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Academies of Sciences and the Transition to Knowledge Societies

*Challenges and Perspectives for the
Academies of Eastern and South-Eastern Europe*

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Academies of Sciences and the Transition to Knowledge Societies

*Challenges and Perspectives for the
Academies of Eastern and South-Eastern Europe*

N°6

REPORT BASED ON THE OUTCOMES
OF THE INTERNATIONAL CONFERENCE 'GLOBAL SCIENCE
AND NATIONAL POLICIES: THE ROLE OF ACADEMIES'

4-5 May 2007, Chisinau, Republic of Moldova
organized by UNESCO and ICSU
hosted by the Academy of Sciences of Moldova

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Foreword

Science and technology are universally recognized as critical drivers for achieving sustainable development and gaining access to the knowledge economy and society, and as such are expected to play a major role in shaping national development policies and bringing about socio-economic growth. While a growing number of developing and in-transition countries are becoming serious contributors to the sum-total of scientific knowledge, the countries of Eastern and South-Eastern Europe (ESEE) are facing major challenges in seeking to take an active part in this process. The socio-political transition that began in the early 1990s and continues to this day, coupled in some instances with discord and conflict, has brought those countries face to face with fundamental changes ranging from new governmental structures and procedures to very different economic realities and societal expectations.

It is within this general environment that, as a follow-up to their World Conference on Science (Budapest, 1999) and in line with their respective strategic plans, UNESCO and the International Council for Science agreed to launch an initiative whereby the Academies of ESEE could come together and freely reflect upon the role they can best play in this part of the world as contributors to global science, how they might collaborate in the future to do so, and re-establish their place in national and international science education and research settings.

This publication represents, in summary form, the main outcome of the discussions held during the Conference in Chisinau of the eighteen Academies of the region organized around these lines of reflection. In addition to a brief account of the presentations and discussions, it includes an analysis of, and proposals for, possible roles that the Academies from the Eastern and South-Eastern European countries can assume in order to play an active role while adapting to the new local realities, as well as to global development and trends. One Annex presents a set of model statutes that could assist Academies in their thinking about organizational and membership issues.

We would like to take this opportunity of expressing our gratitude to Acad. Gheorghe Duca, President of the Academy of Sciences of Moldova, and his collaborators, who hosted the event in such a way as to significantly contribute to its success; to all the Presidents and senior members of the participating Academies, the speakers and contributors who responded positively to our invitation and took an active part in the work of the Conference; and finally to Prof. dr. Albert Koers, Rapporteur of the Conference and author of this Report, and to Iulia Nechifor (UNESCO) and Howard Moore (ICSU) for having taken responsibility for the planning and execution of the event in Chisinau.

It is our hope that this volume will serve as a basis for further reflection and action on the part of the Academies of Sciences with a view to taking their place in decision-making processes in national and international science and society.

Engelbert Ruoss
Director, UNESCO BRESCE

Thomas Rosswall
Executive Director, ICSU

1. Introduction

On 4 and 5 May 2007 sixteen Academies of Sciences from Eastern and South-Eastern Europe (ESEE)¹ took part in a Conference on “Global Science and National Policies: the Role of Academies”. The Conference was organized by UNESCO (Venice and Moscow Offices) and the International Council for Science (ICSU) and it was hosted by the Academy of Sciences of Moldova at its headquarters in Chisinau.

The Conference formed part of an initiative by UNESCO and ICSU to strengthen the interactions between the ESEE Academies and their involvement in international science cooperation. As a first step, a Questionnaire was sent out to all relevant Academies in early 2006 to collect information on their activities and organization, as well as on their aspirations and needs.² The Conference itself was organized in close cooperation with the Academy of Sciences of Moldova, which had expressed its willingness to host the event. A background paper entitled *Academies of Sciences in today's world: roles and organization* was commissioned by UNESCO and ICSU to provide input for discussion.

The Conference was designed to bring all ESEE Academies together with a view to:

- reviewing a set of strategic science issues and initiatives that are high on the agenda of international science cooperation;
- assessing the role of the ESEE Academies in international science cooperation, as well as their role in a national and regional context;
- examining ways to enhance the role of science in society, in national development and in the building of knowledge societies.

This report is based on the presentations that were given, and on the discussions that took place, at the Conference. However, it is not a record of all that was said at the Conference, nor is it intended as a comprehensive summary of the discussions. Rather, its aim is to highlight the most essential overall themes that were addressed in the presentations and discussions, in relation both to the present situation of the ESEE Academies and to their future development; hence, the designation “advisory report” on the cover page.

The Report is made up of the following sections.

- Section II briefly outlines the programme of the Conference to give readers who did not participate in Chisinau some context for the two sections that follow.

¹ Academies from Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Former Yugoslav Republic of Macedonia, Kosovo (UNMIK), Moldova, Montenegro, Romania, Russian Federation, Serbia, Turkey, Ukraine.

² The Questionnaire and the information received in reply are summarized in Annex I.



1. Introduction

- Section III discusses the most important overall themes that were addressed at the Conference in relation to the challenges now facing the ESEE Academies.
- Section IV looks beyond the challenges of today and reviews the ideas that were discussed at the Conference in relation to the future of the ESEE Academies.
- Section V concludes the report with a few general observations on the need for follow-up to the Conference.

Although commissioned by UNESCO and ICSU, this Report does not reflect any official position or opinion of either organization. Its content is the sole responsibility of the author, Prof. dr. Albert W. Koers, formerly Executive Director of the InterAcademy Council and presently IAC General Counsel.

2. Conference Synopsis

The first day of the two-day Conference was devoted to a limited number of major issues and initiatives that are high on the agenda of international science cooperation - especially within the framework of UNESCO and/or ICSU - and that are of special importance to ESEE countries and Academies. The inaugural session was opened by H.E. Vladimir Voronin, President of the Republic of Moldova.

Science for knowledge and sustainable development

Science brings humankind the basic knowledge of nature that is essential for achieving the Millennium Development Goals and, more generally, for making the transition to sustainable development. The purpose of this session was to review and discuss relevant international programmes and initiatives, also with a view to establishing how science can, and should, contribute to achieving (more) sustainability in the ESEE region.

Speakers were: Bedrich Moldan, Director, Charles University Environment Centre, Czech Republic; and Zvonimir Baletič, Croatian Academy of Sciences and Arts.³

- Taking as his starting point the famous formula:
"Impact = Population * Affluence * Technology",
Bedrich Moldan reviewed key programmes of the EU and of the Czech Republic. He also discussed the Millennium Ecosystem Assessment as perhaps the single most important international science initiative in this field.
- Zvonimir Baletič took a social science perspective, suggesting the need for a deeper inquiry into the concept of economic growth. There are good reasons for a national policy of economic growth with an active role for the government: economic growth is essential for achieving sustainability.

Mitigation of natural and human-induced environmental disasters

Disaster mitigation relates not only to natural events, but also to events brought on by poor environmental management. This implies that a broad range of sciences - including the social sciences - need to be mobilized. UNESCO, ICSU and other international organizations are currently developing interdisciplinary research programmes on disaster mitigation. These were presented, also with a view to their relevance to the ESEE countries.

³ This session was moderated by Rem V. Petrov, Councillor of the Presidium, Russian Academy of Sciences. Georgii Kvesitadze, Academy of Sciences of Georgia, and Momir Djurovic, President, Montenegrin Academy of Sciences and Arts, participated as Panelists. Valentin Orlovich, Chairman, Belarusian Republican Fund of Fundamental Research, National Academy of Sciences of Belarus, acted as Rapporteur.



2. Conference Synopsis

Speakers were: Stephen Sparks, University of Bristol, Fellow of the Royal Society, UK; and Mihai Tatu, Institute of Geodynamics, Romanian Academy.⁴

- After mentioning that natural disasters seem to be on the increase, Stephen Sparks set out the research agenda that is being developed through international cooperation, especially within the ICSU context. This agenda ranges from the development of (more sophisticated) physical models, through (better) risk assessment, to (improved) early warning systems.
- Mihai Tatu first discussed natural hazards assessment and management in general terms and then focused more specifically on natural disasters and their mitigation in Romania and the use of hazard and risk maps. He also outlined a number of cooperative projects involving ESEE countries, suggesting that cooperation be intensified.

