

**National Committee of Russia for the International
Hydrological Programme of UNESCO**

**Report of the Russian National Committee for the IHP to the XVIIth Session of the Inter-
governmental Council for the IHP of UNESCO
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Contents

Introduction	3
1. ACTIVITIES OF THE RUSSIAN NC FOR THE IHP UNDERTAKEN IN THE PERIOD SEPTEMBER 2004 – JUNE 2006	4
1.1 Meetings of the IHP National Committee of Russia	4
1.1.1 Decisions regarding the composition of the IHP NC of Russia	4
1.1.2 Status of IHP-VI activities	4
1.1.3 Decisions regarding contribution to/participation in IHP-VII	5
1.2 Activities at national level in the framework of the IHP	6
1.2.1 National/local scientific and technical meetings	6
1.2.2 Participation in IHP Steering Committees/Working Groups	8
1.2.3 Research/applied projects supported or sponsored by the NC	8
1.2.4 Collaboration with other national and international organizations and/or programmes	9
1.2.5 Other initiatives	9
1.3 Educational and training courses	10
1.3.1 Contribution to IHP courses	10
1.3.2 Organization of specific courses	10
1.3.3 Participation in IHP courses	10
1.4 Cooperation with the UNESCO-IHE Institute for Water Education and/or international/regional water centres under the auspices of UNESCO	11
1.5 Publications	11
1.6 Participation in international scientific meetings	13
1.6.1 Meetings hosted by the country	13
1.6.2 Participation in meetings abroad	13
1.7 Other activities at regional level	14
1.7.1 International relations/cooperation	14
1.7.2 Completed and ongoing scientific projects	14
2. FUTURE ACTIVITIES	14
2.1 Activities planned until December 2007	14
2.2 Activities foreseen for 2008-2009	15
2.3 Activities envisaged in the long term	15

Introduction

The present report is prepared at the State Hydrological Institute on the basis of materials received from the following agencies and organizations:

- Federal Service for Hydrometeorology and Environmental Monitoring (ROSHYDROMET)
- Russian Agency on Water Resources (RosVodResursy)
- State Hydrological Institute
- Moscow State University
- Institute of Geography of the Russian Academy of Sciences (RAS)
- Russian State Hydrometeorological University
- Institute of Water Problems of the Russian Academy of Sciences (RAS)
- Institute of Water and Ecological Problems of the Siberian Branch of the Russian Academy of Sciences (SB of the RAS)
- Hydroproject “Russian Joint-Stock Company”, Energy System of Russia
- State Oceanographic Institute
- Altai State Technical University
- North-Caucasus Administration for Hydrometeorological Service.

The Report is prepared according to the structure, format and volume, developed at the UNESCO IHP Secretariat.

1. ACTIVITIES OF THE RUSSIAN NC FOR THE IHP UNDERTAKEN IN THE PERIOD SEPTEMBER 2004 – JUNE 2006

1.1 Meetings of the IHP National Committee of Russia

1.1.1 Decisions regarding the composition of the IHP NC of Russia

The NC of Russia exists since the time when International Hydrological Programmes of IHD/IHP were launched by UNESCO; the personal composition of the NC, however, was renewed periodically. The present NC composition was nominated by a decision of the Russian Government in 2003; moreover, the governing body of the renewed composition of the NC under the chairmanship of A.V. Frolov Deputy Chief of ROSHYDROMET was adopted. Academician V.M. Kotliakov, Director of the Institute of Geography of the Russian Academy of Sciences (IG of RAS) and Professor I.A. Shiklomanov, Director of the State Hydrological Institute (SHI) were nominated as Vice-Chairmen. Besides, it is assumed that a representative of the Russian Agency on Water Resources (RosVodResursy) would be a Vice-Chairman; at present, this function is performed by S.S. Koskin, Chief of the Administration of RosVodResursy.

The personal composition of the NC is usually proposed by the Chairman and Vice-Chairmen and then it is adopted at the meeting of the NC. At present, it consists of 26 members; scientists and specialists well-known not only in Russia but in the world are among the members of the Committee, as well as representatives of different ministries, agencies and organizations greatly contributing to hydrometeorology, water resources, water management, education and training. O.V. Gorelits, Cand. Geogr. Sci., Senior Scientist from the State Oceanographic Institute (SOI) of ROSHYDROMET was nominated as the Scientific Secretary of the NC.

During the period September 2004 – June 2006 three meetings of the NC were held; current problems and perspective plans within the framework of the VIth and VIIth IHP phases were discussed; results of the most important projects in hydrology and water management were considered; a general strategy of the NC was developed on key problems of the international cooperation in the above fields. New NC members were adopted at the meetings.

