slums is hardly possible. As a result of climate change and the constantly increasing temperature, there is a rapidly rise in sea level with the risk of flooding, especially in coastal areas, such as Ganesh Murthy Nagar. In the last ten years, the monsoon became rather unpredictable and was characterized by stronger and more intense rain masses, causing sea level rise within a very short time.

Having the Indian caste distinction and the emerge of changing weather conditions in mind, the research question of this paper is: What impacts has the emergence of climate change on weather perceptions and climate vulnerabilities of different population groups in Mumbai?

The interest for my ethnographic fieldwork in India comes along with a course in the winter term 2013 called ‘Anthropology of Climate Change’ which fostered my awareness of climate change and its diverse forms of impact on people, countries and nature. I then focused on climate change impacts on India and different forms of prevention. After an intense literature research, I decided to travel to India in order to conduct empirical research on climate change impacts. The entire research process took place within the period of August 2013 to May 2015.

On 28th of August 2013, I arrived in Mumbai and could start with the data collection and research. I stayed one month in Mumbai, so it was a relative short-term fieldwork. At large, I conducted four individual expert interviews, one group discussion and a quantitative survey. Therefore, the research is based on both qualitative and quantitative ground.

Besides that, I conducted a ten days ethnographic fieldwork in a slum called Ganesh Murthy Nagar in Colaba, the very south of Mumbai, where I undertook participant observation, informal conversations, a group discussion and data collection and analysis via note taking in a field diary. During the fieldwork, I asked 60 slum-dwellers (30 men and 30 women) to answer a questionnaire on climate change. After the participant observation in Ganesh Murthy Nagar, I had three days left to ask 60 other persons at Marine Drive, next to the slum, in order to compare the two different sets of results.

The data collection, evaluation and interpretation was distinguished by an ongoing transcription work, the continuous logging of all relevant research processes and findings, as well as the ongoing thematic and methodological research.

Summed up, I used a variety of methods in the research process: participant observation, informal conversation, notation of field notes, group discussion, literature research and expert interviews.

This paper is divided into three sections:

Part A provides an introduction to the topic, regarding its relevance and the personal interest of the author. Then a theoretical background of the research will be given in order to understand the theories used in the data interpretation. As this paper was written within the framework of the grounded theory, the whole research and writing procedure was embedded into a flexible framework. In order to understand the basic concepts and theories used for the empirical data presentation and interpretation, the two major disciplines, the Anthropology of Climate Change and the Anthropology of India are illustrated and explained. Still today, Indian society is very much based on the caste concept on all levels of life. In accordance to this, the caste theory will be explained and discussed as well. Part A will also examine the methods used in the research process and provide a detailed description of the different methodical approaches. Besides this, an intense reflection of the fieldwork in Ganesh Murthy Nagar, with the focus on the entering in the field, the author's role and performance as researcher and the way how he was perceived in the slum, will be provided.

In Part B the empirical outcomes of the research are shown. The three empirical categories 'perceptions', 'vulnerabilities' and 'impacts', based on the qualitative and quantitative data collection, evaluation and interpretation, are illustrated. The basic line in all three sections are the different forms and levels of perception, vulnerability and impact regarding to climate change, having in mind that the slum-dwellers are not only having a different perception of climate change, but face also more dangerous forms of climate impacts and vulnerabilities than people from middle and upper class systems.

A basic question in the research was whether there is a big difference of the vulnerabilities to and impacts of climate change between different social classes. In accordance to the research and the author's personal experience in the field, this question can be definitely answered with yes. The data evaluation shows that in terms of perception, vulnerability and impact, social groups in India are influenced very different by climate change.

People from Ganesh Murthy Nagar have a different perception of the concept weather and climate than people from middle and upper classes. The slum-dwellers did not know what climate change is about and most of them have not heard of the term climate change yet. The

reason for this is simple: there is a lack of general education and information about the topic. On the contrary, people not living in slums know what climate change is about, although it is not discussed a lot between them, as the media and government do not produce and communicate a much information to the public.

Many of Mumbai's slums are located next to the coast because they were former fishing villages, like Ganesh Murthy Nagar. As a result of globalization, industrialization, migration and overpopulation, most of the villages became slums over the last decades. The location to the sea makes these areas very vulnerable though because of flooding and sea level rise. The vulnerability of climate change impacts is best shown in the lack of adaptation strategies and the fact that in case of displacement, slum-dwellers will most probably live on the streets of Mumbai, because there is no local, national and global protection for them. Basically, everyone living in Mumbai is affected by climate change, because the location and the general lack of adaptation mechanisms cause a high grade of vulnerability. Nevertheless, the results of the empirical research have shown that people from middle- and upper classes are by far less affected by climate change than slum-dwellers.

To conclude, a closing discussion will be given in Part C, as well as policy recommendations for India and its future prospects to climate change, that are, unfortunately, rather scary. India needs to change its environmental policy strategies and adopt proper ways of energy use. The main problems, however, are the overpopulation of the country and the strong political and cultural separation of social classes. According to the interviews and fieldwork of this paper, a large part of Indian society is still perceived as a 'lower caste' and as a result, there are no climate safety mechanism available for them.

2. THEORETICAL BACKGROUND

Theory is important for every research standard. Without the theoretical framework, no form of research has an academic legitimation. This paper is based on the Grounded Theory, which is one of the most influential and popular modes of qualitative research. The main characteristic of this methodology is the use of qualitative materials and the analysis of it. The Grounded Theory is widely used when a researcher wants to generate theory, based on his/her data (Strauss/ Corbin 1997: vii).

Theory is necessary for many purposes. According to Glaser and Strauss (1998), the generation of Grounded Theory is a method to attain a theory. The different functions of theories in Social Science are to a large extent linked to each other. One of the main functions is to permit the prediction and explanation of behavioral processes. Furthermore, theories are important to support of theoretical progress in Sociology and related disciplines. Through theory, the empirical data becomes a logical meaning in enabling practical applications. That means the theoretical predictions and explanations can be used in practice to understand different situations and make them to a certain extent controllable. In addition to this, theory is entitled to make behavior apprehensible, in order to conduct a valuation of the data. The last function of theory then is to guide the study of particular areas of behavior (Glaser/ Strauss 1998: 13).

Grounded Theory is a strategy to deal with data during the research process in offering possibilities and conceptualize descriptions and explanations. In order to verify a theory, it should have a significant number of categories and hypothesis that must be clear and transparent enough to operationalize them by quantitative studies. Furthermore, the used theories must be understandable for the scientific community, but also for laypersons. The categories of the collected data must be comprehensible and applicable to the data.

Grounded Theory is the best understood as an ongoing research process in which theories are dependent from the data. In the research process and the data collection/interpretation, new theories can be adopted and implemented in order to generate a meaningful outcome of the research. This combination of empirical data and theory provide a scientific claim (Glaser/ Strauss 1998: 13).

Regarding this methodology, the used theories in this paper were chosen on basis of the collected and evaluated data of the ethnographic research in Mumbai. In the course of writing, new theories and key aspects might have been recognized as more important and useful than

others. As a result, the theories changed over the research process. Based on the flexibility and dynamics of the Grounded Theory, the final use of suitable theories was an ongoing and - according to my personal data interpretation – individual process.

In order to reflect the field experience in Ganesh Murthy Nagar, the strategy of an *artificial identity* that Abu-Lughud (1986) discussed in her research at a Bedouin society, becomes important and will be illustrated in the paper. It implicates that the anthropologist has to create a field-specific identity in the field in order to be accepted by its members.

When it comes to the relation between the slum-dwellers and their environment, the concept of the *Game Theory* (Haller 2002) is used. This theory has been further developed to the *Minimax Theory* (Lipton 1982), arguing that there are always winners and losers in the game nature vs. human.

The *Cultural Model Approach* (Paolisso 2003) is taken into account in terms of religious perceptions of nature and climate. Cultural models are based on the complexity of the world and the impossibility for people to understand it. As a result, they develop cultural modes, embedded into values, beliefs and religion, and try to understand different topics only within the framework of the specific cultural model. In Ganesh Murthy Nagar, people believed that the events of flooding are based on God's decisions because they cannot imagine what climate change is as they are not informed or enlightened about it.

According to the *Health Ecology Model* (McElroy 2013) the inclusion of local history, knowledge and experience of people is necessary in order to understand their decision-making processes.

The concept of *Tipping Points* (Nuttall 2012/ Skrimshire 2011) is from great importance when investigating the perceptions and impacts of climate change in Ganesh Murthy Nagar. Tipping points mean that at a specific point the climate collapses, creating catastrophes and there is no return, as soon as we reach a tipping point.

In terms of climate perceptions, the cultural connotation of the concept of *Fear* (Röttger-Rössler 2004) is used to conceptualize perceptions of climate change on an emotional and individual level.

The *Reference Group Theory* (Silverberg 1986) makes forms of mobility inside social classes and castes visible, arguing that individuals from different groups can define positive or negative reference groups, where in some, but not all, cases access is permit. In the slum, different

groups, based on education and the involvement of the fishing process, existed. Some slum-dwellers felt more connected with middle and upper class groups, what made some ambitions of social mobility between castes visible.

The ways in which we think about climate change have been shifting in terms of the increasing use of a vocabulary of forewarnings of imminent danger, hazards, crisis and risk. It is also argued that we live in a *climate of fear* (Nuttall 2012) about climate change, and are confronted everyday in the media and the public discourse with the words catastrophe, terror, danger and collapse (Nuttall 2012: 96).

According to Roncoli (2005) many researchers on climate change had argued that Anthropology deals with climate change and its 'unique' methods, such as ethnographic and participatory methods in order to descramble e.g. *cultural and cognitive landscapes* in which farmers have established their understanding of climate and its changing environment. Furthermore, Anthropology decodes the decision-making processes of farmers that forms their *adaptive strategies* (Roncoli 2006 in Crate 176: 2011).

The Anthropology of Climate Change

For many years, climate change has been based largely in archaeology and environmental anthropology. However, the voice of Social and Cultural Anthropology in this field is not being overheard anymore because there is an unprecedented sense of urgency and a new dimensional level of reflexivity what makes anthropologists work on a cross scale level and in an interdisciplinary research and practice. There is also a lot of anthropological literature on climate change, focusing on the social and cultural consequences for identities, mostly based on qualitative ethnographic fieldwork (Crate 2011: 176).

There is an increasing literature on the Anthropology of Climate Change and its engagement with the effects of climate change. However, the specific methods and its practical implementations remain unclear as the mixture of the different approaches and methods suffers from a lack of coordination and systematization (Crate 2011: 176).

The connection between local and global is normally analyzed by place-based community research on indigenous cultures where socio-cultural relationships are manifest in a web of reciprocities, obligations and assets. These methods are in most cases qualitative and based on ethnographic fieldwork and participant observation. Crate (2011) argues that it is important to

develop these ‘unique’ methods and learn the art and skill of effective collaboration. However, this approach can be understood as too sketchy as one cannot say that all anthropologists use only their ‘unique’ methods, not able to collaborate with other anthropologists or scientists. In this way it seems like that anthropologists work only with the indigenous peoples first and then all of a sudden they should be in the role of expert advisors in international efforts, like the UNESCO Water and Cultural Diversity Initiative (Crate 2011: 182).

However, it is important to work together and to have an interdisciplinary focus because in doing so, the best ideas and most efficient methods can come together and researchers can learn from each other.

Due to new realities of global connection coming from climate change, new theories in anthropology about locality, sociality and connectivity arose, that show that climate change in the end potentially contributes to a refashioning of anthropology itself.

Fact is that climate change is a very important issue and people all around the world are connected with the climate. There is no way to isolate climate from the human world and we have to learn to live with a hybrid climate although the distinction between climate patterns and weather events is not clear-cut, except in theory. So describing both patterns and anomalies is probably the most common way of configuring climate at any point in time, including the present (Hastrup 2013: 2).

As anthropology deals with the livelihood of different people, we have to look at different places and circumstances. Two key words are geographical location and human experience. These play a crucial role in defining the way how people are connected with nature and climate. The task for anthropologists is overall to work on the human impacts of climate change:

“One has to go even further to understand the human impacts of climate change. This challenge has yet to call forth the varied and vast panoply of social scientists needed to address issues that are actually far more complex than the changing climate itself. Historians, resource economists, geographers, anthropologists, and many others have roles to play in assessing the human impacts of climate change.” (Kennel 2012: 227)

As culture shapes values and there is a relationship between values and adaption choices, we can see tensions or discrepancies between rational adaptations by governments and planners and the individuals and communities. In the way in which climate change influences place and culture, it also changes directly traditional or established identities. Although it is a global scale problem the impacts are related to different cultures and for this reason it should not be

recognized from a traditional and ethnocentric worldview because that may contribute to antagonism or cognitive dissonance (Adger 2012: 114).

To cut a long story short, identity, place and culture are not easy to incorporate into public policy or communities. Economically rational adjustments cannot compensate the loss of public goods such as community and place. In this context, it is necessary to acknowledge the importance of cultural factors because if not, both adaptation and mitigation responses will not be effective because they matter to individuals and communities (Adger 2012: 116).

Climate change implicates also policy and science: most areas of public policy seek to promote societal goals through efficient policy mechanisms. The big question is how could policy incorporate culture more explicitly? First, one must recognize the explanatory power and the limitations of the methods of inquiry into culture. The primary method of cultural inquiry is based on ethnography and the immersion of the researcher in places. Secondly, cultural inquiry must be undertaken collaboratively with multiple stakeholders to understand the articulation of global processes in local contexts (Adger 2012: 115).

The Anthropology of India

As this paper is about climate change vulnerabilities and conceptions, based on fieldwork in India, the theory of the paper is not only embedded in the Anthropology of Climate Change, but also the Anthropology of India. At first, one should understand the roots of the modern Anthropology of India. There were three important events and circumstances in history that influenced the discipline:

Firstly, during British colonialism, many Western ethnographers conducted research on behalf of the British Empire. A lot of papers and ethnographic knowledge on different customs and castes and tribes were published since 1881.

Later on, ethnographers in the colonial service, such as John Herry Hutton (1885-1968) and Christoph von Fürer-Haimendorf (1909-1995), became lecturers at universities since ethnographic journals were distributed in Europe and the USA and Ethnology became a discipline at many Western universities.

Since the foundation of the Indian National Congress in 1885, many liberation movements against British control occurred. However, most anthropologists were involved in the British

control mechanisms and played an important role in the awareness of India for the West (Berger/ Heidemann 2013: 4).

While the work of some anthropologists like L.K.A. Iyer (1861-1937) or S.C. Roy (1871-1942) was strongly influenced by the British Empire, others such as Verrier Elwin, were rather critical about the British ruling in India. However, the Anthropology of India before the independence of the country should not be reduced only to ethnography for colonial purposes (ibid, 4).

Before Independence, the Anthropology of India was characterized as descriptive, encyclopaedic and contained many exotic prescriptions of India (ibid, 4).

After Independence in 1947, the Anthropology of India became an explicit academic discipline in India and gained a lot of interest in the Western Anthropology discourses. Western anthropologists at that time conducted extensively fieldwork in different regions, rural and urban territories, using the methods of thick description (Geertz 1973) while focusing on the areas of religion, politics, economy and social systems. Later on 'pan-Indian themes' (Berger/ Heidemann 2013: 5) such as caste system, untouchability and nationalism came up in the discipline (ibid, 5).

In contrast to the Anthropology of America, Africa or Oceania, the Anthropology of India was strongly based on old precolonial Sanskrit texts, using methods of Indology, archaeology and history. While North American and European anthropologists had a structuralist and ethno-sociological approach with the focus on ancient traditions, postcolonial schools argued that Indian society is based on the administrative system, established by British colonialism. Still today there are different approaches in the Anthropology of India and ethnographic research is very heterogeneous because most anthropologists conduct their research on Indian states or communities, having in mind that India itself consists of many particular localities what makes general anthropological theories about the whole country rather difficult (ibid, 5).

Before the Independence of 1947, the Anthropology of India was mainly focused on tribal societies.

'[...] India contains within its population people at various stages of civilization from the most primitive to the highly advanced, and of various racial ancestries from the Negrito to the Nordic. For thousands of years peoples belonging to highly varied cultures and racial types penetrated into this land, forcing the original inhabitants, and, possibly, some of the subsequent settlers, into the security of the forests and hinterland of the country. It

is these people, found all the way from north to south, and east to west, who form the tribal population.’ (Iyer/ Ratnam 1961: 43)

Besides the focus on matriarchy and Physical Anthropology, former anthropologists were overall interested in the process of modification – in the context of colonial influence of the British Empire, interactions and contacts between Indians and Western people, the social and economic effects of the emerging industry and village studies (Iyer/ Ratnam 1961: 70).

After the Independence, the focus was on Hinduism, caste-systems and textual traditions. Especially postcolonial scholars criticized the term ‘tribe’, arguing that, like the term caste, these were still colonial concepts and have nothing to do with Indian society as such. They argued that tribes are a political, sociological and administrative category, very different from the Hindu social systems though. Even nowadays anthropologists of India argue that the term ‘tribe’ is too superficial in an anthropological context because communities and groups in India are too heterogeneous in themselves (Berger/ Heidemann 2013: 6-7).

When talking about the Anthropology of India, it is also important to know what Indian Anthropology is and what distinctions can be perceived between the two disciplines. The Anthropology of India is the discourse on Indian society, culture and practices on an international level. Indian Anthropology refers to the institutionalized research and academics of anthropologists working in Indian universities and related contexts. As Indian anthropology was influenced by British Social Anthropology, American Cultural Anthropology and French Anthropology, there is the debate whether Indian Anthropology can exist on its own and establish an individual research style without the influence of Western Anthropology. Many scholars even argue that Anthropology itself is a Western discipline, based on the ideas, theories and methods of Western anthropologists (ibid, 9).

Arguing against this claim, Indian Anthropology developed its own research character. Indian anthropologists are often more emotional concerned and influenced by their research than anthropologists not coming from India. They focus rather on the areas of development, education, ecology, health, the meaning of Sanskrit texts and are mostly based in India because there are not many Indian anthropologists until today interested in conducting research outside of India (ibid, 10).

As the focus of this paper is the fieldwork and ethnographic research in Mumbai, the ethnographic works in and of Maharashtra shall be illustrated next.

A lot of ethnographic research in Maharashtra was focused on rural communities in villages, although most of the research took place in the western districts Pune, Satara and Kolhapur with Hindus as the main ethnographic group. Only some other ethnographies about Dalits, Adivasis or Muslims exists (Carter/ Desai 2013: 176).

Mumbai as the capital of the state Maharashtra and the biggest city in India is a very attractive place for anthropological research where, like in this paper, a lot of ethnographic fieldwork on urban slum-dwellers has been undertaken so far (ibid, 176).

Ethnographies of and in Mumbai are very diverse in their character because of its huge geographic expansion and its population of about 112 million people (Government of India 2011/ URL 4), including all different castes, communities, social classes and religions.

'By authorizing the name, the Indian state engages in a performance of sovereignty that also indexes a particular ethnohistorical imaginary of what 'India' is: an uncontestable place consisting of many names places. Or, rather simply: 'Unity in Diversity'.' (Carter/ Desai 2013: 189)

The Indian Caste System

In order to understand the social and cultural complexities of the people in Ganesh Murthy Nagar, it is important to discuss the caste theory in India. The forms of social stratification in India are based on caste, which is the most important social institution in India. There are different forms of castes in various societies, although the 2000 years ago established caste system of Hindus in India is the most stratified one. Although castes are officially not allowed anymore, the social practices of this system remained (Béteille 2002: 91).

'The English word 'caste' might mean either varna or jati. Varna refers to an ideal model, a plan or design of society whereas jati refers to the actual social groups with which people identify themselves and on whose basis they interact with each other.' (ibid, 91)

Varnas are divided into Brahman, Kshatriya, Vaishya and Shudra. These four caste groups developed 2000 years ago and were the basis of social stratification and authority. Yet nowadays there is no legal basis for this scheme anymore (ibid, 91)

Jatis do exist in an uncertain number and there is often an internal segmentation inside the groups. They are still important among most Indians although they differ from religion to religion (ibid, 91).

The varna system is very much embedded into Indian mythology. The self-understanding of Indian society is based on Vedas, four texts who are originating in ancient India and considered the oldest Sanskrit literature and the basis of Hinduism. Rg Veda is the oldest one and according to this veda, the distinction of four different castes, combined the varna system, was established in the origins of human being. All four castes were born in the time of Creation. Purusa, the Primeval Man is the creator of the four varnas: the Brahmana were born from his mouth, Kshatriya from his arms, Vaishya from his thighs and Shudra from his feet. This myth came into the Rg Veda in the time of the Aryan agrarian society 1000 – 600 B.C (Yamazaki 1997: 3).

The caste hierarchy of varna is the following:

1. Brahmana – priests and teachers of the Vedas
2. Kshatriya – politicians and people in military
3. Vaishya – herders, cultivators and merchants
4. Shudra – servants

All varnas, except the Shudras, were members of the Aryan society. The members of this society were called Dvijati and conceived as born twice: after the initiation ceremony into Vedic studies (upanayana) in their childhood they were ‘born’ a second time and became members of the religious sphere of Hinduism. The Shudras were completely excluded from this ritual and practice and as a result, they were seen as inferior people within Indian society and its forms of social stratification. However, there was also another group, the Candalas, or ‘untouchables’, who were the less respected caste and not even part of the varna caste system. They were excluded on all social, political, religious and cultural levels of ancient India and are considered to be ‘untouchable’ even today (ibid, 3).

The orthodox Brahmanas, mainly located in the upper-Ganga basin, set new rulings and interpretation for the four-varna system through the writing of the Dharmasutras, Hindi scriptures, issued between 600 and 300 B.B. They modified the basic principles in order to adopt them in a proper way to everyday practices and daily life, although the interpretations were rather general and in the end not specific enough for a concrete implementation.

However, the Dharmasutras diminished the status of the Shudras, the lowest cast in the varna-system in terms of setting the legal status of people from the Shudra caste. According to the Dharmasutras, Shudras are born to serve the Brahmanas, Kshatriyas and Vaishyas because they were not born from the arms, mouth or thighs of the Universal Soul Brahmanas, but from its feet what makes them inferior. Shudras received a small compensation for their services and needed to support their families. Therefore, they were responsible for their survival. However, most men coming from the Shudra caste had a master to serve. When the master fell into poverty, his Shudra needed to help him with the small amount of money he received for his service. On the other hand, the master also needed to take care for his 'slave', so to say¹ (ibid, 4).

Some Shudras had the privilege to become artisans because in principle they were authorized to fulfil this occupation. Yet this was dependent from the social class and political influence of the specific master they served. It is important to notion that this was the only situation where someone from a lower caste could reach some respect and reputation inside the caste (ibid, 4-5).

Nevertheless, Shudras were not part of religious life and the Veda ceremonies, which constitute the legitimization of the Varna caste system and Hinduism itself. According to the Gautama Dharmasutra Art. XII, 4-6, there were strict punishments for a Shudra participating in the ceremonies:

'If a sudra intentionally overhears the Veda chants, he shall have his ears filled with molten tin and dark-peg pigment. If a sudra dares to recite the chants himself, he will have his tongue cut out; and if he learns the chants by heart, his body shall be split in twain. (Gautama Dharmasutra Art. XII, 4-6 in: Yamazaki 1997: 5)

The relationship between varnas and jatis can be described as follows: within the varna castes there are many jatis who constitute different social, political and cultural groups. Jatis can - but do not have to - belong to a particular varna. If a particular jati claims to be part of a certain varna, it can be denied or accepted by the jatis already inside the varna. There are thousands of different jatis in India and they can be conceptualized as clans, communities, ethnic tribes etc. This illustrates the complexity of caste and class structures in India (Klass 1980: 90).

¹ In the literature all of the master-slave relations in the varna system are based on patriarchal norms. Women from the Shudra cast were mainly excluded from this kind of service.

In reality and daily life practices, varnas are the best understood as a group of castes that define the meta-level of social stratification in India. However, varnas do not have a specific formal organization, leadership or control over the different caste members. Not even the jatis, most of them based inside the varnas, do have such forms of organization. They are endogamous, highly undifferentiated and social stratifications are not visible for outsiders of the jatis and sometimes not even clear for its members because even one specific jati is, due to its different communities, a heterogeneous construct (ibid, 90-91).

In the 1970's there was the debate over 'caste vs. class' as these terms are often referred for social stratification. One needs to look more precisely on the two terms. Some argued that caste is the central principle of social stratification and Indian society. Class is more important in terms of economic inequalities and disputes. As a result, people from the same caste can be in different classes, although class itself is less important for identity formation than caste (Jodhka 2001: 37).

Class theorists did not rely too much on the caste system. For them castes were just part of the class hierarchy and the results of former feudal structures. Marxist theoreticians defined class in an objective and economic manner, while caste was understood as a socio-cultural phenomenon that has nothing to do with economy. Within this debate, it was about the distinction of caste and class. While caste was associated with a traditional culture concept and community, class was based inside the economy on an individual level (ibid, 37-38).

When dealing with the term caste one needs to involve the concept of community as well. Jatis can be defined externally regarding their relationships to other jati groups, and internally regarding different kinship and marriage relations. So jatis have been analyzed as a solidary unit with different kin groups inside the caste. This understanding of the jatis' social stratification comes near to the general understanding of community in different sciences. In social sciences, the concept of community was defined by collective action and has been conceptualized as caste or other cultural identities. Community in political science has been conceptualized on a larger scale though. Communities, such as Dalits or Muslims, have been understood as the main political actors although their internal organization and constitution has not been analyzed in a proper way until recently (ibid, 38).

Community is one of the most important features and systems in the sociological literature on India. Always if there is any form of collectivity of people due to their social identity or solidarity, they are conceptualized as a community in the literature. There are different forms

such as caste community, village community or religious community. All these forms have some common features.

