



Università
Ca' Foscari
Venezia

Master's Degree programme – Second
Cycle (D.M. 270/2004)
In International Relations

Final Thesis

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Ca' Foscari
Dorsoduro 3246
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Climate Change: the Limits and
Responsibilities of Paris Agreement and
Glocal Environmental Perspectives

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Academic Year 2015 / 2016

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Abstract

Nowadays we live in a chaotic world where it is hard to orient, but we are increasingly surrounded by issues which require stable landmarks. Among these issues, climate change is certainly one of the most important and asks us for much attention. It is fundamental to act on several levels: international, regional and local. The interaction between these three levels is not obvious, linking global and local levels represents a challenge for decision making on climate change. Indeed, the fight against climate change is no longer simply a matter of emissions and distribution of efforts, but also of technology, economic and social choices, a new vision of the future. The issue of climate change is related to economic transition and it does not concerns only negotiations between technicians of environmental policy.

Starting from this point I would like to explain the limits and responsibility of Paris Agreement today and in the future. What position the countries have in this international treaty and how the multi-level governance works. How the countries have prepared their INDC's and what is the process to reach the international goals in the different scale of our society, local, regional, national and international. In addition, I will analyse if today there could be an international governance without a stable trans-scale framework to face the problem of climate change and what role the nation-states have in this framework.

The Paris agreement could reach its goals if it was seen as the beginning of a process where all are involved, with the awareness that climate change is a global problem, but first of all concerns the individual and his actions. Moreover, with the Paris agreement we could see a new gap opening up between the stated objective and the action proposed. Indeed, the meeting has been prepared at the highest levels of the planet's governments, but only a rigorous planning at local and regional level could make the agreement effective on the international scale. Only in this way we could reasonably face an issue that is Global as much as Local.

Riassunto

Oggi non sono poche le sfide che la nostra società deve affrontare, quella del cambiamento climatico occupa sicuramente un posto centrale, perché riguarda l'intera umanità e mette tutti gli esseri umani sullo stesso piano. La natura nel bene e nel male unisce gli individui e ci ricorda che dobbiamo a lei la nostra origine. Nel mondo in cui viviamo, nell'era della globalizzazione abbiamo difficoltà a trovare regole definite, trasparenti e chiare così come molto spesso facciamo fatica a rispettarle. In questo contesto globale, dove anche i ruoli istituzionali non sono chiari e definiti, non è facile avere una forma di controllo stabile. Negli ultimi anni abbiamo parlato spesso di "crisi": la crisi del debito, la crisi dei migranti, la crisi degli stati, la crisi del clima, etc.. Tutte queste crisi in realtà sono strettamente collegate tra loro e possiamo dire che fanno parte di un'unica grande crisi. La crisi del clima però, del cambiamento climatico che sfida la natura, inevitabilmente ci spaventa più di tutte le altre ed è soprattutto per questo che coinvolge di continuo l'opinione pubblica. Ci spaventa perché a differenza di tutte le altre crisi ci chiede di percorrere nuove strade e non quelle solite del "business as usual" ovvero del fare come se niente fosse e infine ci chiede di tornare a pensare ai nostri sistemi economici se vogliamo continuare ad abitare questo pianeta. Infatti, la lotta contro il cambiamento climatico non è più semplicemente una questione di emissioni e della distribuzione degli sforzi per abbassare quest'ultime, ma è anche e soprattutto una questione di scelte economiche e sociali, una nuova visione del futuro.

Il riscaldamento globale ha già devastanti effetti sulle popolazioni e le attività economiche di tutto il pianeta e la situazione è destinata a peggiorare sempre di più nei prossimi anni, se non agiamo in maniera forte. Le catastrofi ci sono, gli effetti del cambiamento climatico sono evidenti e noi non possiamo ignorarli continuando a percorrere le stesse strade. Nel 1992 all'Summit della Terra di Rio de Janeiro il Cambiamento Climatico ha avuto sul piano internazionale, per la prima volta, l'attenzione che si meritava già da anni. In quella sede nacque la Convenzione Quadro delle Nazioni Unite sui Cambiamenti Climatici, un trattato che puntava alla riduzione dei gas serra, ma con un obiettivo non vincolante. La convenzione Quadro delle Nazioni Unite entrò in vigore il 21 marzo 1994, in quella stessa sede si stabilì che gli stati, facenti parti delle nazioni unite, si sarebbero riuniti nella

conferenza delle parti (COP) ogni anno. La prima conferenza delle parti dell'UNFCCC si riunì a Berlino il 27 Marzo 1995, ma le COP che hanno segnato la storia del percorso, non poco frastagliato, della lotta contro il cambiamento climatico sono state quelle di Kyoto dove nacque il famoso Protocollo di Kyoto, Copenaghen e quella che si è conclusa solo pochi mesi fa a Parigi e che ha dato vita al Paris Agreement. Queste tre hanno segnato la storia del clima degli ultimi vent'anni. Con il Protocollo di Kyoto si definirono, come spiegherò nel primo capitolo, per la prima volta dei meccanismi per abbassare le emissioni di CO₂ nei paesi ricchi e industrializzati. Il Protocollo di Kyoto, senza la ratifica da parte degli Stati Uniti che in quel momento erano i maggiori emettitori di gas serra, perse molto di significato. Inoltre, rispetto a quando fu creato, a Kyoto nel 1997, entrò in vigore solo nel 2005 dopo la ratifica della Russia. Infatti, perché il trattato potesse entrare in vigore, era necessario che fosse ratificato da non meno di 55 Nazioni, e che queste stesse Nazioni firmatarie complessivamente rappresentassero non meno del 55% delle emissioni di gas serra globali di origine antropica.¹

La COP15 a Copenaghen nel 2009 fu un vero e proprio fallimento, soprattutto perché si avevano aspettative estremamente elevate; ci si aspettava un accordo vincolante, con impegni precisi, e con l'indicazione di impegni da parte dei paesi emergenti e dei due global players, Cina e USA. Tuttavia, la COP15 a Copenaghen è importante per diverse ragioni: nessuna delle posizioni dell'UE viene recepita a Copenaghen; si delinea il ruolo centrale di Cina-USA; l'accordo viene disegnato da un pool di paesi che assumono la funzione di guida (USA, Cina, India, Brasile, Sudafrica); viene accettato l'obiettivo dei 2°; si inizia a discutere per la prima volta degli programmi nazionali di riduzione di gas serra, che costituiranno poi l'elemento chiave di Paris COP21, gli INDCs.

Dal 30 novembre al 12 dicembre 2015 si è tenuta a Parigi la ventunesima sessione della conferenza delle parti (COP21) che si è conclusa con il raggiungimento di un accordo. L'accordo di Parigi è stato definito un accordo storico in quanto per la prima volta riunisce le volontà di 195 paesi. Per la difficile fase storica che stiamo vivendo oggi, prima e durante i negoziati, la preoccupazione di non ottenere il risultato sperato, come accadde a Copenaghen, era molto alta. Non possiamo sottovalutare che a Parigi, circa 15 giorni prima dell'inizio della COP21, ci fu il più sanguinoso attacco terroristico sul suolo francese da dopo la seconda guerra mondiale. Per questo motivo la città, la Francia e tutta l'Europa

¹ <https://www.reteclima.it/protocollo-di-kyoto/>

furono letteralmente sconvolte nei giorni a venire. A Parigi molti eventi che avrebbero dovuto fare da cornice alla COP21 sono stati cancellati, in particolare, le proteste su larga scala per le politiche internazionali riguardo a come si sta affrontando il problema del cambiamento climatico. Parigi è sotto stato di emergenza dalla notte tra il 13 e 14 novembre 2015, sono stati chiesti diversi prolungamenti dello stato d'emergenza che infatti perdurerà fino al 26 luglio 2016. Da questo punto di vista, in quella situazione, essere in grado di affermare che era stato raggiunto un accordo internazionale di quel livello ha contribuito a placare gli animi. Infatti, il cambiamento climatico è una questione di grande interesse per la politica estera, oggi uno dei problemi più urgenti che preoccupa il mondo intero. Dopo il protocollo di Kyoto, vi era l'esigenza di trovare un accordo che avrebbe dovuto ripristinare le regole del gioco e coinvolgere più stati per la riduzione delle emissioni di gas a effetto serra. Dopo l'esperienza di Copenaghen non era possibile rischiare di uscire dai negoziati con un accordo puramente formale e non giuridicamente vincolante.

Il ruolo che i diversi stati hanno preso nella preparazione dei loro INDC's, è stato fondamentale per dettare le linee guida dei negoziati e permettere il raggiungimento degli obiettivi. Al contrario però, attraverso l'analisi degli INDC's possiamo notare alcuni dei limiti di questo accordo, soprattutto dal punto di vista scientifico. Per raggiungere l'obiettivo finale, infatti, vale a dire: «tenere l'aumento della temperatura media globale ben al di sotto di 2 ° C rispetto ai livelli pre-industriali e di proseguire gli sforzi per limitare l'aumento della temperatura a 1,5 ° C rispetto ai livelli pre-industriali,» le previsioni degli INDC's non bastano, ma ci vorrebbe un grande lavoro di mitigazione e adattamento a diversi livelli con controlli continui. Inoltre, questo obiettivo non è così semplice da raggiungere perché siamo già a un aumento di circa 1 grado sopra il livello pre-industriale e i due gradi già comportano enormi perdite per l'economia e l'agricoltura. Tuttavia, è giusto porre limiti quantitativi, ma ci dovrebbe essere un maggiore controllo per raggiungere questi obiettivi, altrimenti ottenere questi risultati sarà quasi impossibile.

Inoltre, è interessante analizzare la COP21 sia a livello del processo che dei risultati. Infatti, ottenere in termini concreti i risultati dell'accordo di Parigi è una sfida molto ambiziosa. Il processo della COP21 s'inserisce pienamente nella "crisi" che stiamo vivendo e che richiede un cambiamento radicale nel nostro stile di vita. Infatti, il clima del nostro pianeta è molto instabile, vi è una variazione atmosferica complessa, stiamo

assistendo ad un cambiamento di attività solare ed anche l'attività vulcanica è molto animata.

Il "cuore" del Paris Agreement si basa sui programmi nazionali di riduzione dei gas serra, gli INDC's. Analizzando questi programmi, elaborati dai singoli stati in vista dell'accordo, possiamo già osservare alcuni limiti: in primo luogo, non vi è alcun obbligo per gli Stati di mantenere le loro promesse. In secondo luogo, anche se riescono, siamo lontani dal livello di riduzione delle emissioni che sarebbero necessarie per raggiungere gli obiettivi. Infatti, INDC's forniti dagli stati determineranno un aumento di temperatura di 3 o 4 gradi e sarebbe una catastrofe per l'ambiente. Per questo motivo non è da sottovalutare il divario tra ciò che l'accordo prevede e ciò che gli Stati possono fare concretamente.

Un altro punto chiave è che il testo stabilisce che l'accordo è "legalmente vincolante", ma non ci sono sanzioni per l'eventuale inosservanza e le Nazioni Unite non hanno gli strumenti per fare in modo che gli stati mantengano le loro promesse. Perciò, essenzialmente, ogni paese decide per sé gli sforzi di riduzione dei gas serra. E 'vero che questo meccanismo diventerà una sorta di tassa di "trasparenza" delle misure adottate, ma possiamo dire che l'accordo di Parigi è vincolante in forma. In effetti, la natura giuridica dell'accordo, vincolante o meno, è stato un argomento a lungo dibattuto durante i negoziati. L'accordo cammina una linea sottile, vincolante in alcuni elementi, come per quanto riguarda gli obblighi di comunicazione e trasparenza, lasciando invece altri aspetti del contratto, come ad esempio la scelta dei limiti di emissione di gas serra per ogni singolo paese, non vincolante.

Inoltre, non sono sviscerati alcuni punti chiave di non poco conto per gli anni a venire, tra questi il problema delle future migrazioni dovute ai disastri ambientali e come quest'ultime saranno affrontate concretamente in futuro. Non c'è, all'interno del Paris Agreement, accenno allo stato dell'immigrato per cause climatiche.

Possiamo dunque pensare che anche se è stato raggiunto per la prima volta un accordo "universale" nella storia delle trattative per affrontare il problema del cambiamento climatico, questo non è sufficiente per essere soddisfatti. Alla base vi è un modello economico che continua a percorrere le stesse strade, non ci sono vere e proprie sfide che guardano al futuro con occhi diversi. Il sistema economico e politico in cui viviamo ha già perso da anni dei riferimenti istituzionali saldi, si cerca in tutti i modi di governare dall'alto, ma troppo facilmente si perde il controllo. Siamo intrappolati in una rete piena di

fili spezzati. Bisogna, dunque, trovare lo strumento che ci permetta di ricostruire questi fili e connetterli tra loro per creare un equilibrio. L'accordo di Parigi non può essere visto come un'"illuminazione", non possiamo dimenticare tutto il percorso che è stato fatto fino ad ora e non osservare i limiti e le responsabilità di quest'ultimo. Capire veramente che ruolo hanno i singoli stati e quali rotte dovrà seguire la politica estera nei prossimi anni, se vuole realmente contribuire a salvare il pianeta, è la sfida più ardua.

Oggi, se vogliamo creare un sistema alternativo, dobbiamo capire da dove cominciare e fare in modo che le fondamenta siano stabili e durevoli, consentendo una vera e propria comunicazione a tutti i livelli, dal basso verso l'alto. Per questo motivo è fondamentale agire su più livelli: internazionale, regionale e locale. L'interazione tra questi non è scontata, collegare il livello globale con quello locale rappresenta una sfida per il processo decisionale sui cambiamenti climatici. A questo proposito, oggi è molto interessante pensare al ruolo della governance multilivello da porre come base delle politiche future. Infatti:

All'interno di processi geopolitici globali come negoziati e accordi transnazionali, i governi locali e regionali spesso collaborano strettamente e si percepiscono come controparti dei governi nazionali e del sistema delle Nazioni unite. Questo fattore è divenuto necessario perché i sistemi multilaterali di cooperazione tra stati sovrani, il sistema delle Nazioni Unite e i meccanismi correlati non assegnano un ruolo ai governi locali; sono invece percepiti come parte dei rispettivi paesi e rappresentati da essi. Dunque, oggi, molti governi locali sono preoccupati per il sempre più discusso fallimento degli attuali meccanismi della governance globale, specie ma non solo, quello della struttura delle Nazioni Unite. In generale i progressi limitati a livello dei governi nazionali suggeriscono sia il bisogno sia l'opportunità di un ruolo più importante per le metropoli e le città.²

Una possibilità è di iniziare dai nostri luoghi, dal territorio, dalle città in cui viviamo e in cui abbiamo le nostre relazioni. Guardare verso grandi orizzonti senza avere delle fondamenta salde nel piccolo è come costruire una casa partendo dal soffitto, è impossibile, prima o poi quella casa crollerà.

² Worldwatch Institute, *Governare per la sostenibilità*, Edizioni Ambiente, 2014, P. 177

Dobbiamo quindi affacciarci alle diverse prospettive ambientali che escono dalla retorica che spesso troviamo sul piano internazionale. Se ne parla poco, ma ci sono molti panorami diversi anche nei paesi come ad esempio gli Stati Uniti che sono i protagonisti di questa retorica, in quanto grande potenza politica a livello mondiale. Tutto il percorso che è stato fatto finora nei vari incontri COP e il risultato che è stato raggiunto con l'accordo di Parigi ci possono portare a guardare la questione del cambiamento climatico anche da un altro punto di vista che parte dall'individuo e le sue azioni, dai luoghi che abitiamo tutti i giorni, dalle relazioni sociali e dal rapporto degli esseri umani con la natura.

Il clima è un bene pubblico globale al quale tutti siamo interessati, a questo proposito il problema del cambiamento climatico ci offre l'opportunità di riflettere sulla sicurezza della nostra vita e quella delle generazioni future su questo pianeta. Gli incontri COP hanno anche e soprattutto come scopo quello di trovare un accordo per fare in modo che in ogni caso l'economia del profitto che oggi ci lega tutti, paesi sviluppati o in via di sviluppo, vada avanti nel migliore dei mondi possibili per dare i suoi frutti in tutti i paesi. Forse però oltre a capire e a concentrarsi su cosa accade sul piano internazionale e a quali equilibri ambiscono gli stati, per cercare quanto più possibile di mantenere i loro profitti e far crescere l'economia, è veramente arrivato il momento di fermarsi. Questa volta è la natura a chiedercelo e per farlo bisogna ripartire dal piccolo, dalle fondamenta.

Una sfida più che ambiziosa perché non siamo più abituati a ragionare così, nell'era della globalizzazione pensare di ritornare a ricostruire un dialogo partendo dalle città dal territorio prendendo a modello la democrazia partecipativa delle Agorà greche dove le persone si riunivano, scambiavano le proprie opinioni e le decisioni erano davvero prese in comune sembra impossibile. La parola "democrazia" deriva da due parole greche: Demos (che significa "popolo") e Kratos (che significa "potere"), quindi "potere del popolo". Il popolo dell'antica Grecia era composto da persone attive che discutevano nelle assemblee delle metropoli e che partecipavano attivamente al bene comune. Anche se oggi non siamo abituati a ragionare in questo modo e può sembrare utopico, problemi come i cambiamenti climatici inevitabilmente ci portano a riflettere sulla necessità di dialogo, di incontro e di partecipazione.

Le città possono essere il luogo da dove cominciare, ma ciò che è importante sottolineare è che preparare le città ad una regolamentazione ambientale non è evidente. Uno dei fattori più importanti è la mobilitazione nella zona, tentando il più possibile di far partecipare i

cittadini. Negli ultimi anni, ad esempio, Parigi sta facendo un duro lavoro per aumentare la consapevolezza delle persone a questi problemi. Infatti, dal 2007 Parigi si riferisce ad un piano di clima per l'energia territoriale (Le Plan Climat Energie de Paris) che ha poi riconfermato, con qualche variazione, nel 2012. Questo piano ha ispirato le politiche della città e si concentra principalmente su tre obiettivi per affrontare il problema del cambiamento climatico. Il primo sono gli edifici, che sono grandi emettitori di gas serra, si sta cercando di trovare soluzioni alternative per il riscaldamento all'interno dei palazzi e di rivederne la struttura. Il secondo è settore dei trasporti, si vuole ridurre il più possibile i mezzi di trasporto che inquinano. Il terzo obiettivo è di investire sempre di più nelle energie rinnovabili. Un problema di non poco conto è che molte delle emissioni di gas serra non sono attribuibili alla città e quindi non possono essere tenuto sotto controllo. Parigi può essere un esempio di una città che si sforza di risolvere i problemi legati al cambiamento climatico dal basso, coinvolgendo i suoi abitanti attraverso le associazioni o iniziative che incoraggiano la partecipazione.

Inoltre, come spiegherò nel terzo capitolo, non solo Parigi sta cercando di adottare nuove politiche ambientali locali: in molte altre città in tutto il mondo possiamo osservare lo stesso processo. Per molti di questi movimenti come ad esempio le Transition Towns prende forma una vera e propria transizione economica che vuole percorrere una strada diversa da quella della crescita a tutti i costi e affrontare due tra le più grandi sfide di oggi: il picco petrolifero e il cambiamento climatico. Rimettendo in discussione i dogmi di un'eterna crescita economica in un mondo dove l'energia sarà sempre più rara se continuiamo a usarla in questo modo. A questo proposito la parola "resilienza" che viene tanto utilizzata in questi ultimi anni, dovrebbe diventare un valore che penetri nella nostra società e cultura. Infatti, la resilienza è la capacità di un sistema di rispondere positivamente alle perturbazioni che lo possono disturbare. Il sistema che ha minore resilienza inevitabilmente accresce la propria vulnerabilità. Invece, in un sistema resiliente il cambiamento ha la potenzialità di creare opportunità di sviluppo, novità e innovazione.

Anche la Bioregione può essere un concetto da prendere in analisi per puntare a soluzioni nuove nel panorama ambientale. In particolare lo studio di Alberto Magnaghi sul concetto di Bioregione urbana può farci riflettere su come sia importante ripartire dai nostri territori costruendo una struttura a rete tra le diverse città che compongono una regione, ma prima di tutto lavorando sulle risorse di ogni città per utilizzarle nel migliore modo possibile come bene comune a disposizione di tutti i cittadini. Magnaghi si concentra in modo

particolare sulla riabilitazione del cittadino per consentire un processo di auto-gestione e auto-governo. Infatti, il cittadino di oggi è diventato sempre più un residente che non ha né la cultura, né i mezzi di produzione nel proprio territorio: non sa da dove arrivano la luce e il cibo; dove andranno a finire i suoi rifiuti. Lo sforzo di rieducazione dei residenti all'abitare la propria città deve partire da un processo partecipativo strutturato, all'interno del quale gli abitanti, i bambini e i giovani delle scuole, ripercorrono i valori patrimoniali del loro territorio attraverso un processo di identificazione e re-apprendimento. Per questo motivo educare al territorio consiste in un processo di re-appropriazione della capacità di abitare dell'individuo, della comunità e della società locale.

Introduction

The present era, as we know, is highly marked by the influence of fossil fuels causing global warming. The growth of these colossal energies has brought to the society of 20th and 21st century a formidable industrial and technological complexity. Oil has infused its caloric power in all dimensions of life: transportation speed, power tools, mining techniques, metropolitan development, intensive agriculture, etc. as well as the economic growth rate increased emissions of greenhouse gases, pollution, waste and massive extraction of natural resources have increased in the same proportions.³

Indeed, human society is rooted in natural systems of the planet, and it depends entirely on them. The human economic activities take place in the context of these systems, influencing them and being influenced by them. In general, for most of the two or three million years of our history of hominids, the percentage of influence on our part was minimal. At a certain point, however, in a not too distant past, we have entered what is called the Anthropocene, the era in which they grew impressively and the amount of human beings on the planet is their ability to influence the biosphere through their activities: human beings have in fact become the main engine of the worrying changes taking place on a global scale. These perturbations are now familiar (such as warming of oceans, the acceleration of species extinction rate, etc.), threatening human welfare and civilization itself.⁴

In addition, today's scientific knowledge shows us that mankind has exerted such pressure on natural systems that many fundamental variables for our societies (as, for example, those of the climate system, water cycles, the biodiversity richness of the great biogeochemical cycles, such as those of carbon, nitrogen and phosphorus removal of the purification of the air, the regeneration of soils etc.) are passing, in some cases have already passed, the more or less stable boundaries that were recorded in the last 10,000 years, during which our species has been thriving and spreading on the planet, significantly expanding its number, up to overtake, in 2011 the seven billion inhabitants and heading,

³ Carton H., Servigne P., Sinai A., Stevens R., *Petit traité de résilience locale*, Charles Léopold Mayer éditions, 2015, P. 42

⁴ Worldwatch Institute, *Governare per la sostenibilità*, Edizioni Ambiente, 2014, P. 265

according to the latest World population Prospect of the United Nations, towards 9 , 6 billion in 2050).⁵

For these and many other reasons, nowadays climate change challenges the real way we organize our society. Not only does it challenge the concept of the nation-state versus global responsibility, but the short-term vision of our political leaders. The global warming has already devastating effects on the populations and the economic activities of the entire planet and will worsen more and more in the coming years if we do not act in a strong way. Indeed, we live in a chaotic world where it is hard to orient, but we are increasingly surrounded by issues which require stable landmarks. Among these issues, climate change is certainly one of the most important and asks us for much attention. It is fundamental to act on several levels: international, regional and local. The interaction between these three levels is not obvious, linking global and local levels represents a challenge for decision making on climate change. It is really important to understand that the fight against climate change is no longer simply a matter of emissions and distribution of efforts, but also of technology, economic and social choices, a new vision of the future. The issue of climate change is related to economic transition and it does not concerns only negotiations between technicians of environmental policy.

