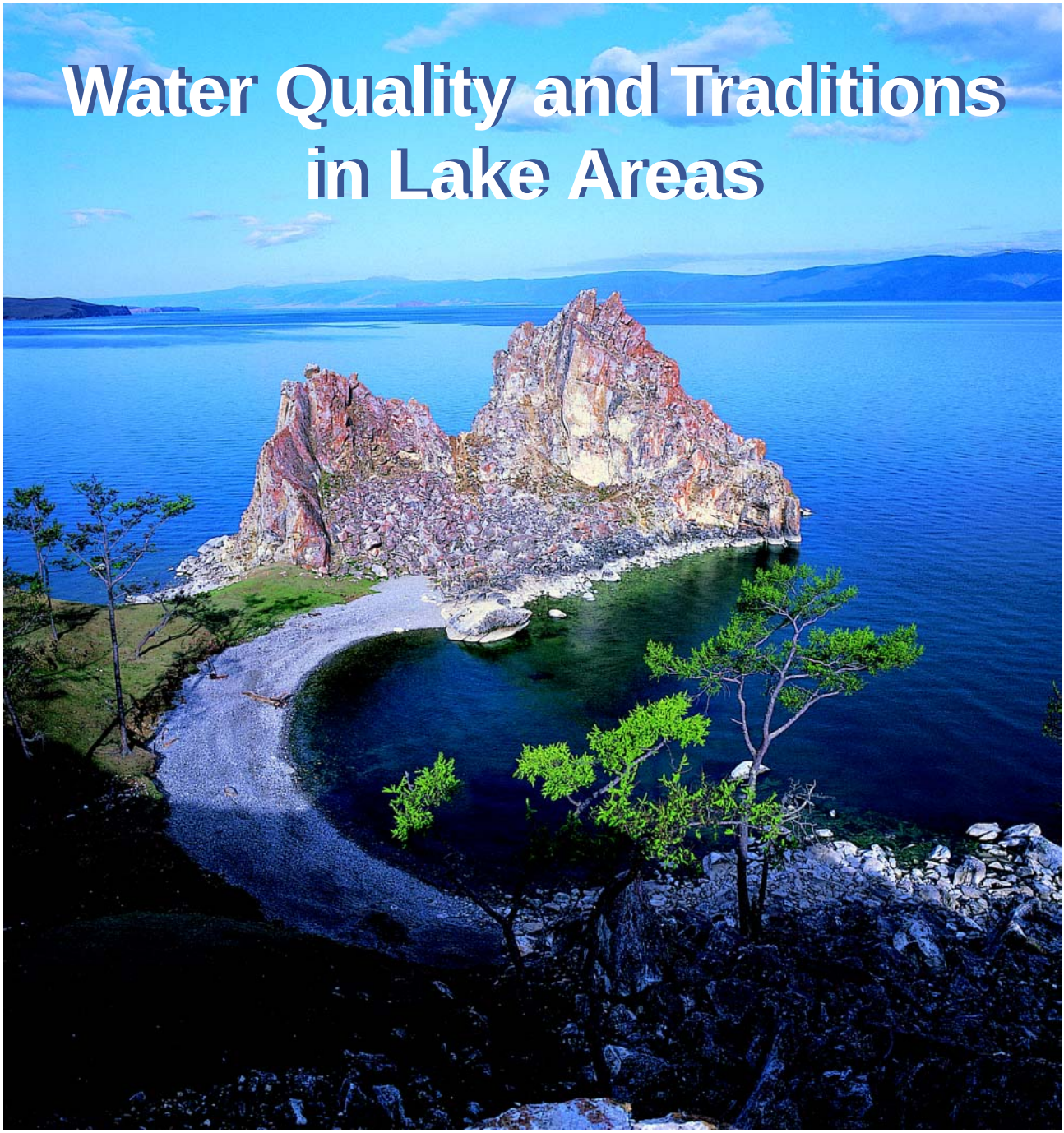
Living Lakes

Global Nature Fund



6th Living Lakes Conference

Lake Baikal, Russia

30 July - 3 August 2001

Documentation

The Living Lake Partners

Partners:

1. Columbia River Wetlands; Canada
2. Mono Lake; California
3. Laguna Fuquene; Columbia
4. Pantanal Wetlands; Brasil, Bolivia, Paraguay
5. Mar Chiquita; Argentina
6. Norfolk & Suffolk Broads; Great Britain
7. La Nava Wetland; Spain
8. Lake Constance; Germany
9. Milicz Ponds; Poland
10. Nestos Lakes; Greece
12. Lake St. Lucia; South Africa
13. Lake Uluabat; Turkey
14. Dead Sea; Israel,Jordan, Palestine
15. Lake Tengiz; Kazakhstan
16. Lake Baikal; Russia
17. Lake Biwa; Japan
18. Laguna de Bay; Philippines
19. Mahakam Lakes; Indonesia

Candidates

11. Lake Larache; Marocco

6th Living Lakes Conference, Lake Baikal, Russia, August 2001

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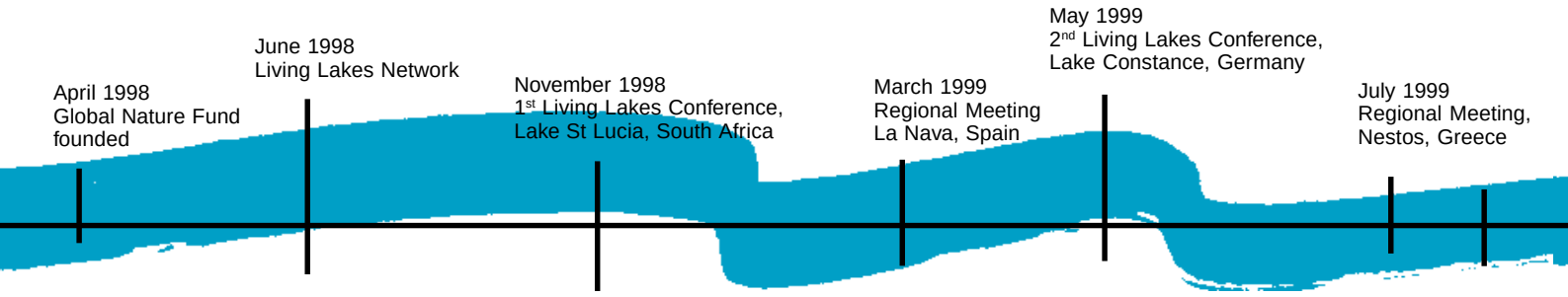


6th Living Lakes Conference, Lake Baikal, Russia, August 2001

Prof. Dr. Gerhard Thielcke
President of the Global Nature Fund

Preface

From July 30th to August 3rd 2001, the 6th International Living Lakes Conference took place at Lake Baikal in the Republic of Buryatia. Hardly any of our previous world lakes conferences had ever attracted such an attention in the preliminary stages of a meeting as this one. More than 160 participants from 19 nations, numerous journalists as well as high-ranking decision makers and experts from policy, science, economy and non-governmental organisations took part in this conference with the topic „Tradition and Water Quality in Lake Regions“. The Vice-President of the Federal Republic of Buryatia, together with Ms Gila Altmann, German Deputy Minister of the Environment, inaugurated the conference.

The participants discussed appropriate measures and projects to protect the water quality of Lake Baikal and shared experiences between the different Living Lakes partners. The main topics of the conference were also shown by several excursions into affected areas of Lake Baikal. For many years the protection of lake Baikal has been the subject of studies, planning and scientific exchange. Now conclusions are being put into practice to protect lake Baikal. The Living Lakes-partner organisations from all over the world are supporting the Russian environmental organisations in their activities and their demands.

I would like to thank our local partners GRAN and FIRN as well as the Baikal Institute for Nature Management for their hospitality and the perfect organisation of this conference. They play a vital role in this regard, as they work closely with local people and scientific institutions. A special thank goes to our sponsors, that made this meeting possible: Unilever, the Global Partner of Living Lakes, our economic partners DaimlerChrysler, Lufthansa, T-Mobil, Kärcher, the German Ministry for Environment and the German Federal Agency for Nature Protection.

Conference participants in Enchaluk at Lake Baikal.

October 1999
3rd Living Lakes Conference,
Mono Lake, California

December 1999
Lake St Lucia
World Heritage Site

June 2000
4th Living Lakes Conference,
EXPO 2000, Germany

November 2000
5th Living Lakes Conference,
Lake Biwa, Japan

December 2000
Pantanal
World Heritage Site

August 2001
6th Living Lakes Conference,
Lake Baikal, Russia

The Living Lakes Network

"Living Lakes" History

Living Lakes History Living Lakes is an international lake partnership created and co-ordinated by the Global Nature Fund (GNF), an international non-governmental and non-profit organisation, located in Radolfzell at Lake Constance in Germany. A principal task of the foundation is to further and promote sustainable development objectives at international level. The Living Lakes project was introduced to the public in 1998. At present the international lake network consists of more than 20 environmental organisations (NGOs) from five continents.

Lakes are very attractive for human activities and often important freshwater supplies. But lake areas are not only man-made landscapes, recreation areas for tourists and drinking water reservoirs. They are also sensitive ecosystems - gathering places for migratory birds and habitat for millions of animals and different plants. Due to their vulnerability, lakes all over the world are nowadays exposed to various threats like e.g. toxic pollution, eutrophication, over-abstraction of water or siltation.

Pollution in rivers, lakes and seas or in the air is not limitable. And so is the situation for migratory species, for which lakes are often important habitats. A good example is waterfowl which might breed at one lake, rest at another and winter at a third place. As nature and pollution know no boundaries co-operation needs to be international to protect sensitive ecosystems rich of biodiversity like lakes and wetlands. Up to now, the protection of lakes is almost exclusively left to regional or national initiatives. The overall intent of the International Lake Network is to prepare the ground for an on-going and sustainable international dialogue and co-operation between all private and public stakeholders involved in water issues.

Objectives are to further the exchange of know-how and technologies (like e.g. low water flushing systems or solar cell technology for boat engines) and experiences between environmental NGOs and other stakeholders of lake regions moving Agenda 21 objectives from paper to practice. Annual "Living Lakes“ conferences are held, thereby promoting the exchange of experiences, formulate statements, co-ordinate single activities and agree on further steps for common activities. Two internet websites and intensive PR work are crucial instruments to present the activities and results of the international co-operation to a wide public. The Lake Network supports campaigns and activities providing financial support from international conservation programs. GNF co-operates closely with international organisations like the secretariats of the UN Convention on Migratory Species (CMS) and the "Ramsar Convention" on the conservation of wetlands.

Global partner of the Living Lakes project is Unilever, a Global Player itself. Unilever supports the world-wide activities of the Global Nature Fund. Additionally, national Lever companies back up lake projects at national level. Sponsors at international level are DaimlerChrysler, the German airline Lufthansa and the telecommunication company T-Mobil. Other partners from the private sector are: Media partners of the Living Lakes project are the nature magazine natur&kosmos and the publishing house Gruner+Jahr, publishing the well-known magazine GEO. Living Lakes is also supported by Deutsche Bundesstiftung Umwelt (German Federal Foundation for Environment) and Ökobank in Frankfurt. Small and middle-scale enterprises include the Kopf AG, a pioneer in the field of solar energy devices. The Living Lakes project fits perfectly with its economic partners' approaches to sustainable development. In both, the sharing of knowledge, encouraging best practice, recognising global responsibility and establishing local partnerships between NGOs, business, authorities and local population, are all vital elements.

The Ivolginsky Monastery, located at Lake Baikal, is the most important Buddhist temple in Russia.

April 1998
Global Nature Fund founded

June 1998
Living Lakes Network

November 1998
1st Living Lakes Conference, Lake St Lucia, South Africa

March 1999
Regional Meeting La Nava, Spain

May 1999
2nd Living Lakes Conference, Lake Constance, Germany

July 1999
Regional Meeting, Nestos, Greece

Summary of the 6th Living Lakes Conference

This conference with the topic "Water Quality - Challenge for the Future" focused on appropriate measures and projects to protect the water quality of Lake Baikal and other case studies of Living Lakes Partners. In this context the effects on the ecosystem and the biological diversity were highlighted. Another main issue is the influence of traditional ways of living on the lake ecosystem.

Lake Baikal is the oldest and largest lake in the world with 20% of the world's accessible fresh water resources. Lake Baikal is bordering the Republic of Buryatia, situated in the central part of Asia. While 333 rivers flow into the lake, there is only one outflow, the Angara river. Besides breathtaking views, the area offers large variety in plant and animal life, a majority of them endemic species. In December 1996, UNESCO recognised Lake Baikal as a World Heritage Site, placing 3.15 million hectares under international protection. Nevertheless the "Pearl of Siberia" is still threatened. In recent years, human environmental impacts and poachers have affected Baikal's animal population, particularly fish and the "Nerpa", the famous fresh water seal. Also the water quality is deteriorating due to negative impacts from agriculture, toxic pollution, municipal and industrial waste water.

On the first and second day of the Lake Baikal conference Living Lakes Partner, as well as experts from economy, policy and scientist discussed about strategies to protect the water quality, a "challenge for the future" especially for Lake Baikal. In addition to that program, several excursions, like a visit to the purification facilities in Ulan Ude or a trip down the Selenga river, as well as a visit at the Museum of the Buryat Scientific Center and at a regional textile factory were organised to show the environmental situation. On August 1st the participants went on the Selenga excursion, which included a boat trip to the Selenga Delta to discover the biodiversity at the shores of Lake Baikal. On August 2nd the Lake Baikal excursion to Tolonki and Pribaikalskij National Park brought the participants on a boat trip to the cliff "White Stone" and to the Boldakovskaya Thicket to show ornithological, botanical and limnological aspects.

Press conference in Ulan-Ude, the capital of the Republic of Buryatia.

Welcome Statements

Michael Semyonov

Chairman of the People's Parliament of the Republic of Buryatia

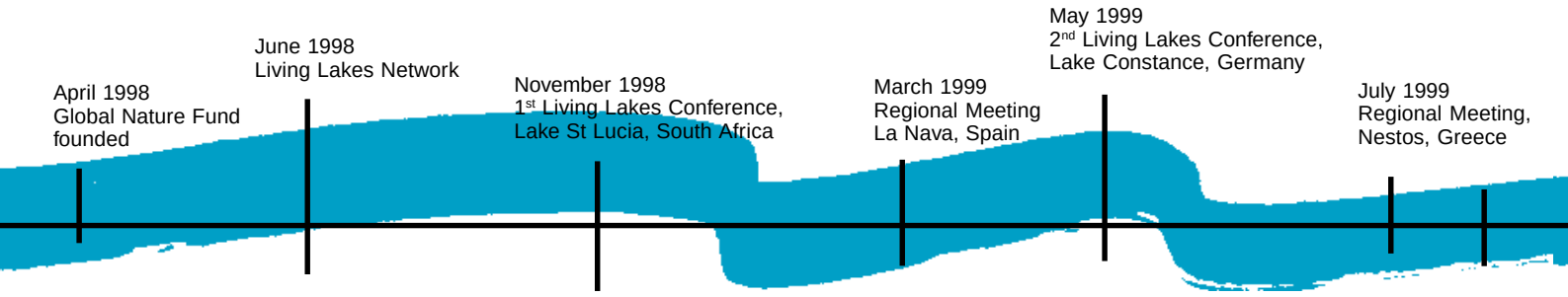
On behalf of the people, Government and People's Parliament of the Republic of Buryatia let me greet everybody who gathered here to participate in the 6th Living Lakes International Conference, Global Nature Fund, on the subject of "Water Quality and Traditions in Lake Areas". We, locals of Pribaikalje, appreciate that this international forum united people deeply concerned by nature protection from 25 countries of the European, North and South American, Asian and African continents. We sincerely believe that results of the conference will give a new impetus to the consolidation of efforts of our countries and the world community to protect and restore lake ecosystems.

People in Buryatia like nowhere else are fully aware of the achievements and drawbacks in this field because the half century struggle for lake Baikal conservation abounds in dramatic periods. It is widely known that Baikal contains 20% of the world fresh water supply and is included in the list of the World Natural Heritage Sites. 75% of the coastline of this unique lake form a natural border of the Buryat Republic. At present we can observe that negative anthropogenic impact on the lake and its ecosystem has been considerably reduced for the last decade. But our activity cannot be limited on nature preservation measures. In the context of increased competitiveness and globalisation the problems of Baikal conservation need to be correlated with social priorities and goals and with new requirements to the living standard. The attempts to make the Republic's economy environmentally sound cause serious economic problems. The so called "Baikal factor" - additional cost of nature conservation measures - reduces the efficiency of our industry and makes its production non-competitive.

In accordance with the recommendations of the 1992 UN Conference on the Environment and Development a conception of the Russian Federation transition to sustainable development was worked out and approved in 1996. Due to the natural and geographic features Buryatia was among the first to accept this new ideology of sustainable development and offered its territories to be used as model ones. Presently the Russian Federation Government is considering the question of giving Buryatia a status of the territory of sustainable development. This status will attach a geopolitical importance to the Republic for elaboration of this model and exchange of experience with other regions of Russia and of the Asian-Pacific Region. This will also allow Buryatia to carry out a structural reorganisation of economy, stimulate the ecologically clean production and develop the market of environmental services. At the moment we are working on a target programme providing for creation of a system focused on a complex solution of environmental issues by governmental, regional and local administrative bodies. That is why it is vitally important today to propagandise the idea of lake Baikal conservation for the present and future generations as a historic mission of the Russian people and the whole humanity.

We appreciate the commitment and efforts of different countries and international organisations to protect lake Baikal. In this respect we regard as highly positive the experience of the Global Nature Fund which demonstrated the effectiveness of the international collaboration of scientists, businessmen, administrative bodies officials and local people to protect lake ecosystems and nature. The Living Lakes projects similar to the one which was implemented on the La Nava lake should be investigated and adopted to other lakes. We are glad to see that the Baikal Information Centre GRAN and the Baikal Institute of Nature Management successfully represent lake Baikal in the Living Lakes programme and actively participate in the creation of an international network of lakes' protection. A number of other international projects are also successfully carried out in Buryatia. However it is a long way to be able to correlate effectively an appropriate living standard with environmental safety.

Our future depends on today's agenda. On our part we will contribute to the realisation of the Living Lakes programme. I wish to the 6th International Conference of the Global Nature Fund a successful and productive work.



Gila Altmann

Deputy Minister for the Environment Germany

Thank you very much for inviting me to speak to you on behalf of the Federal Ministry for the Environment about a topic that is one of the most important ones for the future of humankind. My Minister, Mr. Trittin, is conveying his greetings to you and wishes the conference a successful result.

Lake Baikal is a special case. I do not wish to list all superlatives of the „Pearl of Siberia“ now as we will hear a lot more about it in the course of this Conference. However, we have evidence that lake Baikal is threatened by a number of various impacts. I would explicitly mention that the Federal Ministry for Environment is aware of the importance of Lake Baikal and the problems attached to it. We have assisted the Russian Federation in solving the problems in the past and will do so in the future, if requested. I am grateful to the Global Nature Fund, represented here by Prof. Thielcke and team, for tackling this issue and helping to shake the public to give more attention to the importance of sustainable management and development of lakes worldwide. To connect sites that have similar problems into a network for the exchange of experience is an activity that deserves special merit. It gives people the hope that they are not left alone with their problems and that they have advocates who care for their well-being.

Water is the basis of life. But at the same time there are quite a few examples which demonstrate the thoughtlessness we have shown in managing this resource. Not even 1 % of the water of our planet is available for human use, as you know. A treasure indeed, which should be guarded and wisely used for the benefit of the present and future generations. The reality is different. Contamination of water bodies has reached dimensions that more than one billion people do not have access to drinking water. In some regions of the world the wasting of drinking water for other purposes has become a daily luxury while people in large areas suffer from drought and desertification. The experience of the Aral Sea clearly shows that „unwise management“ is causing disasters for people and their ecological systems.

Extremely alarming are the predictions of scientists about the consequences of the human induced climate change. Irregularities in climate and weather are about to intensify the contrast between water-rich and water-poor countries and people. There is no alternative to a harmonized approach of the world community for solving that problem than to adopt and implement the Kyoto-Protocol of the UN Framework Convention on Climate Change (UNFCCC).

Sustainable use of water resources is one part of the overall magic strategy of the international community: Sustainable development! About ten years ago the Conference of the United Nations for Environment and Development (UNCED) has set a frame in chapter 18 of the Agenda 21 for protecting the quality and quantity of water. The United Nations through their ACC Subcommittee on Water Resources which unites all relevant UN-organisations have put water resources management high on their agenda. Since then many international conferences have dealt with the issue of water resources management and all over the world water has become an issue of great concern.

Gila Altmann, Deputy Minister for Environment, offered the support of the German government in solving problems at Lake Baikal.

Welcome Statements

The European Union has recently adopted a framework directive on water management driving at managing the water resource at a catchment basis. We all bear responsibility for the protection of the global environment, although this responsibility varies according to the local and regional conditions. The global challenges facing mankind implementing the objectives of sustainable development cannot be met by countries acting individually. Activities must be undertaken by all the stakeholders. Initiatives for strengthening joint international efforts for the protection of the environment are a prime concern of German policy. Germany will therefore host an International Conference on Freshwater from 3 - 7 December 2001, in close co-operation with the United Nations. The German government wishes to make a contribution to solving global freshwater problems and to support the preparations for the World Summit on Sustainable Development in Johannesburg in 2002. Invitations are currently sent out to all members of the United Nations, to UN Organisations, International Organisations and Major Groups.