1.1.2 Status of IHP-VI activities

Different aspects of the Russian contributions to the IHP-VI projects are always discussed at the NC meetings. A necessity and importance of research to be made within the framework of the IHP-VI projects at the national level are emphasized, which is a specific feature of this programme. The NC members decided to take the account of the main aspects of activities noted in the IHP-VI during a development of the current themes for scientific and technical studies and works of the leading hydrological and water management organizations in Russia as the first-priority problems.

A particular emphasis was focused on a necessity of active participation of Russian scientists and specialists in the implementation of the following very important IHP-VI Themes where it is possible to obtain the results of a great scientific and applied importance not only for the territory of Russia but on the global scale.

Theme 1. “Global Changes and Water Resources”

Theme 2.1. “Extreme Events on Land and Water Resources Control”

Theme 2.2. “International River Basins and Subsurface Water Storage”

Theme 2.3. “Endorheic Basins”

Theme 5. “Education and Training”.

Within Themes 1 and 2.1, it was emphasized, for example, that it was important to work on the assessment of current and future changes in water resources and hydrological regime over the whole territory of Russia, including extreme hydrological events under the conditions of variable climate and socio-economic situation in Russia. A necessity was noted to proceed studies on the global assessment of water resources and water use, on water storage accumulated in ice and snow cover and on the dynamics of glaciers in the world, where Russian scientists have a traditionally great experience and greatly contribute to these problems solution.

Problems on Theme 2.2 on international river basins are also very important for Russia because of the USSR disintegration and formation of many countries along the boundaries of Russia. Much work on this problem is done by the specialists from the Russian Agency on Water Resources and institutions of ROSHYDROMET on the monitoring of the international water bodies and assessment of transboundary water flow and transportation of pollutants.

Studies on Theme 2.3 “Endorheic Basins” are traditionally made in Russia on the problem of the Caspian Sea drainage area, the largest and most densely populated and most economically developed endorheic region in the world. The Caspian Sea is of a great importance not only for Russia but for the five countries along its coast (Russia, Azerbaijan, Iran, Kazakhstan, Turkmenistan). A wide range of water level fluctuations in the sea explained by climate factors and human activities within its drainage area greatly affect economics, ecology and social conditions of the countries situated along the Caspian coast; a comprehensive study of these processes is an extremely important scientific and technical problem in which specialists in hydrometeorology play the first fiddle.

At one of the meetings of the NC of Russia for the IHP a problem was discussed on a necessity of a more active participation of Russian scientists in Theme 5, “Education and Training”. For example, a possibility and expediency of renewal of the UNESCO International Hydrological Courses at the Moscow State University (MSU) as an important link in the system of hydrological education, improvement of qualification and exchange of information within the framework of the main Themes of the current IHP-VI and outlined IHP-VII phases was discussed. It was proposed at the meeting to organize these Courses at the base of the Russian State Hydrometeorological University (RSHMU) in St Petersburg. Prof. L.N. Karlin, Rector of the RSHMU suggested to consult and coordinate this problem with the MSU and Commission of Russia for UNESCO.

During 2004-2005 at the meetings of the Russian NC much emphasis was focused on a preparation, organization and discussion of the results of the VIth All-Russia Hydrological Congress held in St Petersburg during 28 September – 1 October 2004. It was the most important event for all Russian hydrologists which was held in accordance with the decision of the Russian Government. The State Hydrological Institute was responsible for the preparation and organization of the Congress.

The NC members took an active part in the work of the Congress and in the discussions of its results. A special meeting of the NC was held in St Petersburg during the Congress. At the meeting, a great work of the Organizing Committee on the preparation and organization of the Congress was noted. The NC members took an active part in the preparation of the proposals to the draft decisions of the VIth All-Russia Hydrological Congress.

The NC prepared proposals on the participation of Russia in the competition on the UNESCO Programme of Support for 2005. The inquired funds were to be spent for the organization of an “International Round Table on transboundary hydrological problems, including water quality, with a participation of leading scientists from Newly Independent States (NIS) and Baltic countries from the former USSR within the framework of the VIth All-Russia Hydrological Congress”. As a result of the work done by the NC on the UNESCO Programme of Support, a financial support was received for a preparation and translation of a special volume of selected papers presented at the VIth All-Russia Hydrological Congress (in Russian and English). The papers selected in this volume for a publication should demonstrate in full the present level and achievements of the Russian hydrological science. At present, the proceedings of the Congress are being prepared at the SHI, including the volume of Selected papers in English. It is proposed to complete the work by the end of 2006.

The NC members participate in the discussion of current problems on interrelations among different hydrological educational, research, design and water management institutions. For example, at one of the meetings of the NC, a detailed discussion took place on a possible cooperation with other Committees and Commissions of UNESCO within the “Amur Green Belt” Project.

A.V. Frolov, the Chairman of the NC for the IHP, forwarded proposals to the Russian Commission for UNESCO on the draft Programme and budget of the NC of Russia for 2006-2007 on the items related with the International Hydrological Programme.