At the international level to face the issue of climate change an ambitious path has been followed since 1992 - year of the Earth Summit in Rio de Janeiro- to date, only a few months after the COP21 in Paris, where state institutions, European and internationals, have tried to find a new agreement to re-establish the rules that will replace those laid down in the Kyoto Protocol.

In the first chapter, I would like to trace the path that has been done since the Kyoto Protocol until the Paris Agreement and to explore the limits and the challenges of these agreements. The Kyoto Protocol is important in order to understand its relevance in the fight against climate change and the role played by some states such as the United States during the construction of this protocol. Moreover, I would like to explain why Copenhagen conference was a failure and why there were huge expectations for Paris COP21. Then, I will focus on what were the other important steps that have allowed us to reach the Paris agreement after the conference in Copenhagen.

⁵ Worldwatch Institute, *Governare per la sostenibilità*, Edizioni Ambiente, 2014, P. 11

In the second chapter, I would like to explain the limits and responsibilities of Paris Agreement today and in the future. What position the countries have in this international treaty and how the multi-level governance works. How the countries have prepared their INDC's and what is the process to reach the international goals in the different scale of our society, local, regional, national and international. In addition, I will analyse if today there could be an international governance without a stable trans-scale framework to face the problem of climate change, what role the nation-states have in this framework and what is the position of local governments. Why the strategy and the policy of local governments are very important today. Within global geopolitical processes as negotiations and transnational agreements, local and regional governments often work closely together and are perceived as counterparties by national governments and the United Nations system. This factor has become necessary because the multilateral systems of cooperation between sovereign states, the United Nations system and related mechanisms, do not assign a role to local governments. These are perceived as part of their respective countries and represented by them. Hence, now, many local governments are concerned about the increasingly discussed failure of existing global governance mechanisms, especially but not exclusively, that of the United Nations structure. Generally the limited progress in national government level suggests both the need and the opportunity for a greater role for cities and regions.⁶

Moreover, in the second chapter I will try to understand if it is possible to see the Paris agreement as an excellent result or maybe it is better to believe that this is the «beginning of a process» where we all are involved, with the awareness that climate change is a global problem, but first of all concerns the individual and his actions. Indeed, with the Paris agreement we could see a new gap opening up between the stated objective and the action proposed. Indeed, the meeting has been prepared at the highest levels of the planet's governments, but only a rigorous planning at local and regional level could make the agreement effective on the international scale. Only in this way we could reasonably face an issue that is Global as much as Local.

At the end, in the third chapter, I will analyse the different perspectives for a new environmental economics. I will try to explain how today we can walk other streets than those we have travelled so far. Not covering our eyes, but finding new and resilient

⁶ Worldwatch Institute, *Governare per la sostenibilità*, Edizioni Ambiente, 2014, P. 186

solutions. I will try to understand how it will be possible in future to combine our economic system with the planetary and explain why resilience is now so important that it can be considered a value that must penetrate our society and our culture. Successively, I will analyse the concept of economic transition and how it can be concretely applied through practice experiments, for example through the Transitions Towns. In addition, I will focus on the role of cities today, their importance to build a world that starts from the bottom and not by abstract rules dictated from above. Why the cities?

Because cities are the place in which we live every day, the place of our experience, the headquarters of our social relations. Indeed, we must be aware that the "crisis" of climate change is closely linked to all the other "crises" that we lived and we live in these years and will continue to live unless we act in a strong and concrete way. In conclusion of third chapter, I will focus on the concept of bioregion, how this concept is well suited to a policy that wants to start from the bottom, from the local level to reach the global level. In particular, I will focus on the study done by Alberto Magnaghi on "Urban Bioregion" and explain how it could be a practical solution today.

Chapter 1

The politics of climate change: from Kyoto protocol to Paris COP21

1.1 The issue of climate change in the 21st century

Nowadays climate change is a fundamental issue that puts light on crucial questions of our society that for too long time we have preferred not to face. Climate life of our planet is very instable; there is a complex atmospheric variation. The sun is not in the same position, we are witnessing a change in solar activity and volcanic activity is also very animated: for these and many other reasons we are experiencing a rapid climate change. Furthermore, climate change also needs to be seen within the context of the other great challenges of the 21st century: global poverty, population growth, migrations, environmental degradation and global security. «Climate change, therefore, challenges the very way we organize our society. Not only does it challenge the concept of the nation-state versus global responsibility, but the short-term vision of our political leaders. To meet these 21st century challenges we must change some of the basic rules of our society, to allow us to adopt a much more global and long-term approach, and in doing so, develop a win-win solution that benefits everyone»⁷. Indeed, the fight against climate change is related to economic transition and it is not simply a matter of negotiation between technicians of environmental policy.⁸ Today there must be a willingness to face this challenge, we cannot remain watching anymore. Especially, because it has been scientifically proven that many of these disasters are due to human activity.

Climate change has an impact on the basic elements of life for people around the world. We can mention some of these: health, food production, access to water and the environment. Now the effects for the people and for our planet is very dangerous, but even

⁷Mark Maslin, *Climate Change a Very Short Introduction*, Oxford university press, 2014, p.7

⁸ <http://www.huffingtonpost.fr/henri-landes/>

more in the future, hundreds of millions of people could suffer from hunger, water shortages and coastal flooding as the world warms.

Global warming is one of the most crucial, and also daunting, challenges facing policymakers in the twenty-first century. Assessing a globally efficient time path for pricing or controlling greenhouse gas (GHG) emissions is difficult enough, with huge scientific uncertainties, disagreement over the ultimate goals of climate policy, and disagreement over which countries should bear most responsibility for emissions reductions. On top of this, domestic policy design is inherently difficult because of multiple, and sometimes conflicting, criteria for policy evaluation.⁹ A key starting point for any cost-benefit analysis of climate change should recognize that future temperatures or damages cannot be known exactly and must be expressed as a probability density function. Modelling uncertain catastrophes presents some very strong challenges to economic analysis, the full implications of which have not yet been adequately confronted.¹⁰

Atmospheric CO₂ concentrations increased from preindustrial levels of about 280 parts per million (ppm) to 384 ppm in 2007, and are projected to rise to around 700-900 ppm by 2100. Accounting for non-CO₂ GHGs, such as methane and nitrous oxides from agriculture, and expressing them on a lifetime warming equivalent basis, the CO₂-equivalent concentration is about 430 ppm (Intergovernmental Panel on Climate Change 2007). Total GHG concentrations in CO₂-equivalents are projected to reach 550 ppm (i.e., about double preindustrial levels) by around mid-century.¹¹

On the one hand, if we refer to formal economic models we can observe that if we don't act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now as in the future. Moreover, if a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP or more. On the other hand, the costs of action, to reduce greenhouse gas emissions to avoid the worst impacts of climate change, can be limited to around 1% of global GDP each year.

⁹ Joseph E. Aldy, Alan J. Krupnick, Richard G. Newell, Ian W. H. Parry, and William A. Pizer, *Designing Climate Mitigation Policy*, December 2010

¹⁰ Martin L. Weitzman, *Some Basic Economics of Extreme Climate Change*, February 19, 2009

¹¹ Joseph E. Aldy, Alan J. Krupnick, Richard G. Newell, Ian W. H. Parry and William A. Pizer, *Designing Climate Mitigation Policy*, *Journal of Economic Literature*, Vol. 48, No. 4 (DECEMBER 2010), pp. 903-934, American Economic Association Stable URL: <http://www.jstor.org/stable/29779703> Accessed: 01-11-2015 19:09 UTC

The human actions today and over the coming decades could create risks of major disruption to economic and social activity, on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th century. It is clear that it will be difficult or impossible to avoid these changes. For this reason the operation that will take place in the next 10-20 years will have a profound effect on the climate in the second half of this century and in the next. A decisive action at all levels of government is needed. Since climate change is a global problem, the response to it must be international, but it must be built on mutually reinforcing approaches at national, regional and international level.¹²

Scientists actively work to understand past and future climate by using observations and theoretical models. In recent years also in the newspapers photographs of parts of the earth taken from satellites have multiplied. These photos often show the physical state of an area as it looked thirty or forty years ago compared to how it appears today: anyone can easily see the physical effect of human presence and its impact. Even just looking at these pictures we can see that going in this way, with the development models pursued so far, the world of the future will certainly not be more sustainable than the current one.¹³

Indeed, the fight against climate change today is the focus of many issues. It inevitably touches human beings as individuals as well as communities and it leads everyone to rethink the foundations of the economic and social system in the world where we live. An actual alarm has sounded for years and now it asks for our attention. To prevent further upcoming disasters we need to act and at all levels: local, regional, national and international. It is not enough to impose laws from above: we need a monitoring body supervising if these laws are respected or not. It is hard to imagine such an international monitoring body that can truly control what happens in the individual states. For this reason, it could be crucial to start from the places where we live and in which we relate to others, as cities.

We can see that at the international level an ambitious path has been followed since 1992 - year of the Earth Summit in Rio de Janeiro- to date, only a few months after the COP21 in

¹² Stern Nicholas, *Stern Review: The Economics of Climate Change*, October 2006

¹³ Randers Jorgen, *2052 scenari globali per i prossimi quarant'anni, rapporto al club di Roma*, Edizioni Ambiente, Milano 2013, P. 70-71

Paris, where state institutions, European and international, have tried to find a new agreement to re-establish the rules that will replace those laid down in the Kyoto Protocol.

The road from Rio to Paris was very complex and with many obstacles that put light on issues that go beyond the problem of climate change and touch deeper roots. The economic and political system in which we live has already lost institutional landmarks in the last years, trying in every way to rule from above, but too easily losing control. We are trapped in a network with broken wires. We should find the tool that allows us to reconstruct these wires and that create a global balance. The Paris Agreement cannot be seen as light house that save us from every catastrophes. We cannot forget the entire path that has been done so far and keep the limits and responsibilities of this agreement. Moreover, it is significant to really understand what role is reserved to individual states and which routes the foreign policy will have to follow in the coming years if it really wants to help save the planet. For this reason I would like to try here to trace the path that has been done by the conference of Rio de Janeiro until the Paris Accord. Furthermore I would like to explore the limits of these agreements and give a voice to other ways of solving the problem of climate change, to other points of view that I believe require careful analysis.

In conclusion, I would like to reflect on the fact that what we need is an “anthropological” change, a transition in the way we look at nature. Nature is now asking us to change. These are some questions that I would like to dissect in this text: How can we do it? Which roads we could follow? Are negotiations of COP and their agreements in enough to resolve the problem?

1.2 The Path from Rio to Kyoto

In the 1992 took place in Rio de Janeiro the Earth Summit, the first United Nations Conference on Environment and Development (UNCED). Starting from this conference the issue of sustainable development become the international order, the principal documents which have emerged from this important meeting in Rio de Janeiro were: the Agenda 21, the Convention on Biological Diversity, the Convention on Protection of Forest and the Convention of GHG reduction. All these documents raise the environmental

issue, but in particular the Convention of GHG reduction was fundamental for the signature of the Kyoto protocol. In that context 108 chief of state, 172 delegations of countries and 2400 non-governmental organization that gathered in Rio de Janeiro founded the UN Framework Convention on Climate Change (UNFCCC). An international formal treaty which came into full force on 21 March 1994. This was the agreement where the international negotiations on climate change took place and it involved 194 nations which have ratified the agreement.

In this occasion the UNFCCC created a framework to affront the issue of climate change and its fundamental goal is the stabilization of GHG concentrations in the atmosphere at a level which prevents a dangerous humane interference with climate system. This goal should be reach in a period of time which allows the naturally adaption of ecosystems to climate change. Especially to assure that the production of food is not threatened and allow to economic development to proceed in the sustainable way. From 1994 the UNFCCC has host 21 conference of parties (COP), it has been successful to concord a series of protocol as the Kyoto Protocol and other formal agreements, the last is the Paris Agreement. The goal of meeting COP is to negotiate an agreement to reduce the global GHG emission. In the majority of negotiations the 194 participant nations have made public their objectives to reduce GHG emission and the correlate actions pertinent to climate change.

Furthermore, today there are a wide range of computerize analytical tools with which to make projections on the outcomes of different assumptions regarding the greenhouse gas emissions during the rest of this century. Indeed, in 1988 was founded the Intergovernmental Panel on Climate Change (IPCC) by the United Nations Environment Program (UNEP) with the World Meteorological Organization (WMO), the goal was to collect and promote the scientific information on climates changes.

In 2000 l'UN Intergovernmental Panel on Climate Change (IPCC) stabilised a set of six standard scenarios for the socioeconomic and technological development until 2100. L'IPCC utilise this scenarios to estimate the future emissions in each of them and provide evaluation reports that reflect the current knowledge on climate change.¹⁴

¹⁴Randers Jorgen, *2052 scenari globali per i prossimi quarant'anni, rapporto al club di Roma*, Edizioni Ambiente, Milano 2013, P. 70-71

The assessment, published in 2007 was very important for the future previsions. This concluded that it is very likely that the average global temperature of the earth's surface increases by 2,5 °C by 2100 in scenario with lower emissions (B1) and 4,8 °C in the scenario with higher emissions (A1F1), all relatively to the pre-industrial temperature. The temperature increase by 2050 has been estimated at between 1,8 °C and 2,2 °C. The actual temperature is 0,7 °C higher than pre-industrial era.

1.3 From Kyoto protocol to Copenhagen COP15

The Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) was adopted at the third session of the Conference of the Parties (COP 3) in Kyoto, Japan, on 11 December 1997. In accordance with Article 24, it was open for signature from 16 March 1998 to 15 March 1999 at United Nations Headquarters, New York. By that date the Protocol had received 84 signatures.¹⁵ The Kyoto Protocol was ratified and signed in Bonn on 23 July 2001, becoming a real treaty. The process of creation of this protocol was very complex; we could say that was the first real international treaty on climate change, during its constitution the interactions between countries was not simple. Indeed, only five years after the UNFCCC foundation was drawn up the Kyoto Protocol at COP 3 on the 13th December 1997 the first international agreement, but this treaty came into force only in 2005. During these 8 years the negotiations between countries have premised the real actuation of this agreement. The Kyoto Protocol affirmed the general principles for a worldwide treaty on cutting GHG emissions and in particular that all development nations would aim to cut their emissions by 5.2 per cent on their 1990 levels by 2008-12.

However the United States, at the time chaired by the President George W. Bush, chose to retire and did not sign the Kyoto Protocol at the Bonn Meeting. This changed more the prospective and the goal of agreement, because the USA produced about one-quarter of the world's carbon dioxide pollution. Furthermore, the objectives set by Kyoto Protocol were reduced during the Bonn meeting to make sure that Japan, Canada and Australia would participate. At the end, Australia made the Kyoto protocol legally binding in 2007.

¹⁵ http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php

A crucial point of this treaty was to balance out the historic legacy of emissions by developed countries. Indeed, the protocol did not include developing countries. Later it was determined that the developing countries would have to join the agreement after 2012. At the end the Kyoto Protocol came into force on 16 February 2005, after Russia ratification. The position of Russia was fundamental, because after its Ratification of the treaty was respected the role that at least 55 countries, representing more than 55 per cent of the global emissions, had signed up to it. Thanks to the Russia ratification the Kyoto Protocol became international law.¹⁶

There are two categories of countries inside the Kyoto Protocol: Annex I and Annex II. The first is a category of countries that has reduction obligations, as the rich countries and the industrial countries. The second is a category of countries that has not reduction commitments and do not take on a binding commitment. These countries that have not reduction commitments are divided into two categories: 2A and 2B. In the first categories there are developing countries, whilst in the second there are the countries with economy in transition.

Furthermore, the Kyoto Protocol provides two basic mechanisms: the first mechanism is Emissions Trading System (ETS); the second mechanism is Clean Development mechanisms (CDM).

The Emission Trading System is only for Annex I countries, namely the developed countries with reduction obligations. Instead, the Clean Development mechanism applies in relations between Annex I and Annex II countries.

The purpose of the Clean Development Mechanism is twofold; on the one hand it allows countries developing to dispose of cleaner technologies and orientation towards sustainable development; the other allows the reduction of emissions there where it is most cost-effective and thus reducing the overall cost of fulfilment of obligations under the Kyoto Protocol. The emissions avoided by the implementation of projects generate emission credits or CERs (Certified Emission Reductions) that can be used for compliance with the reduction commitments assigned. The operation of a CDM project is the following: a private company or a public body carries out a project in a country in the process of development aimed at limiting greenhouse gas emissions; The difference between the amount of greenhouse gases actually emitted and what would have been emitted without

¹⁶ Maslin Mark , *Climate Change a Very Short Introduction*, Oxford university press, 2014, p. 117

the project (the baseline or baseline), is considered avoided emission and credited in the form of CERs; The CER credits can then be sold on the market and / or accumulated.¹⁷

It is important highlight that

the lack of multi-level governance meant that the CDM did not work as well as was expected. For example credits for projects involving the capture of industrial gases have been regrettably easy to game. The regulation has created a perverse incentive for companies to produce more HCFC-22, a refrigerant and powerful GHG being phased out under the Montreal Protocol in return for windfall profits for capturing the HFC-23 by product from its production. About 70 per cent of Certified Emission Reductions in the CDM have come from projects of this kind. Depressingly, the European Commission concluded in 2012 that production of HCFC-22 would have been lower today if the CDM had been absent.¹⁸

Moreover, the Emission Trading System (ETS), a system only for Annex I countries, is a mechanism to create an artificial market. This is a market created by states or international organizations. It strongly regulated and is a market that reflects a very strong political logic. Indeed, the ETS allows the exchange of emission credits between industrialized countries and countries with economies in transition; a country that has achieved a reduction of their greenhouse gas emissions exceeding its target can thus release (using ET) such "credits" in a country that, on the contrary, has not been able to meet its commitments to reduce of greenhouse gas emissions.

The European Union has not waited for the official entry into force of the Protocol (16 February 2005) and has previously established, as from 1 January 2005, a system that regulates in a very similar way the Emissions Trading International emissions trading of emissions between companies located in member countries. The European Emissions Trading Scheme (EU ETS) sets limits for emissions of carbon dioxide to more than 11,000 installations across Europe, but allows that the rights to emit carbon dioxide (which are called allowances European carbon EUA) may be marketed.¹⁹

¹⁷ <http://www.minambiente.it/pagina/i-progetti-clean-development-mechanism>

¹⁸ Maslin Mark, *Climate Change a Very Short Introduction*, Oxford university press, 2014, p.118

¹⁹ http://www.info-ets.isprambiente.it/index.php?p=emission_trading

The European Union introduced a Europe-wide emissions trading system for carbon dioxide in 2005. This market-based policy innovation has been controversial, and has been met with extremely hostile lobbying from industrial interests.²⁰

EU ETS develops through three different phases. In the first phase (2005-2007) some countries made unduly generous allocations, without meeting any rigorous challenge from the EU. In this phase the allowance cap is widely regarded as having been too permissive, and CO₂ emissions in practice were well below the cap. Some Allowances remained unused at the end of the period. And once this was realized by market participants, the allowance price dropped to zero.

In the second Phase, the overall cap looked tighter, and there was initially an expectation that it would achieve significantly greater emissions reductions. However, this hope has been undone by the recession, which has led to a significant fall in energy demand and consequently emissions, for reasons unconnected with the ETS. Moreover, the decline in ETS allowance prices is evidence that the system is not significantly constraining emissions. Prices have fallen from €30 per tonne at the start of phase II to around €15 per tonne in late 2010.

The third phase has begun in 2013 and should continue until 2020. Phase 3 is significantly different from phases 1 and 2 and is based on rules which are far more harmonised than before. The main changes are: a single EU-wide cap on emissions applies in place of the previous system of national caps; auctioning, not free allocation, is now the default method for allocating allowances; some more sectors and gases are included.

One of the problems implied by the emissions trading system is the fluctuation in carbon prices. As explained by Cameron Hepburn, it could be possibly solved by the introduction of a price control system, imposing a ceiling and a floor price to carbon. This would ensure a stability positive for businesses planning long-term investments and, at the same time, it would guarantee a certain short-term flexibility. On the other hand, such system of control would imply some practical problems of implementation and effectiveness: for example, to operate efficiently, price caps and floors would need to be the same across all participating countries but an agreement between them could be hard to find.²¹

²⁰ Smith Stephen, *Environmental Economics, A very short introduction*, Oxford University Press, 2011

²¹ Stern Nicholas, *Stern Review: The Economics of Climate Change*, October 2006

Nowadays, we could say that the Kyoto Protocol has been the greatest success, but at the same times the biggest failure of the international climate negotiations. During COP 3 in Kyoto in 1997 the United States have managed to reach an agreement with legally binding targets to reduce CO2 emissions in developed countries. This was an indelible historical mark, but by refusing to ratify the treaty the United States sent a very strong signal to the rest of the world on how to deal with climate issues. The United States have played an important role in the loss of credibility of international negotiations and the difficulties in finding a binding agreement.

In this way the Kyoto Protocol was seen as a treaty which obliged only a part of state to reduce CO2 emissions. Thus, the protocol wanted to create a reduction of 5% of greenhouse gases emissions of industrialized countries between 2008 and 2012 without imposing any constraints to developing countries, including emerging countries such as China and the Indie.²²

In 1997 the US produced 24% of total emissions for a population accounted for only 4.5% of the world population, despite these numbers they decided not to ratify the agreement. Two were the reasons explained by the United States, the first is the refusal to support a binding agreement without obligation on the part of developing countries, the second the huge risk for the US economy. Indeed, Bill Clinton did not introduced the text of the Kyoto Protocol to the Senate, and the 13 March 2001 his successor George Walker Bush March announced, in a letter addressed to 4 senators republicans, his refusal to regulate greenhouse gas emissions.²³

At that time the US position was very complex, for several reasons: firstly the oil and coal lobby, very strong in the Senate; secondly traditional opposition to international constraints - the US cannot bear the obligations established by international organizations; thirdly the fact that the protocol, designed in the mid-nineties, is ill-suited to a world in which emerging like China and India can thwart the efforts - and then the economic costs - in other countries; fourthly the emphasis on the role of technological innovation. In addition, it is important to note that the United States was the first country to experience the cap and trade systems, and therefore artificial markets, to combat air pollution. Moreover, the

²² Landes Henri, Porcher Thomas, *Le déni climatique*, Max Milo Éditions, Paris 2015

²³ Aurélie Vieillefosse, *Le changement climatique: quelles solutions?*, Les Études, n 5290-5291, La Documentation française, Paris 2009

United States has been not to leave the market and consume at all costs, but instead to move towards cleaner energy. Indeed, the United States is at the forefront to promote the development of renewable energies, abandoning the carbon-based technologies.

From the part of the United States, as well as of other countries that follow the US model of development, there is not the voluntary to change the consumer system in which we live, but only moving to the greener energies that allow us to pollute less. Economic Growth and mass consumption must not change, but only must be green. Most of the rich countries have CO₂ emissions per capita well below those of the United States, with living standards almost identical. In 1997, the year of the signing of the Kyoto Protocol, an English emitted on average 9.4 tons of CO₂, a Japanese 9.5 and an American 19.9. The real problem is that the American way of life remains a model especially for emerging countries.²⁴

Once taken the decision not to ratify the Kyoto Protocol United States, have with their behaviour, on the one hand delegitimized the international climate negotiations and the other hand they sent a bad signal to the different economies of the other countries.

