

The role of human factors in possible climate change and the Kyoto Accord: preliminary findings of a seminar committee of the Russian Academy of Sciences.

President Vladimir Putin, in his address at the opening of the World Conference on Climate Change on 29th September 2003 referring to appeals which have been made calling upon Russia to ratify the Kyoto Agreement without delay said: 'The Russian Government is giving careful consideration to this issue, is carrying out a thorough analysis which will also take in all the complex ramifications of the issue. A final decision will be made when this work has been completed. The national interest of the Russian Federation must also be taken into account.'

On Vladimir Putin's initiative a seminar committee was set up under the President of the Russian Academy of Sciences to look at possible ways of preventing climate change caused by human activity as well as its negative consequences and to look at the problems inherent in the Kyoto Protocol. The first session of the committee was officially opened by the president of the Russian Academy of Sciences, Academician Osipov and the Russian executive was represented by the Russian President's special advisor Illarionov, who set out the remit of the enquiry.

27 eminent scientists (most of them members of the Academy of Sciences) are on the Committee. Since January 16th there have been 7 meetings. 17 scientists have made submissions (in order of appearance: Academician Osipov, Academician Izrael', Special Advisor to the President of the Russian Federation Illarionov, Academician L'vov, Corresponding Member Danilov-Danil'ian, Roginko, Iakovlev, Nakhutin, Gruza, Corresponding Member Mokhov, Academician Dymnikov, Academician Demirchan (twice), Gorshkov, Academician Zawarzin and Semenov).

In their submissions the scientists drew on the results of their own research and on the results of research of other scientists both here and abroad, as well as the findings of scientific institutes. The committee also took account of the analysis of the combined results of the Intergovernmental Panel on Climate Change (IPCC) contributed to by scientists from many countries (including Russia).

The committee looked both at fundamental problems requiring long-term research as well as issues on which consensus had for the most part been reached.

1. Global Warming. Members of the committee were in agreement with estimates of warming that had taken place in the 20th century (a rise in average global surface temperature of between $0.6\text{ C} \pm 0.2\text{ C}$ over 100 years). These figures had been included in the last report of the IPCC in 2001.

2. Causes of global warming. Various hypotheses for warming of the climate were put forward. A number of scientists shared the view that the main cause of warming was due to CO₂ and other greenhouse gases. However, there was also the opinion expressed that there could be other mechanisms responsible for the temperature changes. It was stressed that there was a high level of uncertainty as to whether the rise in temperature was in fact due to human activity.

3. Role of CO₂. As well as the hydrothermal regime CO₂ is an important factor in bioproductivity of the planet.

4. Forecasts (projections) of the climate in the future. Many scientists did not take issue with the results of estimates arrived at through large-scale modelling. At the same time it was stressed that there was a high degree of uncertainty in work carried out using large-scale models.

5. Balance of carbon in the environment. Unease was expressed that there was, at present, a lack of data available to science providing information on the balance of carbon in the environment. With our present state of knowledge there was insufficient quantitative data on the role of the ocean, the soil and the biota in the absorption and exchange of carbon dioxide with the atmosphere.

6. Estimates of the general ecological and economic damage caused by global warming. At the present time there is no quantitative data on the general ecological and economic damage resulting from global warming on which rational decisions could be taken on measures to prevent global warming.

7. Cost of preventing global warming. The high cost (dozens of trillions of dollars) proposed by IPCC for measures to stabilize concentrations of CO₂ in the atmosphere to a level of 450 mln-1 caused a great deal of disquiet.

8. Levels of maximum permissible concentrations. A scientifically established level at which concentrations of greenhouse gases (in particular CO₂) caused by human activities become dangerous for the climatic system as defined in the statement of the central goal of the Convention has yet to be determined. This would require intensive scientific investigation and it may be a problem with no solution..

9. Kyoto protocol. Geophysical aspects. The scientists on the committee noted the estimate of the IPCC (Bolin). As a result of all countries bound by the agreement discharging their responsibilities (without taking into account the withdrawal of the USA from the Protocol) the rate at which the growth of concentrations of CO₂ would slow down would amount to only 1-2 parts per million over a ten year period. This would be without taking into account the withdrawal of the USA from the agreement and with a general growth of concentrations of 20 parts per million and a general present level of concentration of 370 parts per million. Thus, the effect of the Kyoto protocol over a ten year period, from the point of view of slowing down CO₂ concentration, might be a maximum of 0.3% of the level of today's concentration.

