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**The development of climate change policies in China**

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## **1. Introduction**

The main topic of this thesis is to analyze and try to fully understand the causes and the consequences of the climate change issue in China. The reason of the decision to focus on this topic is the willingness to be actively involved in this issue. Moreover, it is very strange to think about China as a country, which plays an important role both in the production of the CO<sub>2</sub> and on the development of renewable energies. In fact, we can say that this country faces a double role and represents the two faces of the same coin. China is the biggest country all around the world and surely is the most populated one. Therefore, when we focus on it, our attention is also on the high number of people that are directly involved and on the huge portion of the environment, geographically speaking, that is directly affected. The fact that China is the biggest producer of CO<sub>2</sub> with the USA leads to think that the Asian country is highly developed, almost at least as the USA. Nevertheless, actually, the reality is not this. In fact, China produces so much because its aim is to develop itself as fast as possible and, after that, start thinking about the environment and how to solve the damages they have caused. This point is the central discussion during the international meetings aiming at settle the problem of the environment. All the already industrialized countries try to force China to revise their policies because their philosophy is that China should develop but at the same time, it shall use more renewable energies. Therefore, they have completely overcome the thought of “first develop, and then repair” which the industrial revolution was based on. Of course, China does not agree. We are going to analyze this problem during the dissertation of this thesis.

China, actually, is actively involved in the issue of climate change and for this reason; it represents the first country that invests more on renewable energies. China has a much-differentiated geography; in fact, it can actually see the damages caused to the environment since the industrial revolution. It is weird to think about China as one of the major investors but this is the reality because it has a very sophisticated type of technology. Even if China is, so active it still pollutes too much and it is not able to afford all the demand for energy or water from the population. China faces many problems correlated to the climate change, such as poverty, scarcity of water and of arable lands. The fact that China faces so many problem caused by climate change should stimulate a faster reduction of emissions and a faster development of renewable energy.

This thesis is divided into five different chapters. Starting with a general introduction of the topic of climate change and pollution. Moving on, the aim is to discuss the historical background of this country related to the topic of climate change. Then we focus on the actual policies implemented by the country, understanding also the difficult relationships it has with the so-called developed countries. Fourthly, we move our focus on what is going to come next, because China has to work very hard to resolve the environmental damages that it has caused both on global and national level. After all others, we are going to conclude with a general overview and some personal ideas.

### **1.1 What does climate change mean?**

Nowadays is extremely common to hear on the television or read on Internet the terms “climate change”. Actually the real meaning is not so well explained because people take this concept for granted and do not research the meaning. Therefore, before starting to get

involved on the topic of China's pollution, we need to have a clear understanding of what climate change means. Climate change is an issue that developed during the '50s and in 1972 there was the first conference of the United Nations in Stockholm. During this conference the United Nations Environment Program (UNEP) was formed.

In 1992, the Rio Declaration was signed and the principal themes were environment and sustainable development. The most recent meeting discussing this important issue has been held in December 2015 in Paris. The key elements of the discussion are long-term goal for keeping the temperatures below, without increasing the temperature of two more degrees Celsius, and reduce the global emissions. The Paris climate talks focus on developing economies, it means that North America and Australia are not included in the discussion.

The effects of climate change are studied in two different scenarios. The first one is more optimistic and is called "the propensity scenario"; it anticipates a strong economic growth, improvements in basic services and a lower number of people living in poverty. On the other side, the pessimistic view is called "the poverty scenario". It predicts all the contrary of the "propensity scenario", so a higher number of poor people and an ineffective economic growth.

*However, what does it mean that climate is changing?* The easiest answer is that the temperatures are increasing in the atmosphere and that there is a long-term significant change in the weather patterns of an area.

*Moreover, what does it imply?* It implies that sea levels are rising, and snow and ice cover is decreasing. It, more specifically, means that many animal species are suffering and human beings are facing many problems, for example in the sector of agriculture.

There are different kinds of causes that are going to differentiate the temperatures in the atmosphere. Mainly the causes are divided into two groups: natural and human made. The natural ones can be summarized as the changing in the Earth's orbit or the volcanic eruptions. On the other side, the human made changes are connected to the burning of oil, gas and coal. Of course, the human made causes are more dangerous than the natural elements and for this reason, many different kinds of organizations are working so hard through conferences trying to solve or reduce the risks of climate change.

Right now, we have a clearer understanding of the meaning of climate change and in general, we can say that it refers to the rising of the temperatures. Therefore, we can move on with our analysis of the change in climate policies, starting from an overall of the historical background.

## **2. Historical background**

This chapter presents the historical developments of China regarding the issue of the protection of the environment. This country is a real old one, it is situated in Asia and its role is fundamental in the interconnections between both underdeveloped and developed countries. It plays an important role because of its dimensions and for the high number of people living in there. When we focus on the background of China we want to understand the policies adopted since the 1980s. Therefore, we base our research on the development of the institutions, which the central topic is climate and environment. Our purpose is to understand how the concept of climate change has developed and how China has modified its institutions to adapt them to face this issue. Moreover, we are interested in how the climate change has affected the administrative decisions taken by the Chinese government.

## 2.1 Climate Policies from the '80s.

In the 80s, the Intergovernmental Panel on Climate Change and the United Nations Environmental program were established, and in the same years, the Chinese government started to establish some institutions. The most important institutions were the State Meteorological administration, the State Science and Technological Commission, the National Environmental Protection Agency and the Ministry of Foreign Affairs. At this stage, the issue of climate change was taken as a scientific issue rather than as an economic development issue. However, after the Tiananmen event in 1989, the government was forced to review its economic strategies because that event provoked a recession in the economy of the country. For this reason, the Chinese government started to look at climate change as a source of economic growth. Therefore, China changed its view of climate change issue from a scientific problem to a source of economic growth.

In the 90s, a new institution chaired by Song Jian, that later became State Councilor, was established, named the National Climate Change Coordination Group (NCCCG). Since then, China started to worry about three issues. The first one was the relationship between the reduction of the emissions and the development of the country that requires ever more energy. China was developing very fast, the population was growing without control and this latter caused an increase in the demand of energy that China could not face without a high rate of emissions.

The second one was the low understanding and knowledge of the scientific side of the climate change. China was not ready to handle with the problem of climate change on the ground of scientific research because the Chinese government did not understand the complications of this issue.

Thirdly, was that China was not ready to elaborate a right policy to intervene inside and outside its country.

During this period, the Framework Convention on Climate Change (FCCC) was signed at the conference held in 1992 in Rio De Janeiro. The FCCC was the one that adopted the "common but differentiated responsibilities and respective capabilities", which pretends from the developed countries that they were the leader in combating the climate change. Moreover, it does not give any responsibilities to the developing countries for the damages caused to the environment due to a high rate of emissions.

The Chinese government completely agreed with this topic because they did not feel responsible for the damages that the environment faced in that period. The reason of this thinking was that the Chinese government blamed the developed countries, such as UK and the European countries in general, which were the protagonist of the industrial revolution. The main reason was that the most important causes of the climate change are due to the fast development of countries during the industrial revolution. In fact, before the 18<sup>th</sup> century, the emissions that provoked climate change were very low or even equal to zero. Time passes and the industrial revolution let ever more country to develop until the entire world started facing the consequences of the industrial revolution. It was too late to stop the process but it was the time to develop a new way of production to reduce the emissions and the damages of climate change. At that time, the problems of climate change and pollution were not taken in consideration because, actually, they were not even present in the scenario. People completely ignored the damages that the high rate of emissions were provoking. Therefore, China wanted to follow the same reasoning, but now the damages of the emissions are known and the experts want to prevent the worsening of the current situation.

Therefore, this first period that we have analyzed, focus on the creation of the first institutions and on the development of the concept of “common but differentiated responsibilities”. It is important to have in mind this concept because the Chinese government relies on it in every convention.

## **2.2 The conferences on the ‘90s.**

In the ages of the 90s, many conferences have been held. The first one in 1995 in Berlin, called Conference of Parties (COP1) proposed to negotiate a protocol where the aim was to reduce greenhouse gas (GHG) emissions. China was skeptical of this proposal and, with other developing countries, appealed to the principle of “common but differentiated responsibility”. This protocol was adopted in December 1997, after three years of negotiations, in Kyoto, Japan. Therefore, it is named Kyoto protocol and the aim is to reduce the collective emissions by an average of 5% by 2008. Of course, this protocol wanted to protect the developing countries because it was clear that they were not able to afford such costs to develop such technologies to be more sustainable. In fact, the Kyoto protocol created a market to trade surplus emission credit, through the International Emission Trading (IET).

The Kyoto Protocol, on one side, represents the first step to create market-oriented rules to comply with a specific amount of emission for developed countries.

On the other side, an important critique has been made to the Kyoto Protocol because it bypassed several greenhouse gas emitters, such as the United States, China and India. In fact, only the EU member countries have committed to meeting emission reduction targets set by the Kyoto Protocol. For example, the United States, one of the major greenhouse gas emitters, refused to join the Kyoto Protocol until other emerging economies would accept the commitments on greenhouse gas emission. Nevertheless, developing countries argue that their priority is the economic development and not the protection of the environment.