They are recognized as modes of social organization that had a fundamental role in the pre-colonial Indian society. These groups are considered as 'natural' ones because group members are combined by history, language, territory and culture. Shared traditions, language and social norms are imparted and ensure through this inter-generational circulation the continuity of the community. Features of a community are continuity, cohesion, boundedness and shared traditions. The identity of a specific community ensures also the identity of its members. The most important feature of a community in that sense is that it determines the culture of its members and in Anthropology, culture is the bottom line of human beings and their interactions (Jodhka 2001: 33).

There is and always has been a distinction of the concepts of community and individuality. Social organizations of communities in India have always been characterized as the opposition of modern European society. The differences between the Indian community structure and the European concept of modern society was an important factor in the development of a European identity during the Enlightenment. While community is based on bonds of blood, territory, language and culture, society is the term used to point out that it is a collectivity with rather atomized and heterogeneous members (ibid, 34).

The origins of the caste concept lie in the Brahmanical legislation, introduced by the Brahminical Shastras, the Hindu lawgivers at that time. This legislation making has some tendencies of selfishness of course, because the Brahmanical Shastras were placed in the hierarchy above all other people of India (Bhattacharya 1995: 4).

From a European perspective, caste has most notably been described as an 'iron chain' that binds people from different social, political, cultural, economic and religious classes into one specific caste where exit strategies are impossible. In this context, caste has a strong submissive element. However, Indian scholars have not totally agreed with this perception of caste because they argued that it is true for lower classes, but higher classes have always been very willing to adopt caste structures because they can only benefit from it (ibid, 7).

The strong hierarchy between different castes leads to many social tensions inside society, over all between the members of lower castes and communities. While in the history of Western countries, social and political inequalities of individual has been combated on a large scale, in India, the caste system has been combated only by the lowest caste. However, as they were

vulnerable on all aspects of life, they had no change to become equal to others. Only by the Independence of India, they achieved more freedom rights with the emerging juristic freedom (Jodhka 2001: 101).

According to Bouglé (1971), caste is a complex system with component units that are the basis of social life in India and social stratification. Units are used for castes in his description:

'The spirit of caste unities . . . three tendencies, repulsion, hierarchy and hereditary specialization, and all three must be borne in mind if one wishes to give a complete definition of the caste system. We shall say that a society is subject to this system if it is divided into a large number of mutually opposed groups which are hereditarily specialized and hierarchically arranged – if, on principle, it tolerates neither the parvenu, nor miscegenation, nor a change of profession' (Bouglé 1971: 9 cited in: Klass 1980: 89)

The different concepts of caste have developed and changed a lot in the last years and there are many definitions and interpretations of the caste system today. Obviously social stratification nowadays looks different than in ancient India and many efforts have been undertaken in order to equalize Indian citizens.

Article 14, 15 and 16 in the Constitution of India from 2007 provide the protection of people from all classes a legal basis under the supreme law of India:

14. *The State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India.* (Art. 14 Constitution of India/ URL 3)

15. (1) *The State shall not discriminate against any citizen on grounds only of religion, race, caste, sex, place of birth or any of them.*

(2) *No citizen shall, on grounds only of religion, race, caste, sex, place of birth or any of them, be subject to any disability, liability, restriction or condition with regard to—*

(a) *access to shops, public restaurants, hotels and places of public entertainment; or*

(b) *the use of wells, tanks, bathing ghats, roads and places of public resort maintained wholly or partly out of State funds or dedicated to the use of the general public.* (Article 15 Constitution of India/ URL 3)

16. (1) *There shall be equality of opportunity for all citizens in matters relating to employment or appointment to any office under the State.* (Article 16 Constitution of India) (Article 16 Constitution of India/ URL 3)

According to this, Article 46 shall give the promotion of education and economic possibilities of scheduled castes a legal basis:

46. 'The State shall promote with special care the educational and economic interests of the weaker sections of the people, and, in particular, of the Scheduled Castes and the Scheduled Tribes, and shall protect them from social injustice and all forms of exploitation.' (Article 46 Constitution of India/ URL 3)

Yet it has to be said that the legal basis is not enough to set off the Indian caste system. Before the supreme law, all citizens of India are equal but there are still various cases where people belonging to different castes and classes have been treated unfair and people from higher castes usually obtain legal benefits.

Although the varna system is not embedded so deep into Indian society like 2000 years ago, in practice and reality people from lower castes are still considered to be less valuable and have to face threats of discrimination on a political, social, economic, religious, educational and cultural level.

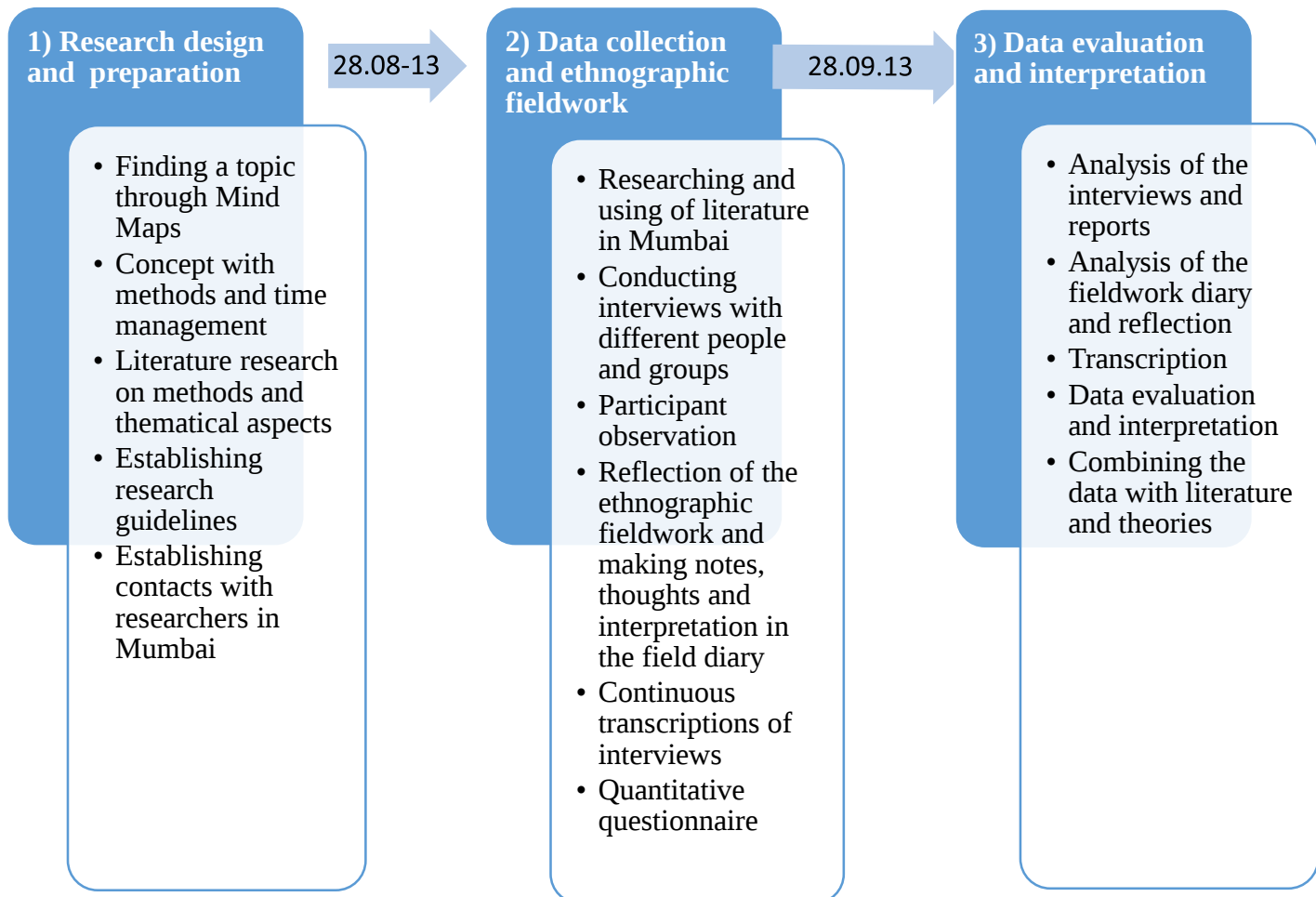
The data interpretation of the ethnographic fieldwork illustrated shows this forms of discrimination and exclusion regarding to climate change and environmental consciousness.

In the next section, the main methods of the research are discussed and illustrated.

3. METHODS

3.1 Overview of the research process

Three large steps are differentiated in this process as illustrated in the graphic below:



3.2 Research design and preparation

The first phase of the research design and conception lasted for about three weeks in August 2013. In this period, it was foremost crucial to specify the research topic and to undertake a first literate and internet research on climate change and its impacts on India, as well as on the Anthropology of India.

Preparation of the research in Vienna

Still in Vienna, I first had to find a concrete topic, what I did in using the concept of mind mapping. The next step was to provide a formal concept with the methods I wanted to use and to decide how long I had time to conduct the research in India. I did a lot of literature research at the Institute of Cultural- and Social Anthropology, the library of the University of Vienna and the library of Sociology and Political Science. The specific information about climate change in India and Mumbai I got from the Internet and later on in Mumbai. After this, I established some guidelines for my research where I focused on what thematic and theoretical aspects I wanted to deal with. In the course of the reflection period and the literature reading, I figured out that the Indian caste system seems to be the most important factor for analyzing Indian society and communities because the political, cultural and social hierarchy is pervasive in every aspect of Indian life. As a result, I decided to focus on how people from different castes are influenced by climate change in Mumbai. The main approach of the research was of qualitative nature. Therefore the key aspects of qualitative research designs have to be discussed.

Qualitative research itself is a hypothesis-generating process and has thus especially a strong exploration function, whereas quantitative and standardized research suffers from a lack of these features (Lamnek 2005: 21).

Characteristics of qualitative research are the spectrum of different methods that are located in the specific research designs, as well as the strong localization of everyday processes. Natural contexts are taken into account and the main objective is to analyze and interpret the perspectives of all stakeholders (Flick/ Kardoff/ Steinke 2010: 22).

At the beginning of the research, I lacked theoretical knowledge regarding the topic and in particular, how climate change affects different communities in India. Important is that I initially started the research from an etic point of view. In order to understand the interior field, the emic conception, I conducted four interviews with experts and one group discussion on that topic and did participant observation. Qualitative methods were very useful to understand the thematic field from the inside.

The open and context related research with few previous knowledge or concepts on climate change impacts on India helped to illustrate and explain the point of view of the involved actors

Qualitative research is based on openness and flexibility, but it is rather important to keep in mind its various quality criteria. Steinke (2010) lays down different main criteria for qualitative

research, which become concrete and modified regarding the specific research. These criteria are intersubjective traceability, indicators of the research process, empirical placement, limitation, coherence, relevance and reflected subjectivity (Steinke 2010: 323).

Summarized, it is about establishing traceability and verification for a wide audience of readers through the transparency of the research process, the individual role in the field and the relevance of the research. In doing so, it must become clear for the reader which questions are still not answered in the research process, where and what are the limits of the gained information and whether the used methods are suitable for the research interests and questions or not. In the course of this paper, all these aspects have been exerted and illustrated.

Literature research

In most standard books on research methods literature research is rarely described as a discrete method and remains on a large scale unappreciated. But it is a crucial aspect in the research process, especially at the beginning.

The research began both methodologically and thematically already at the initial conception of the research and was a continuous ongoing process. Within the research period I gathered new information and ideas or research approaches that I pursued. Initially, I read scientific surveys and books from the library of the Institute of Cultural- and Social Anthropology, the main library of the University of Vienna and the library of Political Science and Sociology. Besides this, I gained many information through the online database of the University of Vienna, e.g. e-journals or e-thesis of the university. In addition, I used the given literature from other courses I attended, especially ‘The Anthropology of Climate Change’ and ‘Die Anthropologie Indiens’. In Mumbai, I received additional literature suggestions that were important for the data interpretation afterwards.

The research of the thematic literature was though a bit difficult in the first stage because although I could find many inputs, I did not have a concrete concept yet. Only within the fieldwork in Mumbai, I was able to differentiate and classify the thematic literature interests.

Entering the field and classification of key actors

Before I came to Mumbai, I already contacted some local NGOs in advance, asking whether they are willing for an interview in September 2013. Three out of eight of the NGOs dealing with climate change answered me and two of them were available for an interview. However, when I arrived in Mumbai and contacted them again, they did not respond anymore. Therefore, I tried to identify some stakeholders in Mumbai working and researching on climate change. Most of them did unfortunately not reply which made the finding of interviewee and the entering in the thematic field a bit difficult at the beginning. Nevertheless, I could arrange four expert interviews with four stakeholders from different institutions.

3.3 Data collection and ethnographic fieldwork

Semi-structured interviews

The four interviews were mainly semi-structured. Semi-structured interviews are conducted in a mixture of expert interview and problem-centered interview. The problem-centered interview focuses on gaining and defining coherent illustrations and argumentations of the interviewed persons. In contrast to the narrative interview, there is no interview manual for an orientation of the interview (Weischer 2007: 273).

While there is no need to have a concrete thematic concept at the narrative interview, the researcher should have already some gained and previous knowledge about the thematic at the problem-centered interview. Nevertheless, the problem-centered interview helps to generate the concept (Lamnek 2005: 364). Problem-centered interviews therefore demand a general understanding of the researcher and, as a result, can be conducted only when the researcher has a general conception of the social and thematic field as certain perceptions always influence empirical surveys.

The expert interview is an open procedure as well and serves to foster and strengthen the self-presentation of the stakeholders through asking questions that motivate them to talk. Experts are stakeholders who understand in their function implicit and explicit systems of rules, structures and decision-making processes for the research relevant fields. They know the field and different field situations very well, although they do not necessarily need to be part of it (Liebold/ Trinczek 2009: 35).

According to Lamnek (2005) a problem-centered interview must have a sequence of different phases. In practice, however, this inflexibility of the problem-centered interview could lead to an artificial and uncomfortable conversation situation. Therefore, I provided a more flexible interview guide, adjusting to the specific person and situation. Especially at the interviews with official employees of a NGO, an association or university, it was important that one does not get only official statements of the interviewed person, but insights in the field and the organization and the different adaptation mechanisms developed to climate change. Although I made to all the interviewees clear that I will not publish the collected data as a book or use for official statements, at the beginning of the interviews, all of them answered with standard statements. Only in the course of the interviews, they spoke more open and honest about their experiences on climate change and the influences on different castes.

To stimulate the interviewed persons to talk, I started directly with a general and large held question ('Do you think there is climate change?') that inspired dissipated answers. The interviewees were thus stimulate to discuss and provide broader answers and information (Lamnek 2005: 365).

I tried to permit narrative elements and was as sensitive as possible to allow and form the interviews in a natural context. In all interviews, I had at the end some more concrete questions regarding the obtained information.

I conducted four qualitative expert interviews and a group discussion in the field. The interview partners for the expert interviews were:

- Ms. Kunti Oza, recognized expert on climate change, environmental activist and chairperson of the 'Clean Mumbai Foundation' (Clean Mumbai Foundation/ URL 2)
- Ms. Dr. Varsha Ayyar, professor at the Tata Institute of Social Sciences, Centre for Labour Studies, School of Management and Labour Studies and expert on caste, gender and labor in India (Tiss Faculty/ URL 7)
- Mr. Athul A. Sathe, Manager of Communications of the Bombay Natural History Society (BNHS/ URL 1)
- Ms. Dr. Puja Vijay Sukhija, Executive Director of the Organisation of Aware Saviours In Society (Oasis NGO/ URL 5)

Informal conversations

Informal conversations were the most important information gathered for the data collection from an anthropological view because I did not want only to verify hypothesis, but also describe the information given by the key actors and interpret it. As a result, I put my focus on the personal opinion of specific persons and tried to make the interview situation as comfortable as possible.

‘To understand an individual’s behaviour, we must know how he perceives the situation, the obstacles he believed he had to face, the alternatives he saw opening up to him. We cannot understand the effects of the range of possibilities, delinquent subcultures, social norms and other explanations of behaviour which are commonly invoked, unless we consider them from the actor’s point of view.’ (Gerring 2007: 64).

Group discussion

The group discussion allows to process data through the interaction of the group members whereas the thematic focuses of the discussion are set through the researcher (Lamnek 1998: 27).

The broadness of definitions can be best explained with the many possibilities of variation of group discussions. The common denominator though is mainly that there are several persons asked different questions they should answer. The group discussion is not a standardized oral survey method but has to be conducted under laboratory conditions (Lamnek 1998: 27).

Initially, there should be a basic stimulus for the discussion that is followed by a free and open discussion, where the interviewer can introduce some discussing points. At the end, a meta-discussion comes up which helps to evaluate the discussion itself (Weischer 2007: 277).

Advantages of this method is the intercommunication between the interviewed persons, allowing to make everyday practices and structures visible. From this group dynamic certain dominant samples of interpretation and analysis of problems emerge (Weischer 2007: 276).

Within my 10 days ethnographic fieldwork in the Ganesh Murthy Nagar slum, I used to have one group discussion that lasted for about two hours. This group setting was not planned, but formed itself out of an automatic situation. Hence, one cannot talk from laboratory conditions in this case. I asked a group of people if the weather is normal this year, when it started to rain

that day. As a result, a group discussion established out of this question. Anyway, the discussion was not only based on natural ground, as I intended with this question to initiate a certain interaction. Therefore, this was a pre-constructed group discussion (Hesse-Biber/ Leavy 2006: 199).

Advantages of personal interviews

One of the biggest advantages is flexibility. There is generally a high flexibility in the questioning process and the more flexible, the less structured is the interview. Therefore, the questions can be formed and established by the researcher and he/she has the opportunity to vary them in the context of the specific interview. Additional information and detail can lead to new spontaneous questions.

Furthermore, the interviewer can control of the interview situation. The interviewer has the possibility to guide the interview and can ask certain questions that subsequently lead to specific questions and answers.

In addition to this, there is usually a high response rate. Compared to the mail questionnaire, respondents are more likely to take time for a personal interview also because some people may not be able to read or write properly.

A last advantage is also the collection of supplementary information. This is an advantage because the researcher can collect additional information about the respondents in order to understand and interpret different answers in a proper way (Frankfort-Nachmias/ Nachmias 2008: 218).

Disadvantages of personal interviews

Nevertheless, there are also disadvantages, such as the higher costs. A mail questionnaire is much cheaper than the cost of personal interviews. In the case of my fieldwork it was primary the travel costs to India that made the research and interview process more expensive compared to a mail survey.

Besides this, one has to keep in mind the interviewer bias. The lack of standardization can make interviews vulnerable to the interviewer bias because if the interviewer cannot control his/her nonverbal communication, interviews lose their objectivity. But also other factors, such as

gender or ethnicity, can influence the interview situation and lead to misleading answers and questions.

Finally, and in practice often very important, the biggest disadvantage of personal interviews is the lack of anonymity. Contrary to mail surveys and mail questionnaires, the personal interview is not anonymous. Often the respondents are threatened or uncomfortable allowing the interviewer to know too much, such as names, telephone numbers or private addresses (Frankfort-Nachmias/ Nachmias 2008: 219).

Methods of data documentation

It is very important to make the methods of data documentation as transparent and reflective as possible. Documentation is in this context the saving of data of the fieldwork in documents, its preservation in scripts, pictures, movies, records and computers (Fischer 2003: 265).

Without a meaningful and structured approach of data documentation, most collected data cannot be used and interpreted in an efficient way.

Field diary, protocols of interviews and additional information

A field diary is very useful to make notes of thoughts and remarks during the fieldwork and interviews. It can help to identify links and interrelations of different aspects of the research. Often some specific details are forgotten if not written down as a note somewhere. Contents of the field diary can be contact details of the informants, thoughts about the research strategy or references referring to research outcomes (Girtler 2001: 133).

At three interviews, I got additional brochures and information material that I collected as additional information.

Quantitative data collection

In order to gain a quantitative approach I developed a quantitative survey: a simple questionnaire with fifteen questions about climate, climate change and Indian society.

Sixty questionnaires were distributed in Ganesh Murthy Nagar and sixty at Marine Drive, a popular promenade next to the Black Bay and only one kilometer away from Ganesh Murthy Nagar. The purpose of the two different locations and the strict distinction of the answers of respondents from Marine Drive and Ganesh Murthy Nagar, is to show the different assumptions on climate, climate change and Indian society and social systems between the two locations which implies a distinction between lower and higher Indian castes as well. So it was a classical way to show the difference between two means:

The aim of the quantitative survey was to test the null hypothesis (H_0) that Mumbai is affected by and very vulnerable to climate change. The null hypothesis has the character of a general assumption regarding the population's parameters (Madrigal 1998; 78).

The alternative hypothesis (H_1) says that for a specific sample in a specific group the parameter of this population is different from that of the null hypothesis (ibid, 78). The alternative hypothesis (H_1) claims that people in Ganesh Murthy Nagar are more affected and vulnerable to climate change than people asked at Marine Drive because of their lower caste and living conditions. The distinction between H_0 and H_1 is an important measure to distinguish between the larger context of Mumbai and the case study of Ganesh Murthy Nagar. In a first step

The hypotheses had a quantitative character because hypotheses must be clear, specific, testable with available methods and value-free (Frankfort-Nachmias 2008: 56-57).

Finally, in order to visualize the results of the data evaluation, I used pie charts. They are very useful to show the proportion of the variables in the total sample. As I worked with Excel and a lot of numbers and figures, pie charts, who show these kind of data the best, were a good way of visualization (Madrigal 1998: 27).

3.4 Data evaluation and interpretation

The third and final step then was to evaluate the collected data and preparing it for the transliteration. Of particular importance in this phase was the reflection of the fieldwork process, as well as the classification of thematic clusters.

Transcription

In a narrow sense, transcription is the graphical depiction of selected aspects of behavior of persons who take part in a conversation. This is necessary to produce out of a spoken conversation a written text who can serve permanently for scientific analyses (Kowal/ Connell 2010: 438).

I used the freeware program f4 and decided to use the transcription methods of Sabine Kowal and Daniel C. O'Connell where particularities of the recorded material are noted down, although not every variation is considered as such (ibid, 441).

To ensure a maximum of comparability I oriented on the guidelines for interview transcription of Ulrike Froschauer and Manfred Lueger (2003). These guidelines include line numbering, codification of interlocutors, exact notations of intervals (one point per second), non-verbal comments (in round brackets), conspicuous emphases (underlined) and stretched way of speaking (with space character between the letters).

These guidelines and 'rules' ensure an authentic written text of the conversation (Froschauer/ Lueger 2003: 223).

Interview evaluation

The evaluation of the interviews was conducted by an encoded procedure that generates different categories. With this approach, the evaluation categories were developed from the achieved material by the researcher, which is very useful for qualitative research (Schmidt 2010: 447).

Five specific steps must be undertaken in this procedure. First, the creation of categories, following a compilation of the categories to an evaluation manual. Then the interviews must be coded. After the coding, there has to be a quantification of the survey of collected information and material. The last step then is a deepening interpretation of the case (ibid; 448).

Especially the first three categories were important for the evaluation. First, I tried to find the convenient text passage and then designed a coding guideline. In the third step, I encoded all the written data collected. Thereupon I had already a good overview of the research results and a basis for the interpretation and analysis.

Evaluation of the field diary and the protocols

The evaluation of the field diary and the reflections of the fieldwork were also important, as this was the source containing all information of the research process, the implementation of the methods, the interviewing process and first reflections. I allocated the specific notations to different topics in order to find a basis of the topics and to ensure references between them. By doing so, I could classify the research process chronologically which made it easy to generate a chronology.

Scriptualization of the research process, reflection and results

According to Van Maanen (2010) there are three forms of text presentation: the realistic representation, the self-confessed description and the impressionistic description (Matt 2010: 584).

While the aim of the realistic representation is to produce an objective reality in written form and not taking into account the subjective opinion of the author, the self-confessed description is based on the authors personal writing style and focuses on the field experiences, reflection and personal perceptions. The main purpose is to describe the author's research as reflexive as possible and avoid objective findings. The impressionistic description is a writing style on the edge of academic writing where the author describes his/her experiences in the field with the elements of fantasy and impressionism (ibid, 584).

This paper is embedded in the first two forms: on the one hand different methods and theories are represented and analyzed in an objective manner, on the other hand a large amount of the thesis is based on my intersubjective ethnographic experience, fieldwork, data collection and interpretation.

The mixture of objective and subjective writing style is important to ensure an intersubjective traceability, which is a 'quality criteria' for qualitative research (Steinke 2010: 324).

The correct quotation and data documentation is another premise for an intersubjective traceability. All statements in this thesis must be verifiable for the readers what I ensured through the American citation-style, the Harvard system, where the source is integrated in the continuous text. The advantage here is that no footnotes are need because they often require a lot of space (Beer/ Fischer 2003: 122).

4. REFLECTION ON THE FIELDWORK

As the reflection of research and fieldwork methods makes the research process understandable for others, in this chapter the experiences and interpretations of the fieldwork are demonstrated.

Entering the field

When arriving in Mumbai on 28th of September 2013 I used to stay in a small guesthouse in Colaba, the most southern part of the city. The location was ideal because it was located next to a former fishing village that transformed to a slum over the last decades. The slum is called Ganesh Murthy Nagar and next to the Colaba Shopping Street and the Taj Mahal Hotel on the coast.

After the conducted expert interviews, I decided to do ethnographic fieldwork in Ganesh Murthy Nagar. It is difficult to estimate the number of inhabitants in the slum because the dark figure is rather high and a proper population census is very difficult due to the high immigration and mobility rate in Mumbai. However, according to the information collected during the interviews, I guess there live around 3000 people in the slum.

To get a deep view inside the case group I had to practice participant observation in order to become integrated in the field. Furthermore, I needed to observe everyday practices and the intercourse with the weather and climate.

