Dear Minister Kleiber, Excellencies, ladies and gentlemen,

Thank you very much for invitation and for an opportunity to address a few thoughts to this conference.

There are major political milestones ahead of many countries of Central European region – NATO summit in Prague in November, as well as final phase in our accession process towards the EU. Maybe the research cooperation is quite a bit more advanced than cooperation in other fields. Nevertheless, there is still something to discuss about also in this topic.

From a very general point of view, Central and Eastern countries do not have any substantial problems regarding international science and technology cooperation. Basic legal aspects are solved, our countries and institutions/laboratories are fully accepted by our partners based upon their performance. There are no “technical” obstacles in cooperation.

However, there is still much to improve.

Although this is an international forum, let me first briefly mention internal – domestic – issues. Countries in transition are by definition usually more concerned about transformation of their political structures and economies. Whilst the political issues are in general clear, transition of economies is still in process. That is why many of CEE countries are still paying more attention to economy, privatisation of state monopolies, to bank sector. And, as research does not stand alone, this speech will touch also some links between research and economy on one hand and research and education on the other.

We all have to bear in our minds, that there are many deep changes in the Europe happening at the same time. EU enlargement is the issue of a crucial priority. Over ten years ongoing process in the “East” - transformation in policy and politics, transition of economy, substantial turn-around of the social sphere. All these changes influence also science and technology. Immediately a question arises: are these changes influenced by science and research, too?
science and technology just drawn by the above changes and responding to them, or does it play an active role in preparation of policies?

I think, that the current status and future can be described by two words:
1. Cooperation;
2. Competition.

Now, let me elaborate a little bit on the above issues:
1. Few comments on cooperation:
   a. According to surveys, science and technology (research and development) are leading engines for competitive economy, for social benefits – and, in general for well-being of the people. Currently, there are no doubts that it can be achieved only by integrated efforts of all “players in the game”.
   b. Integration can be understood in many ways. We should clearly distinguish between “integration” and “unification”. For example, nobody wise enough will not for sure propose “unified culture”. It is more about integrating economies of the countries. As science and research is concerned, it is not only about integration of particular national priorities, but also about integrating research with economy. The question is: to what extent research should be integrated to economy? Maybe the answer is obvious for applied research, development and innovation. The more the better. What about basic (fundamental) science as a source of new knowledge and its potential future use? What to support and by which means? What is – or will be – the role of the OECD, the role of an individual Government and the role of private sphere?
   c. Formal steps in integration are not enough. We must also prepare and enforce an integral policy in science and technology (and, of course, in economy and social sphere). The first steps in science and technology has been already set:
      i. Common (joint) programmes – even being financially “small” comparing to national science and technology expenditures – become real activities tied up with national efforts and priorities;
      ii. Opening-up national S&T (R&D) programmes. This might and should foster new international projects.
   d. It is clear, that science and technology does not stand. The whole process has to be formed in a very balanced position, to be for mutual benefit for all participants. It is not just the financial support that matters – although it is a very substantial precondition. All the countries involved are obliged to create and support “friendly environment” for development the science and research and their
practical utilisation – use of results - in social and economic life. What might be the concern for all?

i. Transfer of knowledge “from laboratories to producers and further on to consumers”. This will need both direct involvements of the state(s) and the OECD, as well as indirect actions – tax incentives being one of the examples.

ii. Attracting public interest in research. It is quite easy to prove, what are the benefits we enjoy thanks to science. It is much harder to prove that investments pay-off. Notably, this problem arises if a short-time perspective is considered. However, it seems, that “marketing the science and research” is far behind other sectors, much more attention is paid to “failures” (disputes about nuclear energy, about greenhouse effect, about ozone layer, about genetically modified/improved food, etc.). Should only the media to be blamed?

iii. Especially important is to bring back young talented people in scientific and research carriers. It was – not so far in the past – considered as a very honest and respectable job. However, it is not a secret that nowadays this sector suffers by lack of interest of young people, but it is underestimated also by a lot of decision-makers. Mostly by those who are strictly short-term-profit oriented. Let’s be fair and let’s try to adapt to prevailing sense of society: fair value for the fair price. So, if it is – and it is – in interest of the society to have new excellent people interested in science, the society has to create conditions for them. Otherwise, they will seek their future in banks and elsewhere.

iv. Equal rights and equal opportunities for all. It is easy to say, harder to pursue. Efforts to involve women, handicapped and minorities are started, much more is beforehand.