Moreover, the Joint Implementation (JI) gave the possibility to the developing countries to cooperate in carbon reduction projects. The Chinese government was against any compulsory emission reduction commitments to developing countries.

It follows two line guides: first, it emphasized that this approach was only a way through which the developed countries avoid their responsibilities for the damages caused in the previous century. Moreover, this approach is seen as a way to exploit further the developing countries. Secondly, China started to collaborate with Japan and Norway, so it was not interested in the specific obligations of the Kyoto protocol.

After some years of administrative adaptation, the Chinese government started to behave in a more collaborative way. In fact, in 2002 at the World Summit on Sustainable Development in Johannesburg, Zhu Rongji, the Chinese premier, said that his government signed and agreed with the principles of the Kyoto protocol.

## **2.3 Turn of the century.**

Another problem raised at the turn of the century for the Chinese government. In fact, China faced a very important dilemma: it became the largest economy to attract foreign investment. This implied that firms from other countries moved their plants in China to produce their goods.

On one hand, this was very good for China because it has implemented the consumption of the population and has increased the total amount of GDP. Therefore, it has increased the

welfare of the Chinese population.

On the other hand, higher number of firms means higher level of emissions due to the production. Moreover, with an increase in the general level of output people are willing to demand and consume more resources, such as electricity and water. The increase in foreign investment both benefits but also worsen the position of China in respect of climate change and development. In fact, since 2001 the level of emission of China increased from 12% to 19.5%.

Since 2003, with the new leadership of Hu Jintao and Wen Jiabao, started an important period of administrative reform to enter into the WTO. In 2005, the Chinese government together with the USA, Australia, Japan, South Korea and India signed the so-called “Asia Pacific Partnership for Clean Development and Climate Change” pact. The aim of this pact was not to replace the Kyoto protocol instead it was complement to it. So, after the ratification in 2005 of the Kyoto protocol, China has been actively involved in climate change negotiations. The main point of the discussion from the Chinese government was that its per capita greenhouse gas emissions were very low respect to the data of the USA. This happens because China is overpopulated but the GDP per capita is not high, each person does not earn in average a sufficient level of money to have the possibility to afford a high consumption of energy or water. The Chinese population is on average poor. The World Bank ranks the poorest through the daily amount of money they have to live with. The poorest are the one that have to live with less than one US Dollar per day. On average, the Chinese population does not earn as much as the average of the United States’ population. China is still considered a developing country.

More recently, after 2006, China started to really appreciate the concept of Clean Development Mechanism (CDM), where the aims are the development of renewable energy, energy efficiency improvement and methane recovery. The Chinese government based its policy program on Five – year Plan with the aim to improve the use of renewable energy from 7% to 15% by 2020. Under the leadership of Hu and Wen the concern on climate change accomplish a high degree which so they developed a new point of view even for the economic development and resource management. The most important policy decision has been taken in 2007, when China announced to the National Climate Change Program its five areas: mitigation, adaptation, technology, international cooperation and participation.

The Chinese government wants to be involved as much as possible in this issue and wants to be active in resolving the damages caused. In the thirteenth Conference of the Parties (COP13) held in Bali in 2007, the parties agreed to establish an Adaptation Fund to assist developing countries to face the climate change problems. The COP13 outlined a new negotiating process to be concluded in COP15 in Copenhagen to increment the post-Kyoto international agreement on climate change. However, both the COP15 and COP16, hold respectively in Copenhagen and Cancun, did not produce any legally binding agreement due to the huge differences between the countries. Although this complication, in both the Conferences the parties agreed to set a goal of limiting global warming to below 2°C by 2100.

## **2.4 Climate Policies until today.**

Recently, China has become the second largest economy after the USA, overcoming Germany and Japan. After the COP17 held in Copenhagen, the Chinese premier announced that its country will receive its carbon GDP intensity by 40% by 2020. The most important fact is that China announced it voluntarily even if it does not accept mandatory commitments. Furthermore, in the conference of 2009 in Copenhagen, China announced that it would

increase the contribution of non-fossil energy to 15% by 2020. The 12<sup>th</sup> Five Year Plan faces an important reduction of greenhouse gas emission; in fact, China is currently *“the largest single country investor in both new renewable energy capacity and total capacity”*. In October 2011, China decided to implement seven pilot carbon-trading systems in two provinces and five municipalities all around the country. This decision was very important because China was starting to develop its policies not only at the central level but also with the active participation at the local level of the population. All of these pilot systems worked under the rules of the region or under local circumstances.

The most recent conference we should care about is called COP21. It has been held in Paris in November 2015. All the countries of the world were present and many decisions have been taken to face the climate change issue. China was one of the country that played an important role in this conference, because it represents the country that is developing faster than the others are. Moreover, China is important because it invests more than other developing countries in renewable energies. China promised to reach an almost impossible goal by 2020; in fact, it aims at cutting emissions from its coal power plants by 60%. It will reduce emissions through the modernization of its coal power plants, and in case of it will not work, China assured that by 2020 it would have closed the power plants that fail to comply with energy saving standards.

To conclude we cannot mention at all that there are other forms of international climate change negotiations, such as the Asia-Pacific Partnership for Clean Development and Climate (AP) or the GLOBE G8+5 Climate Change Dialogue. These negotiations implement the Kyoto Protocol and are undertaken between key economies, which are also major carbon emitters. Moreover, there are also domestic climate change actions, for example, in the United States there are the Regional Greenhouse Gas Initiative (RGGI) and the Chicago Climate Exchange (CCX).

At the end of this chapter, we can say that we have a clear view of the path of the climate policies. The development of the institutions concerning the climate issue has not been easy due to the huge differences between the goals of developed and developing countries. In fact, we have seen as the Chinese government has refused to join the Kyoto Protocol because it was not pleased by the commitments it imposed. Nevertheless, we have also seen that some developed countries, such as the United States, did not collaborate in greenhouse gas emission.

We can sum up that the establishment of all these institutions has not been so easy but, at the end, all the countries have collaborated to obtain a good connections of organizations to face the issue of climate change. The reason because of we have studied the historical background is to comprehend better the interrelationship between developed and developing countries nowadays.

### **3. Current situation**

In the previous chapter, we have analyzed the historical background of the Chinese institutions regarding climate change issue. We have seen how the development on the topic of climate change has modified the structure of some institutions in the Asian country and how it has developed its own administrative structure to deal with this issue.

Now on, we focus more on the current institutions that are involved dealing with this problematic issue. First of all, we have to take in account that the political regime of China is a unitary one; this means that the central government plays a paternalistic role in the process of climate change policy making. This role of the government has a double effect. On the one

hand, it simplifies the application of carbon emission reduction activities. Therefore, it helps the population and firms to respect the emission limits, through some incentives for the firms or some informative programs for the population. On the other hand, the central government limits the full exertion of market forces. In fact, when the power is concentrated only in one hand, in this case the central government, many other actors that are actually capable to deal with this dilemma are going to be excluded. Therefore, some tasks are not going to be fully solved or others are not even taking in consideration at all.

### **3.1 The internal structure of the Chinese government.**

*How is the internal structure of Chinese government organized?* The internal organization of the Chinese government is divided into two macro groups: state and non-state actors. The former are divided into central level, local level and experts.

The first one consists of the State Council, which leads national policymaking and coordinates twenty ministerial different agencies. The latest coordination committee, established in 2007, is the National Climate Change Leading Group (NCCLG). Its functions are very well defined; in fact, its job is to study new national strategies, to develop climate negotiation strategies and to implement programs in emission reductions. It is important to underline that beyond the State Council, the Chinese Communist Party and the National People's Congress play an important role in the mitigation activities. In fact, according to the speech held in 2007 by Hu Jintao, *"China should improve energy, resources, ecological and environmental conservation and enhance China capacity for sustainable development"*.

Moreover, in 2009 at the UN Summit on Climate Change, president Hu focused on the fact that climate change is both an environment issue and, more important, a development issue. This new point of view is important because, as we have seen, at the beginning of the study of this problematic, climate change was taken in consideration only as a scientific problem. Later, it became an environment issue and, finally, now it is considered a development issue.

The second level is the local one. At first, climate change issues were not considered as a responsibility of local governments but nowadays there are contracts that established the relationship between central and local government. The reason why governments at local level are important is that the activities to enhance energy efficiency are opportunities to gain benefits without compromising the local level economic priority.

The third level we mentioned is the one that refers to experts. When we speak about experts, we mean also the different kind of institutions and associations that are involved in the issue. Currently, the number of these institutions are growing up and some of these are directly related to the State Council. They focus broadly on two areas: first, they study climate change sciences and technologies, secondly the impacts on development and China's corresponding strategies. Among these agencies there is much more cooperation than in the central level. It is important to underline the fact that these agencies and associations have more freedom to discuss openly their opinions and this can give the possibility to bring policy discussion at different level.