Some states in the United States, such as California or elsewhere in the Northeast, have worked to resolve yourself the problems related to climate change. The effort of these countries was not enough until now to fill the gap at the international level. After the conference in Rio de Janeiro in 1992 the climate issue has become of international importance, but the attitude of the United States has made sure that issues relating to climate change were still placed behind economic issues. Economic growth and profit before and only at a later time we will deal of climate. Unfortunately or fortunately, this behaviour will not carry us far into the future. Today environmental issues require at multiple levels special attention and inevitably we must also begin to change our economic system.

²⁴ Landes Henri, Porcher Thomas, « Le déni climatique », Max Milo Éditions, Paris 2015

1.4 Copenhagen

In 2009 there was the COP15 in Copenhagen, there were expected glorious outcomes and new quantitative commitments to ensure a post-2012 agreement to seamlessly move on from the Kyoto Protocol. In the same year Barak Obama became president of United States and his position to face the issue of climate change was fundamental, also for years to come.

Indeed, the US position has evolved in recent years, thanks to the voluntarism of its chairman. Barack Obama convinced of the need to establish a sustainable framework for the fight against climate change, a mechanism that transcend cleavages and political change. He was mobilized in favour of environmental protection as never a US president had promised before. We can see that firstly the Obama administration has developed unprecedented regulations on the energy sector, in particular to reduce the pollution of coal plants. Secondly, in November 2014, the United States made a joint announcement with China on gas reduction targets for greenhouse, a first in history. Thirdly, recently the president has opposed the construction of the XL pipeline from Canada, against the will of the powerful US lobbies fossils.²⁵

The position of United States and China play an important role for the future negotiations of climate change. Since 2007, China became the largest emitter of greenhouse gas in the world, even if his head emanation rate remains well below that of the United States.

«The EU had prepared an unconditional 20 per cent reduction of emissions by 2020 on a 1990 baseline and a conditional target rising to 30% if other developed countries adopted binding targets».²⁶ Almost all other developed countries had to offer a plan to reduce GHG emissions. Norway was willing to reduce emissions by 40% and Japan by 25 per cent from a 1990 baseline. Even the USA offered a 17% reduction on a 2005 baseline, which was an equivalent drop of 4% on a 1990 baseline. Unfortunately during the Copenhagen conference nothing went as hoped, we could say it was a complete catastrophe and that the Danish Government was not prepared for this huge meeting.

²⁵ http://www.huffingtonpost.fr/henri-landes/accord-cop21-chine-etats-unis_b_8553462.html

²⁶ Maslin Mark, *Climate Change a Very Short Introduction*, Oxford university press, 2014, p. 119

Indeed, in the second week, when all the high-powered country ministers and their support arrived in Copenhagen, there was not enough room, for this reason, many NGOs present could not even participate in the negotiations. In those days it all really went in the worst way and at the end the negotiators were not ready for the arrival of the ministers and that there was no agreement.

In Copenhagen it was not possible to take a measure that would bring the reduction of emissions to 2 degrees Celsius. There was a turbulent discussion between the developed and the developing countries, which did not allow collaboration between them. Indeed, developing countries accuse the developed countries that they are working on an agreement without involving the proposals of developing nations. About the Copenhagen Accord Lumumba Stanislaus Di-Aping, chairman of the G77, said: «It's an incredibly imbalanced text intended to subvert, absolutely and completely, two years of negotiations. It does not recognize the proposals and the voice of developing countries.»²⁷

The Copenhagen accord acknowledges that «deep cuts in global emissions are required [...] so as to hold the increase in global temperature below 2 degrees Celsius», and pledges countries endorsing the Accord to "take action to meet this objective consistent with science and the basis of equity." While disputes between industrialized and developing countries blocked agreement on a specific timeframe for peaking of global emissions or on cutting global emissions by at least 50 per cent by 2050, this does establish the 2 degree C target as a clear litmus test for success of the global effort. Moreover, one of the achievements of Copenhagen was that it set a deadline that encouraged most of the major emitting countries to put forward pledges of what they were prepared to do to limit their emissions of carbon dioxide and other heat-trapping gases. The Accord establishes appendices for countries to list these emissions reduction targets (for industrialized countries such as the U.S. and Europe) or emissions limitation actions (for developing countries such as China, India, and Brazil). Initial commitments and actions were to be submitted to the UNFCCC secretariat by January 31, 2010, for compilation in an information document. While this is no substitute for enshrining these pledges as commitments in a legally binding treaty such as the Kyoto Protocol, it will give them

²⁷ Maslin Mark, *Climate Change a Very Short Introduction*, Oxford university press, 2014, p. 120

greater political heft and make it more difficult for countries to back away from them later.²⁸

The US president Barack Obama comes just two days before the end of the conference; therefore, it did not participate fully in the negotiations, but gave the final blow. In those two days he had a meeting of the USA with the BASIC (Brazil, South Africa, India and China) countries, however he did not seek real communication with other nations UN and at the end he laid the foundations for the Copenhagen Accord. The Copenhagen Accord recognizes the scientific case for keeping temperature rises below 2°C, but in essence it does not have a real plan to reduce emissions.²⁹

The agreement that was signed in Copenhagen was not binding and the countries that have participated in the signing of the agreement had until January 2010 to declare their goals, or plans to lower greenhouse gas emissions. It was also made clear that countries that signed the Copenhagen Accord were taking a different direction respect to the Kyoto Protocol and its goals. In fact, the United States, the driver of negotiations in Copenhagen, to reach the new agreement were moving away from the objectives of the present Kyoto Protocol that instead should have been respected until 2012. Moreover, earlier proposals that would have aimed to limit temperature rises to 1.5°C and cut CO₂ emissions by 80% by 2050 were dropped.

There were numerous protests, the Bolivian delegation summed up the way the Copenhagen Accord was reached- «anti-democratic, anti-transparent and unacceptable».³⁰ Evo Morales, Bolivian president, was a major player at Copenhagen. He demanded a court for climate justice and indigenous rights. Latin American and Caribbean countries have joined forces to call for climate justice and the defence of the rights of the Earth ahead of climate change talks in Copenhagen. ALBA (Bolivarian Alliance for the Peoples of the Americas) has called on developed countries to recognise the “climate debt” caused by their historical carbon emissions. The network, consisting of nine countries representing 73 million people, also demanded that rich nations «adopt significant commitments to reduce

²⁸http://www.ucsusa.org/global_warming/solutions/reduce-emissions/the-copenhagen-accord.html#.VuwZlBvmpjo

²⁹ Maslin Mark, *Climate Change a Very Short Introduction*, Oxford university press, 2014, p. 120

³⁰ Maslin Mark, *Climate Change a Very Short Introduction*, Oxford university press, 2014, p. 120

greenhouse gas discharge and approve mechanisms to help countries to preserve, protect and conserve their forests».³¹

Another focal point was that from a legal point of view it was not clear what the legal status of the Copenhagen Accord is as it was only “noted” by the parties, not agreed, as only 122, subsequently rising to 139 countries, agreed to it.³²

During the two-week in Copenhagen, the scientific community has expressed doubts on the possibility of keeping the increase in global temperature below two degrees, generally considered the threshold of climate risk. Environmental organizations were furious, a statement from Oxfam with a play on words recited "Copenhagen Cop Out". Moreover this accord was also called as Brokenhagen Accord.

Furthermore, in January 2014, it was revealed that the US government negotiators had information during the conference obtained by eavesdropping on meetings of other conference delegations. Documents leaked by Edward Snowden showed how the US National Security Agency (NSA) had monitored communications between countries before and during the conference in Copenhagen. The leaked documents show that the NSA provided US delegates with advance details of the Danish plan to “rescue” the talks should they founder, and also about China’s efforts before the conference to coordinate its position with that of India.

In conclusion, we can say that COP15 was a real failure especially because: there were extremely high expectations; it was expected a binding agreement with specific commitments, together with an indication of commitment from emerging countries and the two global players, China and USA. However, Copenhagen is important because: firstly, is shown in terms of power the empty policy of EU, indeed none of EU positions is implemented in Copenhagen; secondly, it was defined, in that contest, the central role of China-US relations; thirdly, the agreement is drawn from a pool of countries which take the help function (USA, China, India, Brazil, South Africa); fourthly, it was accepted the target of 2 °; it started to discuss for the first time the national reduction targets / programs, the INDC’s, which then form the key element of Paris COP21.

³¹ <https://www.indymedia.org.uk/en/2009/11/442125.html>

³² Maslin Mark, *Climate Change a Very Short Introduction*, Oxford university press, 2014, p. 120

1.5 The road to Paris

As we could see until now the international climate negotiations have been strongly marked by the negative Copenhagen experience. In fact, the COP15 had already intended to define a new global agreement on climate change to replace the Kyoto Protocol gathering, in this way, all countries in the fight against climate change. In spite of everything the efforts and the mobilization of the different countries at the Copenhagen COP15 it was possible only to end with a political declaration, the COP has simply “taken note”.

The sixteenth session of the Conference of the Parties to the UNFCCC and the sixth session of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol took place in Cancun In November 2010 and was hosted by the Government of Mexico.³³

The agreement reached in Cancun had expected to commit to a maximum temperature rise of 2 degrees Celsius above pre-industrial levels, and to consider lowering that maximum to 1.5 degrees in the near future. Moreover, the Cancun agreements gave start to new processes and institutions, including the Cancun Adaptation Framework (CAF), the Commission for the Fit and the Technology Mechanism, comprising the Executive Committee for Technology (TEC) and the Centre and Network for technology for the climate (CTCN). Decision 1 / CP.16 also established, in accordance with Article 11, a Green Climate Fund (Green Climate Fund, GCF) and designated operational entity for the management of the financial mechanism of the Convention. The GCF is a mechanism to assist developing countries in adaptation and mitigation practices to counter climate change. It will support projects, programmes, policies and other activities in developing country Parties using thematic funding windows’. It is intended to be the centrepiece of efforts to raise Climate Finance of \$100 billion a year by 2020.

The second conference held in Rio in 2012 (Rio + 20) was another important phase in this path towards to reach a better agreement to fight climate change that puts the limits to greenhouse gas emissions. What came out of this conference is that social and environmental pressures wielded as challenges in the medium and long-term in 1992 are a

³³ http://unfccc.int/meetings/cancun_nov_2010/meeting/6266.php

reality today and not only the problem of future generations. Almost a third of this biodiversity in freshwater globally has already disappeared. Nothing between 1992 and 2012, the average global temperature increased by 0.4 degrees and the last decade has been the warmest recorded.³⁴ The concept of sustainable development incorporates a temporal and sectorial dimension to traditional economic development policies, valuing the social and environmental policies. Twenty years after the first Rio de Janeiro conference, we could see if there was an overall awareness of these issues, there has been no profound social and political changes and that this concept is slowing. The "greenwashing" or hollow declarations are no longer sufficient and Rio + 20 was an opportunity to revitalize the concept and its practical implementation.³⁵

Moreover, it is in Warsaw in 2013 that the parties have formally undertaken to submit their INDCs (Intended Nationally Determined Contribution). These contributions must describe in a clear and transparent manner, which objective the country are willing to give and what actions they plan to take to fight against climate change, according to their national circumstances. The principle of common but differentiated responsibility, it was stated in Lima in December 2014, the least developed countries and small island developing States were not required to submit their reduction target emissions, but could provide more general data about their management strategy in addressing climate change. Similarly, he was asked all parties to clarify how their own contributions were "fair and ambitious" in view of the collective effort needed to contain rising temperatures.

Therefore, «At the Lima Conference of the Parties (COP20) in 2014, the Secretariat of the UNFCCC was tasked with producing a synthesis report on the “aggregate effect” of INDCs. This UNFCCC synthesis report will analyse the impact of INDCs on global emissions, in the light of the goal of limiting warming to 2°C or 1.5°C. Other analysis, in particular the annual UNEP Gap Report, will perform similar assessments. These reports represent the cutting edge in terms of understanding the aggregate effect of INDCs on global emissions, in the light of the below 2°C goal.»³⁶

As for EU, despite attempts by the European Union (EU) to promote a framework of this logic of self-differentiation, requirements on the content of national contributions remained

³⁴ <http://phys.org/news/2015-02-years-above-average-temperatures-climate.html>

³⁵ http://www.huffingtonpost.fr/margot-le-guen/souriez-cest-rio20_b_1589695.html

³⁶ Miles Report, *Beyond the Numbers: Understanding the Transformation Induced by INDCs*, October 2015

very vague. Documents received by the secretariat of the Convention are particularly heterogeneous. While some, like the United States or the EU chose to focus their contributions on mitigation efforts, others, such as Mexico, have found that their adaptation efforts had to be brought to the attention of the international community. Emissions reduction targets are formulated in very different terms, with such a wide disparity on the reference years and target years. While the EU wants to display its targets for 2030 compared to 1990, to advance the progress made over the past decades, Japan prefers to refer to 2013 as the starting point of a new path and it is taken into account the post-Fukushima context. Finally, and given the difficulty of the exercise, some countries waive forward an overall reduction target of emissions and propose targets by sectors, or detail all the measures they intend to instead, in terms of support for renewable energy, reduction of subsidies for fossil fuels, or for examples to changes in agricultural practices.

The logic that works today is the self-differentiation that has as advantageous the creation of a ripple effect. If a sufficient number of countries chose to submit contributions, others are clearly encouraged to follow the example to avoid the risk of diplomatic isolation.³⁷

Another important meeting was on 25 September 2015 at the United Nations in New York where the world leaders gathered to adopt the 2030 Agenda for Sustainable Development, this comprises 17 new Sustainable Development Goals (SDGs). The concept of the SDGs was born at the United Nations Conference on Sustainable Development, Rio+20, in 2012. The objective was to produce a set of universally applicable goals that balances the three dimensions of sustainable development: environmental, social, and economic. The SDGs replace the Millennium Development Goals (MDGs), which in September 2000 rallied the world around a common 15-year agenda to tackle the indignity of poverty. Already in September 2000 the attention to environment was high, the goal number seven was dedicated to environmental issues, but in 2015 one of the focal point was particularly the climate change. Indeed, the thirteenth goal wants to take urgent measures to combat climate change and its consequences.

However, after the failure of Copenhagen agreement to find a solution during the subsequent COP negotiations was not a simple goal, in fact, subsequent COP have been even more complicated especially with regard to the dynamics between the different countries. Moreover, Wikileaks revealed that United States have cut financial aid to

³⁷ Caole Mathieu. *L'accord de Paris : Des engagements contraignants ?* Ramses, 2016

Bolivia and Ecuador for their opposition to the Copenhagen agreement. Only later with the Cancun negotiations in 2010 and those of Durban in 2011 we were able to see some important turning points in order to obtain legally binding results. Indeed, significant progress was made in the Reduced Emissions from Deforestation and Forest Degradation including safeguards for local people (REDD+). But only in Doha to COP15 in December 2012 it was found a real deal to extend the period of the Kyoto Protocol from 1 January 2013 for a period of eight years. This ensured that for this period all Kyoto mechanisms and accounting rules remained intact and a guideline of reduction of between 25 and 40 per cent of the 1990 baseline by 2020 has been recommended. The other major achievement during the Doha negotiations was the adoption of a timetable for a binding climate agreement that has been found in Paris thanks to the agreement at COP21, not without much criticism and reserves.³⁸

The Paris meeting which was held in Paris in December 2015 aims to establish a new binding and universal regime to replace the Kyoto agreement. A fundamental role did each participating countries to the agreement that they had to prepare their INDCs before the opening of trading in Paris. The expected task for negotiators, they were not easy: they will need to reach agreement on a new model that is more than procedure based on demonstration. Their vision was focused on establishing a new universal regime is binding and durable; strengthen the advantages of cooperation within a new framework of rules and instruments, thus promoting collective learning and support; and creating a cyclic dynamics of regular renegotiations in order to maintain the political pressure.³⁹

A fundamental point was that the COP21 has been seen as the last opportunity, the expectations of this conference were very high. If this has failed, it would have meant necessity to shift from the multilateral system to other methods of cooperation to address the global issue of climate change. In Paris there had to be a more structural and complete agreement. This does not mean that the agreement has been found with the due analysis and accuracy, does not mean that the further possible roads to follow are only those dictated by the agreement.

³⁸ Mark Maslin, *Climate Change a Very Short Introduction*, Oxford university press, 2014, p. 120

³⁹ Colombier Michel, *COP21: building an unprecedented and sustainable agreement*, Working Papers n°13, 2015

The negotiators in Paris have looked for new and creative legal solutions that will create a dynamic that is both ambitious and inclusive, but we have to see if these solutions will lead to the hoped result.

Now a huge problem is to develop a new economy, but the question is if and how we can involve the business looking to another type of Economics. The situation as regards the reduction of CO₂ in the atmosphere is complex. The Emissions Trading and Carbon Tax are the two economic mechanisms most studied and utilised to try to solve the problem of climate change. In Europe, as we have already pointed out, the EU ETS has been used for years, whereas in the United States in many states preference is given to Carbon Tax.

In a recent article, before COP21, published by Project Syndicate the Managing Director of the IMF, Christine Lagarde, and the President of the World Bank, Jim Yong Kim, wrote the following:

The transition to a cleaner future will require both government action and the right incentives for the private sector. At the centre should be a strong public policy that puts a price on carbon pollution. Placing a higher price on carbon-based fuels, electricity, and industrial activities will create incentives for the use of cleaner fuels, save energy, and promote a shift to greener investments. Measures such as carbon taxes and fees, emissions-trading programs and other pricing mechanisms, and removal of inefficient subsidies can give businesses and households the certainty and predictability they need to make long-term investments in climate-smart development. Carbon taxes should be applied comprehensively to emissions from fossil fuels. The price must be high enough to achieve ambitious environmental goals, in alignment with national circumstances, and it must be stable, in order to encourage businesses and households to invest in clean technologies. Administering carbon taxes is straightforward and can build on existing road fuel taxes, which are well established in most countries.⁴⁰

Nowadays the reduction of greenhouse gas emissions is a huge challenge to resolve the global warming issue. Many proposals have been designed by different countries to find a long-term solution. In this article Christine Lagarde and Jim Yong Kim offer us a path to follow in the next years. They want to promote a strong central public policy that puts a

⁴⁰<https://www.project-syndicate.org/commentary/carbon-pricing-fiscal-policy-by-christine-lagarde-and-jim-yong-kim-2015-10>

price on carbon pollution. In this way there would be a shift to other clean energies as renewable energies. Indeed, they suggest to apply carbon taxes to emissions from fossil fuels placing a high and stable price on them, so that the companies would be more motivated to use greener energy, frightened by the high price of carbon pollution.

However, the issue of global warming may be approached either with market or administrative tools, or a combination of both.⁴¹ There are two main market based alternatives: carbon tax and cap and trade system. The solution proposed by these two leaders is that to use carbon tax implies that the price for carbon emissions is fixed by the government and later adjusted depending on the reaction of market forces. A carbon tax imposes a tax on each unit of greenhouse gas emissions and gives firms an incentive to reduce pollution whenever doing so would cost less than paying the tax. As such, the quantity of pollution reduced depends on the chosen level of the tax. The tax is set by assessing the cost or damage associated with each unit of pollution and the costs associated with controlling that pollution.⁴²

However, another solution can be the cap and trade system also adopted by European Union in the EU ETS program. The main flaws of this framework are that it cannot hit all uses of carbon and poses problems of international coordination. In this system the maximum pollution quantity is set in advance, the trading price of permits fluctuates, becoming more expensive when demand is high relative to supply (for example when the economy is growing) and cheaper when demand is lower (for example in a recession). A price on pollution is therefore created as a result of setting a ceiling on the overall quantity of emissions.⁴³

In conclusion, the path designed by Christine Lagarde and Jim Yong Kim could be a solution, especially because a carbon tax can hit all uses of carbon. By contrast, I think that it is an ambitious solution because it requires a huge control on taxation. A system of taxation needs a transparent bureaucracy, which is far from obvious in many countries. Another significant issue is that a tax ensures everyone knows the price being paid for each

⁴¹ Lagarde Augustine, *The economic debates behind COP21*, November 2015

⁴² <http://www.theguardian.com/environment/2013/jan/31/carbon-tax-cap-and-trade>

⁴³ Stefan Schleicher, Andrei Marcu, Angela Köppl, Jürgen Schneider, Milan Elkerbout, Andreas Türk and Alexander Zeitlberger, *Scanning the Options for a Structural Reform of the EU Emissions Trading System*, May 2015

unit of carbon dioxide emitted, but uncertainty remains about the actual quantity of emissions. If firms are willing to pay a tax the environmental problem will not be resolved.

1.6 Climate Change and Adaptation Efforts

Nowadays the adaptation to the consequences of climate change is a key issue. In the path from the Earth summit in Rio to Paris Agreement adaptation it has become increasingly prevalent. Indeed, even if hypothetically all countries were able today to dramatically reduce their greenhouse gas emissions, the gases already released into the atmosphere would continue to lead to global warming. Therefore, it is necessary that all countries in addition to reducing its greenhouse gas emissions put in place policies and measures to adapt to climate change.

Climate change will have serious consequences on every aspect of our lives: the increased intensity and frequency of rainfall in many parts of the world will lead to more frequent and severe flooding, resulting in the destruction of homes and damage to infrastructure (such as energy and transport) in the most vulnerable areas. In addition, rising temperatures and reduced rainfall will mean that in many areas there will be droughts. This could trigger a serious competition between the agricultural sector, industrial and domestic users to grab the scarce water available. Beyond that, the heat could cause serious damage to health. Climate change could have serious consequences on ecosystems. Many economic sectors depend on stable and healthy ecosystems to supply products and services to the people. For example, the bees pollinate the plants we eat, while forests help absorb greenhouse gases. The changes in the balance of species and habitats in different ecosystems could have wide-ranging effects. The reduction in rainfall in southern Europe could make it impossible to grow certain crops, while rising temperatures could push invasive alien species and disease vectors to move north.

Extreme weather events can cause the loss of lives and impose a setback to economic and social activities in the affected areas, making it so often required substantial funding for the reconstruction of infrastructure and damaged property. However, the damage caused by extreme weather events in recent decades can not only be attributed to climate change: the economic and the increasing expansion of the town towards the floodplains social

developments are also to be counted among the causes. However, in the absence of plans for adaptation to climate change damages, and the related costs, they are expected to rise gradually as the climate continues to change.

The future costs of climate change are potentially huge: recent research has estimated that, in the absence of adaptation actions, the deaths caused by the heat could by 2100 touch the 200 thousand cases per year in Europe alone, while the costs of river flooding could exceed 10 billion euro per year. In case of major climate change and failure to take adaptation measures, forest fires could cost the loss of about 800 thousand hectares per year. The number of people directly or indirectly affected by drought could increase up to seven times, until reaching the 150 million people a year; Moreover, the economic losses caused by rising sea level could even triple, until reaching 42 billion Euros per year.

Whatever the consequences provided for (more abundant rainfall, temperature raising or reducing fresh water available), it is necessary for all countries to adapt their rural landscape, their cities and their economies to climate change to be less vulnerable to this process. The word "adaptation" covers a wide range of activities and policies designed to prepare society to climate change. If implemented, these adaptation policies can help reduce the consequences and the damage of climate change and help the society to maintain its well-being and to develop even with a changed climate. Some of these measures are relatively cheap, such as, for example, information campaigns on how to keep cool during the warmer periods, or the creation of early warning systems for heat waves. Other adaptation measures however can be very expensive as the construction of dams and coastal protection systems (so-called "grey adaptation measures"), the transfer of the inhabitants of the floodplains or the expansion of retention basins to tackle drought. Some adaptation measures include the use of natural methods to increase the resilience of each area to climate change. Among these measures of "green adaptation" include, for example, the recovery of sand dunes in order to prevent erosion or the planting of trees on the banks of rivers to reduce flooding.