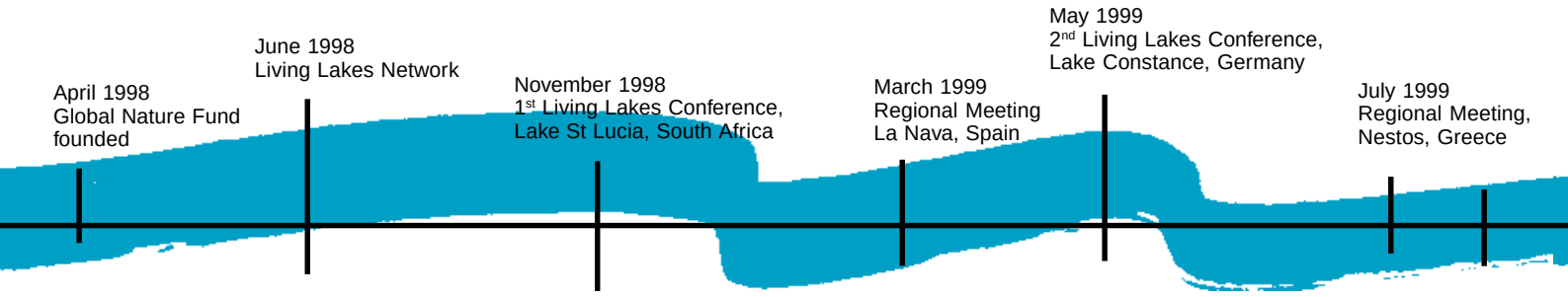
The Conference theme: water - a key to sustainable development - will consider progress made in the implementation of Agenda 21, Chapter 18 and define the necessary action. The Conference will have a focus on the needs of the poor and wants to contribute to the fulfilment of the Millennium Declaration targets by finding solutions for increasing access and affordability to safe drinking water stopping the unsustainable exploitation of water resources. The World Summit on Sustainable Development, to be held in Johannesburg next year, is both an opportunity and a commitment for all of us. It will not only allow us to take stock of achievements ten years after Rio. But it will also help to make clear advances towards the goal of sustainable development aiming at constructive implementation plans and innovative initiatives.

The topics of the World Summit have not yet been officially specified but as I already mentioned water is one of the most pressing global, regional and national fields of action necessary to implement the goal of sustainable development. (For further and detailed information I would like to point out to the Conference website www.water-2001.de.)

These are examples for political measures on a macro-scale to tackle the problem of sustainable management of water resources. However, concrete action must not be left only to the famous decision makers. The public at large, every individual must change her or his behaviour to " not waste water but save water" for the benefits of the present and future generations.

Coming back to Lake Baikal: Already in 1986 the former Soviet Union established the biosphere reserve of UNESCO "BARGUZINSKY" with about 700.000 ha mainly to protect the fragile ecosystem of Lake Baikal. In 1996, the World Heritage Committee included Lake Baikal into the list of World Heritage Sites. The Committee commented: "The Committee inscribed the Lake Baikal as the most outstanding example of a freshwater ecosystem on the basis of natural criteria. It is the oldest and deepest of the world's lakes containing nearly 20% of the world's unfrozen freshwater reserve. The lake contains an outstanding variety of endemic flora and fauna, which is of exceptional value for evolutionary science. ..." The lake itself is one of the most species divers limnic ecosystems of the world. UNESCO recognizes about 1.500 aquatic species, 80% being endemic, among them 255 species of shrimp-like amphipod species that make the ecosystem of the lake so unique but also so vulnerable. Thus, the conservation and rational use of Lake Baikal is not only to be seen in connection with the World Heritage but also a contribution of the Russian Federation in implementing the objectives of the Convention on Biological Diversity.

With the inclusion in the World Heritage List the Government of the Russian Federation and the international community accept a special obligation. The Government has to do its most to ensure the integrity of the concerned site and the international community has to assist the Government in its efforts. The World Heritage Committee concludes: "... Finally, it noted concern over a number of integrity issues including pollution, which should be brought to the attention of the Russian authorities". I hope that this Conference may contribute to solving these "integrity issues" of Lake Baikal in particular and to direct the view of the world on the other members of the Living Lakes Network.



Prof. Gerhard Thielcke

President of the Global Nature Fund

Lake Baikal and its people are fascinating for us from Western Europe and for the people of the whole world. For one thing, it is enormous! Projected on a map of Germany, Lake Baikal would stretch from the Baltic Sea in the North to Lake Constance in the South. Then there is the depth: 1,637 m plus sediments of 6,000 m deposited over 25 million years or more. And there is the big number of endemic species in the lake: 1.560 animal species and 390 plant species. One could say that Lake Baikal is a laboratory of evolution similar to Galapagos.

There are many non-governmental organisations active in the countryside of the Baikal. This is quite unusual for Russia from my experience. Moscow was far away during the communist regime, was the reason given by our local partners! All people are prejudiced. Our prejudice was: All the waste water from human communities flows untreated into the tributaries, and then into Lake Baikal. But during an excursion to Lake Baikal, Udo and members of our partner Kärcher realised that in three communities the waste water treatment was ok., and the paper mill visited had a closed water cycle. - I think we have much to learn about Lake Baikal, and we will hear more during the conference on Monday about "Water quality - challenge for the future“. On the other side, we were shocked about the results of a survey: 55 % of the people interviewed still use DDT dust for disinfecting pet's wounds, killing dogs' and cats' fleas, exterminating garden pests, and to combat lice.

I think the Global Nature Fund would be right to finance a campaign of our partner organisation against the use of DDT because it is an insidious poison for both humans and animals, and enters into the food chain. We hope that this campaign will be successful. In this case the tradition - that's the second theme of our conference - has to be broken with without ifs and buts!

Our partners FIRN and GRAN (Baikal Information Centre) have many plans and ideas. They want to establish a model of sustainable tourism, push the co-operation between government, business and science, and establish a real protected area in the Selenga Delta for migrant birds in connection with the Ramsar Convention.

Lake Baikal is a World Heritage Site. I would like to cite one sentence from the preamble of the Convention for the Protection of the World Cultural and Natural Heritage: "Parts of the cultural or natural heritage are of outstanding interest and therefore need to be preserved as part of the world heritage of mankind as a whole“. For this we are here, let's take some action on our words!

Erich-Helmut Buxbaum

Director of Unilever Austria

In the last two weeks there were two events, which came into my mind when I was travelling to this conference. The one event was the G8 meeting in Genoa and the unfortunate and tragic result of the violent demonstrations, and the other event was the conference in Bonn in Germany which desperately tried to translate the Kyoto protocol into an international treaty.

Let me first take the event in Genoa where the G8 Conference took part. Violent demonstrations destroyed many objects and values and unfortunately one of the demonstrators died in the demonstration. It is important to understand and to accept that people have different opinions and different thoughts about the same problem.

We need to discuss this, we need to understand why other people have a different opinion of a certain problem and we should do this in a considerate manner. Demonstrations yes, but in a peaceful manner.

Water in itself is now for hundred of years a source of conflict. Leonardo da Vinci and Macchiavelli planned already in 1503 to divert the Arno River away from Pisa in the conflict between Pisa and Florence. And in the recent wars in former Yugoslavia bridges on the Danube were bombed, hydroelectric plants were destroyed and water systems were shut down as a part of the military strategy. And if we are looking ahead a few years, there is a

Welcome Statements

Mr. Buxbaum (left), Unilever and Gila Altmann, German Ministry for Environment, at the press conference during the 6th Living Lakes Conference.

big chance that several conflicts will originate from the attempt of one nation to control common water resources, disputes about the proper use of shared rivers, disputes about excessive use of shared water resources by one nation, water pollution and so forth.

I am glad to say that within the Living Lakes projects we all have learned how to work together to get sustainable results. Some years ago it was not a given fact that communities, NGO's, companies and governments were openly talking to each other. Today we can. Our aim must be - not confrontation but co-operation, not violence but active partnership, not fighting each other fur fighting together to achieve sustainable results. The other event was the conference in Germany to transform the Kyoto protocol of 1997 into an international treaty. Over the last months there was hectic activity to convince some important big nations to sign the protocol.

And finally 186 nations, amongst them 38 industrialised countries, signed up to the Kyoto protocol with binding targets to reduce their greenhouse gas emissions. One nation which is responsible for more than 25% of the emissions did not sign this time, and this is a huge foreign policy defeat for the administration of this country.

But consider this. All big things don't need a big push, but only as little push to start. And this first push could be a very tiny one. Think of an avalanche. Or think about an epidemic, where there is a tiny tipping point, which lets the whole thing explode. And we should see the signing of the Kyoto protocol in this respect, "as an early, small but tentative step along a very long road". Margot Wallström, the EU environment commissioner said, "now we can go home and look our children in the eye and be proud of what we have done". But should we be proud? Is the time frame right, do we have enough time?

Let me establish a few figures. Over the last 10 years some 600 to 800 million people got access to water which had none before. This is an impressive result and we should congratulate each other. However, today there are still 1,4 billion people without access to water. This is 5 times the size of the United States. And there are still 15 million people dying every year because they have no access to safe water and more than 2 billion people have insufficient sanitary equipment or no effluent treatment causing many illnesses. If we continue doing business as usual in 25 years time we will have the following figure. Out of an estimated 8 billion world population nearly 4 billion will have no sufficient access to clean water! So let's not get too complacent with what we have achieved.

As far as the global water initiatives are concerned, there is quite some history and progress and many international meetings! Starting in Mar del Plata in 77, the UN World summit on water, followed by the US water decade 80 to 90, the Rio de Janeiro in 92, with the Agenda 21, the Global Water Partnership, the yearly events in Stockholm, the Global Water Forum in The Hague last year, and so on. These are important and necessary conferences and meetings

- to establish the problem
- to raise awareness
- to organise resources and help
- to guide and influence governments to be active in their legislation and so on.

So it is important to have global visions, but it is even more important to have local action. The local, specific projects are

- the evidence of progress
- the proof of what we have put into action
- the basis for a better live in future for us and our children.

And these projects must be sustainable. How many quick and rapid help programmes have we seen which died pretty quickly because there was no maintenance, there was no long

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July 1999
Regional Meeting, Nestos, Greece

term commitment from the local community. If one looks at some of the successful water projects and analyses the date, the course of events and the results, you will always find some of the following key success factors:

- Involvement and commitment of local people
- Financial participation of the people concerned by the project (this could be contributed of course in working hours)
- Development of an integrated plan of the surrounding region of the water basin, whether it is contributing to the problem or benefiting from the solution
- Commitment of the local companies in the region to run themselves active sustainable water development programmes, e.g. less use of water, recycling of water, reduced effluent charge etc.
- Close co-operation of all involved in the project, the community, the NGO's, the local companies, the local and regional governments. Nobody is the only leader of such a project!
- Respect of the dynamic of the local culture
- Protection of and support for bio diversity

And there will be some other key success factors. And this brings me now to Global Nature Fund and Living Lakes. Speaking for Unilever as the main sponsor now already for some years and I am sure for many more years, I am proud to say, that especially the Living Lakes projects are following these key success parameters and therefore are successful projects. Another big advantage of the Living Lakes group, or should I say brotherhood, is the quick and uncomplicated exchange of insights and learning, and their willingness to share all their experience and ideas with all others, other institutions and NGO's. There is no competitive run of ownership of experience but broad and generous sharing. And we need to continue to exploit the learning, so that we get the maximum benefit for all of us.

The Baikal lake project is certainly a big and huge challenge for everybody involved. The importance of this lake in the history of the country and the potential role this lake could play in the new century makes this lake a priority project. It will require commitment, it will require long term thinking, it will require some unpopular decisions, I assume, it will require that the government will have a proper insight and will take action, and it will not go easy. But given the potential of the lake it is worth doing it. In future more and more people will be involved in the project, and this will then lead to a better, more intensive understanding of the problems on the one side, but also the appreciation of the sheer potential of this lake on the other side.

In my discussions about water I very often say, "a raindrop is a kiss from heaven". You have millions and millions of these raindrops still in your lake, take it seriously, don't take it too easy, we still have the chance to change, influence and correct, but as I said in the beginning, "time seems to be our biggest enemy and is running out in some cases"!!!

I wish the Baikal Lake team success, don't get disappointed, believe in your project, and fight for it. We all will help you where we can. And I wish all participants that you have a successful conference, that you exchange your knowledge and ideas with new colleagues, and you will leave this conference inspired to set yourself further stretching goals for your local projects. Only together we will then achieve to have safe water for everyone and our children.

When I am asked why do companies participate in environmental programs I try to answer it as follows. The industrial companies and organisations have at least 3 responsibilities:

The first responsibility is towards their employees

- to treat them properly
- to help them to develop themselves to be their best

The second responsibility is towards the consumer

- to produce added-value, safe and useful products and services
- to help consumers to develop a better life

and the third responsibility is towards the environment

- directly, to respect rules and regulations and to adapt best practise and
- indirectly, to lead, participate, sponsor, and co-operate in sustainable development project work

Welcome Statements

Imagine that nearly all companies are using one way or the other the world's resources to make turnover and profit. To stay in business long-term they shall do everything in their power not only to use the resources wisely and in a responsible way, but also to contribute to sustainable development where ever they can, so that the resources will be also fully available to our children and grandchildren.

Unilever has declared in it's company strategy to support actively 3 sustainable development themes, namely water, fish and agriculture and we devote substantial resources. Either by active sponsorships and partnerships, but also through involvement of our companies in local projects and initiatives. Many other companies have joined this movement of supporting actively sustainable development programs. Today I invite those companies which have not started yet, or in an unsatisfactory manner, to join the club! The sooner, the better! No company can pass on these responsibilities, wherever they are. The "educated consumer" has always been and will always be a good judge. Consumers are increasingly not only judging whether products meet their standards and expectations, but also whether the producing or selling companies fulfil their role in the global concert of sustainable development. Companies which are behind are better to get ready soon if they do not want to loose consumers and share. One of our biggest enemies is time. If we are doing business as usual we are too late. If important players delay joining a global treaty, it does not help. But we can do something important here, namely to spread learning in the most rapid way. Disseminating best practice, spreading insights and knowledge in the way of a snowball system, sharing constantly what we know with many others, will accelerate the application of our knowledge, and will make it work instantly in many places. Therefore the Living Lakes Community is so important, as it facilitates the exchange of best practice in the most rapid and uncomplicated way. This is then our contribution to fight against the time issue. Let's continue to do it that way, we should even try to further accelerate and be quicker.

Sieglinde Jocham

DaimlerChrysler AG

Quality and tradition (these are also key principles at DaimlerChrysler). First and foremost, this relates of course to the products and services of our corporation. But quality and tradition are also key elements of our corporation's eco-sponsoring activities. Our co-operation with Living Lakes and the Global Nature Fund is just one example of our commitment - and a very good one.

DaimlerChrysler has been supporting the international lake network for more than ten years now. This is already something of a tradition, which elucidates our understanding of sponsoring. I need not tell you that continuity is crucial in achieving sustained success in complex projects. And we are striving for sustained success; this is why we vouch for continuity.

Sponsoring ecological projects is just one important facet of our environmental activities; it is embedded in a comprehensive concept. For example, we of course take pains to ensure that our own products and manufacturing processes are environmentally compatible and environment-friendly. This applies both to energy and raw materials management in manufacture and to the environmental balance of the products themselves. As a globally active company, we see ourselves in a position of special responsibility in this regard. Progress therefore means much more to us than ongoing technological development. We regard shaping the future in a responsible manner as one of the greatest challenges facing industrial society today.

DaimlerChrysler has long since taken on this challenge. Back in the seventies, the company was already coming to terms with the effects of production on the environment. Since the mid-eighties, environmental matters have been discussed at the highest level of management. In 1992, environmental guidelines were drawn up and resolved as a binding foundation for thinking and acting at our company throughout the world. In 1999, DaimlerChrysler invested a total of 1.5 billion euros in environmental protection; of this amount, some 870 million euros flowed into the research and development of environment-friendly manu-

April 1998
Global Nature Fund founded

June 1998
Living Lakes Network

November 1998
1st Living Lakes Conference, Lake St Lucia, South Africa

March 1999
Regional Meeting La Nava, Spain

May 1999
2nd Living Lakes Conference, Lake Constance, Germany

July 1999
Regional Meeting, Nestos, Greece

facturing methods and products - and these investments are paying off for the environment. I would like to mention two current examples:

Firstly, DaimlerChrysler is investigating the sustainable application of regenerative raw materials. Natural fibres, for example, have been used in the manufacture of our vehicles since September 2000. The experience and the comprehensive know-how that we gained from our nine-year "Belém Project" in Brazil have proved particularly valuable in this regard. Coconut fibre was used in commercial vehicle production there for the first time.

Secondly: DaimlerChrysler is working on environment-friendly drive technologies, such as fuel cell drive - a system that is practically pollutant-free. In 2002, we shall be delivering the first buses with this technology for use in public transport service.

These are just two examples; I could mention many more. They show that environmental protection has become part and parcel of DaimlerChrysler's corporate philosophy, and that this philosophy is finding its expression in specific actions. After all, we accept the responsibility that we have as a company operating on a worldwide basis - a global player.

Quality and tradition (the backdrop to this convention) gives us every reason to be optimistic. In particular, it is highly gratifying to see that industry and politics, science and nature associations are now joining forces. I would like to thank all our partners for their great commitment, and I hope that we will continue to be successful - jointly and across borders.

Buryats in traditional dress.

Dr. Klaus Rick

T-Mobil

As a sponsor of this event, we were happy to consent to the organizer's request to give a brief introductory speech to this meeting. We are gathered here to discuss environmental protection, to deliberate on errors made and the opportunities that present themselves, and to focus our attention on a very special patient, on Lake Baikal - a textbook model for the study of human endeavour, economics and short-sightedness.

In the era of globalisation, businesses are finding it increasingly difficult to assert themselves. Yet they are also finding it increasingly attractive to expand, rejecting, however, any unstructured rampant growth. One of the consequences is that planning periods are being scaled down and the focus is increasingly on short-term results. Many business executives in this world dominated by economics are being positively compelled to secure their own jobs by achieving rapid increases in value and taking decisions based predominantly on cost considerations. They do so even though they are fully aware that the long-term results of their actions are questionable. They harvest more timber from the woods than can be replenished. And they know it, and will even be rewarded for doing so.

In times like these, who cares about long-term effects? Who can be relied on to generate earnings not founded on destruction? And who will regulate and marshal? People need to be taught about environmental protection. In schools, in government agencies and in business. The issue needs to become an inherent part of our lives. And additional incentives need to be created to encourage people to act in a way that will secure the long-term well-being of society at large. We need to identify, accept and internalise the real costs of our actions. Who will be liable for the costs generated by poor health and the human downtime it causes? And who will provide compensation for reduced biodiversity? We, all of us, are already paying the price. And if we fail to expand the realm of our responsibility and to expand our horizons rather than construing our options to be a confined island

Welcome Statements

of quick success, we and the generations to come will be forced to pay a far higher price still. We need to find a balance between economic necessity and the ecological and social welfare of our environment.

Continuing my line of questioning, I ask: Who rewards sustainable decision-making and the strategic use of resources? For example by taking possible future "downtimes" into the equation and avoiding future costs at the outset? I specifically mean macro-economic costs. A doctor, after all - and I will stick to my original metaphor here - ought to be rewarded for making his patients healthy, and not for any illness he brings on.

I firmly believe that the company I work for is not the only one helping to ensure that we take a more environmentally responsible course. Indeed, the entire telecom´s industry is prepared to take on such responsibility. After all, consumers will easily recognize one-dimensional endeavours to maximize profits while ignoring due ecological considerations. If we were to act in any other way but responsibly, we would be destroying the foundations on which we stand. As far as our particular sphere of influence is concerned, I can declare that it is an integral part of our daily mission to further minimize adverse environmental effects.

But what sort of environmental relevance does a mobile network operator or a telecom company like us really have, when you consider that we don't actually manufacture mobile phones, but only market them?

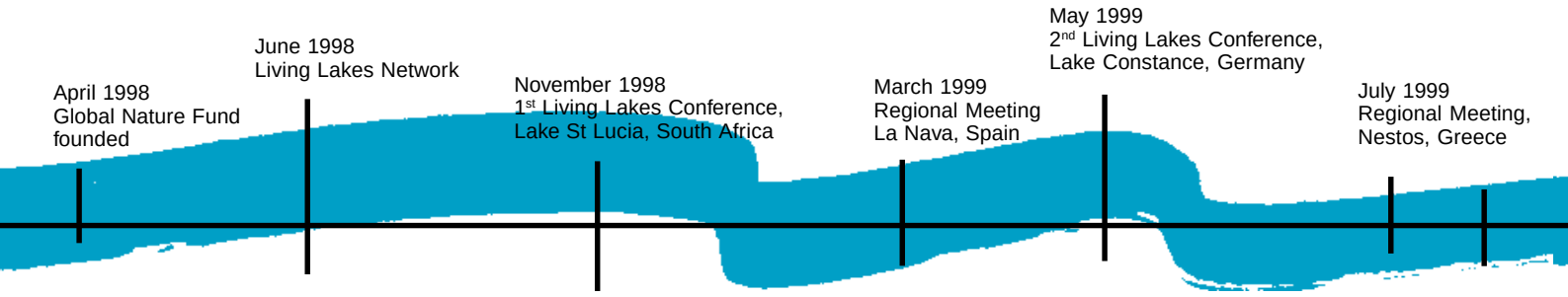
What we sell are abstract virtual goods such as air-time, rates, mobility packages. For which, however, we do operate a growing communications infrastructure. There are over 40,000 vehicles, for example, used within the Group, over 20,000 wireless-transmission facilities for T-Mobil in Germany alone, and a network of well over 40,000 stations for T-Mobile International - thousands of which populate the landscapes on mountains and in fields. We maintain an office infrastructure for over 150,000 group employees. We also issue millions of terminal devices, about which, at least in the past, we had no information as to what they were actually made of or where they ended up at the end of their product life.