Lastly, we do not have to forget the Non-State Actors, also called Non-Governmental Organizations. Actually, the role of these actors is weak because they have a constrained space to play and limited resources. The performance of the NGOs is very different from the western one and the one in China. The western NGOs have the possibility to play many different roles, for example, they can set policy agenda or applying political pressure to obtain a particular result. On the other side, the NGOs in China are not significant actors in the policy making process, because of the lack of funds and human resources. The one that

actually help the NGOs to gain exposure is the media. This way of communication has been used to support the initiatives or provide supervision of policy implementation.

### **3.2 Public Policy and Policy Process.**

In this chapter, we discuss about the current policies implemented by the Chinese government on the climate change issue. Before enter in the details we need a clarification of what means “public policy” and how the policy process works. First, we have some definitions of public policy. Many authors have said what they think about this issue and we are going to take in mind the definitions given by Cochran, Dye, Peters and Gerston.

The first we are interested in is Cochran; he was an American lawyer and gave different meaning to the term “public policy”. In the early 1995, he suggested that public policy consists in “political decisions for implementing programs to achieve societal goals”. Later, at the end of the century, he said that public policy refers to “the actors of government and the intentions that determined those actions”. Moreover, he added that public policy is as “an intentional course of action followed by a government institution or official for resolving an issue of public concern”.

Thomas Dye said that “whatever the government chooses to do or not to do” defines the concept of public policy. Peters in 1999 added that public policy is the “sum of government activities, whether acting directly or through agents, as it has an influence on the life of citizens”. Last but not least we still have the definition of Gerston:” the combination of basic decisions, commitments, and actions made by those who hold or affect government positions of authority”.

Right now, we have a clearer meaning of the term public policy and we can summarize that, in general, it refers to the action taken by the government. It is important to understand the meaning because we are going to focus on what the Chinese government is doing to face the climate change issue. Therefore, the understanding of the concept of public policy is fundamental because, from now on, our attention is all focused on the action implemented by the Chinese government to face the dilemma of climate change.

Now, we need some definitions of policy process and even in this subject, we have some scholars that can help us understanding the real meaning of this term. We have, again, the definition of Gerston who said that policy process is “the process through which the policy is formed”.

Then we have the definition of Gupta who said that policy process is “segmented into series of continuous stages, such as agenda setting, policy formulation, policy adaptation and policy evaluation”. However, there are some complicating factors that hinder the policy process: there are hundreds of state and non – state actors involved in the process, time span of a decade or more and the possible technical and legal problems.

There are different kinds of models of public policy process. Easton (1965) provides a model that views policy process as the product of a system, influenced by and influencing the environment in which it operates. The scholar Birkland criticized Easton because his model does not provide any further explanation to the internal workings of political system. Jones proposed another type of policy process model, it was called policy cycle model. This represents the policy process as a cycle of linear connected stages. Of course, also this kind of model was subject to some criticism, such as a possible inaccurate description of the stages or a lack of causal drivers. In general, Dye said that a good model should keep congruence with the reality and suggest causes and consequences of public policy. Therefore, after having read

the definitions of different scholars, we focus on the summary that Dye made for us. "Policy process should keep congruence with the reality".

### **3.3 Policy Process in China.**

After having discuss the definitions of public policy and policy process, it is time to move on and focus on the topic of this chapter. From now on, we should focus on the policy process in China and we have to understand how it works. First, we must say that the Chinese government has opened its market to the world, so the country has been influenced by foreign cultures and these have driven China to a more modern policy process. In fact, to satisfy the request of the economic reforms, the country has established an integrated, multilevel nationwide bureaucratic system. As we have already said, the National People's Congress (NPC) and the State Council are the most important institutions in policy making at the national level. Anyway, they have different jobs. The former holds the power to make national laws, the latter drafts implementing rules, orders and regulations. Moreover, it has the power to formulate and develop policy.

Pang and Zou, two Chinese experts, explain how works a process of developing a policy in China. There are two steps. The first represents the preparation of policy drafts by government officials. The draft, then, will be circulated among different governmental departments to obtain comments. Then, the second step is the approval of the draft by the State Council. If the policies will be promulgated as a law, then the National People's Congress must approve it. When it is approved, both the State Council and other departments can implement and refining regulations and orders.

We have seen that the decision making process in China is established at a central level, so it is the central government that takes the decisions. However, at some point, after the openness of the market and the integration of foreign firms inside the country, China has tried to decentralize its decision-making. To decentralize means to give more power to local governments to stimulate local economic growth, and consequentially it means to weaken the authority of the central government.

Nevertheless, the process of decentralization did not work well, in fact in China the dominant player in policymaking is the central government. On the other side, the weakest actors, as we have already said, are the NGOs, although they slowly have gained some power. However, the NGOs and in general the public voices are not loud and clear enough in the policy making process. According to Chen (2003), the implementation of policies in China runs into a series of obstacles, for example the insufficient institutional capacity, personal relation and the conflict and ambiguity of policies. For this reason, there are different kinds of models of analyzing China's policymaking process.

First, we can find the already known rationality model, it says that decision makers try to obtain the maximum outcome of the choices they could make, in the case of China; the state is viewed as rational, unitary and coherent. The main problem of the rationality model is that it cannot capture the realistic complex dimensions of the system.

The second model is the power model, which, according to Lieberthal and Oksenberg, says that the outcomes are the result of "struggles among top leaders who are sensitive to the implications of alternative policy choices upon their stature and power". The power model assumes that "Chinese political behavior is the result of inter-organizational bargaining for budgets, status and power" (Dreyer 2006).

The last model we are interested in is the so-called fragmented authoritarianism model.

Lieberthal and Oksenberg have developed it in the late 1980s. This model focuses on two dimensions of centralization and decentralization to reflect the bureaucratic practice: one is the structural distribution of resources; the other is the process of decision-making policy and implementation. Lieberthal called the model-fragmented authoritarianism because he developed the idea of bureaucratic fragmentation and argues that negotiations are crucial in the political process in China. The so-called fragmented authoritarianism model is considered as one of the most influential of understanding the policy process in contemporary China. Anyway, it has been challenged by different scholars, such as Luma and Ruby, which assume that recently China has moved from a fragmented authoritarianism model towards policy coordination. In fact, Yu in 2008 declared that in the area of climate change policymaking, China is highly coordinated instead of fragmented.

Moreover, we do not have to forget to mention a comparison between two more models: the interest-based model and the two-level game theory. The first one was developed by Sprinz and Vaahtoranta, they argue to determine a country's position and policies the two crucial factors are ecological vulnerability and abatement cost. In fact, the more vulnerable a country is to environmental problems, the more it will cooperate and participate in international negotiations. On the other side, the higher the cost a country faces to solve its environmental problems, the less it will participate in international negotiations. However, the applicability of this model is limited because there are many complexities in the international environmental negotiations. On the other side, we find a second model called the two level game theory developed by Putnam. This model when applied in the Chinese context we find that it is based on three key factors: abatement costs, ecological vulnerability and the principle of equity. Contrary to the interest-based model, in the two-level model is present the principle of equity, which can be explained through the concept that developing countries should be "saved" in terms of climate changes by the developed ones.

Developed countries are the ones that have to take charge in solving the environmental problems. Why do we care about the principle of equity? First, think about the hypothesis developed by Putnam "the more equal responsibility each country is willing to accept, the more likely it is that China will commit to cutting its greenhouse gas emissions, and take a more cooperative attitude towards ICCN". The principle of equity, from the Chinese perspective, includes three sub-principles.

The first one is the principle of common but differentiated responsibility, which we have already seen in the previous chapter.

The second is the principle of differentiated capability for different countries. This means that capable countries should contribute more to the campaign against global warming. Nowadays, the developed countries are the ones that are capable of making a greater contribution due to their enormous technological and financial capacity.

Third is the principle of per capita distributed rights to emission, it means that the right of a country to emit is contingent upon the size of its population. The survival emissions of developing countries should not be equated with the luxury emissions of developed countries. Mainly, the environmental damage caused by the high rate of emissions in China provoked damages to the agriculture, forests, water resources, coastal zones and other natural ecosystem. The situation is very bad when we analyze the condition of the arable lands and in general of the agriculture. The lands are highly contaminated and the goods people produce there are not healthy and the risk of getting tumor and illness in general is too high. In the south of China, floods have become more frequent, while in the north droughts are more frequent. The glaciers are melting and this is affecting the water supply. It has been calculated that by 2030, the sea levels along Chinese coastal areas could rise by up to 0.16 meters, increasing the possibility of flooding and storm.

