



Speech of the President of the Max Planck Society

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At the Occasion of Celebrating the 20 Year Anniversary of Max Planck Partner Groups in India

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– Check against delivery –

When I visited *Gandhi Smriti* earlier today, I was very moved. My visit reminded me of what a human being can achieve. Someone who is determined, dedicated, and charismatic. He was convinced that, as he once said himself, “In a *gentle* way, you can *shake* the world.”

Do we know what this means? Although, clearly, Gandhi is a unique phenomenon, what he said also applies to scientists. We as scientists can also shake the world. And as scientists we often do so in a gentle way, or let’s say: quietly. When I was young there was a show on German TV entitled “The quiet stars”. This show was a series of interviews of Nobel laureates, the quiet stars, the stars of science.

Science can change the world quite dramatically. Just think about this: What would the world be without electricity, antibiotics or tele-communication? Such major developments enter our world only after many small advances have been made by the community. It was shown that many *incremental* scientific advances are required to build a foundation before *disruptive* changes can occur. We all give our contributions to scientific progress.

Today we have gathered to *celebrate* our contributions to this progress, may they be smaller or larger. And to celebrate our *collaboration*, in particular our Max Planck Partner Groups here in India. Science is a community effort, and we all need our colleagues. They are not only our collaborators, but also our peers, mentors, coworkers, evaluators, or competitors.

So – a very warm welcome to all of you, in particular our past and present Partner Group Leaders and to all our guests!

And many thanks indeed to Kaspar Meyer and his team for hosting us here at the German Embassy in New Delhi!



It is exactly 20 years ago that we started the Partner Group Program. And believe it or not: since then, a total of 85 Partner Groups were established in India at 41 different institutions. This is just wonderful! Of these groups, 27 are currently co-funded, doing research in many different fields and at 19 different institutions. Maybe I can already *conclude* one thing at this time: Provided this success, we can be looking forward to the *next 20 years*!

Today is actually the beginning of a larger tour that will take our delegation also to Singapore, Japan and South Korea. As the Max Planck Society, we wish to renew our international strategy, strengthen *existing* collaborations and seek *new partners* around the world. What are the rationale and the spirit behind our international strategy? First of all, we wish to conduct excellent research, and this often requires collaboration that enables synergies due to complementary approaches, or shared technology development.

In this context – why is *India* so important for us? Well, just look at how Indian science has developed over the last years. In the summer of 2023, scientists from India sent a clear signal to the world: The spacecraft Chandrayaan-3 landed on the lunar south pole. India joined an exclusive club, being one of only four countries that made a soft landing on the moon. And a Mars mission has also been completed.

Or take the life sciences. The world also looked at India during the COVID pandemic. A total of 60% of the world's *vaccines* are produced here. The Serum Institute in Pune is the world's largest manufacturer of vaccines. And, by the way: Together with Indian colleagues, Max Planck researchers in the team of Stefan Kaufmann are developing a novel vaccine against tuberculosis. These are really things that may not only shake but also change the world.

At this time, we can already look back at many years of collaboration. Our two Max Planck Centers here in India were amongst the first to be established worldwide. The *MPG India Office* at the German House for Science and Innovation here in Delhi was opened 10 years ago already.

And we continue along these lines. During this tour, we will visit some world-leading institutions, including the Indian Institute of Technology here in Delhi, the Indian Institute of Science and the National Center of Biological Sciences in Bangalore. We will also sign a Memorandum of Understanding.

By the way, do you know that India overtook Germany five years ago when it comes to the number of scientific publications? India is now ranked 4th in the world, following the US, China and the UK. India is a global player in science. Really, I think it is appropriate if you as Partner Group Leaders claim a little share of this success story!



Also, I trust that India stays on this path. Last year, the National Research Foundation was established with the aim to broaden the base of research across all publicly funded universities and colleges.

Despite these successes, science in India also faces *challenges*. One of them is a trend, namely that many of the scientists are moving elsewhere. India has become the world's largest outsourcer of computer programmers. Based on data from 2010, over one third of the top 1000 researchers of the Indian Institute of Science moved abroad, now working mainly in the US.

And we are also benefiting from this trend in Germany. In the year 2021, the number of Indian students at German universities had risen to 28,572 and ranked 2nd after China. And at the Max Planck Society, 14% of PhD students and 10% of Postdocs come from India. Last year, our Max Planck Institutes hosted over 1,300 visiting researchers from India. Some of them also obtained director or group leader positions.