For example, the city of Nijmegen in the Netherlands has implemented a "green adaptation" measures of this type. The river Waal forms a loop which narrows just around the cities, causing frequent flooding of the village. To prevent damage, it is in the process of building a national channel that makes easier the flow of water: this intervention has also created new urban spaces designated for parks and recreation. The Dutch program

"Building with Nature" is another good example of the mix of adaptation measures "grey" and "green." It is a restoration program of coastal wetlands such as marshes, reed beds, marshes and tidal flats. These moist areas in fact contribute to prevent the subsidence of the soil, thanks to the roots of the plants that they are in their habitat, thereby protecting the surrounding areas from the risk of flooding.

Other adaptation measures are to enact laws, taxes, financial incentives and information campaigns aimed at improving the resilience to climate change (these measures take the name of "soft adaptation"). For example, a mass information campaign in place in Zaragoza, Spain, has helped to raise awareness about 700 thousand inhabitants of the city to save water, you need to survive for longer periods of drought in this semi-arid region. In addition to ensuring greater control of leakage from water distribution network, the project has helped to reduce by nearly half the daily consumption of water per capita than in 1980; thus, the total water consumption in the city decreased by 30% compared to 1995.

The European Union and Member States have worked on actions to adapt to climate change. In 2013 the European Commission adopted the Communication "Strategy of adaptation to EU climate change" in order to help countries to plan their activities in this regard. This strategy promotes the creation and sharing of knowledge and aims to improve the resilience in key sectors through, among other things, to EU funds. Over 20 European countries have already adopted adaptation strategies, outlining the initial actions to be taken (such as vulnerability assessment and research) and how they intend to adapt to a changing climate. Nevertheless, many countries are still far behind in terms of concrete actions to be implemented in the field.

The extreme weather events and the policies dictated from the hart summit in 1992 to date have meant that policies and adaptation measures have assumed greater importance on the policy agenda of most countries in recent decades. However, according to recent research, many countries have not undertaken any action for lack of resources such as time, money or technology. Even the «uncertainties about the extent of future climate change» and "unclear" responsibilities are perceived as obstacles by many countries. The effects of climate change vary from region to region. Policy-makers are faced with a further difficulty: inscribe future changes linked to economic resources, infrastructure and population within adaptation programs to climate change. What will be in fact the needs of

an aging population and urbanization in terms of transport, housing, energy, health services, or simply food production in a climate that changes?

Rather than considering adapting a separate political sphere, interventions should be integrated widely in the field of public policies. As part of adaptation strategies, many countries have studied and are studying how to integrate adaptation issues within different policy areas such as agriculture, health, energy or transport policies.⁴⁴

The Paris Agreement places unprecedented importance on actions needed—both nationally and globally—to help people adapt, and solidifies expectations that all countries will do their part to promote greater climate resilience.⁴⁵ The primary reason is that today's extreme weather events have shown that the choice not to adapt is very expensive and in the long and medium term, it reveals a not applicable solution. To find and implement effective solutions it requires a Broader and more long-term perspective, based on the integration of policies to tackle climate change within the various public policies on sustainability. In the case of adaptation to climate change, Doubts arise with respect to the way we build our cities, we transport people and products, we provide energy to our homes and factories, we produce our food and we take care of our natural environment.

⁴⁴ <http://www.qualenergia.it/articoli/20151202-clima-e-cop21-l-adattamento-ai-cambiamenti-climatici-un-urgenza-anche-l-europa>

⁴⁵ <http://www.wri.org/blog/2015/12/what-does-paris-agreement-mean-climate-resilience-and-adaptation>

Chapter 2

Challenges of COP21: limits and possibilities in the 21st century

The path that has been done by the Earth Summit in Rio de Janeiro to date has certainly helped to reach the Paris agreement that has been defined by many as a historic agreement for the result. The Paris Agreement for the first time brings all nations into a common cause based on their historical, current and future responsibilities.

Before and during the negotiations the worry of not getting the hoped outcome, as happened in Copenhagen, was very high. Especially in the difficult phase of history in which we live today. We cannot underestimate that in Paris, about 15 days before the start of the negotiations of the COP21, there was the bloodiest terrorist attack on French soil since after World War II. For this reason the city, France and the whole Europe were literally shocked for the days to come. In Paris many events that were supposed to surround the COP21 were cancelled, in particular the large-scale protests to international policies with respect to how to tackle the problem of climate change.

Paris was under a state of emergency since the night between 13th and 14th November 2015 until 26th July 2016. From this point of view, being able to claim that an agreement had been reached contributed to calm everyone down. Indeed, climate change is a matter of great interest for foreign policy, today one of the most pressing problems that worries the whole world. After the Kyoto Protocol, it was required to find an agreement that would restore the rules of the game and involve more states to the reduction of greenhouse gas emissions. After the Copenhagen experience it was not possible to risk going out of the negotiations with a purely formal and not legally binding agreement.

The role that the different states took in preparing their INDC's before Paris was crucial to dictate the guidelines of the negotiations and allow the settlement to be reached. By contrast, through the analysis of INDC's we can also understand some of the limits of this

agreement, especially from the scientific point of view. To get to the ultimate goal, indeed, namely «holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels», the forecasts of INDC's are not enough, but it would take a great mitigation and adaptation work at different levels with continuous controls.

Finally all the way that has been done so far in the several COP's meetings and the result that was reached with the Paris Agreement may lead us to look at the issue of climate change also from another perspective that starts from the individual and his actions, from the places we inhabit every day, from social relations and the relations of humans with nature. In this regard, today it would be very interesting for future policies to think about the role of multi-level governance.

2.1 The limits and responsibilities of Paris Agreement

In 2015 there has been the twenty-first Conference of the Parties (COP21) between 30 November and 12 December in Paris. After the Kyoto Protocol, states committed to negotiate prior to the end of 2015 a new international framework for climate action for the post-2020 period. This was the great challenge of the climate conference in Paris, the COP21.⁴⁶

Indeed, during this conference 195 countries adopted the first-ever universal, legally binding global climate deal. The agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C. The Paris agreement is due to enter into force in 2020. This has been deposited at the UN in New York and opened for signature for one year on 22 April 2016. It is important to underline that the agreement will enter into force after 55 countries that account for at least 55% of global emissions have deposited their instruments of ratification.

The key elements of this agreement are: a long-term goal of keeping the increase in global average temperature to well below 2°C above pre-industrial levels; to aim to limit the increase to 1.5°C, since this would significantly reduce risks and impacts of climate

⁴⁶ <http://www.iddri.org/Themes/Climat/Global-governance-of-climate>

change; on the need for global emissions to peak as soon as possible, recognising that this will take longer for developing countries; to undertake rapid reductions thereafter in accordance with the best available science. Moreover the agreement expects a climate finance fund of \$100 billion per annum for developing countries by 2020, with further future finance, is to come from the pockets of developing states.

The countries that have participated in COP21, before and during the COP, have submitted comprehensive national climate action plans: INDC's (Intended Nationally Determined Contributions). These are not yet enough to keep global warming below 2°C, but the agreement traces the way to achieve this target. Indeed the governments agree to favour the transparency and global stocktake. For this reasons the countries want to come together every 5 years to set more ambitious targets as required by science; report to each other and the public on how well they are doing to implement their targets; track progress towards the long-term goal through a robust transparency and accountability system.

Moreover the governments want to strengthen societies' ability to deal with the impacts of climate change and provide continued and enhanced international support for adaptation to developing countries.⁴⁷ Furthermore, this COP's brilliant focus on empowering individual countries to independently frame their own climate commitments and devise their own national plans well before COP21 stimulated early a strong sense of ownership, accountability, and responsibility to the collective narrative, as well, creating a virtuous cycle for other nations to write their INDC's.⁴⁸

Starting with the overall aim of the Agreement and its general obligations it is important to focus on the key points mentioned in different articles of Paris Agreement:

Art 2.1 «Holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change».

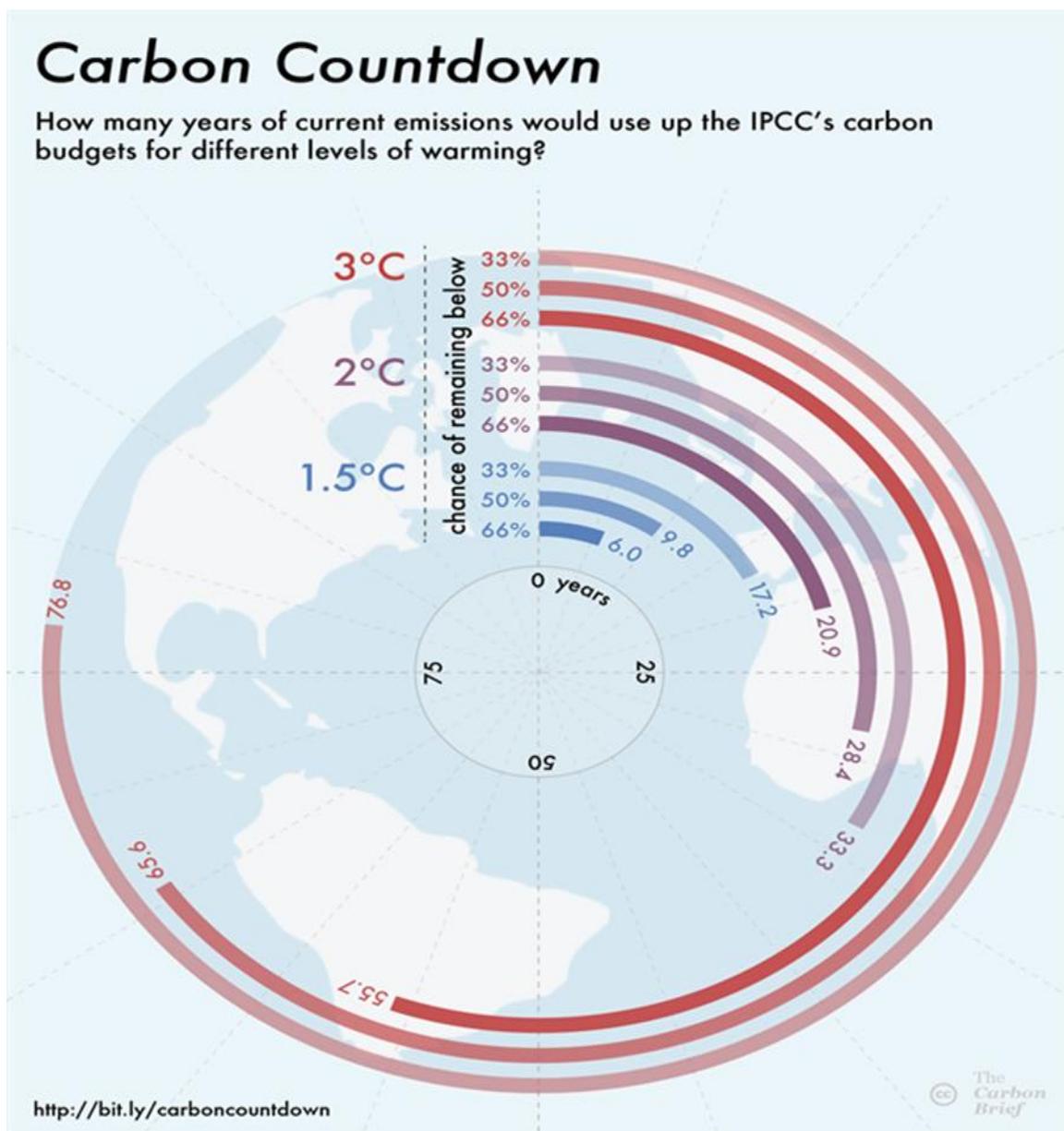
In this article it is mentioned the fundamental goal of this treaty but a temperature target must necessarily correspond to a carbon budget. That is, how much carbon headroom do

⁴⁷ http://ec.europa.eu/clima/policies/international/negotiations/paris/index_en.htm

⁴⁸ http://www.huffingtonpost.com/catherine-cunningham/reflections-on-cop-21-the_b_8913744.html

we have before the average temperature increase hits 1.5°C ? And who will use how much of that headroom? By when?

The developed countries have used up their budget, even overdrawn on it. Indeed, the current plans of nations - the Intended Nationally Determined Contributions- puts the world on course to warming well above 3 degrees Celsius. The image below (by carbonbrief.org) shows us how many years of current levels of emissions will use up this carbon budget. The Paris Agreement, however, does not seem to base itself on this science.⁴⁹



⁴⁹<http://scroll.in/article/775682/the-paris-climate-change-agreement-was-a-day-late-and-a-dollar-short>

Moreover, there is no mention of correcting or balancing the historical inequity in favour of developing countries, as we can observe in the second paragraph of article two.

Art 2.2 «This Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances».

Indeed, here lies the problem of equity between the developed and the developing countries, a problem that has never been solved effectively. The countries wanted to grow and increase their profit polluting as long as they could and now the majority of developing countries want to aim this model. In this contest there are also the contradictions due to the system where we live because, for example, countries like Venezuela want to sell their oil, but at the same time they do not want to decrease their emission to grow up economically. This is a crucial point because now we really need emission reduction, but our system was built in the other way. Until we do not eliminate this contradiction from the basics it will be hard to resolve the problem and achieve the goals that we have imposed ourselves.

Also in the article 4.1 of the Paris Agreement are mentioned the fundamental goals of this COP, but we cannot find what are the roads that will be taken in order to achieve these goals. Many countries that want to reduce their emissions do not say how they will meet them, setting arbitrary international goals.⁵⁰ Moreover we can read “as soon as possible”, but we do not know the real period of time. Therefore, the Paris Agreement seeks the vision of the decarbonized globe; but it is highly questionable whether it will have the legs, and the lengths, to fulfil it.

After this short analysis, it could be interesting to reflect on why the countries reached an international agreement at this COP21. We might also ask if we were ready to do so at this time or if it was an “historical necessity”. Indeed, there are deeper reasons to reach this agreement that we can analyse together.

The COP21 was a gathering of world leaders, a truly global event. On the first of December 150 heads of state went to Paris to present their national declarations, one of the reasons was also to show solidarity with France after the terrorist attacks on 13 November 2015. Many events and initiatives related to COP21 did not take place for the state of the emergency besetting France after the attacks of 13 November. What we found in the

⁵⁰ <http://thehill.com/policy/energy-environment/263049-gop-chairman-blasts-paris-climate-accord>

speeches of this COP was an authentic urgency of climate action expressed among the world leaders. The tone of the statements has revealed that climate change is not simply an object of scientific research subject. World leaders have started to see climate change as a reality experienced at several levels. All are now more convinced that climate change also threatens our global security. Why now? The answer is simple: too many abnormal weather events have been leaked in recent years. No one can honestly ignore the melting of sea ice drama, the rising sea levels, melting glaciers, desertification, floods, heat waves, fires, abnormal climatic events have indeed played out tangible. In fact, more intensely from Copenhagen real environmental disasters can be observed. Can testify: the recent flooding in Chennai and London, extreme drought in California, fires in Australia, extraordinary heat waves in Iran, inundated aquifers under the Marshall Islands, Arctic sea ice and the Greenland ice sheet melting at unprecedented rates, permafrost in Russia and Siberia releasing deadly methane, the worst air pollution on record in China These are just some of the impacts that climate change is having on our planet today and of which we are witnesses.⁵¹

Moreover, it could be interesting to analyse the COP21 at both level: process and outcomes. Indeed, to achieve in concrete terms the results of the Paris agreement is a very ambitious challenge. The process of COP21 fits fully in the crisis that the western world is experiencing and that requires a radical change in our lifestyle. Climate life of our planet is very instable; there is a complex atmospheric variation. The sun is not in the same position, we are witnessing a change in solar activity. Volcanic activity is also very animated and we can see a rapid climate change.⁵²

This agreement has not few limits: the focal point of the Paris Agreement, as we said before, is that the surface temperature of the Earth should not rise more than 2 ° C (preferably not more than 1.5 degrees). This objective is not evident because we are already at an increase of about 1 degree above pre-industrial level. The two degrees warmer already involve huge losses to the economy and agriculture. However, it is correct to put quantitative limits, but there should be more control to reach this goal. How can we achieve these results?

⁵¹http://www.huffingtonpost.com/catherine-cunningham/reflections-on-cop-21-the_b_8913744.html

⁵² Climate, the 360° exhibition News – issues – artists' views (13 october 2015-20 march 2016)

There are many important points in the Paris Agreement; but many are merely formal and insubstantial intentions. The "heart" of the agreement, however, is based on INDC's. Here we can observe some of the limits: first, there is no obligation for states to keep their promises. Second, even if they succeed, we are far from the level of emissions reductions that would be required to achieve the objectives. Indeed, INDC's of the data in this moment would lead to a temperature increase of 3 to 4 degrees and it would be a catastrophe for the environment. For this reason the gap between what the agreement provides and what states can do in practice should not be underestimated.⁵³

Another focal point is that the text says "legally binding", but there are no penalties for the possible non-compliance and the UN does not have the tools to enforce them. This "link" essentially means that each country decides for itself the GHG reduction efforts to achieve. It is true that this mechanism will become a kind of tax to the "transparency" of the measures taken, but we can say that the Paris agreement is binding in form. Indeed, the legal nature of the deal –whether it will be binding– had been a hotly debated topic in the lead up to the negotiations. The agreement walks a fine line, binding in some elements like reporting requirements, while leaving other aspects of the deal, such as the setting of emissions targets for any individual country, as non-binding.⁵⁴

By contrast, if we read the articles 27 of the agreement we can note that “No reservations may be made to this Agreement”. This is interesting from a legal perspective; no choice to opt out from provisions (e.g. INDC's). Moreover, the final text establishes the review of commitments every five years. For now, the first "review" is expected in 2025, with a "budget" in 2023. Fifty countries met in a grand coalition to request an advance of time for review.

In conclusion, it has been reached for the first time a "universal" agreement in the history of the negotiations in terms of climate, but this is not enough to be satisfied. At the base there is an economic model that continues to stay on the same track, there are no real challenges that look to the future with different eyes.

⁵³<http://www.wri.org/blog/2015/11/insider-why-are-indc-studies-reaching-different-temperature-estimates>

⁵⁴ <http://time.com/4146764/paris-agreement-climate-cop-21/>

2.2 Planning inside of states to reach a global common goal

The INDC's indicate a significant increase in the number of countries adopting climate measures at national character often covering many sectors and greenhouse gases. The parties have actively responded to the invitation by the Conference of the Parties to report INDC's, despite the short period of time established by decision 1 / CP.20. At the time of the adoption of the Cancun Agreements, 96 Parties had submitted their emission reduction targets, at COP21 even more. This is a new type of instrument in the United Nations Framework Convention on Climate Change (UNFCCC) which allows states to present, in advance of the conference, national efforts envisaged under the fight against climate change. National contributions based on the principles of ambition, differentiation and transparency.

For comparison, 1 October 2015, 148 Parties had submitted their overall INDC's. It was expected that the parties that have not submitted their contributions before October 2015, they should have done from the perspective of the Paris Conference or shortly thereafter. The commitments made by countries in the fight against global warming agree on one point: the contributions are based on low-carbon emissions, but without strengthening the reduction of emissions, rising temperatures for the year 2100 cannot be limited to 2 ° C. The commitments submitted by states will lead to a global average reduction per capita emissions by 8% in 2025 and 9% in 2030.⁵⁵ However, this significant reduction will not be enough. According to the Climate Interactive, the only respect INDC's without other commitments later lead to the increase in global temperatures to about 3.5 ° C.⁵⁶ According to the Climate Action Tracker, if INDC's and other commitments made by the members would be met (which is not always obvious), global temperatures would rise anyway to about 2.7 ° C.⁵⁷ Indeed, the studies also show that without additional action, the INDC's are insufficient to limit warming to below 2°C and avoid some of the worst

⁵⁵ <http://newsroom.unfccc.int/unfccc-newsroom/indc-synthesis-report-press-release/>

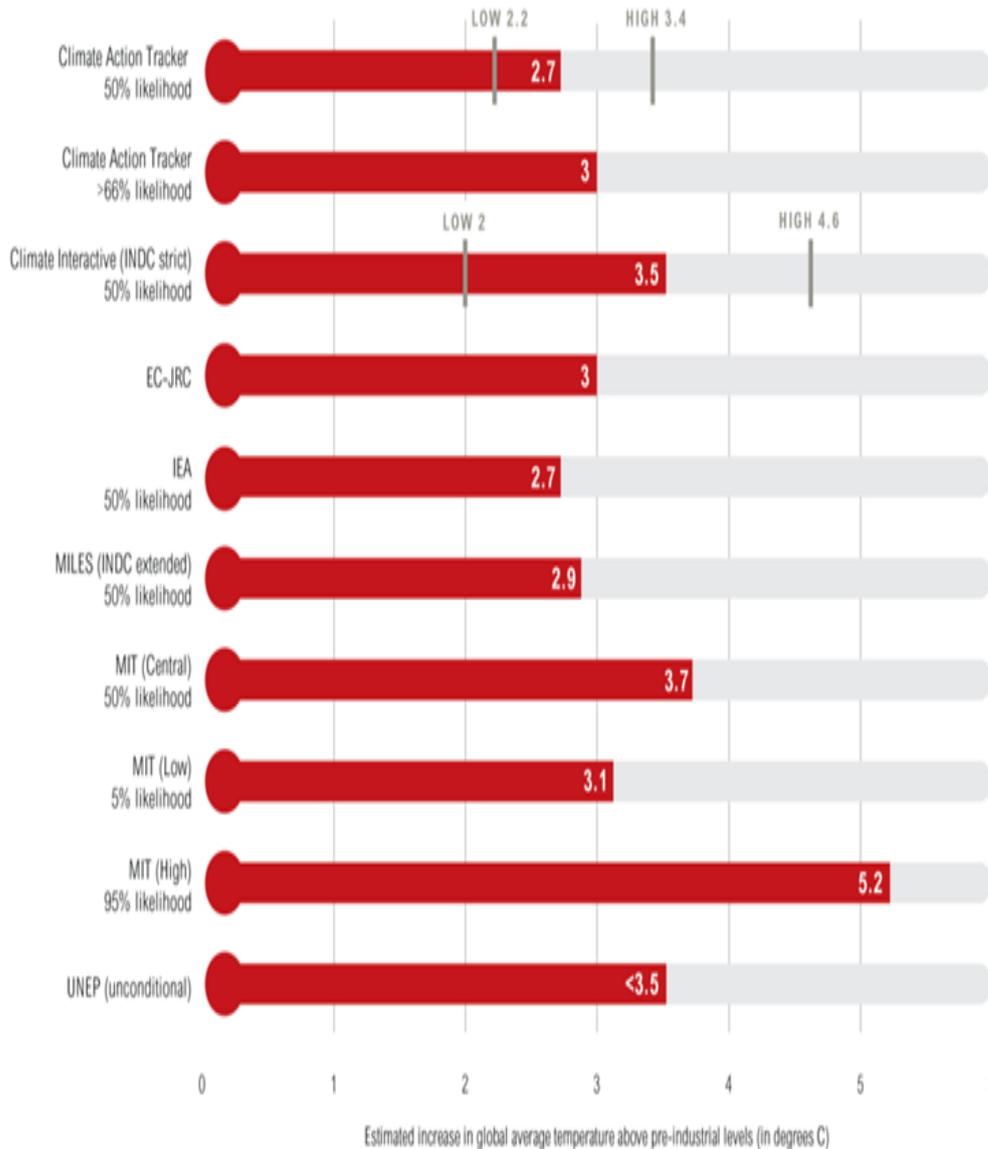
⁵⁶ <https://www.climateinteractive.org/tools/scoreboard/>

⁵⁷ <http://www.climateactiontracker.org/>

climate impacts. The details of the Paris Agreement are, therefore, very important to help achieve an additional bending of the emissions trajectory before 2020, to support the implementation of the INDC's and to ensure greater ambition after 2030.⁵⁸

⁵⁸ <http://www.wri.org/blog/2015/11/insider-why-are-indc-studies-reaching-different-temperature-estimates>

Estimates for Global Temperature Rise with INDCs



Note: "Likelihood" refers to the probability of limiting global warming to a specified temperature by 2100. For instance, >66% likelihood provides a "likely" chance that warming will not exceed the given temperature.