### 3.4 Climate Change Policies

Since the 1990s, the Chinese government started working very hard to implement climate change policies. China, finally, fully understood the importance of the environment and the damages that caused globally and nationally. Their role became ever more active in solving the dilemmas provoked by the climate change issue. For this reason, China adopted a climate change mitigation policy. This is a portfolio of policies that fits national circumstances, the aim is to reduce or limit greenhouse gas emissions. These policies can be divided into two macro groups: climate-specific and climate-related. The former refers to the reduction of greenhouse gas emission. The latter refers to policies that treat greenhouse gas emission as a by-product activity of economic development. Comparing the two groups of policies, the climate-related ones are more inclusive; in fact, they are adopted in area such as energy production and transformation. There are other kinds of policies, which do not affect directly the mitigation; instead, they directly affect trade, foreign investment and social development. In July 2007, the most important climate change policy was adopted. It is called the National Climate Change Program, which explains the activities that China has been planning to undertake in mitigating greenhouse gas emissions and adapting to the consequences of potential climate change. The major critique made to this policy was that China did not set emission reduction goals or a timeline; in fact, this policy had only a symbolic role.

There are two different visions of the behavior of China in response to the threat of climate change. First, some say that there are potential net gains to China from a warmer world. Moreover, China at first did not agree with the Kyoto Protocol on the reduction of greenhouse gas emission because it thought that these restrictions would harm its economic development. On the other side, China will be one of the worst impacted countries if the climate changes as predicted. In fact, China has been more proactive on climate change actions and has made great efforts in reducing carbon. We need to say that up to one third of Chinese emissions were actually due to production of exports and this means that the industrialized countries, which are importers have exported their emissions to China. Since 2007, China has surpassed India and Brazil as the largest CDM credit supplier, the reasons can be found out in the abatement costs, effective administrative arrangements and large emission reduction potential.

In November 2014, China committed to peak its carbon emissions by around 2030, with the intention to peak even earlier. Although the government has not identified the peaking level, studies suggest China should be able to cap its energy-related CO<sub>2</sub> emissions at around 9–10 GtCO<sub>2</sub> by 2020 with enhanced policies, which the government has started to lay out. Government officials will then need to disaggregate the country's GHG growth cap to regional (provincial and municipal) and sectoral levels to ensure effective implementation.

China is implementing significant policies to address climate change, most recently aiming to restrict coal consumption. A key policy lever is to put a price on carbon emissions, therefore the peak of the emissions will reduce by 2030 or sooner. President Xi announced that his administration plans to launch a national emissions-trading system in 2017. To overcome some difficulties at technical and political level, the Chinese government decides to rebuild a robust emissions measuring and determining and allocating emissions allowances. On 30 June 2015, China submitted its Intended Nationally Determined Contribution (INDC). One of the

target was to decrease CO<sub>2</sub> emissions by 2030 at the latest. Other outcomes would be to lower the carbon intensity of GDP by 60% to 65% below 2005 levels by 2030, increase the share of non-fossil energy carriers of the total primary energy supply to around 20% by that time and increase the Chinese forest stock volume by 4.5 billion cubic meters, compared to 2005 levels.

In 2007 the National Climate Change, Energy, Efficiency and Emission Reduction Leading Small Group (LSG) was established and it is the highest climate policy-making organ in China. This is a very important actor, acts as a coordinator for relevant government agencies, and sets broad guidelines for policies to follow. Premier Wen Jiabao currently leads the LSG. Although the sheer size of the LSG, it is not involved in actual policy formulation, in fact most of the work is carried out by its secretariat at the NDRC.

The main problem with China's INDC and its national actions is that it is not consistent with limiting warming to below 2°C unless other countries make much deeper reductions and comparably greater effort than China. The Chinese government alone is not able to limit the temperatures to raise if it works alone; it needs the support of other major economies to face the challenge. Setting aside the carbon intensity target, China's INDC's actions and non-fossil energy target lead to GHG emission levels of around 13.6 GtCO<sub>2</sub>e in 2030 and to an improvement of carbon intensity of 70%. The INDC carbon intensity target, if dominating other elements of the INDC, national policies and actions, would lead to much higher 2030 emission levels of 15- 16.9 GtCO<sub>2</sub>e. Due to the fact that China has not yet implemented sufficient policies addressing non-CO<sub>2</sub> greenhouse gas emissions, the total amount of greenhouse gas emissions are likely to continue increasing until 2030. This indicates a need for further action in this area, and it is encouraging that the INDC acknowledges that addressing these gases is important. The time span of the INDC commitment is of significant concern because the Chinese government is still far from reaching the 2°C in 2030. Therefore, China should set the goal not for 2030, rather for 2025 and should help to improve the cooperation at the international level.

With currently implemented policies, China will reach a GHG emissions level of between 12.2 and 12.6 GtCO<sub>2</sub>e in 2020 and 13.8 – 14.4 GtCO<sub>2</sub>e in 2030. Of these, 8.9 - 9.2 GtCO<sub>2</sub>e in 2020 and 9.6 – 10.2 GtCO<sub>2</sub>e are energy-related CO<sub>2</sub> emissions. This is an increase in emissions of 22% above 2010 levels by 2020 and 33% - 44% by 2030. The announcement that China will peak its CO<sub>2</sub> emissions will have a significant impact on global CO<sub>2</sub> emissions in the period after 2030, as most projections foresee increasing emissions for decades after that. As the target consists of changes in the energy mix, additional energy efficiency measures reducing the absolute energy use could decrease emissions even further. This means, that according to our assessment, China will meet its 2020 pledge but will be substantially above current emissions levels.

Since the Medium and Long Term Development Plan for Renewable Energy from 2007, China has increased its renewable energy capacity plans multiple times. Its INDC notes that installed solar energy capacity has grown 400% since 2005. In its latest update of the 12th Five Year Plan, China decided to aim for a target of 700 GW of renewable energy capacity in 2020. This target was confirmed by the National Action Plan on Climate Change released in September 2014, which defines a number of actions and targets for 2020 (The People's Republic of China, 2014).

In March 2015, China expressed its willingness for a strong increase of renewable energy, planning to increase solar capacity by 17.8 GW in 2015, instead of its previously planned 15 GW (Bloomberg, 2015a). A report by the Energy Research Institute illustrates a scenario of a high penetration of renewable energy, reaching a share of more than 50% of electricity generation in 2030. The report shows that renewable energy is seen as an important pillar of

energy supply in China and can significantly contribute to a long-term sustainable energy system (Energy Research Institute, 2015). China's National Action Plan on Climate Change mentions a target to increase the share of gas in the total primary energy supply to 10% in 2020. The Energy Development Strategy Action Plan (2014 – 2020) further defines the “reasonable control of the total coal consumption” as limiting coal to a maximum of 4.2 billion tonnes of coal by 2020. In 2013, China published the Air Pollution Control Action Plan (Government of China, 2013) that, besides other measures, bans construction of new coal-fired power plants in various coastal provinces in order to decrease air pollution. The effect on emissions will likely be small, as the regions with major extension plans for coal-fired power plants are not touched by the regulation (Ailun Yang and Ryna Yiyun, 2013). Eventually, the impact on emissions will be dependent on the energy source used to replace the plants affected by the regulation.

In 2013, the two major economies all around the world, China and the United States, decided to sign a pact together. The president Obama persuaded the Chinese president, Xi Jinping, to sign a pact to beat the global warming and the problems of the climate change in general. This action will lead to the Conference of Parties of Paris in 2015 with some agreements already taken between developed and developing countries.

In 2014 and 2015, China has also started to tackle non-CO<sub>2</sub> emissions, most notably HFC emissions. NDRC is investing in demonstration projects for the controlled disposal of HFCs in industry. Further, it is setting up a reporting and monitoring instrument for f-gases for industrial companies (ESCO Committee of China Energy Conversation Association 2015). The INDC document also states targeted reductions of HCFC22 production of 35% by 2020 and 67.5% by 2025 below 2010 levels, and also refers to controlling HFC23, which is largely a byproduct of HCFC-22 production. According to our initial assessment, this could lead to reductions of HFC23 of 230 MtCO<sub>2</sub>e in 2020 and 300 MtCO<sub>2</sub>e in 2025. As there is no clear regulation yet that assures implementation of these targets, we have not included these reductions in the current policy projections. However, they are an important stepping-stone towards tackling this sector (EIA 2015).

Moreover, in February 2015, the Ministry of Industry and Information Technology (MIIT) and the Finance Ministry released the 2015-2020 action plan on the efficient use of coal, aiming at decreasing coal by 160 million tonnes in the next five years (Xinhua 2015). We expect these actions to be important drivers on a pathway towards peaking emissions in China at the latest by 2030, if not earlier. The Chinese government is shutting down coal-fired power plants to reduce air pollution, for example in big cities as Beijing and Shanghai. In February 2015, the National Bureau of Statistics of China (NBS) communicated that consumption of coal had fallen by 2.9% in 2014 from 2013 levels, while total energy consumption increased by 2.2% to 4.25 billion tonnes of coal equivalent (tce) (NBS 2015). In September 2015, the NBS published revised energy statistics for the period 2000 to 2012. The revision reportedly solves a number of technical issues: most importantly, previously unallocated coal demand now being attributed to final consumption in industry (IEA 2015b). However, in the newest IEA publication of CO<sub>2</sub> emissions from fuel combustion (IEA 2015c), these updated energy balances have only been taken along from 2011 onwards, resulting in a discontinuity in the emissions time series between 2010 and 2011. Thus, the CAT still uses the previous (2014) IEA data on emissions from fuel combustion instead of the newest 2015 data, to prevent using an inconsistent time series. We note here that this data is to be replaced in a future CAT update, once revised energy and emissions data are available starting from 2000.

