

# PROF. MURAT TÜRKES: “A FUTURE THAT TAKES CLIMATE CHANGE INTO ACCOUNT NEEDS TO BE PLANNED”

**Interview: Bahar Yıldız**

**Translation: Bahar Yıldız**

*In this issue of the Journal of Matter, Dialectics, and Society, we interviewed Prof. Dr. Murat Türkeş who made great contributions to both climate science and climate diplomacy in Turkey, following the publication of the latest report of the Intergovernmental Panel on Climate Change and the approval of the Paris Agreement.*



Prof. Murat Türkeş

**Welcome, Prof. Türkeş. First of all, thank you very much for accepting our interview request. Can we get to know you a little? You are from Hakkari. We know that you completed your undergraduate degree in physical geography and geology at Ankara University. Can you tell us a little about your early teenage years? How was the process from Hakkari to Ankara? Did you go to university consciously or coincidentally?**

Yes, I was born on 23 June 1957 in Hakkari. When you are the child of a civil servant father, it is really not clear where you will go. When I was 1.5 months old, my father started his first job as a merchandise manager from Hakkari to Demirci district of Manisa. In fact, in this way, a new leaf was also turned in his life. We stayed in Demirci for about 5.5 years. Then the roads again... Gemlik district of Bursa for 2.5 years, Afyon Sandıklı for about 3 years; but it was Soma that shaped our lives, introduced us to the working class, the peasants, and those who live by their labor. I completed primary school in Soma, starting from the 3rd grade. I completed secondary and high school at Soma Lignite High School, which was newly established at that time. Then we went to Bursa Mustafakemalpaşa due to my father's duty. I was studying at the university at that time, I couldn't study in the '70s... I was expelled, I was punished... My father, with one salary, could not send me any money. I worked for a while. Then, "You will not be able to study, we will not be able to rent a house for you, so let's move to Ankara." they said. So, we came to Ankara. I deliberately chose Ankara University, Faculty of Language History and Geography, Chair of Physical Ge-

ography and Geology. Earth sciences, natural sciences, veterinary medicine, and of course, physical geography and geology were my ideals. Ever since I was little, I was a child trying to understand nature, keeping animals, looking after the gardens of all my neighbors. Here I deliberately chose physical geography and geology in Ankara. I enjoyed it very much. I had worked throughout my education life, starting from middle school. I also worked in construction, in steel bending, in mines... I worked as a temporary worker at the General Directorate of Mineral Research and Exploration (MTA).

**Could you tell us a little bit about your work in the General Directorate of Meteorology (MGM)? As far as I understand, your duties at MGM have a significant impact on your academic interests.**

In 1981, my wife and I started to work in the General Directorate of Meteorology. The reason why I was interested in climate change, drought, desertification, and atmosphere was because I had to specialize in these subjects because I was working at MGM, and all international correspondences were passed through our hands. In those times, atmospheric sciences, climate change were not commonly known by these names. I completed my master's degree in synoptic meteorology weather types. It was the first work for those days. Then, I started the Climatology Meteorology Department of the Institute of Marine Sciences and Geography of Istanbul University to be able to do a doctorate directly in climatology and meteorology. I was working at weather forecasts in shifts. Without eating, drinking,

or sleeping, I was finishing up my shift and was going to doctoral classes, and was seeing my teacher. I'm so sorry I couldn't see how my son had grown up... I did my doctorate on arid regions, and significant dry years in Turkey. It was actually the first at that time. "Will it be a doctorate from drought and rainfall changes?" people said, but now the whole world is talking about them all the time.

We carried out the first academic studies at MGM. We prepared the first peer-reviewed journal article in the Climate Change and Variability Unit, of which I am responsible, at MGM. We also carried out Turkey's first national climate change studies. We have prepared a voluntary national communication for the United Nations Framework Convention on Climate Change (UNFCCC), and drafted the 8th Five-Year Development Plan Specialized Report on Climate Change. We contributed to national and international studies in the Climate Change and Variability Unit at MGM. I was a reporter-editor in most national studies. Collective studies in public institutions require someone to write a report. A lot of raw information comes from institutions, but this information needs to be processed. Therefore, I wrote 60-70% of these reports directly.