<http://bit.ly/indc-temp>



The Paris Agreement was defined by Laurent Fabius, President of COP21, as «right, durable and balanced», but in reality this agreement lacks of actual figures. The agreement provides for revision every five years, with a "racket mechanism" which does not provide

the possibility of increasing the reductions.⁵⁹ It is necessary to remember that there are large uncertainties in the estimates of future emissions. This is mainly due to the difficulty of accurately assessing future emissions of INDC's in which reduction targets are expressed in terms of gross domestic product (especially critical for China), but also counting rules (important data for the sector forestry) and obligations related to external financial support.

Focusing on more individual obligations of Member States in the Paris Agreement:

Art 4.2 «Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.»

Article 4.3 «Each Party's successive nationally determined contribution will represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.»

Despite the linearity of these two paragraphs, however, the INDC's contain some gaps and imprecisions: it would be appropriate to define and specify the best means to achieve goals. Indeed, these should be more transparent, to clearly show how countries demonstrate to reduce GHG emissions and specify the mechanisms and real possibilities for a coherent adaptation. In addition, national and international laws must be consistent with the objectives of INDC's and include monitoring and strict sanctions.⁶⁰ This should be the perspective for the future that could make us hope that something really will change, but now the situation is still complicated and how we can see in this analysis there are many issues to resolve.

⁵⁹http://www.lemonde.fr/cop21/article/2015/12/12/cop21-laurent-fabius-presente-un-texte-d-accord-mondial-sur-le-climat_4830539_4527432.html

⁶⁰ <http://demandclimatejustice.org/news/10-key-issues-at-cop-21-on-the-paris-agreement>

2.3 COP21: the positions of United States, China and European Union

How you have already seen in the first chapter, China and the United States have played an important role in the last COP meetings. Since 2007, China became the largest emitter of greenhouse gases in the world, even if its per capita emissions remain well below those of the United States. In November 2014 China and the United States signed an important agreement to take action on climate change reaffirmed in 2015. In this Agreement China intended to peak CO₂ emissions around 2030 and to make best efforts to peak early and intends to increase the share of non-fossil fuels in primary energy consumption to around 20% by 2030. The United States intends to achieve an economy-wide target of reducing its emissions by 26% - 28% below its 2005 level in 2025 and to make best efforts to reduce its emissions by 28%.⁶¹ These China and United States commitments laid the foundations to prepare these two countries for the negotiations of an ambitious agreement in Paris at the COP21.

The United States officials see the Paris agreement as the result of a long, slow rebuild of Obama's climate strategy – after the chaotic end of the Copenhagen summit in 2009 and the death of cap-and-trade legislation in Congress a year later. Indeed, in 2013 Obama declared the fight against climate change one of the top priorities of his second term and began using his executive powers far more aggressively to reduce US emissions, including rules cutting pollution from power plants. Kerry told reporters after the deal:

Officials say Obama's decision to elevate climate change to a top-tier issue, along with such domestic initiatives, cranked out every few days over the course of the year, helped establish trust that the US was serious about cutting emissions. Obama also moved to cement relations with other big climate polluters, notably China, India, Brazil, and Mexico. The relationship with China “changed the paradigm of what happened in Copenhagen”,. “It was a sea change.” The US was also adamant

⁶¹<https://www.whitehouse.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change>

any climate agreement be universal, with all countries taking steps to reduce greenhouse gas emissions.⁶²

A strong agreement in Paris would not happen without US leadership. By submitting its INDC and basing its commitments on existing policies, the US has shown how serious it's taking the process, encouraging others to follow suit. It has also put pressure on large emerging economies such as China and India to present their own plans with targets that represent the best of their respective capabilities.

The United States submitted its new climate action plan to UNFCCC in Bonn, 31 March 2015. The US want to reduce its greenhouse gas emissions 26% - 28% below 2005 levels by 2025; accomplishing this goal with existing regulatory authority – notably the EPA Clean Power Plan and fuel economy standards for vehicles. The US INDC represents the first time that the United States has committed to reducing carbon pollution based on real world targets with real world policies and regulatory authority. This on its own is a very significant and positive step. That said, there is more work to be done, and they have to keep pushing for stronger targets down the road. The United States believe that with renewable energy prices falling rapidly, it will soon be easier to make even deeper cuts in emissions. They also have to keep pressing lawmakers to pass more permanent domestic legislation that would keep us on a path towards a sustainable future powered by renewable energy. At this point, it is possible to understand that The United States are very focused on the shift to renewable energies and little on lowering consumption and therefore living standards. The largest investments in the years ahead by the United States will be for this reason precisely on renewable energy.

Whereas, today China is in the final stages of industrialisation and is in the process of urbanisation. In recent years, China has undertaken huge efforts to increase energy productivity through increasing energy efficiency and developing renewable energy. However, due to rapid economic growth, China remains highly dependent on fossil fuels. Indeed, while China is now the world's largest renewable energy producer, it is also the world's largest importer of fossil fuels.⁶³

⁶²<http://www.theguardian.com/us-news/2015/dec/13/climate-change-paris-deal-cop21-obama-administration-congress-republicans-environment>

⁶³ <http://2014.newclimateeconomy.report/china/>

China submitted its INDC in Bonn the 30th June 2015. According to its INDC, China intends to peak CO₂ emissions by around 2030 and lower CO₂ emissions per unit of GDP by 60-65% from 2005 levels by 2030. The INDC is set to accelerate the country's on-going transition from an economy based on fossil fuels to a healthier society built on clean energy. China is currently the world's biggest investor in clean energy, spending a record of almost 90 billion US dollars last year.

China also notes its intent to increase the share of non-fossil fuels in its primary energy consumption to around 20% by 2030 and increase its forest stock volume by approximately 4.5 billion cubic meters over the 2005 level by 2030. Noting the country's vulnerability to climate change, the INDC relates that China will continue adaptation efforts in key risk areas, such as agriculture, forestry and water.

The INDC also elaborates on the policies that China will carry out: implementing proactive national strategies on climate change; improving regional strategies; building a low-carbon energy system. For example using these kinds of measure: building an energy-efficient and low-carbon industrial system; controlling emissions from the building and transportation sectors; increasing carbon sinks; promoting the low-carbon way of life; enhancing overall climate resilience; and promoting carbon emission trading.

On the legal form of the agreement, China calls for a legally binding agreement implementing the Convention that features mitigation, adaptation, finance, technology development and transfer, capacity building, and transparency of action and support in a balanced manner.⁶⁴

Moreover, China has published its newest 5 year plan in Mid-March. This plan – the 13th of its kind gives a blueprint of China's development program for the time period 2016 to 2020. In the coming months this plan will be translated into more specific one for provinces or specific sectors. Think of it as the overarching framework for China's socioeconomic development.

These are the expectations if this plan will be respected in the future: the GDP Growth of 6.5 % p.a. Growth is expected to increasingly come from services – the aspiration is to move from 50.5% of GDP to 56% of GDP, energy intensity reduction – 15 % per year, Carbon intensity reduction – 18% per year (from 2015 levels) measure of how much

⁶⁴ <http://climate-l.iisd.org/news/china-submits-indc/>

carbon dioxide is emitted per unit of gross domestic product, increase of non – fossil energy of primary energy consumption to at least 15% by 2020, and at least 20% by 2030. The plan, to achieve these targets, calls for controlling emissions from energy-intensive industries like power and steel, by for example building a unified national carbon emissions trading market.⁶⁵

The current China 5-year plan is the greenest to date. It contains various goals on the reduction of carbon intensity, as well as energy intensity, and forestation and for the first time ever it sets an absolute ceiling on China's energy consumption. Investment in renewables sees a huge increase and the government is sending signal of its willingness to address unpleasant topics. Moreover, the government is speaking about opening up major sectors like electricity and gas and about cutting job in the coal and steel sectors. Another important element is the congruence between the INDC and the 5 year plan. On the one hand it is a positive sign that national development plans are well aligned with INDC's submitted under the UNFCCC. This strongly favours the credibility of the country but also the credibility of the UNFCCC and the crucial importance of climate policy in our development paths. On the other hand China has promised to start reducing emissions by 2030, thereby maintaining wide margins of freedom and above all his promises do not go far beyond its urgent interest in limiting emissions of other pollutants associated with greenhouse gases, which make life unbearable in the big Chinese conurbations.⁶⁶

Speaking of the international scale, China is playing and will continue to play a critical role in international climate policy. The goals laid out in the UNFCCC and of the Paris Agreement won't be achieved if China is not on board. Moreover, China may serve as a role model for other countries or regions. For example the emission trading scheme that China is setting up might be a new model how cap-and-trade systems could be constructed.

Also the European Union had a fundamental position before and during the negotiations in Paris. The EU submitted its INDC to the UNFCCC Secretariat on 6 March 2015. Only five parties submitted their INDC's by the end of the first quarter of 2015: Switzerland, Norway, EU, US, and Mexico, followed by Russia and Gabon on the 1st April. Moreover, the European Commission has laid out in a communication in March key issues for a

⁶⁵ D'Aprile Aurora, *Climate and energy targets in China's 13th five-years plan*, ICCG-International-Climate-Policy-Magazine-N.40, March 2016

⁶⁶ <http://www.agenziaefficienzaenergetica.it/news-1/riflessioni-sullaccordo-di-parigi-cop21>

“Paris Protocol”.⁶⁷ It includes further elements for a Paris Agreement which would be useful in embedding the INDC’s in a new framework, strengthening ambitions over time and recognising the need for more financial support for mitigation and adaptation. In contrast to Copenhagen, the EU entered in the Paris negotiations without an adopted legal framework to implement its 2030 Framework; this will be legislated progressively over the course of the coming years.

The EU’s INDC wants to reduce emissions by at least 40 per cent by 2030 compared to 1990 levels, in a linear trajectory from 2021 to 2030, and addressing all sectors and all GHGs not controlled by the Montreal Protocol, an international treaty designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion. The Montreal Protocol was agreed on 16 September 1987, and entered into force on 1 January 1989, followed by a first meeting in Helsinki in May 1989. In addition, the EU’s INDC builds upon the agreement on the EU’s 2030 climate and energy framework reached by European Heads of State at the European Council in October 2014. The EU’s INDC is specific and transparent in its mitigation target, but really limited in explaining the policy and analytical basis underpinning the implementation of this target. The EU’s INDC refers to domestic emission reductions within the EU, and clarifies that international credits will not be used.

The EU’s INDC still leaves room for improvement. Such improvement could be communicated by the EU any time including in the context of a five-year review cycle, as proposed by the EU. The EU INDC may be enhanced “vertically” by communicating further details of the implementation of the INDC goal at the EU level and “horizontally” by providing additional information on activities planned and implemented by EU Member States.

Another improvement would be more transparency on its INDC itself. This is to be decided after 2015 (and by 2020). Depending on the accounting methodology used, this could provide a significant source of uncertainty. In particular the lack of early specification increases the risk of slowing down the transformation in other important

⁶⁷European Commission 2015, *Energy Union Package, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank*, COM(2015) 81 final, Brussels 25.2.2015, http://ec.europa.eu/priorities/energy-union/docs/energyunion_en.pdf

sectors whose long-lived infrastructure must be largely decarbonized by 2050 (such as buildings and transport).

The EU submitted that it plans to introduce legal proposals in 2016 to implement the 2030 Framework. The EU does have in place a well-tested policy framework, which it will need to update and complement with additional elements, particularly in the area of innovation and infrastructure deployment, to reach its 2030 target. Accordingly, the EU could provide additional information internationally on the EU-wide 2030 targets on renewable energy and energy efficiency and the sub-sector mitigation targets for the EU Emissions Trading System (ETS) and the non-ETS sectors.

The EU's INDC implementation by Member States, could be further substantiated and enriched by providing supplementary information on ambitious targets and measures planned and implemented at Member States' level, such as national renewable energy and energy efficiency targets, mitigation targets (e.g. decarbonisation goals), or best-practice examples of national policies.

The EU has always emphasized 'transparency' as an important element of the international climate agreement. Indeed, the transparency of implementation is fundamental to:

- Create trust among parties by allaying the strong perception that climate policy is a zero sum game with parties that take advanced mitigation action at an (economic) disadvantage vis-à-vis free-riders.
- Facilitate domestic implementation of INDCs because of the knowledge that parties have gained through target and policy definition for their INDC, and associated data collection.
- Enhance, over time, policy diffusion between countries.⁶⁸

The importance that the EU places on this issue internationally is in part derived from its importance in domestic EU policy implementation. To ensure that objectives under the

⁶⁸ Susanne Dröge and Thomas Spencer (leading authors), Alexandra Deprez, Liz Gallagher, Artur Gradziuk, Andrei Marcu, Sebastian Oberthür, Oliver Sartor, Henri Waisman, Tomas Wyns (contributing authors), *The EU's INDC and its contribution to a successful deal in Paris 2015*, Working Paper FG 8, 2015/03, June 2015 SWP Berlin

Kyoto Protocol or the EU's 2020 pledge under the Cancun Agreement are met, the EU and its Member States, too, face challenges of policy design and tracking.

One of the key points of the UNFCCC negotiation in Paris was how INDCs will be revised and updated over time, including potential elements for their review of adequacy. The European Commission proposed «to ensure dynamism by providing for a global review, to be conducted every five years». In a new regime with INDCs – that is voluntary pledges based on national ambitions, with different target years, base years and types of targets – the agreement on a regular review would ensure that UNFCCC member states are obliged to re-evaluate their national climate policy agenda in the light of an on-going process of international cooperation. The review therefore implies ex ante and on-going commitment to the UNFCCC process, which would need to find support by all UNFCCC parties.

Given the inertia of the EU's internal decision-making processes, it is important that the EU and its Member States start thinking upfront what implications the concept of a five-year review cycle in international negotiations could have on policy decision processes in the EU. Indeed, The EU will have to establish an internal way of creating the momentum for a regular update of its mitigation ambitions. With a five-year cycle, the EU has need agreement on its INDC for 2020, but it has even need to go beyond 2030 on a regular basis.

While according to the EU Treaties climate legislation follows the normal legislative procedure including “qualified majority voting” in the Council of Ministers, the European Council clarified in October 2014 that it would “continue to give strategic orientations as appropriate, notably with respect to consensus on ETS, non-ETS, interconnections and energy efficiency”. Changes of EU climate and energy policy headline targets towards 2030 could again require consensus amongst the Heads of States and Government in the European Council, where individual member states could block such consensus. The consensus was chosen due to internal conflicts around energy solidarity, reforming the EUs ETS, upscaling the 2020 reduction target and on the new climate goal for 2030.⁶⁹

⁶⁹ Susanne Dröge and Thomas Spencer, Alexandra Deprez, Liz Gallagher, Artur Gradziuk, Andrei Marcu, Sebastian Oberthür, Oliver Sartor, Henri Waisman, Tomas Wyns (contributing authors), *The EU's INDC and its contribution to a successful deal in Paris 2015*, Working Paper FG 8, 2015/03, June 2015 SWP Berlin

As we have seen from the analysis of their INDC's the position of these three world powers is at the same time complex and ambitious. In addition, European Union and United States were opposed to any coercive systems that expose them to claims by poor countries, destroyed by cataclysms. To protect their indifference is the absence of a binding clause on respect for human rights, mentioned just in the preamble. Ultimately, the international mechanism set up the Warsaw COP for the loss and damage «does not involve or provide any basis for liability or compensation». With a decision not binding, also it asks the Warsaw mechanism to set up a task force, recommendations and developments to avoid, minimize and deal migration to cover negative impacts of climate change.

Meanwhile, they can withdraw at will fossil fuels for years to come. Indeed, the Paris Agreement does not set any deadline for the exploitation of coal, gas and oil. All it asks is to reach the peak of emissions as soon as possible in order to achieve «a balance between anthropogenic emissions [...] and absorption of greenhouse gas reservoirs in the second half of this century». Thus passes the principle of climate neutrality and not that of zero or decarbonisation emissions. Finally, deforestation: while reaffirming the importance of forests as carbon sinks and a need to reduce deforestation, no binding target for zero deforestation is contained in the text.⁷⁰

In addition, the Paris Agreement does not provide adequate safeguards for vulnerable countries to the effects of climate change, which could be swept away by floods or drought, those from whom you should start the 250 million expected by the UN migrants by 2050. The problem of migration due to climate change is an issue of fundamental importance for years to come and you cannot be underestimated, but the agreement in Paris does not address this issue and no mention of the state of climate refugees.

In conclusion, the fact that they have reached an agreement in Paris can be positive because it is not obvious to find an agreement that formally unites 195 countries. If we think of what happened in COP15 in Copenhagen, COP21 can only be seen as a success because it makes us understand that the issue of climate change is something that unites us. In Copenhagen they talked about goals and purposes; in Paris they talk about rights and this is already a hope. By contrast, the Paris agreement must be seen as the beginning of a process and not as an excellent result, the results will be evident with time and as we have all seen there is a lot of work to do. The real challenge is to re-educate people in

⁷⁰ <http://www.rinnovabili.it/ambiente/cop21-approva-accordo-globale-clima-333/>

environmental awareness. From this point of view, the article 12 of the Paris Agreement gives hope, especially to young people. Another important point to note is that even if 195 countries have signed the agreement, all of these countries are not identical, there is diversity especially in the means to achieve the promised results, and this factor cannot be underestimated. Indeed, the biggest risk of climate change's issue is the increase of inequality.⁷¹ This is one reason that makes us realize that single global governance is not enough, we need trans-scalar governance, we must start from the territory, to participate in the common good and this realization must come from young people who have watched with their own eyes the failure of an "alienated" global government. Nowadays young people have a responsibility to educate watching the mistakes that have been made in the past; the role of education of future generations remains the biggest challenge today.

2.4 Climate change: the lack of a world government and the ways to cooperate between states

Many political scientists have thus investigated options for building strong and effective international institutions and establishing new forms of global governance. The key premise of this literature is that the global environmental crisis requires intergovernmental institutions to constrain the behaviour of nation states.⁷² The question that arises at this point is: we need an intergovernmental institution that takes a control from the higher level, or rather we have to begin to build a network from the bottom?

Moreover, is it possible to imagine a framework of control from above?

Nowadays this is a focal point for the issue of climate change, but not only. Because today there are many problems that require us to reflect on this point and climate change is one of these. The states are interdependent economically especially today there is a fluid dimension that unites us, but such a smooth fluidity that cannot fit into precise rules, stable and durable. «In world politics, the lack of a world government means that states must find

⁷¹ Klein Naomi, *Una rivoluzione ci salverà, perché il capitalismo non è sostenibile*, best BUR, Novembre 2015, p. 218-223

⁷² Biermann Frank, Dingwerth Klaus, *Global Environmental Change and the Nation State*, 2004. P 1-9

ways to cooperate with one another and to reach agreements that can be maintained through the use of reciprocity rather than through hierarchy».⁷³

Today to find this way is more and more complicated because it is always increasingly difficult to define the role of the states. The states want to continue to maintain their national sovereignty and implement the choices within the state walls, but on the other hand greater openness is required to build a global governance. The real problem today is to understand what institutions must be entrusted to the future choices and whether to return to build from the bottom or rely on rules dictated from above.⁷⁴ Today nation states have a complex role and it is not easy to define their position because we are in a transition phase, in a limbo where a choice has to be taken with respect to how we intend to regulate issues such as climate change in the future.

At this point, another important question is: today are nation-states promoting or obstructing trans-scalar Governance?

For example this is a particular issue for Europe. European and nation states levels often overlap, the national sovereignty of the states is still very strong and for a lot of issues as climate change it could be an obstacle. Indeed,

Global environmental change challenges the nation state in two ways. First, it increases the demand for mitigate and adaptive action, which places additional stress on the overall capacities of nation states to promote and protect the welfare of their populations. Second and related to the first, global environmental change increases the mutual dependence of nation states, thereby further undermining the idea of sovereignty as enshrined in the traditional Westphalia system.⁷⁵

In general there are two different schools of thought about nation-states in trans-scalar governance: obsolescence of Nation-state to strengthen international governance and continued relevance of Nation-state that makes it possible the sharing of best practices. What we surely need now, especially with regard to the problem of climate change it is coherence between the actions taken by nation states and the goals set by the international governance. Without this coherence, it will be difficult to achieve ambitious goals and to

⁷³ Keohane Robert O., Ostrom Elinor, *Local Commons and Global Interdependence*, Harvard University Center for International Affairs, 1995, introduction P. 1

⁷⁴ Bauman Zygmunt, Bordoni Carlo, *Lo stato di crisi*, Gilui Einaudi Editore, 2015, P. 49-63

⁷⁵ Biermann Frank, Dingwerth Klaus, *Global Environmental Change and the Nation State*, 2004

find this coherence we must try to define the role of nation states today. In addition, this definition is necessary because without it the trans-scalar framework breaks and in this way also the communication with the cities, that are the places where we live, is missing.

Moreover, almost all climate scientists today agree that the global warming trend during the last century can be attributed mainly to human activity, is no longer a subject of scientific disputes the fact that climate change will impose real challenges to current and future generations. Mankind has been aware of climate change for decades, however for most neither institutions nor individuals have been able to respond with the appropriate speed to intervention proportionate to the scale of the events. There has been a failure to significantly reduce carbon emissions and our dependence on fossil fuels, a triumph on our long-term welfare of the short-term interests to maintain or grow our current consumption levels. The paradox is that our evolutionary history has equipped us for long-term projects and actions. Humans have highly advanced capabilities for "time travel" mental and probably unique for accuracy in remembering past events and predict future scenarios.

Humans are creatures of culture - learning the product of human behaviour and human actions that cannot be attributed directly to genetic inheritance. Governance is a cultural phenomenon and evolves to physical traits: behaviour can be transmitted and may change over time. Now we are witnessing a kind of governance that starts from the centralized and hierarchical to which we are entrusted to us so far to solve problems. The governance systems interconnected represent a shift towards a self-organizing approach that brings together scattered individuals belonging to the state, civil society and the private sector who have a shared interest. Each operates independently while remaining connected through the exchange of information, planning of future events, and any form of useful cooperation.