Science education

Undoubtedly, human resources are the most important element of science. Science education is therefore a crucial element in developing the S&T capacities of a country or a region. There are many national, regional and global initiatives to enhance the quality of higher education in science. This session reviewed those initiatives, as well as the initiatives and projects that are being carried out in the ESEE region.

Speakers were: Ivo Slaus, President, South East European Division of the World Academy of Art and Science, Croatian Academy of Sciences; and Ion Tighineanu, Vice-President, Academy of Sciences of Moldova.⁵

- In his wide-ranging presentation, Ivo Slaus first explored the relationship between education and employment. He then focused on globalization as a major driver of the knowledge society. In the knowledge society new approaches to education are essential, not just for economic reasons, but also to increase the happiness of people and society.
- Ion Tighineanu emphasized that, if knowledge moves the world and if the 21st century is the century of knowledge, then science education is of paramount importance and that it is a most crucial element of national development. Starting at kindergarten, science and its relation to society needs to be a core subject in every school.

Enhanced cooperation between the Academies, National Commissions for UNESCO, and UNESCO's associated schools, for example could constitute a useful means for promoting science education at all levels.

Gender issues in science

Two recent reports – one from UNESCO and the other from the InterAcademy Council – examine the causes of the under-representation of women in science, as well as its effects on science and society. Both reports also present an action agenda, with the IAC report especially

⁴ The session was moderated by Tarik Celik, Vice-President, Turkish Academy of Sciences. Panel members were: Momir Polenakovik, Vice-President, Macedonian Academy of Sciences and Arts, and Rem V. Petrov, Councillor of the Presidium, Russian Academy of Sciences. Rapporteur was: Nikola Hajdin, President, Serbian Academy of Sciences and Arts.

⁵ Zdravko Stoynov, Bulgarian Academy of Sciences, moderated this session. Panel members were: Eduard Sulstarova, Academy of Sciences of Albania, and Ion Tighineanu, Vice-President, Academy of Sciences of Moldova. Florin Filip, Vice-President, Romanian Academy, acted as Rapporteur.

focusing on the role of Academies. The issues raised in these reports were discussed with respect to their relevance to ESEE countries and Academies.

Speakers were: Ayse Erzan, Istanbul Technical University, Turkish Academy of Sciences; and Eduardo Martinez, Science Policy and Sustainable Development Division, UNESCO.⁶

- Introducing the IAC report, *Women for Science*, Aysa Erzan stressed that increasing the number of women in science is not just a practical matter, but also an ethical issue. The IAC report focuses on actions to be taken by Academies, ranging from increased visibility of successful women scientists to empowering women at the grassroots level.
- Eduardo Martinez presented the highlights of the UNESCO report: the *International Report on Science, Technology and Gender*. The report is a technical study, involving inputs from many partner organizations, all coordinated by UNESCO. The report is both a conceptual and analytical tool, as well as a multi-actor action agenda.

It was highlighted that there is an extremely reduced representation of women in Academies' membership. Like other Academies around the world, the ESEE Academies were called upon encouraging and supporting the contributions of women to scientific discovery and applications, as well as to the improvement of gender equality within their membership. Both publications mentioned above include series of specific recommendations to be put into practice in order to overcome this situation.

On the second day focus shifted away from the international arena to the national level. Two fundamental questions were addressed: what is the relationship between science and national development, and what is the role of Academies of Sciences in setting research agendas and shaping national science policies?

Science and national development

Science is not only essential for tackling global issues – as discussed during the first Conference day – but it is also vital for national development. Without science there can be no innovation, without innovation there can be no economic growth, and without economic growth there can be no better quality of life. Different strategies for harnessing science for national development were discussed in this session.

Speakers were: Denis Monard, President, Swiss Academy of Sciences; Gheorghe Duca, President, Academy of Sciences of Moldova; and Slobodan Loga, Foreign Secretary, Academy of Sciences and Arts of Bosnia and Herzegovina.⁷

- Denis Monard described the landscape of science policy organizations in Switzerland and the principles underlying its re-organization. There are now four Academies associated in a

⁶ The session was moderated by Ionel Haiduc, President, Romanian Academy. Panelist were: Marko Andjelkovic, Academy of Sciences and Arts of Serbia, Alexei Onischenko, National Academy of Sciences of Ukraine, and Ingrid Kissling-Naf, Secretary-General, Swiss Academy of Sciences. Radik Martirosyan, President, National Academy of Sciences of Armenia, acted as Rapporteur.

⁷ Salvatore Bushati, Vice-President of the Academy of Sciences of Albania, was Moderator. Panelists were: Slobodan Loga, Foreign Secretary, Academy of Sciences and Arts of Bosnia and Herzegovina, and Rexhep Ismajli, President, Kosovo Academy of Sciences and Arts. Zvonimir Baletić, Croatian Academy of Sciences and Arts, acted as Rapporteur.



2. Conference Synopsis

“Management holding”. The Swiss Academy of Sciences has now been re-organized so that it is now more outward looking and has stronger advisory capacities.

- Gheorghe Duca began by outlining the disparities and inequalities between countries in respect of scientific activities. Globalization has widened the science gap between nations. Regional cooperation and national policies are needed to improve the situation. In Moldova the Academy is in the forefront of national development.
- In Bosnia and Herzegovina investment in science has dropped dramatically. According to Slobodan Loga this problem can only be solved if self-isolation is ended and if the budgets at all levels of government are re-allocated in favour of science. Of special importance is the need for university teaching staff to be given time to do research again.

Role of Academies in the ESEE countries

Academies of Sciences can be important actors in relation to the shaping of international, regional and national research agendas and the setting and implementation of national science policies. This session addressed questions like: what roles have proven to be effective; what must ESEE Academies do in order to be effective in influencing decision-makers; and how can ESEE Academies be active players in international science cooperation?

Speakers were: Nicholas Mann, Vice-President, All European Academies (ALLEA); and Atanas Atanassov, Academy of Sciences of Bulgaria.⁸

- Nicholas Mann introduced ALLEA, outlining its membership, mission, structure, partners and publications. Essentially, ALLEA aims to facilitate the exchange of information and experience among its members, it seeks to promote excellence in science and scholarship and it addresses issues of ethics and responsibility in science.
- In his far-reaching presentation Atanas Atanassov began with an analysis of the problems and challenges facing Academies in the ESEE region. The adoption of a consistent national (or regional) science policy is key to finding answers to present problems and future needs. Academies must take the lead in developing such a policy.

Conclusions and recommendations

The Conference ended with a final session in which the Rapporteurs reported on the highlights of their respective sessions. In addition, Engelbert Ruoss, Director, UNESCO-BRESCE, and Thomas Rosswall, Executive Director, ICSU, gave brief presentations on what they considered the main outcomes of the Conference.

This session⁹ will not be further discussed here, since most of what was said and discussed has found its way into the next two sections of this report.

⁸ Momir Djurovic, President, Montenegrin Academy of Sciences and Arts was Moderator. Panel members were: Rajko Kuzmanovic, President, Academy of Sciences of the Srpska Republic (Bosnia and Herzegovina) was panelist. Zdrovko Stojnov, Bulgarian Academy of Sciences, was Rapporteur.

⁹ The session was moderated jointly by Engelbert Ruoss, Director, UNESCO-BRESCE, and Thomas Rosswall, Executive Director, ICSU. Speakers were the Rapporteurs of the various sessions: Valentin Orlovich, Chairman, Belarusian Republican Fund of Fundamental Research, National Academy of Belarus (Sustainable development); Nikola Hajdin, President, Serbian Academy of Sciences and Arts (Disaster mitigation); Florin Filip, Vice-President, Romanian Academy (Science education); Zvonimir Baletić, Croatian Academy of Sciences and Arts (National development); and Yatchko Ivanov, Bulgarian Academy of Sciences (Role of Academies).