MGM is one of the rare organizations in Turkey that works according to international standards. It works in accordance with the standards set by the World Meteorological Organization. MGM is therefore a national part of the UN specialized agency. It has an advantage with this position. It is indeed a great wealth for those who are interested. Being at MGM was a great advantage for a young specialist like me who aimed to study these issues. Because MGM was like an institute. When you worked at MGM, if you saw it as a practice school, you could learn many subjects there that you could not learn at any university. When I worked in the Department of Weather Forecasts, I directly had the opportunity to blend many things, both theoretically and practically, such as meteorology, synoptic meteorology, dynamic meteorology, weather forecasting and analysis, nautical meteorology, which provided me a lifetime advantage. At that time, many things were done in person, such as the preparation of weather maps, monitoring, observations, etc., but now it has all turned to automation. New generations do not have the chance to learn as much as I do without the direct practice of climatology, meteorology, and atmosphere. In the past we had it. I took advantage of this chance, I'm glad I did.

### **How did your transition occur from here to academia Was it among your goals?**

Of course... I completed my Ph.D. in 1990. Due to the state of universities after September 12, I actually had no intention of moving to academia. However, I received invitations to lectures on my studies at MGM. So, I taught Time Series Analysis on Climate Change and Cli-

matic Variability at Hacettepe Environmental Engineering Department for 6 years. It had been a very enjoyable 6 years. I also gave lectures on Hydrological Time Series Analysis and Climate Change at Gazi University. It was not easy to become an associate professor of classical physical geography with my studies, this was not widely accepted. Indeed, I applied for an associate professorship in 97', they did not even take it into consideration! Thus, I put aside this thought that came to my mind later about the university. However, in 2001, when the Council of Higher Education (YÖK) reorganized the criteria for academic associate professorship, the point system was established, and especially the articles in journals scanned in international indexes such as SCI came to the fore. And, I had enough articles. Thus, I became an associate professor of physical geography in 2002. After becoming an associate professor, I had searched in several universities to see if I could stay in Ankara, but it didn't happen due to their professional bigotry. A friend of mine with whom we dreamed of working together for many years had come to Çanakkale. Thus, I started to work at Çanakkale 18 Mart University as an associate professor in May 2004. I worked here for about 9 years. I held various administrative and academic duties. We



**Picture 1.** Prof. Murat Türkeş (face to the screen) at Geology class field study with Çanakkale Onsekiz Mart University Geography Department students. Çanakkale, 2010.

carried out good studies.

In fact, I founded a geography department, just like in advanced universities abroad, which has modern quantitative laboratories and often conducted field research. But during the Gulenist period, I was subjected to many investigations and conspiracies at the university and my health deteriorated. I retired in February 2013. Nothing was easy for us... Because I had always stood up for what I believe at the university and in all areas of life and everywhere, because I had lived and worked without compromising my left-wing worldview (philosophy), because I had established good relations with my students and the public and I had been in solidarity with them, because I had taken a leading role as a scientist in almost all environmental and ecology struggles in Çanakkale and Biga Peninsula since 2005 and had given voluntary scientific support to many NGOs against gold-silver mining, thermal power plants, etc. (I still

do), because I had tried to establish a contemporary department and academic environment at the university and partially succeeded, and for many other reasons, I disturbed the reactionaries and the university leg of Gülen Sect so that I was exposed to mobbing, harassment, conspiracy and several repeated investigations on the same issues during the period of 2009-2015 (I retired early in February 2013 because my health deteriorated and I wanted to live, but the investigations took a few more years, and I completely acquitted them all). But despite all this, I have never given up, I have not fallen back from any area of life, and despite all, I went through, and my health deteriorated seriously, I continue my life in Çanakkale as a progressive patriotic scientist in line with my philosophy.

**Despite your retirement, you still continue to work. You are also involved in the environmental struggle. Besides, you are a co-author of the Intergovernmental Panel on Climate Change (IPCC)...**

After my retirement, I worked as an associate lecturer in the Department of Statistics at METU for a few years. Since 2015, I have been a member of the Board of Management of Boğaziçi University Center for Climate



**Picture 2.** Prof. Murat Türkeş (second from the right) giving information to Fatih Mehmet Maçoğlu (far right) in his capacity of Ovacık Mayor regarding the damage caused by the Kirazlı Balaban Alamos Gold Mine to Sarıçay and Atikhisar Dam. Çanakkale, 2019.