The interconnected systems of governance appeared after the Second World War and continued to grow as an adaptation to support the global challenges and complex problems that the existing systems, which frequently are slow and hampered by policies tied to particular interests, have not been able to adequately address. The governance interconnected systems give the possibility for small groups to act quickly and in locally appropriate ways, trying solutions that can then be passed to other groups with similar objectives. Some current examples of interconnected networks in governance that address the challenge of sustainability include the Extractive Industries Transparency Initiative, the

Roundtable on Sustainable Oil Pal, the Marine Stewardship Council, the Equator Principles or the Forestry Stewardship Council. Each has been successful to varying degrees because it has facilitated partnerships with a wide array of actors including the private sector, governments, international organizations and non-governmental organizations to reach a common view in the absence of regulation.

The interconnected governance could be just the kind of evolutionary development or adaptation that will enable us to counter our innate propensities so that we can start to re-order our lives in a way that will lead us towards a more sustainable future. As the governance of interconnected systems become prevalent, and hold up to the test of time, we can contribute to direct their evolution by exploring the ways that can be replicated at different scales of size to share lessons learned and to encourage adoption of good governance practices. The governance systems in the network are currently the most versatile, agile and adaptable at our disposal to deal with the challenges that lie ahead. The task now is to identify and reinforce these new systems that gradually they emerge.

In that respect, it is important to remember the thought and the studies of Elinor Ostrom that was the first woman to be awarded the Nobel Prize for Economics in 2009. The award was the initial for studies on the analysis of governance and its mechanisms, in particular the management of common resources. These were based on her experiences in small companies in various parts of the world it has identified eight principles for the effective management of common resources: a strong group identity, fairness in the distribution of costs and benefits, unanimity in decision-making, effective monitoring of efforts and rewards, graduated sanctions, rapid and equitable resolution of disputes, sufficient autonomy when the group is part of a larger system, adequate coordination between the groups. Ostrom and her colleagues have deduced from these principles meticulous studies on the effectiveness of various management systems of the common property. When the principles are respected, local communities do a commendable job in protecting their resources even when subjected to intense external pressures.⁷⁶

The spontaneous movements were instrumental in pushing the governance towards sustainability. But many efforts for a good purpose were thwarted by an attempt to reconcile sustainability with the dominant ideology of growth and accumulation. The

⁷⁶ Worldwatch Institute, *Governare per la sostenibilità*, Edizioni Ambiente, 2014, P. 58-61

hierarchies in governance are sometimes in conflict: the imperative of the global economic system to grow and accumulate undo the efforts made at lower levels. Progress has been made in the planning of policies to shape individual behaviour and to guide institutional change at the community level. But at the highest level of management - the overall socio-economic system - little it has been done to redesign the institutions in order to promote sustainability and individual well-being. It is the imperative of growth and accumulation that ultimately guide the individual decisions. An example of this is the extraction of gas shale in the United States. This extraction contributes to climate change, disrupts local communities and could cause many environmental problems. But to order the extraction and use of shale gas is the need of the global socio-economic system. The decision to use this type of resource seems almost out of human control.

An evolutionary perspective can help us focus on the trajectories and dynamic paths towards sustainability, towards a different economic system than the one we live in and not only on issues such as population growth or limitation of CO₂ into the atmosphere within a specified time limit. These are laudable goals, but without an understanding of the forces that drive human expansion these policies will remain unsuccessful.

So far, the unstoppable machine of capitalism has had evolutionary advantage in terms of natural selection, this does not mean that the system is desirable because it is the result of "natural" forces. In fact, if we care about the future of our species and the rights of other species that share this planet with us we should affirm the human intentionality and eliminate the worst aspects of the global economy.

There has always been a resistance to the system's power, but must be informed with an assessment of the system's power as strongly interconnected entities and highly evolved. The question for governance is whether we can gain control over the system that shaped us and how we could do it. Today it is still an open question whether the power of human society will be enough to tackle problems of this magnitude.

To achieve sustainability and to face real problems such as climate change, we must devise institutions to address global control of the economy. Today there are many open questions: is possible to arrive successfully at this result by means of a world government that acts in the interests of individual human beings and the rest of the world of nature, or system is intended to generate a self-centred dictatorship of a few? Can a revolution from

the bottom to win the political and military power of ruling elite to curb the abuses of capitalism? Can the rules of Elinor Ostrom for successful governance of the community to be extended to the level of the global economy?⁷⁷

At this point would be interesting to understand how in recent years local governments have become a key component in the efforts for global sustainability. This can help clarify even the current discussions on the governance of the climate and the role of cities in achieving Sustainable Development Goals of the United Nations. Indeed, until the end of the eighties the local governments did not represent a significant factor in global debates.

The term "local government" in public administrative units means the lowest levels of government and includes: provinces, regions, departments, counties, prefectures, districts, cities, districts, towns, municipalities, administrative divisions and villages. Recently, concerns on environmental protection and sustainable development have led local governments has also co-operate across state boundaries. Increased international cooperation is tied in large part to the involvement of local governments in the global sustainability debate.

Several globally relevant organizations such as Local Governments for Sustainability and the United Cities and Local Governments, are open to all local governments concerned and are involved in global processes of promoting and improving global and local governance. The network focused on the thematic and regional cooperation between cities including in the field of climate protection: Climate Alliance and Cities Climate Leadership Group. The increasing involvement of local governments to climate issues goes in parallel with that of regional governments, some of which also have formed global organizations based on visions and similar concerns, an example is the R20 (Region for Climate Action).

Often it refers to local and regional governments as "subnational governments", but in many cases their character is mixed. Within global geopolitical processes as negotiations and transnational agreements, local and regional governments often work closely together and are perceived as counterparties by national governments and the United Nations system. This factor has become necessary because the multilateral systems of cooperation between sovereign states, the United Nations system and related mechanisms do not assign a role to local governments. These are perceived as part of their respective countries and

⁷⁷ Worldwatch Institute, *Governare per la sostenibilità*, Edizioni Ambiente, 2014, p. 65

represented by them. So, now, many local governments are concerned about the increasingly discussed failure of existing global governance mechanisms, especially but not exclusively, that of the United Nations structure. Generally the limited progress in national government level suggests both the need and the opportunity for a greater role for cities and regions.

Today, however, it is important to understand that many local and regional governments form a strong coalition and are not mere subordinate entities than national governments. Many local governments in different countries think globally and act locally. Almost all local governments that engage in international cooperative processes do it with a predisposition of relative openness and giving priority to the common objectives, such as climate protection, biodiversity conservation and sustainable management of resources.

Local governments are often more quickly than national governments to undertake environmental initiatives. For example, after the adoption of the UNFCCC (UN Framework Convention on Climate Change) in 1992, it took just eight months because local governments convoked first Municipal Leaders' Summit on Climate Change and to launch Cities for Climate Protection Campaign of ICLEI. National governments have had rather need 13 years to prepare the global implementation mechanism under the Kyoto Protocol and even after the United States, the major carbon dioxide responsible (CO₂) of the time, not ratified. Therefore, we can confirm that local governments often show greater commitment and readiness would reach goals and objectives of international agreements. In particular those cutting-edge local governments attentive to the future and well-administered have demonstrated that their commitments to sustainability are not limited to isolated local actions, but are adopted in a global context, through a connection of local networks, with the clear purpose to help achieve overall objectives.

The local action is successful because it is closer to the people the best way to stimulate action with regard to issues such as climate change is to use the city as a pioneer who set the example, encouraging similar actions in other cities of their own country or abroad. To promote this development ICLEI has assembled a network of model cities and satellite cities in countries model especially for urban low-carbon development strategies. These cities are applying long-term plans with clear objectives and evaluation systems available. Do assimilate in depth and strengthen these trends will require the establishment of

national laws facilitating and incentives, economic incentives and the transfer of more responsibilities to local governments.

Although many local governments are investing in voluntary actions very often the targets could be achieved more quickly and effectively by the conditions created by national contexts, for example through national laws or standards of construction and adjustments set by national authorities in economic conditions, such as energy prices. To recognize and support the local actions the states should highlight the objectives achieved and the benefits that brings these. Indeed, to support the importance of local governments and the contribution of civil society in achieving the objectives for sustainability, it must better measure impacts, objectives and progress, going beyond the activities mainly descriptive. It is important to go beyond the key players of climate change. The strategy of the global objectives and local implementation does not allow to bypass the national level, only in this way cumulative local actions can achieve tangible improvements in global sustainability.⁷⁸

⁷⁸ Worldwatch Institute, *Governare per la sostenibilità*, Edizioni Ambiente, 2014, P 175-188

Chapter 3

Different perspectives for a new environmental economics

Nowadays there are many signals that make us to realize that to continue on the road of economic development as we have done until now is impossible. Many international institutions, starting with various bodies of the United Nations, argue the impossibility of continuing to pursue the development models as the current. Today we must inevitably find other solutions, the business-as-usual scenario (BAU) in other words "doing as usual, doing business as usual" is not an option any more credible and viable for the future. We cannot continue with the development models pursued until now and based on material and quantitative growth of our societies. At this point it is necessary and urgent to change route. Issues like climate change remind us every day, the time to full availability to do so to experiment with new roads is limited. We therefore have to acquire as soon as possible an individual and collective awareness to address these problems in the best way possible, trying to avoid irreparable damage in years to come.⁷⁹ International agreements and challenges of COP meetings are not the only answer to the issue of climate change.

In 1974, two years after the first major United Nations conference on environmental issues, the UN Conference on the Human Environment held in Stockholm in June 1972 and the publication on the limits of growth (*The Limits to Growth*), Lester Brown founded the Worldwatch Institute, an original and innovative think-tank. Indeed, the Worldwatch Institute has been operating for forty years to analyse and find solutions to issues relating to sustainable paths of our development models that are fundamental for the future of us all. A real observatory that aims to help to change our society, producing surveys, research and proposals of innovative solutions for the future of humanity aimed at making our current world less unsustainable. The Worldwatch Institute has provided an invaluable contribution to understanding and deepens what it means, in theory and in practice, sustainability, what is moving innovative in this sense in the world and how you have to

⁷⁹ Worldwatch Institute, *Governare per la sostenibilità*, Edizioni Ambiente, 2014, p.7

concretely apply our knowledge and experience to apply in practice the new sustainability of our development models.

Today we are increasingly faced with the inability of a culture that has trained and educated us to separate, to distinguish, to live and work in remote reality, to follow simple linear logical cause and effect. And we are increasingly faced with the difficulties of setting a new culture that tries to make us understand, however, the complexity, the connection, the contamination, the synergy, the connection, the set, the union. The reality is deeply complex, it exists only in our mental fiction, the world of economy and companies separate from the world of nature. This distinction, which is always based on our culture, unfortunately, helps to create a false view of reality. Lester Brown was, however, always an extraordinary protagonist of systematic culture, interdisciplinary and innovative. In 1984, Brown wanted to start for the Worldwatch Institute, an adventure fascinating: the annual publication of an international report to give account in an exciting and educational manner of the state of the world, in the interrelation of environmental, economic and social, with the timely indication of concrete progress made towards the path of sustainability, with the significant title "State of the World". Since 2001 Lester Brown has then founded another school, the Earth Policy Institute, which launched the challenge of concrete realization of an eco-economy and the development of an alternative plan for the future of humanity.

In the State of the World 2014 Conor Seyle and Matthew Wibur King wrote about the concept of governance: the term "governance" refers to the processes by which coordinates any complex task or complex system. Any system in which separate parts must work together to achieve a goal to possess a form of governance: the first steam engines, for example, were made more secure by installing a "governor", which maintained the constant speed, preventing damage that they could damage the engine. The specifications of governance mechanisms are diverse and can range from specially designed devices, such as those mounted on steam engines, tangled and decentralized systems developed by evolution. Ants, even if they have a central structure responsible decision-making, cooperate in a highly organized manner and the governed. The same basic definition applies to human society: human social groups are complex systems that require governance systems to achieve the common objectives. In literature there are several definitions of governance of human groups. A simple is that governance encompasses every mechanism

used by people to create «the conditions for an orderly regulation and collective action».⁸⁰ A more elaborate definition defines governance as «the constellation of rules, institutions and practices through which any collectively manages its relationships». An attempt to define the governance at the state level describes it as «the exercise of economic, political and administrative for the management of state affairs at all levels». Governance defines the formal and informal mechanisms and processes that humans use to manage their social, political and economic relations with their neighbours and the ecosphere. These mechanisms and processes are embedded in social institutions, and reflect social norms, values and power relations. Governance therefore includes any system used to take and impose collective decisions.

The goal of the Worldwatch Institute is to find a governance that makes this world more sustainable. The international scientific community that studies global environmental change and its effects on natural and social systems is further studying, for some time, as our impact is now about to reach those critical points, which exceeded the cascading effects that result can be truly uncontrollable and devastating for humanity, occurring in this way the so-called "threshold effect". Scholars have indicated of "planetary boundaries" that human intervention should not exceed, otherwise we will have negative and dramatic effects for all social systems. The main objective of this research is to indicate a safe and operating space for humanity.

The Planetary Boundaries indicated so far are nine and concern: climate change, ocean acidification, the reduction of the ozone layer in the stratosphere, the modification of biogeochemical cycle of nitrogen and phosphorus, global usage of water, changes in land use, loss of biodiversity, the spread of atmospheric aerosols, pollution due to anthropogenic chemicals. For three of these: climate change, biodiversity loss and the nitrogen cycle we are already beyond the boundary that has been shown by scientists. The scientific debate and practical applications of the concept of planetary boundaries have expanded into international policy debates, intersecting with social considerations. We can notice it in the Sustainable Development Goals that were approved in 2015 by the General Assembly in New York and that will characterize the international development agenda in years to come, these represent an embryonic attempt for a governance on sustainability.

⁸⁰ Worldwatch Institute, *Governare per la sostenibilità*, Edizioni Ambiente, 2014, p. 7-9

Kate Raworth, senior researcher at Oxfam and professor at the Environmental Change Institute at Oxford University, taking up the work and reflections on planetary boundaries, expanded the theme of environmental pressures to the pressure on the social foundations of planetary boundaries and provided so a further contribution to the definition of a fair and safe space for humanity. According to Raworth identified the nine planetary boundaries, they can be designed as an integral part of a circle with a hole in the middle (a donut shape) in this way you can better define the area as a “safe operating space for humanity” and configure it visually. While the conventional economy is environmental degradation as a “externalities” which falls largely outside the economy monetized, natural scientists have overturned this approach by proposing a set of quantified limits of the use of resources within which the global economy should work, if you want to avoid touching points of no return of the earth system.

Human well-being depends on the overall maintenance of the use of natural resources below critical thresholds, but also depends, in equal measure, by the needs of individuals to have some resources to lead a dignified life and full of opportunities. International human rights standards have always argued for every individual moral right to basic resources such as food, water, basic health care, education, freedom of expression, political participation and personal security designators. Just as there is an external border the use of resources, a "ceiling" beyond which environmental degradation becomes unacceptable, as well as there is an inner boundary to the withdrawal of resources, a "basic social level" below which human deprivation becomes impossible.

A basic need of this type provides only the basic human needs. But when you consider the current scope of global poverty and extreme inequality, the guarantee of a common basis of human rights for all must be inevitably considered a priority. Kate Raworth has established eleven priorities: food, water, health care, income, education, energy, work, freedom of expression, gender equality, social equity and resilience to shocks as the basis of the social foundations necessary for human existence, crossing them with planetary boundaries.

In this way it creates visually, among the basic rights of the social foundations and environmental roofs of planetary boundaries, a donut-shaped end that can be defined an environmentally safe and socially just for humanity. In this area they move the resilience of social-ecological systems which should not overtake the "roofs" of planetary

boundaries, but even the floors that constitute the social foundations. Because this type of "overtaking" would cause a situation in which it would weaken the resilience of social-ecological systems, and would increase their level of vulnerability. This analysis is commonly called the economy of the "donut" where the planetary boundaries constitute the outside of the bun and the social foundations the interior thereof, and they provided a further important spreading the tenth edition of the biennial of the WWF report, Living Planet Report 2014.

A combination of social and planetary boundaries of this type creates a new perspective of sustainable development. Long-time advocates of human rights have stressed the imperative of ensuring every individual the minimum necessary to live while ecological economists have focused on the need to place environmental economics within environmental limits. This "donut", and this safe operating space for humanity, is a combination of the two, creating an area that respects both the basic human rights of both environmental sustainability and also recognize the existence of complex dynamic interactions between multiple borders and inside them. The illusion of independence in economic activity from nature is no longer credible. The economy has been the inspiration of an overall behaviour of human societies that failed to take into account the value of nature for our survival, let alone understood the seriousness of our intervention on natural systems that, however, is paradoxically justified by the imposition of our economic discipline.⁸¹

⁸¹ Worldwatch Institute, *Governare per la sostenibilità*, Edizioni Ambiente, 2014, P. 11-13

3.1 The value of resilience in the 21st century: the conflict between our economic system and planetary system

In the forty years since the first United Nations Conference on the Human Environment, held in Stockholm in June 1972, the UN Conference on Sustainable Development, held in Rio de Janeiro in June 2012, was produced an extraordinary conceptual and operational progress on the concept of sustainability. Considerable progress has been made in understanding the state of health of the ecosystems of our planet and the interrelations between natural systems and social systems and it have started a bit anywhere in the world, political actions and true sustainable development. We are opposite to cognitive advances of great charm and very innovative concrete applications, but overall this has produced very little progress compared to the challenges we face and that we will continue to face in the years to come.

Indeed, applying sustainability in practice is a real conceptual and operational challenge to our cultural settings. Our mental reference models were consolidated in the cultural evolution that has taken place, particularly in wealthy industrialized countries, since the industrial revolution to date. A real challenge that deeply questions the models of economic development so far pursued and their cultural foundations, centred on continued growth, material and quantitative and on the pursuit of consumerist lifestyles. A challenge to the whole field that has to touch many aspects and disciplines of human knowledge and to force us to face the reality that surrounds us through new optics.

Nowadays, the basic goal of sustainability is just to be able to engage in social development and economic models of human societies that are able to make us live within the limits of natural systems. The socio-ecological systems, subject of sustainability, are complex systems. The cognitive approaches to the complexity seek to identify the conditions and the emergent behaviour of complex systems, focusing on the structure of the interconnections and the general architecture of the systems rather than on their individual components. This represents a significant change of orientation and comprehensive scientific knowledge, rather than a new specific branch of science. Traditional science is based on a fundamentally reductionist reasoning why, if they are known all factors that combine to create a situation, it is possible to predict the result and vice-versa.

However, we there makes it easily account that for the dynamics of an ecosystem or for socio-economic dynamics we are opposite to a new situation in which knowledge of the properties of the individual elements is not sufficient to describe the structure as a whole. The physicist Robert Laughlin, Nobel Prize for physics in 1998, wrote:

Although I'm contrary to the abuse of the concept from reductionism Era to emergency Era, a period in history in which the search of the latest causes of phenomena undergoes a metamorphosis: from the study of the behaviour of the individual parts to the study of collective behaviour.⁸²

The concept of resilience represents a very important characteristic of complex systems and is increasingly used in various disciplines. The resilience is considered the ability that a system has to respond positively to perturbations that can disturb. Normally resilience is the capacity that allows the system that has suffered the disruption to react to allow it to return to the state before the action of the perturbation. The ecological concept of resilience it has been introduced by Crawford Holling, since the early seventies, and defines the ability of natural systems or socio-ecological systems, to absorb a disturbance and reorganize while the change take place, so as to keep still essentially the same functions, the same structure, the same identity and the same feedback. The system then has the possibility of evolving into multiple states, different from the previous ones to the disorder, ensuring the maintenance of the viability of the functions and structures of the system itself. Indeed, Holling remembers that resilience is the measure of the degree of disorder that can be absorbed before the system changes its structure, changing variables and processes that control the behaviour. The resilience of an ecosystem is thus its ability to tolerate disturbance without collapsing into a qualitatively different state.

The system that has less resilience inevitably increases their vulnerability. Therefore the management of socio-ecological systems must be addressed to maintain a high level of resilience to low vulnerability. The vulnerability is the inverse of resilience. It has vulnerabilities when an ecological or social system loses its resilience, thus becoming vulnerable to changes that could have been absorbed. In a resilient system change has the potential to create opportunities for development, novelty and innovation. In a vulnerable system even small changes can be devastating. The vulnerability is tightly bound to the

⁸² Worldwatch Institute ,Governare per la sostenibilità, Edizioni Ambiente, 2014, P. 14

propensity of a socio-ecological system to suffer harshly to exposure to stress and to external shocks. Less resilient the system is, the lower the capacity of institutions and companies to adapt and to cope with change. Implement sustainability policies means then learn how to manage uncertainty, adapting to changing conditions as they arise, but especially to avoid to make natural systems and our social systems always less resilient and more vulnerable.

We are in a world in which humanity is playing a leading role in changing the biosphere processes, from the generic level to a global scale. We desperately need to mitigate our impact on natural systems and to be able to adapt to new situations with great capacity for learning and flexibility. Sustainability policies based on best trans disciplinary scientific knowledge should become the priority of the international political agendas. The environmental cost, economic and social that could pay, if that does not take place, may indeed be very high. Sustainability and resilience are concepts closely related to each other and affect the practical efforts of what needs to be done in politics, in the governance and management of complex socio-ecological systems.

The researches that have been done so far we show how surveys about resilience conduct us to analyse the interrelationships between complex natural and social systems and the deepening of the effects of local and global changes produced by human intervention on the natural evolution of natural systems. Only by strengthening our knowledge base and allowing it to be interdisciplinary, flexible, innovative, open to contamination of many other fields of knowledge, we will be able to launch significant programs designed to achieve sustainability of our being and of our development on this planet . Only in this way we could have a governance for sustainability.

Today we have good reasons to think that the problems that we face, like the climate change, are likely to get worse and amplify. Now a new era is emerging in favour of the multiplication, the unpredictability and irreversibility of disasters. We are heading us toward an unknown land marked by global warming and the tilt of our planet in an unknown state. So we have entered a new era that geochemist Paul Crutzen has proposed to appoint "Anthropocene" (from ancient Greek Anthropos which means man and Kainos which means new). During this era of humanity, especially the industrialized, it has become a geological force capable of changing the Earth system, as well as glaciers and volcanic eruptions. As they wrote Jacques Grinevald and Clive Hamilton, the

Anthropocene conveys a challenge for modernity and its traditional representations "continue", such as the vision of an unlimited economic growth. This is also a concept that stimulates a new vision for the future of industrial society, which must go beyond the exuberance of the ultra-consumption of resources to found the sober and resilient society. However, more recently, international geologists organizations are considering the adoption of the term for precisely a new geological era.

Our society, or rather our modern industrial civilization, is living a period of great energetic descent, a euphemism that could bring together a civilization collapse, specifically our thermo-industrial civilization. The collapse word is not an exaggeration, but a collapse is not the end of the world nor the Apocalypse, or one-time catastrophe that is forgotten after a few months, like a tsunami or a terrorist attack. A collapse is the process after which the basic needs (water, food, housing, clothing, energy, etc.) are no longer provided at a reasonable cost, a majority of the population by the services set out in law. The collapse is inevitable: there is no solution to seek, but rather the best ways to leave in this situation. So there are paths to take to adapt to it, to make it less unjust, less toxic. Three reasons suggest that a collapse is now inevitable. Firstly, the era of fossil fuels plentiful and cheap coming to an end, as evidenced by the rush unconventional oils to environmental costs, energy and economic exorbitant. This energy shortage committed to permanently renounce any economic growth and thus bid farewell to the current economic system based on debt.

Secondly, the exponential expansion of our material civilization has irreparably disrupted the natural systems on which it depends. The climate change and the collapse of biodiversity have announced: disruptions of our food systems, social, commercial and medical, massive population displacement, armed conflicts, epidemics and famines will damage the stability and even the viability of our societies.