3. Challenges of Today

Much of the discussion at the Conference dealt with the fundamental changes that have taken place in all ESEE countries, and with the impacts of these changes on the Academies of these countries. The forcefulness of these impacts is a direct consequence of the special characteristics of (most of) the ESEE Academies and this raises the question as to how these Academies differ from Academies in other parts of the world.

Three archetypes¹⁰

Each and every Academy of the 90+ Academies worldwide is unique. Even so, an analysis of their role and functions shows that essentially there are three archetypes.

Learned Society

The Learned Society is essentially an association of scientists for science, usually for a limited set of disciplines. Its most important function is to act as a honorific association extending recognition to eminent scientists by inducting them into the Academy's membership. It also acts in support of science and scientists and it often is engaged in the publication of scientific publications. Overall, the interest-horizon of the Learned Society is essentially limited to science. Therefore, the leadership of a Learned Society is in the hands of scientists. There usually is a small administrative staff and the financial resources are quite limited.

Advisor to Society

Like the Learned Society, the Advisor to Society is a honorific association of scientists for science. However, it has a broader ambition: not just to serve science, but also to serve society at large. Accordingly, the Advisor to Society has an advisory role vis-à-vis the government and the general public. Usually, this role has two sides: policies for science and science for policies. Accordingly, the interest-horizon of an Advisor to Society is not limited to science, but it also extends to societal issues. Leadership is in the hands of scientists, but there is a (much) larger number of staff, while the financial resources are (much) larger.

Manager of Research

The third archetype - Manager of Research - is an honorific association as well, while it usually also acts as Advisor to the government. The additional element is that a Manager of Research actually manages and operates a number of research institutes, usually on behalf

¹⁰ Much of this discussion is taken from the background paper *Academies of Sciences in today's world: roles and organization* specially prepared for the Conference and accessible at www.unesco.org/venice (Science Policy). It is summarized here to ensure that the Report can be read independently.



3. Challenges of Today

of the government. As a result, the Manager of Research is a much bigger organization than the other two archetypes, sometimes employing many thousands of scientists and other staff. Leadership is therefore a much more complex arrangement, often involving several layers of authority. The Manager of Research usually has a large number of staff and extensive financial resources.

It follows from these brief descriptions that the three archetypes are not mutually exclusive. Rather, the Manager of Research builds on the Advisor to Society, just like the Advisor to Society builds on the Learned Society.

ESEE Academies

Almost all ESEE Academies¹¹ fall in the category of Managers of Research. In fact, this archetype is typical for all countries that had¹² or have¹³ communist governments. These governments charged the national Academy with managing most, if not all, scientific research in the country. While retaining their character as honorific associations - thus electing members on the basis of scientific excellence - the Academies in the former communist countries of the ESEE region were in many ways also state organizations charged with directing and conducting scientific research on behalf of the government. The other side of this arrangement is that the research role of universities was usually much smaller than in non-communist countries.

For more specific details on the ESEE Academies that responded to the questionnaire, see Annex I.

Academies in transition

Financially challenged

The fact that almost all ESEE Academies are Managers of Research is most relevant for the problems and challenges they face today.

- The Learned Society may receive some financial support from the government, but the scope of its activities is so limited that it is not really dependent upon the government.
- The Advisor to Society may also receive some base-level financial support from the government, but most of its advisory work is funded separately through programme or project funding. If the government were to reduce the size of such programme or project funding, the programmes and projects in question would probably be in trouble (unless the Academy finds alternative sources of income), although the Academy itself would not be really be in jeopardy.

¹¹ In fact, of the 16 Academies that participated in the Conference only two – from Kosovo (UNMIK) and Turkey – do not manage any research institutes at all.

¹² Such as most of the ESEE countries.

¹³ Such as China.

- For the Manager of Research the situation is radically different: having hundreds or even thousands of employees it needs massive amounts of government funding each year to stay in operation, not just by way of programme or project funding, but as structural base-level financing.

Therefore, of all three archetypes, the Manager of Research is most vulnerable to uncertainties and reductions in the level of financial support from the government. For the ESEE Academies that vulnerability is not just theory: as was shown, most of them are Managers of Research and their government is indeed no longer the reliable source of funding that it used to be. This was made clear repeatedly in the presentations and discussions of the Conference.

Changing environment

However, it would be unrealistic and inadequate to reduce all problems and challenges facing the ESEE Academies to financial uncertainties and constraints. Discussions at the Conference made clear that the picture is more complex, and that other factors are also involved.

- **Market economy.** With variations in speed and ambition, most ESEE countries are in transition to a market economy. This transition not only has important consequences from an economic perspective, but it also affects the beliefs and attitudes of society and people in a more general way. For Academies it implies, for example, that they too must realize that their funding may be increasingly based not on what they need to remain operational, but on what the market demands and is ready to pay. Again, in view of its extensive structural commitments, this paradigm shift will hit the Manager of Research much more forcefully than the Learned Society and even the Advisor to Society.
- **Knowledge society.** Of equal significance is a related development: the shift from an economy based on industrial output to the knowledge society where knowledge is the most important resource. For the ESEE Academies this has a two-fold effect: on the one hand, their core mission – to promote science – is more important than ever, but on the other hand, the science for which they are responsible must be cutting-edge and meet international standards of excellence. This means that the ESEE Academies – and their members – must be able to connect with global centres of excellence and that they must have the resources to initiate new lines of research. They also need to interact more closely with centres of innovation and the commercial sector.
- **Brain drain.** The knowledge society may have the future, but the market economy dominates the present. One result is that the younger generations see commercial and managerial positions as offering the best chances for a successful career. A career in science has lost much of the glory it had in the past. In most ESEE countries salaries for scientists are relatively low, there is less prestige as before and career opportunities are uncertain. It is therefore not surprising that science no longer attracts the younger generation as it once did, while those that have been educated in science look for career opportunities outside the ESEE region.



3. Challenges of Today

- **National science policies.** In most ESEE countries¹⁴ science and science policies are essentially absent from the political agenda. Perhaps this is still a remnant from the past when governments had essentially delegated science and science policies to their national Academies, although it is no longer a viable position in today's world of market economies developing into knowledge societies. As a minimum, the government needs to determine whether the national scientific research effort remains with the Academy or is transferred, in whole or in part, to the university system. That determination is also crucial for an Academy to decide on its future role and position.
- **More transparency.** Academies of Sciences are honorific associations with new members elected by existing members on the basis of subjective judgments of a candidate's scientific work. In other words, Academies worldwide are not known for the transparency of their procedures, nor for the democratic qualities of their decision-making processes. This is also true for the ESEE Academies. However, in the ESEE countries there now is a great deal of societal pressure towards more openness, more transparency and more democracy. And this pressure also extends to Academies of Sciences, implying that the ESEE Academies are often subject to closer scrutiny than Academies elsewhere.

It is worth noting that the discussions at the Conference made clear that the above developments are most acutely felt in those ESEE countries that are member of the European Union or that wish to become EU member. Indeed, EU membership forces the transition to a market economy; it accelerates the need to become a knowledge society; it facilitates the brain drain from East to West; it compels governments to think about national science policies; and it strengthens the drive towards more openness and democracy.

Internal aspects

Just as it would be unrealistic and inadequate to consider financial problems the sole source of all the challenges facing the ESEE Academies, so it is equally unrealistic and inadequate to refer only to the outside world as the universal cause of all that troubles the ESEE Academies. The Conference participants acknowledged that there also are internal factors.

- **The ivory tower.** The Learned Society is almost by definition an ivory tower organization where scientists meet to talk to other scientists. The Advisor to Society is the opposite: it interacts actively with society at large and the government in particular. Although usually a (very) large organization, the Manager of Research may be as much an ivory tower organization as the Learned Society. To some extent this seems to be true for ESEE Academies. Most of these Academies appear to have had relatively little direct interaction with the media and the general public, while their interactions with the government seem to have been mostly on matters of finance and management. This may explain why in the ESEE countries there is relatively little support with the media and the general public for the notion that science is crucial for national development.