Change and Policy Studies. I am also a part-time faculty member at Boğaziçi University, Department of Physics.

Since the day I started to work here, I have been supporting all democratic agendas in Çanakkale, and the environmental and ecology struggle here, in a very serious, even pioneering position. I voluntarily contribute to both the İda Solidarity Association and the TEMA Foundation in the review of environmental impact assessment reports, public participation meetings, and litigation processes. If I can, I try to support other non-governmental organizations as well.

Since climate change is an area that I have constantly been interested in, I also have had an interest and contribution to the IPCC, which started while I was working at MGM. This contribution has become more visible

since I entered academia in the 2000s. I have served as lead author or contributing author on various reports of the IPCC. I also served as the review editor for Chapter 12 of this newly published the Working Group I Contribution to the Sixth Assessment Report on Climate Change: The Physical Science Basis. If I am re-elected in the next term, I will continue these studies. These tasks are voluntary, as you know. In the last report, I was probably the only person from Turkey. As a referee, I also contributed to 5 sections.

**Well Prof. Türkeş, how does the IPCC work? How do the reporting processes work?**

IPCC is an intergovernmental science platform established in 1988 jointly run by the World Meteorological Organization and the United Nations Environment Programme. In fact, its establishment has two purposes. One of them is to initiate the intergovernmental negotiations of the UNFCCC. The initial structure of the intergovernmental negotiating committee consisted of representatives of national meteorological organizations that were members of the World Meteorological Organization, who were also delegates to the IPCC. But the main task of the IPCC is to meet the scientific requirements on climate change related issues in the Convention on Biological Diversity and the Convention to Combat Desertification, which are the main outputs of the UNFCCC, the Kyoto Protocol and the Paris Agreement and the 1992 Rio Conference. For this, the IPCC publishes a global climate change assessment report every five years. Five of these reports were completed. The fifth evaluation report was completed in 2013-2014. Finally, the Summary Report for Policymakers of the Working Group I Contribution to the Sixth Assessment Report on Climate Change: The Physical Science Basis was released to the world on August 9. In addition to these evaluation reports published every five years, the IPCC also prepares scientific reports if any special reports are required in the scientific fields I have just mentioned. Reports have been prepared for biodiversity, ozone depletion, greenhouse gas emissions, sinks and scenarios. For example, the IPCC has recently published two very important reports. One of these is the IPCC Special Report on Global Warming of 1.5°C, published in 2018. The second is the Special Report on Climate Change and Land, of which I am one of the lead authors and contributing authors. IPCC is a platform where a very important refereeing process is voluntarily carried out in the world, and that is why it is very valuable. Authors and lead authors, contributing authors and review editors are selected and assigned to these voluntary positions. Therefore, the reports become the main source in this field in the world just after the day they have been published. They present an evaluation of tens of thousands of quality publications published around the world over the past five years. These are not reviews, they are literally scientific evaluation reports. Although the Sixth Evaluation Report was delayed by one year due to the



pandemic, it has been found very valuable. Currently, it is at the top of the agenda in almost every country in the world, especially in countries that have witnessed severe weather events and forest fires due to climate change. In this sense, if you are working in this field -not only in terms of the physical science basis of it, you may



**Picture 3.** Murat Türkeş during the IPCC 6th Evaluation Report 1st Working Group studies. Toulouse, France, 2019.

be a politician, financier, business world, you may be an expert or technocrat in the public or local government - you need to follow the IPCC studies.

The working mechanism of the IPCC's is similar to other intergovernmental platforms of the United Nations. Indeed, the United Nations provides some of the financings it needs. But developed countries protect and support the secretariats of reports and special studies and provide funds for the studies. For example, the Netherlands may say that I will finance a study that will take 3-4 years. Therefore, the IPCC is a platform supported by both the United Nations and developed countries. Of course, the United Nations also provides financing from the contributions of member countries.

How was the sixth evaluation report prepared? At the IPCC plenary meeting, the contents of the sixth evaluation report are discussed and approved, and thereafter, author, lead author and review editor contributions are asked for each part of each working group through world focal points. Ministries send it to relevant public institutions and universities. Resumes of scientists and experts who would like to apply are collected and sent to the IPCC through the relevant focal point of the Ministry of Environment and Urbanization. IPCC selects authors, editors, and review editors from among them, taking into account the recognition, publication, and IPCC experience in the world. Those elected are appointed to these posts for a three-year term. It's a difficult process. Each report goes through four major peer-review and review processes, apart from its own internal peer-review process. Two of these are carried out when the report is made available to government representatives, and two when it is made available to the world. Then, the report is revealed to the world.