It was very important to gain access to the field to conduct the fieldwork in the Ganesh Murthy Nagar slum. According to Gerring *'the product of a good case study is insight, and insight is the unknown quantity which has eluded students of scientific methods. That is why the really great men of sociology had no method. They had a method; it was the search for insight. They went by guess and by God, but they found out things.'* (Gerring 2007: 7)

The first time I entered the slum, everybody looked at me and some people even stopped their activities, like playing cards or repairing the boats, in order to observe me. After one hour of walking around, I asked a young woman whether she speaks English and I was lucky because she responded in quite good English and asked me immediately what I am doing in this area. When I explained to her that I am an anthropologist and want to conduct research on climate change impacts on Mumbai, I got the feeling that she was very interested and even amazed by

the fact that someone not coming from India is interested in doing research in this slum. Before I could explain her that I wanted to make some first impressions of Mumbai's various coastal zones, she told me that her name is Shubra and took me to her family's house.

When arriving at the house, she asked me to take a seat and offered me cay tea. Inside the small hut there were nine persons: her mum, her dad, her grandmother, three brothers of her and three more friends. Everyone looked at me and talked in Hindi with each other, what I neither understand nor speak. After around one minute - that seemed to be the longest minute of my entire life - the father asked me something in Hindi and Shubra translated it. He wanted to know where I come from, who is my 'sending organization', what I want to do in their village and if I were married. I answered all the questions in an accurate way and asked then directly if they want to tell me a bit about the weather this year and what living next to the coast means for them. The father said that I should come back the next day in the morning because his wife is cooking and it is time for dinner.

In order to show the dialectic of the process of entering a field in anthropology, a comparison of my research with that of the former anthropologists Renee Hirschon (1989) and Abu-Lughod (1986) might be useful.

Renee Hirschon is an anthropologist who conducted ethnographic fieldwork in 1989 in a community between Athens and Piraeus in Greece. Her attempt was to generate a full and detailed description and analysis of a specific community in Greece and therefore living within the community seemed to be crucial for her fieldwork. She had some difficulties in finding a room and said that this process crystallized the rules of her fieldwork and being accepted and getting information:

„When I first attempted to rent a room ... I was taken around and introduced by a well-known, elderly resident, Eliso. Even so, I was refused by several families who gave feeble excuses. Later Eliso explained apologetically that people couldn't be sure, since I was a foreigner whether I was 'a good girl'. This was my first indication that real acceptance would mean conformity to their notions of good conduct and that this would determine the degree of trust I would have with local families in the area.” (Hirschon 1989: vii)

When I entered the field, I had the same feelings at the beginning.

If an anthropologist wants to conduct research in a community, he/she needs to have often access to a single family in order to become more accepted from other families and community members, like I had.

I want to focus here on Abu-Lughod (1986) and her access to a Bedouin household. Her ethnographic fieldwork began in 1978 when she arrived in Cairo:

„ ... and awaited my father's arrival. Here the reader might pause. I suspect that few, if any, fathers of anthropologists accompany them to the field to make their initial contacts. But my father had insisted that he had something to do in Egypt and might just as well plan his trip to coincide with mine. I had accepted his offer only reluctantly, glad to have the company but also a bit embarrassed by the idea.” (Abu-Lughod 1986: 11)

It gets clear that her father helped her to create the access to the field. Abu Lughod describes it as follows:

„Only after living with the Bedouin for a long time did I begin to comprehend some of what had underlain my father's quiet but firm insistence. As an Arab, although by no means a Bedouin, he knew his own culture and society well enough to know that a young, unmarried woman travelling alone on uncertain business was an anomaly. She would be suspect and would have a hard time persuading people of her respectability.” (ibid, 11)

Due to her father's position and his probably good arts of persuasion, he could convince a leader of the Bedouin community that his daughter would not interfere with the family or harm them if she would live with them. I guess in my fieldwork, Shubra convinced her father and family that I should be accepted.

Performing in the field

The next day I came back to the family and with the translating skills of Shubra, I asked them general questions about the weather and the monsoon this year. It was important for me to understand the climatic impacts on the villagers of Ganesh Murthy Nagar, and what kind of adaptation strategies they developed over the years. In this context, it has to be said that I conducted my fieldwork in September where usually the monsoon period is nearly over and the rainfalls are not that heavy anymore. Nevertheless, I saw many empty houses at the coast and asked if somebody lived inside. I got the answer that two months ago they were flooded by water and the homeowners had to migrate to the North of Mumbai, probably to the Dharavi slum, that is said to be one of the biggest slums in Asia.

On my second day in the field, I was able to gather many information about climate and climate change because the family I talked to was very helpful and gave me rather informative

information. According to my conversations, the monsoon became more intensive in the last few years with a higher number of flooding.

Shubra was my gatekeeper in the field because she translated all the conversations from English to Hindi and reversed, as she managed to go at least for eight years to school and gained some basic knowledge of English. After the two hours conversation, the father asked me again if I want to come the next day at 7 pm in order to have dinner with them. I agreed and returned the next day to the family in Ganesh Murthy Nagar.

On the third day in the field, I talked the whole evening about the weather, the rain, the monsoon, the fishing village and their memories and experiences with it. This time seven more residents of the slum joined the conversation and two of them could speak rather good English, which made the conversation mode more easy and flexible and established a bit of transparency. However, I could not record the conversations because my informants told me that they would not feel comfortable with it. For that reason I used my field diary to note the most important information down. In order to have a certain amount of structure in the conversations I used the following questions as an interview guideline:

- What is your name?
- How old are you?
- Where are you from?
- Since when do you live here?
- What changed during the time you were living here?
- Is the weather normal this year?
- Did the weather change over the last years?
- How many people live here?
- Is this a slum?
- If this place would be flooded, could you go somewhere else?
- What do you think about Indian society?

The field diary helped me to maintain certain impressions and memories in making notes all the time. According to Beaud and Weber (1998) the main function of the field diary is to transform social memories into ethnographic memories because of safeguard measures to maintain information from the field which could become isolated from the memory in a written form. Therefore, the field diary has the function of an aide memoire for the researcher (Beaud/ Weber 1998: 2-3).

After this evening, the family proposed me to come more often to Ganesh Murthy Nagar and Shubra and her younger brother Leyle offered to show me around their village. I accepted this offer immediately and arranged a 'tour' the following day.

The first entry into the field went well and was easier than I expected. It became clear that the access to the ethnographic field was assured due to the interaction and willingness of the people to give me information. For this reason I decided not to go to other slums to conduct interviews, informal conversations or participant observation anymore, because it was more efficient to invest my time in the field research of the inhabitants of Ganesh Murthy Nagar and the most difficult phase, gaining access to the field, was achieved.

According to Gobo (2008), the access to the empirical field is often very difficult, and sometimes even the most challenging part of the research because there has to be cooperation of the people in the field. As not everyone in every field shows an interest in cooperation with the researcher, many organizations and groups are not available for research anymore. When a researcher was able to enter a field, he/she must take great efforts in order to maintain the trust of the field participants (Gobo 2008: 118).

The main objective of the fieldwork in the slum was to conduct participant observation to observe everyday practices and interactions. I needed to understand the field very well and find mechanisms and strategies in order to become more integrated into the field, because the more I was involved in everyday practices, the more I could understand them. The more people I talked to, the more information I got about climate change and its impacts on the slum inhabitants. Another important research question was how and if weather and climate are being discussed in the field and what meanings these topics have for the people in Ganesh Murthy Nagar. On account of this, I had to observe as much as possible and try to understand different arguments to assure to a certain degree a reflection of reality.

The primarily goal of the ethnographic fieldwork was not to classify hypothesis and verify them through interviews and conversations, but more to describe the information and content gathered in the whole fieldwork. Hence, the personal opinion of different individuals was a crucial element in the attempt to reflect, to a certain degree, the reality of the field. As a result, I put my focus on the personal opinion of different people and tried to make interview situations as comfortable as possible.

According to Gerring (2007), the individual and personal view of the field participants is rather important. But the researcher should not forget that the gathered information is always based on the individual perception of the individual (Gerring 2007: 64).

The intensive access to the field was a crucial factor for the success of the fieldwork. Therefore, I used to come every day to the Ganesh Murthy Nagar slum for the next week. My guesthouse was only a five minutes walking distance from the field, so it was very convenient to go there. Every day I arrived at seven in the morning and observed the fishing men and the women in their domestic activities such as preparing food, taking care of the children and cleaning the cabins. Within this week, I felt more and more integrated in the field because I got to know the people there and they became less curious about my presence in the slum. In the first two days, everybody stared at me in a quite uncomfortable and intrusive way. As soon as the slum-dwellers knew who I am and what was the purpose of my presence, they were less prying.

The position in the field

I always kept in mind that I would never be an integrated part of the field and community because I am not Indian, I do not speak Hindi and I am not part of a family in Ganesh Murthy Nagar. However, in the course of my fieldwork I sometimes wished to be a family member of one of the families in the field. It would have been much easier to describe a field one is part of, instead of describing a field one will, because of ethnical, cultural, social and political reasons, never be completely integrated.

Afterwards, I can conclude that I was part of the field, although having the position of the white European researcher – the position of an accepted outsider. I felt accepted in the field, but I could not determine if this was really the case when it comes to everyday practices. The most crucial distinction between me and the people in the field was the language because I do not speak Hindi and nearly all slum inhabitants spoke Hindi. Due to a lack of school education and the high illiteracy rate, most of the residents did not speak English, which made it sometimes difficult to have conversations with them. As a result, I was very dependent from my gatekeepers, and especially Shubra, who had the role of a translator in the field research. For this reason, there was a distance between me and the informants.

I was told by many people in the slum that I was the first person asking them about climate change and the weather, and generally the first person from outside who was interested in their

lives. Being the first person asking specific questions about their vulnerabilities and adapting methods to climate and climate change brought me into a special role in the field. After some days many residents, and especially children, greeted me when they saw me. I assume my presence was an issue of discussion in Ganesh Murthy Nagar. Within the whole fieldwork of ten days everybody smiled at me, what implies that I was not put on negative or 'dangerous' spot in their discussions about me.

According my position in the field, I had a double identity and played a double-cross so to say. On the one hand, I was the interested researcher from Austria, conducting important research for the welfare of the slum and its residents, on the other hand, I was the critical anthropologist, collecting and interpreting data from the field. I created a - I would say 'field-identity' - in pretending different topics to be more relevant and interesting than I really did. However, to have this double identity is an important strategy to maintain the access and relationship to the field and interpret the data afterwards.

According to Wengle (1988), fieldworkers are not '*social chameleons*' (Wengle 1988: 160) in the sense that they cannot understand the native's point of view *per se*, but with a certain degree of empathy and secondary identification anthropologists are able to identify themselves to some level with the field participants (ibid, 160).

Non-Going Native

During my fieldwork, I began to observe things differently and tried to understand the feelings of the slum residents. Things that used to be strange or new for me became more and more familiar with the time and I had the feeling of being at the beginning of an assimilation process. However, when coming back to Austria I realized immediately that my field was a microcosm and my natural living conditions and everyday practices are completely different to those in India.

All together I was for ten days in the field, which is not very long. Nevertheless, the ethnographic fieldwork in Ganesh Murthy Nagar was very intense for me as levels of interaction in India were completely different to those in Austria. Often I had to dissimulate me to maintain my accepted status in the field.

The concept of 'going native' is criticized by many anthropologists and researchers nowadays because in some cases the anthropologist cannot live in the field and in many cases the

anthropologist cannot become a part of the field because of his/her internalized culture and habitus. However, Delamont (2002) argues that in the process of going native the cultural, political and social perspectives of a researcher can shape in the course of their identification with the field (Delamont 2002: 37).

The fieldwork of anthropologists is part of their lives and influences or changes the personal development in many ways. Sometimes one anthropologist must change his/her lifestyle completely in the field in order to survive on a psychological and social level (Kutzschebach 1982: 52).

The field can be so different from the individual socialization of the researcher in political, cultural, social, religious and economic terms that it breaks through the limits of a researcher's psychological and physical capacity. To prevent one from this experience, a continuous reflection of the research in writing down experiences and impressions in a field diary is necessary. The personal notes are different from the methodological demands in the field. If one does not reflect its own fieldwork and the notes in the field diary, tensions with an intersubjective character can arise. Therefore time to reflect the events within the fieldwork is needed to soften the social ballast emerged from the different experiences in the field (ibid, 55-56).

I reflected the fieldwork and the experiences in the field every evening in the guesthouse I stayed. I was very happy to be alone in the room in order to make notes, listen to music and relax. This was a mechanism of differentiation from the field because I knew that my identity in the field is not the same as outside.

Malinowski, the 'founding father' of Anthropology, said in his first research period that fieldwork can only then be unprejudiced when the researcher lives in the field and his/her place of residence is the field during the entire fieldwork. Only when living together with the villagers the anthropologist can understand the routine in their everyday lives and the rituals, ceremonials and forms of interaction and business (Malinowski 2001: 42).

According to Malinowski, it is a crucial element of fieldwork to focus on the 'normal' and the 'typical' of social interactions in the field. If an anthropologist is aware of everyday practices, he/she can recognize divergence easier (ibid, 45).

This prototype of Malinowski's fieldwork suggests that the results of fieldwork can only then be a reflection of field reality, if the anthropologist lives in the field to understand the 'normal' and 'typical' settings of the field. However, it has to be said that living in the field is no

implicitness. In contrast: living in the field is very difficult and the access and acceptance in the field depend from various factors such as gender, age, ethnicity, language, education, religion and political, social, cultural positions. One should not forget that gaining access to the field can be very difficult and is sometimes even impossible.

It can be determined clearly that there is often a certain connection between the field that has to be explored and the anthropologist in order that the field can become the residence of the researcher. If this connection is made, the anthropologist must maintain his/her role as researcher and get a second identity. On the one hand, the researcher is the researcher *per se* and on the other hand he/she is then a part of the field and will be re-socialized and perceived by the field. The perception of the people in the field does not always need to be identical with the own perception of the researcher:

„The other consequence of my introduction to the community as my father's daughter was that I was assigned and took on the role of an adoptive daughter. My protection restriction was an entailment of this relationship, but so was my participation in the household, my identification with the kin group, and the process by which I learned about the culture, a sort of socialization to the role. Although I never completely lost my status as a guest in their household, my role as daughter gradually superseded it.”
(Abu-Lughod 1986: 15)

As mentioned above, I created a sort of second identity in the field. Anthropologists perform inside the field always in a dialectic of proximity and distance, participation and observation, and activity and reciprocity. This dialectic organizes the social acting of anthropologists (Dammann 1991: 44).

In a very critical sense, I am sure that in many cases an anthropologist can never become part of the field if he/she was not born inside. Therefore, it was not necessary for me to live in the Ganesh Murthy Nagar slum.

Conceptualizing the village

Malinowski was convinced that the village is the prototype of an ethnographic field. The main achievement in ethnographic fieldwork is to understand the field as good as possible. However, this position was criticized a lot over the years because many anthropologist argue that the village itself is not an isolated and autonomous unity, but always a part of society and has to be understood in a wider context within social, cultural, religious and economic areas. The

classical village has to be conceptualized as a small unity in a more complex entity. In an inductive approach, it is possible to make ethnographic links from the village to a more complex locality, such as other villages, districts, cities and even countries (Ellen 1984: 67).

For me the conduction of ethnographic fieldwork was necessary to understand climate change in a more complex dimension. Classical fieldwork, as proposed by Bronislaw Malinowski or Margaret Mead, was not able to explain bigger complexes and phenomena. Only within the years, anthropologists began to focus on topics in a wider context, having the importance of ethnographic fieldwork and case studies in mind though.

To conclude, the main purpose of ethnographic fieldwork in Ganesh Murthy Nagar was on the one hand to provide a specific case study, and on the other hand to ensure the anthropological demand of this paper.

If an anthropologist wants to conduct research in a village, it is necessary to collect information some months in advance of the field. An extensive knowledge of the people, the different places, the language, institutions and values of the field are important to understand the mechanisms inside the village. When these factors are met, the researcher has normally a high acceptance in the village and can build up strong relationships with the members of the field. Although it must be considered that the learning of a language is a very complex and time intense process and often anthropologists do not have the time usually required to learn a language in order to communicate with its speakers. Another factor that influences fieldwork are the interpersonal relationships and the sympathy/empathy with the people in the field. If an anthropologist is not accepted in the field, there are often personal reasons and forms of interpersonal in/exclusion the main cause behind this (Ellen 1984: 241).

Thus, life in the village is for many anthropologists very difficult because the physical residence in the village itself does not mean that one “lives” in the village. Living in a village is often more a general acceptance of the residents to learn from the anthropologist and to let him/her being involved in their lives, the public or private nature (ibid, 242).

Being the stranger

During my ethnographic fieldwork, I had the feeling that one is never completely involved in the field, the community and the field as long as having the role of the researcher. Abu-Lughod argued that she never really lost her role as a ‘guest’ in the field, and neither did I. I never had

the feeling to become part of the field and the community, although my research was very intense. I assume that being an Austrian anthropologist in Mumbai also meant that it was clear from the beginning on that I could not become part of the field, due to my ethnicity and the fact that the relationship between observer and observed person becomes often critical. People in the field often want to show a certain picture to the anthropologist that can create artificial situations. Regarding to different point of views relating politics, religion, gender-relations, culture, economy and kinship, I invented an 'artificial identity' for the outside appearance in the field, in order to become integrated easier when adjusting my socialization to the socialization processes of the field.

I think it is important to notice that she would not have been accepted and tolerated without her father in the Bedouin community because of her sexuality or gender. I would not have been accepted in the Ganesh Murthy Nagar slum as well, if I had not had the help of my gatekeeper Shubra and her family. Because of these social ties, I was relative accepted in the field.

The outcome of the fieldwork with the field observations, the results of the qualitative interviews and the quantitative survey will be discussed in the following Part B – Empirical Data Presentation and Interpretation.

PART B – EMPIRICAL DATA

PRESENTATION AND INTERPRETATION

Now the empirical outcome of the research is illustrated. The purpose of this chapter is to provide an analysis of the ethnographic fieldwork in the Ganesh Murthy Nagar slum, including the different forms of perceptions and impacts of climate change in Mumbai. Based on the qualitative and quantitative research it became clear that people from different castes and class configurations are facing different vulnerabilities, what makes the discrepancies between the people of Mumbai and India visible.

5. PERCEPTIONS

In this section I will deal with the people's perception of climate change, its effects and weather in general, based on the ethnographic fieldwork, qualitative interviews and the quantitative survey. The bottom line for an anthropological analysis and discussion is to understand different individuals and groups and their conception of social, cultural, political, religious, economic and ecological norms.

'I suggest that a focus on anticipation and anticipatory knowledge may help bring greater clarity to understanding how people think about the world around them and the changes they notice and are affected by, how they engage with the world and move around in it, how they think ahead and imagine the future, and how they create and enact change within a world that is also undergoing a constant process of remaking and reshaping' (Nuttall 2012: 102).

In order to understand and investigate the different perceptions of climate change in the field, I needed to talk with the involved people. As noticed some decades ago by Hannah Arendt (1970, 1972) and Jürgen Habermas (1984), talking and communication between people allows the emergence of important things such as information and ideas exchange, establishing human contacts and building communities (Norgaard 2011: 97).

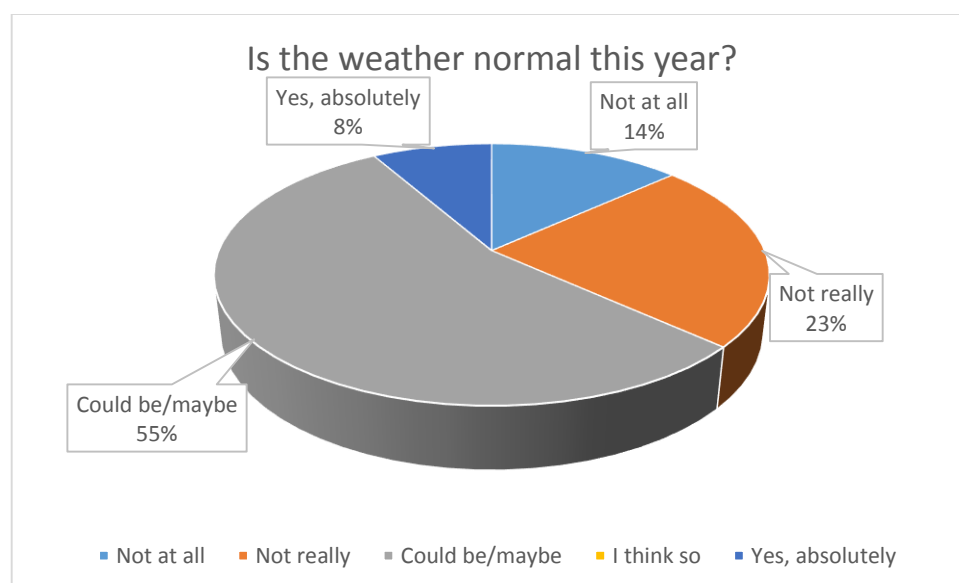
Through conversations, people can understand their relationship to larger contexts and develop specific conversation norms, where cultural practices play an important role. Conversation norms are revealing insights into social and private life of people, but also to the relationship of political economy and interpersonal interaction (ibid, 98).

When I was talking with the slum-dwellers, I could explain them what climate change is about, how it will affect them and what causes they are already facing with. As a result, they could identify themselves in a proper way within the global context of environmental policy and the climate change discourse.

Preliminary it can be said that the perceptions of climate change and its effects were rather different between castes due to education, different forms of vulnerability and the different effects of climate change discourses on people and castes. A detailed prescription will be illustrated next.

5.1 Perception of climate change in slums

According to the evaluation of the questionnaire in Ganesh Murthy Nagar, most interviewed persons were not sure whether the weather was ‘normal’ in 2013. With ‘normal’ is meant that there were no extreme weather events, floods, droughts or unusual heavy rainfalls. The majority answered the question ‘Is the weather normal this year’ with maybe/could be (55%), which shows that there is an uncertainty about perceptions of weather and its changing character. 23% answered the question with ‘not really’. When I asked during the survey and ethnographic fieldwork the people of Ganesh Murthy Nagar about the constant of the weather, they said that since the last decade the weather became less predictable and they do not feel safe to climatic factors:



However, in the group discussion they told me that the weather was normal this year:

'Yes, it is a normal rainy. In summer is raining season and in winter is cool' (Group discussion; 17.09.2013).

The reason might be that since the flooding of 2005, there were only smaller impacts of flooding in Mumbai - until 2014, one year after this fieldwork, when new floods took place in the city.

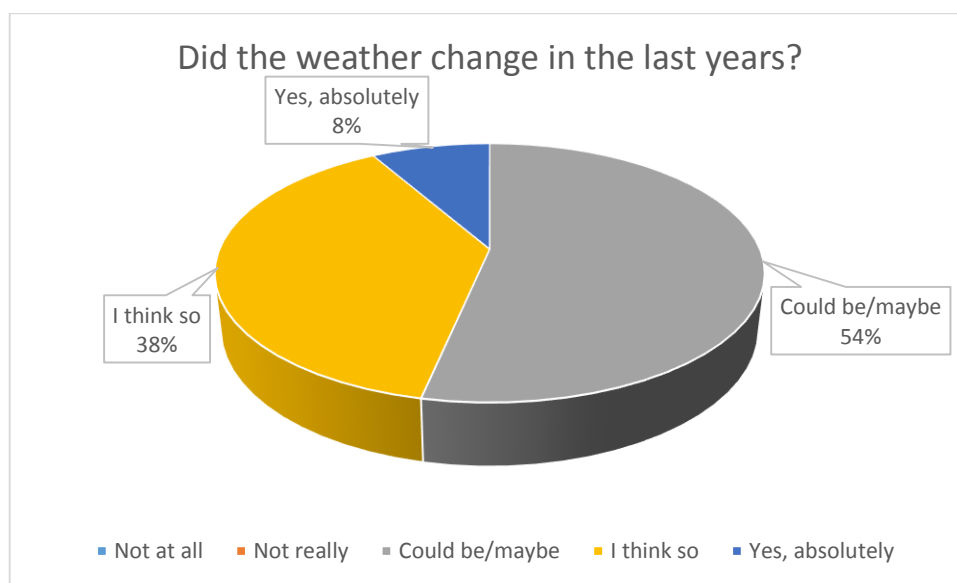
Therefore, people might use to think that the flooding in 2005 was an individual case and has nothing to do with climate change.

There were also not many social, cultural and political spaces where the topic of climate change was important enough to be considered for any discussion.

However, the case group could memorize the flooding very well when I asked them if there was ever a flooding in their 'village':

'Once it had happen. It a l l took water inside' (Group discussion; 17.09.2013).

However, according to the questionnaire, the perception in the slum went more in the direction that there was a change or at least nobody negated it:



Village or slum?

The inhabitants of Ganesh Murthy Nagar are rather conscious about changes of weather, but not of climate change itself because they are not informed about the concept and the effects of climate change.

Many people in Ganesh Murthy Nagar said they are very much connected with nature and their surroundings because they live in a fishing village and before the industrialization process and the strong migration to the city, there were only fishermen in the south of Mumbai. Their existence was based on fishing and they were highly dependent from the sea and its resources.

'A number of majority here are fishermen in this area. They sell fish and then they get money for that' (Group discussion; 17.09.2013).

Most of the informants felt very much connected to the sea and the different modes of fishing. They considered themselves as a fishing community. But although there were some hundred of men fishing every day on the coast, the majority of Ganesh Murthy Nagar's population was not involved in fishing or the distribution process of selling fishes.

The fishermen told me that they have a strong connection to the sea and nature. They also said there are many risks when living next to the sea, but they know how to deal with it. They definitely knew how to perform in terms of natural realities and circumstances.

According to the game theory, Lipton (1982) developed the minimax theory arguing that people play against nature and in order to win, they must find ways to ensure the highest degree of safety against nature. Game theory implicates that two actors play against each other, but as nature is no actor itself, the term is better understood as the natural basic conditions people live in (Haller 2002: 54-55).