A key focus of our environmental activities is on reducing the impact of technologically generated radio-wave emissions - i.e., electro smog. In conjunction with the Ministry for the Environment, with other operators and system suppliers, we are progressively compiling internal technology-impact assessments as well as standards for even further reductions in emission levels. (We have already achieved levels that outperform the WHO criteria by a long shot.) Our efforts are aimed at averting any risks from the people, animals and vegetation living or growing within close proximity to the stations we use. In addition to our environmental management unit, we have established a special team to deal with all issues of transmission technology and emissions registration. We take the inquiries directed at us by the public seriously, we follow up on them, and we continue to keep abreast of research developments and expand our own research efforts in this field.

Another environmental issue which is directly linked to the goals of the Summit On Climate Change, which has just drawn to a close in our home town of Bonn, is that of energy consumption and carbon dioxide production. We are vigorously working on cutting our overall energy consumption.

In view of high energy demand, we expect more from our suppliers than just lip service. On this front, too, we cooperate with other operators, sitting down with suppliers to review the compliance of their systems with our ecological demands, to formulate environmental criteria for delivery contracts, and to call for more strenuous environmental efforts and recognizable results. Those who don't play by the rules will face a real problem! The program launched to correspond with this policy is our Greenbook Initiative. This initiative is a first step towards committing all operators to fixed environmental standards in terms of the construction, operation and disposal of mobile radio networks. Suppliers will benefit from the reliability these standards provide for their planning processes, enabling them to better meet the more stringent demands of our industry. And that, in turn, will benefit the environment.

Deregulation of the energy market has produced price cuts - though it must be said that the benefits thereof were to some extent neutralized by the eco-tax levied in Germany. Despite these price cuts, however, we will



persist in our efforts to reduce the energy supplies we procure, but also to reduce radio emissions. Needless to say, there are economic considerations involved here, as well.

You will gather that we, too, are committed to pursuing environmentally friendly corporate policies and to creating preservation-oriented processes, technologies and products. Just like you, we have a vital interest in examining the long-term benefit of any strategy or investment option and then acting accordingly - front of pipe. Anyone who has come to realize that the basis for the existence of future generations, that our own quality of life and that the natural diversity of our planet have been at risk for some time now - here on Lake Baikal and elsewhere - will be determined to make others aware. And I can assure you that we will continue to give thought to these issues and to act accordingly. We are still in need of answers to the questions of responsibility I have posed. But the time that remains for us to actually influence those answers is melting away like the ice on this beautiful lake in spring.

You, in your capacity as decision-makers and champions for the environment, we, the corporate world, and the political community as the regulating body have it in our power to help generate the right answers by putting social concerns at the centre of our plans for the future, by subjecting our own negative history of short-sighted decision-taking to genuinely critical review and by looking beyond our habitual horizons. Let us all work towards taking our responsibility more seriously.

This will be a challenging, many-facetted conference. I would like to express once more how much we appreciate that the Global Nature Fund, who initiated this event, continues to staunchly pursue its commitment to conservation and water protection. But I would also like to thank you for doing away with the preconception that corporate executives think only in terms of dollars, euros and the stock market. You will find more allies in the corporate world than you might think. And I am convinced that our co-sponsors and the other corporate representatives at this conference will agree with me.

Pristine shoreline at Lake Baikal.

Prof. Dr. Wolfgang Engelhardt

Honorary President of Deutscher Naturschutzring, Germany

The Future of Water - Challenges and Solutions:

Water Quality

The Scientific Council of the Government of the Federal Republic of Germany has devoted its annual report 1997 to almost the same topic "Global Environmental Changes". It contains 419 pages. In 45 minutes I can only deal with a few aspects of the general problem, aspects that I consider most important with regard to this conference. The Scientific Council of the German Federal Government as well as the Worldwatch Institute in its report "State of the World 1999" stressed that acute freshwater shortage is the crucial problem for about 2 billion people at present. The saying "Without water no life" is still valid.

The astronauts called the earth "the Blue Planet". Its total water quantity amounts to approximately 1.4 billion cubic kilometres. The oceans contain 96.5% of it covering 71% of the earth's surface. The rest (1.77%) is stored in ice water (poles and glaciers), groundwater (1.7%) as well as water from lakes, swamps, rivers, permafrost soils - water we often forget to take into consideration - , and the water of the atmosphere: together 0.03%.

Every year, about 41,000 cubic kilometres freshwater from precipitation minus evaporation, flow into the oceans, 28,000 cubic kilometres directly as surface water and 13,000 cubic kilometres indirectly via groundwater and rivers. For various reasons, only about 10,000 cubic kilometres are usable for man. At present, about 18% of these renewable resources are used, 69% for farming, 23% for industrial purposes, and 8% in households (drinking and sanitary water). By the way, 96% of the extracted water destined for the industrial production is used in North America and Europe.

The earth's fresh water resources are the same now as they were 2,000 years ago when the world's population was less than 3% of today's. And the human population will continue to grow in the next decades, the water consumption will increase further as well.

Since 1940 the fresh water resources available have decreased by 2,5 - 3% yearly (in the global average), in the developing countries by 4 - 8% while the world's population increased by 1.5 - 2% annually. World wide only about 10% of the renewable water potential is being used, the problem is the completely uneven distribution of the utilisable water quantities. So Lake Baikal contains almost 20% of the freshwater available in lakes world wide, about the same quantity as the Great Lakes in the border area of USA and Canada together. Frequently, the water shortage is especially severe, and the water quantity bad in countries where the population is growing particularly fast. On the other hand, several enterprises have recently expressed their intention to transport fresh water from the Canadian provinces Newfoundland and British-Columbia, in tanks, to USA and sell it there very profitably. After strong protests of the population - water is a public property in Canada - the government has not yet authorised the transport.

Acute water shortage is defined if less than 1,000 m^3 water is available per person and year or if 40% of the water potential is being utilised. Water potential is defined by the water quantity being at the disposition per person and year. It depends on the annual precipitation minus evaporation loss and the surface run off. About 2 billion people, a third of the global population are lacking of sufficient drinking and sanitary water. In the developing countries every second person suffers from water-borne diseases, diseases that are caused by germs in drinking water. Every year, about 5 million people in developing countries die of such an illness. Now I would like to illustrate some of the problems that particularly threaten the earth's fresh water resources.

1. Irrigation projects

In the semi-arid regions of Asia, fields were being irrigated more than several thousand years ago. World wide, at the turn of the 19th to the 20th century, the artificially irrigated farmland was estimated at about 48 million hectares. By 1950, these areas doubled to

94 million hectares, and in 2000, about 260 million hectares were irrigated, about three times as much as in 1950. Thanks to the irrigation, Lester Brown referred to it (1999), it was possible to extend farming into arid, naturally extremely dry areas. In monsoon countries additional harvests during the dry season were made possible, and last but not least, the application of artificial fertilisers in large quantities was then possible.

Today, about 40% of the global food production comes from irrigated fields. Two thirds of the irrigated areas are found in Asia where 60.7% of the world's population live. In China 70% of the crop harvested come from irrigated fields, and in India about 50%. The success of the Green Revolution was substantially achieved thanks to the conversion to irrigation agriculture.

The water for irrigation is either extracted from the groundwater or withdrawn from rivers dammed up for this purpose. It's true that dams in rivers are often used for energy generation in hydroelectric power stations, sometimes to improve the shipping conditions, but mainly to divert river water to irrigation canals. World wide there are about 40,000 larger and large dams. Between 1944 and 1994 alone, the World Bank appropriated 58 billion US $ for dam constructions.

During the past decades it has become quite clear that in many cases the withdrawal of river water for irrigation purposes, cannot be increased anymore. On the contrary, due to ecological and economical reasons it often needs to be reduced. To cite an example: In 1972, China's Yellow River Huang He, did not reach the sea for 15 days. This was the first time this had happened in the 3,000 year old history of China. In the following years there were even longer periods when the river did not reach the sea, and finally, in 1997 the river was cut off from the sea for a full seven months. The situation is similarly critical in the lower course of the Nile and the Ganges. Also the Colorado very seldom arrives in the Golf of California.

A problem unsolved up to now - at any rate in regard of a cost-benefit-analysis - and a problem that probably can't be solved at all, is the sedimentation, as a consequence of river dams. In calm backwater, suspended particles form sediment and fill up the reservoir little by little. According to a World Bank publication (1996) about 1% of the storage capacity of the river reservoirs is lost every year, that means since 1986 about 20% of the global storage capacity. According to the "Three Gorges Project", the world's largest hydraulic engineering scheme, the Yangtze will be dammed over a distance of more than 600 kilometres. The river transports more than 500 million tons of sedimentation yearly, of which the greatest part will be deposited in the storage reservoir.

2. Utilisation of fossil groundwater

It goes without saying that sustainable use means that the groundwater withdrawn must not exceed the annual precipitation supply input. Unfortunately this is not the case, for the installation of highly efficient pumps is no technical problem, but may lead to financial problems for the runners as most are lacking adequate money. Since the 90ties, the ground water levels in all parts of the world have been dropping, in the Middle West of USA , North Africa, India and China alike. In the north Chinese plane the ground water level is dropping by about 1.5 m yearly, in large parts of India by 1 - 3 m yearly. It is quite clear that this cannot go on ad infinitum. When the groundwater resources of India will be exhausted, respectively the extraction too expensive, India's grain harvest would go down by 25%, certainly a disaster for a country the population of which will surpass China's number of inhabitants in the foreseeable future.

3. Salinisation of the soil

A most annoying consequence of the wrong irrigation methods applied in semiarid and arid regions is the growing salinisation of the surface soil. I remember well the fields in Turkmenistan resembling snow-covered areas, even from short distance, but which finally turned out to be fields of stunted cotton plants.

In the 60ties, the water of the main feeders of Lake Aral, the Syr-Darja and Amu-Darja, was used to irrigate huge cotton plantations. As a consequence, the surface area of Lake Aral diminished by 60%, the water volume by 80% and the salt content increased to five times as much (45 g/l), the originally rich fishing industry has been destroyed, and, due to salt-laden dust storms in large areas, agriculture

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production is highly threatened or no longer possible at all. A desert hostile to life developed. Experts estimate the economic consequential damages at 37 billion Rouble.

Insufficient precipitation and irrigation as well as inadequate drainage of the surplus irrigation water that is not absorbed by the cultivated plants lead to a rise of the groundwater up to 1.5 m under the soil. The soil water is then raised to the surface by capillary force of the soil, evaporates and the solute salt remains. A growing soil degradation is the consequence, and according to Postel (1993), the yields in Egypt and Pakistan, for instance, will decrease by about 30%.

4. Deterioration of the water quality

Up to now we have only considered the threatening shortage of fresh water as such. Of course, it is not only a problem of quantity but also of quality. Globally only about 5 % of the waste water is treated. An important part is played by the so-called "Favela-Syndrome", a problem that apparently cannot be solved. In 2010 about 3.3 billion people will live in cities, half of them in slums (Favelas) where there is neither adequate water supply nor waste water disposal let alone waste water treatment. As a rule, the untreated sewage water of these slums reaches the outlet ditch. Also most industrial firms discharge their process water more or less untreated, and no recycling of the industrial water takes place. Of course, there are several desalination techniques, but all are expensive as they require high energy input. Additionally, they are only profitable if they are near the shore.

Summary

Basically, the menacing water shortage is a problem of (food) subsistence. To import a ton of wheat means, in the end, to import a ton of water. Among the 204 independent states of the earth, currently 31 are suffering from acute water shortage, in a few decades the number will rise to 48, almost a fifth of all countries will then be affected. The water rights will be the subject of political confrontations. Possible solutions to attenuate the water crisis do exist, the experts presented them long ago, but - as in almost all sectors of global environmental crisis - responsible actions of the governments are often long in coming.

According to Hinrichsen, and others, (1998) we need a "Blue Revolution", comparable to the past „Green Revolution“, to improve the freshwater resources management to meet the ecological conditions as well as the economic and social requirements. The legal basis of such a "Blue Revolution" must be a general outline of a "Convention providing guidelines for the protection and preservation of freshwater resources" as suggested by the Council for Global Environmental Changes. Important elements of such a convention should be:

- Basic drinking water supply for the present generation must be ensured as well as water-related hygienic measures.
- The global fresh water resources must be preserved for the future generations. When using fossil groundwater resources, its long-term substitution must be secured.
- The rights of access to and use of fresh water resources which lie in sovereign territory of different countries must be guaranteed in fair contracts.
- Damage to people (especially people living further down-stream) by manipulating the water quality or the run-off must be avoided.
- The internationally protected freshwater eco-systems (Ramsar, World Heritage Sites and Living Lakes regions) must be protected, especially since the ecological balance of ancient lakes rich in endemic organisms is being highly damaged by the introduction of foreign species (see Lake Victoria).
- The undisturbed functioning of other freshwater ecosystems must be secured and restored as far as possible - also as prerequisite for sustainability.

Lake Baikal contains 20% of world's accessible surface freshwater.

Dr. Tobias Salathé

Regional Coordinator for Europe - Convention on Wetlands, Switzerland

Water Quality and Nature Conservation: The Convention on Wetlands (Ramsar 1971)

The Convention on Wetlands was adopted in the Iranian city of Ramsar on 2 February 1971 and came into force in 1975. As of July 2001, 124 states were Contracting Parties and many others are poised to join. Ramsar is the only global environmental treaty dealing with a particular ecosystem.

Contracting Parties commit themselves for three things:

- To include sites in the List of Wetlands of International Importance and ensure their appropriate management. By July 2001, the List included 1072 covering almost 85 million hectares.
- To ensure the wise use of all wetlands in the country. To do this the Convention encourages the development and application of National Wetland Policies, or equivalent instruments.
- The Convention requires that member countries cooperate in relation to wetlands extending over the territories of more than one Contracting Party or where a water system is shared by Contracting Parties. This includes issues related to international assistance to implement the Convention.

The presentation is briefly outlining the existing Ramsar toolkit, consisting of a set of guidelines published in nine Ramsar Handbooks for the Wise Use of Wetlands, and the work currently in progress to elaborate further tools and guidelines to be adopted at the next Conference of the Parties, to be held in Spain in November 2002.

Dr. Valery S. Molotov

President of the Baikal Committee for the Environment and Nature Conservation in Lake Regions, Republic of Buryatia

Preservation of Lake Baikal: Problems and Solutions

Problems of protection and rational use of natural resources of Lake Baikal are the object of careful attention of the state administration on both federal and regional levels. A variety of official documents, the main being the Federal Bill „On Protection of Lake Baikal“ passed on May 1, 1999, convincingly testify to this fact. Inclusion of Lake Baikal into the UNESCO world heritage sites list was an act of international recognition of the invaluableness of Lake Baikal.

Over the period after the passing of the Federal Bill, the federal, regional and local administrative bodies as well as industrial and public organizations of the Baikal region conducted a significant work to preserve the ecosystem of the lake. However, this work was restricted by a number of circumstances, connected with the reforms in the state committees on environmental management and nature protection. Last year, in accordance with the decree of the Government of the Russian Federation a large organizational work was carried out. Organizations, previously belonging to the dismissed State Committee on Ecology and Russian Forestry Management, were transferred under the authority of the Ministry of Natural Resources of the Russian Federation. Rational environmental management, based on strictly defined criteria of ecological safety is easier to attain when there is one federal administrative body, instead of seven responsible organizations, which had previously existed.

It was only on September 25th, 2000 that the Ministry of Natural Resources of the Russian Federation became the federal executive body specially authorized to exercise state regulation of the protection of Lake Baikal. Since that moment it carries out its responsibilities both directly and through regional branches, such

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as Baikalkomvod, Natural Resources Management Committees in the Republic of Buryatia, Irkutsk region, Chita region and beyond. We consider the last year's regional conference on the execution of the Federal Bill "On Protection of Lake Baikal" a very important event. It was convened on the initiative of the President of the Republic of Buryatia Leonid Potapov and gathered such officials as the Plenipotentiary Representative of the President of the Russian Federation in the Siberian Federal District, administrative representatives of the Irkutsk region, Ust-Orda Buryat Autonomous District, Chita region and others. Taking into account a general structure of the Federal Bill, the conference agenda included development of legal acts on the following topics:

- creation of a certain executive body, specifically authorized to exercise state control over protection of Lake Baikal;
- dividing the Baikal area into ecological zones;
- information for the population on the borders of the Baikal natural territory and its ecological zones;
- minimal and maximum water levels in Lake Baikal;
- peculiarities of procurement and protection of the endemic species of water animals and plants in Lake Baikal;
- development of the list of restricted activities for the central ecological zone of Lake Baikal;
- norms of permissible influence on the ecosystem of the lake;
- amendments and additions into the governmental legislature on Lake Baikal.

It is necessary to highlight the fact that ministries and organizations responsible for different aspects of the carrying out of the Federal Bill are currently working on the instructions for their internal use and developing a set of documents related to important ecological issues.

Executive bodies of the Republic of Buryatia, the Irkutsk and Chita regions, and the Ust-Orda Autonomous District participate in the development of the legal documents on all stages. They provide the protection of the nature resources as well as state control of their use and monitoring of the environment of the Baikal territory according to their authority. The administrative bodies of the Republic of Buryatia and Irkutsk region will have to set the rules of organization of tourism and recreational activities in the Central Ecological Zone. Since October 2000 the real federal funding of the protective measures for Lake Baikal started. It is intended to finance the following:

- environmental pollution monitoring - 5 million roubles;
- funding for regional programs and measures based on the requests from the federal subjects in the Baikal region - 5 million roubles;
- reconstruction and major repairs of anti-erosion hydro technical constructions in federal possession - 5 million roubles;
- state support for the coastal areas - 45 million roubles.

All this allowed continuing the development of the well-defined program of execution of the Federal Bill "On the Protection of Lake Baikal". This year we expect federal funding of 90 million roubles for the solution of problems of Lake Baikal. Usually, it is considered that the economic interests of both population and many industries of the Baikal region will be affected by the new bill. Here, we mean the ecological zoning of the Baikal natural territory and limitation of the economic activities within it. It is one of the most arguable and hard to solve questions. The presence of the so-called '"Baikal factor" created considerable limits on the use of the environmental potential of the Baikal territory. On the one hand this can be

Deforestation is a problem at Lake Baikal - and in many other lake regions all over the world.

The regenerative ability of Lake Baikal is still high, but with increasing pollution this might change.

traced in a direct ban on some economic activities and limitation of the economic activity of certain enterprises, on the other hand there is an obvious need of expensive nature protection measures. With the adoption of the new bill its effects will increase.

The most strict limits are expected in the Central Ecological Zone (CEZ) of the Baikal natural territory. For instance, a special decree of the Russian government will introduce a list of economic activities, prohibited in the CEZ. Of the enterprises currently operating in the area, the Baikalsk pulp and paper mill fits into the list of restrictions. In this connection "The Complex Program of Restructuring of the Baikalsk Pulp and Paper Mill and the town of Baikalsk" has been developed. This program addresses both ecological and social problems as the Baikalsk enterprise is the main employee for the population of the town of Baikalsk and thousands of people depend on it. Other enterprises located in the CEZ do not require major restructuring. Economic and other activities in the buffer ecological zone and the zone of atmospheric influence are subject to regulation. Also, new norms of the permissible influence on the Baikal ecological system are currently under development.

Buryatia is very much prone to the effects of restrictions and limits imposed by the new bill. The republic's burden of additional ecological expenses leads to a decline in quality of the locally produced goods and budget revenues; it also complicates investment into the local industries. The government of the republic attempted to get additional financial support from the federal budget to compensate the aforementioned expenses. The Baikal Institute for Nature Management conducted a research ordered by the Ministry of Economy and International Relations on the rationale for the extra expenses on the life sustenance objects in the Baikal area in 1998.

Unfortunately, the bill does not presuppose compensation of the expenditure which the subjects of the Russian Federation incur protecting the Baikal natural territory.

Another problematic issue concerns the regulation of the water level of the lake. The exceeding of the normal water level (457 m), which took place 10 times between 1980 and 1995 was mainly caused by the violation of the existing norms by the Angara hydroelectric power station. The long-term excess of the normal level of water in the lake led to degradation of the shores, especially visible in the territory of the Republic of Buryatia. In

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addition to the damage of the lake's shores, this also caused destruction of railroads and highways, communication lines, port constructions and the like, as well as flooding of the settlements in the vicinity. To prevent this negative influence a specially created workgroup regulates the operational modes of the Angara and Enisey reservoirs. Taking into account fuel shortages of the recent years in the energy industry as well as low actual cost of energy at the hydroelectric stations, and the multiple purposes of the water resources of the Angara and Enisey rivers (i.e. their use as sources of water supply, transportation network, etc.) the rational management of the water resources of Lake Baikal in both its minimal and maximum levels is a task of great importance. That is why observations of the level of water going through the weir of the Irkutsk hydroelectric power station are carried out on the daily basis. Short-term and long-term monitoring of these indicators are also underway. Based on this data the workgroup plans the annual summer and winter operational mode for the weirs of the hydroelectric power station following the ecological regulations for Lake Baikal as the main determining factor.

In the period of the workgroup's activity the water level never exceeded the permissible limits. Moreover, in this period no decrease of the water level below the permissible limit (456 m.) was detected. According to the scientific data the decrease of the water level results in the disruptions of water exchange between the lake and its bays leading to intensive growth of seaweed. The current water level of the lake is reflected as the norm in the Federal Bill "On Protection of Lake Baikal".

Imported pollution is another acute problem of the lake area. The Selenga river is the main tributary to Lake Baikal and the quality of its water greatly affects the purity of the lake. The Selenga mainly flows through Mongolia who has not yet signed the International Convention on the Protection of trans-border rivers and lakes.