The other relevant bureaucracy is the Ministry of Foreign Affairs (MFA), while the Ministry of Environmental Protection (MEP) and the Ministry of Science and Technology (MOST) both play a secondary role. The MFA is a “hard-liner” in stressing the prominence of Chinese

sovereignty in international negotiations. On the other side, the MOST and the MEP are more concern to environmental concerns, but their problem is that they lack bureaucratic weight. The MOST is responsible for technical aspects of climate research; the MEP, which was granted full ministerial status only in 2008, is smaller but in equal way efficient in the protection of environmental cause.

The most recent agreement between China and the United State has been signed on 3<sup>rd</sup> September 2016, which confirms the accords already taken in the COP21 hold in Paris. The document they signed establishes that the parties work hard on reducing the greenhouse gas emission all around the world, financial helping developing countries to use more renewable energies and maintaining low the rate of emissions. Nevertheless, the agreements taken in the Conference of Paris will be active after those 55 countries will ratify it. China and the United States alone count for the 38% of the global emissions, so the choice taken on September 2016 is very important because it means that these two superpowers have decided to collaborate. To respect the deal, the two countries have to invest more than ever before; for this reason, it is crucial that the two can count on each other; they have to trust each other to obtain the goal they have set. Therefore, after the ratification of these two countries, other important nations as Russia and India will agree and understand the importance of this collaboration.

We should remind which are the main points developed on COP21 in Paris: first, the aim to maintain the temperatures low and not let them rise above the 2°C; second, reducing the greenhouse gas emissions; third, financing every year 100 milliard dollar to the developing countries to help them develop more sustainable energies; fourth, check the goals obtained every five years with new Conferences.

### **3.5 Chinese Paradox in Climate Policies**

China is, with the United States, one of the major greenhouse gas emitter and it appears to have contradictory climate policies. Although the Chinese government wants to pursue a renewable energy policy, the capital city of China, Beijing, is weak on a commitment to emissions reduction. The paradox we are going to discuss in this paragraph can be explained on the willingness of China to growth rapidly while caring about the renewable energies. In fact, China is one of the major greenhouse gas emitter but it is also the country that invests more on renewable energies and on the new technologies. The Chinese climate-relevant policies appear somehow paradoxical. On one side, the country has refused to commit to any international binding emissions reduction standards. On the other side, China is the major investor in renewable energies, even if right now this sector account for only about 10% energy generation in China. The 12<sup>th</sup> Five-Year Plan (2011-2015) singled out seven “strategic emerging industries”, for example energy conservation and environmental protection, and clean-energy vehicles. The aim of the Chinese government is to raise the contribution of these industries from the current 5% to 8% by 2015 and to 15% by 2020. Therefore, the goals of the government are very well described and clearly set. We do not have to forget that all climate-relevant policies are under the control of the National Development and Reform Commission (NDRC), a state agency responsible for formulating policies in numerous areas related to economic development.

Due to the rapid economic growth, the emissions-intensive industries in China, as cement and steel, have grown rapidly. This has caused an increase in the rate of emissions. However, with most other developing countries, China feels a cap on emissions to be a constraint on economic growth. The Chinese government counters that with its huge population and the

high rate of poverty, its main worry is to put economic development as a top priority. Moreover, China asks the industrialized countries to allow it to grow without restrictions and commitments. The Chinese government raises an important problem; it claims the developed countries having a great financial capacity and better technology that should provide financial and technological assistance to the developing countries to help them realize the common goal. As we said, the Chinese government is a centralized one, for this reason it perceives any imposition of an emission cap by industrialized nations as an infringement of its sovereign right to pursue economic development.

Climate change mitigation is important because of climate change's threat to energy security and its impact on the domestic environment and society. Anyway, China does not want to give up on economic development, however if this country continues to burn fossil fuels the consequences, globally and nationally, would be catastrophic. The behavior of the Chinese government is going to crack the relationship between other countries. Even if China is one of the biggest investor on renewable energies, it is still one of the biggest emitter of greenhouse gas. Therefore, the industrialized countries blame the Chinese government because it could have the possibility to actually reduce the emission of greenhouse gas emission, but, due to its willingness to develop fast, it still use more non-renewable energies than the renewable one. This is the reason why in the Copenhagen Conference the industrialized countries wanted to put target level on the Chinese emissions as a commitment. China, as already said, refused the commitments but started to invest more on renewable energies. It shows that China is able to emit less than it is actually doing because of its huge knowledge about the most recent technologies even if it is not able to completely sustain the demand of energy by the population. For this reason, the industrialized countries try to force China to use only renewable energies or at least reduce hugely its consumption of fossil fuels. Nevertheless, China is trying to follow the target standards set in the Conferences in the previous years, but it blames developed countries, above all the United States, because of their per capita emission. In fact, analyzing the per capita emission of developed countries, such as United States, and developing countries, such as China, we will find out that there is a huge different between the two. The Chinese per capita emissions in 2011, according to the data of the World Bank, is 6.7; on the other side, the per capita emissions of the United States in the same year is 17.0. The per capita emissions of the United State are almost three times bigger than the per capita emissions of China. It means that a single human being in the United States consumes three times more than a single human being in China. This is due to the per capita income that receives the two populations but also to the number of the population. China is overpopulated, the per capita income is very low, the rate of poverty is high, so its per capita emissions is low; despite all we have said, it is a country with a high emission rate. On the other side, we find a fully developed country, the United States, which is not overpopulated, the per capita income is high and the per capita emissions is high. This is what the Chinese government claim to the developed countries and this is what could crack the international relationship between developing and developed countries.

The Beijing's priority for growth stems the scarcity of internally binding commitments, whereas the push for renewable energy means China's energy security concerns but also it is a policy to promote strategic growth. It is unrealistic to expect the Chinese government to care more about the global climate change issue than its economic growth. It is counterproductive to push China toward a more vigorous action on climate because the Asian country will define itself as a developing country, which still needs fossil fuels to grow.

We can conclude this chapter with a general overview of the work that China is doing to improve its collaboration with other countries. It is important to understand that China is still a developing country because its GDP is increasing but it is not sufficient yet. The Chinese government, however, is doing a great job in developing its technologies and in implementing

all this kind of institutions to be able to face the problem of climate change. China is actively involved in the climate change issue and its actions demonstrate that it wants to collaborate and cooperate both with developed and developing countries.

#### **4. What is next?**

The aim of this chapter is to discuss China's possible future climate change policy after the 2011 Durban Conference. First, we need to understand the implications of the Durban outcomes and then discuss the transitional period of 2012-2020. After that, we will focus on the future climate negotiations in a post-2020 era. In November 2011, China suggested that the Durban Conference should focus on the following tasks: a second commitment period for the Kyoto Protocol, with a clearer explanation of emission reductions quantities for developed countries; comparable targets for industrialized countries that are not parties to the Kyoto Protocol; implementation of green climate fund and technology transfer. In the Durban summit, many important decisions were reached between parties of UNFCCC, including the establishment of the Durban Platform for Enhanced Action, which may lead to a legally binding climate change agreement to a post-2020. Beyond the Durban Platform for Enhanced Action, the Durban summit also launched the Green Climate Fund, which will distribute an annual 100 billion USD dollars to finance adaption to climate change in developing countries. The Green Climate Fund is important because it overcomes the mistrust between industrialized and non-industrialized countries.

For the Chinese government, the Durban Conference meets two important implications. On the one hand, the Durban Platform may engender a new climate treaty where China has to share the responsibility of climate change with the developed countries. On the other hand, the division of negotiations leads to a more pressure on the world's three largest emitters (China, USA, and India).

The period between 2012 and 2020 will be a critical transitional period for China, which will determine China's post-2020 climate change policy. The Chinese government wanted to return to its pre-Durban positions, which means that the priorities are the eradication of poverty and the achievement of global and social development. After the transitional period, from 2012 to 2020, the future climate change policies adopted by China will rely on the outcomes of the previous period policies. With the new agreement coming from the Durban Platform, China will have to accept more emission reduction responsibilities; in fact, its international negotiation stance after 2020 is to strive for more emission space for the country's future development. Moreover, China will be active in the developing countries groups to gain more bargaining power. In the future, the international climate change policy is going to be more flexible that means more cooperation with developed countries, because the domestic need of the Chinese government is to develop a low carbon society. China will continually represent the needs of developing countries because it understands the demands of developing countries and coordinates the conflicting interests between them.

Sustainable development is a goal that the Chinese government wants to reach before 2020 but it is aware that this requires a huge work so it is the stance in post-2020 climate negotiations. China's post-2020 domestic approach on climate change may largely mirror its previous domestic policy, that as we already know is focused on building a low carbon energy development path and, on the other hand, adopting other approaches to deal with climate change.