Having this theory in mind, the perception of nature of the slum-dwellers was very much embedded into the performance and adaption to the basic conditions of nature – the sea gave many men the opportunity for fishing and bringing the fish home to their families. Therefore, they were the 'winners' of the game. In terms of flooding and other risks such as the decrease of fishing, the people of Ganesh Murthy Nagar were the losers though.

In fact, on some parts Ganesh Murthy Nagar did appear more to be a fishing village to me and not simply a slum community located next to the coast. Nevertheless, it is officially defined as a slum. However, people did not want to say this to me. Most probably because they felt ashamed in front of me.

When I asked in the group discussion if this was a slum, they negated it and even denied their status of being part of a lower social class.

'It is not a slum' (Group discussion; 17.09.2013).

'Here there are slums but not t o o much. Here all middle-class people stay' (Group discussion; 17.09.2013).

However, due to the poor living conditions and the lack of sanitary facilities it is a slum, also mentioned in the expert interviews:

People in Ganesh Murthy Nagar lived there for thousands of years. Whether people like it or not - those old fisherman villages became slums (Interview Varsha Ayyar; 170-171).

'The fisherman villages are now all a slum. Do you see? The surrounding and community living there.. it is very much slum' (Interview Kunti Oza; 167-168).

In fact, although now being a slum, many parts of social, cultural and economic interactions and conditions in Ganesh Murthy Nagar had the features of a fishing village. This made the contextualization of the field very interesting and more complex because on the one hand it had the features of a slum, on the other hand - especially regarding the hundreds of men fishing in the sea every day – those of a fishing village.

Religious explanations of weather

The fascination about the weather and the spiritual and religious influences on its description have a long history. One of the earliest scholars discussing weather events and conditions was René Descartes:

'Although the clouds are hardly any higher than the summits of some mountains . . . nevertheless, because we must turn our eyes toward the sky to look at them, we fancy them to be so high that poets and painters even fashion them into God's throne, and picture Him there, using His own hands to open and close the doors of the winds, to sprinkle the dew upon the flowers, and to hurl the lightening against the rocks. This leads me to the hope that if I here explain the nature of clouds in such a way that we will no longer have occasion to wonder at anything that descends from them, we will easily believe that it is similarly possible to find causes of everything that is most admirable above the earth. (Descartes 2011 [1637]: 263 in: Strauss/ Orlove 2003: 4).

Michael Paolisso, an associate professor at the Department of Anthropology of the University of Maryland, College Park, had done extensively ethnographic research for many years on the Chesapeake Bay region, dealing with climate change perceptions of watermen within specific fishing policies. In his research, he used the Cultural Model Approach, that

can be implemented also in the ethnographic fieldwork and the weather perceptions of Ganesh Murthy Nagar's slum-dwellers.

Cultural models are defined by the imaginary of people of the world, whereas these models are taken for granted. According to this theory, the complexity of the world makes it impossible for people to understand all the different modes existing, so they rely on specific modes and worldviews. These modes are embedded into beliefs, values, spirituality, nature, work, morality and economic and ecological knowledge (Paolisso 2003: 66-67).

The cultural modes theory can be implemented for the slum-dwellers of Ganesh Murthy Nagar as well. They could not explain the events of flooding or changes in weather, so they were convinced that God is the main responsible actor for these events.

In many villages some people are very conscious and they are taking great care. So it is . . . you know, half-half. Some people are conscious but majority is not conscious. Because they are not educated they don't know what is climate change. They just believe oh it's a god's work. But actually it all depends on human beings how they protect' (Interview Kunti Oza; 158-162).

When I asked about the possibility of future flooding in Ganesh Murthy Nagar exactly this religious argument was stated:

'We have hopes in god that there is no flooding' (Group discussion; 17.09.2013).

Like in my ethnographic fieldwork, also the watermen at Chesapeake Bay in the research of Paolisso (2003) shared a specific cultural model in the management of the blue crab fishery.

Paolisso argues that watermen at the Chesapeake Bay were convinced that only God provides crabs that created a close and individual relationship with God, whereas there is a social hierarchy because God has the control over the weather in terms of storms and other dangers in working on the water. In their perceptions, God provides crabs and the availability of crabs is under his control. For them the emergence or decrease of blue crabs had no correlation with climate or weather conditions, and so they said that it is not understandable by themselves or scientists (Paolisso 2003: 74-75).

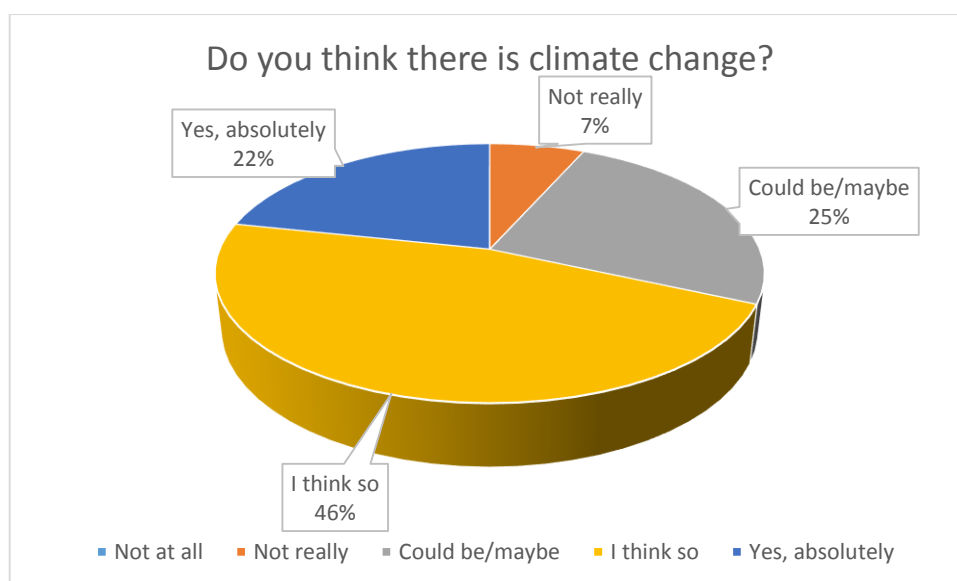
This cultural mode was represented by the Ganesh Murthy Nagar slum-dwellers as well. Most of them told me that God is the only power that influences the weather and therefore they are dependent from him on the one hand, and reduce the effects of human impact on nature and climate change on the other hand. In this context, it is important to mention though that nature plays a

crucial role in Indian societies as many objects are regarded to be sacred and holy. The slum-dwellers told me that rain symbolizes freedom and rebirth and is something natural and sacred. Water is conceptualized as a symbol of life and everything that contains water is holy and therefore considered as the work of god:

In India rivers having considered sacred. Rivers and mountains are sacred and those places especially on the temples in the mountains some people come to have a trance experience and then come back' (Interview Atul A. Sathe; 98-100).

'Many things are sacred. Animals are also sacred. But for researchers scientific data of nature are relevant for discussion and understanding climate change. For the rural people it is not relevant. They need some symbols' (Interview Atul A. Sathe; 103-105).

Regardless of the discussion on what is a slum and what is not, the crucial point is that the majority of the interviewed persons in the slum believed that a change in weather, not explicitly using the term climate change, exists:



A climate ecology model

One key issue in the fieldwork was to investigate individual perceptions and definitions of climate change, based on personal experiences of the slum-dwellers.

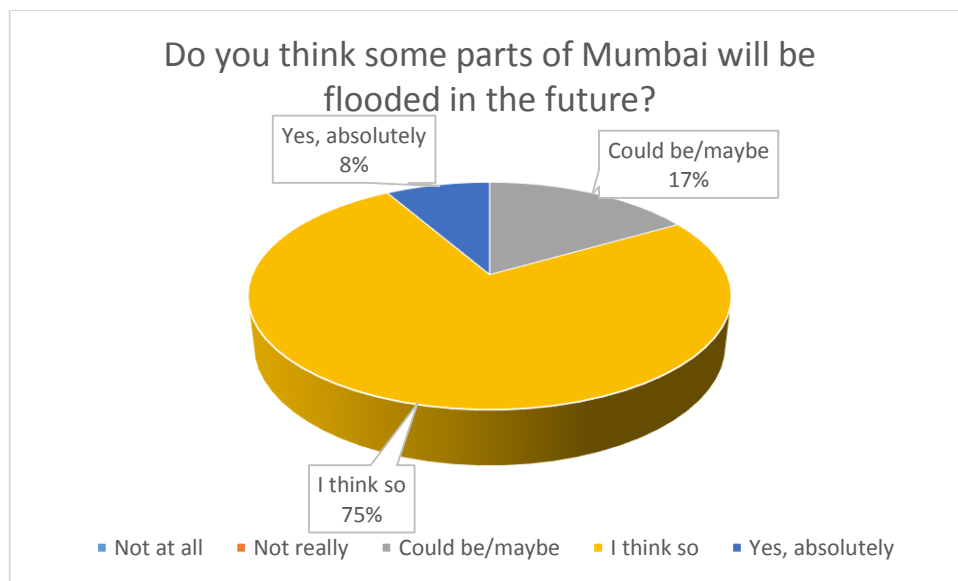
There are strong connections between the ethnographic fieldwork and the *health ecology model* (McElroy 2013: 146). This model is methodological based on local history, knowledge and

experience of people. Cultural factors, such as systems of knowledge, care and hierarchies, play an important role in investigating the decision-making process of a specific group (ibid, 146)

Furthermore, perceptions of the environment are a cultural construct, that is produced and articulated different by individuals and groups. These perceptions have a temporal dimension in terms of past, present and future perceptions, and a space dimension, regarding the local, regional or global context (ibid, 146-147).

On basis of this model, I wanted to research the perceptions of individuals and groups of environmentally influenced problems, not having the focus on health but on a more general level. Hence, this attempt could be named as the ‘climate ecology model’.

When it comes to the effects of climate change and the worst-case scenarios, such as the flooding in 2005, where thousands of people lost their lives due to extreme heavy rainfalls, people in the slum were rather convinced that there will be more floods like this in future:



Regarding the answers of the last two questions, it can be argued that the case study of the Ganesh Murthy Nagar slum was highly relevant in terms of the historical and interpersonal perspective and experiences with climate change and extreme weather events.

‘It would be a good idea to do research on people’s memories about climate and weather. In terms of climate change this slum is interesting because it was affected by flooding. I did fieldwork in another slum and I entered into a house. There was a closed door and when I opened it a lot of garbage came out. You cannot believe this kind of living

conditions those people have to deal with. I don't know if the state does know about how people live' (Interview Varsha Ayyar; 174-178)

Tipping points

During the fieldwork, it became clear to me that the case group was rather fearful of unforeseen climatic events and their effects on the slum. This reflected the lack of alternatives or adaption strategies because if the slum is flooded and people are forced to leave their homes, there is simply no place to stay or any shelter or public help offered. When I asked them if they have developed any adaption strategies to climate change or natural catastrophes they neglected:

'N o o .. no, we don't have. If the tsunami comes, so where do these people then go? No way..' (Group discussion; 17.09.2013).

In this context the concept of 'tipping points' becomes relevant because in the event of flooding there is often no return for the slum-dwellers.

Many anthropologists use the term of tipping points when describing the nature of climate change. A tipping point can be characterized as a point of no return and shows the more or less abrupt change in climate systems and the ecosystem. Nuttall (2012) says a tipping point very often can be seen as a point of no return and this raises global fears, discussions, danger, risk and disasters (Nuttall 2012: 96).

Tipping points are referring to the threshold behavior of systems and in terms of climate change, the threshold accumulation of greenhouse gases, such as CO₂, implicates global warming to become unstoppable. A prominent example for a tipping point is the melting of the arctic sea ice. As it reflects the sun's rays like a solar mirror, its constantly melting would mean less reflection of the sun, what leads to a rising of the sea temperature which causes negative impacts on maritime climate and sea-dwellers (Skrimshire 2011: 97).

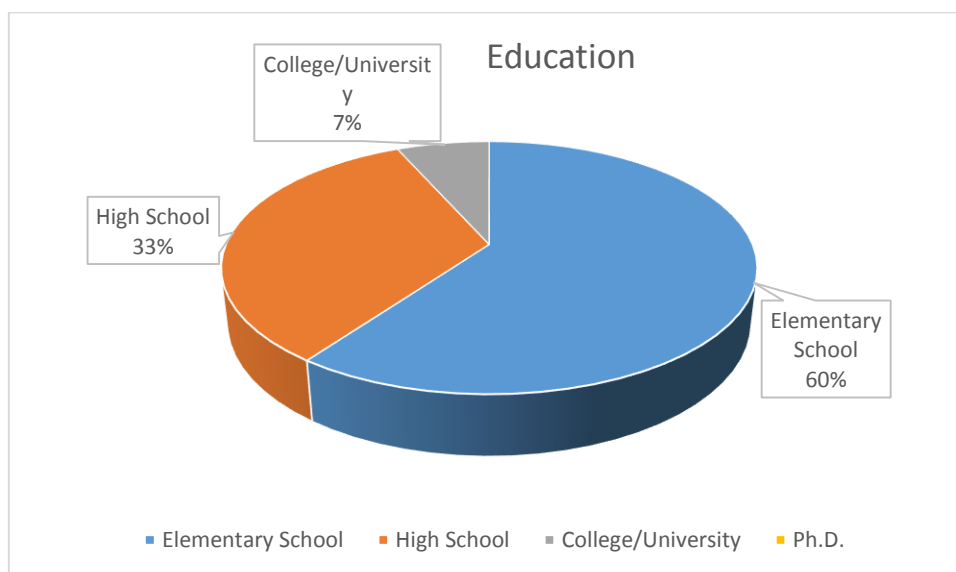
'Tipping points represent the prediction of the unpredictable.' (ibid, 97)

People must be conscious about tipping points because once a point of no return is reached, no adaptation strategies will have a positive effect for society anymore because they are not suitable for 'worst case scenarios'. India should acknowledge this and keep in mind that they will lose an enormous part of its population when such climatic catastrophes in terms of tipping points occur.

The understanding of the livelihood of the people in the slum is crucial in order to understand their concepts and relations to weather and climate. In order to gain a holistic approach one has to understand these concepts in terms of living, institutions and local management structures.

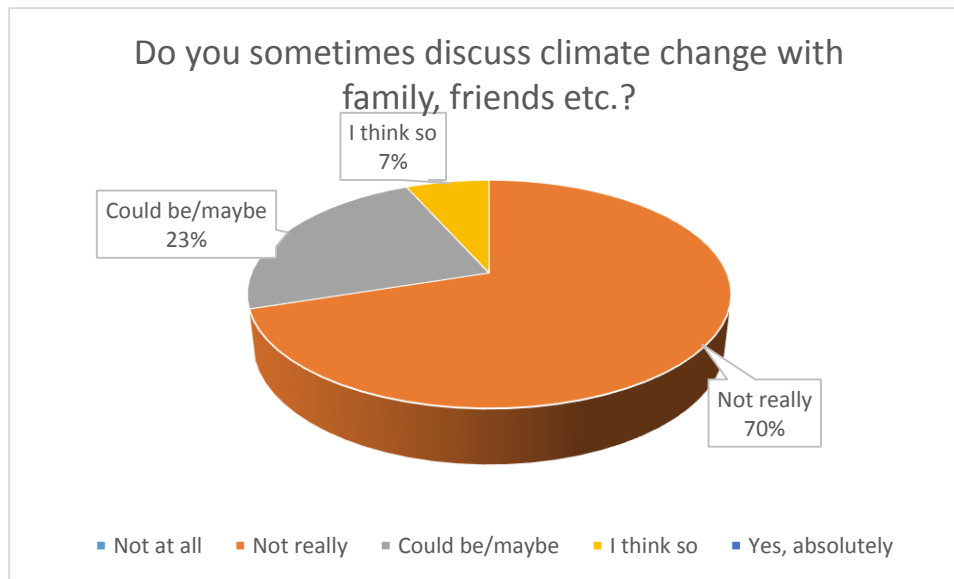
Lack of education

When having a look on the education of the 60 interviewees in Ganesh Murthy Nagar, more than half of the people did not visit a school over elementary level. A third obtained a high school degree and 7% said they went to university although I highly doubt this allegation.



In the field I was often told by people that they could not go to school and they are not informed about current topics in politics. The lack of education and information about climate change was reflected in the arguments that people in general are defenseless against any forms of climatic circumstances:

Given the fact that most people in the field did not know what climate change is or how it could affect their lives, it is not discussed as such between them:



As already mentioned, the slum-dwellers always argued that they live in a fishing village and this is like a small community. Some of my informants told me that their families lived in this village since hundreds of years and they called themselves villagers and not urban people. This is highly interesting because rural Indian societies have a stronger and more intense relationship to nature and its conception.

‘Even now the rural population of India who has a very rural and simple lifestyle but even now they are largely connected to the natural circles. Their lifestyle and way of life is very much embedded and connected with nature. Somebody from the city or somebody from another country cannot come to the rural tribes and explain climate change to them. They will not accept or understand it. The same thing is for people in the slums here. They simply will not understand it because they are not educated enough. Besides this, the social distinction of the Indian population makes this kind of knowledge exchange nearly impossible. In India there is an increasing part of the population that is cut off from nature and has no sense for climate change anymore’ (Interview Atul A. Sathe; 101-108).

Most people in lower castes and slums are not informed about climate change and its impacts at all. Therefore the flooding of 2005 was very surprising and unexpected for them. Most do not know why floods and sea-level rising happen, so they believe it is a ‘decision’ made by gods and religious figures, as mentioned earlier.

Public awareness programs on the level of government must be established to make climate change and its impacts visible for society, especially for people living in slums or in bad living conditions, as they are the most vulnerable groups. These groups must be aware of climate change and know

what kind of adaptation strategies exist. The Centre of Environmental Education collaborates since some years with the Ministry of Environment and Forests of India in developing and implementing some environmental education programs in schools and through workshops and capacity building programs (Macnaughton 2012: 425).

There are not enough programs yet though, and most people in lower social and economic systems are not actively involved in this process. I asked some slum-dwellers in Ganesh Murthy Nagar if they know about any of these programs and everyone negated it. They said that they are a separate community in the city and they have never seen any politicians or important stakeholders in the slum or this area in general.

Fear of Climate Change

Not important whether the case-group was aware of the meaning and the effects of climate change, the fear of changes in weather was pervasive in the slum. People told me that in the flooding of 2005, many houses in the slum were destroyed and many people died or were lost afterwards.

For that reason one should have a closer look on the term fear:

‘The fear: an unpleasant emotion caused by the belief that someone or something is dangerous, likely to cause pain, or a threat [...] To fear: be afraid of (someone or something) as likely to be dangerous, painful, or threatening.’ (Oxford dictionary online/ URL 6)

Generally, it can be said that every definition of fear implies that someone is feared of someone or something else. Therefore, the emotion fear is dependent from another person, thing or situation and shows itself in an interdependency between persons and things. Very often in Anthropology and the history of societies it is about me and ‘the other’, ‘the unknown’ and ‘the stranger’ what makes fear a crucial emotion from an anthropological point of view because Anthropology is always about the relationship between persons to other persons, cultures or circumstances.

So people have fear of the unknown that is perceived as something different from the self and structured in different codes and schemata of cognition and interpretation of a person, social group, specific culture or a historic event (Schäffter 1991: 7).

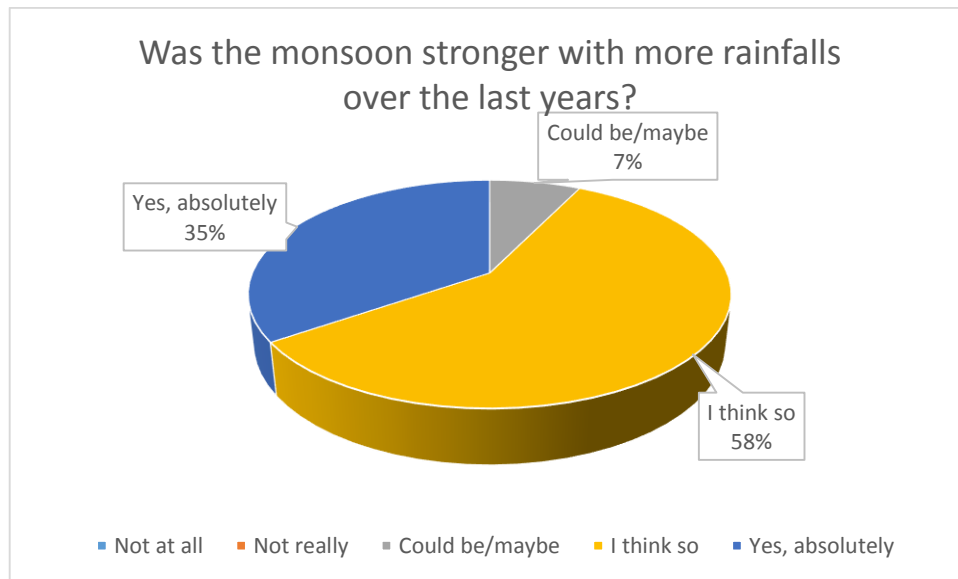
The case group was feared of weather changes, although most of them did not know what climate change means. It is therefore an unknown situation or event they are feared of.

Cultural models of emotions implicit emotional rules and prescribe people how to react to specific situations and persons. They are not isolated from social actions, but part of complex networks of meanings. From an anthropological point of view, emotions are part of the complex believing systems and the cultural, religious and political codes of norms and values that construct social meanings in everyday life. Specific emotional domains get positive or negative connotations because of the cultural models of emotions. The point is that emotions are shaped by cultures and differ from different cultural contexts. That is why, for example, in some cultures the emotion fear is seen as a positive, necessary and appropriate emotion while in some other cultures it has a negative connotation and is associated with feelings of failure, the contravention of social norms and a lack of self-monitoring. We have these different cultural connotations regarding to emotions everywhere and for anthropologists it is important to keep this cultural complexity of the emotional mechanism in mind if we want to understand how emotions are used (Röttger-Rössler 2004: 76).

Culture shapes emotions in two ways: First most of the people notice emotions in their cultural and social mental schemata and second these emotions are valued as positive or negative differently from societies (Röttger-Rössler 2004: 77).

The slum-dwellers often told me that rain is holy and a spiritual thing. Nevertheless, after the flooding of 2005, they became more conscious about the density of rainfalls and their fear was definitely the return of heavy rainfalls causing damage to their homes. As a result, fear of environmental changes is a crucial part of their culture and must be taken into account in terms of describing the cultural context of Ganesh Murthy Nagar.

According to the questionnaire answers, the perception of stronger monsoons was quite obvious in Ganesh Murthy Nagar:



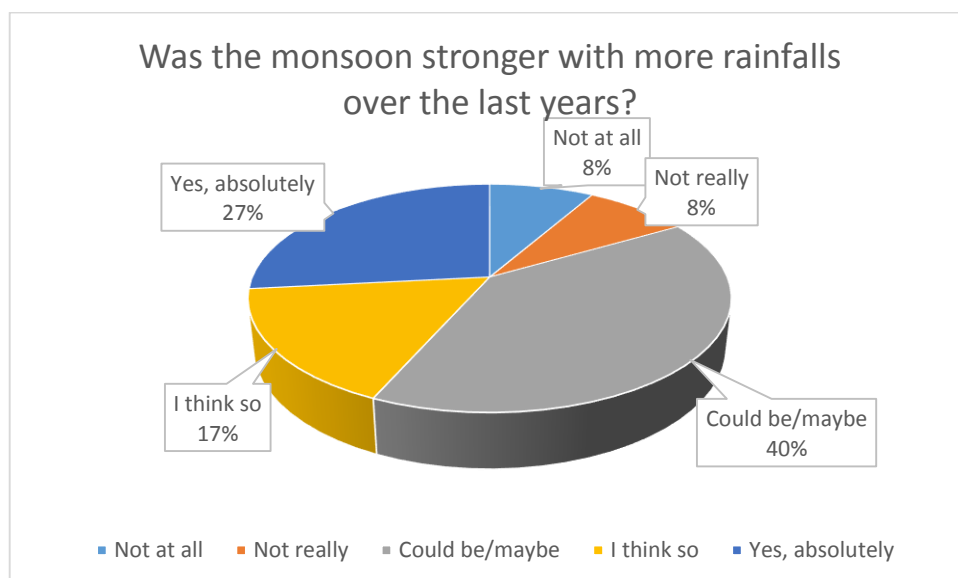
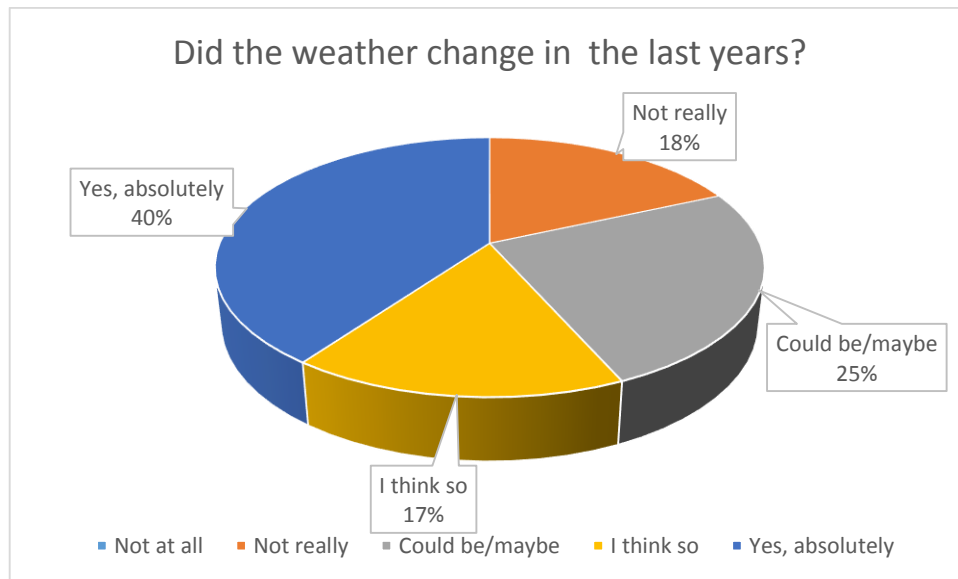
That implies that the case-group was continuously feared of irregular weather events because they acted on the assumption that the weather changed because they have seen stronger monsoons and more rainfalls in the past.