Lake Baikal was considered by the Mongol peoples as a sacred inland sea since the times immemorial. That is why it is easier for both countries to reach agreement on the issues of the trans-border water protection based on the traditional careful respect to water. I mean that we achieve mutual understanding on virtually any problem connected with the water protection. However we clearly realize that under very complicated economic conditions of today Mongolia has her own priorities which require much funding. The pollution level of the Selenga in the border areas is defined as "moderately polluted" (III degree of purity). However, some facts of pollution do take place. For instance, the presence of substances like mercury, phenol, zinc, and iron considerably exceeds the permissible level. The identification of sources of pollution requires additional research, complete analysis of water samples, and hydrobiological and microbiological monitoring should also be conducted. The development of the "Scheme of the Complex Use of the Water Resources of the Selenga Basin" was an important step towards rational, economically secure management of the water resources, balanced economic development and preservation of the unique qualities of Lake Baikal. Technical assignments and the order of development of the scheme have been discussed with the Mongolian side. The first phase of this work will be completed this year.

Air pollution takes place due to industrial, transportation and other releases of waste as well as wind erosion of the soil, especially active in the fall and spring periods. The total volume of sewage waters getting into the natural reservoirs equals 500 million cubic meters per year, including 140 million cubic meters of insufficiently purified water and 40 million cubic meters of polluted water. The total mass of pollutants equals 50,000 tons. Intensive wood cutting, agriculture, extraction of raw materials also much harm to the natural reservoirs. Lake Baikal can be considered a well-studied natural reservoir. Hydrochemical study of the lake and its tributaries started in 1925. At present, the observations of the Baikal natural territory are conducted by research institutions on both local and federal levels. Since 1965 the systems of hydrological, hydrochemical and hydrobiological monitoring have been formed, which by 1980 covered the entire Baikal area, its bays, river mouths, port and sewage areas. Simultaneously, observations of the bottom deposits, atmospheric precipitation, snow cover and subsoil waters were conducted. The observation network of the Russian Committee for Hydrology and Meteorology is nowadays the

major source of information on the state of environment in the Baikal area. In 2000 the hydrometeorological service of the Irkutsk region conducted field research aimed at determining the changes in the hydrochemical and hydrological regimes of Lake Baikal.

In the area of deep-water stations located along the longitudinal section of the lake in its central part a drop in the concentration of ammoniac nitrogen by 2 times, chlorides by 1.3 times, nitric nitrogen down to zero concentration, and increase in the organic substances concentration by 1.1 and 1.4 times, phosphates by 1.5 times were detected. Other indicators remained constant.

For the first time in the recent years a survey was carried out in the Selenga shoal area. The results of the hydrochemical observations showed that the area under survey was polluted by petroleum waste. Its concentration varied from 1.4 to 4.4 of the maximum permissible level. The water quality analysis in the northern part of the lake, the Barguzin bay, and the Kultuk-Slyudyanka area showed that the majority of hydrochemical indicators corresponded to the set standards of surface water. Recently, much negative information on the quality of water in Lake Baikal appeared in the newspapers. The quality of Baikal water is still very high. Only an insignificant (around 1.5%) increase in the concentration of chlorides, sulphates and organic substances was detected in the southern part of the lake. It is connected with the industrial activity in the Selenga basin and the functioning of the pulp and paper mill in Baikalsk. Self-rectification ability of Lake Baikal is still very high and it will be hard to pollute it, but once polluted the lake would not be saved. That is why it is important to join the forces of all people concerned with the fortune of the lake.

Industrial activities in the southern part of Lake Baikal increase the concentration of chlorides, sulfates and others.

In 2001 a program on the protection of Lake Baikal and the Baikal area was developed. Being an element of a larger federal project "Ecology and Natural Resources of Russia", this program introduces a complex of measures to protect the lake, which, as a unique object of nature, was included into the UNESCO world heritage sites list. The priority components of this program are: implementation of a set of measures to decrease the negative effect of human intervention including the reduction of the environment pollution, ecologisation of industry, recycling of wastes, health care for the local population, biodiversity preservation and so on.

We pay much attention to the enhancement of interaction between the regional and local executive bodies in the field of rational land use and environment protection. On our initiative we convened the Coordination Council for Environmental Management and Water Protection in the Baikal area which combines the heads of local administrations of the coastal districts of both Buryatia and the Irkutsk region. This council represents the innovative approach in the sphere of land use.

In order to promote commitment of the local people in the solution of the questions of Baikal protection we organized a contest "Pure Waters to Lake Baikal". In 2000 secondary school faculty and students from all nine coastal districts took part in the contest, and this year we encourage the municipal authorities to participate. This conference will, undoubtedly, become a new incentive for the ecological activities in the region, and incentive to strengthen understanding and collaboration of the community and governmental departments.

Hüner Gülay

Unilever, Rotterdam, The Netherlands

Water Quality and Nature Conservation in Lake Regions

Water Quality

Introduction

Major threats to the public health, productivity and bio-diversity of the marine environment result from human activities on land - in coastal areas and further inland. Some 80% of the pollution load in the oceans originate from land-based activities. This includes municipal, industrial and agricultural wastes and run-off, as well as atmospheric deposition. These contaminants affect the most productive areas of the marine environment, including estuaries and near-shore coastal waters. The marine environment is also threatened by physical alterations of the coastal zone, including destruction of habitats which are of vital importance to maintain the health of the ecosystem.

Presently, about one billion people live in coastal urban centres. Estimates show that almost 50% of the world's coasts are threatened by development-related activities. The health, well being and, in some cases, the very survival of coastal populations depend upon the health and well being of coastal systems such as estuaries and wetlands. The intense pressures put on the coastal systems require serious commitment and preventive action at all levels: local, national, regional and global.

Conservation of a Lake Ecosystem

Currently the demand for water outstrips potential supply, particularly in areas of water stress. It is widely understood that water is likely to be the source of some of the most difficult problems facing the world this millennium. Without action by all users - whether individuals and communities, or business and industry - it's no exaggeration to say that an ever-increasing number of regions of the world face catastrophe. In the past the economies of the industrialized countries were able to compensate for the losses of the benefits provided by the wetlands. Therefore the losses of those years were not paid much attention.

However due to losses of wetlands the benefits provided by controlling the floodwater treatment etc. are being realised by building dams which carry huge costs for the economies of the countries which in turn are obtained from the taxes of individuals. The depletion of fish stocks and other wetland products carry an even higher price. The cost of wetland losses today have reached such a level even in industrialised countries that the protection of the remaining wetlands is now a very high priority. In developing countries the rural economy and the wealth of people are much more dependent on the wetlands. The national economical power and the individual economic power generally fails to compensate the loss of direct and indirect benefits provided by the wetlands. Especially in Africa there are examples of increased fatalities due to insufficient availability of food. This is one of the main reasons for the mass migration of people. Therefore protection of the ecosystem around the wetlands is a very important issue not only for the developing countries but also for developed and industrialised countries.

Conservation of lake ecosystems must be considered as an interdependent event. Human and their activities shape lake ecosystems, just as lakes determine to a certain extent the quality of human life around the lakes. This impact is especially important for the poorer sections of the society, which is strongly dependent on natural sources and services provided by wetlands. For these people the conservation of lake ecosystems is indispensable. Therefore conservation of a lake ecosystem is an ecological, socio-economic and a political matter.

The Critical Success Factors

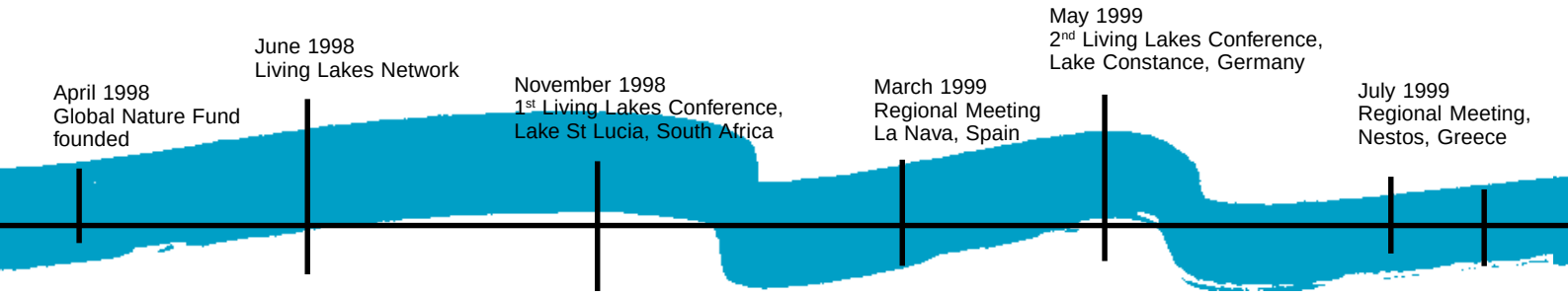
1) The ASSESSMENT: identification of and getting familiarized with the

- Social
- Physical
- Environmental

Characteristics of the region.

2) Ensuring 100% participation of all the stakeholders

3) Evaluation of the potential of the ecosystem of the catchment. Mainly in terms of



- Quality of the water
- Quantity of the water
- And the relation with the other living mechanisms around

4) Participate implementation with a continuous review and update where and, when required. Management measures must be as dynamic as the wetland functions.

5) Realistic and applicable targets with due consideration of all economical, social and ecological factors

6) Monitoring the changes in the catchment and reviewing and developing the plan, accordingly

7) Definitely an INTEGRATED approach

Unilever's Approach

As Unilever our corporate purpose is to meet the everyday needs of people everywhere creatively and competitively, this means also thinking about sustainability. This is a huge agenda and a huge challenge, not just for us, but for all business, and all of society. In Unilever our approach to sustainability is first to understand where our major environmental impacts are as a worldwide branded food and home and personal care business, and to focus on those areas where we have an impact and might also be able to make a difference. As a result of this work we have established sustainability initiatives in fisheries, in agriculture and water.

Sustainability involves creating long-term shareholder value by embracing the opportunities and managing the risks associated with economic, environmental and social developments. It is commonly separated into sustainable production and sustainable consumption. This integration of social and environmental thinking into business thinking and planning involves a fundamental shift in attitude to accommodate both greater operational transparency and greater public commitment than ever before. We have looked at our water use through the full life cycle of our products, and right across our product range, from raw material sourcing to consumer use of our products. This has given us a global picture of our water needs and of the way in which we impact on both the availability and quality of water after its use.

One of 333 tributaries to Lake Baikal.

We recognized that a global imprint is of limited value in guiding our actions. We must gain a better understanding at the local level of the imprint of key agricultural crops, our manufacturing operations and consumer use of our products - particularly in those regions already experiencing water stress. In addition we wanted to work on the basis of a clear vision of the water question. This, we articulated as follows as Unilever's Water Vision:

To ensure that our activities and those of our suppliers, customers and consumers achieve a sustainable balance between protecting ecosystems and meeting human needs, so assuring the ability of future generations to access sufficient quantities of clean water. We will do this by understanding the water imprint of our operations locally and by ensuring that our imprint is sustainable within the limits of the relevant water catchments.

To this end we have set ourselves six objectives:

- Deepen our understanding of Unilever's potential to impact on the world's water resources by looking at the regional differences in our Water Imprint.
- Improve continuously water management in our factories to ensure that we minimize the contamination of water. In the past 5 years we have cut water pollution loading overall from our factories by 20 per cent. Many of our factories, particularly those in developing countries, discharge no effluent as a result of investment in on-site waste treatment and water recycling facilities.

Water Quality

- Help others, particularly our suppliers and customers, to do the same.
- Work in partnership with others to protect water catchment areas around the world.
- Contribute to finding effective solutions by sharing knowledge and best practice across our societies. We have formed an important link between our own scientists and the Institute of Water Research at Rhodes University, South Africa, to work on aquatic toxicology.
- Promote "water awareness" and action on water by informing the public about ways to reduce water use and minimize wastewater disposal. In Europe the detergent industry's "washright" initiative is demonstrating how effective advertising can be used to promote change in consumer behaviour for the benefit of water and the environment.

Priorities for Action

To meet our objectives and to help us really make a difference wherever we operate around the world, seven key priorities for action have been identified. These are:

- Understand our Imprint
- Good Housekeeping
- Limiting Downstream Impact
- Working with Suppliers
- Improving Lives with Less Water
- Understanding Values and Changing Behaviour
- Inclusive Partnerships

Conclusion

The water crisis is global, but the solutions are local. Clearly there is only so much a single company - even one the size of Unilever - can do to improve the situation. But we believe we can be a significant part of the solution rather than part of the problem. The example of Unilever would help in arriving at institutional solutions that are far more important than technical or scientific solutions to the problem. It is heartening that Unilever is taking the lead in this critical area of global concern. Unilever has worked out a set of principles to guide its companies and their partners in water stewardship activities. This management initiative is called SWIM: Sustainable Water - Integrated Catchment Management. SWIM provides practical steps to help in the evaluation and implementation of partnership water projects. The aim is to help Unilever companies identify and improve problem areas and develop further appropriate practices that will benefit water quality and supply for the community. The foundation of SWIM is a set of three principles:

Hüner Gülay presented Unilever's sustainable water approaches.

- Water development and management should be based on a participatory approach, involving users, planners, policy makers and all other appropriate stakeholders, at all levels, taking account of social and cultural diversity.
- Fresh water is a bounded, finite but infinitely renewable and vulnerable resource, essential to sustain life, development and the environment.
- Water has an economic, social and environmental value in all its competing uses.

The step by step approach of SWIM provides guidance on selecting an appropriate project area, identifying potential partners, assessing the catchment, preparing an action plan and evaluating projects against the SWIM principles and performance indicators. Unilever's role in SWIM is not to be an expert in integrated catchment management, but to act as a facilitator - working to bring people together, using management skills to drive the actions required to achieve the best solutions to improve a water catchment area. Examples of successful Unilever partnership projects include the Pasig River in the Philippines and the Don River Watershed in Canada. Water is a shared resource and its care demands collective responsibility. We at Unilever are playing our part - and want to do more- to ensure that in future there is enough clean water to meet all our daily needs.

April 1998
Global Nature Fund founded

June 1998
Living Lakes Network

November 1998
1st Living Lakes Conference, Lake St Lucia, South Africa

March 1999
Regional Meeting La Nava, Spain

May 1999
2nd Living Lakes Conference, Lake Constance, Germany

July 1999
Regional Meeting, Nestos, Greece

Prof. Dr. Shinji Ide

International Lake Environment Committee (ILEC), Japan

Water Quality and Nature Conservation of Lake Biwa

1. Recent Changes in the Water Quality of Lake Biwa

In the last 15 years L. Biwa has seen a gradual increase in COD (Chemical Oxygen Demand) concentration, particularly in the northern part of the lake, whereas the BOD (Biochemical Oxygen Demand) concentration has been almost constant during the period. This is due to an increase in the concentration of non-biodegradable organic compounds (non-BOCs), namely humic acid-like compounds, in the lake water. The same phenomena have been also observed in Lake Suwa, Lake Kasumigaura, and other major lakes in Japan for years.

There still remains some scientific controversy over the mechanism that causes these phenomena, whether non-BOCs are produced inside the lake waters or outside the lakes, such as their watersheds, and flowing into the lakes. The later hypothesis that non-BOCs are produced outside the lake is much in favour as long as L. Biwa is concerned. The studies that estimated non-BOCs loadings to L. Biwa from various sources indicates that much of non-BOCs are produced neither in industries nor domestic but in the nature, flowing into the lake. Why the nature, however, suddenly became to produce non-BOCs these years? The suspected main reasons are

- Urbanization
- Reforestation with mono-cultural trees
- Loss of wetlands
- River banks made out of concrete
- Division of intake and discharge watercourses for paddy fields, in the catchment areas of L. Biwa.

As a result, water has lost contact with the soil, and non-BOCs that could have been removed by soil absorption and decomposed by micro-organisms in the soil turned out to be directly flowing into the lake. It is not possible to cope with this kind of problem with conventional type of countermeasures such as wastewater treatment, which aims to reduce organic loadings from domestic and industries to the lake.

Otsu is the largest city at the shores of Lake Biwa, Japan.

First Stage, 1999-2010	Second Stage, 2010-2020	Desired Stage, 2020-2050
Restore the influent load to that of the late 1960s.	Return water quality to that of the late 1960s.	Water quality to be restored to the level of the late 1950s.
Secure an adequate area of forests and farmland for rainfall infiltration.	Improve the rainfall infiltration and holding capacity of forests and farmlands.	People to live together with forests and make full use of the natural water cycle.
Secure strategic points for the creation of networks to be linked with biotopes.	Establish a framework of biotope networks.	A variety of unique living creatures in a rich natural ecosystem

Table 1

2. Destruction of Ecosystem

More than 1,000 animal and plant species have been recorded so far in L. Biwa. A total of 57 species are regarded as endemic, of which 90% (51 ssp.) are animals. Those changes in the nature and land-use mentioned above also led to the destruction of ecosystems of L. Biwa and its watershed, damaging the habitats and corridors among them, and threatening wild lives, as well as threats of eutrophication, invasion of exotic species, and others. For example, a lot of endemic fishes have lost their breeding and nursery sites by road constructions along the lakeshore, the reclamation of wetlands, or changes in the irrigation system of paddy fields in the catchment areas of L. Biwa. If they could succeed to spawn, their eggs would be dried through the rapid decrease in water level during their breeding season. Even if their eggs could hatch out, their juveniles are to be killed by exotic fished and pesticides that are applied to the paddy fields in the catchment areas.

3. Comprehensive Conservation Plan of Lake Biwa

Taking into account those problems concerning water quality and nature conservation of L. Biwa, the Shiga Prefectural Government newly developed a comprehensive conservation plan of L. Biwa, called „Mother Lake Plan 21“ in 1999, in addition to the load-reduction type old plans. This plan aimed not only to improve the water quality of L. Biwa, but also to conserve the indigenous biota, the forests, and soils in the watershed of the lake in an integrated manner. The stepwise objectives of the plan are listed in Table 1.

This plan is oriented toward the development of citizen autonomy regarding environmental issues in the 21st Century. However, to make it realized, the role of NGOs will be more and more important in terms of further citizen involvement and fostering partnerships between citizens and local authorities.

The "Mother Lake Plan 21" aims to improve the water quality of Japan's largest lake Biwa.

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Prof. Dr. Michael Succow
University of Greifswald, Germany

Traditions and Sustainability - Challenges and Visions

I have already worked for 30 years in Eurasia in the former Soviet Union and Mongolia. For the last ten years I have been working in the so called threshold countries, such as Russia, Kazakhstan, Kyrgiztan, Uzbekistan, Georgia, Azerbaijan, Belorussia, Mongolia and recently also in north-east China in the autonomous urigur region. With "me" I mean - the NABU (German association for nature protection), my own Foundation and young scientists from my institute for landscape ecology and nature protection at the University of Greifswald in north-east Germany. We help these countries to establish large protected areas, such as:

- UNESCO World Heritage Sites
- National Parks
- UNESCO Biosphere Reserves (with sustainable and traditional land use)
- As the most important feature of our work, we help to develop democracy and transparency by building up NGOs in the environmental sector.

First of all I want to thank the GNF for the invitation to this very important conference. The 6th Living Lakes conference has got an extraordinary importance. The conference venue - The Baikal Region - was overdue:

The Baikal is certainly the most important lake in the world to protect, in the area of freshwater conservation.

The Baikal is for me the personification of a lake. It is for me the mother of all lakes in the world:

- It is the oldest lake of the world
- It is the deepest lake of the world
- It has 20% of the freshwater reservoir of all lakes in the world
- The highest number of endemic organisms can be found here
- This lake still has oligotrophic water quality.

I don't want to even imagine what the ecological situation of this lake would be like, if it was located in the USA, Europe, China or Japan! This lake is the heart of Buryatia. And is still owned by the Buryats, Evens and Siberians. It is their holy sea! They managed to preserve it, although 70 years of socialism passed by. Or maybe the high value of this lake could be preserved because of Socialism? How will capitalism affect the lake now? I switch to the core topic of my presentation:

The lake could be conserved because: the indigenous people living around the lakes have a very deep spirituality, their normative due to the natural resources, their deep love, respect and worship for the lake which has carried on for centuries and millenniums. It is their holy Lake Baikal. This is a contradiction to the Christian spirituality in my country, in the western world: "Man should rule the world". The philosophy behind is the cultivation of nature. We have a deep fear of wilderness. I have been working a long time in Mongolia, a country with similar traditions as Buryatia. The proverb of an old Mongolian herdsman - an Arat, I kept deep in mind: Nature does give us everything with full hands if we respect Nature. Nature, damages us, if we disregard Nature. Three main aspects are very important for me, for the future of our civilization. Here we have to learn from the so called developing countries:

- Firstly we have to learn about the functionality of nature and to respect its principals. As you know the enterprise nature has existed for billions of years and has not gone bankrupt yet.
- Secondly we have to protect all the ecosystems which we have not irreversibly damaged so far. This might only be 10 to 20% of the land surface of the world. UNESCO World Heritage Sites or National Parks (Category 1 and 2) are the best instruments for this. Nature has got the ability to adopt to new conditions, that's a part of its evolution, but that takes time and space and our advanced civilization gives us less and less of it. Our future lies with nature. We need wilderness which is holy for us. We have to use nature sustainably. We have to learn from countries with traditional forms of land use and a culture of land use. Instruments and examples are UNESCO Biosphere reserves for Man and Nature.

Now I want to stress what I have said with a few transparencies: First I want to show you what the challenges and necessities are and secondly I want to show you examples of Siberia and Central Asia, the part of the world where we now are. These are examples of young states, which give hope to the world, only ten years after Perestroika, that is it possible to use natural resources sustainably.