According to the data of IPCC in order to stabilize CO₂ concentration down to a level of 550 parts per million (an increase of 50% from the current level) over 100 years it would be necessary to halve emissions of CO₂. In other words, the current level of emission as stated in the Appendix to the Kyoto Agreement, if it were to continue at the same level over 100 years would constitute only 1% of the reduction that would be required for stabilisation.

Many scientists point out that the Kyoto protocol has practically no basis in scientific fact and would have no practical effect.

10. Kyoto protocol. Economic aspects. The committee were given figures for the growth of CO₂ emissions linked to growth in GNP based on different scenarios, including a doubling of GNP in Russia over a ten-year period.

In a scenario based on data from the International Energy Agency (starting at a base-line of 2050 metric tones of CO₂ in 1990) and with an annual rate of growth of GNP of 7.2% (corresponding to a doubling of GNP over 10 years) the limit set for Russia would be exceeded in 2009. At a rate of growth of GNP of 6.7% (the average rate of growth of Russian GNP over

1999-2003), this would take place in 2009. At a rate of growth of 6.2% (which has been forecast by the Russian government) the limit would be exceeded in 2010, and with a rate of growth of 5% - in 2012.

Thus the most likely time-frame in which Russia would exceed the level set for her would be between 2009 and 2012.

11. Kyoto Protocol. Ethical aspects. In a number of countries the charge is levelled at the Russian Federation that by not ratifying the Kyoto Protocol we would prevent it from taking effect. This does not square with the facts. Having made a substantial cut in emissions between 1990 and 1998 Russia has compensated for almost 40% of the growth in CO₂ emissions from other countries for the period 1990-2001.

In addition Russia extracts and exports its natural gas reserves to other countries of the world in significant quantities (an energy resource with a low carbon content). Russia is not given any credit for the global reduction in CO₂ emissions thus obtained.

If Russia were to withdraw from the Protocol (just supposing that it had been ratified) at the end of its first phase and especially if Russia had been able to 'earn' something by using its mechanisms, this would be an extremely unethical act in the arena of international relations. Russia could be subjected (and in this case justifiably) to severe criticism in all international forums. In addition, she could be liable to financial penalties.

13. Kyoto Protocol. Other aspects. The opinion voiced by some scientists that the Kyoto Protocol would foster the development of energy efficient technologies and/or reduction of harmful emissions does not stand up to serious examination. It is perfectly possible for such projects to be undertaken without ratification of the Kyoto protocol. Indeed, the speed at which energy efficient technologies can be implemented depends in large degree on the rate of economic growth. This could be significantly decreased by ratification of the Kyoto protocol.

13. Discriminatory character of the Kyoto protocol. The Kyoto protocol has a discriminatory character in relation to Russia:

- no account was taken when the agreement was drawn up of the climatic situation of Russia – the coldest country in the world,
- with regard to Russia no account was taken of the general quantity of forested areas as a factor permitting the absorption of CO₂ (another point of difference with a number of countries),
- when Russia sells natural gas to other countries no account is taken in its price of the transfer from Russia of implicit quotas for CO₂ emissions.

General conclusions concerning the ratification of the Kyoto accord and its effect on the economic and social life of Russia.

1. The Kyoto Protocol has no scientific basis.
2. The Kyoto Protocol is ineffective in achieving the goals of the Framework Convention of the United Nations on climate change, the purpose for which it was set up. The main objective of this Convention is the stabilization of the quantities of greenhouse gases in the atmosphere to a level at which dangerous man-made influence on the climatic system would not occur.
3. A rise in temperature in Russia – the coldest country in the world – would have a number of very positive effects (heating, transport, agriculture, increase of biomass etc). It should also be

remembered there could be negative effects (for the permafrost belt it could effect the stability of buildings). It is essential to make a whole range of estimates of the possible effects of climate change for the economic and social life of Russia.

4. With an increase in GNP over 10 years and taking into account the instability of the weather and considerable fluctuations of temperature from year to year it is hard to see any positive economic effects from the Kyoto Protocol even in its first phase. In the long term it is likely to have a severely negative effect on Russia's economy. Withdrawal of Russia from the Protocol after a period of time will entail severe legal consequences and harm to Russia's image.

5. Ratification of the Protocol when there is a definite link between CO₂ emissions and economic growth based on hydrocarbon fuel would mean a significant limit to the rate of growth of Russia's GNP.

6. It is essential to carry out a whole range of investigations of the effect of climate change on the economic and social life of Russia.

7. It would be beneficial for the committee of enquiry of the Russian Academy of Sciences to continue its work.