5.2 Perception in the media and public discourse

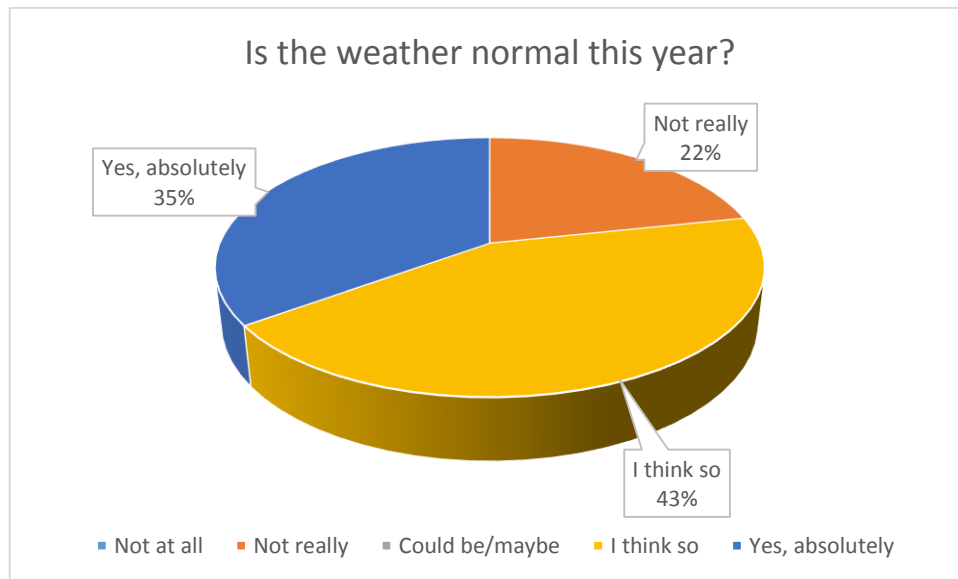
The perception of climate change in the media and public discourse has to do with the distinction of classes or castes. While in the Ganesh Murthy Nagar slum the education level was low and the illiteracy rate high, people asked at Marine Drive were from middle and upper classes. This implicates that they are better educated and can use the media and they shape the public discourse because media is mainly written for people who can read and have the financial or (in the case of social media) technical resources for it.

Perception of climate change in the media and public discourse implicates the perception of middle- and upper class people because people from lower classes and castes have no voice in public, although they represent a large part of the population.

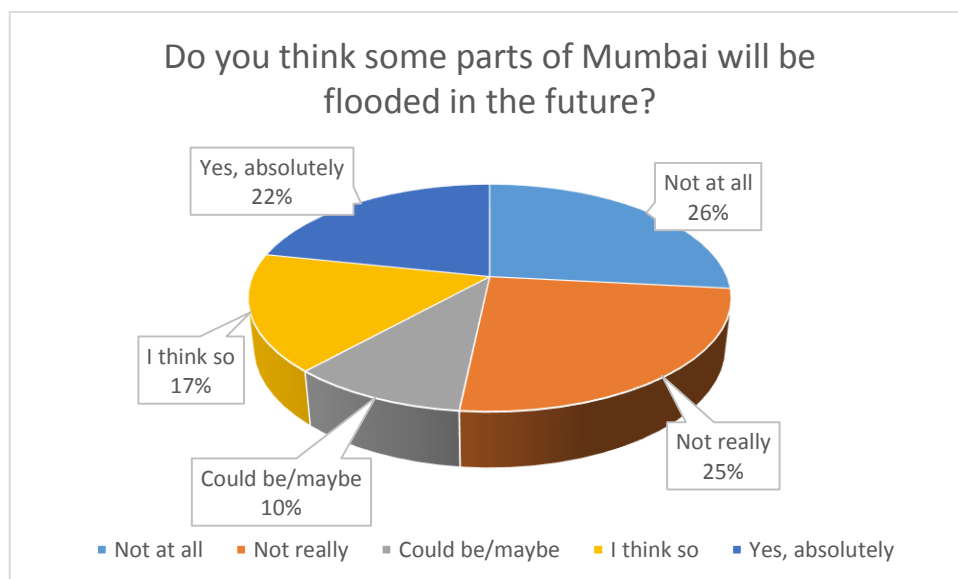
The mixed answers of the questions whether the weather changed or the monsoon became stronger over the last years show that there is no common public opinion about it. A reason for this could be the lack of media attention to the topic. The following two graphics illustrate the heterogeneity of perceptions at Marine Drive:



The answers regarding the question if the weather is normal this year were rather mixed according to the evaluation of the questionnaires filled out from people at Marine Drive:



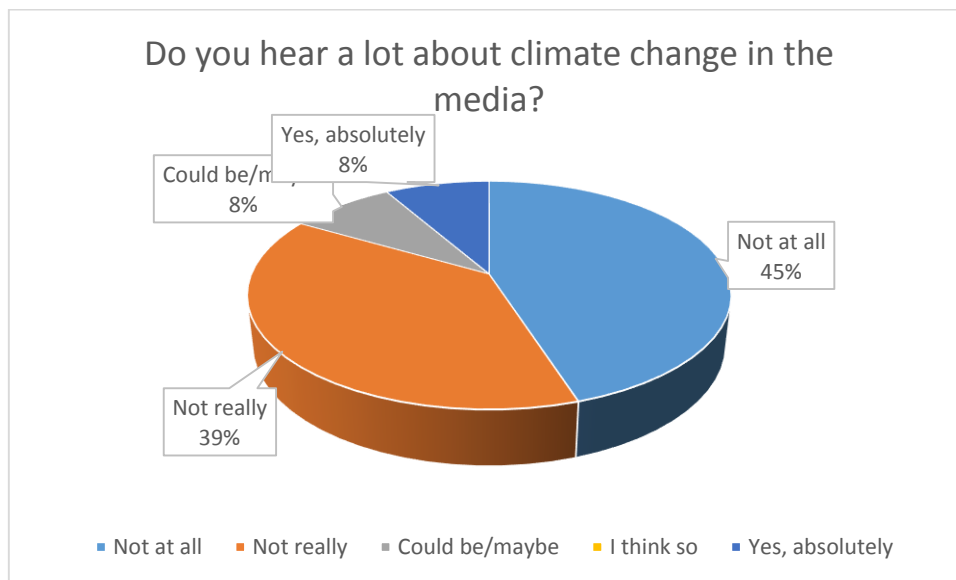
The middle and upper class is generally less vulnerable to climatic events and climate change because they have some adaptation strategies and could move somewhere else, in case their homes would be destroyed by a natural catastrophe. Therefore, these people seem to be more optimistic than slum-dwellers regarding future predictions of climate change:



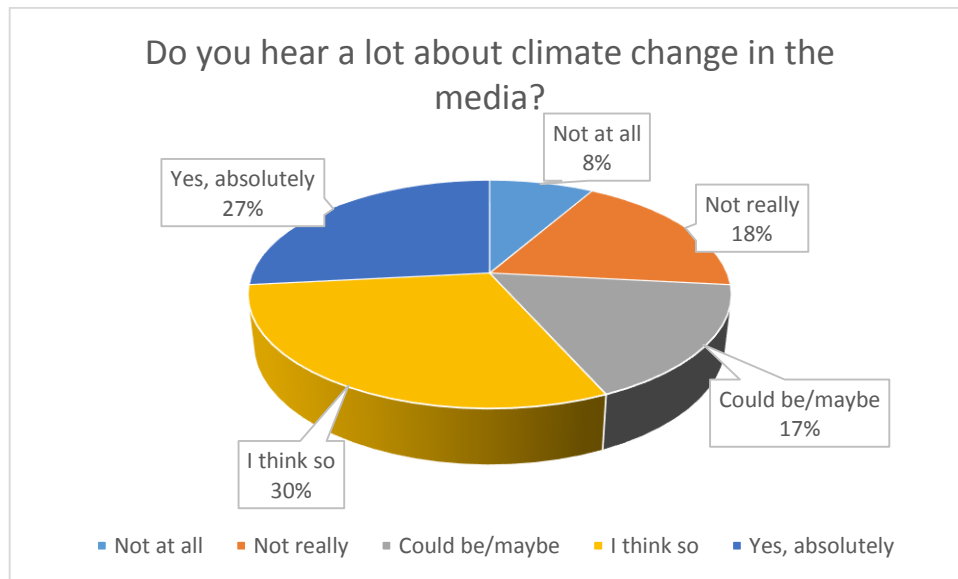
In comparison to the answers of the slum-dwellers - the majority thought or was sure that some parts will be flooded - the answers at Marine Drive were rather mixed, although more than half of the answers did not reflect a possibility of future flooding.

Media plays an important role in the perception of climate change. The slum-dwellers did not hear a lot about climate change in the media because of the high illiteracy rate and the lack of communication mediums such as television, radio, newspaper and computers with access to internet. I have seen some people having a radio, but there was no computer or television at all in the slum.

The limited access to the media was also reflected in the questionnaires in Ganesh Murthy Nagar. The majority is 'not at all' or 'not really' confronted or informed about climate change by the media:

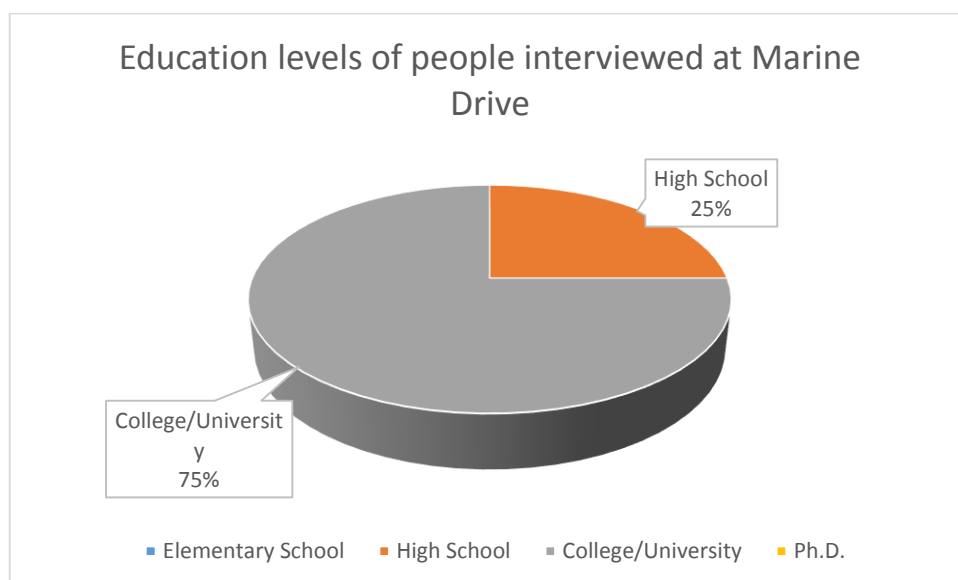


This looks different when having a look at the answers of the interviewed persons at Marine Drive:



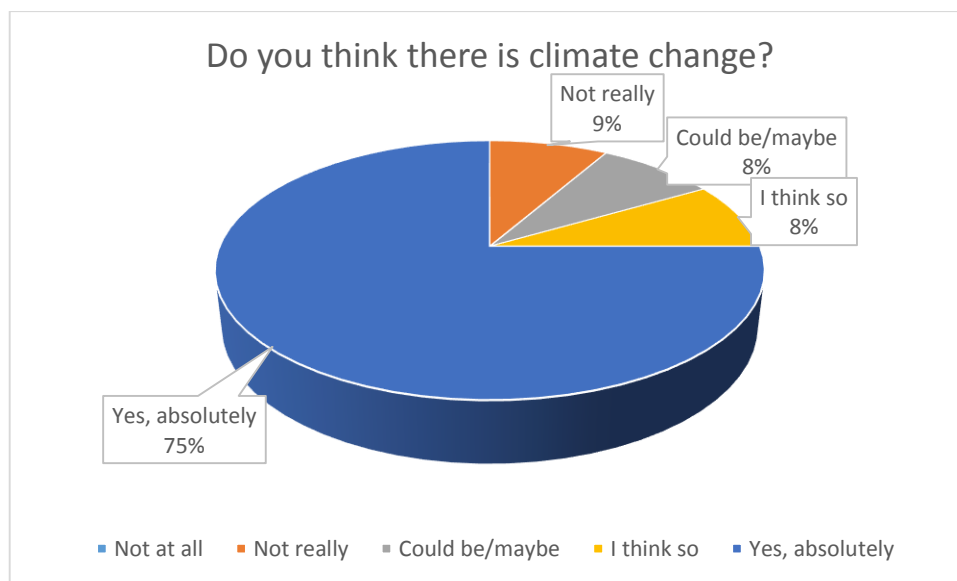
The people interviewed at Marine Drive did hear sometimes about climate change in the media but in general the media or government is not really talking or informing about it, this is also what I figured out when I was conducting media research.

Compared to the case-group, people not living in slums had far better education: 75% obtained a university degree or were enrolled at university and everyone went at least to High School.



Having this in mind, it is self-evident for people in middle and upper class systems to gather information about climate change and inform themselves about policy strategies and government actions to it.

However, as people are informed at least to a certain degree through media and their education system about climate change, they perceive climate change as a reality that exists which is illustrated in this graphic:



Nevertheless, the information given by the media, government and stakeholders is not enough to provide a critical relationship between people in India and climate change. There are only some information and confrontation of climate change, what leads to a '*climate denial*' (Noorgard 2011: 121). To keep the information of climate change at distance is often an active strategy for people's relationship with the topic (ibid, 121).

By trend, there is a rising attention given to climate change again in the Indian media. Some Indian newspaper report about it, although most of them are less distributed and influential for the public discourse than the 'Times of India' or the 'Indian Express' for example.

'We do observe the increasing of more articles about this topic . . . and this in a very holistic manner. There is a Hindi language called Marathi, the local language of Maharashtra. And there are some newspaper in Hindi language with article about sustainability, the social issues . . . and then again, when creating awareness of people I personally feel that an environment educator should promote all aspects and not each things in isolation. Human society, customs, traditions, economic aspects, religious aspects, all these things brought together. When I was talking about the rural Indian or the tribal Indian there are people who have a very complex knowledge about nature and they can contribute in the articles' (Interview Atul A. Sathe; 111-118).

As already mentioned, the main newspaper reaching most of people in India deal only to a very limited degree with climate change:

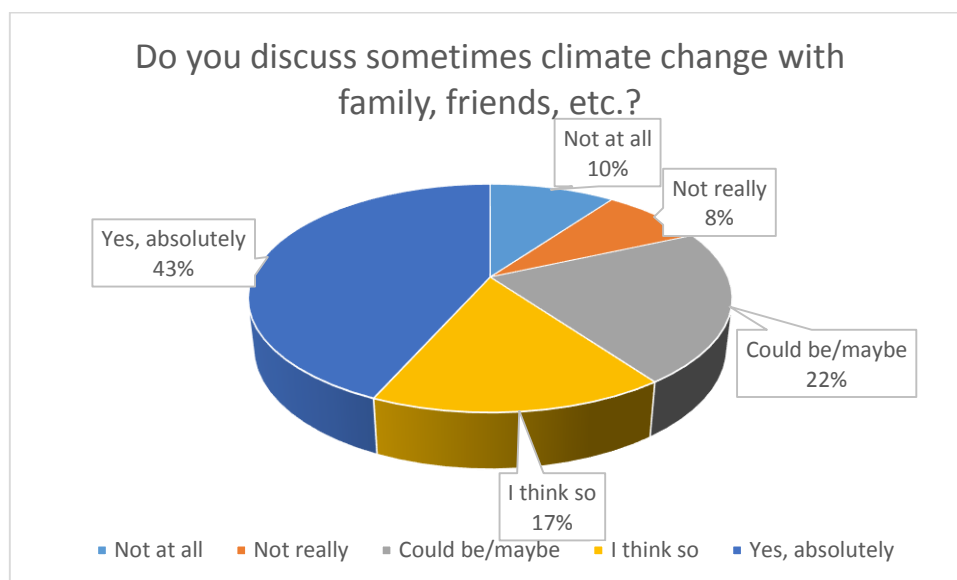
‘When it started in 2008/9 it was discussed a bit in the media. But only for a short time. Nowadays nobody talks about climate change anymore’ (Interview Kunti Oza; 177-178).

The importance of the media becomes clear when looking at its opinion formation and the huge potential to shape ideas, strategies and raise awareness for a sustainable lifestyle.

Media can influence culture as well because culture is very much connected to the general opinion of people, communities and societies. Therefore, the media can influence people drastically, and also their culture.

‘One has to use to media in order to raise awareness for climate change. And also you need projects to raise awareness in schools’ (Interview Puja Vijay Sukhija; 128-129).

However, to a certain degree middle and upper class people were informed about climate change and as they usually have a basic education it is more eager that this topic raises awareness in the public discourse or the private sphere as shown in this graphic:



6. VULNERABILITIES

With the emerging of climate change as a global topic for discussion (Heyd 2008: 74) also the terms ‘prevention’, ‘mitigation’ and ‘adaptation’ became a new meaning and are being discussed by different policies and organizations on a national but also international level. As many areas of the world are extremely vulnerable to climate change, the term vulnerability became a key term and can be understood as the product of exposure and sensitivity to exposure on the one hand and adaptive capacity or resilience to exposure on the other. In other words: vulnerability to climate change can be identified as the capacity of people to adapt to climate change. Therefore, vulnerability cannot be understood just as a function of the objective physical characteristics of landscape features, but also on the way how ready people are to respond in an adaptive way to the drivers of climate change (Heyd 2008: 75).

Different people and societies are facing vulnerabilities to climate change on different levels. In principle, climate change affects everyone and every person is confronted with a minimum level of vulnerability, although climate change does not have the same effects on everyone.

Due to the unofficial caste system in India, people from lower castes and social classes are very vulnerable to climatic events because on the one hand no adaptation strategies were developed for those people, and on the other hand the infrastructure and capacities in order to provide people a certain degree of protection in the case of a natural disaster, are not even sufficient enough to cope the protection of middle and upper class people.

According to Crate (2008) a vulnerable system is ‘*very sensitive to modest change in climate, where the sensitivity includes the potential for substantial harmful effects, and for which the ability to adapt is severely constrained.*’ (Crate 2008: 571)

The concept of social vulnerability has often been discussed in social research, having the focus on environmental migrants and their vulnerability to climate change. There is a sort of ‘alarming’ environmental migration literature where social vulnerability was de-emphasized. Anthropologists and many social scientists criticized the lack of the focus on vulnerability as they stressed out that social vulnerabilities have to be considered in a wider context such as impoverishment, political marginalization, inappropriate development (often caused by colonial histories) and a lack of economic and social capital (Marino 2013: 191).

There are many different factors on economic, political, social and environmental levels, that define the specific vulnerability of a community or individual. There is no evenly distribution

of the degree of vulnerability between individuals, households, communities and countries. This demands specific research on a local and global level to identify the different contexts of vulnerabilities. Different groups are embedded in different contexts and have diverse histories and perceptions of nature and the environment what causes different local interpretations of vulnerability. In addition power is distributed very unequally – some people can force the government to act on climate change in order to reduce risks and vulnerabilities, others have no possibility to act and are forced to live with a considerably risk (O’Brien et al. 2012: 17).

This applies to the slum-dwellers of Ganesh Murthy Nagar – they are virtually captivated to have any demands on the government because they have absolute no social, political and economic power to do so.

The city of Mumbai falls under the definition of vulnerability for two reasons: first its location next to the sea with a rising sea-level and second the high population density which makes impact assessments and adaption strategies very difficult.

In the course of my empirical and quantitative data collection and interpretation I analyzed how vulnerable people in Ganesh Murthy Nagar are to climate change and, in comparison to that, how vulnerable middle and upper class people are, according to the data evaluation of the questionnaire at Marine Drive.

6.1 Vulnerabilities in slums

Conceptualizing slums

First of all the term slum must be explained in order to understand the living conditions and surroundings of the case group and what makes them so vulnerable to climate change.

The United Nations defined 1984 a slum as

“[...] a building, group of buildings or area characterized by overcrowding, deterioration, insanitary conditions or absence of facilities or amenities which because of these conditions or any of them, endanger the health, safety or morals of its inhabitants or the community.” (Rao/ Rao 1984: 117)

Another rather old but very clear and still effective definition was given by Singh and Pother (1982) who said that a slum is defined by poor houses and people, disorganization, decadence, transition and criminality (Singh/Pother 1982: 2).

Especially rural people are more eager to migrate to cities such as Mumbai, Chennai, Kolkata, Kanpur, Delhi, Ahmedabad, Bangalore, Hyderabad and Baroda as these cities have an emerging industry and therefore offer industrial employment for migrants. People from the rural area do not migrate to urban centers due to find a better employment opportunity, but moreover to find employment *per se*. The migrant population from the rural areas is an important component of India's urban centers (Mohanty/ Mohanty 2005: 15).

A high percentage of rural migrants is young and has a lack of school education and working experience. Also the possibilities to start an own business in the urban areas are limited as most of the migrants do not have any financial capital. The majority of migrants in India's mega cities have no access to the minimum living conditions such as shelter, enough drinking water, food and clothing. As a result, most of migrants coming from rural areas end up in slums (Mohanty/ Mohanty 2005: 32).

According to Mohanty/ Mohanty (2005) there are three reasons for the emerging and expansion of slums.

Firstly, due to indivisibilities of investments and the infrastructural facilities, there is a concentration of population and congestion within the urban centers. Invisible and interdependent infrastructural facilities foster the concentration of economic activities in the cities. As an effect, the land value raises and house rents become more expensive whereby a high percentage of the population cannot afford living. Especially the agglomerations of the big cities are strongly embedded in the industrialization process that creates urban centers without a concrete planning. These areas are marked with a low quality of life, shortage of basic amenities and overpopulation. Therefore these old dwelling units transform into slums, although they were not so by the time of their construction. The housing prices in the industrial zones are relative cheap compared to those in the city centers. The price difference of dwelling in the agglomeration compared to the city center in India is extremely big. As a result, also people with an income above the poverty line are often forced to live in the slums as the rents in the other parts of the cities are too high (Mohanty/ Mohanty 2005: 33-34).

Secondly, many people choose to live in slums with a low quality of life in order to save at least a small amount of their earnings to afford other urgent needs such as food, clothing and other goods, defined by the social structure, as well as local customs (ibid, 34).

Thirdly, low/ inadequate income and relative high living costs hinder many workers who have an earning above the poverty line to afford a housing above this line. Especially employees in the informal sector are affected by this situation and as their earnings do not increase, so as the number of these employees, slums are emerging and are affected by congestion (ibid, 34).

Reasons for vulnerability

The people in Ganesh Murthy Nagar are, according to the expert interviews and the data evaluation of the questionnaire, by far more vulnerable to climate change than middle and upper class people.

‘Most of the slums in Bombay they claim land and they claim land by the communities themselves. They also give contributions to the city because they are very productive and contributing. But they are also under the upper and middle class and therefore the most effected by those effects of climate change’ (Interview Atul A. Sathe; 50-53).

Their vulnerability arises due to various reasons.

First of all, their location next to the coast. As the sea level is rising, some parts of Ganesh Murthy Nagar will be flooded in future. But also in the case of heavy rains, the sea level rises and floods the houses located directly at the coast.

Besides this, is the humidity of the soil leads to huge amounts of mud during the monsoon period. As a result of the lack of sanitation, the mud affects the health of the slum-dwellers. Besides this, there is no state and government policy that protects the slum-dwellers in the case of displacement. The biggest problem is, however, that no adaptation strategies have been developed or implemented so far.

In the case of flooding or any other natural catastrophes, most of the houses in the slums are destroyed immediately because they are not built on solid ground and a huge amount of houses is made of bamboo what makes them easy to collapse in the case of flooding.

‘Well, the people living in the coastal areas are very vulnerable. The slums do not have really a proper shelter’ (Interview Kunti Oza; 33-34).

The social location of most slums, and also the Ganesh Murthy Nagar slum, is responsible for a double vulnerability: on the one hand there is no public help for the slum-dwellers, as they are considered to be part of a lower social class, and on the other hand, they are more

endangered to be destroyed by natural effects than other areas inside the city because there is no efficient housing and adaptation policy, in case of natural catastrophes.

‘The most interesting and ironic part is you know what? . . . Slums are 64% of Mumbai’s population but only 7 % on really dry land. Most slums are next to the coasts where the ground is wet and humid so that houses are also not built on a good ground so to say’ (Interview Puja Vijay Sukhija; 44-46).

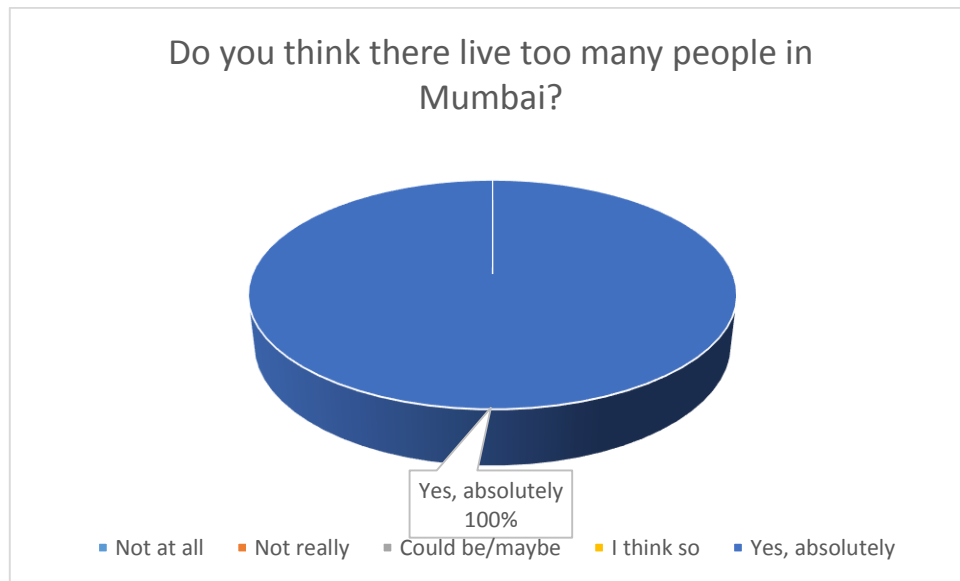
In terms of improvement of housing and living quality in slums, nothing has been done yet. Most of urban migrants move to slums as they cannot afford the living costs in other districts of the city and as a result, more and more people start to live in houses and areas with a high degree of vulnerability to climate change. According to the expert interviews, slum-dwellers are by far the most vulnerable group in Mumbai:

(Are slum-dwellers the most vulnerable group in Mumbai?) ‘Yes of course. They are the most vulnerable. Number one is we do not have a very progressive state policy on housing’ (Interview Kunti Oza, 37).