Traditions and Environment

Dr. Jürgen Nauber

Federal Agency for Nature Conservation (BfN), Germany

Baikal Projects by the BfN - Experiences and Results

The German Federal Agency for Nature Conservation (BfN) is a supreme federal authority in the portfolio of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). It advises the BMU in all questions concerning national and international nature protection and landscape conservation measures, supports environmental protection measures, supervises research activities and is the licensing office for the import and export of protected animal and plant species.

The BfN puts into practice various environmental support programmes of the federal government. Dr. Nauber presented predominantly the projects of the BfN in Asia and Eastern-Europe. The emphasis was on concrete work carried out in the region around Lake Baikal in the past few years. The BfN combines elements of nature protection with issues of sustainable development in the very sparsely populated area of Lake Baikal. Much of the damage done to the bio-diversity in the area, for example through illegal hunting, can be attributed directly to the hardship and poverty of everyday life in the region. The pollution of surface water and ground water through industry and private households is a direct result of insufficient investments. This is one reason why it has been mainly natural resources such as wood which has been exploited and overused. The BfN wants to offer ecological and social alternatives through its projects in the region. (Summary prepared by GNF)

Prof. Dr. Arnold K. Tulochonov

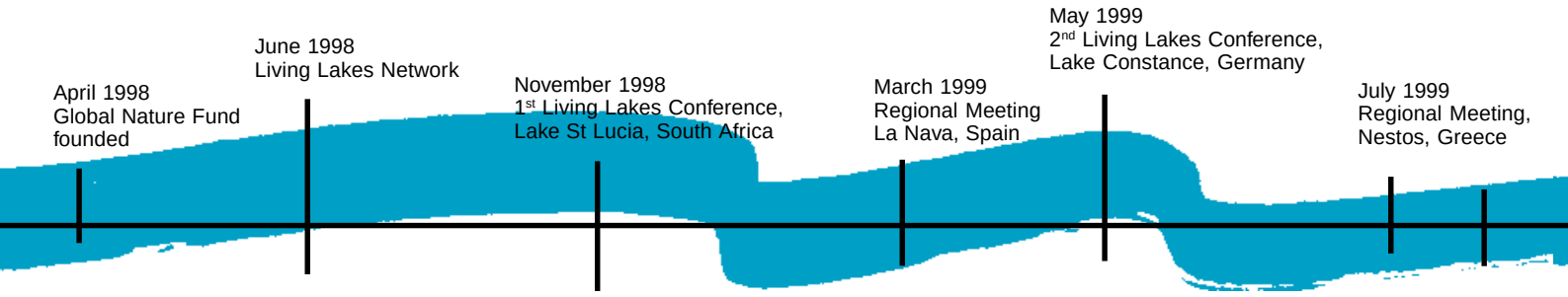
Director of Baikal Institute for Nature Management, Ulan-Ude, Russia

Adaptive Environmental Management as a Basis of the Sustainable Development

ABCs of Adaptive Environmental Management

Transition of the region's economy to energy-saving and ecologically safe production technologies is expected to be the final result of the sustainable development strategy planning which will equally meet the requirements of the present and future generations. As the previous experience showed, a wide-scale development of industries and agriculture caused various negative changes in the ecosystems of the Baikal region. At the same time this was never followed by any increase in the living standards of the local population. At present the problem of effectiveness of the local economy is even more acute and the situation requires new solutions, in our view, an extensive development mode has few perspectives and is no longer a priority. However, in reality there is no possibility to cut down production of material wealth and, therefore, a temporary economic decline should inevitably be followed by a new development phase. Unlike the period of centralized economy, when the allocated funds weren't even fully spent, realities of our time introduce a major principle of getting a better result at minimal expense based on local resources. Adaptive environmental management mode corresponds best to this development strategy.

Analysis of the historical experience of environmental management is interesting for us because food requirements of the local peoples were, until recently, met by the use of purely local resources. Moreover, according the calculations, despite huge capital costs the gross volume of meat production has not changed significantly. In the last 100 years gross expen-



diture on similar products grew no less than twofold. That's why a study in economy of the private agrarian environmental management is, undoubtedly, indispensable not only in the historical respect, but also as a supplement to new forms of land use.

This historical digression is not just a return to the past. It also presupposes a study of the use of low-cost technologies for their possible adaptation to new realities. It equally refers to all traditional modes of environmental management characteristic of the Baikal region, which should comply with the following requirements:

- availability of resources suitable for industrial use;
- a careful use of these resources;
- low-cost technology of their use;
- economic effectiveness.

The inclusion of a social factor does not presuppose any limitations, but, on the contrary, highlights the natural element of environmental management. For example, nomadic cattle-breeding, hunting, and other traditional modes are most effective in the steppes and taiga of Inner Asia not only because of natural conditions, but also due to the inborn nomadic life skills of indigenous peoples. To the field of adaptive hi-tech methods we also relate such specific sphere of human activity as traditional (Tibetan) medicine, which has traditionally been practiced in the Baikal region, the centre of the Buddhist religion in Russia. Tourism and recreational industry, on the other hand, provide special perspectives for the development of the regional economy due to the rich recreational resources of the Baikal region.

In the final analysis, all these branches of economic activities of the society are interesting from the viewpoint of the elaboration of the regional sustainable development strategy. This is mainly due to the fact that the development of these industries may be most effective for the regional economy and its negative consequences, if any, will be minimal. It is crucial to create social conditions stimulating such modes of environmental management, which are most acceptable for the indigenous peoples in terms of their traditional lifestyle and culture. On the other hand almost all modes of adaptive environmental management cannot compete with such industries as oil and gas. They are primarily optimised for marginal or border zones of industrial production where such wide-scale forms of use are impossible. A higher degree of dependence on natural factors is typical of such modes; therefore other, more flexible approaches are required. For instance, fishing or hunting cannot be planned as timber production. Their planning requires careful attention to natural reproduction processes.

Thus, the essence of the adaptive environmental management concept is in the adoption and realization of the main ecological principles in accordance with the natural and social environments of the region, and, the modification of economy based on the aforementioned principles.

Rural Environmental Management

Agriculture is most dependent on environmental conditions and, therefore, its state is often indicative of the ecological situation in the region. In its turn, the agricultural factor to a high extent determines a degree of destruction of a natural environment. In addition, this sector rapidly reacts to any market fluctuations. That is why a program of sustainable development should be started with the agricultural segment of the economy. Even a preliminary analysis of the condition of the regional rural sector allows making a conclusion that it is currently in a state of deep collapse. Actually, over a very short historical period it switched from private ownership to state management and vice versa and these processes could not fail to influence its productivity and ecological safety.

The ongoing agricultural crisis reflects not only political and social processes in our society, but also an obvious neglect of the environment.

The Buryats have a tradition of cattle breeding.

Traditions and Sustainable Use

This conviction is based on a retrospective analysis of the rural management history of Siberia encompassing a period of more than 100 years, since the beginning of the 19th century.

In the world of private ownership a peasant could not rely on state support and all his actions were determined by a state of the market and actual cost of his produce, i.e. by critical parameters of environmental factors and the production adaptivity principle. Absolutely different conditions were formed when the state became the sole manager of agriculture. With light soils, very prone to erosion, the Transbaikal region nevertheless paid its share into the "virgin soil programs". The result of that mismanagement was a heavy overuse and rapid degradation of available arable lands. This was closely followed by the notorious "corn epic". Hoping for state support the administration of the region began building giant poultry and hog breeding complexes fully dependent on imported forage. Forage shortages became a chronic illness of the regional agriculture. Loss of cattle in wintertime amounted to hundreds of thousands. Forage was imported from the Altai region, Amur region, and Mongolia. There was a widespread viewpoint that state support would cover any costs.

In this connection it is plausible to agree with the words of Karl Marx that those human projects which do not take into consideration the great forces of nature are doomed to do only harm. What way out of this troublesome situation can we find? First and foremost, we need to determine such agricultural priorities of the region's sustainable development as a necessity to reclaim productivity of arable lands and increase in the volume of competitive agricultural produce.

We are by no mean trying to find a panacea for all problems of the rural sector, but at the same time we can be sure of the following facts. A decrease in state support to agriculture unequivocally means that the latter cannot produce the same volumes it had done in the previous years. The main determining factors of today are the actual cost of the agricultural produce and productive capacity of the land. These factors were systematically ignored in the past. We can also make up a hierarchy of agricultural priorities. From this viewpoint cattle-breeding is more effective than farming, within cattle-breeding a priority should be given to meat production which may be more effective with the use of traditional nomadic forms of cattle-breeding. Considering the farming structure we prioritise forage crops, as they require less attention than other crops. In its turn, the use of natural pastures is more effective in this respect, while among crops rye is more profitable to grow, as it requires less expenditure.

This scheme is neither mandatory, nor it is in its final form. In practice it can be adjusted to existing conditions. Moreover, when agricultural zones are determined in the region, certain areas can be oriented towards crops and dairy farming, especially those situated close to big settlements. In any case a careful calculation of economic value of this or that agricultural product is crucial to determine whether is worth producing here or it should be imported from other locations.

Nomadic Cattle Breeding

Nomadic cattle breeding is highly perspective in our region both quantitatively and qualitatively. This means that this form of cattle breeding will allow achieving an ever-increasing volume of ecologically safe products with high nutrition value. More importantly, it will provide us with the cheapest products possible. Undoubtedly, this is very important at the moment.

A combination of cattle breeding, farming, and hunting in the taiga was typical of the Transbaikalian Buryats. Nomadic cattle breeding was a priority. It was a determining factor for the activities of individual farms and their impact on the environment. Economic activity of the nomads did not violate the environment. Quite the contrary, it smoothly introduced domestic animals and crops into the local biocoenosis, naturally transforming the region's landscape into a more cultivated one. Nomadic cattle-breeding was subject to a strict system of seasonal roaming from one place to another of an entire herd, a nomad's family and all belongings. It was characterized by the following features:

In the post-collectivisation period radical changes occurred within the structure of regional cattle breeding. The total number of horses shrank from 257,000 to 55,000 heads since the beginning of the century. The number

of dairy cattle increased drastically demanding new, higher volumes of forage. The aboriginal breed of sheep was fully substituted by another one, completely unaccustomed to severe climatic conditions of Transbaikalia. Buryatia has great perspectives for the revival of traditional environmental management experience. This republic is characterized by a sharp variety of natural and climatic conditions and belongs to the area of pasture cattle breeding from the times immemorial. Breeding of the yaks, cattle and smaller livestock of local breed, horses, reindeer, and camels was successful here in the earlier times. Aboriginal livestock provided mostly meat, but also milk, wool, cowhide, and were used as means of transport. It was the main objects of economic use for the local population. It also served as a means of development of local meadow and pasture resources.

It is plausible to highlight the fact that the nomadic cattle breeding has not yet found a wide recognition and development in the rural areas. It is especially visible in the course of structural analysis of the aboriginal livestock breeding in the republic. Due to their fictional non-profitability the yaks almost entirely disappeared in the Tunka region. Their total numbers were drastically reduced in the Oka region as well. The 1997 expeditions to the Baunt and Oka regions showed that purely aboriginal livestock can no longer be encountered there; only an insignificant number of second or third generation crossbreeds can now be found. On the native lands of the Buryat aboriginal sheep the sheep-breeders had lost the frequency of seasonal roaming long ago. Now they change their pastures only twice a year. A shortage of pasture forage is compensated with the deposits of hay and other forage in winter.

Traditional farming still exists at Lake Baikal.

In the beginning of the 1930s many Buryats roamed to the region of Inner Mongolia with their families and livestock. Now, the aboriginal Buryat livestock, including sheep, can still be found there. A reference to the historical experience does not presuppose a return to the past. It mostly means a study of the ecologically proven, century-long low-cost agricultural technologies and their adaptation to the existing realities taking into consideration ethnic and social factors.

Rational Use of Taiga Resources

To radically change the existing situation and to successfully develop the fur-hunting facilities of Buryatia it is essential to carry out a complex of relevant economic, organizational, and legal measures. Within the framework of the "Economic Development Program of the Republic of Buryatia till 2006" a sub-program was drawn under the title "Development of the fur-producing complex". It highlights the following issues:

- transition to a new concept to fur-hunting facilities which includes not only procurement of raw material, but also its processing into ready-to-use goods;
- measures designed to boost productivity of the hunting lands (foraging, selection, etc.);
- modernization of the materiel of hunting facilities;
- production of competitive high-quality fur;
- development of hunting tourism;
- creation of the market infrastructure for the fur-producing complex, including marketing and advertisement services;
- humanization of hunting and creation of special wildlife protection foundations;
- creation of a legal instrument that would stimulate rational development of the hunting facilities.

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In general, the development of fishing industry in the region should occupy an important position in the structural modification of the economy. This will require the following:

1) Research work, such as:
- assessment of fishing resources and elaboration of scientifically grounded limits on the volume of industrial and amateur fishing;
- determination of the main factors influencing productivity of the fishing industry;
- monitoring of the main natural reservoirs and development of measures to increase their productivity;

2) Measures to protect fish-farming, such as:
- determination of optimal capacity of the fish-factories and their specialization;
- reconstruction of the fish-factories and development of a new biotechnology for breeding new fish species;
- development of legal and economic measures that will prevent pollution of the natural reservoirs and poaching,

3) Modernization of the fishing industry:
- reconstruction of processing facilities to allow a better processing of fish, expansion of the range of goods, and a shift towards low-waste technologies;
- implementation of the new methods of fishing and transportation to cut down accidental losses.

Gathering of herbs is also important from the economic viewpoint. In the recent years, the procurement of fen was developed due to the ever-growing international trade of the republic. Annual procurement of this plant amount up to 100 tons, mainly in the Kabansk and Pirbaikalsky areas. It is important to note that the registered procurement of herbs and mushrooms build up a tiny part of what is usually procured by the local population. The environment of the region allows creating processing facilities to produce ecologically clean products for domestic and export use. In general, the growing attention to traditional use of the taiga resources nowadays can be explained by such factors, as:
- the fact that this activity involves only procurement and processing costs as well as some measures to stimulate the growth;
- growing limitations of state donations on foodstuffs;
- the fact that the traditional use of the taiga resources is a significant supplement to the rations of the local population and its procurement provides additional employment;
- a shift towards better processing of the raw materials and production of ecologically clean foodstuff's for export use;
- development of international contacts in the spheres of trade and tourism;
- finally, the fact that the traditional environmental management to a great extent corresponds to the principles of sustainable development and the mentality of the local peoples.

Definition of limits on the volume of fishing is required at Lake Baikal.

Burghard Rauschelbach

Program Manager,
GTZ - German Agency for Technical Co-operation

Traditions and Innovations for Sustainable Development: The Role of the Global Biodiversity Convention

The Succession of Development

The vision of the sustainable development comes from the idea, that economic and social development and ecological sustainability are no longer contradictions. Quite the contrary: they would depend on each other. There were no sustainable economic development, if it were not related with social issues and ecological orientation. Seen from the standpoint of environmental policy: ecological sustainability could only be guaranteed, if there were economic growth and if it were socially acceptable.

This comes close to the idealistic picture of life, which means to live economically independent and in harmony with the social and the natural environment. People, living in an industrialised environment and who have lost their immediate relationship to natural resources, tend to project this idea to the "ideal world" of rural life, often symbolised by indigenous groups. And people, living in a rural environment with little technical and infrastructural support, tend to project their ideal living conditions to the situation, where food, water, clothes, housing with independence from seasonal weather conditions are available, often symbolised by urban life style. Implicitly the direction of "development" from traditional, agriculturally oriented societies towards modern, industrialised countries is being drawn out.

Hypotheses and questions:

- Indigenous peoples are taken as a symbol for the "ideal world" of rural life - and their life style is idealised as per se "sustainable". This perception prevents the development of appropriate innovations for indigenous societies. At the same time, the vision of sustainable development disappears from the real world of urban life.
- The succession of development is perceived as a one-way road from rural to urban life. Cities apparently offer more chances, less social pressure, more freedom, less persecution, more comfort and less poverty. This brings about regional dis-proportions and centralisation, huge emigration to mega-cities. The conventional instruments of regional policy and planning are not sufficient to overcome the impacts of centralisation.
- Indigenous groups are not per se a model for sustainable development, nor for a life style appropriate to the environment. Awareness promotion for environmental facts and ecological functions must be target-group oriented for the special situation of indigenous groups.

The Role of the Biodiversity Convention

The Convention on Biological Diversity (CBD) has now been joined by about 180 states. Each of the convention's three elements, namely conservation of biological diversity, the sustainable use of biodiversity and the equitable distribution of benefits arising from the use of genetic resources, has a connection with our panel focus. In particular article 8(j) gives a basis for concrete actions. Like many articles it is carefully and non-committingly embedded with the phrase "as far as possible and appropriate, and subject to their national legislation". It further stipulates that the signatory parties shall

"respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices".

The Convention thus highlights the importance of local and indigenous knowledge for the conservation of biodiversity and affirms the

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rights of indigenous and local communities. Attempts are now being made to protect the cultural identity of indigenous peoples and to strengthen their potential for self-help. The traditional knowledge of these peoples provides with information useful for developing various products, notably of an agricultural or medicinal kind; it also plays an important part in ensuring the conservation of genetic resources. In line with this, the Convention stresses that indigenous and local communities should share in the benefits arising from the use of their knowledge, and that they should be given incentives to conserve both this knowledge and the respective biological resources.

Hypotheses and questions:

- It is recognised that indigenous and local communities have contributed to the world's stock of genetic resources and to the knowledge about biological resources and ecological processes. How to define traditional knowledge, how to accommodate collective rights, how should benefits be distributed between different communities, and groups of people?
- The ecological knowledge of indigenous peoples and groups is a hidden resource. How could they be furthered for environmental monitoring? How could they play a role as an environmental watchdog?

Principles

Cultural and biological diversity depend on respect for the integrity of indigenous cultures and on the right of indigenous and traditional peoples to retain control over their cultural institutions, territories, language and systems of knowledge. Any attempt to safeguard and harness traditional knowledge should take the following points into account:

- Indigenous and local cultures can only be understood from a holistic point of view. Their resources and knowledge are inseparable from their culture.
- Indigenous cultures are complex: they are characterized by internal, gender and intergenerational differences and specialisations. This means that access to knowledge and resources must be negotiated with a given interest group; generalisation is not possible. This should especially be recognized when it comes to benefit-sharing-arrangements.
- Because indigenous peoples often have oral traditions, loss of traditional knowledge and biodiversity is closely related to cultural and linguistic loss. This fact needs to be recognised in relation to documentation activities in development projects.
- Indigenous organisations, whether local, regional or of an umbrella kind, need to have their capacities built up and their institutions strengthened, in order to be able to look after the interest of the indigenous group, and in order to be equal to negotiate with extern interest groups in a fair manner.

Traditional housing and Buryatian musicians.

Nyoman Suryadiputra

Project Director of Wetlands International, Indonesia

Traditional Fishery Harvesting in the Mahakam Lakes, East Kalimantan, Indonesia

The Mahakam river is one of the longest rivers in Indonesia (i.e. 920 km). It is located in east Kalimantan and receives water from its 77,700 sq. km (approx) catchment area. Three major wetlands types can be found in this area, i.e. fresh and peat swamp areas, floodplain lakes and rivers (including tributaries). Surrounding the Mahakam region there are at least 152 lakes (76 lakes located in the middle region) that can be detected from the map of scale 1:50,000, their sizes ranging from around 1.2 ha up to the biggest such as Jempang (15,000 ha). These lakes are very rich in term of fish diversity (86 species) and relatively productive in term of its fish yields (*Wibowo et al., 2000 and Suryadiputra, et al., 2000*).

Although no records in fishery productivity from the whole lakes can be obtained, in the early seventies, the middle Mahakam area alone produced between 20,000 - 35,000 ton of fish per year (*Christensen M.S., et al., 1986*). This figure, however, seems to progressively have decreased. In the late seventies up to late 1985 of which the fish production in this area has been reported to drop to 30% - 50% or its annual productivity remains between 15,000 ton to 20,000 ton (*Mursid L.A. and M.S. Christensen, 1987*). This drop was mainly suspected to be due to several reasons (i.e. increased number and types of fishing gears, increased fishing efforts/frequency due to the increased number of fishermen folks, etc.)

There are about 20 traditional fishing gears (except electric hook & line) commonly used in the Mahakam wetlands region, i.e.: longline, single hook and line, hook and line with duck bait, double vertical slit trap, slender funnel trap, thrownet, a combine longline with scoopnet, covered drum/funnel trap, open drum/funnel trap, vertical slit trap, vertical bamboo fence, wingtrap, scoopnet, woven box trap, Vee-shaped dipnet, Vee-shaped dipnet mounted on canoe, gillnet, liftnet, seine net and electric hook and line. The first six gears mentioned above are mainly used in swampy areas while the rests (except funnel trap, scoopnet, Vee-shaped dipnet and electric hook and line) are mostly used in lakes and in rivers areas (except a combine longline with scoopnet and double vertical slit trap).

From the 20 gears mentioned above, 15 units (75%) can likely be categorized as the most environmentally friendly fishing gears, while the resting 5 units (i.e. Vee-shaped dipnet, Vee-shaped dipnet mounted on canoe, liftnet, gillnet and seine net) are likely to be unfriendly. The reasons for this unfriendly gears were because they have a relatively very fine opening mesh (1-3 cm) and are relatively big in its sizes (especially the seine net which has the length of up to 100 m and the gillnet up to 30m). Every single fishing gears operated in the Mahakam having its own specific characteristics in use. Its specifications differ in its operation methods, in size, in its operation time, locations, in the baits, fish species that caught, etc. Some are operated actively (mobile) others are passive (stick at a certain place only or immobile).