¹⁴ There are exceptions; see section 4.

- **Bureaucratic reflexes.** As was mentioned earlier, most ESEE Academies have a large number of staff, while leadership is usually exercised through a multi-layer structure with the President at the top, with several governing bodies and with a range of officials and officers being responsible for specific areas. In short: from one perspective the ESEE Academies are honorific associations, but from another perspective they have many of the features of real bureaucracies. This should not come as a surprise as under the former communist governments the national Academy was in fact exercising governmental functions in relation to science. There is nothing wrong with being a bureaucracy, but one of its inherent aspects is that a bureaucracy is averse to change.
- **Age of members.** Some of the presentations at the Conference raised the issue of the age of membership. This issue also stands out in the replies to the Questionnaire. The summary of these replies in Annex 1 shows that the average age of the members of most ESEE Academies is over 70 years, with only a few Academies having a sizable number of members between 60 and 70 years of age and even fewer Academies having any member under the age of 50 years. The aging of membership is a problem for many Academies worldwide and some Academies seek to retire older members. This, however, seems to miss the point: the real challenge, also for the ESEE Academies, is to bring in younger scientists, rather than to push out older members.

4. Options for the Future

Most, if not all, ESEE Academies find themselves in a Catch-22 situation: they need money to modernize and they need to modernize in order to get money. It is most unlikely that simply asking the government for more funding will enable many ESEE Academies to get out of this loop. So what can ESEE Academies do realistically to secure or strengthen government support? Or, more generally, what can - or should - they do to find for themselves a role that reflects the new reality of market economies evolving into knowledge societies?

Determine core mission and identity

The single most important question raised at the Conference in relation to the future of ESEE Academies¹⁵ is what they want to be in the future: a Learned Society, an Advisor to Society or do they wish to continue as Manager of Research? Of these three options, the Learned Society archetype is perhaps the least relevant in today's world and, more specifically, in an ESEE context. It seems unlikely that ESEE Academies will withdraw from being Managers of Research into associations where scientists occasionally meet to discuss science for science's sake. Also, as was said before, the Learned Society function is included in the other two archetypes.

If, then, the real choice is between the Advisor to Society model and the Manager of Research model, no ESEE Academy can be expected to make this choice all by itself: after all, the heart of the matter is whether the national research effort remains largely the responsibility of the national Academy or is placed, in whole or in part, under the responsibility of the universities in that country.¹⁶ This is such a far-reaching decision with such fundamental implications for government policy and society at large that it can only be made at the highest political level. However, Academies can - and perhaps should - initiate reflection and discussion on the issue among all major actors: government, universities and, yes, the Academy itself.

The advantages and disadvantages of placing the national research effort within an Academy or within the university system are unique to each ESEE country, implying that each country has to make its own choice in the matter. Also, a mixed approach is possible so that research in specific areas is left within the Academy, while other areas are transferred to the university system – for example, in view of the need to strengthen in these areas the interaction between research and teaching. In fact, many Academies in Western Europe are primarily in the role of Learned Society/Advisor to Society, but they also manage a limited number of

¹⁵ Particularly in the second session of the second day of the Conference on the 'Role of Academies in the ESEE countries'.

¹⁶ As was done recently by the government of Albania.



4. Options for the Future

research institutions that for some (often historic) reasons did not find a place within any university.

Once there is some indication of the answer to be given at the national level to the question where the (bulk of the) national research effort will be placed, an Academy can then - and only then - move ahead with follow-up questions.

- If the national research effort is largely retained within the Academy, to what extent should the Academy enhance its Advisor to Society role? That is: become an independent source of advice to the government and society at large on issues of science (policy for science) and/or on issues of society (science for policy)?
- If the national research effort is largely transferred to the university system, how does the Academy make the transition from the Manager of Research model to the Advisor to Society role? This may sound like a simple question, but for most ESEE Academies it will in fact be a most complex process, involving perhaps the re-location of thousands of staff.
- And once these questions have received answers, the Academy can begin the process of re-organizing its internal structures and working procedures to bring them in line with its new core mission: Advisor to Society, Manager of Research or a bit of both.

Reach out to the world

Even if finding an answer to the question of an Academy's core mission is the single most important issue confronting ESEE Academies at the moment, there is a lot they can do in the meantime that is beneficial, regardless of what the future mission will be.

- **National science policies.** ESEE Academies can participate – and perhaps even take the lead – in the process of developing a national science policy or, if such a policy is already in place, in the process of keeping it up to date. Of course, the question of where the national research effort will be located is a most important aspect of national science policy, but the issue is much broader, as was made clear in the Conference.¹⁷ In general terms, all countries worldwide – thus, the ESEE countries as well – must find ways to make the transition to the knowledge society. Therefore, the transition to a knowledge society provides ESEE Academies with a unique opportunity to convince the government and society of the need of developing a (new) national science policy and of allocating sufficient resources to science, science being the *conditio sine qua non* of evolving into a knowledge society.
- **Media and public at large.** As was mentioned before, many ESEE Academies have not yet developed a great deal of interaction with the media and the public at large. Yet, in a more open and democratic society it is essential to do so, not only to convince people that sci-

¹⁷ Particularly in the first session on the second day of the Conference on *Science and national development*.

ence is important and offers exciting career opportunities, but also since politicians tend to listen to what the media and the voters tell them. In reaching out to the general public ESEE Academies often do not have to re-invent the wheel: other Academies, but also organizations like UNESCO, ICSU and the InterAcademy Panel, have much to offer that can be used with a minimum of adaptation. Outreach to society is particularly important in relation to the younger generation, which suggests that science education is one issue that needs to be addressed continuously by all ESEE Academies.¹⁸ And, in a market economy outreach to the private sector is also of great significance, yet few ESEE Academies seem to have effective mechanism in place to do so on an organized basis.

- **International science cooperation.** Reaching out to society also relates to international science cooperation. The ESEE Academies have a tradition of being active participants in international science cooperation, but in recent years financial constraints have forced them to minimize their involvement. This especially in relation to multilateral forms of cooperation as the ESEE Academies rightly gave priority to bilateral or regional projects. Yet, if science in the ESEE countries is to remain – or, in other areas, is to become – internationally excellent it is essential that the ESEE Academies are once again fully connected to international science cooperation and that they can participate in any major international science initiative that is of interest to them.¹⁹ UNESCO and ICSU, but also organizations like the InterAcademy Panel and the All European Academies, should support the ESEE Academies with these efforts.

Modernize the internal organization

Logically, re-organizing an organization's structure and/or working procedures can only be undertaken once there is agreement on that organization's mission and interactions with the outside world. However, in reality things are not always so straightforward: more often than not modernization is an iterative process. Which implies that there are many things an ESEE Academy can do in respect of its internal organization that do not have to await the outcome of discussion on core mission and external interactions.

- **Younger generation.** A most important and most urgent issue ESEE Academies need to address is how to induct a younger generation of scientists into the Academy – male and especially female: this, of course, without compromising the criteria for membership. As was mentioned before, many Academies worldwide face the same issue, but for the ESEE Academies it seems particularly crucial in view of all the other problems and challenges that confront them. As was suggested earlier, the experience of other Academies shows that the best way to make progress is to focus on how to bring in a younger generation

¹⁸ Virtually all international science organizations have programmes and projects in relation to science education. However, for Academies the science education programmes of the InterAcademy Panel seem especially relevant, in particular in relation to science education at the secondary school level.

¹⁹ Such as those discussed in the first day of the Conference.