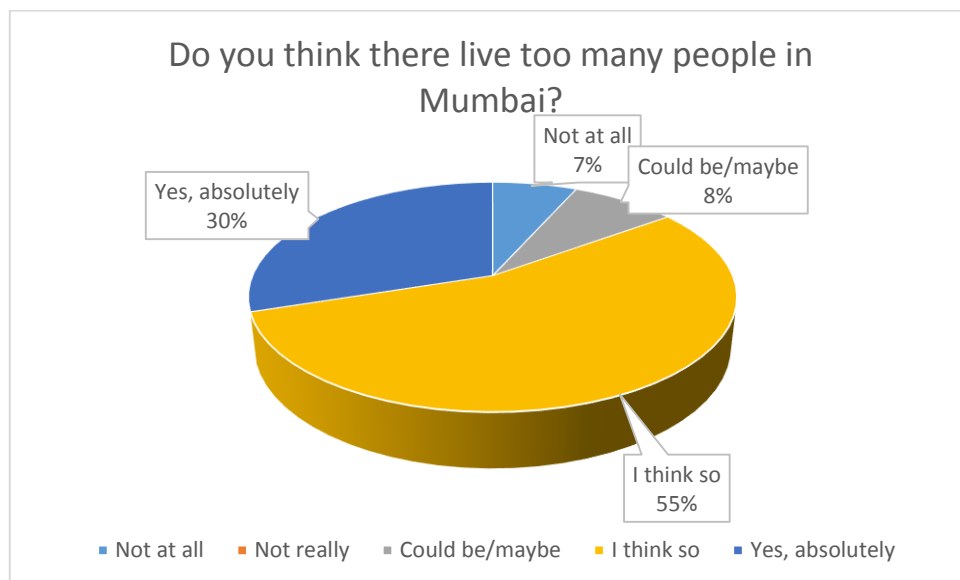
Overpopulation

Another problem of slums is their overpopulation. India has to face the problem of an expansive population growth and no state or policy measures have been established so far, in order to regulate this massive growth. The extreme intensity of people in the cities, and overall in slums, makes it difficult to organize different groups or provide proper housing, also due to the economic state costs.

According to the questionnaire, all interviewed person at Marine Drive were totally convinced that the population of Mumbai is too high:



The slum-dwellers of Ganesh Murthy Nagar answered this question a bit different. The majority of answers indicated an overpopulation of Mumbai, although the answers were not so significant like in the Marine Drive questionnaire, where 100 percent were convinced of it:



However, overpopulation is a big problem recognized by both state and citizens, lower, middle and upper class. As the density of people is the highest in slums, exit strategies like displacement or escaping the effects of climatic disasters are not possible.

6.2 Mixed vulnerabilities between different castes

I found out that, on a large scale, the people I talked with at Marine Drive were rather nationalistic because I asked all of them if they like India and Mumbai, and most of them said that they do not like but *love* India and ‘their’ city and they are very proud of being Indian. They said that in India has such a beautiful landscape and a great diversity of food and people and this makes the country so special. Nevertheless, it was contradictory to me when most of them said that they are proud of their ‘different ethnic mix’ but in general I always saw people from the same skin color together and had the feeling that many Indians divide themselves very much into skin color, sex and caste of course.

I noticed that the slum-dwellers of Ganesh Murthy Nagar never talked with other people who were - according to their appearance and clothes - not slum-dwellers and so from a higher class/caste, passing by. There is a strong social hierarchy and many invisible borders between different communities.

People from lower castes and classes are never the ones who have the legitimacy to change caste structures or get involved into policymaking.

‘It is sometimes said that the underlying structure of caste remains what it was, and that if there are changes in caste practice, they are superficial and confined to a handful of urban, or educated, or westernized individuals who are in any case not truly representative of Indian society and culture.’ (Fuller 1997: 152)

Although castes have officially no legal basis to discriminate people, they still remain in the mind of Indian society and everyone knows to what caste he/she belongs to:

‘There are castes, some middle-class and high-class. They have taken house and they have kept them’ (Group discussion; 17.09.2013).

When I asked Ms. Sukhija if people from upper castes do respect people from lower castes, she negated this question and stated out the relations of Indian castes and class systems. It has to be said in this context that people using the term ‘class’ in India, mostly mean ‘caste’ by it.

‘No, no, no, no! (laughing) I would say that upper class people are normally those who migrated in respect to get treated with special privileges abroad. If you look at the Silicom Valley 80 percent are Indians. And they are not respectful against other people from South Asia like Bangladesh, Pakistan, or to Latinos and Blacks. They feel superior due to the status of their caste’ (Interview Puja Vijay Sukhija; 33-37).

Reference groups

Due to environmental factors, there is a lot of mobility within castes and different social, cultural and political groups. In order to analyze mobility in castes and urban stratifications, the reference group theory might be very useful. A reference group is defined by an individual, who is either member of the group, or not. There are different reference groups within a community and some connections between reference groups can be established since most societies have an institutional structure. If one group has a lot of structural strength, an individual from a group with less power might choose this one as his/her reference group. Contrary, a group can also become a negative reference group where other groups and individuals do not want to identify themselves with it (Silverberg 1968: 96).

Every social group has an internal structure and different norms. The social organization of groups determines their values and norms that are crucial for the communication with other groups. Different groups in a society can be open or closed for new members or the inclusion of other groups (ibid, 97).

Castes are embedded in a closed system and people normally cannot be included in a caste ranked higher than their own. However, according to the reference group theory, positive orientations from an ego towards a caste he/she is not member, can happen. This positive orientation between different caste members towards other casts is permitted and encouraged in India. Although people cannot change their caste membership, this kind of positive caste orientation occurs often. If members of a specific jati (subcaste) or the whole caste move towards a higher caste, there is a lot of social mobility between subcastes and their members, although they cannot change their caste position (Damle 1968: 98).

In the course of my fieldwork, I noticed that there were different social groups in Ganesh Murthy Nagar. Simplified said, there were those members and families who had a certain degree of education and who could speak English quite well, and those lacking education who could not speak English at all, what made the communication and interaction between me and these groups rather difficult. With the help of my gate keepers and 'translators' (especially Shubra, the girl who allowed my access to the field in inviting and introducing me to her family), I could ask them some questions though and give them my questionnaire to fill out. Nevertheless, I observed that Shubra, who had a better education compared to those people, showed some restrictions in the contact with them. Although we were only four houses far from hers, it seemed that there was less communication between her and the neighbors, than 100 meters back

to her family house. When I asked her if she has a problem with talking and furthestmost translating the questionnaire to them, she said that these people live in another context and will not know anything about the weather because they are not involved in the fishing process and have no alternatives at all. Their only goal in life is not to die from hunger.

That means that also inside the field there was a lot of heterogeneity and diversity on a social, economic and cultural level. For me as an outsider it was at the beginning nearly impossible to see these different social stratifications inside the slum. Only after some days, I saw the different mechanisms of social inclusion and exclusion within the case group. Shubra and her friends told me that they are more connected to the people living outside the slum next to them and they are sure that, instead of Western people, Indian non slum-dwellers know very well the differences inside slums. Many people I spoke English to in the slum said that they want to go to university one day or work at least outside the slum.

According to the reference group theory, those slum-dwellers with a higher education than the average do persist a positive orientation towards middle class/caste people. In fact, it seemed to be easier to discuss and talk with this more educated group about climate change and weather because they had at least any knowledge and memories about the changing weather conditions.

In Mumbai, the biggest city of India, positive orientations towards higher castes and social mobility between different castes and communities might be more common than in rural India. Social systems in urban areas are more open and transparent than in rural villages because, in principle, there more mobility and interaction in urban society (Marriott 1968: 104).

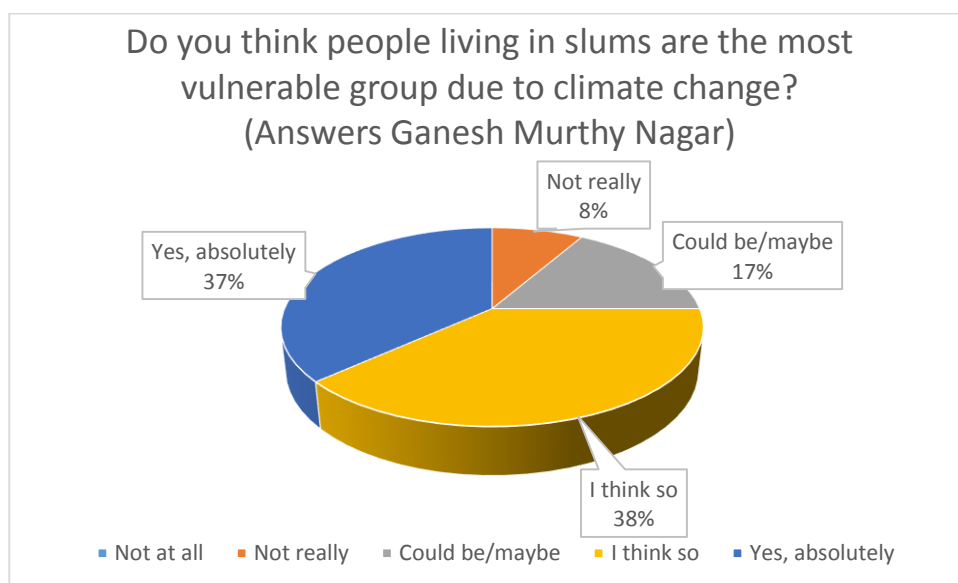
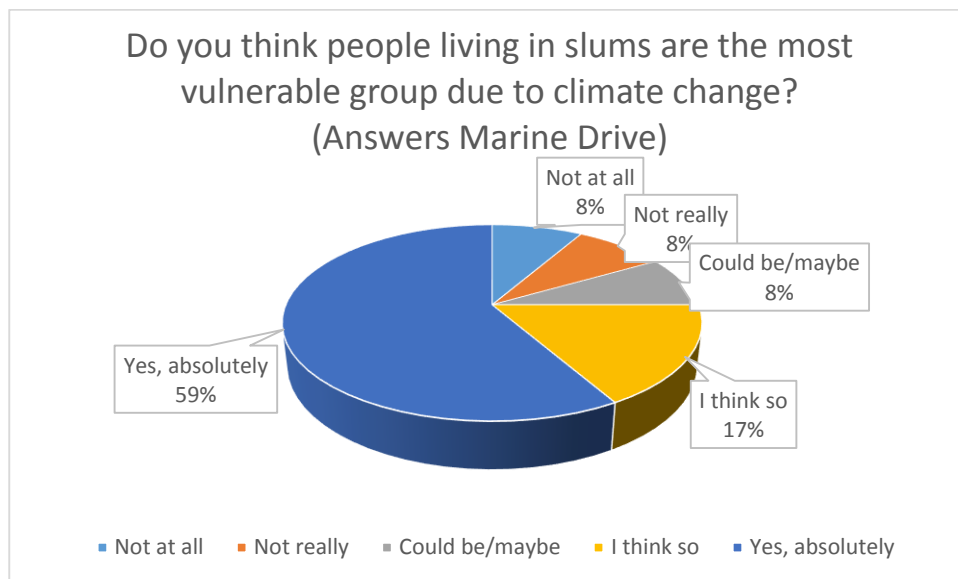
As a result, the caste and class status of an outsider or migrant coming to Mumbai is not clear at the beginning. However, dependent on education and financial resources, one person needs to choose his or her community soon after the arrival in Mumbai.

Being part of the Shudhra caste does not mean to be excluded from most aspects of social life though, because the classical varna caste system is less important in Indian cities than the different units and reference groups in the big castes (ibid, 104)

Perceptions of vulnerability

According to the questionnaire, especially people not living in slums do see slum-dwellers as the most vulnerable group. In contrast to this, the sense of self was slightly different at the case

group in Ganesh Murthy Nagar – most of the interviewed person were rather convinced to be the most vulnerable group, although the answers at Marine Drive were more significant:



However, causes and effects of climate change can affect everyone. In fact, the effects have to be analyzed from different scales, although they are omnipresent. When there was the flooding of 2005, it affected also the middle and upper class areas, so that was not class or caste specific.

‘If there is a crash of the transport system or flooding in the city it affects also the middle class. There were middle-class people who died. They were sitting in their cars because the car was in a flooded area and the water came inside through windows. So they died.

What I want to say is, if a catastrophe comes, everybody needs a protection (Interview Atul A. Sathe; 79-82).

Vulnerability of Mumbai

During the stay in Mumbai, I noticed that people are much more aware of their natural environment in the slums than in the business districts like Fort or Bandra. The hectic life of many working people may lead to an unawareness of the safeguarding of natural resources in the city.

‘People from middle class have such a busy lifestyle. They travel every day some hours to work in Mumbai. Who has time to think about nature? There is the economic crisis . . . there is crime. . .’ (Interview Atul A. Sathe; 34-36).

Summing up, people from lower castes/social classes are more vulnerable to climate change than people from higher ones. Notwithstanding, everyone in India is affected by climate change and to a certain degree vulnerable because the location of Mumbai itself makes it a dangerous place to live, due to the reclaimed land in the course of land reclamation in history.

‘The whole city of Mumbai is sinking. It could be avoided but if we do not take any action against it, nothing will make this situation better’ (Interview Kunti Oza; 195-196).

The peninsula Mumbai is therefore very endangered by the effects of climate change. Nonetheless, no efficient state measures have been undertaken so far.

‘Bombay is an island and we have already seen a vulnerability and that was with the massive floods that we saw in 2005. It was quite unexpected.. on the one hand you have massive growth and on the other hand there are more regulations in respect towards it that many people don’t know. But we have an evidence, I mean.. we saw that many people lost their lives in the flooding. Thousand of people and animals.. we lost them’ (Interview Varsha Ayyar; 147-151).

Furthermore, she concludes:

‘So probably Bombay is the most vulnerable in comparison to other regions in India’ (Interview Varsha Ayyar; 170).

It is therefore a highly risky situation, considering that the most populated city in India is also the most vulnerable area of the country.

Especially South Mumbai, which was the construct of seven islands before the land reclamation, is more affected than other areas in the north of the city.

‘Especially South Mumbai is very much affected by floods because nearly everything is reclaimed land. There is a lot of population growth in all the coastal zones which are mostly slums. I think all the coastal areas are vulnerable because of sea-level rise. But in Mumbai live so many people that this would be definitely the most affected area in India’ (Interview Atul A. Sathe; 170-173).

‘In the coastal zones in South of Mumbai there are plenty of flooding areas. Often locals get affected by unexpected rains. So if you ask me so, yes the rain is becoming stronger’ (Interview Atul A. Sathe; 120-121).

Summing up, slum-dwellers in Southern Mumbai, like my case group, are the most vulnerable people to climate change in Mumbai, and maybe even some of the most vulnerable people in India.

6.3 Gender roles and vulnerability of women

Many people in India, as the country is quite conservative, do not reflect a lot about the circumstances they live in. There is a lot of pressure in the country but no systematic ways to improve the situation. Beside the gap of classes, there is also a big gender gap, which is combined with the caste system. Women coming from higher classes are often conceptualized as independent, strong and beautiful women who can do whatever they want and they are also capable of making a career. Women from lower social contexts are reduced in their nature as a women and giving birth to babies seems to be the only assignment for them. It is very difficult for these women, especially when they are poor and live in slums. If there were a flood, they would have to ask their husbands first where to go and what to do because they have no rights in the family. Most of them have no basic educational level and the illiteracy rate is very high. Especially young girls living in slums, without any possibilities to go to school, are probably the most vulnerable group due to social factors, economy and climate change.

Besides the high potential of damage for women to climate change and its effects, they often have to face private violence where, like with climate change, hardly any exit strategies exist.

‘Violation against women was never discussed in the public. It always happened in the private. It took a lot of the women to stand for their rights. Earlier most of these women,

especially also middle-class women, did a long time let impress themselves' (Interview Varsha Ayyar 102-104).

'Women are not equal to men when it comes to crime. They are much more affected by it. All of the crimes are gender specific' (Interview Varsha Ayyar; 107-108).

When I asked some women in Ganesh Murthy Nagar where they would go in the case their homes are being flooded, they always said that it is not their decision, but the one of their husbands. In fact, I noticed that all decisions, such as the menu for lunch or dinner, or what activities women could do, were taken by men. Also in the case of flooding women would most probably not decide where, when and how to go. Men are the ones making decisions, while women are kept silent.

'There is a gender-gap in migration. Most of decisions in terms of where to go or stay are taken by men. They are dependent on their husbands. It is assumed that men know what is the best for their families and there is no way to change that' (Interview Varsha Ayyar; 22-24).

In addition to that, Ms. Varsha Ayyar explained the men-dominated migration strategies in more detail:

'You see, most of the migration within Mumbai is based on social networks and kinship ties. From a gender perspective the women in India do not migrate by their own, it is more husbands who take the migration. So there is a strategy behind and migration does not happen as an accident and a big strategy where do you go and stay. And they move out. But what happens in Mumbai? The slums were flooded and many people died and there was water everywhere. Also many children died because they were next to the creek. And for them they could not get out of the water because it was flooded already everywhere. There were people who actually ran away and then they have come back and again started their live again. Even if women did not want to, they had to come back. They have not given up although they are vulnerable. But they have come back to the slum and drink the water that is toxic. It is toxic and still they are living there. Women have nothing to say in life. But they do not have any other options because the state is looking at them as parasites' (Interview Varsha Ayyar; 27-37).

It seemed to be self-evident for women to depend on their husbands and follow these men-dominated political and social rules and regulations. In the Indian caste system, women have always been dominated by men what makes it difficult to change these forms of social stratification.

‘What is the basis of Indian society? It is the caste system. And the caste system since its beginning in its manifestations has been very oppressive towards women. The control of women sexuality is the basis of caste system. So caste system is a very aggressive practice towards social institutions. It is very important to understand the larger crimes against women like femicide’ (Interview Varsha Ayyar; 209-213).

Based on the interviews and field perceptions, women are more vulnerable to men in slums because they have no rights in terms of decision-making. This also implicates that there should be a stronger focus on the empowerment of women in India, especially those not coming from middle and upper classes.

6.4 The role of politics

Although India as a country with more than 1.2 billion people should have some efficient adaptation strategies, it is far behind in implementing measures to weaken the impacts of climate change. This is due to the emerging industrial development and the overpopulation, which makes it difficult for politics to guarantee alternatives for people suffering from climate change effects such as flooding, drought or scarcity of natural resources.

India has not the capacity to support so many people, there is not sufficient water for everyone (Interview Atul A. Sathe; 171).

If you have a smaller population, they can be managed so their city is smaller and it is manageable. But in a big city with huge population this is not problem. Also with the economic problem that we face. But then the question comes: How much is enough? Where is the limit? What makes the limit? Where does the limit comes from? That is where a balanced lifestyle comes into the picture (Interview Atul A. Sathe; 131-134).

As already described, climate change and sustainability are not discussed a lot in the public discourse or media. As a result, the majority of people, especially those having a lack of education, are not aware of these topics at all.

‘The point is we are not even thinking of preparing ourselves. In future we are not prepared for that. Yet, we are undertaking this massive development which is not sustainable’ (Interview Kunti Oza; 113-114).

On the level of governments and international relations different policy-makers and stakeholders must recognize not only the importance of the observation of climate change,

but also the reception of it. Reception in this context means the involvement and engagement of climate change information in the media and the display of the topic in terms of education or NGOs. The observation of impacts and effects of climate change in specific localities on the micro-level is a necessary premise to analyze the impacts on a larger scale (Rudiak-Gould 2013: 7).

Lack of information

A possible way to act against climate change would be to conduct efficient research, based on these results, define programs and plans and then make climate change a main topic in the media in order to develop sustainable management strategies.

‘There should be a strong scientific research. We must know what changes over the seasons on different species and people. Secondly, some plan has to be developed and come into the field of economy and politics. Thirdly, there should be more promotion in the media to inform people they shall not throw away their waste’ (Interview Atul A. Sathe; 37-40).

‘The question is how to get out of the crisis we are facing. But personally if you ask me it definitely is gonna be a problem in various trends, where to get the water from. You take all the resources from the surrounding districts if flooding happens in South of Mumbai. They need a sustainable management and it must become self-initiative. There should be at least some level of sustainability’ (Interview Atul A. Sathe; 41-44).

Politics and policy measures in Mumbai and India are not really informing people what they can do for a sustainable environment and how they can make cities ‘greener’. ‘Green Politics’, like in Europe, do not exist in India and most of the people are not reflecting their lifestyles and life circumstances. People inside their classes try to be uniform and extraordinariness is something frowned upon and critical thinkers are not welcome in the society, although Gandhi taught something different.

There is no public policy for climate change so affected people in the slums have no options at all (Interview Varsha Ayyar; 181-182).

Also in terms of climate migration and climate refugees, inside the country not much has been done yet.

I want to answer the question ‘what can be done’ on a political way with five principles from Biermann and Boas (2010) when, they tried to find a Sui Generis Regime for governing the climate refugee crisis.

First of all, the principle of planned re-location and resettlement: The increase in magnitude and frequency of climatic events and climate change impacts can be predicted. With good technology, the consequences of such events and the consequential need for local populations to leave regions, can be foreseen. With good technology, that would need in many countries different sponsorships, the governance can be better organized and planned and voluntary relocation and resettlement programs over years or, in some cases, decades, can be made possible.

Secondly, the principle of resettlement instead of temporary asylum: Especially climate migrants and refugees who are victims of sea-level rise cannot return to their homes because they do not exist anymore. However, there is often the assumption in current refugee governance that these people may return home. This has to be replaced by an institutional design in which the climate refugees are noticed as permanent immigrants who are accepted by the specific regions or countries.

Thirdly, the principle of collective rights for local populations: Based on individual persecution, the Geneva Convention includes quasi-collective titles. That is the case when for example a whole ethnic or religious group in a country is judged and persecuted. A climate refugee regime has to be appropriate for collectives of people, like villages in the coastal zones (Biermann/ Boas 2010: 75).

Besides this, the principle of international assistance for domestic measures is important on a global perspective. Generally, climate refugees have the protection of their own countries. An international regime, however, would focus less on the protection of persons outside their states but moreover support governments and local communities. A support of agencies to protect people within their own territory would also be possible. Therefore, the specific governance has to focus on international assistance and funding for the domestic support and different resettlement programs.

The last principle is international burden-sharing: When we talk about climate change we have to keep in mind that it is a local but moreover global problem with global causation and consequences. Industrialized countries bear most of the moral responsibility for its victims, although one cannot accuse these countries on ground of this. The protection of climate refugees

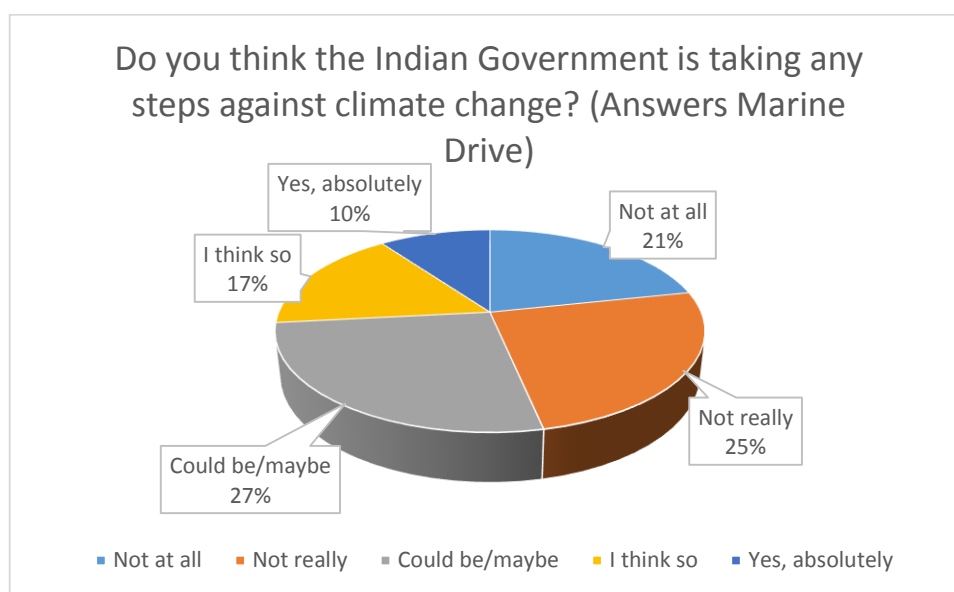
needs an adoption of institutional elements from existing agreements on climate or from similar areas. Ways to enforce this claim would be common but differentiated responsibilities and respective capabilities, reimbursement of full incremental costs of affected countries and double-weighted decision-making procedures which would open an equal dialogue between developing and industrialized countries (Biermann/ Boas 2010: 76).