1.1.3 Decisions regarding contribution to/participation in IHP-VII

The problems of the IHP-VII formation in UNESCO were discussed at the Russian NC meetings repeatedly. In fact, the preparation of the IHP-VII began in advance, in 2003. To this end, the Secretariat organized a special International group on a preparation of the programme. The IHP Secretariat disseminated basic requirements for the programme among IHP National Committees based on the decisions of the UN Conference in Johannesburg in 2002 and requested the NCs to send their considerations about the new programme.

The NC of Russia fully supported the idea that the basic trends in the UNESCO activities within the IHP-VII should primarily stimulate the solutions of those problems which are presented in the “Implementation Plan” adopted at the Summit on the Sustainable Development in Johannesburg in 2002.

Proceeding from a rich experience of the Russian hydrologists in the studies and generalization of water resources data on regional and global scales, the NC of Russia proposed to include the following two problems into the programme of work which directly reflect water aspects in the above Plan:

- To do a complex of works on a reliable assessment of renewable water resources for each country in the world (surface and subsurface water resources, including water suitable for drinking water supply).
- To make a detailed analysis of the efficiency of fresh water use in each sector of economics, primarily in the countries within the regions of water shortage.

In the proposals of the NC of Russia, a necessity was substantiated to solve the above problems and to formulate particular objectives which might be implemented by groups of experienced international experts in a close cooperation with other NCs for the IHP and UNESCO Secretariat.

On the basis of the proposals received from different countries, the International group on the preparation of the programme prepared the first variant of the IHP-VII Concept in which four general directions were suggested as a basis, i.e. *global change, management and socio-economic problems, ecological control and water quality – health – food safety*.

Four themes have been formulated for the implementation of these directions:

Theme 1 – Global change, watershed divides and aquifers

Theme 2 – Management and socio-economic problems

Theme 3 – Ecohydrology and ecological sustainability

Theme 4 – Water quality, health and food safety.

The Concept contains a generalized strategy and plan for the IHP-VII implementation, in which each Theme is subdivided into 4 key areas considering particular aspects of the Theme.

After a preliminary discussion of the Concept at the session of the Inter-governmental Council in September 2004, it was adopted as a whole; but it was advised to the NCs for the IHP to send their proposals and comments once again to improve the Concept. At present, such proposals of the NC of Russia are being prepared. For example, many NC members, after a careful consideration of the Concept, strategy and IHP-VII plan, are a little anxious about its content.

Moreover, it is noted that all the Themes and key areas of the IHP-VII are of a great socio-economic and ecological importance, but most of them are apart from the proper scientific hydrology.

Out of the four proposed IHP-VII Themes, only one Theme (Theme 1) is purely hydrological, but it concerns only global aspects of hydrology. All the other Themes and key areas refer to socio-economic and ecological aspects of hydrology which are traditionally considered by many other governmental and non-governmental international organizations, e.g., UNEP, FAO, etc. Meanwhile, there are many unsolved problems, which are to be solved, that is why the UNESCO International Hydrological Programme was developed.

If scientific hydrology is not properly reflected in the IHP-VII, an illusion may be produced (under UNESCO authority), that all hydrological events and processes are well studied and the problem is how to apply the available knowledge correctly.

It is highly desirable to avoid this wrong understanding, and the IHP-VII is to involve not only important socio-economic and ecological aspects but current problems of scientific hydrology.

The Concept and the IHP-VII Plan will be discussed repeatedly at different meeting, namely, at the next session of the Inter-governmental Council for the IHP in July 2006, at which main proposals and comments may be considered.

1.2 Activities at national level in the framework of the IHP

1.2.1 National/local scientific and technical meetings

The most important event undertaken under the auspices of the NC of Russia for the IHP in the period September 2004 – June 2006 was the organization of the VIth All-Russia Hydrological Congress held during 28 September – 1 October 2004 in St Petersburg.

Traditionally, hydrological congresses in Russia (USSR) are of an extremely great importance for a development of national hydrology and water management.

The 1st Congress was held in 1922, several years after the organization of the SHI (1919), as the leading institute in the country in hydrology of land; the SHI was the initiator of the first congress and of the other congresses, too.

At each Congress the major emphasis was focused on the problems which would meet the most reasonable demands for a development of hydrology and water management, provision of population and developing economics with hydrological information, solution of most important ecological problems.

All Congresses were held in St Petersburg (Leningrad) and were organized by the SHI. The previous Vth Congress was held in 1986, about 20 years ago.

After 1986, very serious changes took place in the territory of Russia; firstly, in the climate system at the global and regional levels, and, secondly, in socio-political and socio-economic spheres. These two circumstances greatly affected the condition of water resources and regimes of water bodies, situation with the hydrological network and hydrological science in the country, water management and fresh water use. The same situation was observed in the countries of the former Soviet Union. All these factors were the main prerequisite to organize the VIth All-Russia Hydrological Congress with invitation of scientists and specialists from NIS. The organization of the Congress was supported by UNESCO, WMO, IAHS and other international organizations associated with water.