Apart from the above gears, some fishermen were sometime also using natural poisons (made from poisonous plants) and/or synthetic poisons (such as Diazinon, an organophosphate poison) in some parts of the Mahakam rivers. This practice, although does not commonly occur in the Mahakam, but it has a severe potential damage to the fish population in the lower Mahakam areas if it were allowed to continue.

The Mahakam Lakes in Indonesia - home of 86 fish species.

Dr. Alexander G. Lubsanov

Head of the Committee of Parliament for Economical Policy, Nature Use and Protection of the Environment, Buryat Republic, Russia

Law on Lake Baikal Protection and Problems with its Implementation

Nature use and environmental protection in Buryatia, elaboration of a national strategy, discussion of ecologically safe development of the Republic, consolidation of industrial and public organizations' activity and the society on the whole these are the problems that are becoming more and more urgent nowadays. That is why the Peoples' Parliament Committee of Economic Policy, Mineral Resources, Use and Environmental Protection in the Republic of Buryatia has been giving a special attention to these issues since the day of its foundation.

Lake Baikal uniqueness poses additional responsibility on all public authorities for protection of this natural property. This explains the activity and concern of deputies of the Committee of Economic Policy in the discussion of the Federal Law "On Lake Baikal Protection". They started working on it in 1991 and made great efforts to settle all disputable questions. In this connection the Peoples' Parliament of the Republic of Buryatia put into its agenda the discussion of the law draft. The Law on Lake Baikal Protection focuses primarily on establishing a legal, economic and organizational basis for the work aimed to preserve, restore and use rationally natural resources of the lake and adjoining territories.

At present necessary data are being gathered and meetings and consultations on the question are being carried out. The Decree of the Russian Federation Government states the amount and procedure of spending the target budget for the lake protection. One million roubles is provided to design a project of environmental zoning of the Baikal Natural Territory (BNT). This work will be implemented by the Baikal Institute of Nature Use. We have investigated the world and home experience of environmental zoning, worked out general regulations suitable for the local situation and elaborated appropriate methods. We have analysed:

- legal basis;
- evaluation of environment;
- level of social-economical development. We have worked out the principles of environmental zoning, determined the boarders of the BNT and approved the content of the map of environmental zoning.

Till now the question of prohibition or limitation of activities on the BNT has not been solved yet. The adoption of the Decree of the Russian Federation Government "On the List of Activities Banned in the Central Environmental Zone of the Baikal Natural Territory" is being delayed. It should be noted that this delay of important legal acts' adoption by the Russian Federation Government produces a negative impact on the implementation of a number of the Law's regulations. Due to this reason the following Articles of the Law are not implemented: on limitation of discharges and emissions of pollutants, on disposal of industrial and consumption wastes dangerous for the unique ecosystem of Lake Baikal, on complex schemes of protection and use of natural resources of the BNT, on environmental documentation of economic establishments on the BNT, on elimination of environmentally dangerous economic establishments. The implementation of the Law on Lake Baikal Protection and the fact of including Lake Baikal in the list of the World Heritage Sites should be supported financially. Unfortunately at present the financial problems are the most urgent. In 2001 31.03 million roubles were assigned for the protection of Baikal in the Republic of Buryatia.

With the adoption of the Law "On Lake Baikal Protection" economic establishments of BNT have received additional financial burden because of the introduction of serious limitations on certain activities and toughening of environmental control. This affects negatively not only competitiveness of products manufactured in the Republic but the economic situation in the Republic on the whole. The Law has not settled this problem, that is why it needs to be improved in the part connected with compensation of expenses. Considering activity of the Peoples' Parliament Committee for Economic Policy, Natural Resources' Use and Environmental Protection it should be

stressed that its deputies have carried out a considerable amount of work. On the whole 9 laws of the Republic of Buryatia were adopted. We need to create a general conception of the development of the environmental legislation system, to determine basic directions of its development, to find optimal balance between the Federal and Federation Subjects' environmental legislation.

Dr. Valerii Gulgonov

Director of GEF Project (Global Environmental Facility), Ulan-Ude, Russia

Environmental Protection on Lake Baikal and the International Collatorative Experience

1. State-sponsored Environmental Projects

Numerous programs aimed at preservation of Lake Baikal have been undertaken in the Baikal region. The main governmental documents on the protection of Lake Baikal are:

- The Decree of the Central Committee of the CPSU and the Council of Ministers of the USSR "On the protection and rational use of natural resources of the Baikal area in 1987-1995" issued on April 13, 1987;
- "Complex territorial scheme of environment protection in the Baikal area" approved on April 14, 1990 by the decree of the Presidium of the Council of Ministers of the Russian Federation;
- Complex federal program for the protection of Lake Baikal and the rational use of its natural resources (1994).

Despite the fact that these programs were only partially completed some results were achieved, including the following:

- A closed-cycle production was introduced at the pulp and paper mill in Selenginsk;
- rafting of timber was stopped on the rivers flowing into Baikal;
- collection of sewage waste from the vessels was introduced;
- the pulp and paper mill in Baikalsk reduced emission of air pollutants;
- release of hazardous waste into the lake was reduced;
- Lake Baikal was included into the UNESCO world heritage sites list;
- monitoring of chemical substance concentration in the atmosphere was introduced;
- "Baikal" foundation was created;
- norms of permissible influence on the ecosystem of Lake Baikal were developed and are now being updated.

At the same time, the experience of the Baikal region allows to determine factors, diminishing the effectiveness of the aforementioned programs, such as:

- Absence of a coordinated system of goals, issues, and measures of each preservation project, undertaken in the Baikal area;
- absence of ecological rationale in a number of programs;
- insufficiently developed economic, legal, and financial instruments for successful fulfilment of the programs and deficit of funds;
- methodological flaws, such as disregard of the complex eco-systematic approach;
- excessive "centralization" and absence of clearly defined orientation on the possibilities and priorities of interested parties and beneficiaries of the projects.

2. International Projects

The Baikal region has a long record of international collaborative projects aimed at the protection of the lake and implemented with the support from different international organizations. Among the largest programs implemented in the Baikal region are:

"Biodiversity preservation program for the Russian Federation" (Global Ecological Fund)

Operational management: the World Bank, Center for Support and Implementation of Technical Assistance International Projects (Moscow, the Republic of Buryatia, the Irkutsk and Chita regions). This project is based on the Baikal biodiversity preservation components (development and implementation of preservation strategies, model sites etc.)

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involving a wide range of governmental, scientific, educational, and public organizations as well as the local population.

Main results:

- A strategy of biodiversity preservation for the eco-system of Lake Baikal and Implementation plan have been elaborated;
- financing of pilot projects has started;
- a wide range of local initiative projects have been supported.

"Complex Land Use Program for the Baikal Area" (AMP/USA - USAID the US Department of State)

Administering organizations: ESD Inc., regional executive branches (Republic of Buryatia, Irkutsk and Chita regions).

Main results:

- A general plan of the sustainable development of the Baikal region in a form of a land use policy map was proposed;
- mechanisms of implementation of this plan have been tested under actual economic conditions (model projects on eco-tourism, rural and forestry development, etc.). A system of geo-information support for the plan was tested and partially implemented on two levels of administration: regional and municipal;
- an incentive was created and infrastructure elaborated for the development of public ecological organizations in the Baikal region;
- program results were utilized and developed in other programs and projects (such as TACIS projects, etc.)

ROLL Program (AMP USA/USAID)

Administering organizations: ISC, regional ROLL centre (East Siberia) based in Ulan-Ude

Main results:

Positive program results are published and distributed in the Irkutsk region and Republic of Buryatia. These results were obtained not only by the East Siberian regional program, but also by other regional USAID programs for the Russian Federation

GTZ German Technical Society Project "Landscape Planning in the Baikal Area" (Federal German Government)

Administering organizations: GTZ, Institute of Geology, Russian Academy of Science

Main results:

- A set of combined mid-scale environmental and landscape planning maps was created for the Goloustnaya river basin and the Olkhon district;
- legal principles of landscape planning were elaborated;
- two pilot projects were carried out: a camping site for automotive tourists was built in the area of the Smaller sea and ecologically friendly private farming technologies projects were supported in the Olkhon district of the Irkutsk region.

TACIS Projects (EU)

Administering organizations: foreign consulting agencies, governmental bodies of the Russian Federation (regional branches of ministries and departments), educational institutions.

"Rational Use of Natural Resources in the Baikal Basin"

Administering organizations: Scandinavian consulting agencies, Ministry of Forestry of the Republic of Buryatia, Forestry Department of the Irkutsk region.

Main results:

- The landscape plan for the „Pribaikalskii“ reserve of the Republic of Buryatia. As a result, the volume of timber production on the reserve territory was reduced threefold;
- state inspection services were installed in 14 timber sites of Buryatia and 3 timber sites of the Irkutsk region. Computer equipment was installed at the Training Center of the local Ministry of Forestry;
- strategic recommendations were proposed to implement the ecosystem methods into the local forestry industry;
- two pilot projects on breeding of the aboriginal livestock (yaks, camels, sheep) were carried out;

- Scandinavian timber technologies were proposed and tested. The project promoted understanding of the biodiversity idea and change of stereotypes among the regional administrators. Also the project stimulated interaction between the Department of Hunting, State Committee of Ecology and so on, as well as started a dialogue between timber companies and NGOs.

"Fostering the ecological awareness and public information among the population of the Baikal region"

Administering organizations: GTZ, Baikal Institute for Nature Management, etc.

Main results:

- WEB-sites containing bibliographical and reference databases on Lake Baikal and the Baikal region were launched for mass media, NGO's, educational, and governmental institutions;
- twenty educational packets and booklets containing study materials for scholars, teachers, journalists, and active participants of ecological organizations were compiled. Computer equipment and software was purchased for 5 environment protection organizations of the Republic of Buryatia and 12 organizations in the Irkutsk region;
- new NGOs were created including the Baikal Information Center "Gran" (the Baikal Institute for Nature Management) and the Baikal Information Network (Irkutsk).

Re-training for governmental employees in the sphere of management and business, development of consulting services for the industry, energy-saving methods.

Administering organizations: foreign consulting agencies, governmental bodies of the Russian Federation (regional branches of ministries and departments), in some cases institutions of higher education and research organization.

Main results:

The results of these projects are of interest as they provide opportunities to rebuild the infrastructure of production management, environment protection, and new organizational and managerial forms based on the environmental approach. In this connection, the TACIS projects' recommendations in the field of eco-tourism, ecological audit, pulp and paper production conversion, education, and re-training of the industrial ecologists are of particular interest.

Eurasia Foundation Projects (AMP USA, USAID, private foundations)

Administering organizations: the Far Eastern Branch (coordinators in the Baikal region)

In the recent 2-3 years several non-profit organization projects were supported. Among them are: ecological club "FAWN", business development training programs of the East Siberian University of Technology and the Buryat Scientific Center, a public-access Internet Center at the Buryat State University, private farms development programs in the Kabansk district of Buryatia, etc. In general, the results of these projects should be taken into account when planning the environment protection programs.

ISAR Projects

Administering organization: ISAR Moscow Office

Projects are targeted at the development of the non-commercial sector. ISAR has a very effective system of grant management, which has been partially implemented in the "Local Initiatives" program of the GEF.

Seeds of Democracy Program (USAID, USA)

Several environment protection projects were supported in the Baikal region. The best known program is the public protection project for the sacred mountain of Alkhanai. The project was successful and a national park was created in the area.

Nuclear Disarmament, Radiological Security, and the Civil Society (private US foundations)

In the framework of this program in Buryatia a public opinion survey project was carried out. It was devoted to the fortune of the Hiagda uranium deposit.

3. Scholarly Projects

Several dozen of collaborative international scholarly projects have been implemented in the Baikal region. These projects received support from the "Copernicus Programs", INTAS programs, Eurasia Foundation grants and assistance of other foreign foundations

as well as through scientific collaboration schemes between certain research organizations.

In general we need to point out high effectiveness of these programs. It is due to the research projects that we got a chance to significantly enrich our knowledge of the eco-system of Lake Baikal, strengthen the international collaborative links and attract attention of the world's leading experts to the problems of the lake. We also managed to support fundamental research under harsh conditions of the perestroika times and the transition period.

At the same time, the implementation of these projects per se influences the eco-system of the lake and requires careful ecological assessment.

Conclusions:

Taking into consideration the combined experience of Lake Baikal protection it is possible to assert that:

- "Vertical" coordination of the global, international, national, regional and local interests in the field of environment protection is virtually non-existent at this stage;
- Coordination of efforts and "horizontal" coordination of interests between the regions, subjects of environment protection and economic activity and the international grant makers are insufficient;
- There is a lack of motivation on the part of the local population and economic subjects of the Baikal area to protect the lake.

International Co-operation

1. Experience, achievements, problems

International co-operation at the governmental level

Signing of environment protection agreements between the states, interested in the mutual use of reservoirs and other natural objects in the border areas is an unquestionable achievement of many states. The Russian Federation participates in two international conventions that have either direct or indirect relation to the protection of Lake Baikal. They are the Convention on the Global Cultural and Natural Heritage and the Biodiversity Convention. Both these conventions allow attracting additional organizational, informational or financial resources to the task of preservation of Lake Baikal.

Wetland at Lake Baikal.

Factors, hampering the effective use of opportunities, connected with the inter-governmental partnership, are at the federal level:

- lack of resources, allocated for fulfilment of the tasks, set in the international Conventions;
- lack of a necessary legal basis that would foster the fulfilment of the Conventions;
- insufficient lobbying of the ecological interests of the Baikal region by its representatives in the federal governmental offices responsible for international co-operation in the relevant fields.

International co-operation in the field of scientific research

This component of international collaboration has a long record and considerable achievements. Due to this fact the level of fundamental knowledge on Lake Baikal have been sufficiently improved. A number of international expeditions was carried out. Partnership ties among the scholars have been established and strengthened.

International co-operation in the field of ecological education

This type of collaboration embraces internship programs and special educational programs. Educational programs may include study abroad and home residence components. This type of partnership has distinguished itself as very efficient. Nevertheless, the educational co-operation has not been specifically focused on the particular problems of Lake Baikal.

Business partnership

Business partnership on the international level has been actively developed in the region. In this particular case the orientation of such partnership towards particular biodiversity preservation problems of the area is obviously rather weak. At the same time this type of co-operation has a very high potential which should be, and will be, used to preserve the biodiversity of the Baikal region.

NGO co-operation and not-for-profit programs

This type of activity currently undergoes rapid development in the Baikal region. The so-called "third sector" is rapidly formed in the region and its role in the protection of the living nature increases daily.

Religious co-operation

International co-operation on the level of religious organizations is one of the quickly developing trends. This type of partnership is insufficiently focused on the problem of Lake Baikal protection. Yet there were some precedents and the entire trend seems to have a high potential for development. Dissemination of information among the representatives of all religious confessions should be fostered.

2. Strategic directions of the international co-operation

At present, we can outline the following strategic directions of international co-operation:

- In the sphere of inter-governmental co-operation it is necessary for the protection of Lake Baikal to develop the regional level. It is important that not only ecological experts, but other administrative officials participate in these activities;
- In the field of municipal co-operation it is important to organize joint programs with the authorities of the Great Lakes area;
- In the sphere of scientific research - it is necessary to develop a uniform research strategy for Lake Baikal, aimed at the direct beneficiaries of the research projects ("market approach"). As a sample priority field of the fundamental research we can name the criteria system for assessment of the ecological situation of the Baikal area;
- In the field of education it is crucial to develop such trends, which will allow using the global experience of ecological education for implementation in the region;
- In the field of business partnership - a very important thing is to introduce the ideas of the protection of Lake Baikal as priorities into the system of advertisement and marketing;
- In the field of not-for-profit programs it is necessary to broaden the spectrum of directions for the protection of Lake Baikal;
- Co-operation on the level of religious confessions. All initiatives connected with the principles of protection of the lake are important in this field.

Prof. Dr. T. Dorzhiev

Vice-Director of the Buryatian State University, Ulan-Ude, Russia

Use of Traditions of the Baikal Region's Peoples in Concepts of Nature Protection

Integration of Traditions

Indigenous peoples living in the Baikal region established their own relations with the environment. These relations are based on the philosophical thesis - 'man is a part of nature', thus a man is considered one of the components and units of the ecosystem. This thesis reflects a great background, interrelations and interdependence of all components. Local peoples realized that their future wholly depended on the environment. In my report I would like to consider a few aspects of using traditional approaches of the Baikal region's indigenous peoples - Buryats and Evenks - to the environment in the context of present use of nature and resources.

Traditional nature use: Traditional economy of Buryats is cattle-breeding. Its basic form is nomadic. Advantages of nomadic cattle-breeding are obvious. Firstly, due to a regular change of pastures (from 8 to 12 times a year) various types of pastures were fully used with consideration of their condition and environmental expediency. Secondly, owing to a regular change, pastures were not destroyed by extensive use. This made it possible to preserve natural families of the steppe flora. It should be noted that Buryats often shepherded together different species of cattle which in accordance with their biological peculiarities used pastures differently. This helped to increase total productivity of cattle-breeding without overloading pastures. Therefore, in Buryats economic traditions environmentally sound approach is easily recognized.

What is the present situation in cattle-breeding from the point of view of keeping traditions? In many regions of Buryatia nomadic cattle-breeding is forgotten completely, in mountainous districts it is preserved partially. This resulted in overuse of pastures and transformation and degradation of the steppe communities. Presently due to the reduction in number of cattle and decline in cattle-breeding the steppe is restoring in some places. Do we need to return to the traditional cattle-breeding to reduce cattle's impact on natural ecosystems? Partially - yes, but we will not be able to do it in the full volume, we should take only positive experience that was accumulated during the peoples' history.

Another urgent question for Buryats is traditional attitude to the wood. Wood communities have changed dramatically for the last 10-15 years. They are losing their traditional appearance and are being destroyed on vast territories. Let me dwell upon some peculiarities of Buryats traditional use of forest. They mainly used overripe dry woods. In summer time people gathered dry branches which often cause fires. Cutting of woods along rivers was strictly prohibited. In a word, our ancestors traditionally behaved in the way we need to take over to bring our forests into a healthy state.

Traditional cult sites and their role in nature protection and preservation is also of great importance. Cult ritual places of Buryats, Evenks and other peoples of Siberia are usually connected with unique natural sites. These include cliffs, unique mineral springs, tracts and places with a high degree of biophysical activity. It is evident that these places are practically untouched by people of all ethnic groups worshiping them. Local people of Buryatia traditionally banned hunting and cutting certain species of fauna and flora. Influence of traditional bans of particular natural sites is not prominent but still can be seen. Unfortunately many of the bans are being forgotten. Regarding traditions and their role in nature protection we should dwell on traditional eco-education of indigenous peoples.

Many families, especially those following Buddhism, try to make their children understand that a man is a component of the same importance with an ant for instance, and he should not regard himself superior to others. Such education contributes to respectful attitude to all living creatures.

Traditionally Buryats and Evenks treated fire and water in a special way viewing them as sources of life and natural disasters. It was

prohibited to pollute water, throw garbage and dairy products' remnants into rivers and hearth.

In conclusion I would like to stress that each people has its own rich experience of interrelations with nature. These traditions are unique, they were formed and tested in the course of time. Unfortunately many traditions are fading away. They could make an invaluable contribution to nature protection.

Germán I. Andrade

Fundación Humedales, Bogota, Colombia

Bio-cultural Restoration - A New Management Paradigm for Lake Fúquene, Colombia

Lake Fúquene (30km^2) is a shallow tropical high altitude (2,539 m) ecosystem located in the Colombian Eastern Cordillera, at the heart of a water basin of 1,520 km^2. It is the biggest remnant of large north Andean Pliocene lakes, rich in biodiversity with several endemic and globally threatened species. The lake supports a rich regional economy, and provides resources for approximately 150 poor families settled on its shores. An intense on-going ecological degradation process has called the attention of environmental authorities and the civil society. Currently there are controversy regarding the lake's management objectives. For the regional environmental authority (CAR) management is oriented towards guaranteeing (and increasing) the amount of water available for irrigation and human use. Scientists argue that if the lake is viewed solely as a water reservoir, some of its most important natural values could be jeopardized. Fundación Humedales is promoting an integral management plan based upon the Ecosystem Approach adopted by the Convention of Biological Diversity and the Ramsar sustainable use principle. Both imply the integration of nature conservation with human development. We wish to demonstrate that this goal could be approached through the recreation of cultural traditions. A historical overview of the relationships between people and nature shows how the negative evolution of the ecological structure of the lake is related to changes in the cultural valuation of the ecosystem.

Humans started influencing the lake by 30,000 year BP, when hunter-gatherers settled on its shores and valued its resources on a utilitarian and animistic basis. To 4,000 BP traditional raised-field agriculture (maize, potatoes, and tubercles) developed, complemented with extractive activities (hunting, crab and egg-collecting, reed harvesting and fishing). The first major change in the cultural traditions was produced by the collapse of indigenous populations during conquest (1,490), when new imposed values favoured the transformation of natural ecosystems in agricultural fields. The low-technology colonial cultures developed however a certain level of coexistence between people and lakes. During the first half of XX century the lake was still an important leisure destination and urban inhabitants were attracted by its beauty and rich wildlife. Drastic ecosystem change was promoted from 1934 to 1994, when the level of the lake was decreased by 3 m and channels constructed to irrigate 20,000 ha of pasture fields. Phosphorus inputs increased and the lake turned euthrophic. Species invasions (especially alien waterweeds and fish) changed its ecological structure. As the lake degraded, it became less attractive for recreation and direct extractive uses. Currently the population settled on the shores of the lake is extremely poor, while the lake continues to degrade.