Thirdly, highly complex systems that provide us with food, water and energy, and enable the policy, finance and the virtual sphere to operate, require such contributions, increasing, energy and materials they are on the verge of implosion. These infrastructures have become so interdependent, vulnerable and oftentimes dilapidated that small perturbations of these flows can endanger the stability of the overall system by causing cascading effects disproportionate. Today, globalization has raised the overall systemic risks, and with them the tangible possibility of a collapse on a large scale.

Our regions, those which have known only abundance since the end of World War II could well see them quickly negated food security. Globalization has made extremely fast food chains, long and complex, and pushed entire regions to specialize in one or two crops, causing massive erosion of genetic and cultural diversity. In fact, what this globalized industrial system has become more efficient, it lost resilience. At the slightest incident is the ensemble of the structure that could collapse.⁸³

In the 1970s, there was still time to build a "sustainable development", that is to say a company that takes at least a few decades. Today it is too late, global disasters are there, the science is satisfied that they will gain in frequency and intensity. In other words, our society, modern and industrial, will never be "sustainable." This is not a reason to let go. On the contrary, everything remains to be done, we cannot avoid a collapse, but we can mitigate some of the effects and build now the world from a "post-carbon". In this sense, all the efforts of the states with these international agreements will serve to nothing if you do not change anything since the origins of a system designed in this way can no longer function. Therefore, now the question is: what can be done?

There are several answers: to come back to local to be free in a few years, reinvent our approach to collective and common property, favour a low-tech economy, participate in transition initiatives, develop agriculture without oil, mend powerful connections with neighbours, etc. An example can be Alternatiba that is a social mobilization process and a challenge to climate change. In more than eighty cities in France and Europe, the Alternatiba festive events have been completed or are underway (in 2015-2016). Hundreds of alternatives are presented to elicit insights and behavioural changes to policy makers. This movement wanted to demonstrate to citizens Europeans that, after the failure of Copenhagen, we should not expect everything to agreement on high, at the top, but from below, from the local. Start where you live, to invest in concrete initiatives: Eco-habitat, short circuits, renewable energy, organic, local currencies⁸⁴.

According to Ilana Solomon, business analyst for the Sierra Club:

to fight against climate change is really necessary to start from our local economies and to think about how and what we are buying and how it was produced [...] If we

⁸³ Carton H., Servigne P., Sinai A., Stevens R., *Petit traité de résilience locale*, Charles Léopold Mayer éditions, 2015, P. 9-13

⁸⁴ <https://alternatiba.eu/>

do not reflect on how the economy is structured, we'll never get to the real root of the problem."⁸⁵ The paths to trace are many and sometimes contradictory. Yet they have something in common: resiliency. Indeed, the current impact and future call for the building of a less vulnerable society. In this contest it is important to start from the local to face global issues. Dennis Meadows, the lead author of the famous report to the Club of Rome, it is now clear that "we must prepare now to build urgently the small resilient systems".⁸⁶

The word resilience is now fashionable and very popular. We can find this "ability to bounce back" in the UN reports, the recommendations of the OECD, European programs, calendar World Economic Forum, the G20, or even in the recommendations of the World Bank. In January 2013, Time magazine declared resilience "buzzword" of the year. The reason for its success lies in three points: firstly, the notion of resilience is used in a context of shocks, disturbances, breaks, or "crises" and today we are in this situation. Secondly, resiliency is a positive concept that gives hope for the future, opens a path for action, and allows us to go forward. Indeed, in this way it regenerates a capacity that we already have within us to navigate the unexpected and come out stronger. Thirdly, since the beginning of the economic and financial crisis of 2008, a certain weariness is observed, or even suspicion, about the concept of sustainable development, too "catch-all". Or, failing "growth" and "sustainable development project," we need a new horizon that can be summarized in one word. We need to create something that allows us to believe in a better world in the years to come.

Moreover, resilience is the ability of a system to maintain its core functions despite the shocks, including the price of an internal reorganization. The system is the society, the city, the house or ourselves, the principles are much the same. Resilience can be collective (territorial) or individual (psychological).

It is too late to build a "sustainable development", but it is never too late to build "small resilient systems" at the local level that will better withstand economic shocks. We must think to a social and ecological future. For food systems, for example, imagine local, diverse, decentralized, cyclic, transparent, and based primarily on a greater social cohesion

⁸⁵ Klein Naomi, *una rivoluzione ci salverà, perché il capitalismo non è più sostenibile*, Best BUR, Novembre 2015, P.125

⁸⁶ D. Meadows, *Il est trop tard pour le développement durable*, in A Sinai, *Penser la décroissance, Politique de l'Anthropocène*, Presses de Sciences Po 2013

at a local level. Apply these principles resilience fundamentally alter the design of cities. It is relatively reassuring that when major disruptions arise, alternatives emerge very quickly, as evidenced by the protest movements that multiply in Greece, Portugal, Spain, prefiguring tomorrow's world.

Resilience is the leitmotif of the movement of the Transition. In fact, it is building in advance "the world according to" to limit the disastrous effects of fossil fuel depletion, extreme weather events and more generally of the Anthropocene. The transition paths do not guarantee a peaceful and democratic outcome. It is quite possible that our regions are sinking sharply in wars, famines and severe pandemics as happened to past civilizations. No one can guarantee a peaceful transition to a post-industrial world. Nevertheless, the concept of transition has the merit of pushing to action, and especially to collect. It does not disturb totally the imagination of continuous progress, while leaving flourish catastrophic lucidity. It allows to find common practices and shared positive imaginary. The people that believe in transition movement do not expect governments, they invent now, and in an ideal sake democratically non tragic ways of living collapse. Through an attitude both catastrophic and optimistic, they are not waiting for the worst, but to build the best. Neither business as usual nor end of the world, just one world to invent together here and now.⁸⁷

3.2 Transition Economics and Transition Towns

The movement of transition towns represents an attempt to conceive an abundance of trails to descend on the other side of peak oil, to arouse new possible horizons. Trying, in this way, to put resilience at the heart of all projects in the years to come. Rob Hopkins, an independent activist and writer on environmental issues, argues that the transition to more local organization that is more productive by using energy more efficiently is no longer a choice, but it is the direction that humanity has to follow in the coming years. The end of the era of cheap oil has arrived and we are forced to radically change our lifestyle that we want it or not.

⁸⁷ Carton H., Servigne P., Sinai A., Stevens R., *Petit traité de résilience locale*, Charles Léopold Mayer éditions, 2015, P. 16-18

The era of cheap oil, which lasted from 1859 until today, coming to an end and for a company that depends absolutely by this, implies huge changes. The future with less oil could be preferable to the present, if we have ahead a plan with enough imagination and creativity. Certainly, we can say that the future will look very different from what we know today. It begins with an exploration of peak oil and climate change, the twin engines of the transition concept and the two greatest challenges facing humanity in the early twenty century. Hopkins has tried to imagine the world that we could have if we do not respond with imagination to the dual challenge: climate change and peak oil. Taken together, these two issues are sometimes referred to as the "Twins of the hydrocarbon", because if viewed in isolation, much of the portrait escapes us.

Thanks to Live Earth, the Global Cool campaign engages celebrities to support this awareness and in this way the campaign against climate change has grown rapidly. Supermarkets such as Tesco and Walmart are engaged in analyses pushed of their carbon footprint and seem to take this issue very seriously. Climate change is happening much faster than most models are not able to realize it, defying expectations constantly; So, the models are constantly being revised and updated as the scale of this challenge becomes obvious. In addition, climate change is a huge problem, but its worst effects could still be avoided if we are collectively able to tackle this issue. The Transition initiatives are a powerful technique for reducing carbon dioxide emissions, among many others, if we adopt them in time can allow us to avoid the extreme worst of climate change. We know, however, that the current trend is not encouraging. If one wants to explore the relationship between the global economy, peak oil and climate change, we must first examine the assumptions that form the basis of the current economy. These assumptions about the economy and the financial system as well as on both natural and cultural resources, which have formed the basis for decisions of the past 50 years, can still continue on this path?

Chris Materson, author of Crash Course, sums up the issue:

Nous savons certaines choses. Nous savons que l'énergie est à l'origine de toute croissance et de toute complexification. Nous savons que les surplus énergétiques diminuent. Nous savons que l'ère du pétrole bon marché est révolue. Et nous savons que, pour cette raison, les coûts pétroliers accapareront une part croissante de notre budget. Ce qui précède entraîné des risques. Celui, par exemple, que notre système monétaire exponentiel cesse de fonctionner dans une monde de

*surplus énergétiques en diminution parce qu'incapable de s'y adapter. Il y a aussi le risque que nos sociétés soient forcées à se simplifier. Si vous vous arrêtez vraiment pour y penser, la phrase précédente est lourde de sens.*⁸⁸

This thinking shows us that economies can continue to grow indefinitely, trade will continue to grow each year, we will have more and more money, we will produce and consume more and more things and the consumer base will increase continuously; that infinite economic growth and natural resources, energy and raw materials to produce more and more things will always be available at low cost. We will always have access to cheap credit and we can continue to borrow in future world because we also assume that we will be more and more rich, more and more adept with technology and more creditworthy than now. The value of our homes will continue to increase in the long term and serve as distribution money machine, so that we will build more houses, more people will borrow big money. One way or another, this economic growth and progress will provide us lives and empowered communities otherwise poverty, riots and disorder will prevail.

It is now clear that these assumptions merit a questioning. Dogma, established for decades, for an everlasting economic growth would not suffer from being questioned even by invoking its impossibility in a world where energy is rare: it was claimed that this dogma should be maintained to keep the busy people physically and psychologically to maintain social order. However, we note that today more and more people challenge this orthodoxy in question.

Recently, at the launch of the report Prosperity Without Growth prepared by the Sustainable Development Commission of Great Britain, Professor Tim Jackson said:

On pense que seuls les lunatiques, les idéalistes et les révolutionnaires remettent la croissance en question, mais nous devons tout le faire. Nous avons été trahis par le mythe de la croissance. Il a échoué, d'une façon spectaculaire et selon ses propres règles, à offrir la stabilité économique et à assurer le bien-être des gens. La poursuite bornée de la croissance représenté une horrible distorsion du bien commun et des valeurs humaines fondamentales. Les marchés ne se sont pas effondrés à cause du comportement répréhensible de certains individus ou de la

⁸⁸ Hopkins Rob, Manuel de Transition de la Dépendance au Pétrole à la Résilience Locale, le éditions Eco-société, 2010, P.45

complaisance des organismes de réglementation. Ils ont été défaits par logique de la croissance elle-même.⁸⁹

Today more and more transactions take place without the establishment of trust relationships built on human and personal relationships and money exchanged is not related to the community in which it is spent. In the future, rebuilding the trust between the people and businesses will be the heart of the relocated economies. The economic models that have worked so well to climb the mountain of energy provided by fossil fuel types will prove completely inadequate for the descent on the other side. The transitions model requires relocation of the life and work caused by the end of the use of cheap fuel for food production, transport and energy production. But today, almost everyone is part of a global economic system highly dependent on imports. Politicians and business leaders have recently taken their distances from the most extreme cases of wild financial activity. But, in any case, we can observe the credit crunch, attrition energy, climate change impacts, the most serious jobs crisis ever seen, regardless of national borders.

The sudden paralysis of the economy based on growth and household debt leaves the financial system gutted. With the crisis of peak oil and climate change: what are the implications for the millions of people working in shopping centres that offer a wide range of services, all dependent on consumption levels unviable?

Things can get any worse?

One can only guess, but meanwhile, people and businesses that undergo this transition can plan on a future economy that is more resilient, more local and networked. The trick will be to create viable business models in the paradigm in force today, so that they can thrive in tomorrow even if it almost impossible to imagine.⁹⁰

Thanks to the work of Rob Hopkins the transition concept takes concrete forms through the transition towns. These represent a movement founded in Kinsale in Ireland and England in Totnes by the environmentalist Rob Hopkins in 2005 and 2006. The goal of the project is to prepare communities to face the double challenge consists of the addition of global

⁸⁹ Hopkins Rob, *Manuel de Transition de la Dépendance au Pétrole à la Résilience Locale*, les éditions Eco-société, 2010, p. 46

⁹⁰ Hopkins Rob, *Manuel de Transition de la Dépendance au Pétrole à la Résilience Locale*, les éditions Eco-société, 2010, p. 12-49

warming and peak petroleum. The movement is now growing rapidly and has hundreds of affiliated communities in different countries.⁹¹

Hopkins with students of Kinsale Further Education College, analyzed resilient approaches, multidisciplinary and creative with regard to energy production, health, education, economy and agriculture, in the form of "road map" towards a sustainable future for the city. After culminated in an essay entitled «*Energy Descent Action Plan*». One of the students, Louise Rooney, has further developed the concept of transition towns and presented to the city council of Kinsale, which with a historic decision adopted the plan and today works today to energy independence.

The idea was later reformulated and expanded in September 2006 to the native city of Hopkins, Totnes, where he now lives. The initiative has had rapid spread and, in October 2014, include more than 2,000 communities officially recognized as Transition Towns in the UK, Ireland, Australia, New Zealand and Italy. The "city" epithet is actually different sized communities, from small villages (Kinsale) to districts (Penwith) up to real cities (Brixton). In Italy there are several transition towns officially recognized, one of the first was Montevoglio, in the province of Bologna.⁹²

According to Hopkins the transition came as a historic opportunity to rebuild local communities from the bottom, rethinking the local economy, bring people together and make them more aware of using their creativity. This was the starting point. Then Hopkins decided to move in Totnes with a group of locals and he has begun to think how this community could respond to climate challenges.

The first experiments began in the market town (market towns, medieval villages that had acquired the right to host a market), in particular in Bristol. The city administration has decided to fully embrace the project created in 2007 Transition Bristol. But also in London on the concept of transition it has taken fast foot. There is no general project as Bristol, but in recent years were born more than 50 groups that deal with the transition. The first was born in London's Brixton, home to a daily market.

When Hopkins began this work in Totnes, which has about 8,500 inhabitants, people said they worked because there is a small community, while in big cities would be more

⁹¹http://www.transitionnetwork.org/initiatives?themes=All&community_type=All&status_value=official&country=All&field_title_search=

⁹² <https://www.transitionnetwork.org/>

difficult. But this is not true because the 50 groups in London are doing a great job, even better than that of Totnes. So the transition can be undertaken both in the market town that in the big cities. It is something that can adapt to very different realities, there are also universities that have joined the movement.

The scope of the issue of climate change is huge. It has no precedent in human history. If we want to keep global warming below 2 degrees, there is only one possibility: we must cut CO₂ emissions by 10% for year in industrialized countries. And we must start now. It's something that never been done before. To do this we need to build new generation power plants that require seven, eight years to become operational. So the only way to reach the peak of emissions as soon as possible and then begin to reduce them is to work on the request, there is needs to reduce demand. But in the collective this is synonymous with deterioration in the quality of life. As if you were to go back to the thirties, something terrible.

In this scenario the Transition networks and local communities play a key role because they replace this negative idea with a positive story. They need not wait for the funds to anyone. They shall not be allowed by anyone. They are not forced into organizations where everyone is frightened by the possibility of taking risks. They just have an idea and put it into practice. And this is a way to change things from below. Recently, the British government has drafted the Energy community strategy. It is the first time that a strategy for local communities in the UK is drawn up in collaboration with the Transition Network. Many of the cases studied for the preparation of the report concerning the transitional cities. For the first time at the state level it is the potential of local initiatives has seen at first hand and how these can affect the political sphere. It is impossible to say that the only thing we need is for local initiatives, but these are the starting point, from where you can begin to change things in a wider context, the global.⁹³

Moreover, we can also mention the movements in the United States where especially in California adopt very strong local policies. Indeed, the Transition Towns in California implement a large awareness campaign to environmental issues by creating an increasingly stronger network between cities. Facilitating connection between sustainable and regenerative community groups, organizations, businesses and local government efforts

⁹³ <https://itempinuovi.wordpress.com/tag/citta-di-transizione/>

globally; Connecting and collaborating with local and global initiatives that encourage: sustainable community development, zero waste, community based economies, local food production, sustainable business practices, and efforts that lend towards the transition to a sustainable world. This network was previously the Transition California Network that was based on the Transition Town model.⁹⁴ These can be concrete examples of how, with constant efforts, determination and involving people from local, we could build a strong network ready to face also global problems.

It is important underline that cities can be the place where to start, but what is important to emphasize is that to prepare the cities to an environmental regulation is not obvious. One of the focal points is the mobilization in the area, trying as much as possible to mobilize citizens. In the last years, for example, Paris is making a hard work to raise awareness of the people to these issues. Indeed, from 2007 Paris refers to a climate plan for territorial energy (Le Plan Climat Energie de Paris) reaffirmed in 2012. This plan inspired the policies of the city and it focuses primarily on three goals to face the problem of climate change. The first are the buildings that are large emitters of greenhouse gases trying to find alternative solutions to heating inside the buildings, and review the structure of the buildings. The second is the transportation sector, trying to reduce as much as possible the means of transportation that pollute. The third objective is to invest more and more in renewable energy. One problem may be the fact that many of the greenhouse gas emissions are not due to the city and thus cannot be kept under control. Paris can be an example of a city that strives to solve problems related to climate change from below, involving its inhabitants through associations or initiatives that encourage participation.

At the end, nowadays if we want to create a system that starts from the bottom we have to figure out where to start and make sure that those foundations are secure and durable, allowing a real communication at all levels from the bottom upwards. A possibility and at the same time a great challenge is to start from our places, from the territory, from the cities in which we live and where we have our relationships. Looking at great horizons without having a firm foundation in the small is like building a house, starting from the ceiling: it is impossible, sooner or later the house will collapse.

Therefore, the problem of climate change offers us the opportunity to reflect on this point because the climate is a global public good to which we are interested because concerns

⁹⁴ <http://www.transitionsf.org>

the security of the planet, our own life and that of future generations. COP meetings are also and above all this come to an agreement to make sure that in any case the profit economy that binds us all, developed or developing, moving forward in the best possible world to bear fruit in all the countries. But maybe in addition to understand what happens at the international level and to what balances the states aspire to try as much as possible to maintain their profits and make the economy grow, it is really the moment to stop. This time it is the nature who asks us to stop and we must start from the small, from the foundations. «Indeed, research on local CPR (common-pool resources) problems has demonstrated that under some circumstances solution worked out by those individuals directly affected prove more successful and enduring than resource regimes imposed by central political authorities». A very ambitious challenge because we are not used to thinking so. In the era of globalization it seems impossible to think of returning to rebuild a dialogue starting from the bottom, by the cities taking as a model participatory democracy of the Greek agora. Where people gathered, exchanged their views and decisions were really taken in common. Differently from what happens today, where the decision are taken by others and seen from a distance as solutions to which we cannot access. By contrast, we have to approach it is our future and that of our children that we are talking we have every right to participate. The word “democracy” comes from two Greek words: Demos (meaning "people") and Kratos (which means "power"), therefore "people power." The people of ancient Greece was an active people arguing in the assemblies of the metropolises and participating actively to the common good. Although today we are not used to feeling this way and it may seem utopian, problems such as climate change will inevitably bring us to reflect on the need for dialogue, meeting and participation.

3.3 Bioregions

The bioregion term was defined for the first time in 1977 by American environmentalists Peter Berg and Raymond Dasmann in section "Reinhabiting California." For them, the bioregion is a geographical area with a homogeneous natural together. So not a territory defined by political boundaries but by the geographical boundaries that take into account both human communities and ecosystems. Thus, to delimit bio-region taking into account

soil characteristics, hydrography, climate, fauna, flora, mineral resources, but also native cultures and societies of this region. Border bioregions, unlike the administrative boundaries are not hard limits, but rather soft borders and therefore the passage of a bio-region to another is progressive and gradual.⁹⁵

The concept of bio-region calls for the organization of a new way of life and development in relation to the territory a real « *ré-habitation* ». Indeed, the « *ré-habitation* » is to set up a socially and ecologically sustainable system based on knowledge of particular ecological relationships of a given territory, called « *vivre en place* ». To establish this « *vivre en place* » needs that interdependent relationship and exchange between population and ecosystem bio-region, the population needs that food, water, energy, habitat and culture must not destroy the ecological system. So the population is also a constituent part of the bio-region but only insofar as it lives in harmony with nature and it draws its sustainable livelihood. The « *ré-habitation* » finally goes through the development of a bio-regional identity, that is to say which is commensurate with the territory.⁹⁶

Concept of bio-region is derived from a movement called "bio-regionalism", also designed by Berg and Dasmann in the context of the 1970, which saw the emergence of political ecology in the United States. Bio-regionalism is a proactive approach that seeks to establish a positive and lasting relationship between the environment and human society, that is to say integrate humanity and culture within nature rather than trying to preserve wilderness in sphere out of human society. In a bio-region, urban, rural and wilderness are all designed as an interface between man and nature areas. Each interface has a different approach to re-habitation of the territory, which is appropriate to its characteristics.

Subsequently, a significant number of authors came to complete this initial approach and the concept of bio-region was particularly taken by supporters of degrowth, to which it is a component of what they call the society of degrowth. This is the case of Serge Latouche, who in his *Petit Traité de la Décroissance Sereine* , moves away a bit of the definition of Berg and Dasmann For him, a bio-region is a coherent spatial entity reflecting a geographical reality, social and historical. Its definition puts forward more political, in

⁹⁵ Article "Reinhabiting California" de Peter Berg et de Raymond Dasmann: <http://exacteditions.theecologist.org/browsePages.do?issue=5704&size=3&pageLabel=399>

⁹⁶ les bibliographies de Kirkpatrick Sale (Dwellers in the land) et Alberto Magnaghi (La bio-région urbaine = <http://www.reseau-territorialistes.fr/369-2/> + http://www.architectes-conseils.fr/sites/default/files/textes/alberto_magnaghi_la_bioregion_urbaine.pdf)

particular identity and democratic bioregions its scientific aspects, as is the case of Berg and Dasmann.

In reality, according to Latouche, the bio-region is a means to reach a broader goal to invent a local ecological democracy. Then poses problem of what should be the size of a bio-region. Latouche evokes the "democratic dilemma" more is a political entity, more it can be directly controlled by its citizens, but its sovereignty are restricted areas on issues that overlap its boundaries, as is the case in the ecological area. To counter this dilemma, Latouche takes up the idea of Paola Bonora according to which it should not address the issue of local ecological democracy from the size but of identity, which is essential to ensure consistency bio-regional unit. What matters is the existence of a collective project rooted in a territory for citizen participation through action.⁹⁷

At the end, Latouche, in his book, explains the concept of bio-region in explaining what is an "urban bio-region." Uses the definition of Alberto Magnaghi, a great scholar of bioregions, in which urban bio-region would be designed as a polycentric network or multipolar, as a municipality consists of a complex set of local territorial systems.

Alberto Magnaghi wrote the book "La Bioregione Urbana". The underlying theme of this book is very clear and brings us back to the territory of the need to re-occupy our territories and reclaim our spaces with greater awareness. Making wealth of history, culture and architecture of a place. At the centre of this book there are also the social relations of individuals within the urban space. Today in fact we tend to not give enough value to these relationships to the urban space. Yet it is precisely in this space, essential for their construction, they are formed.