## 4.1 Emission Trading System

Emissions trading system (ETS) is a market-driven regulatory instrument aiming to reduce the emissions of pollutants at a minimum cost by providing economic incentives for polluters. In the Emissions Trading System there is the principle of “cap and trade”, which sets cap on the emission quantity for emitters and then allocates emission allowances to allow one emitter to trade with others. In this system, every metric tonne of CO<sub>2</sub> emitted requires an emission permit. Actually, there is no limit on emissions from any single installation, but there is a limit on the total amount of emissions allowed within the system as a whole. The sectors covered in this scheme includes: iron and steel, cement, glass and ceramics, paper, electric-power generation and aviation.

The system works in a very successful way, if the holders of permits emit less than they are allowed, they can sell their surplus allowances and make profit. When the level of emissions are too high, the permits become scarcer and their price goes up. If a firm or a stakeholder exceed their allowances, they can buy permits from others, in the case, they are still available, or they can purchase reduction from an offsetting programme.

To construct a carbon trading system, in general, there are five main components to care about: 1) setting the total emission limit, 2) allocating the permit or allowances, 3) verification rules and judicious accounting greenhouse gas, 4) trading infrastructure, and 5) an accountability system. These five components are indispensable and, above all, require a fair allocation mechanism, free market conditions and reliable oversight.

To measure the performance of carbon emission trading markets is analyzed the effectiveness of emission reduction, the cost of reducing emissions and the investment in clean technology. The only market-based mechanism of the Kyoto Protocol, which is important for the Chinese government, is the Clean Development Mechanism (CDM). It is a market in which investors from developed countries gain “carbon credits” by applying a project in a developing country that reduces the emissions. In 2004, China recognized the CDM and in 2005 issued the “Measures on the Operation and Management of Clean Development Mechanism Projects”. Afterwards, China became the dominant Clean Development Mechanism carbon credit supplier. From 2008 and 2009, many “climate exchanges”, “carbon exchanges” and “environment exchanges” have been established, such as the China Beijing Environment Exchange (CBEEEX) and the Shanghai Environment and Energy Exchange (SEEEEX). In 2010, the Shenzhen Environment Exchange was established.

The Chinese government has introduced the Emissions Trading System within the 12<sup>th</sup> Five-Year Plan. Citing the document: *“China will, drawing on the experience of the international carbon emissions trading market while taking into consideration its actual conditions, gradually promote the establishment of a carbon emissions trading market. The country will further reform the price formation mechanism of carbon emissions trading by standardizing voluntary trading in emission reduction and discharge rights, gradually establish trans-provincial and trans-regional emissions trading systems, so as to give full play to the fundamental role of the market mechanism in optimizing the allocation of resources, and realize the objective of controlling greenhouse gas emission at minimum cost.”*

In October 2011, the cities of Beijing, Shanghai, Hubei and Guangdong, have been listed as pilot trading zones. These zones represent different levels of the country’s wealth, with

Guangdong as the richest and Hubei as the poorest. The aim of this pilot was to provide a precious future experience. The key issue of the ETS pilots is to set emission targets to distribute allowances. However, the reality of China is very complex, in fact, there is a huge gap between the rich and poor area, the different level of GDP and the size of the population will make difficult to set ETS foundations.

In any case, there are some questions to be answered: first, how to determine the proper type of cap; second how to distribute allowances and, third, how to integrate the Chinese Emissions Target System in other international ETS.

In 2012, NDRC issued a regulation document referring to emission trading, "The Interim Regulation of Voluntary Greenhouse Gases Emission Trading in China". The aim of this document is to govern the seven pilot ETS. The rules inside the interim document promote a series of management mechanisms for both emission trading projects and emission reductions. By the year 2020, the Emission Trading System may be completely established and used as a market-based instrument. The ETS will become a critical measure to China's costly administrative means on which China has mainly relied to meet its goal of clean revolution. The Chinese government and other developed countries have generated a more share interests in the case of low-carbon development due to the establishment of national Emission Trading System. Li Keqiang, the current Chinese vice premier, proposed a high level of cooperation between China and the EU. Moreover, Germany and China are potential partners in the future in a bilateral energy cooperation, above all in the area of clean and environmental friendly technologies development.

China's carbon market development is still at the initial stage; in fact, there is any carbon trading market in China aside from the CDM. There are two types of markets: the voluntary one and the regulated one. Nowadays, China does not have a regulated market yet and speaking about the voluntary market, the experiments are limited, therefore it could be considered as unsuccessful. Anyway, eventually carbon trading market development in China is inevitable. The departure point for any emission-trading scheme is setting an emission cap and, based on that, distribution of emission allocations, with equity and efficiency as key principles to consider. With different economic structures and growth rates, there is substantial difference in energy consumption and carbon emissions across Chinese provinces.

A document written by Li and He in 2011 discusses the implication of different principles of emission permit allocations. The two principles tested are an emission quota for provinces based on historical emissions, greater emission rights available for larger historical emission; and an emission quota based on carbon emission per capita, larger population means more emission permits. According to the two authors, Li and He, the per capita scenario is fairer; this is because in the historical scenario, allocations are more or less consistent with current demand. Moreover, they find out that the western provinces compared with other provinces will face the largest welfare losses in both scenarios.

## **5. Conclusion**

We are at the end of this paper and I think we have learn a lot about the policies, the strategies and the problems of China facing the climate change issue. We have started since the beginning of the history, around the 80s, when China for the first time was made aware of the problem that the world for facing. The Chinese government, as we have said many times, was not ready to face this issue, first because its aim was to develop, to gain the same results as the already industrialized countries. Second, it did not feel responsible for the damages caused to the environment. Third, the Chinese government did not accept any commitment by the developed countries. Therefore, since the beginning of the discussions about climate change, China was

not a collaborative country. It felt wrong to be stopped on its development process by countries that first develop and the care about the environment. Then, we move on our analysis discovering that as time passes many more organization have been founded and that the Chinese government became ever more cooperative. Of course, the main Protocol was the one of Kyoto and we need to remind that, at first, China did not ratified its participation. After some year, it started to collaborate.

The paper, after a general overview of the historical background, focuses on current policies on climate change. There is an outline of some definitions to understand better the topic and then we concentrate on what the Chinese government is doing to reduce greenhouse gas emission. This is the hearth of this paper because our aim is to understand how China started to cooperate with the most industrialized countries in the world. The aim of every policy was to reduce the emissions, improve the technologies and invest more on renewable energies. The Chinese government, now, is ready to face its responsibilities and start working to resolve the damages that it creates over time. We have cited many documents, papers and protocols but, in summary, the general aim is to reduce greenhouse gas emissions and implement renewable energies. When we speak about the relationship between developed and developing countries, we must remember that China is still consider a developing country even if it is growing very fast. The reason is that it is not able to cover all the necessity of its population in fact; its rate of poverty is very high.

Very important, is the paradox that is cited in this paper. The fact that China is both the biggest emitter of greenhouse gas but it is also a huge investor in renewable energies. This paradox is important because it helps us to understand the dynamics behind the behavior of the Chinese government. It wants to become a developed country, so it wants to grow rapidly. However, at the same time, it starts to understand to importance of the protection of the environment because, on one hand, it is already facing the consequences of the climate change, as more frequent floods. On the other hand, it is aware of the fact that a worsening of climate change will lead China to an unsustainable situation for its population.

The forth chapter focuses on the future policies and actions implemented by the Chinese government. Moreover, there is a brief discussion on Emissions Trading System. This market is gaining every day more importance and China wants to exploit the possibility of selling carbon emissions permits and purchasing the permissions to emit more. With the possibility to emit more without incurring in financial fines, China can develop faster without having problems with the develop countries.

We conclude our analysis saying that the Chinese government has worked very hard to gain some results, but the way to go is still very long. The Chinese government, according to my personal view, is able to obtain important goals on the climate change issue. It is a very smart country with high available human resources and, as we have said, it has now a good relationship with the United States. If they collaborate for the good of our Earth, our society, they will be able to reduce the damages provoked to the environment.

China has the duty to understand that the collaboration is essential when we deal with such huge topic. Because if China and the United States start to actively collaborate many more developing and developed countries will follow the same route.

On the other side, people have the duty to understand that this planet needs us to be safe, but more than that the human beings are just hosts of the Earth and that without this planet we are going to be extinct. Therefore, people from all around the world, from developed countries and developing ones must cooperate to reduce the damages and to help the governments to collaborate.

To conclude, personally, I think that China is a country full of resources, not only material ones, and that if there is collaboration the Chinese government will be more than happy to be involved in the improvement of the current situation.

## Riassunto dell'elaborato.

Il tema principale di questa tesi è un'analisi approfondita delle cause e delle conseguenze future delle politiche climatiche in Cina. Ho scelto questa specifica tematica in quanto la Cina è il più grande paese emettitore di gas serra ma al contempo è il paese che investe maggiormente in energie rinnovabili. Inoltre, questo è un tema che mi appassiona particolarmente e la mia esperienza in Cina mi ha portato a voler approfondire il più possibile il pensiero politico del governo cinese in merito alle politiche ambientali.