According to a decision of the Government of Russia, A.I. Bedritsky, Chief of ROSHYDROMET, was nominated as the Chairman of the Organizing Committee; the Programme Committee was headed by Prof. I.A. Shiklomanov, Director of the SHI, Vice-Chairman of the NC for the IHP.

750 claims for a participation in the Congress were received from scientists and specialists, including 100 claims from NIS. After editing, all the accepted abstracts of papers were published; 670 abstracts of papers in 7 separate issues (abstracts of plenary papers and papers at six sections) were published. All the abstracts were also available on CD and were widely distributed.

545 participants took part in the Congress, out of which 62 specialists from NIS and other countries. About 500 papers were presented at the plenary session, at six sections (oral presentations and posters) and at two round tables.

The main results and conclusions, which were presented and discussed at the Congress, involved the following problems, most of which directly corresponded to the UNESCO IHP purposes and objectives:

- water resources and water management problems of Russia at present and for the future;
- dangerous hydrological events, floods and inundations in particular;
- system of hydrological observations; problems of collection and generalization of information, delivery of information to the users;
- runoff formation and computation, hydrophysical events and processes;
- ecology of water bodies; protection of water bodies against pollution and depletion;
- studies of lakes, reservoirs and river mouths;
- studies and monitoring of channel processes, erosion and sediment yield;
- transboundary hydrological problems;
- education and training in hydrology.

All these problems were discussed at the Plenary sessions, at sections and round tables, where particular decisions were made on a development of strategy, proposals and projects on support and development of the national hydrological science and practice on the basis of the results of the performed investigations and consolidation of the scientific, technical and production potential available in the country. It was decided at the Congress that all the papers presented at the Congress would be published in 7 volumes; besides, by the end of the current year, it is outlined to prepare a volume of selected papers in English and to submit it to the UNESCO Secretariat for publication in the next IHP issues.

Besides the organization of the VIth All-Russia Hydrological Congress, the NC of Russia organized the following national scientific and technical events (during September 2004 – June 2006) in the field of hydrology, water resources and water management:

- Workshop “State-of-the-art and perspectives for a development of the system of hydrological observations and provision of users with information in the light of the decisions of the VIth All-Russia Hydrological Congress” (Valdai Branch of the SHI, Valdai, June, 2005).
 - Conference “Fundamental problems of studies and use of water and water resources”, Irkutsk, 20-24 September 2005.
 - Conference “Hydropower generation, new problems and technologies”, St Petersburg, December, 2005.
 - Workshop “Water conservation zones. Experience in practical use and reasonable development”.
- Supported by the Federal Agency on Water Resources, 18 April, 2006, Moscow.

1.2.2 Participation in IHP Steering Committees/Working Groups

At the 16th session of the Inter-governmental Council for the IHP (September, 2004) Prof. I.A. Shiklomanov, a representative of the NC of Russia was elected a member of the Governing Board of the UNESCO – IHE Institute for Water Education.

In December 2005, Prof. I.A. Shiklomanov attended a meeting of the Governing Board which was held in Delft (The Netherlands). The Work Plan and Budget of UNESCO – IHE for 2006 as well as the Contents of the Academic Plan and other current problems of the IHE activities were discussed. Several post-graduate students from different countries made brief reports about their research activities for the members of the Board, which stirred up a lively interest in the listeners.

1.2.3 Research/applied projects supported or sponsored by the NC

During the recent years a number of national scientific and technical projects in hydrology and water resources are being developed in Russia, which are supported by the NC of Russia and fully agree with purposes and objectives of the IHP-VI. Among these projects, the following should be noted which are implemented by different agencies and organizations and covering the whole territory of the country or its vast physiographic and economic regions:

- Implementation of the national subprogramme “Water Resources and Water Bodies 2002-2010”; Responsible Agency – Russian Agency for Water Resources. Within the framework of the Subprogramme different projects are to be made to satisfy the demands of economics and population in water, to raise the technical level, to provide safe water management systems and hydraulic structures operation, and to reduce damage of water impact. A great interest taken in this Subprogramme is confirmed by the fact that the State funds transferred to water management and water conservation projects increased in more than two times during the last 5 years. For example, within the framework of this Subprogramme there are projects on a development of schemes for a multipurpose use and conservation of water resources of Russia, aimed at an optimization of planning water projects and higher efficiency of the investments (contribution to Theme 1, IHP-VI).