**To what extent do you think these studies are affected by market discourse? Especially after the 90s, environmental policies are dominated by a framework drawn by market instruments. With the dissolution of the Soviet Union, there was no focus left to restrain liberalism. In this environment, do you think liberalism affects scientific studies? In other words, do you think that the work of the IPCC may be shaped in line with the interests of capital?**

I don't think the IPCC's work has come out in favor of capital, liberalism, but this has implications in the Framework Convention. Preparations for the Framework Convention continued in the late 1980s and were adopted in Rio in June 1992. During the preparation period of the Convention, the world's socialist system and the Soviet Union were still standing. When I went to the first intergovernmental meetings in 1990, they were creating a serious balance with the People's Republic of China. But the dissolution of the Soviet Union, paving the way for liberalism, and the fact that globalization came at the top of everything, especially in the late 1990s and 2000s, undoubtedly affected the climate change negotiations and their legal basis. For example, the UNFCCC was almost entirely aimed at combating climate change, eliminating the negative impact of humans on climate change, and protecting nature. It should be said that this Convention, which supports sustainable life, is a very serious legal basis for developing and underdeveloped countries to be least affected by the effects of climate change and to support them in this fight. Many of its principles are very humanistic and naturalistic in this sense. However, the dissolution of the USSR and the transition of the former Soviet countries to the market economy and approaching the West also affected the Convention process. For example, after the dissolution of the Soviet Union, former socialist countries were defined in Annex I to the Convention as countries undergoing the process of transition to a market economy. Almost all of them are now members of the European Union. Look how far in advance the capital gets prepared! For the first time in the Kyoto Protocol flexibility mechanisms were introduced, namely emissions trading, the Clean Development Mechanism and Joint Implementation. These mechanisms pay regard to market economy processes and globalization. So, the main message was this: you would fight against climate change and your capital would earn money from it and you would have the chance to grow your capital... In the Kyoto Protocol, there were quantified emission reduction targets for countries. But the work began to be cut loose with flexibility mechanisms. The hot air problem has emerged<sup>1</sup>. These mechanisms were in fact established to enable EU and OECD countries to make money from abroad, as well as to reduce emissions in their own countries. Developed countries, especially the USA,

<sup>1</sup> The excessive amount of tradable carbon units assigned to former Soviet Union countries due to the economic regression after the dissolution of the USSR.

did not like the limitation of meeting all of the quantitative reduction obligations in the Kyoto Protocol with flexibility mechanisms, and most of them did not fulfill their obligations. As you know, the USA also withdrew from the Kyoto Protocol. The Kyoto Protocol failed. It did not die but crawled. In the period leading up to the Paris Agreement, 15 unsuccessful years passed in the fight against climate change. Currently, liberalism, market economy, globalization, large capital groups are also very influential in the Paris Agreement. The Paris Agreement is completely voluntary, there is no longer an expression of obligation. There are fancy words like nationally designated contributions or statements of intent. It is tried to be maintained that the more you intend, the more satisfied we will be. Despite being such a loose and weak structure, six years have passed since it entered into force and the Paris Agreement has done nothing. To be effective, it had to reduce global greenhouse gas emissions by 50% from 2010 levels. Besides doing nothing, even if all the nationally determined contributions are fulfilled—none of which happens—it seems to be well below this level. So the world's grade is totally bad, between 0 and 1. Last April, the new president of the United States, Joe Biden, convened a climate summit. There, intention statements spin a yarn. They envisaged a 40-50% reduction by 2030. At the UNFCCC 26th Conference of the Parties to be held in Glasgow in November, these declarations need to be translated into legal texts so that the Paris Agreement can move towards the 1.5 °C global warming target. The new report remains optimistic if action is taken, but there is no tangible progress yet to be optimistic.