In order to direct actions towards sustainable environmental management several obstacles must be removed:

- Most institutional actions still respond to local symptoms (within the lake) and do not address the larger-scale causes of degradation (at the watershed)
- Management does not account for all stakeholders' interests and perceptions (wetland inhabitants do not have access to decision-making)
- Management does not consider the Lake's full range of values

The debate can be summarized as water reservoir vs. ecosystem. It is however uncertain whether all the lake's natural values and functions could be restored. Economic-oriented

policies at the watershed level are incompatible with the restoration of the integrity of the ecosystem. Returning water to its original level would imply the removal of several thousands ha of productive land, which is politically unthinkable. Moreover, returning the lake to its 1960 level implies substantial changes in the management of the water irrigation facilities, which is not an easy task either. A short-term consensus for an integral and socially feasible management agenda should be reached. A compromise between the allocation of water for dairy industries and ecosystem functions is needed.

Integration of Traditions

Sustainable ecological restoration requires a management agenda that links environmental problem solving with the imment of the life of local populations. For this, a basic economic issue must be addressed: those who cause the problem (dairy industries) do not benefit sufficiently from the remediation, and the beneficiaries of lake restoration (direct users: fishermen, fringe agriculturist, reed harvesters) are not those who caused the degradation. Management objectives should be defined, at least, for stopping ecosystem degradation at its current level; and starting the restoration of some of its values, especially the ones that benefit directly the poor populations. One way to implement it, is the recreation of adaptive traditions. Work with elders has shown that the memories of the past lake's life, including actual extinct species, are still present although vanishing. New generations are growing up in an environment progressively devoid of the cultural and natural values of the lake.

Several features of the ancient adaptive system can be emulated both for economic development and habitat and species conservation. Raised agricultural fields that conferred advantages such as greater soil fertility, better water control and nutrient retention, could be re-created. Sustainable natural resources use can contribute to biodiversity conservation. Fundación Humedales is undertaking actions that contribute to integral ecosystem management, as follows:

- Pilot restoration of a riparian Alder forests, in order to raise public awareness about ecosystem integrity and functions;
- Study for the retention of phosphorus at farm level and definition of alternatives for diverting organic wastes from the channels that lead it directly to the lake to water depolluting facilities;
- Technical support to local communities for the sustainable use of natural resources (fisheries, reed beds and macrophyte vegetation);
- Design and implementation of a biodiversity inventory and monitoring system; and
- Educational campaign, including the development of the Living Lakes interpretative centre, focusing on the lake's values and functions.

Potential positive impacts are even larger, as Lake Fúquene is becoming a model site for the implementation of the Colombian Wetlands Conservation and Sustainable Use Policy.

The Fundación Humedales is undertaking actions to promote integral ecosystem management at the Colombian Laguna Fúquene.

Adalberto Eberhard

Director of Ecotropica Brazil, Cuiaba, Brazil

Integration of Traditions in Nature Conservation Concepts - Case Pantanal, Brazil

Located in the middle of South America is Brazil's vast Pantanal ecosystem. Almost ten times the size of the Everglades in the United States, it is the world's largest continuous wetland system. Embedded in the Mid West of Brazil, the Pantanal comprises part of Mato Grosso and Mato Grosso do Sul States, extending as far as Paraguay and Bolivia. This immense region, of approximately 140 thousand square kilometres through which Paraguay River and its tributaries run, is considered one of the most productive wildlife ecosystems in the world, surpassed only by the African Savannah.

Surrounded by hills and plateaus, the region is characterized by the water cycle. Between the months of October and April the rains increase the volume of water from Paraguay River and its tributaries. Overspilling the riverbed, they inundate a large portion of the plains which, for having low declivity, between other factors, do not allow the flow of such volume of water. At the end of the rainy period, between May and September, the waters descend staying only in the beds of the permanent rivers. The rain regime in Pantanal and the climate, as a whole, are similar to the semi-arid regions. There are two well defined seasons: the dry and the rainy seasons, characterizing the climate as seasonal.

At the beginning of the rains, the waters are rapidly absorbed. Later, the soil slowly humidifies. Swamps and bays start to form small and large streams. Soon the water covers and connects the lowest areas. Only low terrain elevations, known as "firmes", are not inundated. Swimming downstream, many animals seek shelter in these dry areas. Life proliferates in the streams. Fish reproduce and many aquatic plants flower. Life manifests itself again in the temporary bays. Seeds of some plants that remained dormant during the dry season germinate, recommencing another cycle.

However, in the low water period when the waters decline in the Pantanal Plains, sediments, nutrients and organic materials brought with the overflowing of the rivers are deposited in the soil, allowing its fertilization. It is during the dry season that many plants start to grow. Weeds form a natural pasture in the region. The animals encounter a larger abundance of food and start their mating and reproduction rituals. On the trees countless nests are formed, announcing the arrival of new inhabitants. The decreasing waters bring a new landscape. A scenario that calls for observation. The large variety of environmental conditions in Pantanal are grounds for a vegetation that, in general, comprises large mosaics. The types of plants are many, from the minuscule submerged aquatic, herbaceous and paludicole, to palm trees and high stature trees. Here we encounter probably one of the greatest biodiversity ranges in aquatic plants, with about 250 species.

In the permanent bays, vegetation islands formed principally by lily pads constitute the floating water plant islands, true nurseries for fish and other animals. Alongside the floating islands nymphals and the famous victoria regias grow. In the parts where the water dries more rapidly all types of wild grass grow, natural pasture for the wild herbivores and for the cattle raised in the region for over two hundred years.

On the riverbanks or humid water-covered areas of the terrain grow the Carand palm tree and the Acuri, constituting the regionïs famous carandazais and acurizais. Areas populated only by Yellow Trumpet, trees of yellow flowers and Purple Trupet Trees are also registered markings of Pantanal. Humid vegetation called gallery forest accompany the streams, playing an important role in the aquatic life. Some plants produce fruits which are food for the fish. Leaves and branches, upon falling in the river, supply organic material indispensable to the maintenance of the biological conditions of the water. In the more elevated areas of the Pantanal Plains, the more dense vegetation denominated "capäes", we find some species that are typical of Amazon vegetation. On the top of the „cordilheiras“, stains of savannah resemble the landscape

Integration of Traditions

of other regions of the Central Plains. Accompanying the vegetational diversity, the Pantanal fauna is also very rich. The birds have their great paradise here, arriving at 650 species, a number that compares to the diversity of Canada and the United States together.

Dense populations of jaguars, capybaras, marsh deer, giant anteaters and tapirs share the same territory with other important species of mammals, highlighted by ocelots, foxes, quatis, agouti, pecaries, otters and giant otters. Marsupials, bats, savannah rats and, of course, monkeys, especially hauler monkeys, capucine monkeys and others. More than 300 species of fish, together with reptiles and insects form a separate chapter in the Pantanal fauna. It is remarkable, for example, the amount of ants, termites, spiders, and mosquitoes. However, in the intricate network that composes the local ecosystem, this surplus of insects is fundamental for the survival of birds, fish and batrachia that populate the region. Among the rich Pantanal fauna there are many species threatened with extinction such as the Hyacinth Macaw, the giant armadillo, the ocelot and the Giant River Otter.

The Mato Grosso Pantanal is the permanent genesis of a great organism governed by amphibicity, in constant bio-geo-chemical accommodation in full process of abandoning its adolescence in the search for ecological maturity. What can be said and thought about this immense process initiated millions of years ago which is still in plain effervescence? Rivers are born, rivers disappear, regular cycles, mixed with regular irregularities, phenomena that repeat themselves with a statistical regularity, and when science finally judges that is able to model it, to learn it, it changes brutally. It was like that in 1942, it was like that in 1974 and it was also like that in 1985. It must have been like that at several other times in past epochs and will continue to be for a long time. The heart of this organism is the hydro-period. When it beats more or when it beats less, everything changes.

This great flat plain, with altitudes varying from 80 to 150 meters above sea level, is surrounded by scarped plateaus, situated in the centre of South America. The main characteristic of this 139.000 km^2 piece of land, one-and-a-half times the size of Portugal, is that it is subject to periodical flooding. The low declivity from North to South and from East to West, the low soil permeability and the fact that there is only a small outlet at the South called Closure of the Mountains are jointly responsible for the retention of water over the plain. We need to imagine the Pantanal as a depression in the form of a large horseshoe surrounded by highlands. The open part of the horseshoe is very small. Everything that happens to the highlands is reflected in the Pantanal. Thus, when the heavy rains fall on the highlands between November and March, the amount of water that runs into the depression is larger than the amount evaporated, infiltrated or drained from the system through the Paraguay River Closure of the Mountains in the South.

A landscape designed by such permanent conflagration could not create an absolutely homogeneous and undifferentiated product. This is the reason why the term Pantanal really means a number of totally diversified landscapes within the same plain, that is, Pantanal is in fact a network of separate and distinct Pantanals, mainly related to the sub-basin where all these interactions occur.

This macro division of 10 different Pantanals is a first comprehension for the great landscape diversity, which may reach tens of others when we develop a profound study of the phytosociology, water level permanence, biological pathways, etc. In this way the definition of landscape cultural units, designed along the Pantanal's geomorphological conformation, are clarifying factors of the different possible interrelations of new ecological units.

It is in this catharsis of solar energy, water, nutrients, phytoplankton and zooplankton where the vegetal and animal settlers decided to establish themselves, from the Amazon, Cerrado (Brazilian Savannah) in all its formations, Chaco, Atlantic Forest, and according to more recent information, the Caatinga. As a worldwide unique phenomenon, the vegetation abandoned its original characteristics, adapted themselves to an amphibious environment and merged with others with even more different addresses which had also abandoned part of their original characteristics to adapt to the new environment, and together they formed an unequalled phyto-geographical complex. The current design of this miracle, which may abruptly change at any time, presents great areas of native fields, gallery

forests, semi-deciduous vegetation, permanent green vegetation, immersing vegetation, different characteristics of Cerrado and marshes. In general we can say that Pantanal is an amphibious version of the Cerrado. Hence, the Pantanal-Cerrado Complex was recently identified as one of the top threatened hotspots on Earth, in combination to the Atlantic Forest, considered the one with Higher Priority (Megadiversity, 1999), Pantanal being considered as Highest Priority at Regional Scale, vulnerable and Globally Outstanding (A Conservation Assessment of the Terrestrial Ecoregions of Latin America and the Caribbean).

But, how was it possible that this fantastic natural paradise arrived until our days in so wonderful ecological situation, once, during more than three hundred years there was economical activity in the region?

For the cultures of the old world, three hundred years doesn't mean a lot of time, when compared to the millenarian cultures established in these regions. During the colonization period , the white culture took advantage of the indigenous cultures, practicing a true genocide and socio-cultural destruction, the use of the traditional knowledge was practically null, conducting to a solid environmental degradation in a period of extremely small time. In the Pantanal, due to his amphibious characteristics, that always was extremely hostile for the process of white colonization, even with the tremendous destruction of the indigenous cultures, it was necessary that the settler decided between learn with the natives of the plain, the forms of adaptation to periodical pulse of the waters or destroy the environment to adopt it to his foreign management practices.

Luckily the first settlers in the Pantanal decided for the integration process with the movement of the waters, respecting in his economical occupation in a good scale the millenarian ecological and cultural processes of the floodplain. The Pantanal lives a historical phase of his ecological evolution at this time. When the modern technologies try to overcome the old cultural concepts that knew so well how to conserve the local nature, in a way integrated with the process of generation of income, the Pantanal is declared Biosphere Reserve. By definition, the implementation of the Biosphere Reserve foresees in its instrumentalisation, the ransom and the application of the cultures and local knowledge, in the way to guarantee the perpetuity of the nucleus areas of the Reserve through the implantation of ecological sustainable activities in the buffer zone and in the transition area. The great subject that is not resolved is the existent conflict among the dimension of the goods that can be produced through activities that allow the permanent offer of benefits and environmental services with regard to regenerative capacity of the ecosystems and, the laws of market of the capitalist model of accumulation and consumption.

The second subject, and this is fundamental to define the future of the local cultures in the conservation of the nature, tells respect to the aggregation of economical value to these forms of sustainable natural practices. I will illustrate with one example: The cattle raising activity in the Pantanal. During centuries the local farmers developed a system of natural pasturing, without deforestation, using the native grasses of the Pantanal. This practice, however, for several reasons is not able to compete with highland dry areas where the modern methods of intensive creation, burn, deforestate and seed grass in a very bad system of landscape simplification and high loss of biodiversity. The issue is that both meat produced in this both cases, receives the same price at the market. So, the question is: is it possible to join economical value to the meat of the Pantaneiro cattle, once it is produced in a Biosphere Reserve, in areas of native fields, without deforestation? Will the consuming world be able to pay for this product, a larger value, taking into account the sustainable management practices constructed with respect to nature and regional cultures ? These are the great questions that need to be answered if we want to build a world that maintains healthy bridges with nature and society, being able to construct a modern future, other than accumulation and consumption only for the most privileged societies. That is a local case that in the same way as thousands of other local cases asks for global answers.

Olga Myznikowa

CEO of "Bereg" (Russian NGO), Ulan-Ude, Russia

Integration of Traditions

Environment laid an imprint on the ecological traditions of spiritual life of the peoples in the Baikal area. These traditions originated in the Stone Age and were further developed over the periods of shamanism and Buddhism. In the understanding of the Buryat people a human being is a creation of heaven and earth. That is why they always praised them. During the celebrations, in the beginning the elder of the house goes outside with a plate of food and a cup of drink and then drops crumbs of food three times in the direction of the south, as a sign of respect to fire, three times to the east honouring the air, then three times to the west showing respect to water and finally to the north, remembering the dead.

The basis of many traditional practices is formed by the feelings of gratitude and elation. This highlights the in-depth understanding of the fragility of the environment. In this connection we can talk about the existence of some rational mechanisms of adaptation to the habitat, an ability to keep a balance with the environment through spontaneous environment protection. Strictly set limits on the number of animals hunted down in a certain area, or the quantity of edible plants gathered at a time are well known from the history. Ecological traditions are formed by a combination of traditional knowledge and skills, accumulated in the course of interaction with the surrounding nature. The indigenous people of the Baikal region were always good hunters. In many cases hunting is the only means to keep the normal subsistence level for a family. But if in the earlier times a certain hunter's code existed which prohibited to kill female species, banned unnecessary killing, such as hunting birds in spring, restricted the dates of hunting seasons, there is no substitute for it today.

Due to a hard economic situation of nowadays, forest provides a real support to the people in many regions. People procure berries, mushrooms, nuts, very often they try to do this in the areas adjacent to the main transportation lines without too much transportation expense. They frequently start the procurement season too early well ahead of the permissible dates. The same situation can be encountered in fishing and hunting the Baikal fresh water seal. Cases of poaching are widespread. If in the earlier times the meat of wild animals and edible plants were procured exclusively for self-subsistence, nowadays the situation changed. The people began to do this for sale. Fishermen noticed the fact that omul stopped using the estuary of the Abramikha river, its usual breeding site. It turned out that in the recent years poachers crossed the river with their nets to such an extent that the fish going up the creek could not pass. By now the situation has been improved, but the genetic memory of the usual spawning ground was already lost. There are no nets in that river now, but the fish avoids this place. Ecological problems are a matter of concern of the world community. Gro Harlem Brutland who heads the commission on environment protection and development pointed out that "poverty is the source of environmental problems".

If we take the example of our Kabansk district we can see that, in the words of the head of the Baikal nature reserve Sutula, "the loss of traditions took place long ago". Due to many reasons, among them geographical peculiarities of the area, the settlers came to these territories not only from Russia, but also from other European countries. They were better armed than the indigenous population who lacked even steel traps. The availability of the hunting grounds, the overflow of hunters, uncontrolled woodcutting, frequent fires led to the extinction of many species, the famous sable among them. In 1935 a restriction on hunting was introduced. 300 sables were settled in that area. In the 1950s sables were transported to other places. Eventually, we came to the conclusion that since the traditions of careful use of natural resources were lost we needed to restore them through creation of reserves. The Baikal nature reserve was thus founded.

Pollution of water was an act of sacrilege among the indigenous people. Washing cloths in the reservoirs, constructions of dams and suchlike were absolutely prohibited. But a new generation emerged, and it was brought up on the maxim of Michurin who said that "we cannot wait for nature's blessing but our task

is to extract it from nature". In this way the reign of a human being over the nature was proclaimed and now we are facing the consequences of this arrogant misguidance. Wasting available water resources the world approaches the threshold of the so-called „Great Thirst". Such alarming prognostication was issued by the Institute of World's Resources, USA. Ecological condition of the fresh water sources has deteriorated so deep that they gradually lose the capacity to sustain the human existence as well as flora and fauna on the planet. If to be more exact, by 2025 at least 3,5 billion people will suffer from the lack of fresh water. We can await a rapid decline of the population on the planet and total extinction of certain animal and plant species.

Fresh water seal is a purity indicator showing the quality of water in Lake Baikal. It is the only mammal living in the lake. Recent research showed that the animals are seriously sick. Some substances released into the lake reduce the immunity potential of the water seal's organism and they are helpless when infected by the viruses. A possible cause of the massive death of the seals can be an animal plague virus. Lake Baikal is famous for a very low concentration of mineral and other substances and all influence can be fatal for it's vulnerable ecosystem. More than 1,200 animal species can be found here and many of them are endemic. Many of the organisms from the lake can only exist in a narrow range of temperatures. That's why the ecological crisis primarily threatens these very species. The increase of the water temperature by 1 degree can cause their extinction. An endemic of the lake, the golomyanka fish and a certain species of a fresh water shrimp can die if the temperature will rise to 11-12 degrees. Yet, these animals are the source of purity of Baikal water. The growing ecological tension in the area of Lake Baikal badly affects the health of many people.

Increased pollution has reduced the immunity potential of the Baikal Seal.

The first place among the most common illnesses spread among the local people belongs to the respiratory diseases and various tumours. Death rate in Buryatia exceeds the birth rate. The highest mortality rate and the lowest birth rate in 1999 were detected in Ulan-Ude and the Kabansk district. Having learnt the mysteries of earth, space and seas, having reached the peaks of technology development and science, and, at the same time, having realized the narrowness of this selfish process, a human being finally seems to realize that this is a dead end in the development of the civilization. The man can learn the mysteries of the world only in harmony with the nature. In Buryatia and Mongolia, in the basin of the Selenga river, the main tributary to Lake Baikal, big cities line up on the banks. Industrial and household waste of these cities is the main source of aerial and water pollution of Lake Baikal. Woodcutting, frequent fires, cultivation of the land in the coastal area exert very negative influence on the lake environment. The worst of all troubles is the loss of traditional knowledge and practices by the indigenous people of the region, the loss of harmony with nature. On the verge of ecological disaster we face a necessity to take care of the heritage, its security and its continuity.

We, all nations living on this land should become its real owners. We should take responsibility to protect the natural and cultural heritage so that we could hear the songs about the beauty of our sacred Baikal, about hard-working people of this land in the centuries to come.

Dr. Nina Dagbaeva

GRAN, Ulan-Ude, Russia

Integration of Traditions

My report touches upon one of the crucial aspects of the program, which is worked out in accordance with the Russian concept of sustainable development and aimed to protect and save lakes, Lake Baikal in particular. Sustainable development presupposes that satisfaction of an individual's needs does not threaten future generations' welfare and violate their possibility of meeting their needs. This definition has been worked out by the International Environmental Committee and has been recognized by the world community. Therefore the most urgent issue of the concept of sustainable development is considered to be alteration in people's consciousness.

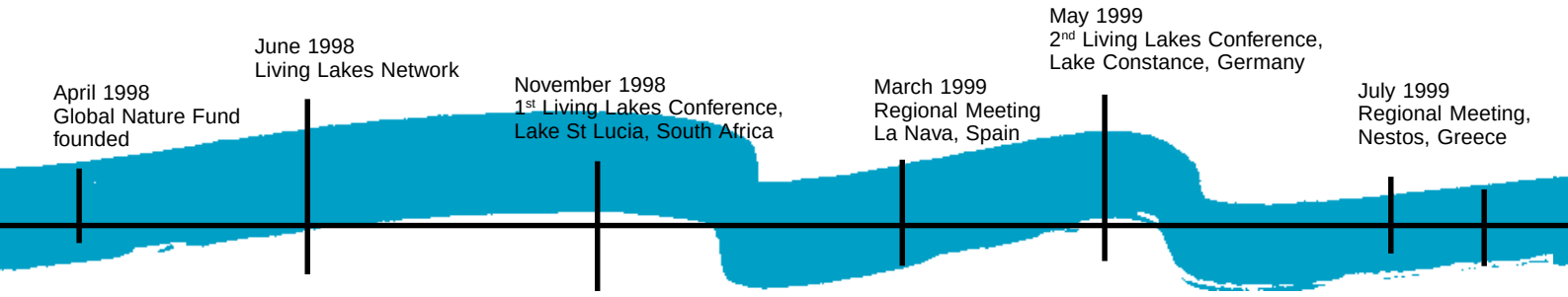
This idea is difficult to realize. As a rule, we get anxious about the natural conditions of the place we live in if we are in the position of observing the actual change of the environment. If, for instance the water we use acquires a brownish colour, or the air we breathe smells bad. But as soon as these outward characteristics disappear, our concern or feeling of danger also diminishes. Psychologists say that we react to a stimulus if it is obvious. There is one more reason that discourages people from being environmentally friendly. Environment fails to compete with everyday people's needs and desires. In the first issue of our magazine the results of the survey of the people of Ulan-Ude were given. The residents were asked if they would agree to use bicycles instead of cars, to restrict themselves to lesser energy consumption, and to buy environmentally sound goods. It turns out that money and conveniences are hard to refuse. At the same time people's modest input into environmental protection activities, like collection of paper and bottles will bear fruit only in the far future. In order to cope with these two problems we must influence public thinking. To make this influence effective it is important to put a special emphasis on environmental issues and to motivate environmentally conscious behaviour. Thus, it is evident from this that a tendency, for information and enhanced importance of informational activity contribute to the transition to sustainable development and to the reduction of anthropogenic pollution.