L'elaborato è suddiviso in cinque capitoli. Il primo capitolo è un'introduzione generale; il secondo è la cronistoria dagli anni '80 delle politiche ambientali; il terzo analizza la situazione attuale; il quarto è uno sguardo al futuro ed alle future azioni politiche ed infine, il quinto riguarda la conclusione con alcuni pareri personali.

L'idea di basare la mia tesi finale su questo preciso argomento si fonda principalmente su tre pilastri: lo studio della lingua cinese; il mese trascorso in Cina e il corso di "Population, Environment and Sustainability" del professore Di Paola. Lo studio della lingua cinese l'ho intrapreso all'inizio della carriera universitaria tramite i corsi di lingua a scelta organizzati dell'università. È una lingua che mi ha sempre affascinata, sia per la differenza nella scrittura dalle lingue latine sia per la cultura che racchiude.

L'opportunità di trascorrere un mese lì è stata veramente fuorviante e mi ha aiutata a guardare il "nostro" mondo con una prospettiva diversa, a conoscere molte sfaccettature del mio carattere e soprattutto a rapportarmi con una cultura così diversa dalla mia.

Infine, il corso di "Population, Environment and Sustainability" offerto dalla facoltà è stato molto utile per comprendere al meglio la correlazione tra popolazione ed ambiente.

Dopo aver spiegato i motivi che mi hanno portata ad affrontare l'argomento delle politiche ambientali per il mio elaborato conclusivo di un primo percorso di studi, è necessario soffermarci sul contenuto vero e proprio della mia tesi. Come ho già anticipato, la tesi è suddivisa in cinque capitoli che analizzano storicamente lo sviluppo delle politiche ambientali e forniscono un quadro della situazione attuale. Analizziamo il contenuto di ogni capitolo in modo da avere una visione completa dell'elaborato finale.

Il primo capitolo di questo elaborato è un'introduzione generale all'argomento delle politiche ambientali adottate dal governo cinese. Lo scopo principale di questa tesi è di analizzare e cercare di capire al meglio quali sono state nel corso degli anni le cause e le conseguenze del cambiamento climatico in Cina. Analizzando questo paese asiatico, noi non solo scopriamo che egli gioca un ruolo importante sia nella produzione di gas serra, ma è anche uno dei più grandi paesi che investe nelle energie rinnovabili, insieme agli Stati Uniti e la Germania. Inoltre, la nostra attenzione è rivolta al grande numero di persone che popola questo paese ed anche all'ampia porzione di ecosistema che contamina direttamente. Nonostante la Cina sia uno dei più grandi produttori di gas serra, ciò non significa che questo paese venga considerato un paese sviluppato. Infatti la sua alta produzione di gas serra è dovuta al fatto che la Cina vuole raggiungere un livello di sviluppo elevato in un tempo estremamente breve, perciò il governo cinese sfrutta al massimo le sue risorse senza tener conto dei danni che provoca all'ambiente. Tutti i paesi considerati sviluppati, quali Stati Uniti, Germani e Regno Unito, cercano di costringere la Cina a ridurre il livello di gas emessi nell'atmosfera ma il governo cinese non è d'accordo. Difatti, il pensiero del governo cinese riguardo la sua produzione di gas serra è "prima ci sviluppiamo e poi pensiamo ai danni causati all'ambiente". Questo tipo di ragionamento fu adottato nella prima rivoluzione industriale, quando i danni che venivano

causati all'ambiente non erano noti alla popolazione dei paesi che stavano attuando la rivoluzione industriale, quali Regno Unito e Francia.

Oggi giorno, la Cina è un paese altamente coinvolto ed attivo nel risolvere le problematiche del surriscaldamento globale. Nonostante ciò, il governo cinese non è ancora in grado di soddisfare la domanda da parte della popolazione di energia o acqua. Sebbene sia il più grande paese investitore in energie rinnovabili, il suo livello di inquinamento è ancora troppo alto rispetto alle quote di altri paesi.

Prima di entrare nel dettaglio, abbiamo fornito una delucidazione sul termine "cambiamento climatico", poiché, nonostante venga sentito in televisione o attraverso altre risorse di informazione, non è sempre chiaro ciò che implica questo concetto. Il cambiamento climatico è un argomento che si è iniziato a trattare dagli anni '50, fino a quando, nel 1972 c'è stata la prima conferenza delle Nazioni Unite a Stoccolma. Gli elementi principali delle discussioni delle varie conferenze sono: il progetto a lungo termine di non far aumentare la temperatura sopra i due gradi e la riduzione delle emissioni globali. Le principali conseguenze del cambiamento climatico sono l'aumento del livello del mare mentre la quantità di ghiaccio e neve sulla terra sta diminuendo. Infine è necessario dire che ci sono diversi fattori che influenzano il cambiamento climatico, principalmente si dividono in due gruppi: cause naturali e cause artificiali. Le prime dipendono, per esempio, dal cambiamento dell'orbita terrestre o dalle eruzioni vulcaniche. Al contrario, le cause artificiali, sono quelle che dipendono direttamente dal comportamento dell'uomo, come per esempio la produzione di gas serra. Le cause artificiali sono più pericolose e più dannose rispetto a quelle naturali.

Per quanto riguarda il secondo capitolo, basato su un'analisi storica dello sviluppo delle politiche climatiche, lo scopo principale è quello di studiare come si è sviluppato il concetto di "cambiamento climatico" ma soprattutto capire il comportamento del governo cinese per affrontare questa problematica. Il capitolo è diviso in diversi paragrafi per dare una visione più chiara di ciò che è successo dagli anni '80 fino ai giorni nostri.

Nei primi anni '80 vennero fondate due delle principali organizzazioni che riguardano il cambiamento climatico: il Gruppo Intergovernativo sul cambiamento climatico e United Nations Environmental programme. Il governo cinese, negli stessi anni, si attivò per stabilire alcune delle basilari organizzazioni interne al paese. Le più importanti istituzioni furono: il Meteorological administration, la commissione delle scienze e delle tecnologie, l'agenzia nazionale della protezione dell'ambiente e il Ministero degli Affari Esteri. In questo periodo, quando il dibattito sul cambiamento climatico era solo all'inizio, questo fenomeno era analizzato solo da un punto di vista scientifico. Solo dopo il 1989, dopo gli eventi della piazza di Tiananmen, il governo cinese iniziò ad affrontare il problema del cambiamento climatico come una questione economica.

Il decennio degli anni '90 è stato ricco di conferenze riguardanti il tema del cambiamento climatico. Prima di tutto dobbiamo ricordare la creazione del Gruppo di coordinamento nazionale del cambiamento climatico (NCCCG), guidato dal futuro consigliere di stato cinese Song Jian. Dalla creazione di questa istituzione in poi, la Cina ha iniziato a preoccuparsi per tre questioni principali. Per prima cosa, la Cina si stava sviluppando molto velocemente e la popolazione stava crescendo senza regole. Tutto questo ha portato ad un aumento della richiesta di energia da parte della popolazione, ciò significava un accrescimento delle emissioni di gas serra. Come secondo problema, il governo cinese non era ancora ferrato per quanto riguardava la visione scientifica dal cambiamento climatico. Difatti, non era ancora in grado di affrontare questo tema con le risorse tecnologiche che avevano. Per concludere, come terzo problema, la Cina non era in grado di stabilire una giusta azione politica per fronteggiare la discussione sul tema del cambiamento climatico.

Il capitolo continua poi con la conferenza del 1992 tenutasi a Rio De Janeiro, nella quale il concetto di “comuni ma diversificate responsabilità” venne chiarito. La Cina ed in generale i paesi in fase di sviluppo credono fermamente che i paesi industrializzati, quali Stati Uniti ed i paesi europei in generale, debbano risarcire l'ambiente dei danni che hanno creato. Ciò significa che sono coloro che devono prendersi la responsabilità di trovare al più presto una soluzione per i danni che loro stessi hanno creato all'ecosistema. Inoltre, i paesi sottosviluppati devono avere le stesse possibilità, sia economiche che pratiche, che hanno avuto in passato gli altri paesi per svilupparsi così rapidamente.

Gli anni '90 sono stati fondamentali per la prima COP1 a Berlino nel 1995. In questa conferenza si iniziò a parlare di un protocollo per diminuire la produzione di gas serra, ma paesi come la Cina non furono d'accordo. Per questo motivo, il Protocollo di Kyoto fu firmato nel 1997 con lo scopo principale di ridurre l'emissione di gas serra del 5% entro il 2008. Inoltre, il Protocollo di Kyoto diede vita al mercato delle emissioni, il quale verrà spiegato nei seguenti capitoli di questo elaborato.