**When said there is no reason to be optimistic, I would like to get your opinion on the situation that is presented as the climate disaster. In the media, it is often introduced as “climate is changing, the world is coming to an end” or “great disaster”. Instead of climate change, it is now called the “climate crisis”.**

The word “crisis” is not relevant. You can use the expression crisis to emphasize the diplomatic side of the issue. But to describe what we are struggling with, it is necessary to say “climate change”. Non-governmental organizations and some academics directly use the term climate crisis when they speak about it without ever mentioning climate change. Crisis, after all, has happened... After a disaster, crisis management occurs, for example. If you don't talk about climate change, you won't fight. Let the politicians look as if they are doing something. But we must protect the main concepts of climate change and variability. We must preserve these concepts in order to be able to take precautions and predict better. But if you want to say fancy words, for example, you can ask the government or local governments, “What are you doing about the climate crisis?”. But you cannot say that these disasters happened because of the climate crisis, we are talking about disasters triggered by climate change. It should not be used

everywhere.

**The IPCC published its final report on August 9, to which you contributed. What is said in this report briefly? What does this report bring? Is there an exaggerated catastrophic situation in the future that awaits us? What kind of future awaits us?**

It's actually not exaggerated. It was said that the global average surface temperature would rise between 1.5 and 4.5 °C, approximately 3 °C with the best estimate, in climate change scenarios and model studies of the IPCC and similar intergovernmental organizations, which can be considered very primitive compared to today, in the early 1990s. 30 years later, the same predictions are mentioned in the new report of the IPCC. Here, the message of the IPCC's new report is very important. First, this report, unlike previous reports, very clearly expressed the human impact on the climate system without using probabilistic terms. Second, it was clearly stated that climate change has reached an irrevocable point and is at a level that has never been seen before. Another main message of the report is that climate change affects all parts of the world. The report includes regional analysis and evaluations. As in the 1.5 °C Global Warming Special Report, it was also underlined in this report that although it was late in the fight against climate change, we needed to reduce greenhouse gas emissions very quickly. Here it still gives a chance. In the new assessment of the IPCC, the global warming level is 1.1 °C. In other words, we have increased the global average surface temperature by 1.1 °C since the industrial revolution. This is the fastest temperature rise in the last 10,000 years. In the last two centuries, we have achieved a temperature increase that is comparable to the warming in the last interglacial period 125,000 years ago.

One can say what will happen with 1 or 1.5 °C global warming. However, this is a global value. The annual average of the annual averages of temperatures at mea-



**Picture 4.** A memoir from the IPCC Climate Change and Land Special Report Desertification Chapter Editors' Meeting. Prof. Murat Türkeş is at the back row, third from the right. Colombia, 2019.

surement points on the globe. This is a very general statement. The regional and national repercussions of 1, 2 or 3 °C global warming are very strong. The new report has very nice maps about it.

For example, global warming of 2 °C means 2 to 4 °C warmer conditions in the Turkish part of Mediterranean Basin in coming decades, while Turkey has started to experience 1.5 to 5 °C warmer weather conditions in many stations in the last 70-80 years. So, Turkey is a warmer country now. Although there is a winter season, Turkey is a country where tropical conditions begin to dominate in a large part, high temperatures break records, and the duration, number, intensity and size of heatwaves become much stronger. If the pessimistic scenario comes true, that is, if the global warming is 4 °C in the coming decades, its reflection in the Mediterranean and Turkey will be 4 to 8 °C above annual averages. The effect of this in summer means 10-12 °C.

These results are very consistent with our studies. In the coming years, the duration, frequency and severity of droughts are expected to increase in the Turkish region, as in most of the Mediterranean basin. It is predicted that precipitation will decrease very rapidly in Turkey. And it is clearly stated that droughts in Turkey, especially agricultural, hydrological and ecological droughts, will be much more severe and much more effective in the coming decades. Despite the wrong policies, Turkey is still an agricultural country. Since severe weather-climatic events occur in every dry period, serious agricultural product yield losses are experienced. According to the IPCC report, the decrease in precipitation, high temperature, and decrease in soil moisture indicate that agricultural droughts will increase in the future in Turkey.

It is predicted that the sea level will rise by around 30 cm on a global scale by the 2050s, and by around 1 meter by the end of 2100. Permanent snow cover is rapidly decreasing all over the world. The IPCC report also predicts that the remainder of the polar glaciers, sea glaciers, ice shields and Alpine glaciers in mountainous areas will melt very quickly.