However, the society is not always conscious of the significance of these factors and in the documents detailing Rio-de-Janeiro Summit of the year 1992, nothing except for a small part called "The XXI Century Agenda" is devoted to this problem. It is obvious that the development of information technologies also requires efforts and financial support. Though it should be mentioned that these expenses are much less than those spent on "material" things: equipment and technologies. But the effect they produce is much more beneficial as information technologies greatly advance alteration in people's consciousness and modes of their behaviour.

Since the transition to sustainable development is a manageable process, it should be provided with necessary information. Presently, this process is considered to be an active informational process, which demands greater amount of information. It is clear that information functions, first, as a building material which is used to construct a system of the civilization intellect and, second, as a global objective and priority issue of people's life. Informational integration is vitally important at the level of educational systems, mass media, research, public and environmental activities resulting in the creation of common databanks, single legislative base and organizational structures. Informational integration implies working out a single approach sustainable development and defining goals and functions of this transitional process and concept of sustainable development.

Baikal Information Center (BIC) GRAN' founded in 1999 as a non-governmental organization is trying to apply this approach. Members of BIC GRAN' - teachers, journalists, engineers-programmers, economists, united by their anxiety over future of the environment, once cooperated in the TACIS project. They have realized that in times of information supremacy the largest deficiency of the present period is the lack of information.

What is the current situation? Information is gathered and analysed by various governmental and non-governmental organizations which use it for their own purposes. And what should an ordinary person who is not burdened



with these organizations' concerns and duties do? In two years of work we have collected much useful information about the environment and anthropogenic pollution it undergoes, created a Web-site "Environmental information" and worked on an environmental library. Having participated in several grant programs we have managed to set up and conduct training seminars for school teachers and students. We consider this activity to be vitally important since school functions as a mass institution, centre of public and business structures interaction.

Our activity forms the basis of alteration in people's consciousness and modes of their behaviour and assists teachers much in their work. We are well aware that unless business people get interested in environmentally sound production, nothing will change for the better. Our successful presentations of Buryat firms at the International Exhibition EXPO-2000 at Hanover prove that business people do not ignore environmental activity and are ready to make their own contribution to the protection of the environment. Presently, we have engaged in the issuing of an environmental magazine "Living Baikal". This project has been supported by the Unilever Company. The magazine aims to provide teachers, children, environmentalists with informational assistance. "Living Baikal" is not analogous with any periodicals published in the Buryat Republic. Thus, we firmly believe that solution to environmental problems, to the issues of water quality and traditional nature use in particular, depends on interaction of governmental, business, public and educational institutions linked together with the help of information.

The experience of BIC "Gran" shows that we have chosen the right direction. To create a network of mass informational use we need both governmental and public support. The organization of the Information Center is not limited to a web-site creation but is considered to be a place for people to meet, communicate and cooperate on environmental projects. We view our centre as a technically equipped room with an environmental library, database, advertising facilities required by tourists, business people, students, visitors. It is obvious that the Information Center actually forwards the idea of sustainable development in a particular region. We have planned panel sessions at the shores of Lake Baikal to discuss the problems raised in this report and share our opinions on them.

Conference participants learning a traditional Buryatian Dance.

Anne Levesque

East Kootenay Environmental Society (EKES), Kimberley, Canada

Building Relationships with First Nations in Canada for Nature Conservation

Integration of Traditions

The arrival of Europeans in Canada changed forever the traditional way of living for the First Nations people living on the land for over 10 000 years. After only a few hundred years of economic, trade and agricultural changes brought by Europeans, did the great buffalo herds, and sturgeon populations (to name a few), were extirpated forever, along with the way of life of the First Nations people.

The people were obliged to move on reserves and were given basic government subsidies. This drastic change came with unparalleled social and economic problems for the First Nations communities, but they continued their claim that they have rights to the land. The request by the First Nations people of Canada for their land is one of the most challenging political issue presently faced by the Canadian and provincial governments of this country. This complex political debate has heated up over the past four decades. Even bloody confrontations have arisen in a country known as "peaceful". Racisms are increasing and the business communities feel that the uncertainty around the land rights restricts them to invest in certain parts of Canada.

** Note: A 1990 report calculated the cost to British Columbia as a result of not settling land claims to be $1 billion in lost investments and a loss of 1,500 jobs a year in the mining and forestry sectors alone.*

First Nations are successfully using the law to demonstrate the obligations of the federal and provincial governments in negotiating land treaties.

** Note: In 1997 the Supreme Court of Canada issues the landmark Delgamuukw decision defining aboriginal title. The Supreme Court of Canada has acknowledged that the First Nations have Aboriginal title: a legal interest in lands and a right to the land itself. In addition they also confirmed that Aboriginal title is on an equal legal footing with the Crown's (government) title.*

In British Columbia, shortly after Delgamuukw the First Nations Summit placed the governments on notice. First Nations intended to re-establish communities, economies, and laws on Aboriginal lands. They called on Canada and British Columbia to put an immediate freeze on any further alienation of land and resources within the province. The recently defeated British Columbia (BC) government recognized officially the existence of aboriginal rights and began a modern treaty process in 1992. The Federal and provincial governments and First Nations Summit established the BC Treaty Commission.

In 1998 the Nisga'a Tribal Council and the governments of Canada and BC signed the final agreement as a foundation for negotiating BC's first modern treaty. This treaty was established by the federal government in 1973 but has been used as an example for the BC Treaty Commission process.

** Note: The Treaty was immediately faced with criticism from some of BC's non-aboriginal population and challenged in court by the BC Liberals, the newly elected provincial government.*

In the northern part of Canada, the Nunavut Land Claims Agreement was passed through the Canadian Parliament in June of 1993. This is the largest native land claim settlement in Canadian history, an area of approximately two million square kilometres, or one-fifth of Canada's landmass.

The Basis of Treaty Negotiations

Treaties are expected to involve transfers of land and cash by both the Federal and provincial governments to the First Nations, accompanied by full governance on treaty settlement lands; creating a different level of government and decision makers for certain parts of Canada.

Treaties differ from table to table but generally cover three broad subject areas:

- First Nations government structures and related financial arrangements
- Jurisdiction over ownership of lands, waters, and resources and,

- Cash settlements

Implications to Lands, Resources, and Wildlife

In the Nunavut Land Claims Agreement case:

- Equal representation of Inuit with the government on a new set of wildlife management, resource management and environmental boards;
- The right to harvest wildlife on lands and waters throughout the Nunavut Settlement Area;
- A share of federal government royalties for Nunavut Inuit from oil, gas and mineral development on Crown lands;
- Where the Inuit owns surface title to the land, have the right to negotiate with industry for economic and social benefits from non-renewable resource development;
- The right of first refusal on sport and commercial development of renewable resources in the Nunavut Settlement Area;
- The creation of three new federally funded national parks;

BC Treaty Commission Expected Agreements:

- BC government states province-wide standards of resource management and environmental protection will apply. Treaties will encourage the management of natural resources in accordance with principles of sustainability and environmental protection
- Access to land and resources for hunting, fishing and recreational use will be guaranteed to First Nations.
- Transferred resource revenues are expected to be made from forestry, mining, and other land-based incomes.
- First Nations ownership of land is expected to be tied to resource development and income generation, as their territories often contain valuable resource generating capacities.
- Addressing the fisheries resource in treaty negotiations will likely be quite challenging. It is likely that agreements will allocate to each First Nation a portion of the Total Allowable Catch.

Integration of Traditions into the Nature Conservation Concept

It is clear due to the present economic structure of Canada, that it is impossible to fully reintroduce the traditional use of the land into First Nations treaty negotiations. The treaty negotiations in British Columbia have brought many concerns to conservationists in the legislation of the already weak environmental provisions for forestry, mining, tourism and development practices. In the early 1990's First Nations and conservationists debated the concepts of protected areas and parks. These land concepts are somewhat alien to First Nations traditions. However, as lands and resources are increasingly threatened, parks are receiving support from some First Nations communities.

Many First Nations communities have begun working closely with conservationists to pursue environmental protection of the land. Different environmental groups have close working relationships with First Nations in developing protected areas and in defining natural resource use. These developing relationships are new, as working with First Nations governments has never been done before. The political structure of these upcoming governments will require innovative strategies and negotiations from conservationist faced with well over 50 new governments to be established in British Columbia alone.

- Total Number of bands in BC: 197
- Number of bands participating in BC Treaty process: 112

Working with First Nations people will require the maturity of conservationists to learn the traditions and culture of these people. Developing not only working relationships towards a specific conservation goal but genuine understanding and respect of cultural differences. This is a difficult task but necessary in developing common conservation goals for the land.

Poster Presentation

Dugar Sanzhitsybikov

Executive Director of the Baikal Information Centre GRAN

"Prevention of DDT Pollution in the Selenga River."
A project funded by GNF.

The project "Prevention of DDT Pollution in the Selenga River" is being carried out by the Baikal Information Centre "GRAN". Project goal is to give the local population comprehensive information on the dangers of the use of DDT and the harm it causes to human health and to the environment (flora and fauna). Although the use of DDT dust was officially banned in 1972, the survey showed that about 55% of the interviewed people still use DDT in form of dust for the disinfection of pets' wounds, killing dogs' and cats' fleas or exterminating garden pests. It is still used by children and adults to kill lice.

Moreover, 60 % of those interviewed were sure that DDT did not present any danger to human health. Among garden plot holders and members of gardening associations an information brochure on the dangers of DDT use was distributed. In fact, some people were really shocked when shown our leaflets. They were especially shocked by pictures of Franco Fellippe who was born without extremities after his mother was exposed to pesticides.

Prof. Dr. Bimba Namzalov

Director of the Ecological Institute, Buryat State University.

"Nature Protection Zone in the Selenga River Delta."
A project funded by GNF.

The project "Nature Protection Zone in the Selenga River Delta" was carried out by the Russian Living Lake partner FIRN in co-operation with the Ecological Institute of the State University of the Republic of Buryatia. The Selenga River is the largest feeder of Lake Baikal. The delta with an area 543 km² is part of the central catchment area of Lake Baikal and an UNESCO World Heritage Site. Project goals included the investigation of the present conditions of bio-diversity and the ecological situation, in order to work out approaches to the creation of alternative nature management models. The fieldwork covered all major landscape complexes of the delta and lasted 60 days. Those involved in the fieldwork were students, postgraduates, professors and scientists from the Ecological Institute of the Buryat State University. Information booklets published within the framework of the project and distributed among schools, ecological centres, libraries, and universities help to raise the local population's awareness about the present ecological state of the Delta, and to involve them in nature protection activities to preserve the unique eco-system at Lake Baikal. The survey constitutes the basis for environmentally friendly tourism.

Minoru Shirai

Chief Officer of the Secretariat of the 3rd World Water Forum.

Announcement of the 3rd World Water Forum in Japan in the year 2003.

The 3rd World Water Forum will be held from the 16 - 23 of March 2003, in Kyoto, Shiga and Osaka in Japan. Taking up the spirit of the 2nd World Water Forum, the 3rd World Water Forum is intended to be open to all stakeholders, to stimulate global awareness of water problems, to help generate action from the debates and ideas centered around the World Water Vision, and to contribute to concrete solutions of world water problems.

Minoru Shirai announced the 3rd World Water Forum at the Conference's poster session.

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Activities leading towards the 3rd World Water Forum are the Virtual Water Forum, the Water Voice Messenger, regional conferences held in various regions around the world to discuss water issues specific to those regions, and the drafting of the World Water Action Report, which will be presented at the 3rd World Water Forum. We would like to invite all of the partners of Living Lakes to these projects.

Virtual Water Forum (VWF)
The VWF is a World Wide Web site (www.worldwaterforum.org) hosting discussions about water. You can learn about water problems and hear people's opinions from around the world. When you find an interesting theme or a theme on which you would like to express your opinion, please join the discussion.

Water Voice Project
The objective of the "Water Voice" Project is to collect various opinions and ideas related to water from people in areas where the internet environment is not complete. Such ideas will be reflected in discussions at the 3rd World Water Forum towards the solution of water problems around the world. We have been inviting volunteers to collect "Water Voice" from all over the world as "Water Voice" Messengers, and also started to recruit organizations to support this project as "Water Voice" partners. We are hoping that you will register as a partner.

Background Information: Excursion Sites

1. Ulan-Ude Sewage Water Treatment Facilities

The capacity of the city's purification facilities with a thorough biological cleaning included is estimated at 185,000 cubic meters every twenty-four hours. This year 51,038,000 cubic meters of sewage water have been cleaned, 76% of them have been discharged from the residential area. The effectiveness of sewage water purification achieved at mechanical treatment facilities is about 65% and at biological water treatment constructions - at about 93%.

Visit to the Ulan-Ude sewage water treatment facilities.

In accordance with recommendations of the Baikal Institute of Environmental Toxicology and the City's Center sanitary inspection chlorine disinfecting of the cleaned water has been suspended unless a safe method of disinfecting will be found. To advance effectiveness of sewage water purification in 2000 the cleaning facilities have been provided with:

- Plastic small bubbling systems of air distributors to air sewage;
- Plastic overflow edges of regulating sewage transfer through filters and of preventing appearance of silt in settling tanks within the first stage purification.

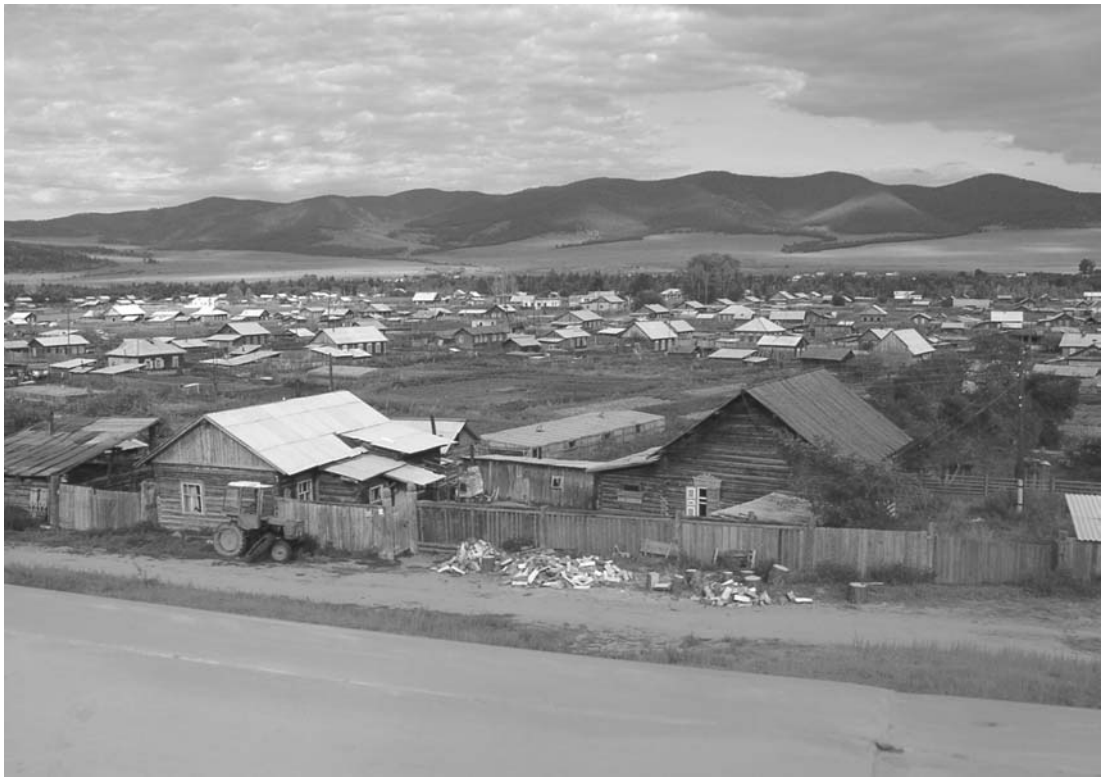
Acquainted with American and Japanese methods of sewage water treatment we are presently able to compare effectiveness of various means of water cleaning.
(Information provided by sewage water treatment facilities.)

2. The Selenga River

The Selenga river is Baikal's main tributary which starts in Mongolia and carries the water of 10,000 tributaries on its way. It brings to Baikal approximately 30 cubic kilometers/year of water that makes half of the lake's inflow. The total length of the river is 1024 km, with the water basin of 447,060 square kilometres. It is 200-400 m wide and 2-3 m deep, the current speed is 0,9-3 m/s. The Selenga main tributaries are the Dzhida, Temnik, Chikoy, Khilok and Uda rivers. The Selenga water basin makes up 27% of the Buryat Republic's territory, with 84% of the population living here and 90% of industry and agriculture concentrated in this part of the region. 90% of irrigated lands of Buryatia are located in the Selenga basin. The total amount of sewage waters discharged annually averages 420 million cubic meters with 19% of them regarded as polluted. The main source of water pollution is Selenginsk village which every year discharges 3 million cubic of sewage waters containing up to 1,000 tons of pollutants.

(Information provided by Swetlana Wasiljewa, Committee for Nature Resources.)

Traditional village at Lake Baikal.



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3. Textile Manufacturer

The textile factory in Ulan-Ude was founded in 1946. The company's main activity is wool purchase, its assortment, wool-washing treatment and manufacture of woollen and half woollen coats, suits and a wide variety of thick woollen cloths. In 1995 the company was awarded the international Gold Medal "European Rainbow" in Madrid, in 2000 it received a diploma in the contest "One hundred best Russia's products". The manufacture's capacity amounts to 1720 thousand running meters. Cloth production in 2000 reached 115 per cent comparatively to 1999.

1859 workers are employed at the factory. Presently the factory washes up to 1,000 tons of wool. Two plants, primary wool treatment and fine-cloth production, are operating on the premises of the manufacture. Both plants' sewage undergoes preliminary cleaning before being discharged into the city's sewage system. Purification systems at the primary wool treatment plant are designed to purify the manufacturing water when wool is washed and include a grit catcher, biological purification, unit of mechanic dehydration and vertical sedimentation tanks. Purification efficiency is 99.3%. Sewage disposal plants at the fine textile manufacture are designed to purify the process water from the fibre's dyeing and finishing department. The purification technology includes four stages: physical-chemical, foam separation, sand-gravel filters and ozonisation. Purification efficiency is 82.2%.

(Information provided by Gennadij Reschetnikov, Textile Manufacturer.)

The Ulan-Ude textile manufacturer employs more than 1,800 workers.

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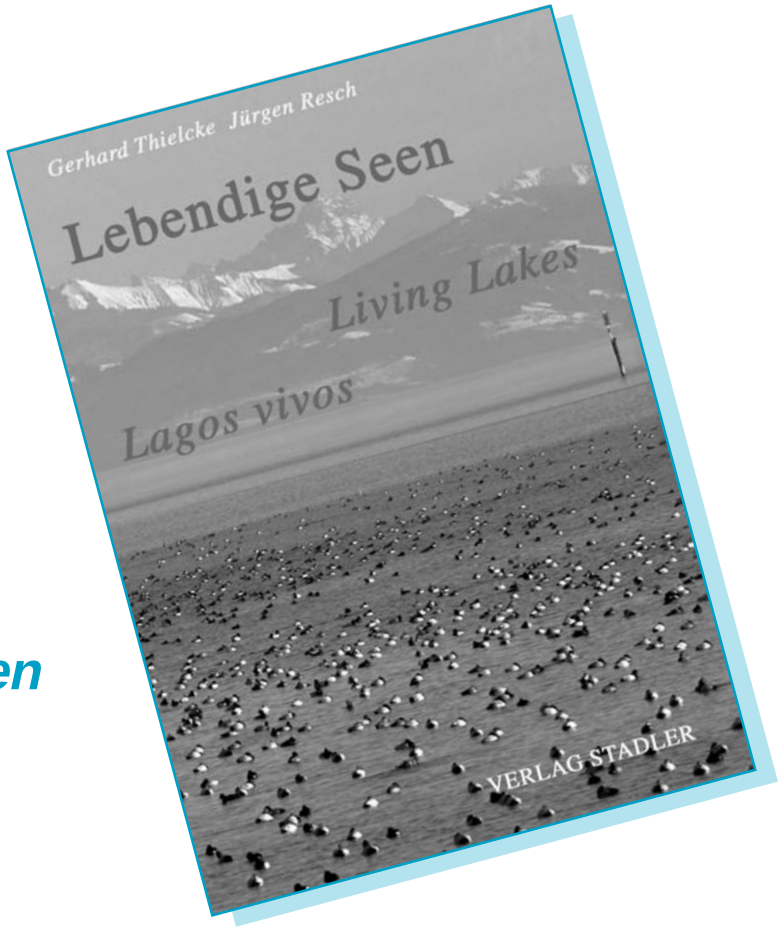

Living Lakes
Lebendige Seen
Lagos Vivos

Lakes are indispensable for fishing, swimming, boating but also extremely important as habitat for hippos, flamingos, fish eagles and stopover for migratory birds - they have to be preserved. This is the vision and purpose of the Living Lakes book by Professor Dr. Gerhard Thielcke and Jürgen Resch.

Fantastic pictures illustrate the breathtaking beauty of the Living Lakes member lakes and the wonderful flora and fauna of these regions. Text and photos document the problems lakes and their tributaries are facing but also how it is possible to live in harmony with nature.

"Living Lakes" by Gerhard Thielcke and Jürgen Resch is published by the printing house Stadler, Constance, 192 pages. The book costs EURO 25,46 (DM 49,80) plus postage. It can be ordered by contacting:

DUH Umweltschutz-Service GmbH, Güttinger Str. 19,
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