- Multipurpose projects implemented by the organizations within the RosVodResursy on a development of outlook, principles and practice for a more effective management of water resources and water ecosystems in transboundary river basins. There are 70 large and mid-sized transboundary rivers in Russia (Theme 2.2, IHP-VI). During 2004-2006 much work has been done in the field of cooperation of Russia and the Ukraine, Estonia, Kazakhstan, Finland, Mongolia, Azerbaijan, China, and Russia-Belarus-Latvia on joint use and conservation of water bodies.

- “Expected changes in water resources and hydrological regimes within river basins and Subjects of the Russian Federation for the period before 2010-2015 under the conditions of the global warming and assessment of possible socio-economic results”. The project was implemented at the SHI in 2005 and the results were submitted to ROSHYDROMET; the project was considered as a contribution to Themes 1 and 2.1 of IHP-VI. The results of the studies discovered regions in Russia where expected changes in climate and hydrological regimes may be most unfavourable; preliminary proposals and recommendations have been developed on prevention, adaptation and mitigation of negative effects.

- Preparation of the monograph “Water Resources of Russia and Their Use”. The Project is under development by the scientists from the SHI and other organizations of ROSHYDROMET and RosVodResursy; it is to be over at the end of 2007. The Project is a contribution to Theme 1. IHP-VI.

- Project on the study of the current dynamics of glaciation, maximum snow storage and principles of glacier runoff formation; it is to be implemented by the IG of RAS within the framework of Theme 1. IHP-VI for the islands of the Russian Arctic region, mountain glaciers in the Urals, Caucasus, Pamir and Tien Shan.

The studies provided important research results on the condition of glaciers in the Russian Arctic region, on the dynamics of glaciers in mountains, on the maximum snow storage variations in Russia at the end of the XXth century obtained from the use of geoinformation methods.

- Within the framework of Theme 4. IHP-VI “Water and Society” an original “Hydromanager” Decision Support System (DSS) has been developed at the Altai State Technical University; the system is aimed at an economic optimization of quality control by means of a complex consideration of the state of the environment, socio-economic and legislative aspects for the conditions of Russia. This system is adapted to the requirements for the account of the environment expressed in the EC Water Directive and economic principles applied in the EC in relation to water resources management.

The applicability of the system has been tested in the Neme river (Belgium) and in the Ob river (Russia).

1.2.4 Collaboration with other national and international organizations and/or programmes

First of all, practically all the NC members contribute to the WMO activities on the “Hydrology and Water Resources” Programme, as well as to IAHS projects. For example, Prof. I.A. Shiklomanov, Director of the SHI, is the Chairman of the Working Group on Hydrology for Asia (RA-II) and participates in the WMO Executive Committee every year. Prof. I.A. Shiklomanov is also one of the leading authors on the preparation of Chapter “Hydrology and Water Resources” for the 4th IPCC report and he attends the meetings on the preparation of this report every year.

Dr. J.A. Balonishnikova, Scientific Secretary of the SHI, is a WG member on the assessment of water resources of the WMO Commission for Hydrology and she attends the WG meetings. She is also a member of the IAHS/UNESCO young research group on the preparation of monograph “Hydrology 2020”.

Prof. V.S. Vuglinsky, Deputy Director of the SHI, is a WG member on Hydrology of Europe (RA-VI) and WG member on “BALTEX” Project; he attends the meetings of these WGs.

Dr. Z.D. Kopaliani, Deputy Director of the SHI, is a member of the Steering Committee on International “GEWEX” Project and he attends the meeting of the Committee every year.

Prof. A.E. Asarin, a NC member, contributes to the work of the Technical Committee “Floods and Dams”/ICOLD (International Commission on Large Dams).

The members of the NC for the IHP greatly contribute to the editorial boards of international scientific journals:

- Prof. A.A. Tskhai is a co-editor of “Hydrological Environment” Journal (ISSN, 1738-8449);
- Prof. R.S. Chalov is a member of the editorial board of “International Journal of Sediment Research”
- Prof. I.A. Shiklomanov is a member of the editorial board of the international journal “Integrated Assessment”.

The members of the Russian NC collaborate with many other international organizations, such as:

- International Association for Hydraulic Research (IAHR)
- International Geographic Union
- Association of Academies of Sciences of Asia
- Wetlands International
- NATO Research Programme
- International Commission of Geophysics Union on Water Sustainability.

1.2.5 Other initiatives

Since 2005, the NC of Russia for the IHP takes an active part in the preparation of a new UNEP/GEF project: “Climate change sound water management, water and ice conditions of large Arctic rivers including development of water management facilities adaptation strategy”.

It is assumed that this project would be a continuation of the international UNEP project “Dialog on the strategy of climate change account in the water resources management and readiness to floods in the Lena river basin”, which was successfully implemented during 2002-2003. The main goal of the project was to study the state of water resources and conditions of dangerous floods formation in the Lena river basin on the background of current and possible changes in climate to develop recommendations for the executive organs of Russia and Yakutia on the control of water resources and mitigation of negative effects caused by floods within the Lena river basin with the account of possible global climate warming.