The report states directly or indirectly that to avoid future catastrophes due to climate change-related disasters, although it is too late, policies should be implemented immediately to reduce greenhouse gas emissions and the Paris Agreement should be strengthened.

It is also underlined in this report that the hydrological cycle is strengthening. Global warming increases evaporation. The moisture-holding capacity of warmer air masses increases. Thus, there is a drastic change in hydrology and water resources. When the hydrological cycle strengthens, if any, precipitation can turn into a disaster. We see this in the Black Sea, for example. In many parts of Turkey, especially during the hot period of the year, precipitation is much stronger and occurs in the form of excessive precipitation from time to time. It is predicted that these will increase in many regions in the future. For example, the Black Sea is a very sensitive region. Because the Black Sea itself is a source

of moisture and the north-facing slopes of the North Anatolian Mountains are affected by the systems coming from the north. That's why it rains in summer. We also understand from the general evaluations of the report that in case of precipitation in Turkey, especially in the Black Sea region, it may fall in the form of stronger, more severe, and excessive precipitation. Our studies also confirm this. We are also part of the subtropical Mediterranean climate. In a warmer world, Turkey will increasingly be under the influence of tropical air masses and tropical weather systems. This seems to lead to a rapid increase in the highest air temperatures in Turkey, to intensify and strengthen heatwaves, to decrease in soil moisture, and to increase the probability of large forest fires in summer. When we evaluate the results of this report, we are on the losing side. But no region could benefit from climate change, as was once thought. All countries of the world are currently being affected by the negative impact of climate change. The summer of 2021 corresponded to a year when severe weather-climate events and disasters occurred frequently in every region of the northern hemisphere. Tropical cyclone season started early in America. It can also be expected that tropical cyclones and hurricanes occur more intensely over a longer period of time, under the condition that seawater temperatures exceed 27 °C outside the equator.

In such Turkey, where evaporation is more and the hydrological cycle is accelerating, it is necessary to consider that winter precipitation, as well, may turn into disasters. When humid hot air masses meet cold air in Turkey, the frequency of tornadoes increases. Turkey is currently a hotspot country that is among the countries most affected by climate change. Turkey needs to weave and plan a future that takes climate change into account in all sectors, by considering all human and natural systems.

### **So, very challenging days await us both in terms of biological diversity and socially...**

Yes. We are not the only ones living in the world. There are ecosystems, there are associations of life, there is biodiversity in the broadest sense. Turkey is also a very rich country in this respect. Turkey's ecological biogeography is very valuable. A country where three major biomes meet, and many vegetation formations coexist. Many species still exist since before the last ice age. There is twice as much biodiversity in Europe as in Anatolia. That's why we have to plan and weave the future that will protect both human systems, and natural systems and biological diversity.

**At this point, adaptation comes to the forefront. In other words, when climate change mitigation is so weak, adaptation policies need to be much stronger. I personally think that this can only be realized with central planning. Success can only be achieved if all**



**social processes and resources are planned from a single body... How do you comment on this?**

I absolutely agree. We see what happens in the absence of central planning. Let me give an example, in 1998 heavy rains occurred in the western Black Sea region and floods turned into disasters. Dozens of people died. What was the problem? Due to the pressure of the increasing population, unlike in the past, Cities in the Western Black Sea Region, Organized Industrial Zones, new residential areas were built in floodplains, and even in the main channel of river, which had to be protected geomorphologically. At that time, weather observation and radar systems were established with the resources of the World Bank. The aim was to forecast the next heavy rains. This did not happen. Meanwhile, all these disasters were repeated almost every year in both the western and the eastern Black Sea. Although there are regulations and action plans, since there is no strong central government and the rent-based urban economy is prioritized, both local governments and central government could not prevent the improper settlements in the western or eastern Black Sea region, and this time disaster happened in August 2021 in the Western Black Sea region again... Serious loss of life and property happened, historical-cultural heritage, biodiversity were destroyed in flood. In order to prevent these, a multi-disciplinary, multi-sectoral participatory understanding is required. Here, it is necessary to give importance to natural sciences without giving place to professional bigotry. There is only an engineering approach in these applications. There are no physical geography, geomorphology, climatology experts, meteorologists in institutions dealing with disasters and climate change. It is absolutely necessary to re-plan disaster areas by taking climate change into account, with a central management approach that understands and considers nature, makes use of natural sciences expertise, and sets back rent.