Il capitolo a tiratura storica si conclude con un'analisi delle politiche ambientali degli anni 2000 arrivando fino ad assistere ad un'azione completamente volontaria da parte del governo cinese di ridurre l'emissione di gas serra del 40% entro il 2020. Tutto ciò è stato dichiarato alla COP17 tenutasi a Copenaghen. Infine, non bisogna dimenticare di citare la COP21, la più recente svoltasi a Parigi nel Novembre del 2015. In questo caso, la Cina ha promesso di una maggiore riduzione nella produzione di gas serra fino ad arrivare a un 60% in meno entro il 2020.

Il terzo capitolo di questo elaborato si concentra sulle politiche ambientali messe in atto dal governo cinese, con un excursus sulle definizioni di politica pubblica e processo politico. Si conclude poi con un'analisi sul paradosso delle politiche cinesi. Prima di inoltrarsi nelle politiche del governo cinese bisogna capire come è strutturato il sistema politico cinese. La Cina è un paese nel quale il potere è concentrato nel Consiglio, ciò significa che è un potere centrale. Però, oltre al potere statale, ci sono anche figure non-statali che intervengono nelle discussioni politiche. Purtroppo, gli attori non-statali non hanno molta influenza sulle decisioni del governo, nonostante ciò sono presenti per cercare di far sentire il loro pensiero.

Il capitolo prosegue con una chiara definizione di politica pubblica e processo politico. In entrambi i casi ci siamo basati su pensieri di autori dalla fine degli anni '80. Il termine di politica pubblica può essere generalizzato, grazie all'aiuto di letterati come Cochran, Dye e Gerston, come tutte le azioni messe in atto dal governo. Invece, per quanto riguarda il concetto di processo politico abbiamo fatto affidamento al pensiero di istruttori come Gupta, Easton e Birkland, arrivando alla conclusione che il processo politico è composto da tutte quelle azioni che portano il governo ad erogare una legge. Concentrandoci principalmente sul processo politico del governo cinese vediamo che il Congresso Nazionale del Popolo e il Consiglio sono le principali istituzioni nell'elaborazione delle politiche cinesi. Il Congresso ha il potere di emanare le leggi, mentre il Consiglio ha il compito di progettare norme e regole. Per emanare una legge ci sono due step da seguire. Prima di tutto bisogna sviluppare un progetto di legge e farlo circolare per i vari organi del governo. Una volta che il progetto viene approvato dal Consiglio, se lo stesso viene emanato anche dal Congresso, allora si parla di una legge ufficiale che può essere modificata anche da altri dipartimenti con l'aggiunta di regole e norme.

Il governo cinese ha sempre avuto un potere centralizzato, tuttavia negli ultimi anni, dovuto alla globalizzazione, perciò ad un'apertura dei confini, la Cina ha cercato di istituire un potere più decentralizzato in modo da dare la possibilità anche alle istituzioni locali di prendere provvedimenti. Nonostante ciò, questo processo di decentralizzazione non ha avuto successo ed il potere è rimasto nelle mani del governo centrale. È necessario dire, però, che l'apertura dei confini ha fatto in modo di dare maggior potere alle organizzazioni non governative.

Le politiche ambientali del governo cinese sono migliorate nel corso degli anni ampliando sempre più i loro obiettivi nella riduzione di emissioni di gas serra. Ciò che più è importante negli ultimi anni, è che il tre settembre del 2016 è stato firmato un accordo tra Cina e Stati Uniti, nel quale queste due superpotenze si impegnano a ridurre le emissioni di gas serra ed aiutare finanziariamente i paesi in via di sviluppo. Per rispettare il patto, Cina e Stati Uniti devono investire più di prima in energie rinnovabili ed è importante che entrambi si fidino dell'altro paese perché senza collaborazione e fiducia questi obiettivi non possono essere raggiunti. Inoltre, dopo la firma di queste superpotenze anche altri paesi come la Russia e l'India saranno spronate a collaborare per ottenere gli obiettivi prefissati.

Il paradosso che affligge il governo cinese è che questo paese è sia il più grande emettitore di gas serra ma al contempo è il maggiore investitore in energie rinnovabili. Ciò che ancora rende più evidente il paradosso è che la Cina non accetta obblighi per quanto riguarda le politiche ambientali da parte degli altri paesi, ma rimane comunque il più grande stato ad investire per migliorare la situazione del cambiamento climatico. Il problema del governo cinese per quanto riguarda la soluzione o comunque sia un miglioramento del cambiamento climatico, è che è un paese che punta principalmente ad uno sviluppo economico producendo così sempre maggior quantità di gas serra. La Cina vuole diventare una superpotenza, questo è il suo principale obiettivo, e pensare poi a come ridurre i danni causati all'ambiente. Poiché il governo cinese ha sempre rifiutato di adattarsi agli obblighi imposti dai paesi sviluppati per quanto riguarda le emissioni di gas serra, ha deciso ed è stato anche forzato ad aumentare il valore dei suoi investimenti per migliorare l'utilizzo di energie rinnovabili. Difatti, si è scoperto che la Cina è in grado di inquinare molto di meno di quanto sta facendo attualmente grazie alle sue conoscenze in campo tecnologico. È importante rimanere coscienti del fatto che la Cina è ancora un paese in via di sviluppo, nonostante ciò il governo cinese sta facendo un ottimo lavoro nello sviluppo delle tecnologie ecosostenibili. Il governo cinese si sta impegnando a fondo per ottenere esemplari risultati nel campo del cambiamento climatico.

Nel quarto capitolo di questo elaborato si ha l'obiettivo di comprendere quali saranno le future mosse politiche del governo cinese per quanto riguarda il cambiamento climatico. Durante la conferenza di Durban del 2011, la Cina ha sostenuto che i punti sui quali doveva concentrarsi la conferenza fossero: una più chiara spiegazione delle quantità di emissioni permesse ed un ampliamento dei fondi per un'economia ecosostenibile. La conferenza di Durban creò anche il Fondo Verde per il clima, il quale distribuirà ogni anno 100 bilioni di dollari statunitensi per finanziare i paesi in via di sviluppo.

Il periodo che va dal 2012 al 2020 è una fase di transizione per il governo cinese perché determinerà le politiche che adotterà la Cina dopo il 2020. La Cina infatti dovrà adattarsi ad una quantità sempre minore di gas serra emessi ed inoltre sarà molto più presente per i paesi in via di sviluppo in modo da ottenere un maggior poter di contrattazione. Ciò che più è importante per il governo cinese è di raggiungere uno sviluppo ecosostenibile prima del 2020, eppure ciò implica una maggiore collaborazione con i paesi sviluppati.

Il capitolo prosegue poi con una spiegazione del sistema di Emission Trading che al giorno d'oggi è per prima cosa molto importante ma anche moderno. L'Emission Trading System riguarda strumenti di mercato economico che favoriscono lo scambio di emissioni ad un costo minimo. Questo sistema funziona in modo eccezionale. Colui che ha a disposizione i permessi di emissione può venderli a paesi che invece necessitano della possibilità di inquinare maggiormente per favorire il proprio sviluppo. Nel caso in cui il proprietario dei permessi non li sfrutta al massimo, quindi inquina di meno rispetto alla sue possibilità, ha il diritto di venderli a paesi che invece necessitano di ulteriori permessi. Quando il livello delle emissioni è troppo alto, il prezzo dei permessi salirà in modo da incentivare la riduzione di emissioni.

Per costruire un mercato delle emissioni si ha bisogno di cinque requisiti: 1) decidere il limite massimo di emissioni consentite; 2) distribuire i permessi; 3) fare dei controlli regolari per assicurarsi che gli obblighi vengano rispettati; 4) organizzare delle istituzioni per la distribuzione dei permessi; 5) un sistema di controllo generale.

Il governo cinese ha introdotto il sistema di Emission Trading durante il dodicesimo piano quinquennale; il documento dichiara che la Cina si impegnerà nel promuovere la fondazione di questo sistema di emissioni e successivamente modificherà i prezzi per la creazione di questo sistema. Entro il 2020 questo nuovo sistema economico verrà ufficialmente stabilito ed il governo cinese ed altri paesi sviluppati hanno dichiarato un profondo interesse dello sviluppo dei paesi con basse quantità di emissioni attraverso il sistema di Emission Trading.

Questo nuovo mercato si divide in due categorie: volontario ed uno regolamentato. La Cina, come prevedibile, ha preferito un sistema volontario per non dover sottostare ad obblighi imposti da altri paesi che gli impedirebbero di utilizzare a proprio piacimento il sistema di Emission Trading. Fortunatamente, questo nuovo mercato sta già portando dei benefici all'ecosistema e ha fatto in modo di coinvolgere anche i paesi che sono ancora in via di sviluppo al tema del cambiamento climatico.

Siamo giunti così alla conclusione di questo elaborato avendo un quadro più quadro di quale è la situazione attuale in Cina quando si tratta del problema del cambiamento climatico. Questo è un paese che è cresciuto molto, sia a livello economico ma anche etico. Credo che sia un paese dal quale abbiamo molto da imparare nonostante egli non sia comunque perfetto.

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