v. Thesis “Governance for Science and Science for Governance” should be put in practice. As of today, there is not only visible separation between different sectors (science versus applied research versus industry) but also clear lack of communication between political representatives and top scientists. One has to be able to listen the others for benefit of all.

vi. The best cooperation can be established between those, who are “close”. The term “close” is not to be geographical; it might cover similarity in cultures, in tradition, in history, in interests and goals, in political and economical status, etc. It seems that one of the biggest inequalities – as far as science
and technology concerns – is a gap relating to facilities and equipment among OECD members. In case of CEE countries, it is mostly inherited and we cannot change the past. I would rather mention some ideas how to improve the situation so we all could move ahead. I am sure that as the investments to research will substantially enforce progress in economies and social sphere, so it will be useful to have coordinated efforts in strengthening research infrastructures in CEE countries. Maybe the “rich” could more think about targeted support to build and renew facilities and equipment in the laboratories in “developing countries”. Such proposals have been already raised, but not accepted.

vii. Science had for times been maybe the most “open” sector. Even at times of an “iron curtain” there was at least some cooperation. If not particularly strong, of course, there were mobility programmes like Fraunhofer stipends or Fulbright scholarships. And, scientific journals were the most common place for exchange information. Now, mobility of the best and young became a widespread activity for fast improvements. It is one of the biggest achievements. However, what one can expect if either a recognized professor or talented young scientist finishes his/her time at the Western laboratory and he/she knows that back home the conditions are not adequate? I am not meaning the salary – although it is also a sensitive issue – but facilities and equipment. That’s the reason why a number of them seeks for extension to stay abroad – and year after year they are more rooted there than at home country. We often hear, that in the times of internet, it does not matter, where the people are working. I have to say: Yes and no. Maybe it does not matter in science and research itself, but it for sure matters at least in the university education. The best are the future; they have to take leading roles also in preparation of their followers. Who can better ensure quality in education and in general a quality of new generations of scientists, engineers, technicians, than those who are the best today? What will be the situation in just twenty years if majority of the current best people decides to live outside? Such a situation will inevitably lead to increasing the gap between countries instead of strengthening their cooperation.

viii. Therefore the idea of “return grants” is worth to think about. Due to this idea, those who will return back home after spending some time – a year, or two or three – abroad, will
have a chance to compete for let say one year grant for working at their home laboratories. This grant will not only ease their return, but it should cover also some modest support for equipment. The best example is initiative of the National Institutes of Health in the USA.

ix. What I would like to stress now, is the “way to success” in multilateral research cooperation.

x. At first, there must be favourable internal (domestic) environment. Situation in Eastern countries differs one from another. While in early nineties, shortly after political changes in the CEEC started, support for science and research declined dramatically basically in all CEE states, late nineties brought about quite different approaches. Decline in early nineties is quite understandable – general reshaping of priorities, hence also state budgets and expenditures. All CEE countries faced a very substantial change in structure of their science and technology organisation. The issue concerns for example the role of the Academies of Sciences, the role of Universities, the role of public (state) research bodies, the role of private sector. After a while, new approach to research emerged. Some of the CEE countries recognized it as one of key factors for further development; some others stressed another priorities – mainly structural and economic ones – not considering science and technology as a tool for prosperity. Hence, both direct and indirect support for research is increasing in countries like Hungary, Slovenia, and Czech Republic on one side, and it is decreasing in relative figures in Slovakia on the other side. The same applies to support related to international research cooperation.

xi. At second, an appropriate level of expertise and international recognition of the person/team/institution is a condition. We all know, that to find a partner abroad is a tough work for an unknown organisation and/or person. One has to prove results. Here the circle is sometimes closed: to have results, one need to have international recognition, but to have international recognition, you have to have results. The only way out of this circle is selective and strong support for the best from domestic resources. It takes time to become successful, but it is the only way. The CEE found the way – variable means for support are already introduced. It is nothing new, different agencies and resources are well known in the Western countries.
xii. At third – and it is often forgotten – multilateral begins on bilateral. Nobody is, so-to-say, “born” for multilateral success. It is hard to compete and even harder to win. Therefore we think, that bilateral agreements on various levels are the best starting point. These include personal contacts, conferences, seminars, workshops, cooperation of institutions, and at last – but not least – governmental agreements. All of these activities must be supported to the highest possible extent. The last ones are not only “political expressions of good will”, but, if properly prepared, they also set priorities of common interest and financial resources for participants.

xiii. Let me mention also one particular topic – regional cooperation. It means cooperation within regions of various countries – mostly neighbours. This tool is – or should be – a very powerful instrument gathering people and teams and institutions in cross-boundary regions with the same goals and interests. It should overlap – or by-pass? – agreements between respective Governments on one side and internal domestic policies on the other side. Nowadays, the frontiers should not be strictly marked lines. There might be and for sure there are particular interests of regions, which are not the top priorities on a state level, but are eminent for some parts. We do support these forms of cooperation, but it must be clear, that the regions themselves should be the most active in forming the goals and in financial support.