4. Options for the Future

rather than on how to push out older members. In this perspective several useful mechanisms have been developed elsewhere, such as: the setting of quotas,²⁰ age limits for leadership positions²¹ and, especially, the creation of a so-called “Young Academy”.²²

- **Representativeness.** At the Conference there also was discussion on the question of whether an Academy should remain truly a honorific society, only accepting the few very best scientists of the country, or evolve into a professional organization representing all scientists who meet certain criteria of quality and professionalism. Here again, there is no single best answer, since the advantages and disadvantages of each approach vary from country to country. However, in general terms: if an Academy decides to move into the direction of an organization representing all professional scientists, it may gain in terms of transparency, openness, support and legitimacy, but at the same time it may lose in terms of reputation, quality, credibility and impact. So it is perhaps best to seek a balance between the two extremes of, on the one hand, limiting membership to the happy few elected through procedures known only to insiders and, on the other, opening the door to anyone who claims to be a qualified scientist and willing to pay the annual membership fee.
- **New statutes.** If an ESEE Academy seeks a driver for initiating reflection and discussion on its internal organization – and, indirectly, on its mission and external interactions too – one possible approach would be to start a project to develop new statutes and/or bylaws. Of course, for this to be productive, such a project must not be an abstract exercise in legal drafting, but rather a mechanism to engage all stakeholders – member or not – in discussing an Academy’s future, with the results of that discussion ultimately being condensed into new statutes or bylaws. Initiating an in-house process of developing new statutes or bylaws also gives legitimacy to a request from an Academy to the government to revise the laws and regulations governing the Academy – which in turn will necessarily lead to discussions with the government on national science policies. In other words, under the flag of developing new statutes or bylaws, an Academy can place many of the above issues on the agenda of decision-makers, not only internally, but also externally.²³

²⁰ This is made possible in the new Statutes of the Academy for the Developing World (TWAS).

²¹ This was an essential part of the modernization of the Chinese Academy of Sciences.

²² This has been done, for example, in Germany and the Netherlands.

²³ To illustrate the scope of such a project, Annex II of this report presents a set of model statutes developed by the InterAcademy Panel to assist member Academies in re-thinking their statutes or to help a group of scientists wishing to create an Academy.

The case of Moldova

In July 2004 the Republic of Moldova adopted a new Code on Science and Innovations. There may well be other examples of similar legislative acts in other ESEE countries, but since the Moldovan Code was discussed at the Conference,²⁴ it is perhaps appropriate to end this section with a brief review of the highlights of the Moldovan Code.

With 164 Articles, totaling about 65 pages (in the English translation) and with two additional Regulations, the Code is a very complex document that cannot be easily summarized in a few lines. However, to an outsider the most striking innovations of the Code are as follows.

- Perhaps the most important principle underlying the Code is that all governmental powers in relation to science are delegated to the Academy. The result is that – perhaps even more strongly than in the past – the Moldovan Academy remains a Manager of Research.
- The government and the Academy have concluded a Partnership Agreement with a four-year life cycle, also in relation to funding. This implies that the Academy – and through the Academy, science in Moldova – has a degree of financial security and stability.
- A crucial element of the Code is a system of accreditation. This system is obligatory for all state science organizations and optional for private science organizations; it also covers all universities. The rule is: no accreditation means no funding from the Academy.
- All accredited institutions for research, innovation and education belong to one of the six Divisions of the Academy, implying that they are subject to the Academy's governance structure and its managerial bodies and procedures.
- Lastly, the code also sets up an Agency for Intellectual Property Rights to ensure that scientific discoveries that (seem to) have commercial value can be exploited for the benefit of national economic development.

This is not the place to discuss the Code in more detail and it is even less appropriate to discuss its possible implications for science in Moldova. Suffice it to note that the Code represents a thoughtful attempt to come to grips with many of the problems and challenges discussed in Section III of this report and to make choices in relation to the issues discussed in this Section IV. As such, there is much in the Code that should be of interest to other ESEE Academies.

²⁴ Especially in the presentation of Gheorge Duca, President of the Academy of Sciences of Moldova, in the first session on the second day of the Conference on *Science and national development*.

5. Final Observations

The Conference did not end, nor was it intended to end, with a proclamation or with specific conclusions. However, in the last session of the Conference there was a strong sense of urgency among all participants that the ESEE Academies now stand at a critical juncture if they are to adapt to the new realities. There also was a strong sense that the ESEE Academies are now ready to take up the challenge of re-inventing themselves for the future.

There are many Academies worldwide that demonstrate the value of a well-founded and well-functioning Academy of sciences: the quality of the membership of these Academies ensures their independence and the quality of all they do. In addition, such an Academy contributes not only to science, but also to society – as a minimum by promoting good science, but perhaps also by bringing a science perspective to bear on societal problems. Such Academies take a long-term perspective, they can foresee problems before they are manifest to all and they have the power to mobilize some of the best minds of a country.

The ESEE Academies still retain many of these unique features, but there is no denying that many of them are finding it increasingly difficult to maintain their qualities while adapting to both new local realities and international development challenges and trends. From this point of view, two aspects are particularly relevant in connection with measures needed to be adopted without delay by the ESEE Academies.

The first one relates to the membership of the Academies which, in the future, will need to consent to a stronger involvement of the younger generation of scientists in the Academies' work, as well as to the respect of gender equality. To this end, UNESCO's *Medium-term Strategy for 2008-2013* recognizing 'gender equality' as one of the two main cross-disciplinary priorities of the Organization for the above-mentioned period, could offer the opportunity for joint action with a view to promoting gender equality within academic membership.

The second aspect concerns the fact that the Academies should take, independently of the role that they decide to play within the national science and research systems, a forward-looking approach, based on foresight exercises, in defining medium- to long-term objectives and goals.

National governments are called upon to play an active role in the Academies' reform processes, not just for the sake of their Academy, but also for science and society.

And lastly, as mentioned above, international science organizations like UNESCO and ICSU, but also the InterAcademy Panel, the InterAcademy Council and the All European Academies, need to extend a helping hand to the ESEE Academies when such a hand is requested. And this not just for science and society in the ESEE region, but also for science and society worldwide.

ANNEX I

Questionnaire Addressed to ESEE Academies

Of all ESEE Academies, about half responded to the Questionnaire that was sent out in preparation for the Conference. For this reason, the responses received should not be considered representative for all ESEE Academies. Even so, it is possible to make a number of generalizations. For a summary of the information collected through the Questionnaire, see the table below.

• Differences in size

There is a tremendous difference in size among the (responding) ESEE Academies, ranging from the National Academy of Sciences of Ukraine with 543 members, a total staff of over 39,000 and an average budget of US\$ 292 million to the Academies of Bosnia & Herzegovina, Kosovo, Former Yugoslav Republic of Macedonia and Serbia, all with less than 50 members, very few staff members and budgets ranging from US\$ 200,000 to US\$ 1 million. Of course, the political and economic realities behind these differences need no explanation here, but the fact is that in the ESEE region there are more extreme variations in size of Academies than in Western Europe (where they are mostly medium-sized), Africa (with the exception of South Africa (medium), mostly small), South America (mostly medium to small) and North America (large). Asia is perhaps the only other region that shows a similar variation in size. Extreme variations in size may hinder cooperation as there is less common ground and experience to share.

• Range of disciplines

Worldwide, most Academies of Sciences have a strong focus on the natural sciences – as indeed had the Accademia dei Lincei, the precursor of all Academies. The ESEE Academies are a marked exception to this general picture. Membership of all (responding) Academies is drawn not only from the natural sciences, but also the social sciences, the humanities, the medical sciences and the technical sciences. The proportions vary from Academy to Academy, but overall these Academies have an above-average mix of disciplines represented in their membership. This undoubtedly helps them in their role as Advisor to Society or Manager of Research.

• Manager of Research

Even with this extreme variation in size, there is a great deal of commonality among the ESEE Academies. In the terms of the archetypes discussed in the previous section, most fall in the category of “Manager of Research”, which is not surprising since this model was widely adopted by communist governments, precisely in view of its ability to promote scientific progress in areas prioritized by the State. The number of research institutes managed by an Academy varies significantly, from 182 for the National Academy of Sciences of Ukraine to two for the Academy of Sciences and Arts of Bosnia & Herzegovina. The same variation is found in the number of scientific staff employed: about 16,350 for the Ukrainian Academy to 2 in the Academy of Sciences and Arts of Bosnia & Herzegovina. Of all Academies that responded, only the Academies of Kosovo and Turkey do not manage any research institute at all.