A newly initiated project was preliminary supported by AMAP and UNEP/GEF; it is intended to expand research to other large river basins within the Arctic Ocean drainage area; the project duration would be three years (2007-2009); it is intended to include such important problems into the research programme as assessment of vulnerability of ecosystems and population in the Arctic zone under the conditions of climate change.

It is assumed that the main contributors to the project would be Russian scientists and specialists representing different agencies and institutions, i.e. ROSHYDROMET (SHI, AARI, MGO, SOI), RAS (IG, Zoological Institute, Institute of System Analysis), RosVodResursy, etc.

Investigations will be performed in close cooperation and participation of the WMO, AMAP, International Polar Year (IPY), International and national programmes on the studies of the Northern territories of Canada, Denmark and Greenland, Iceland, Norway, USA, Germany, etc.

At present, Russian and foreign specialists make their joint efforts to develop detailed proposals and programme of the project. During a preparation of the project, two international meetings were held. The last

meeting was held in 29-30 May 2006 in St Petersburg at the SHI. Ten scientific presentations on different problems of the Arctic region under the conditions of climate change were made and discussed at the meeting; it is intended to include these presentations into the programme of the initiated project. Responsible representatives from all Russian organizations planning to participate in the project attended the meeting; Dr. Lars Otto Reiersen Executive Secretary, AMAP; Dr. Arni Snorrason Chairman, Arctic-Hydra, and Dr Odd Rogne – AMAP, IPY IPO attended the meeting.

During the meeting, the text of the project was prepared in accordance with the requirements of UNEP/GEF; the work plan and a list of the responsible authors were determined.

Implementation of the initiated project, in the opinion of the NC of Russia for the IHP, would be a significant contribution to IHP-VI, to Themes 1 and 4 in particular.

1.3 Educational and training courses

1.3.1 Contribution to IHP courses

At its meeting in 2005, the NC of Russia for the IHP discussed a problem of renewal UNESCO Higher International Courses in Russia, which were organized in Moscow at the Moscow State University during many years. There is a proposal of the Russian State Hydrometeorological University to organize similar courses in St Petersburg, where it is possible to collaborate with the scientists from the SHI and St Petersburg State University. At present, this problem is under consideration (see item 1.1.2 of the present report).

1.3.2 Organization of specific courses

Every year, according to the agreement with ROSHYDROMET, the State Hydrological Institute organizes advanced courses for the specialists in hydrology and water management on different hydrological problems; these courses are attended by hydrologists working in research institutes and at hydrological network of ROSHYDROMET and other agencies, as well as by specialists from universities, design institutions, ministries and companies.

For example, the following courses were arranged during period September 2004 – June 2006:

- Advanced courses for hydrologists “New system of hydrological computations for construction”. Set of Rules – SP 33-101-2003 “Determination of basic design hydrological characteristics” 4-8 November 2005, St Petersburg, SHI.
- Advanced courses for hydrologists “New system of hydrological computations for construction”. Preparation of “Territorial Construction Standards (TCS)” 26.06-07.07.2006, St Petersburg, SHI.

Besides, at the end of 2004, in Barnaul, an international educational workshop “Water Resources Management in Russia and in EC” was held at the Altai State Technical University; professors from Belgium, France and Russia and more than 100 students, post-graduate students and lectures attended the workshop.

1.3.3 Participation in IHP courses

During September 2004 – June 2006, representatives of Russia did not participate in the IHP courses. In fact, there are many opportunities to participate in the national courses and seminars organized in Russia. Many universities and research institutes, as well as technical secondary schools have great experience in training in hydrology (technicians, engineers, and specialists of higher qualifications, i.e. masters of degree and candidates of sciences). Technicians in hydrology are educated in hydrometeorological technical secondary schools and colleges; engineers and scientists in hydrology, as well as specialists of higher qualification get their education at the specialized Russian State Hydrometeorological University, in Moscow and St Petersburg State Universities, and in other universities in many cities of Russia.

For example, the RSHMU has several agreements on the exchange of students, probationers and training of post-graduate students from different countries. For instance, the agreements are carried out with the following universities:

- Dresden and Freiburg Universities; the students from these universities are engaged in practical work in the RSHMU;
- National universities of Cote d’Ivoire for training specialists of higher qualification on prediction of catastrophic hydrological events.

The RSHMU has students and post-graduate students from different countries, namely, from Estonia, Tajikistan, China, Cote d'Ivoire, Ethiopia, Jordan, Colombia. Theses of post-graduate students refer to different branches of hydrology, including those on the IHP-VI Themes (sedimentation, outstanding hydrological events, transboundary water bodies, etc.). Since 1 September 2006, a specialization "Catastrophic hydrometeorological events" will be introduced to curriculums of students for master's degree. For this purpose, detailed syllabi have been developed and a staff of lecturers has been invited.