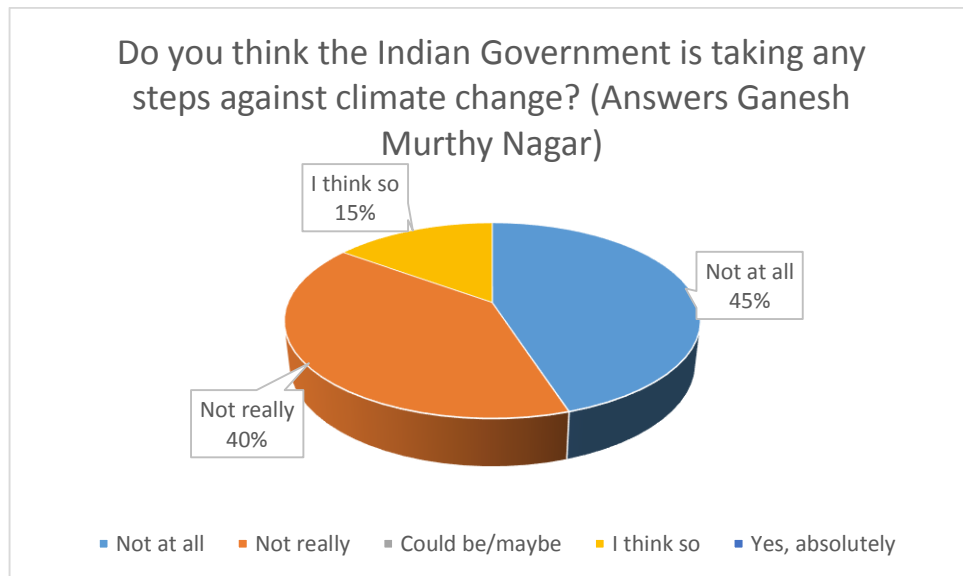
Lack of political action

The more than 1.2 billion people in India make it difficult to implement bottom-up policy actions and many people are confronted with a strong distance to politics. As a result, there are only few information about different policy plans of the Indian Government and the wide distributed lack of education politics is far away from the citizens and not very transparent.

‘There are some projects like gardening but they are so small. The government is not taking any initiatives. I mean, we have so many open tracks. Why don’t they encourage people in farming, greening policy and so on?’ (Interview Kunti Oza; 153-155).

The top-down policy mechanism of the Indian Government is reflected in both questionnaires at Marine Drive and Ganesh Murthy Nagar. It seems that inside society people do not feel satisfied with the efforts of the government in combating climate change, which can be identified in the following two graphics:





'I think the Government will be happy when we have less people. It is just we are not prepared for disasters. I mean there is a kind of preparation but it is not enough. We only do post impact intervention. It only means that people have lost their lives. I am sure, considering the kind of development that we have goes too strong on industry but it is not sustainable. There are so many things you can do and still we haven't seen a n y t h i n g yet' (Interview Puja Vijay Sukhija; 93-97).

When I asked the people in the field what they think about Indian politics and if they think there are some adaptation strategies developed from the government, they said:

'I don't think Indian Government will help. Half of the money they keep in their pockets, other half they invest' (Group discussion; 17.09.2013).

There is a strong mistrust in politics and people especially in slums cannot expect too much from the state.

Collective political action is important in responding to climate change on a local, but also global scale. The impacts of climate change are recognized on a societal, cultural and economic level whereas not only policy makers must take direct action, but also citizens through voting political parties working on climate change adaptation strategies or through protesting (Norgaard 2001: 41).

India is not giving a proper political response, whether on the governmental, nor the societal level. The level of direct participation of citizens in the political process is very low in India, so

some sort of 'levelling up' of citizen's rights is not possible, not least because of the strict forms of social stratification in the country.

Vulnerability through political deadlock

When I asked Ms. Oza what has been done so far to promote sustainable industrial growth and policy mechanisms to reduce the effects of climate change, she answered that barely nothing has been implemented and there is no sensibility for climate change. As two different possibilities for adaptation strategies, she mentioned awareness raising in schools and fundraising and cooperation with 'developed countries'.

[What has been done to combat climate change?] 'Well, nothing much. Maybe we are putting more stress to people to use solar energy. You know, it is a very natural thing. Less energy use. There are NGOs going to schools providing information to people about pollution' (Interview Kunti Oza; 118-120).

'Pollution is too high here and a lack of civil sense.. there is not much considered to the environment. But due to a climate change conference I attended in New York I got some projects. For example awareness raising in schools' (Interview Kunti Oza; 142-44).

The Government of India is, of course, aware of the problematics of climate change because it is one of the biggest industrial nations and with the population of 1.2 billion inhabitants, the government has to take a lot of responsibility for its citizens. Through the reports *Limits to Growth* (1972) and the *World Conservation Strategy* (1980), the term climate change became rather important in international politics and an international discourse on the environmental problematic has started. The reason for this in the 1980s was the problem of acid rain, as politics, media, policy-makers and the public were concerned of its impacts. With the emerging of CO₂ emissions and the worldwide rise of natural disasters, climate change is the key issue in environmental politics, which are part of international politics (Hajer 2005: 298).

There is a lot of criticism on the realist way of analyzing and dealing with environmental problems in international politics because there was/is no critical reflection on the definition of the environmental problematic. It is still common, also regarding to climate change, that many researchers ask why and what sort of action was established using the terms 'interests' and 'powers' to explain these dynamics. However, the common opinion of most climate

change researchers is that governments are not acting and responding quick and efficient enough on the effects and causes of climate change and so there is a distinction between the 'rhetoric' governmental acting and the environmental reality (ibid, 298).

The former Indian Prime Minister Manmohan Singh proposed in June 2008 a National Action Plan on Climate Change (NAPCC) with the propose to adapt mitigation and adaptation strategies on the principles of energy efficiency and conservation and the implementation of sustainable programs and energy projects. In terms of 'ethnic sustainability', the NAPCC was criticized a lot though because the planed dams and hydropower plants would cause displacement for rural communities and destroy their livelihoods. Former projects like these have already been affected around 150 million rural people, with the results of establishing top-down measures where local communities lose their local powers (Macnaughton 2012: 425).

For the Indian Government it would be more fruitful to include local communities and citizen's stakeholders in the policy-making process, like Ms. Oza:

'I am doing awareness [raising]. Make Mumbai clean. And we also talk about climate change' (Interview Kunti Oza; 151).

For environmental activists, such as Kunti Oza, it would be a benefit if the government empowered local stakeholders to take part in the development of government strategies and plans. Through the local knowledge of civil stakeholders and affected communities and groups, climate change adaptation strategies could be more effective and adoptable to the needs of the citizens (Macnaughton 2012: 426).

Nevertheless, the main player in the adaptation to climate change is the government itself. According to MacNaughton (2012) especially poor and marginalized groups are affected the most by climate change (MacNaughton 2012: 426). That showed also the research in Ganesh Murthy Nagar.

Furthermore, MacNaughton concludes that lower social groups highly depend on social action and humanitarian groups enabling local solutions for the global problem of climate change. Therefore, more efforts of the Indian Government have to be taken in the form of national people-centred plans, enabling a sort of climate education and inclusion of lower classes. However, not much has been done yet to implement such strategies (ibid, 427)

Although India has a GDP of around \$ 1.8 billion USD, a GDP growth of 6.9 percent and an enormous industrial and economic growth (World Bank 2013/ URL 8), it is for many people still considered as a ‘developing country’ in terms of Human Rights, the rights and empowerment of women, health and educational standards. As a result, in the literature on the impacts of climate change, India is mostly associated as a ‘developing country’ and is often found under this category. Not only researchers identify India often as a ‘developing country’, but also people in India themselves:

Developed countries should help us with technologies and some funds. We still need more development. It would be good if they help because our pollution is also affecting Europe’ (Interview Kunti Oza; 148-149).

Many decades the global south claimed that northern countries talked and investigated in climate change because they wanted to prevent economically poorer countries from developing in terms of economy, market, business, trade, energy and industry. In the last years, however, international climate change negotiations and panels have achieved the understanding of a more sober realization of the current situation. As there is a strong connection between the GDP of a country and its capacity for adaptation strategies, it became clear that (in terms of economy) ‘poorer’ countries are to a large extend more affected by the threats of climate change, such as floods or droughts. These countries are dependent on the aid and financial assistance of richer countries, especially in terms of adaptation and insurance (Giddens 2009: 177-178).

7. IMPACTS

Researchers have already defined the many impacts climate change has on people and the planet. There is enough evidence that humankind is the only responsible actor for climate change and governments, but also individuals must take action and be aware of this facing global and local problem.

Mumbai is located next to the sea and around 60 percent of it is reclaimed land. That makes it on some parts humid and the city is slowly sinking into the ocean. The effects, such as the floods in 2005, are serious enough because the city’s location is very susceptible to inundation. The effects are also seen in migration and displacement: while many migrants from the rural areas migrate to Mumbai because of droughts and water shortages, also within Mumbai many

people, especially those living in slums next to the coast, are displaced because of drowned areas. Regarding this, the impacts of climate change will be analyzed on two scales: the impacts on migration and the effects on Mumbai itself.

7.1 Impacts on migration

Climate change has already some very critical impacts on migration and the causes of climate change will lead to even much more displacement in future. The main drivers of migration nowadays are economic and political factors, the displacement-effect of climate change is slowly but continuously recognized. Many livelihoods are dependent from the ecosystem and in the case of its breakdown it will lead to displacement, especially of people who do not live in climate-resilient livelihoods (Care/ CIESIN/ UNHCR/ UNO-EHS/ WORLD BANK 2012: 9).

Furthermore, due to the continuation and emerging of disasters, shorter-term displacement will increase. Disasters are very likely to increase in future because climate change causes natural hazards like floods, cyclones and droughts. The sea-level rise causes saline intrusion, storm surges, erosion and inundation (ibid, 9).

The population of Mumbai is foremost affected by floods, because the land is very humid and during the monsoon, the whole state of Maharashtra faces more rainfalls than the average in India. Also sea-level rising is a risk for the city because of its relatively low sea-level. While in New Delhi the biggest effects of climate change are droughts, in Mumbai people face the problem of floods.

Worldwide there is a growing concern over how climate change will affect the international migration and how the interaction between endogenous climate change, international migration, inequality and optimal migratory policies works out. Researchers from many fields put their focus on the questions what are the environmental reasons for people to migrate, what are the welfare effects, what could potentially be welfare-improving and which are the effects of different policies? But one can use all these questions also on a national level and therefore I want to try to use some aspects of the literature on international and transnational migration to understand mobility within Mumbai and internal migration in India. I think that social processes cannot be understood severed from the cultural, political, historical and economic context and so the existence of general theories about processes such as migration are not possible. Therefore, every phenomenon is different from each other because there are different

circumstances and to understand a specific phenomenon, like mobility in Mumbai and immigration and emigration in- and outside the city caused by climate change, one needs ethnographic fieldwork. There it is necessary to communicate with the persons in the field to come to an understanding of their points of view.

The slum-dwellers of Ganesh Murthy Nagar experienced a heavy flooding in 2005 what showed the alarming effects of climate change: many houses were damaged or simply flooded away and some people died through that tragedy. There is no official number of the victims as the estimated number of unreported cases is very high.

'In 2005 there was a heavy flooding. But there is such a high density of people. So where would people go?' (Interview Atul A. Sathe; 23-24).

Migration is a topic that crosscuts all social science disciplines and therefore there are various methods, concepts and ideas.

Climate change and migration

According to Architesh (2010), climate change can affect migration in three ways:

First, the agricultural potential of many regions will be reduced and the ecosystem services will be undermined because of the warming of the atmosphere.

Second, there is a mass displacement in some regions due to extreme weather events

Third, people who live at coastal zones are forced to migrate and relocate permanently in many areas when the sea level rises.

Although there was always migration, and also migration because of the climate and different weather events, we have to face the problem that there is an increasing certainty about the effects of climate change what leads in the end to large-scale forced migration of people, like in India (Architesh 2010: 76).

Climate migrants are most likely displaced in slums as their economic capital is not sufficient to afford housing somewhere else:

'The city needs its migrants for different reasons. For economy or cheap labor. But housing is not provided by the state so when they lose their houses where do they go? They live in the slums which is itself a big area in the politics because one first needs to

identify a slum. And what happens is that they in politics often have problems with different issues such as Human Rights or the quality of life that you need (Interview Varsha Ayyar; 44-49).

In the case of flooding, people from Ganesh Murthy Nagar will most probably be homeless when their houses are destroyed. There is no public shelter or any other alternatives to go. Most probably they will live, like many others, on the streets of Mumbai.

'Where would they go? There are no options for them' (Interview Varsha Ayyar; 51).

Both sides, the expert interviews and the public opinion in Ganesh Murthy Nagar made clear that the only option to escape from a natural catastrophe is to become a climate refugee when fleeing from the destroyed homes. It is interesting that the term climate refugee or climate migrate is mostly used for people migrating between borders and countries. Nevertheless, when some of the slum-dwellers of Ganesh Murthy Nagar had to flee from their homes during the flooding in 2005 they became climate refugees inside the city.

'If sea-level is rising where to go? No idea . . . ' (Group discussion; 17.09.2013).

'Where to go then? We all have to go. When the tsunami came we all had to go. I have also heard the Taj is sinking' (Group discussion; 17.09.2013).

Climate migration

As climate migration and displacement will be one of the biggest causes of climate change, a discourse about the terms, regarding environmental migration contexts in Ganesh Murthy Nagar, is necessary to understand the immense volume of climate change.

The term climate refugee has been used as a means to underline the different and complex social and human consequences regarding to anthropogenic climate change in a quite catastrophic perspective where climate refugees are considered to be helpless victims of 'something' they have not produced though. The image is often this of 'innocent' people from the global south who are suffering the northern emissions of greenhouse gases. From this perspective, the consequences of climate change are reckoned to induce internal and international migration (Felli 2012: 4).

There is still a lack of conceptual clarity and consensus, what makes research on climate refugees and a comparative research program and data collection very difficult. Climate

refugees are also called environmental refugees and these are considered as persons who suffer from a lack of safety regarding environmental factors, such as floods, droughts, water shortages and natural disasters (Myers/ Kent 1995: 18-19).

The term environmental refugees includes also climate refugees but it is very difficult to specify or quantify climate-related migration because there is no official and clear definition of climate refugees so far (Biermann/ Boas 2010: 62).

If we want an efficient definition of climate refugees we have to address the type of environmental harm or climate-change impact, the knowledge whether the migration process is voluntarily or forced, temporary or permanent, transnational or internal and to find the appropriate terminology (Biermann/ Boas 2010: 63).

Many NGOs, especially environmental ones, international organizations and different social movements share the view that there is an absence of a strong action on climate change regarding both mitigation and adaptation. Over the last years many scholars and activists have developed numerous blueprint conventions for the protection of climate refugees and environmental refugees, like the declaration of the Greens/European Free Alliance (EFA) Group at the European parliament on 11th of June 2008 (Felli 2012: 4).

In contrast to climate refugees, climate migration is seen as a strategy of adaptation and not as a failure of mitigation and adaptation and it is more promoted as a solution to climate change. A proper management for climate migration and more focus on sustainability and development strategies is needed (IOM 2009: 24).

The International Organization for Migration (IOM) established in this management a different set of rules, norms and practices which is called the 'migration management cycle' (IOM 2009. 40).

This migration management cycle is a guideline for finding out the differences between climate refugees and climate migrants.

Climate refugees' view of migration is a failure, the climate policy is mitigation and the nature of migration is forced. Responsible for their migration is the global climate change, produced by Northern countries and the consequences of migration are an environmental degradation on the receiving territory. The institutional levels are states, international security international law and the term climate refugees is used to underline the human consequences of climate change and the responsibilities of northern countries.

On the contrary, climate migrants are not forced migrants but more volunteers because environmental migration is part of human history and manageable. They are characterized by vulnerability, a properly managed migration that leads to new resources, remittances and knowledge transfer and from an institutional level, they are individuals and communities but also human security and human rights groups. IOM uses the term 'climate migrant' to replace the mitigation policy by adaptation policy, to promote the 'migration management' and the institutional reform agenda and as a source of labor-power in the North (vgl. Felli 2012: 9).

There were no social policy funds in order to rebuild the flooded and damaged houses in Ganesh Murthy Nagar after the 2005 flooding. As a result, the displaced people who wanted to return after the flooding had no opportunity for housing anymore. Therefore, many people remained on the streets of Colaba, which brought them in an even worst situation than living in the Ganesh Murthy Nagar slum.

'Why would they go back? The question is where else would they go? They have no perspectives and work' (Interview Varsha Ayyar; 121-122).

When it comes to the decision-making process identity plays a crucial role because it is connected with the choice of destination for migrants and influences also adaptation strategies of migrants due to different climatic events and circumstances. To focus on the identity of migrants, it is especially important to consider those who were resettled by authorities. Climate migrants find themselves often in vulnerable situations because when they lose their localized environmental knowledge they live in an area of risk and are more vulnerable to environmental risks in new localities (Adger 2012: 114).

Another implication of climate change are new structures and mechanisms in world wide migration flows. According to Marchiori and Schumacher (2008) climate change will have four main effects for migration:

At first, there will be a general increase of migration because of because of climate. Secondly, due to the overall impact of climate change, even small impacts of climate change will influence a significant number of migrants. Thirdly, due to a barely strict northern immigration, policy migration will increase easily and lead to irregular migration flows. Through the establishment of an effective green and immigration policy at last, there will be a change in the form of an increase or a decrease of North-South inequalities (Marchiori/ Schumacher 2008: 571).

Fact is that migration is a phenomenon that exists since humankind. Very often people had to migrate because of environmental issues, like nowadays. For example, droughts in the USA were the cause for the displacement of more than 30,000 people in the 1930s or the tsunami in Indonesia in 2004 displaced 500,000 people. One million people in Burkina Faso and Sudan were displaced because of droughts from 1968-1971 although many of them returned when droughts stopped. Very often only a part of the household, usually the male, migrates because the costs to migrate are too high for the whole household (Marchiori/ Schumacher 2008: 573).

Climate migration processes in Mumbai

As there are strong kinship and social ties, most Indian families migrate where their relatives live. According to my conversations in Mumbai, it is unusual for Indians to migrate abroad or in another city alone. That shows the strong meaning of social groups and family. Therefore, also in case of a flood, probably not single persons, but wider groups, migrate. That happened for example in 2008, when many parts of Mumbai's coastal zones were flooded.

When climate refugees come to a new country, they are, according to Horton/ Kraftl (2012) mostly feared, and this fear is used as a collective identity and builds up new communities. In a community, the level of adaptation may be much higher because often they share the same cultural, religious and social values. But what is more important, especially when they are climate migrants or refugees, is the shared memory of fear. Many of them have a common memory and history when they lost their place of settlement and that can create new identities of being and belonging. How exactly different memories to places and communities are connected to each other is not clear yet. (Horton/ Kraftl 2012: 1).

Mumbai is a melting pot for many people because of its size, the industrial and economic growth and the supposed working possibilities. Nevertheless, most of internal migrants come from rural areas and have hopes to establish a better life and find a job. In reality, the job perspective is far below their expectations and they end up in slums. Then, in the event of natural catastrophes, they are endangered to die.

'Many people migrate to Bombay because there is no work in the villages. The city allows to find a job but most of people come already from poor areas in the country side so they don't have good education or qualification' (Interview Kunti Oza; 29-31).

7.2 Impacts on Mumbai

In terms of a larger scale of climate change vulnerability, India is influenced and affected by climatic events and weather changes to a very large extent. Especially the areas in the world where prosperity and agriculture depend highly on the monsoon, changes in the monsoon cycle can cause many problems on an ecological, economic, political and social scale.

‘India is very vulnerable to climate change as it is a tropical country. With the kind of policies that we have we become a bit more concerned and we are witnessing the effects of flooding and natural catastrophes. The problem is the weather is becoming unpredictable’ (Interview Varsha Ayyar; 131-133).

‘Undeveloped’ city?

India defines itself, like the People's Republic of China, often as a developing country who is far behind from European countries in terms of industry, health system, social policy and different standards and norms. However, there is one factor where India is slowly overrunning Europe – the economic growth. In order to let the economy grow, strategic business plans have been developed to foster the economy, but the emerging of factories and industrial centers harm the environment and produce more CO₂.

As already mentioned, there is no public awareness of climate change due to a lack of information from politics and media. The unsustainable way of making business in India is another factor for the suppression of the problem of climate change.

‘India is a developing country and I don’t think we have reached an awareness of . . . you know, climate change. So it will be very tough for India’ (Interview Kunti Oza; 42-43).

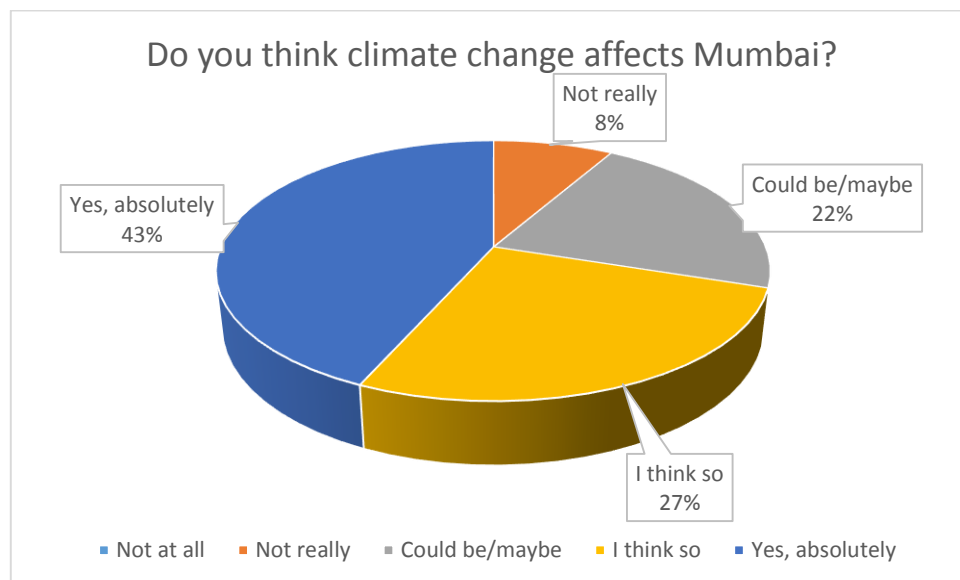
‘I think development for India is necessary. But we know that European countries made some mistakes in development. Then I think the developing countries should not repeat the mistakes. They should make it better. But the developed countries have already destroyed a lot. And then the developed countries should help the developing countries because they made their money’ (Interview Kunti Oza; 59-62).

The effects of climate change to Mumbai will be catastrophic because of its vulnerable location, the high number of possible victims and the lack of adaptation strategies on all levels.

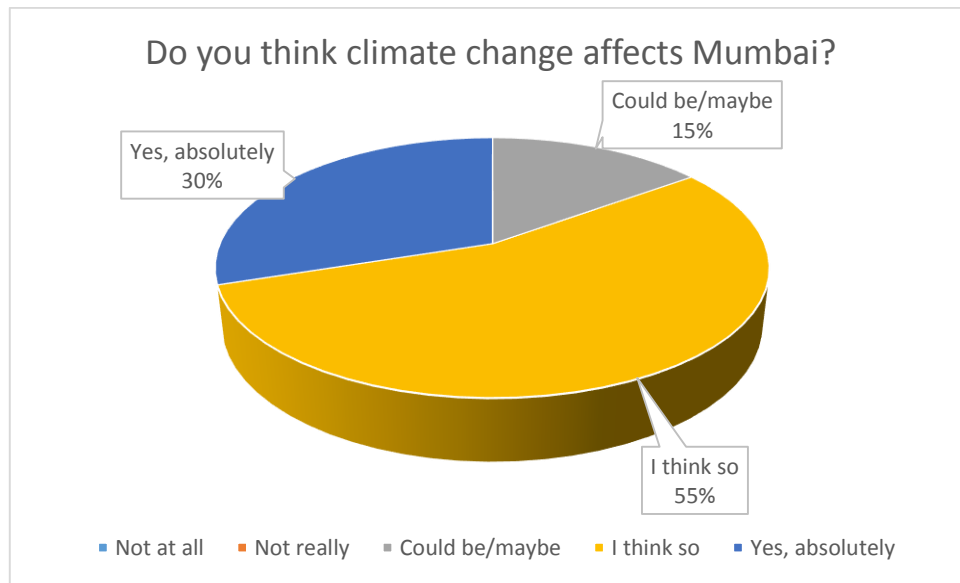
'If you ask me if some parts of Mumbai will be flooded in future, my answer is yes' (Interview Kunti Oza; 102).

'The worst caste scenario would be a big flooding and big event in the future. Of course, the middle class would be affected to a certain point. But the most vulnerable are people working on the streets and living in slums. They are the one affected by that kind of events. As terms of a country, we are used to lose many people and lives. It seems an individual life is not important' (Interview Puja Vijay Sukhija; 51-55).

Also within society, it seems clear that climate change will have effects on the city, although especially the interviewed persons in Ganesh Murthy Nagar were not aware of the term climate change. At Marine Drive 70 percent of the interviewed persons (43% yes absolutely, 27% I think so) were convinced that there will be effects for Mumbai in the future.



In Ganesh Murthy Nagar the statement is even more clearly formulated:



The awareness of climate change and changes in the monsoon cycles rose after the flooding in 2005. I was often told by the people in the field that after the 2005 floods they did not feel safe anymore because these floods were unpredictable and that makes it dangerous not only for the slum-dwellers, but for everyone living in Mumbai.