Indian scientists are very welcome at our institutes. And without doubt, we benefit enormously from our international scientists and their many contributions. We are very grateful for this and *wish to give back*. This is one more reason why we promote more exchange and collaboration. And we want to continue to support Indian coworkers when they return home and set up a laboratory here. This is where our Partner Group Program comes into play: It provides some support to get started and helps to maintain links to Germany.

Just three examples of what the Partner Group Leaders do: Medhavi *Vishwakarma* at the Indian Institute of Sciences combines applied cell biology with soft matter physics to investigate biological phenomena such as cell migration in epithelial tumors. Or take Tanusri *Saha-Dasgupta*. She is a physicist working on condensed matter and became director of the Bose National Center for Basic Sciences. And Durgesh *Tripathi* has dedicated the past ten years to developing the Solar Ultraviolet Imaging Telescope, one of the main payloads on the Aditya-L1 mission that studies the solar atmosphere.

These are just *three of many*, but you can also see the success of our collaboration when you look at statistics. In 2022, 69 collaborative projects were ongoing, and Max Planck scientists published 477 shared papers with scientists in India, actually a share of 4% of all our papers. These successes are really a good reason to celebrate together.

Let me now turn to a more general consideration for the future. I am convinced that international cooperation helps us to tackle global challenges. We *share* many challenges, and some of them are even greater for India than they are for Germany or Europe.

Today I can only mention three of these challenges. I do so not only to make us aware of them again. No, I will also try to outline how we can work together to tackle them at least to some extent.



First things first: *climate change*. Extreme weather events are increasing in number due to climate change, and India is highly vulnerable to them. Floods, landslides or coastal erosion pose threats to human health. In the first nine months of 2022, India recorded an extreme weather event nearly every day. We also know from a study that was published in *Science Advances* last September that rising temperatures accelerate groundwater depletion rates in India and the resulting water shortages can endanger food production.

It seems that the only way to respond to these dangerous developments is to take care of three things in parallel: cutting emissions, taking measures for climate adaptation and conducting research on climate mitigation.

With respect to the first point, there are encouraging news: In the Thar Desert in Rajasthan, India built the world's second-largest solar park. It contains 57 square kilometers of photovoltaic panels that can generate over two gigawatts of energy, more than a medium-size nuclear plant.

We have less sun in Germany. But the government is making big efforts to increase renewable energy production and to reduce emissions. Last year, *half* of our electricity came from renewable resources and it is planned to be 80% by 2030. We at the Max Planck Society will contribute our share. We just published a Climate Action Plan that aims at cutting our emissions by half until 2029.

India's national Climate Action Plan is also highly ambitious and we appreciate this. It aims to increase the share of renewable energy to 40%, to reduce emissions of the economy by a third, and to create an additional carbon sink of up to 3 billion tons of CO₂ equivalent through additional forest and tree cover – all of this by 2030. By the way, India and Germany concluded a Green and Sustainable Development Partnership in 2022, which is very encouraging.

No doubt, science is giving important contributions to tackle climate change. Three of our Partner Groups here work on this: Gunthe *Sachin* at Madras, Dhanya *Pillai* at Bhopal and Vinayak *Sinha* at Mohali. They provide a better understanding of atmospheric chemistry, aerosols, and the sources and sinks of various greenhouse gases. I think Dhanya and Vinayak are here!

Clearly, your work contributes to providing a strong basis for what is needed next: new ideas and approaches to *mitigate* climate change. Recently, there have been highly influential papers from India on strategies to reduce air pollution and on new materials for green hydrogen production. If you have good ideas with respect to climate mitigation research, then please let us know, maybe we can join forces.

The Max Planck Society is also active in facilitating the required transition to a sustainable future. We just announced three new group leader positions in the field of *carbon capture* technologies. We will



also redirect our old institute in Düsseldorf towards renewable materials. Think of green steel or the recycling of metals that can prevent emissions in the first place.

Let me now switch to the second grand challenge, the incredibly fast-moving field of *artificial intelligence*. We all know machine-learning methods are transforming science and society. Already in the 1980s, India initiated the rise to become a leading nation in computer science. It was prime minister Rajiv Gandhi who strengthened ties with the West and led the way into the computing age. By now, India is a *leader* in computer science.