Training of specialists of higher qualifications in hydrology (candidates and doctors of sciences) is also made in the leading research institutes of ROSHYDROMET and RAS (SHI, Hydrometeorological Centre of Russia, AARI, IWP of RAS, IG of RAS, etc.).

1.4 Cooperation with the UNESCO-IHE Institute for Water Education and/or international/regional water centres under the auspices of UNESCO

Prof. I.A. Shiklomanov, Vice-Chairman of the NC of Russia for the IHP, was elected a member of the Steering Committee of UNESCO – IHE Institute for Water Education (see item 1.2.2 of the present report). During a meeting of the Steering Committee, Prof. I.A. Shiklomanov and the Head of IHE initiated a cooperation between IHE and RSHMU on the exchange of experience and curriculums. At present, negotiations on these problems are in progress.

Prof. I.A. Shiklomanov got an invitation from Prof. K. Takeuchi, Director of the newly organized (in Japan) International centre of UNESCO ("Hydrological Hazards and Risks") to contribute to the work of the Centre as a member of the Consulting Board.

1.5 Publications

Monographs, sets of papers, text books and educational supplies

Monographs:

Buzin V.A. Ice jams and floods on rivers caused by ice jams. – St Petersburg, Gidrometeoizdat, 2004, 203 pp (in Russian).

Lurie P.M., Panov V.D., Tkachenko Yu.Yu. The Kuban river: hydrography and runoff regime. 2005 (in Russian).

Lurie P.M., Panov V.D., Ilyichev Yu.G., Salpagarov A.D. Snow cover and glaciers within the Kuban river basin. 2006 (in Russian).

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1.6 Participation in international scientific meetings

1.6.1 Meetings hosted by the country

During September 2004 – June 2006 the following meetings were organized:

- Workshop on INTAS coordination, Barnaul, 2004.
- International conference on water problems within the framework of the 9th international exhibition “Man, ecology, health”, Barnaul, 2004.
- Fourth Russian-Iranian conference on agriculture and natural resources. Iran, Shahr-e-Kord, September, 2004.
- International meeting “Conference within the framework of the International Polar Year 2007-2008”, St Petersburg, February, 2005.
- International Congress “Large rivers 2005”, Section 2 – Major trends in international cooperation in hydrometeorology. – Nizhny Novgorod, 17-20 May, 2005.
- International meeting “Water quality and water resources control”, St Petersburg, 16-18 June 2005.
- NATO International symposium “Extreme hydrological events: new concept on safety provision”. Novosibirsk, July 2005.
- International workshop on the preparation of UNEP/GEF Project “Climate change sound water management, water and ice conditions of large Arctic rivers including development of water management facilities adaptation strategy”, St Petersburg, 29-30 May 2006.
- International Congress “Large rivers, 2006”. Nizhny Novgorod, 26-29 May 2006.

1.6.2 Participation in meetings abroad

The members of the Russian NC for the IHP participated in the following meetings abroad:

- British Hydrological Science International Conference. London Imperial College, 2004.
- IX International Symposium on River Sedimentation. October 2004, Yichang, China.
- International meeting “Development of recommendations on the use of satellite images for prediction and assessment of risks of floodplain flooding”. Peking, China, March 2005.
- First International Regional Conference on CLiC Project in Asian Region. April 2005, Peking, China.
- 171st session of the Executive Council of UNESCO, Paris, France, 12-28 April 2005.
- Conference of the European Geophysical Union. Vienna, Austria, 24-28 April 2005.
- VIIth Scientific Assembly of IAHS, Foz-de-Iguacu, Brazil, 21-26 April 2005. Within the framework of the Assembly there was a meeting of the IAHS-UNESCO WG “Hydrology 2020” where the results were presented on the preparation of the monograph which is published now.
- International meeting on “Rapid Sea level change: a Caspian Perspective”, 2005, Rasht, Iran.
- International Symposium “Ecology 2005”, Burgas, Bulgaria, 13-17 June 2005.
- 15th Stockholm Water Symposium. Stockholm, Sweden, August 21-27, 2005.
- International meeting on “Environmental change and rational water use”. 20 August – 3 September 2005, Buenos-Aires, Argentina.
- Russia-Taiwan Symposium “Water and Environmental Technology”, Taipei, Taiwan, October 2005.
- Meeting of UNESCO on 521 Project “Black Sea – Mediterranean Sea corridor for the last 30 k.a.: water level change and adaptation of mankind”. Istanbul, Turkey, 7-16 October 2005.
- Governing Board of the UNESCO-IHE. The Netherlands – Delft, 2 December 2005.
- Meeting on a preparation of the international scientific survey “Assessment of climate change in the Baltic region” within the framework of BALTEX Project. Warsaw, Poland, 8-9 December 2005.