2. Some remarks related to competition

a. It is acknowledged, that competition is the force moving the things forward. There are no doubts, that it is true also for research. However, there is one point to mention – let’s call it “fair competition”. We can come to a similar conclusion as mentioned above when I mentioned cooperation – both competition and cooperation can be functional only between/among equals.

b. Nobody would ever think to arrange competition in athletics between handicapped and well-trained professionals. Even there are separate Olympic Games. To have “fair” competition in research, which will result in benefit for all, we have to have competition among equals. Otherwise the current leaders will set the rules for their own benefit only. Conclusion is quite clear and is the same as the one regarding the cooperation: there is a need to support promising and vital institutions/laboratories/individuals who did not have a chance to prove their excellency before for various reasons. It might – and it will – hurt the current “best” in their particular
interests. On the other hand, it will increase the competition and hence also benefits for all in future.

c. Since this is a very sensitive point, I would like to be very clear. I am not in favour of support everybody who claims to be scientist. Not at all! As an example, let me present some data from Slovakia: In personnel, Slovak Academy of Sciences decreased in about ten years by more than fifty percent. At the same time, outcome – counted by papers cited in the Current Contents – increased about twice. Clearly, the Academy gets rid off number of those, who were not contributing to its mission. One have to understand, that it has happened under situation that many excellent scientists left the Academy and are working abroad. Public research institutions in Slovakia oriented primarily to applied research undergone even much harder change – the staff is less than twenty percent compare to 1990. I am not calling for support for everybody. Here the competition is desperately needed. However, in the CEEC there are still “cores” we – the world - can build upon. Let us think about ways, how to support them. Let us put them on the same “starting line”. This will need concerned actions both by individual CCE countries as well as by the most developed ones. I am sure that the result wills pay-off for all.

d. So, we do have in the CEEC an internal/domestic competition, there is also international competition. What we all do need is to set rules which are not too rigidly "mechanical" or "simply mathematic", but flexible enough to give a chance also for perspective teams.

Now, ladies and gentlemen, let me come to final part of my presentation.
I have already mentioned, that the CEEC are involved in number of international research programmes. I did mention also the ways we are involved in. It is good and appreciated by us.

Let me mention briefly other multilateral cooperation:
* We – at least majority of the CEEC’s – are either members or have close ties with the CERN, with Trieste laboratories, and in many other programmes. There is no need to discuss much about CERN – it is a very organized type of cooperation of a very high scientific value. We – at least in Slovakia – are somehow concerned about increasing demand for financial contribution, which exceeds the expected and planned levels.
* Some more sentences should be devoted to scientific/research/development programmes of the OECD and NATO. OECD programmes in science and development are basically related to “global issues” where individual countries have no power to deal with (global warming, genetics, etc.). NATO civilian research programmes are
mostly targeted to mobility. Both OECD and NATO research initiatives are very much appreciated.

Conclusions:
1) Science and technology (research) has to have close ties with economy and social life. It is important to get involved private sector into research. However, science is not only for benefiting to economy, it is important at the same time also for gaining further knowledge of a “basic” character. We must not omit importance of science and technology for education – mostly at universities – as a resource for future progress.
2) There is no doubt about benefits of international science and technology cooperation between countries;
3) The benefits are many-fold: economic, social, educational, cultural;
4) The key principles for international research cooperation, as the most important challenges for the future, are:
   i. Integration;
   ii. Cooperation;
   iii. Competition.
5) To work on international level requires:
   i. Domestic base and support;
   ii. Including the State as well as the private sector;
   iii. International recognition.
6) Multilateral cooperation is based on domestic conditions and on bilateral cooperation:
   i. Structural, organisational and financial support and its variability;
   ii. Fair competition;
   iii. Well-set priorities, goals, means;
7) Principle of “equal opportunity” which should be applied very carefully and to take into consideration not only current status, but more to pay attention to potential;
8) Coordinated efforts of the countries involved.