Floodplains should be completely reorganized in such a way that they can be used as multi-functional landscape areas that need to be protected in the city. Apart from that, central planning is required in the fight against drought, which will reduce water demand, stop supporting wrong product patterns, and control illegal water use. Otherwise, we may dramatically fail in adaptation to climate change as we cannot mitigate it. Success in mitigation and adaptation can only be achieved through a public perspective, a scientific and planned approach. Today's public order, the structure of institutions, despite all their good intentions and all legal regulations, cannot provide this. Something must change rapidly.

**Does the ratification of the Paris Agreement signal this change? How do you evaluate Turkey's stance on climate change diplomacy so far?**

MGM has been the driving force in national climate change work for many years. Other institutions also got involved with the urging of the MGM and the Ministry of Foreign Affairs. But unfortunately, especially financier ministries, institutions and organizations, business world and industry tended to see the climate change fight in the framework of UNFCCC and Kyoto Protocol as a group of international agreements that would reduce their profits and undermine Turkey's development, energy, employment, and job opportunities. Therefore, we saw that the process accelerated from time to time, but the main idea behind it never changed. The Republic of Turkey became a party to the UNFCCC in 2004 and to the Kyoto Protocol in 2009 with a delay and did not take any direct obligations. Despite these delays and the fact that the special situation that makes it different from other Annex-1 countries while being a party to the UNFCCC was accepted by the Marrakech decisions, Turkey has not been able to give a direction to the fight against climate change in accordance with its own capacity, unfortunately. Therefore, the issue of climate change and related fields were hardly ever included in the development plans. Climate change may have been noted somewhere in the plans, but an effective initiative that could produce serious long-term results and ensure that the present and future generations of people living in Turkey are less affected by climate change related disasters has not found a place on legal grounds. Turkey has not been a party to Paris Agreement until today, although it has gained very special rights after all this long climate change quest. It is a step forward that the Republic of Turkey ratified the Paris Agreement before the 26th Conference of the Parties to be held in Glasgow. However, in the text of the justification sent by President Erdogan to the Grand National Assembly of Turkey for the ratification of the Paris Agreement, it is declared that the Agreement and its mechanisms will be implemented provided that they do not prejudice the right to economic and social development. It is too early to make predictions about Turkey's future policies. However, this statement gives the impression that Turkey can continue its demands on issues such as leaving Annex-1 of the UNFCCC and benefiting from financial mechanisms allocated to developing and underdeveloped countries such as the Green Climate Fund, which have been ongoing for nearly 10 years.

**My last question will be about the academic aspect of the subject. How do you evaluate the academy's interest in climate change studies in Turkey? Are these studies supported? What is the level of interest of academics? How do you think universities approach this issue?**

Climate change interest in academia has skyrocketed over the past decade. Currently, I see that young academics are interested in studies on climate change, drought, desertification, climate change related severe weather events, disasters, forest fires and climate change adap-

tation city planning. However, in our country, the interest rises suddenly, but serious, permanent, highly recognized international studies are not produced. Studies are supported by TÜBİTAK or universities' resources, but their effect is not as much as at the rate of these incentives. In other words, good publications do not come out of these studies. Another problem is that the public and local governments have little to do with the results of climate change and related scientific production. So, these studies are not used much. Of course, there is also the fact that the public and institutions that will support these scientific studies discriminate academics for various reasons. In addition to this, professional bigotry creates very serious pressure in this area. The number of scientists selected from Turkey to the IPCC for years still does not exceed 1-2. This number is expected to be higher in a country like Turkey. In the next IPCC report, I wish 20-30 scientists from Turkey to be involved in this process with various assignments. But it also requires lots of serious studies to be done.

Moreover, the work done in academia is not sustainable. In other words, a little bit, trends are caught, fashion is followed. It is started by saying, "This subject is very popular now, it can be published in various journals", but that subject is not followed persistently. Therefore, these studies are almost never recognized. However, if academics specialize in a few subjects and study various aspects of it, their recognition will increase, their work will receive much higher citations and the impact factor will increase. I think we are weak in this regard as well.

**Professor, thank you very much for your contributions to climate science and for answering our questions.**