The invitation of Alberto Magnaghi is to come back to the territory, in our places with different eyes, less "alienated" more alert and aware of what is happening. This demands to grow "the conscience of places" to rebuild relations synergies between human settlements and the environment, to promote new convivial and sober ways of living and producing, to enhance active citizenship, networks civic and forms of common property of self-management capable of producing lasting wealth in every place of the world.⁹⁸ Indeed, according to Alberto Magnaghi the duration of this new conscious way to address the land

⁹⁷ Serge Latouche, *Petit traité de la décroissance sereine, mille et une nuit*, 2007

⁹⁸ Magnaghi Alberto, *La Biorégion Urbaine, Petit traité sur le territoire bien commun*, Rhizome Eterotopia France, Paris 2014. p. 6

and nature is essential if it will truly become a value that will last over time. To ensure that this will be so, we must begin to re-educate the individual to these values, only in this way they will put solid roots.

A multipolar, reticular urban system leaderless is the morph-typological element generator of human settlement urban bioregion, in contrast to the hierarchical model centre outskirts of town diffused and mega city.⁹⁹The aim is to prevent the system does not degrade in a hierarchical type of relationship system that induces the creation of dependency ratios centre-periphery. In line with this thought, Magnaghi identifies seven "constructive elements" of urban bioregion: cultures and contextual knowledge and local experts, able to reactivate the "ars aedificandi"; Geomorphological hydro balance and quality of ecological networks prerequisites for Human establishment; Polycentric urban public spaces and their centralities whose reconstruction involves the abandonment of the model between centre and periphery; Local economic systems whose development reflects the increase in the value of heritage properties; Local energy resources integrated valuation supports the self-production of the bioregion; Agro-forest areas to multi-functional vocation for the requalification of urban-rural relationships and reducing the ecological footprint; The institutions of participatory democracy and forms of social management of territorial self-government for a joint property of the bioregion.

All of these are important pillars for the construction of a bioregion that has stable and lasting roots in time and we can also consider that each of these is a project we must devote ourselves. Therefore, we can define the bioregion as a complex body composed of several elements each of which is important for the construction of the bioregion. It is impossible to think of losing even just one of these elements, as they are related to each other in this complexity, as in a human body, the bioregion comes alive when all these elements work alone and together . The constructive elements of the urban bioregion and their relations have their operational nature in the development of active citizenship forms that express the self-government capacities and community self-management. Therefore, the self-centred self-sustainability and self-determination of local companies become strictly interrelated concepts.

⁹⁹ Magnaghi Alberto, *La Biorégion Urbaine, Petit traité sur le territoire bien commun*, Rhizome Eterotopia France, Paris 2014. P. 109

Magnaghi proposes a possible project for the region of Tuscany in a scenario that sees Florence expand its service roles, coordination and promotion of a regional model of polycentric development, based mainly on the redevelopment of metropolitan system bioregional Florence-Prato-Pistoia. With a vision of the metropolitan city as a united federation of cities along the Arno river.

Another focal point often found in the book of Magnaghi is that to activate a process of self-management and self-governance rehabilitation of citizens is fundamental. The residents of the rehabilitation effort to live and the art of building, can only from structured participatory process where people, children and youth in schools, re-walk the heritage values of their territory through a process of re-identification and re-learning. Today we are no longer accustomed to these efforts; we live in our places giving a lot of things for granted. Indeed, the inhabitants became a resident who has neither the culture nor the means of production in its own territory: he does not know from where come the light and food; where will go the waste.

The world in which we live is based on market principles and consumption, which accelerate human life time. This can also be found in the relationship that often occurs in the work: the man must have a job to get a salary that allows him to eat, but sometimes it does not even know why he did this and how the system works. However, in a bioregion work can be seen from another point of view, it could help the community and at the same time felt individuals more aware of their work and thus more solidarity with other people. The scenario of the bioregion offers us new horizons through which the inhabitant is less "alienated" and more conscious. We can say that knowledge sharing and solidarity is the backdrop to this process, and to achieve this it is necessary to re-educate men to these values.

Indeed, *«il capitalismo è stato negli ultimi trent'anni una macchina di distruzione delle relazioni sociali»*.¹⁰⁰ It is true that capitalism has become over the years an economic structure that is completely self-devoid of any purpose other than infinite growth; in which the production of wealth is entirely separate from the social conditions of workers which make possible this production; in which knowledge has been artificially hyper-fragmented so as to eliminate all critical faculties to those who are called to produce goods and services. Precisely for this reason the capitalist culture rejects any approach with the past

¹⁰⁰ Bevilacqua Piero, *Il grande saccheggio, l'età del capitalismo distruttivo*, La terza, 2011

and the future unless the latter is not limited to a very short period. Each resource - cultural, environmental, and human - is sacrificed on the altar of the super production, because the free market has literally wiped the public interest.

It is for this reason that we must return to the collective participation of the Common Good. Through the biorégionaliste approach the process of participation evolves into social production plan in order to achieve social production of territory. In this way, it establishes a real re-territorialisation. This process requires the collective mobilization of inhabitants and permanent institutions for consultation on shared projects as protagonists in rebuilding territorialises values. Indeed, underlines Magnaghi:

si habiter veut aussi dire produire la qualité de son propre milieu d'établissement à travers la production des valeurs territoriales, la participation se développe dans cet acte productif et non seulement dans des problèmes disjoints de l'acte de résider. De plus, éduquer au territoire ou à la conscience, et non seulement à la connaissance et à la représentation de ces valeurs patrimoniales, engage aussi ce processus culturel par lequel la citoyenneté active et les formes d'auto-reconnaissance de la société locale par laquelle se forme le projet local grandissent. Pour cette raison éduquer le territoire consiste en ce processus de réappropriation de la capacité d'habiter de l'individu, de la communauté et de la société locale : dans l'acte de reconstruction de l'habiter demeure la clef pour la reconstruction de la ville, du paysage et de son soin par ceux qui y vivent. Prendre soin d'un territoire n'est pas une question évidente, aujourd'hui nous avons oublié, mais on peut dire qu'il y a un réel art de prendre soin d'un territoire. L'art du soin du territoire, observe Magnaghi, est donc d'abord, la capacité d'autoreproduction de la vie (et de ses « styles » locaux) de la part de la communauté établie, qui reconnaît et re-projette ses éléments : le cycle de l'eau, des déchets, de l'énergie, de l'alimentation. Dans la reconstruction de cette activité de soin social de son propre milieu de vie se génèrent, ou se régénèrent, les savoirs pour la valorisation du patrimoine comme fondement pour les modèles socio-économiques durables et auto-soutenables.¹⁰¹

¹⁰¹ Magnaghi Alberto, *La Biorégion Urbaine, Petit traité sur le territoire bien commun*, Rhizome Eterotopia France, Paris 2014, p.144-145

In conclusion, climate change, the exponential growth of territorialisation process, form, scale, speed of urbanization of planet and the consequent contradictions converge in the same eco-catastrophic direction from the viewpoint anthropological, cultural as well as social and environmental.

C'est pourquoi les efforts des projets de Magnaghi tendent vers l'horizon d'un dépassement et d'une inversion du processus d'urbanisation dans le monde en proposant un contre-exode basé sur la reterritorialisation des peuples et la recherche de nouvelles formes d'équilibre entre les communautés établies, le milieu ambiant et les patrimoines locaux.¹⁰²

This "return to the territory" for Magnaghi is not a return to past, it's nothing repetitive or nostalgic, is a return to the construction of future conditions of life on earth. The aim is to design new social relations, new forms of institutions, therefore each community has the ability to reproduce sustainable forms of its territorial heritage. In addition, testing of socio-economic models based on optimization of the economic public goods at regional level may still assume a strategic reach. Indeed, real autonomy places and the people who live allow them to be freer and less slaves of global rules dictated by the market. Hence, Magnaghi proposes a "globalization from below", where we are all connected through a network of complex and strong systems that can last over time. We must get out of the infernal bubble: work, productivity, consumption and ensure that the cycle becomes more visible and concrete. Indeed, as Zygmunt Bauman argues :

la distance et la disproportion entre les puissances mondiales et les politiques locales sont accrues : d'un côté s'exerce une puissance mondiale affranchie du contrôle politique et de l'autre des politiques locales résiduelles privées du pouvoir d'intervention sur les variables environnementales de la crise. Aujourd'hui émerge donc une mondialisation de l'inégalité avec l'émancipation des intérêts des entrepreneurs hors de toute institution socioculturelle existante. Face à cette escalade de la crise et des conflits entre hétéro-directions et autogouvernement, le

¹⁰² Magnaghi Alberto, *La Biorégion Urbaine, Petit traité sur le territoire bien commun*, Rhizome Eterotopia France, Paris 2014, p. 145

*rééquilibre entre le niveau local et le global devient une exigence essentielle et prioritaire sur toute politique mondiale.*¹⁰³

¹⁰³ Magnaghi Alberto, La Biorégion Urbaine, Petit traité sur le territoire bien commun, Rhizome Eterotopia France, Paris 2014.P 33

Conclusion

The COP21 in Paris ended in the best way that could be expected, compared to the result that occurred in Copenhagen in 2009 it was a great success, but there are many contradictions that come out of this long-awaited agreement. In fact, this agreement is part of an international rhetoric where the economic interest too easily comes to prevail over the common good and to manipulate information. From the summit of the Earth in Rio de Janeiro to date, the issue of climate change has had more and more weight and attention at international level.

Indeed, from Rio the United Nations and the states that are part of it have begun to face the issues of climate change and its consequences, but without subverting the rules of our economy. Trying to understand what were the real problems and amortizing these as best as possible within the rules dictated by the market and today's capitalist world. They are therefore looking for solutions such as the Emission Trading System, within the Kyoto Protocol, which made CO₂ emissions to be included in a commodity market with well-defined entities, the states, to keep emissions under control. The Emission Trading System makes sure to create a business at the height of the competitiveness of the states to get their profits and be the best. Europe offered for the first time in 2005 an emissions trading system (EU ETS) that seemed perfect, as well as China proposes now, in its INDC, showing us that there is the will to continue on the same roads, within the same economic rules to promote growth and profit at all costs.¹⁰⁴ The costs we are paying today and will continue to pay in the future, if we do not change these roads, will be very high for life on our planet.

Moreover, the companies and especially the large companies have a dominant role in contemporary societies. They are able to influence governments, sometimes even to keep them hostage, as well as to guide consumers through advertising and other means. When governments threaten regulatory intervention, companies have announced that they will move elsewhere, this is the problem of "carbon leakage", in other words the flight of businesses to countries with less stringent regulations. This should make us reflect on how much power markets have today: this power offer us less rules and more freedom and this

¹⁰⁴ <https://icapcarbonaction.com/fr/news-archive/288-china-s-indc-endorses-emissions-trading>

landscape can be very dangerous. Indeed, what we need today is to return to regulate, to build stable rules, which are recognized and respected. To do this we must make sure that there is a U-turn especially on the cultural level, because the consumer society has resulted mainly to a loss of values, this is undeniable. Today overturn the rules means also and above all get out of the logic that combines the state and the market, the economy and politics. Reacting to climate change will require innovation and encourage the government and the relationship between state, market and civil society.¹⁰⁵

Today there is much talk of the need to move away from fossil fuels and to invest as much as possible on renewable energy, but there is little talk of: lowering fuel consumption to simplify our lifestyle, the local community projects, lower greenhouse gas emissions, of those citizens who want to lower greenhouse gas emissions, from the bottom want to try to build a strong network. Moreover, the Paris Agreement does not really explain what means resilience and its importance in a world where environmental disasters are becoming more and more diffuse. Despite the Worldwatch Institute has been working for years for the construction of a world that makes a value of the word “resilience”. Indeed, resilience is considered the ability that a system has to respond positively to perturbations that can disturb. Normally resilience is the capacity that allows the system that has suffered the disruption to react to allow it to return to the state before the action of the perturbation.

Nowadays, if we are to meet the objectives recommended by science regarding emissions, avoiding other disasters, the carbon reduction must be managed through the strategy of radical and immediate decline in all industrialized countries. The current economic systemic idolizes growth of GDP by placing it on top of everything, no matter what human or ecological consequences it could have , while it does not value those things that most of us care most about: a decent standard of life, some security for the future and the relationships that bind us to each other.

There is still time to avoid catastrophic warming as long to get out of capitalism rules in their current form. This is undoubtedly the main reason why there has ever been to change these rules. Instead of continuing to pretend to be able to solve the climate crisis without starting from the bases, we must have the clarity to think differently and to imagine alternative futures. Change the earth's climate in ways that will prove to be chaotic and

¹⁰⁵ Giddens Anthony, *La politica del cambiamento climatico*, il saggiatore, Milano 2015, p. 103-107

disastrous is easier to accept than the prospect of changing the fundamental logic, based on the growth of capitalism.

Many climatologists have found that giving the news of our collective responsibility about climate situation in which we are has inadvertently destabilized the political and social order. Now the only solution is to find alternative routes, change the rules of the game, consuming less and simplifying our lifestyle through a path that looks less to a large pressure and a major shift towards a better future. Today more than ever we need comprehensive programs and policies that make easy and convenient for all the option for low carbon profile. The personal initiatives of reduction of emissions should be done on a scale that allows to have a material impact, we cannot just leave them to individual decisions on the lifestyles of those good citizens.¹⁰⁶

We all have to become aware of the need to change our lifestyles, production and consumption. Today, however, we are trapped within this vicious circle that pursues late profit at all costs, this is the rhythm that marks the lives of many, we are founded on this our present society and changing this will not be simple scheme . Start talking to conceive the problems to open their eyes to what is happening and will happen in different parts of the world. I am referring to environmental disasters of all kinds: the melting of glaciers, the loss of biodiversity, toxic tides, desertification, rise in sea level, rise of global temperature, hurricanes will become stronger and more intense, Arctic likely to become ice-free.¹⁰⁷

Educating to care of territory, to respect nature and stop seeing the earth as a place to exploit the resources that nature offers us may start to be a solution, but this also means to make compromises in the years to come. Thus, in the coming transition, experienced people in the fields of: permaculture, organic farming, production of organic fertilizers, maintenance of soil fertility, livestock and animal care, rehabilitation landscapes, conversation and seed dissemination, it will be required. In this time where the era of oil between declines and the industrial society addresses the unstable slope of a collapse, whether gradual or sudden, we must agree to have happen incredible revolution in employment.

¹⁰⁶ Klein Naomi, *Una rivoluzione ci salverà, perché il capitalismo non è più sostenibile*, best BUR, novembre 20015, P. 128-131

¹⁰⁷ <http://climate.nasa.gov/effects/>

Since the beginning of industrialization, new technical and economic factors have prompted the creation of many new types of jobs, while others have become rare or extinct. Historically, while civilizations have become more complex, a trend was observed with increasing economic specialization. The consequence of this increase in specialization has been the agricultural surplus which allowed the company to release some of its labour force in food production to other roles. The unlimited supply of fossil fuels during the last two centuries reinforced the trend towards specialization of roles to the point that less than 4% of the French population is employed today in the Agriculture. Understanding better the implications of the current mutation can also help to orient professional retraining into more promising sectors in the future. The cottage industry is likely to make a comeback in the coming decades, which implies significant job creation. The expertise of recoverable energy system and small scale systems will also be in high demand, as well as objects repair capabilities of all kinds, tools and devices, most of which are now designed to be obsolete, but we will want to make them last. This requires strong choices in the field of job today for the future. The message hammered by politicians and the media on the return to growth does not help to prepare the population that will be absolutely taken aback by the earthquake of industrial change. It is therefore advantageous to prepare for independence, domestic subsistence and developing a range of skills.

To mitigate the impacts of climate events on their economic activities, several hundred cities are already taking steps to protect their infrastructure and reduce dependence on fossil fuels. Indeed, the adaptation is very important to face the issue of climate change today.

According to *Protecting our Capital*, report co-developed by the C40 network of cities for climate, Bloomberg Philanthropies and CDP Global Cities from data from 207 cities, climate change could cost up to 4 trillion (4,000,000,000,000) dollars of 2030.¹⁰⁸ Now most of the world's GDP is generated in cities. 76% of them declare themselves aware of the impacts that climate could have on their business. A recent study by the Asian Development Bank pointed out that East Asia the costs of climate change could exceed 5.3 & of GDP. The US firm Risky Business calculates that these amounts are in the billions of dollars and could fall to 5.9% of economic output. Resilience therefore interests more than ever the business world and insurers.

¹⁰⁸ Carbone Disclosure Project, AECOM et C40, *Protecting our Capital. How Climate Adaptation in Cities create a Resilient Place for Business*, juillet 2014

The third European port, Hamburg, reports that its infrastructure will be degraded by climate affects. At Capinas in the state of Sao Paulo, Brasil, production of soft drinks is threatened by water scarcity. In the United States, the city of Cleveland reports that its shipbuilding activities on Lake Erie are threatened up to 6.5% billion. The port of Seattle has seen its port traffic disrupted by extreme weather events. According to the OECD, no fewer than 35,000 billion that climate change could cost to the economies of port cities. Faced with these risks, cities are developing their resiliency and begin to limit their carbon emissions. In 2014, 102 cities have developed plans for adaptation to climate change and 108 cities have published their carbon emission inventories. Since 2009, the metropolis of Denver, London, Madrid, Durban and Taipei have reduced emissions a total of 13.1 million tonnes CO2 equivalent, a decrease of 12%. The number of cities that have deployed climate-related measures doubled from 110 in 2013 to 207 in 2014. They recognize that the climate is not a source of costs, it can be an economic opportunity: improving infrastructure, increasing energy efficiency in buildings. The city of Portland (Oregon, US) announced that it saves \$ 5.5 million annually through the Energy City challenge. "Investing in the resilience of water systems, energy and communications can have beneficial economic impact for cities and businesses," the report said.¹⁰⁹

These are some examples of how today's start from the cities, from below, can help to build a solid network. Urban scale is the scale of our personal experience more meaningful and more concrete. In the period of the networks, the Internet and technology, everything touches everything. A lot of phenomena belong to global scale but for us they remain abstracted. Whilst the national scale is that of the political and ideological project, our lives are measured at the urban scale. Urban scale is that of our experience. The traditional categories that we were using to analyse the world are now old. Indeed, at this time we have new countries that are emerging as new global players.

Today we have to understand why the role of cities in the global world is so important. It makes sense because in the cities there is the heart of globalization. The major cities are the headquarters of: multinational companies, international institutions, governments, finance activities. The cities are distinguished by function and range. It means that cities have different functions. For example, a city can be: industrial, cultural, touristic, etc . Hence, many different functions, that are very often integrated with one another. The area

¹⁰⁹ Carton H., Servigne P., Sinai A., Stevens R., *Petit traité de résilience locale*, Charles Léopold Mayer éditions, 2015, P.42-49

of influence of the city, the city radius can have global range. When a city gathers; has all functions and has a global range for all of these functions it is called a global city, an expression invented by Saskia Sassen. Today global cities are 3: New York, London and Tokyo. Everything that happens in these cities has a global range. Then there are the candidate cities to play a global function and are: Paris, Los Angeles, and still the cities of emerging countries such as Beijing, Rio de Janeiro, S. Paolo etc ...

A key element of the reason about the city today is the theme of decomposition. A city is made up of different pieces poorly integrated with each other, that is, the city is the emblem of the grid operation, within the city there are seamlessly integrated nodes with the global network, but there are also nodes that are not at all and they are remote and marginalized areas. This characterizes the cities in emerging countries where this breakdown can get to have a form of spatial segregation. This in the more extreme cases takes the form of militarization for example in Cape Town where there are areas more linked with the global network, whereas others completely disconnected.

Why the analysis of these aspects may be important today? Because cities are the places where we have to start, as we have said several times the cities are the places where we have: our everyday experience, real and concrete social relations, are the sites of involvement. Today, if we really want to solve the global challenges that we face, like climate change we can no longer try to change things from above in an abstract way, but we have to start at the bottom in a concrete way. This is the only solution to build a solid network that can last in the time. Many experiments that I showed in the third chapter, as the Transitions Towns or the Bioregions are the examples that help us to better understand how many important is to plan starting from the cities.

Moreover, it is important to understand that, if we really want to change something, energy supply and environmental issues should not be left in the hands of private operators who work for profit. Today the greatest impediments are of social and political nature, what is needed is to decide collectively that this is the new road that we want to undertake.¹¹⁰ Today this is not a simple challenge, because the public sphere and the private sphere have overlapped almost completely and in many areas it is just the market economy to dictate

¹¹⁰ Klein Naomi, *Una rivoluzione ci salverà, perché il capitalismo non è più sostenibile*, best BUR, novembre 2015, p. 143

the rules. We can get out of it only through a radical change but it should be cultural, social. It seems impossible, but this is the opportunity that remains to define a world with less inequality, less environmental disasters, less concentrated power and with more redistribution.

As we have already mentioned at the end of the second chapter it is important to remember again the thought and the studies of Elinor Ostrom, who was the first woman to be awarded the Nobel Prize for Economics in 2009. In this way we can better understand how important it is the public sphere and why we should always distinguish the public sphere from the private. The award was for studies on the analysis of governance and its mechanisms, in particular the management of common resources. These were based on her experiences in small companies in various parts of the world. She has identified eight principles for the effective management of common resources: a strong group identity, fairness in the distribution of costs and benefits, unanimity in decision-making, effective monitoring of efforts and rewards, graduated sanctions, rapid and equitable resolution of disputes, sufficient autonomy when the group is part of a larger system, adequate coordination between the groups. Ostrom and her colleagues have deduced from these principles meticulous studies on the effectiveness of various management systems of the common property. When the principles are respected, local communities do a commendable job in protecting their resources even when subjected to intense external pressures.¹¹¹ Starting from local, as we have seen in many examples in the third chapter, can be a solution to imagine a network from the bottom, from fundamentals, a network that from local reaches global. A network could define “glocale” namely that starting from small systems from the bottom and connecting them can lead to a global connection. This can only happen if we work to make it strong and resilient early on smaller systems, this explains why the cities and regions today are very important.

In conclusion, the "crisis" of climate change we are experiencing today is closely linked to our economic, political and social crisis. However, what we have to understand, whether we like it or not, is that in front of nature we have no choice, we have to stop and rethink a world that is more sustainable, more human. The challenge that new generations must face today is huge, perhaps the greatest challenge ever existed in history, but we need to take part collectively in this challenge to save our planet. In saying collectively, I think not only

¹¹¹ Worldwatch Institute ,Governare per la sostenibilità, Edizioni Ambiente, 2014, P. 58-61

about politicians who occupy high positions in government at national or international level, but about all those who inhabit this land: children, teenagers, men and women.

Moreover, I think also that we must stop to talk about crisis, but to act. Because as Einstein wrote:

Let's not pretend that things will change if we keep doing the same things. A crisis can be a real blessing to any person, to any nation. For all crises bring progress. Creativity is born from anguish, just like the day is born from the dark night. It's in crisis that inventiveness is born, as well as discoveries made and big strategies. He who overcomes crisis, overcomes himself, without getting overcome. He who blames his failure to a crisis neglects his own talent and is more interested in problems than in solutions. Incompetence is the true crisis. The greatest inconvenience of people and nations is the laziness with which they attempt to find the solutions to their problems.

There's no challenge without a crisis. Without challenges, life becomes a routine, a slow agony. There's no merit without crisis. It's in the crisis where we can show the very best in us. Without a crisis, any wind becomes a tender touch. To speak about a crisis is to promote it. Not to speak about it is to exalt conformism. Let us work hard instead. Let us stop, once and for all, the menacing crisis that represents the tragedy of not being willing to overcome it.¹¹²

¹¹² Einstein Albert, *The World as I See It*, 1949

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