Annex I: Questionnaire Addressed to ESEE Academies

• Adviser to Society

All (responding) Academies indicate that they act as “Adviser to Society”, especially in relation to the government. The number of advisory reports varies again significantly from about 200 in a five-year period for the Moldovan Academy of Sciences to 4 for the same period for the Kosovan and Macedonian Academies. However, a possible explanation for this variation may be that the term “advisory report” easily lends itself to different interpretations.

• Learned Society

All ESEE Academies are active in their role as Learned Society. They organize scientific meetings on a regular basis and they are all involved in the publication of scientific papers. Again, the number of meetings varies, as does the number of publications, but all recognize that an Academy is not really an Academy if it disregards its roots as a Learned Society.

• International relations

A more fragmented picture emerges in the area of international relationships. A few Academies are member neither of ICSU, nor of the InterAcademy Panel on International Issues (IAP); some are members of either ICSU or IAP; and a small majority (of the responding Academies) are member of both. However, regardless of their membership status, most (responding) Academies participate only in a very small number of ICSU or IAP meetings. Financial constraints are undoubtedly one of the major reasons for this state of affairs. The picture is more positive in relation to bilateral inter-Academy cooperation and participation in international research projects, but in most cases the focus of these activities is on Academies in the region or on regional projects.

• Membership

Almost all Academies participating in the Questionnaire have in common that their membership is of an advanced age. Most Academies have no members under the age of 50, while in many Academies the average age is over 70 years of age. As was mentioned before, this situation is not unique to the ESEE Academies, since many Academies worldwide find themselves in similar circumstances. However, even in the absence of complete and reliable figures, it seems likely that worldwide the ESEE Academies find themselves at the extreme of the age-spectrum. Another membership issue facing Academies of Sciences worldwide is the underrepresentation of women, especially at higher decision-making levels. Although the Questionnaire did not produce hard data, it appears likely the ESEE Academies are also in this situation.

This is not the place to speculate in any detail on the background of the above characteristics: the Academies concerned are in a much better position to identify the reasons than any outsider or outside organization. As indicated earlier, for a third party it would even be presumptuous to engage in such speculation and the same holds true for suggestions as to possible solutions.



Organizing change

Section II of this document stressed that the world of science is no longer what it used to be and that globally there are significant developments and trends. That section also outlined some of the resulting challenges that Academies of Sciences are facing today. In addition, the ESEE Academies are confronted with radical changes to the immediate political, economic and social environment in which they operate. All this implies that Presidents and other elected officers of an ESEE Academy find themselves in a most complex and fluid situation. The science they know may not be the science that is needed today, while the institutions they are used to may no longer be the institutions that science or society presently requires.

It is therefore not surprising that many Academies of the ESEE region are facing major challenges. Being a Manager of Research may be a most important role to perform, but it quickly loses much of its value if available budgets drop below what is minimally required. And the role of Adviser to Society also needs a minimum of resources, financial and otherwise, if an Academy wishes to be taken seriously in that role. At a reduced level this is even true for the Learned Society. Many ESEE Academies have responded to these developments by initiating a process of change, both in relation to their role or roles vis-à-vis science, scientists and society and in relation to their internal organization.

One possible concrete expression of such a process of change would be the elaboration and drafting of new statutes, provided this is not approached as a hollow exercise in legal pen- and craftsmanship. Rather, the drafting of new statutes should be seen as a vehicle to systematically examine, discuss and, when necessary, re-invent an Academy. If approached in this manner, new statutes would capture in words the outcomes of an Academy-wide process of renovation and rejuvenation to make the Academy ready to face the challenges of the 21st Century.

Of all the issues and provisions to be examined in elaborating new statutes the single most important set deals with the selection and election of members. If there is one message pervading the previous sections it is this: whatever role or roles an Academy of Sciences has, it is the Learned Society that is most essential: without a Learned Society of the highest calibre, there can be no credible and effective role as Adviser to Society or as Manager of Research.

And the quality of a Learned Society is directly proportional to the quality of its membership, both individually and collectively. This, then, may suggest the most crucial issue facing the ESEE Academies today.

THE QUESTIONNAIRE

I. Membership

Disciplines represented in the Academy

1. Total number of members of the Academy?
2. How many from the natural sciences?
3. How many from the social sciences (including economics)?
4. How many from the humanities?
5. How many from health and medical sciences?
6. How many from engineering and technical sciences?

Age composition of membership

7. How many members are under age 70?
8. How many members are under age 60?
9. How many members are under age 50?

II. Activities

Management of research institutions

10. Is the Academy charged with managing active research institutions?
11. If so, for how many institutions is it responsible?
12. If so, what is the total number of active researchers employed at these institutions?
13. If so, what is the total number of staff (research + support) at these institutions?
14. If so, what is the total budget available for these institutions?
15. What percentage of this budget comes from the government?

Please list in a separate annex the areas of research covered by these institutions.

Scientific and organizational activities

16. What is, on average, the number of meetings per year of Academy members?
17. Of these meetings, how many are devoted to managing the affairs of the Academy?
18. Of these meetings, how many are devoted to a scientific topic?
19. On average, how many members participate in these meetings?
20. Does the Academy publish any periodicals or reports?
21. If so, how many publications were issued in the last five years?
22. Is the Government seeking advice from the Academy?
23. If so, how many advisory reports were issued in the last five years?

Please list in a separate annex the titles of the most recent advisory reports.



International relationships

24. Is the Academy a member of ICSU and/or IAP?
25. To which ICSU International Scientific Unions does your Academy adhere?
26. To which ICSU Interdisciplinary Bodies does your Academy adhere?
27. Does the Academy participate in ICSU and/or IAP meetings?
28. If so, how many meetings of ICSU were attended in the last five years?
29. If so, how many meetings of IAP were attended in the last five years?
30. Does the Academy maintain structural relationships with other Academies?
31. Does the Academy participate in international research projects?

Please list in a separate annex the other Academies with which the Academy cooperates.
Please also list the most important international activities in which the Academy participates.

III. Organization

Officers and staff

32. How many elected officers does the Academy have?
33. Are all officers elected from among the Academy's members?
34. What is the maximum term in office of the President of the Academy?
35. Does the Academy have any permanent staff paid by the Academy?
36. If so, how many full time staff positions are available?

Facilities and budget

37. Does the Academy have a permanent office of its own?
38. What is, on average, the annual budget for staff and office expenses?
39. What is, on average, the annual budget for programs and other activities?
40. What is, on average, the annual budget for international cooperation?

Please list in a separate annex the principal organs and officers of the Academy.