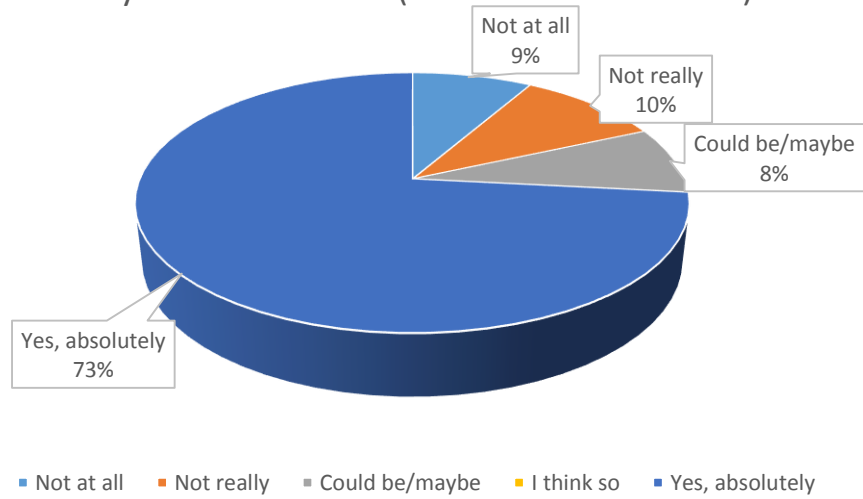
Emotional effects on people of Mumbai

Apart from the dangerous and uncomfortable side effects of displacement, the question ‘how much people are emotionally attached to Mumbai’ is interesting to understand what emotional consequences climatic effects on Mumbai can have on its population.

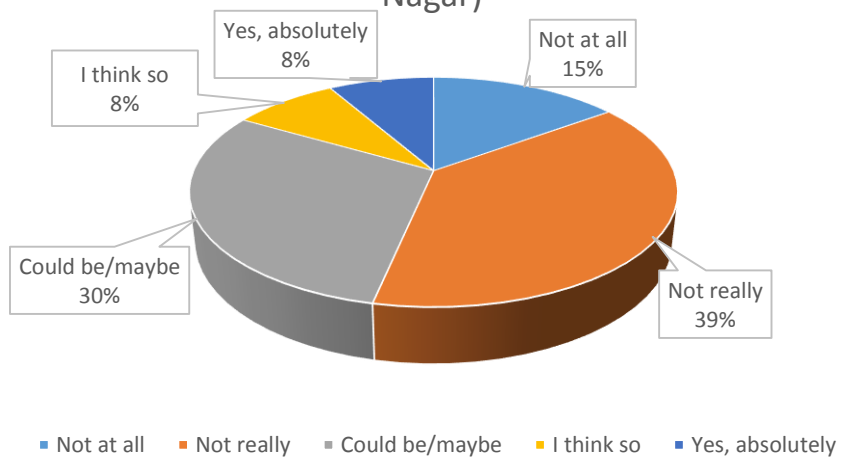
The question whether the interviewed persons like Mumbai, offered the biggest distinction of answers between Marine Drive and Ganesh Murthy Nagar. 73 percent of people interviewed at Marine Drive answered this question with ‘yes, absolutely’, while people in Ganesh Murthy Nagar were not sure or did not like Mumbai in general.

It is to a certain degree self-evident that people in slums, coming from lower social classes have to deal with many problems and are threatened and vulnerable on all aspects of life. In fact, most of the people living in slums are struggling in order to survive. As they have no other options or career perspectives, the slum-dwellers were less attracted by the city than middle and upper class people:

Do you like Mumbai? (Answers Marine Drive)



Do you like Mumbai? (Answers Ganesh Murthy Nagar)



PART C – CLOSING DISCUSSION

Having discussed the relationship of climate change and caste on the levels of perceptions, vulnerabilities and impacts, in this section of the paper the connections and links between the categories are illustrated in order to establish a closing discussion of the topic.

8. CONCLUSION

Based on the ethnographic fieldwork, four qualitative interviews and a quantitative survey in two different settings it became clear that Mumbai is very vulnerable to climate change because of its geographical position and its high population. Every day the number of people living in Mumbai gets higher and there is not enough space and infrastructure in the city to organize the living of about 18 million people. That leads to many tensions between the population and produces strong distinctions between different social, cultural and political groups. The Ganesh Murthy Nagar slum is based in Colaba, the south of Mumbai, which is also considered as a business and tourist district. Therefore, the difference of rich and poor is very visible – if one looks on the left side, he/she sees people living on the streets or in slums, on the right there are shopping malls and shops with luxury brands.

What can be seen from the data collection is that social class and caste relations and regulations are the guidelines for the Indian society. There are various and rather complex social, cultural and political networks and kinship ties between the 18 million people living in Mumbai what has effects on migration, work and gender gaps.

When analyzing climate change and its connection to people, one needs to understand the perception of the specific groups or societies. It became clear that people in slums are more aware of climate change because on a large scale they are highly affected by it. However, they did not know the term climate change itself, but are rather aware of some unpredictable weather events, such as flooding or more rainfalls.

Summing up, there are different effects of climate change on society, politic, migration and class/caste relations. When people lose their homes, like it happened in 2005, they lose a part of their identity and personal history as well.

Climate change has many different effects on society, culture, politics and migration. Migration is a phenomenon since a very long time but it is important to note that climate plays a crucial role when it comes to migration. Mumbai is a very vulnerable region regarding climate change and mainly the rising sea level and the unexpected flooding, that culminated in 2005, causes migration and displacement.

People living in slums are generally from a lower social class and very poor. Not much has been done so far in order to improve their living qualities and standards. They know that the weather is changing, but are not involved in the climate change discourse because they have no access to media and information and the illiteracy rate is very high. However, people coming from middle and upper classes know about the term climate change although they are not that much informed as well due to the general absence of awareness raising from politics and the media. To make the effects of climate change visible it would be necessary to include as many stakeholders as possible, such as international organizations, NGOs and other environmental frameworks.

While people from middle and upper class identified climate change from a rather objective point of view, people in Ganesh Murthy Nagar used religious concepts and explanations for unusual weather events such as the flooding in 2005. They said that only God has the power to transform the weather and they did not consider factors such as pollution and industrialization responsible for these events.

In this context, it is important to understand that the connection between climate change and culture is crucial in order to analyze perceptions of people on climate change.

Information of climate change does not connect with all cultures and worldviews in the same way, as cultures are dynamic and complex. In the field of the Anthropology of Climate Change, anthropologists must find out in which ways different cultures produce their own selective views of the natural environment.

The big task for anthropologists is trying to incorporate culture and identity into public policy. However, this is not easy because losses of public goods such as community or place cannot be compensated or swayed easily by arguments over economically rational adjustments to risk. What anthropologists should do is to acknowledge the importance of cultural factors and dimensions through appropriate-scale individual and community involvement when they determine the goals of adaptation policies and shape their means of implementation. Anthropologists also must bring the cultural dimensions in the front stage of research programs

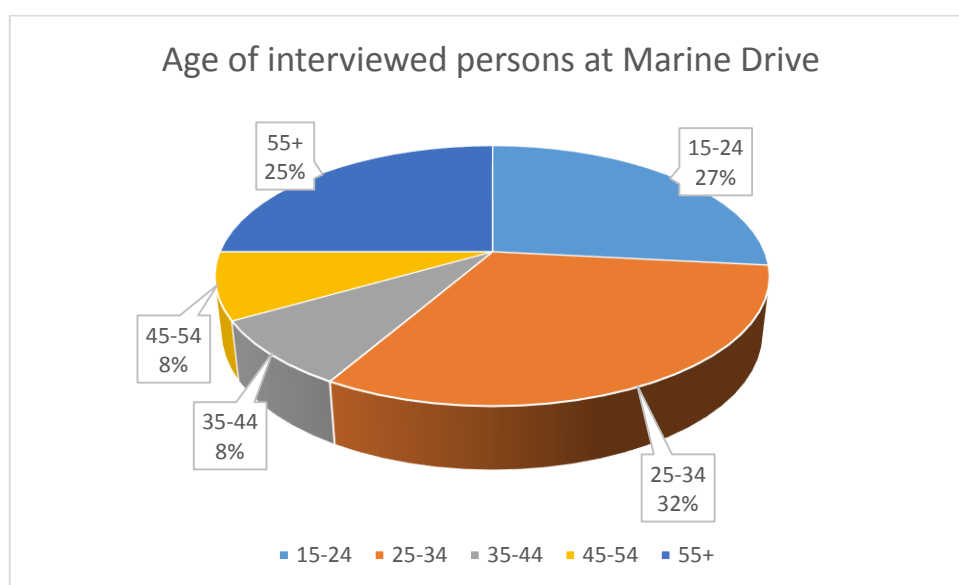
so that they cannot be ignored because if so both adaptation and mitigation responses could fail to be effective because it gets hard for them to connect with what matters to communities and over all individuals (Adger 2012: 116).

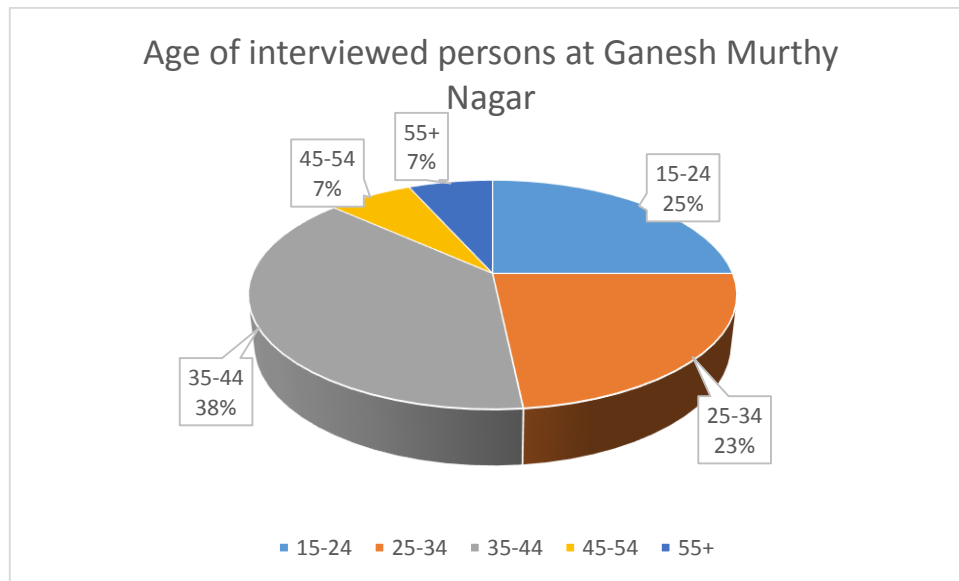
The monsoon became stronger in the last years with more heavy rainfall and many people I talked to were concerned about this because they had already problems such as flooding or accidents because of the strong monsoon. A reason for this different perception of climate change might be the different levels of education. While the majority of the slum-dwellers did only attend elementary school, most of the interviewed people at Marine Drive went to university.

By and large, there were some differences in age between the two groups of interviewed people as people at Marine Drive were a bit younger than those at Ganesh Murthy Nagar.

Yet, the thematic is so complex that the difference of education, knowledge, experience and perception of the two groups cannot only be described with the attribute age.

However, the next two graphics illustrate that the age differences are not sufficient enough in order to deduce explanations of the data results from it.





The research has shown that for people not living in slums, the four experts and the case group itself it was clear that slum-dwellers are the most vulnerable group to climate change. People in slums in general were not conscious of climate change, but of their environment. Contrary, middle and upper class people were to a higher degree conscious of climate change, but not of the environment.

The people of Ganesh Murthy Nagar talked a lot about the weather, but more about the daily weather and not about climatic circumstances over different periods in time. As a result, I was not able to identify their perceptions of climate change in a larger context.

Due to the limited media and politics attention, climate change is not very much discussed between people in Mumbai, with no big difference between social classes and castes, which is a big obstacle in making the dangers of climate change visible in the public discourse.

But what became clear in the course of the research was that people do not feel safe to climate change and know that the effects can be very harmful for them and Mumbai itself. The big difference although is that people from lower classes are more vulnerable than middle- and upper class people.

The Indian Government has not done a lot yet. It must be stated that Mumbai is in great danger because in future more flooding is predicted. It is necessary and crucial for politics and media to make climate change a 'hot topic' in order to enable a public discourse on it. As long as these important stakeholders are not acting, nothing will change. Actually, this absence of awareness

raising might worsen the situation in future because people in Mumbai are not prepared for climate change and its effects – regardless of class and caste.

Regarding the research question what impacts the emergence of climate change on weather perceptions and climate vulnerabilities of different population groups in Mumbai has, it can be finally concluded:

The impacts of the emerging climate change produce a strong separation of population groups in Mumbai. This separation is not visible in society because, based on the Indian caste system, the social, political and cultural groups are strictly divided from each other and barely any form of contact between them exists. Through the emergence of extreme weather events, most notably floods and irregular monsoon periods, both slum and non slum-dwellers notice their increasing vulnerability to climate change. However, the main difference lies in the fact that, instead of middle- and upper class people, slum-dwellers have no adaptation strategies and possibilities to avoid the impacts of climate change. In the case of extreme weather events, they are directly confronted with destruction, desperation and death, while the majority of middle and upper people survives. In terms of perception, there is also a big difference: In middle and upper class communities, there is at least a little bit information about climate change produced and distributed, with the results that climate change is perceived as dangerous. People from lower social contexts are completely excluded from the slowly emerging climate change discourse in India due to a lack of education, information, and their acceptance of being people which deaths would be only a benefit for the government.

According to this, I asked a year ago an Indian politician at a High-Level Conference in Vienna what are the biggest problems facing India. The person answered:

‘We have 1.2 billion problems, my dear.’ [...]

9. FUTURE PROSPECTS AND POLICY RECOMMENDATIONS

The Government of India must identify the impacts of climate change on local communities, as well as on the country as a whole. There must be a stronger emphasis on research activities and for measuring the perceptions, vulnerabilities and impacts of climate change on a local level. A possible way to do so would be a stronger engagement and involvement of national and international NGOs in the policymaking process because through this bottom-up strategy the government comes to information on local impacts and strategies on the one hand, and can ensure a 'levelling up' of citizens and vulnerable communities. The future livelihoods of many people in India depend on the measures taken by the state, so the government's duties are to inform people on climate change, engage local communities to be aware of the implications of climate change to them and provide sustainable ways of energy using.

Human Rights in traditional India are not comparable to the western Human Rights discourse, considering the fact that the 'UN Universal Declaration of Human Rights' is a Western tradition and India is not formally practicing its contents. People are not considered being equal in social realities and practices, although according to the Constitution of India, they should be. As long as these many forms of political, social, cultural and economic discrepancies exist, India will be far away from international Human Rights standards.

India will definitely suffer from the impacts of climate change even stronger in the following decades. The complex interplay between the drivers of climate change and the fact that nobody can be completely isolated from its risks and threats makes adaptation strategies on a local and global level very difficult and opaque.

However, there is existing evidence that climate change will have effects primarily to the developing world, especially in terms of population movements and displacement. India must overcome its strong reduction on the caste system and provide possible safety measures for all citizens. There must be the development of measures identifying adaptation strategies and opportunities in order to become less vulnerable.

Apart from that, more research on all aspects of climate change must be adapted. Research is important on both local and global level. Therefore, also support to the research capacities in different regions and communities should be available. Then the integration of this data, which is relevant to develop adaptation strategies, must be embedded into policy mechanisms and the

strategic guidelines from the government. The relevant governmental instruments, such as the Ministry of Environment, Forest and Climate Change or the Ministry of Industry, must then adapt adaptation profiles.

Furthermore, the development of information systems, who do not only generate and process data, but also enable communication between Indian policy-makers and politicians at various levels to inform them about relevant data, is necessary.

Indian citizens, and especially those living in slums, or suffering from bad living conditions, have needs that must be accepted and recognized by the state. In the case the government understands the demand for direct or indirect action, policy-makers can rely on the current knowledge that already exists.

In my opinion, it is from great importance in this context that politicians should not focus and rely only on the 'global knowledge', which is the outcome of thousands of documents and papers produced by entities and specialized agencies of the United Nations System. There should be rather a focus on local knowledge, produced by different communities, NGOs, environmental activists, local stakeholders and the specific histories of various people and groups affected by climate change.

Considering the necessity of interaction in order to produce and implement local knowledge into the sphere of politics, an efficient and fruitful dialogue between the government and local people must be possible. The Indian Government should therefore contribute in talks with the civil society and put the received local information on the agenda of international negotiations. India is the world's biggest democracy and one of the biggest economies and industries on the globe. Hence, it plays a crucial role in international politics and the international climate diplomacy mechanism.

If India were more willing to act against climate change and implement useful and proper mechanisms to protect the Indian population, it would not only save the lives of millions of people, but also gain more respect in the international community. As long as there is no legal and institutional framework in the Constitution of India, nothing will change in the future.

Apart from that, enhanced cooperation is only then possible if India strengthens its policy coherence at the national level and then interacts with the international development and humanitarian aid policies.

Regarding the media, there has to be more information offered on climate change to the population. A large amount of India's population has no basic education and access to the media or other canals of information distribution. As seen in the fieldwork in Ganesh Murthy Nagar, most of the slum-dwellers were illiterates and had no opportunity to learn reading and writing.

According to that, even if they had access to media, they would not be able to understand printed media.

Concluding, I think that education in India is the first and most important adaptation strategy to climate change. If people on a large scale begin to understand the risks and impacts of climate change, they will start to act different in many fields and try to live a more sustainable way of life.

If there is public demand for more sustainability, the Indian Government needs to develop and implement sustainable development strategies in terms of disaster risk management, linking disaster risk reduction and facing the challenge of climate migration. A possible option then would be to bring these strategies in accordance to the United Nations Development Assistance Framework.

India definitely needs to involve multiple stakeholders, including representatives of indigenous groups, social, political and cultural organizations, local authorities, the private sector, NGOs, environmental activists and youth representatives. Only then, a comprehensive and sustainable way of climate change adaptations is possible.

I really hope India will accept these major challenges to enable a future of prosperity, sustainability and safety for its society, and especially the people of Ganesh Murthy Nagar.

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GOVERNMENT OF INDIA. 2011

URL 4: https://mahades.maharashtra.gov.in/files/report/pca_2011.pdf (Last access: 11.06.2015)

OASISNGO

URL 5: <http://www.oasisngo.org/> (Last access: 13.06.2015)

OXFORD/ DICTIONARY ONLINE

URL 6: <http://www.oxforddictionaries.com/definition/english/fear> (Last access: 12.06.2015)

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URL 7: <http://www.tiss.edu/faculty/Ayyer> (Last access: 12.06.2015)

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10.3 Interviews

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SATHE, Athul A. 2013. Expert interview. 08/09/2013. Bombay Natural History Society. Hornbill House, Chowk, Colaba, Shahid Bhagat Singh Rd, Mumbai

SUKHIJA, Puja Vijay. 2013. Expert interview. 11/09/2013. B 601 Kailash building, 131 SV rd, Khar west. Mumbai

11. Abstract English

The subject of this paper is climate change and its implications on the Indian caste system, based on the author's own research in Mumbai and the involvement of mainly anthropological literature.

Caste and climate change are two areas in which people and societies perform on different levels. While people often from lower social contexts are very affected by their natural environment and the impacts of climate change, people from middle- and upper classes are less vulnerable to climatic events. In the case of India, where caste is still the basis of society, this social and political distinction of people is even more visible.

History had shown that caste results in highly complex forms of social stratification where people are usually not able to switch between the different categories. As climate change affects Mumbai on various levels, the perceptions, vulnerabilities and impacts of and to the city are, regarding the forms of social stratification, different from area to area.

To remedy this problem, this paper proposes the methods of ethnographic fieldwork, participant observation in Ganesh Murthy Nagar, Mumbai and qualitative interviews. In the attempt to provide a variety of methods, a quantitative survey in the Ganesh Murthy Nagar and Marine Drive, a non-slum area, has been conducted.

The result of both theoretical and empirical research show that climate change has not only negative impacts on Mumbai itself, but also on the strengthening of caste models and forms of political, cultural and economic exclusion. The slum-dwellers are more vulnerable to climate change because of their locality, their own perception of weather and a lack of resources, education and adaptation strategies.

12. Abstract German

Das Thema dieser Masterarbeit ist Klimawandel und seine Auswirkungen auf das indische Kastensystem, basierend auf der Forschung des Autors in Mumbai und der Miteinbindung hauptsächlich anthropologischer Literatur.

Kaste und Klimawandel sind zwei Bereiche, in denen Personen und Gesellschaften unterschiedliche Formen von Performanz aufweisen. Während Personen aus einem niedrigeren sozialen Kontext weitaus mehr von den natürlichen Rahmenbedingungen und den Auswirkungen des Klimawandels beeinflusst sind, zeigen jene, kommend aus den von der Gesellschaft produzierten und legitimierten höheren Klassen, eine niedrigere Verwundbarkeit auf. Im Fall Indiens, in dem Kaste immer noch die gesellschaftliche Grundbasis darstellt, wird diese soziale und politische Segregation von Menschen noch sichtbarer.

Die Geschichte hat aufgezeigt, dass Kaste in sehr komplexen Formen sozialer Stratifizierung resultiert, innerhalb dessen Personen normalerweise nicht zwischen den ihnen vorgeschriebenen Kategorien wechseln können. Nachdem Klimawandel Mumbai auf verschiedenen Ebenen beeinflusst, sind Wahrnehmung, Verwundbarkeit und Auswirkung im Zusammenhang mit sozialer Stratifizierung innerhalb der Stadt unterschiedlich konzeptualisiert.

Um dieses Problem zu behandeln, wurden in dieser Arbeit die Methoden der ethnographischen Feldforschung, teilnehmender Beobachtung und qualitativer Interviews angewendet. Des Weiteren wurde im Zuge der Methodenvielfalt eine quantitative Datenerhebung im Slum Ganesh Murthy Nagar und des benachbarten Marine Drive, das keinen Slum darstellt, durchgeführt.

Das Resultat der theoretischen und empirischen Forschung zeigt, dass Klimawandel nicht nur negative Einflüsse auf Mumbai selbst hat, sondern auch zu einer Verstärkung des Kastensystems und den Formen politischer, kultureller und wirtschaftlicher Exklusion führt. Die Slumbewohner/innen sind verwundbarer gegenüber Klimawandel aufgrund ihrer Lokalität, der spezifischen Wahrnehmung von Wetter und des Mangels an Ressourcen, Bildung und Anpassungsstrategien.

13. Curriculum Vitae

EDUCATIONAL BACKGROUND

- 2014 – 2015 **Master European Studies – *graduating in September 2015***
Postgraduate Center, University of Vienna
- Major subjects: Organization and Working Procedures of the EC/EU Institutions, Human Rights in Europe, European History, European Integration Politics, European Law, European Economy
- 2012 - 2015 **Master Joint Program Cultural Differences and Transnational Processes (CREOLE) – *graduating in June 2015***
University of Vienna, Department of Cultural and Social Anthropology
- Major subjects: Intercultural Communication, Conflict Management, Transnational practices and migration, Super Diversity, Globalization Integration, State Analysis, Climate Change, ethnological dealing with climate (policy), Natural Disasters and weather, Diaspora Research, Mobilities
- 2012 **Erasmus Studies in Rome (6 months)**
Università degli Studi Roma Tre, Facoltà di Scienze Politiche
- Major subjects: Italian history , Fascism, International Relations, United Nations, Environmental Policy, Asylum Policy
- 2011 - 2014 **Bachelor of Political Science**
University of Vienna, Department of Political Science
- Major subjects: International Relations, Asylum Policy, United Nations System, International Politics, Environmental Policy, Comparative Policy Analysis, Governance Theories
- 2009 - 2012 **Bachelor of Cultural and Social Anthropology**
University of Vienna, Department of Cultural and Social Anthropology
- Major subjects: Migration, Transmigration and Integration Policy, Environmental Policy, Asylum Law, Tourism, Transnationalism

PROFESSIONAL EXPERIENCE

- 2014 **Internship at the United Nations Industrial Development Organization (UNIDO), (4 months)**
PRF/RPF/ Asia & the Pacific Programme
- Preparation and accomplishment of country briefing notes
 - Communication and coordination with staff from the Asian Field Offices and project managers on administrative, logistical and financial issues
 - Keeping minutes of meetings
 - Writing draft papers on evaluations of UNIDO Field office performances and pipeline projects, talking points for social events and meetings with ministries and ambassadors and recommendations of Technical Cooperation Guidelines
- 2013 – 2014 **Project Coordinator**
Campaign *Climate Change and Social Justice*, SCI Austria
- Promotion of the international SCI Campaign ‘Create a Climate for Peace’
 - Holding of 10 school-workshops in Austria on Climate Change, Environmental Policy and Sustainable Development
 - Awarded as UN Decade project of Education and Sustainable Development from UNESCO

2013 – 2014	Project Member <u>LEONARDO Project <i>Starting Business in Later Life</i></u> ▪ Research on education and knowledge building for persons 55+ with the VHS Vienna (Project Managers: Herbert Depner and Monika Reif) ▪ Presentation of the research results and collaboration in the project development and evaluation during meetings in Budapest, Lisbon and Hamburg
2013	Internship at the Austrian Commission for UNESCO (2 months) <u>ÖUK - Intangible Cultural Heritage</u> ▪ Organization and preparation of presentations ▪ Record of minutes of negotiations and committee meetings ▪ Formal review of applications ▪ Presentation of UNESCO at national events ▪ Quantitative and qualitative data analysis ▪ Assistance to the Chief of the Intangible Cultural Heritage in Austria
2013 – 2015	German teacher (continuous) <u>Actilingua Academy</u> ▪ German classes in grammar and conversation for adults between 16-35 years ▪ Organization, participation and presentation of cultural programs
2011	English Teacher (6 weeks), Taslicay/Turkey <u>NGO EDIT (Development through Interaction)</u> ▪ Teaching English and working closely in the local community in the fields of integration, cultural mediation and communication between Turkish and Kurdish identities
2011	Learning and teaching assistance (4 months) <u>Wiener Kinderfreunde</u> ▪ Learning support in reading, writing and mathematics ▪ Pedagogical supervision on excursions
2008 - 2009	Civil service at SOS Kinderdorf Moosburg (9 months) <u>Crisis intervention group <i>Barbakus</i></u> ▪ Educational support ▪ Preparation of daily reports ▪ Recreation activities

LANGUAGES GERMAN (Mother Tongue) ITALIAN (C1) ENGLISH (C1) FRENCH (A2)