At this time, a few big global players are moving ahead in developing AI very rapidly, with science beginning to lag behind. However, it is important that publicly funded research continues to contribute to the development of AI. One thing is that we should stay in a position to *compete* with companies for *talent*.

But science should also develop AI in fields that are important for the future but maybe not the focus of industry. Think about the interfaces between AI and earth system sciences, synthetic chemistry, or the social sciences. At Max Planck, we are in a position to have experts in all these fields. And we are developing an AI strategy. Here I also see opportunities for cooperation.

As you all know, AI also has its *negative sides*. To mention just one: In Europe we currently see a huge amount of disinformation in social media and we also see that this promotes right-wing extremists and can even influence elections. As far as I understand, here in India the government has an increasing influence on social media companies like X, formerly known as Twitter, or Meta. Due to the IT rules that India adopted in 2021, sharing content on social platforms in India can make one liable to prosecution. How to go about these issues is difficult but one thing is clear: Democracies must be able to defend themselves against fake news, massive disinformation and the manipulation of elections.

This brings me to the third and final challenge for today: the impact of geopolitical conflicts on our science and on our democracies. In a few days, on April the 19th, parliamentary elections are starting here in India. These are the largest democratic elections in the world. In total, almost one billion people are called to vote, more than ten percent of the world's population.

This democratic system is also why India is considered an *important partner* in Germany, even more after the geopolitical developments in recent years. Do you know that 1,800 German companies have already established branches in India? There is still potential, as this is in comparison to about 10,000 German branches in China. That the *world order* is changing is to a large extent due to these rapid economic developments in Asia.



Let me also mention how geopolitical conflicts can often have negative consequences for our science and our democracies, and how these can strongly differ in different parts of the world. For example, Germany relied on Russian natural gas for many years. After Russia invaded Ukraine, we stopped importing gas from Russia. As a consequence, energy prices rose very steeply in Germany, which directly affected our work.

Germany also stopped all scientific collaborations with Russia, and this did damage to our research. Just to give you an example: we recently published a view of all energy-rich sources in the universe, based on a new detector called “eRosita” that was built by Max Planck scientists and brought into space on a Russian satellite. In the published data, *half of the sky is missing*, because data East of the center of the milky way belongs to Russian scientists.

There are other geopolitical conflicts that concern us as the Max Planck Society. Because conflicts are complex and because opinions on them differ, especially with people from over 130 countries working with us, there is always the risk that these conflicts will be carried to our institutes. For example, take the distressing developments in the Middle East. Facing these, we should stand united as international scientific communities. In November, I reiterated our commitment to welcoming researchers from all over the world, especially also from Arab and Israeli, Muslim and Jewish backgrounds.

In these challenging times, one thing is of *central importance*: maintaining our *discourse*. We need an open and constructive discourse, in which changes of perspective remain possible. Such scientific discourse is the essence of our search for truth. What hurts us are polarization and political activism.

Therefore, in addition to our scientific aims, there are overarching goals. The *language of science* is universal. It can build bridges between people despite numerous geopolitical conflicts. The *nature of science* – seeking the truth – unites us. It has an intrinsic value for all societies. The *voice of science* must be loud and clear. It can distinguish fact from fiction, enable evidence-based political decisions and can build bridges in a multilateral world.

Let me conclude. It is clear there are many challenges that we share, may it be climate change, the AI revolution or geopolitical conflicts and threats to democracy. Science offers a great potential to address these challenges. And I think we can make best use of this potential if we continue to work together.

In this respect, I see great opportunities for collaboration between the Indian and German scientific communities. During our stay we will visit several leading Indian institutions and discuss how we can build on our strengths, take our projects to the next level or start new ones. We much hope that this way we can further build our partnership and our friendship.



This brings me back to the beginning of my speech and my visit to *Gandhi Smriti*, where Gandhi lived the last 144 days of his highly influential life. Today I learned that just before his assassination 76 years ago, Gandhi asked himself: "Will our world always be one of violence? Will there always be poverty, starvation, misery?"

I cannot answer these fundamental questions. But one thing I know for sure. As scientists we have the ability – and the responsibility – to seek answers to such questions together. I am sure that for many of us, this is part of our motivation. Our motivation can arise from a combination of *pure curiosity* and a *sincere hope* to contribute to a better world. We can draw a lot of energy from this. We can *encourage* each other, *share* our insights, and *develop* ideas together. This is another reason why I am here with you tonight.

Thank you and all the best for the future!