Annexes

- Annex 1: Areas of research covered by research institutions managed by the Academy
- Annex 2: Titles of the most recent advisory reports
- Annex 3: Academies with which the Academy cooperates
- Annex 4: International research projects in which the Academy participates
- Annex 5: Principal organs and officers of the Academy

Annex I: Questionnaire Addressed to ESEE Academies

Summary Table of Replies TO Questionnaire

	Armenia	Bosnia & Herzegovina	Kosovo (UNMIK)	FYR of Macedonia	Moldova	Romania	Srpska Rep. of BiH	Turkey	Ukraine
I. MEMBERSHIP									
<i>Disciplines represented in the Academy</i>									
1. Total number of members?	97	49	26 *	38 **	106	161	35	119	543
2. From the natural sciences?	31	7	5	5	38	60	7	67	300
3. From the social sciences?	5	2	6	6	8	22	8	24	62
4. From the humanities	10	13	11	18	17	38	13	0	25
5. From the medical sciences?	7	9	2	4	14	12	4	28	29
6. From the technical sciences?	44	9	2	5	29	29	3	0	127
<i>Age composition of membership</i>									
7. Members under age 70?	29	17	14	8	40	54	10	86	197
8. Members under age 60?	4	1	4	3	9	8	3	54	94
9. Members under age 50	0	0	0	0	1	0	0	16	11
II. ACTIVITIES									
<i>Management of research institutions</i>									
10. Charged with managing research insitutions?	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes
11. How many institutions?	37	2		5	39	62	5		182
12. Number researchers at these institutions?	2115	4		13	952	2475	24		16349
13. Total number of staff at these institutions?	3724	8		17	2665	3979	48		39190
14. Total budget for these institutions?		Euro 25K		Euro 16.5K	US\$17.8M	Euro 34M	Eur 100K		US\$ 292 M
15. Percentage of budget from government?	70	60		90	90	83	20	81	
<i>Scientific and organizational activities</i>									
16. Number meetings members per year?	18	40	50	4	2	60	52	150	4
17. How many on affairs Academy?	18	25	40	2	1	12	12	50	1
18. How many on scientific topic?	45	15	10	2	1	30	24	100	3
19. Average number of participants?		10	20	30	100	80	10	2-80	490
20. Publication of periodicals or reports?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21. How many publications in last 5 years?	11000	47	65	145	5750	400	18	90	575
22. Does government seek advice from Academy?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23. Number advisory reports in last 5 years?		6	4	4	200	4	10	15	

Annex I: Questionnaire Addressed to ESEE Academies



	Armenia	Bosnia & Herzegovina	Kosovo (UNMIK)	FYR of Macedonia	Moldova	Romania	Srpska Rep. of BiH	Turkey	Ukraine
International relationships									
24. Member of ICSU and/or IAP?	Yes/Yes	No/Yes	No/No	Yes/Yes	Yes/Yes	Yes/Yes	No/No	No***/Yes	Yes/Yes
25. How many ICSU Scientific Unions?	5			1		28			10
26. How many ICSU Interdisciplinary Bodies?						3			3
27. Participation in ICSU and/or IAP meetings?	Yes/Yes	No/No	No/No	No/No	Yes/No	Yes/No	No/No	No/Yes	Yes/No
28. How many ICSU meetings in last five years?	1				1	2			5
29. How many IAP meetings in last five years?	1							10	
30. Structural relations with other Academies?	Yes [10]	Yes [7]	Yes [6]	Yes [25]	Yes [12]	Yes [43]	Yes [7]	Yes [16]	Yes [32]
31. Participation in international research projects?	Yes [16]	Yes [1]	Yes [1]	Yes [16]	Yes [5]	Yes	Yes	Yes	Yes
III. ORGANIZATION									
Officers and staff									
32. How many elected officers?	7	4	7	9	5	23	9	11	31
33. All officers from among members?	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
34. Maximum term of the President?	10 years	No limit	6	4	4	4	6	8	5
35. Gender balance in decision-making? ****	♂♂♂♂♂	♂♂♂♀						♂♂♂♀	♂♂♂♂
36. Permanent staff paid by the Academy?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37. How many full-time positions?		25	11	35	70	126	9	12	273
Facilities and budget									
38. Permanent office facilities of its own?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
39. Average annual budget staff and office?	US\$ 720K	Euro 380K	Euro 120K	Euro 437K	US\$ 97.3K	Euro 6.45M	Euro 325K	US\$ 975K	US\$ 3.3M
40. Average annual budget programmes/activities?	US\$ 700K	Euro 200K	Euro 165K	Euro 300K	US\$ 1.2M		Euro 75K	US\$ 1.5M	US\$ 289M
41. Average annual budget internat. cooperation?	US\$ 1.8M	Euro 12.5K	Euro 20K	Euro 40K	US\$ 460K	Euro 106K	Eur 10K	US\$ 49K	US\$ 500K
* Plus 15 foreign members									
** Plus 1 honorary member and 28 foreign members									
*** Turkish Academy of Sciences is not the national Turkish member of ICSU									
**** In error, this question was not included in all the questionnaires sent to the Academies									

Model Statutes for a Medium-Size Academy of Sciences with Comments and Alternatives

Introduction

It is, of course, quite impossible to draft model statutes that meet the needs of each and every science Academy: each Academy is unique and wants to be unique. However, the fact is that at a more abstract level there is a great deal of overlap between the various issues that must be dealt with in the statutes of any science Academy: all statutes must deal with objectives, activities, membership, governance, finances, administration and so on.

The model statutes presented here aim, first, to identify those issues and, second, for each issue to present one possible arrangement to deal with it. However, for a specific Academy there may be additional issues, some issues may not be relevant at all and for any given issue other arrangements are not only possible, but may even be preferable.

Not only Academies are unique, but so are the legal systems within which an Academy's statutes are to function. Not all provisions suggested below need to be checked in the light of national law, but there are some for which this is absolutely essential. Mostly, this applies to the legal status of an Academy, but – more practically – also to its status under tax laws.

Input for these model statutes was sought – and found – in the statutes of a number of real Academies of Sciences. Apart from a great deal of similarity in terms of the issues addressed, as well as much variety in the arrangements to deal with them, there is also a great deal of difference between these real statutes in the level of detail. Some Academies have very general statutes, while others have statutes that go into extreme detail.

The statutes presented below try to strike a balance: they do not aim to cover every contingency in detail, but they attempt to address all likely contingencies that may occur in the normal life of an Academy. For the sake of clarity it was also decided to present only statutes, whereas in reality it may be advisable to move some provisions to bylaws or standing orders. This not only makes the statutes simpler, but it also gives more flexibility when changes are needed.

Overall, the statutes that follow are intended for a medium-size Academy with a total of, say, 100 to 300 members. An Academy of this size can have an overall structure with: (a) a general meeting of all members that takes a limited set of crucial decisions and sets general poli-



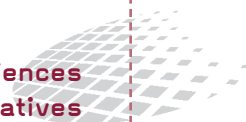
Annex II: Model Statutes for a Medium-Size Academy of Sciences with Comments and Alternatives

cies; (b) a smaller body of elected members that is charged with day-to-day management; and (c) a (small) bureau with professional staff to support the elected officials.

In a much larger Academy total membership will most likely be split up into divisions, with each division having a governance structure of its own – which impacts greatly on the governance structure of the Academy as a whole. In a smaller Academy the general meeting may make most managerial decisions itself, with a smaller body of elected members in charge of implementation, so minimizing the need for professional support staff.

Lastly, the importance of statutes should not be underestimated, nor overestimated. The quality of the individuals involved – elected officials and staff – and of the organization as a whole, is more important. When an Academy is governed by wise men and women, statutes will most likely live out their lives at the bottom of a drawer. And if an Academy's leadership is incompetent, no statutes can really remedy that situation. But good statutes – like good laws – may help the wise and hinder the not-so-wise.

All this confirms what was said earlier: the Model Statutes presented below should be treated as a source of ideas and inspiration in drafting statutes that really meet the specific needs of your Academy or Academy-to-be. The Wonderland Statutes are a starting-point for discussion – not the outcome.



STATUTES

- Whereas science, in all its aspects and in all its forms, enriches our understanding of the world around us;
- Whereas the contributions of science are essential for the advancement of our nation and its growth and development;
- Whereas the values of science and of the scientific method enhance the quality of the decisions-making processes to chart the nation's future;
- We, the Undersigned, have agreed to establish an Academy of Science.²⁵

Article 1: Establishment²⁶

- 1.1 The Academy of Sciences of Wonderland, hereinafter referred to as “the Academy”, is an autonomous science²⁷ organization established by a group of scientists, hereinafter called “Founding Members”²⁸, to pursue the objectives set out below.
- 1.2 The Academy shall be concerned with the natural sciences, mathematics, medicine and other life sciences, the engineering sciences, social sciences and the humanities.²⁹
- 1.3 The Academy has legal personality under the laws of Wonderland, it may receive and dispose of property, monies and other assets and it is capable of suing and being sued under its own name.³⁰

²⁵ Such a Preamble is of course optional, but it may be used to present, as concisely as possible, to the outside world the reasons of the “Founding Members” to set up the Academy.