1.7 Other activities at regional level

1.7.1 International relations/cooperation

Implementation of different projects, within the framework of the IHP-VI including, in cooperation with Russian Universities (faculties and chairs) and Universities from other countries is widely developed in Russia.

For instance, the following projects are under implementation with the State Moscow University:

- “Large European river system responses to global change and human activities – the Volga and Rhine rivers” (NOW – RFBR Project N 047. 014. 010). It was implemented by the MSU and Utrecht University, The Netherlands. The Project was implemented in 2005.
- “Changing flood dynamics and their impact on fish recruitment in large rivers (Volga, Russia)” It is under implementation by the MSU, by Wageningen University and Utrecht University. The Netherlands. The Project was initiated in 2005.

During September 2004-June 2006 the Russian State Hydrometeorological University made the following agreements with research institutions and universities:

- Joint studies of river and glacier runoff on Spitsbergen Island with the Arctic and Antarctic Research Institute (AARI) and Nansen Centre (Norway). An agreement with the University of Fairbanks on the hydrology of Arctic rivers (Chair of hydrology of land) is at the stage of being concluded.
- Colombia Hydrometeorological Centre (IDEAM) on the optimization of observation networks, forecasts of water inflow to the reservoirs with hydroelectric power plants. An agreement for a joint project on hydrology with the Ottawa University (Chair of hydrophysics and hydrological forecasts) is at the stage of being concluded.
- Peking Technical University (China) on channel processes and sedimentation (Chair of hydrometry).
- Joint programme with Norwegian Institute of sea studies on the organization of the international portal to provide monitoring in the shelf zones of oil deposits (Chair of hydrogeology and geodesy). Participation in the Russia-Lithuania Commission on the assessment of ecological sustainability of the Baltic Sea on the Kaliningrad shelf. Contribution to the joint monograph “Pure Water” (Chair of hydrogeology and geodesy jointly with the Chair of hydrogeology of the St Petersburg State University and Berkeley University (USA)).
- Negotiations are conducted with French Institute of Environmental Research (Paris). Late in 2005, a French delegation visited the RSHMU to discuss a possibility of joint works, exchange of students and probationers. Mutual interests are: water resources and their use, water quality, hydrological risks.

1.7.2 Completed and ongoing scientific projects

The following international projects should be noted:

- “Comparative analysis of the conditions for channel formation and channel forms display in large rivers of Russia and China (case studies of the Northern Dvina, Vychegda, Lena, Ob, Huang Ho, and Yangtze rivers)” (Grant RFFI-GFEN China, completed in 2005).
- “Conservation of wetlands and fauna species in the south of West Siberia”. Grant of the government of The Netherlands. Russian-Dutch Project “PIN-MATRA SE 075”. Implemented by the Institute of Water and Ecological Problems (IWEP SB of RAS).
- “The Rehabilitation of the Ecosystem and Bioproductivity of the Aral Sea under Conditions of Water Scarcity”. INTAS-01-0511. Implemented by IWEP SB of RAS.
- “Informative facilities to control water quality in river basins based on economic and ecological considerations”. INTAS-01-0768 Dsgjkyztncz with BD”G CJHEY/.
- INCO Project “International water resources control: to sustainable future of the Aral Sea basin”; implemented at the support of the European Commission and participation of the Hannover University, 2006-2008.

2. FUTURE ACTIVITIES

2.1 Activities planned until December 2007

The following activities are planned:

- International conference on the problems of hydrometeorological safety (prediction and adaptation of the society to extreme climate changes). 26-29 September 2006, Moscow, ROSHYDROMET.

- International scientific conference “Extreme hydrological events in the Aral-Caspian Region”, to be supported by the International Association of Hydrological Sciences, Moscow, October 2006.
- IVth International conference “Ecological and hydrometeorological problems of large cities and industrial zones”, 25-27 October, 2006, St Petersburg, RSHMU.
- Preparation for the Tenth International Symposium on River Sediments “Impact of river sediments and channel processes on social, economic and ecological safety”, 1-4 August 2007, Moscow, MSU.
- International symposium “Floods. Risk of flood formation and strategy of control in extreme situations”. To be supported by the Federal Agency on Water Resources, Russian Academy of Sciences and ROSHYDROMET, October 2007, St Petersburg.
- Advanced course for hydrologists “Expertise of hydrological computations for construction, including preparation of technical regulations on hydrometeorological safety of structures”, 2007, St Petersburg, SHI.

2.2 Activities foreseen for 2008-2009

These activities will be considered at the meetings of the NC of Russia for the IHP in 2007, at the preparation of programmes on research in hydrology and water management in different agencies and organizations of Russia for 2008-2010.

2.3 Activities envisaged in the long term

It is assumed to organize the next VIIth All-Russia Hydrological Congress in 2010-2012.