²⁶ In addition to the Statutes, there also may be enabling legislation, adopted by the parliament and/or government to recognize the Academy and its statutes as a public organization. However, such legislation should not impede the ability of the Academy to arrange its own affairs as this may raise questions in relation to the Academy's independence.

²⁷ The term “science” appears more appropriate than “scientific” as the work of the Academy relates to science, without that work being done “scientifically”.

²⁸ If a new Academy is to be credible, it is of course essential that the Founding Members themselves are eminent scientists. One or more well-established Academies or the IAP - as the organization representing all leading science Academies of the world - could be engaged on an ad hoc basis to vouch for the qualifications of the Founding Members.

²⁹ Here, a choice has to be made: all these disciplines or fields or just a subset? Also, in some cases it may be advisable to be more detailed, while in other cases just the opposite may be true. Lastly, is it desirable to mention explicitly that the Academy is concerned both with basic sciences and with applied sciences?

³⁰ Depending on the existence and the content of enabling legislation, additional provisions may need to be added here to meet specific requirements of the law of the country in which the Academy is established. There also may be certain procedures to register the organization. A specific issue in many countries is how to ensure that for tax purposes the Academy is classified as a non-profit or even as a charitable organization.

Article 2: Objectives³¹

- 2.1 The objectives of the Academy are:
- 2.1.1 To recognize, support and promote excellence in scientific research performed by scientists who are citizens of Wonderland³²;
 - 2.1.2 To promote contacts among scientists who are citizens of Wonderland and between them and the world scientific community;
 - 2.1.3 To strengthen the global position and role of scientific research performed by scientists who are citizens of Wonderland;³³
 - 2.1.4 To advise the government on the quality of science in Wonderland, as well as on scientific aspects of social and economic issues in Wonderland;
 - 2.1.5 To provide information on science to, and build support for science with, the general public in Wonderland;
 - 2.1.6 To advise the government on all issues related to science teaching and science education in the country;
 - 2.1.7 To ensure that in Wonderland research is conducted in areas or on questions of special importance to science or the nation.
- 2.2 In pursuing these objectives the Academy shall ensure the highest standards of independence and impartiality. Any recommendations or advice emanating from the Academy shall be merit-based and be made public unless exceptional circumstances make this impossible.³⁴

Article 3: Activities³⁵

- 3.1 In pursuing the objectives set out in article 2, the Academy may undertake, *inter alia*, the following activities:³⁶

³¹ Objectives should give direction and identity, but it is not advisable to make them so specific as to force the Academy into a straightjacket. However, even if the objectives remain general, important choices need to be made between three different sets of objectives: (a) those dealing with the Academy as a learned society (here the provisions 2.1.1 to 2.1.3); (b) those dealing with the Academy as an advisor to the nation and the government (here the provisions 2.1.4 to 2.1.6); and (c) those dealing with the Academy as a manager of research institutions (here the provision 2.1.7). The role of learned society is inherent to all Academies, implying that objectives such as 2.1.1 to 2.1.3 should always find their way into statutes. But if, for some reason, an Academy does not have, or does not wish to have, a role as advisor to the nation/government or as manager of research institutions, objectives such as set out in 2.1.4 to 2.1.7 have no place in the statutes of that Academy.

³² There are several alternatives here: (a) not link membership to any nationality so that members may come from all countries of the world, strictly on the basis of scientific eminence; (b) to refer to “scientist working in Wonderland”, or “scientist with residence in Wonderland”, but then the terms “working” or “residence” should be defined more precisely. Is a two-week visit enough? And does “residence” relate to a factual or to a legal status?

³³ This phrase implies that the Academy is concerned both with “policy for science” and with “science for policy” issues. However, in a concrete situation one of these two perspectives may be less (or more) relevant than the other.

³⁴ This provision clearly reflects an ideological position. Yet, it also articulates a core feature of an Academy of Sciences if that Academy is to express the values of science.

³⁵ As with the article on objectives, the article on activities should not deny an Academy the flexibility to adapt to changed conditions. Hence, the “*inter alia*” in the chapeau of this article and the open formulation on other activities in provision 3.1.9.

³⁶ Of course, not all activities need to be mentioned. However, it is important that the list of activities is consistent with the list of objectives. If, for example, provision 2.1.6 is deleted from the list of objectives, then the corresponding provision 3.1.8 on activities should also be deleted. As a rule, it should be possible to link each activity to one or more of its objectives.

- 3.1.1 Present a platform for discussion and dialogue to all scientists from Wonderland and elsewhere on issues of common interest;
 - 3.1.2 Elect into the Membership of the Academy scientists who have made outstanding contributions to their respective field(s) that meet the highest internationally accepted standards;
 - 3.1.3 Represent and promote the interests of science in Wonderland in national, regional and international organizations and decision-making bodies;
 - 3.1.4 Conduct studies and publish reports and statements on themes and topics that relate to science in Wonderland or to scientific aspects of social and economic issues in Wonderland;
 - 3.1.5 Award competitive research grants to scientists who are citizens of, and to research organizations established in, Wonderland, either from its own financial resources or from financial resources made available to it;
 - 3.1.6 Award medals, prizes and other honours to scientists from Wonderland or elsewhere who have made outstanding contributions to their respective field(s) or to the objectives of the Academy;
 - 3.1.7 Publish journals, other periodicals and books, both for the community of scientists and for the public at large;
 - 3.1.8 Manage, or support the management of, scientific research institutions or departments of such institutions in Wonderland;
 - 3.1.9 Organize conferences, workshops and symposia on themes and topics that fall within its objectives and undertake such other projects and activities as it deems appropriate for achieving its objectives.
- 3.2 In carrying out these activities the Academy shall endeavour to contribute to the social and economic development of Wonderland. It shall also endeavour to increase awareness in society of the values represented by science and the scientific method.³⁷
- 3.3 In carrying out these activities the Academy shall maintain effective cooperation and coordination with other organizations or institutions, national or international, that have similar objectives.³⁸

Article 4: Membership³⁹

- 4.1 The Membership of the Academy shall consist of the following categories:
- 4.1.1 Founding Member;⁴⁰
 - 4.1.2 Active Member;⁴¹

³⁷ This provision may not be without controversy as it also reflects an ideological position on the value and values of science.

³⁸ This clause has been formulated here in general terms. In a specific situation it may be wise to add the most relevant organizations by name.

³⁹ The issues associated with membership are perhaps the single most important (legal) factor in determining the (future) viability and credibility of an Academy, both nationally and internationally. Accordingly, they need very careful consideration.

⁴⁰ For mechanisms to ensure the standing of the group of Founding Members, see footnote 4. It is of course a closed group once the Academy has become operational.

⁴¹ Active Members are the core of the Academy. Their qualities determine the viability and credibility of the Academy as a whole. Hence, the requirement of provision 4.2 that they must be eminent scientist in the light of internationally accepted standards.



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- 4.1.3 Emeritus Member;⁴²
- 4.1.4 Foreign Member;⁴³
- 4.1.5 Honorary Member.⁴⁴
- 4.2 Active Members shall be elected from amongst active scientists who are citizens of Wonderland⁴⁵ and who have, according to internationally accepted standards, made outstanding contributions to their respective field(s) of science. Active Members enjoy all the rights and have all the obligations of Membership.
- 4.3 An Active Member shall become an Emeritus Member at the end of the year in which he or she reaches the age of 70 years. Emeritus Members shall have the same rights and obligations as Active Members, except the right to be elected Officer of the Academy.⁴⁶
- 4.4 Foreign Members⁴⁷ shall be elected from amongst scientists who are not citizens of Wonderland, but who have made significant contributions to science in Wonderland. Foreign Members shall meet the same criteria for Membership as Active Members. Foreign Members shall have the same rights and obligations as Active Members except the right to vote in the General Meeting or to be elected Officer of the Academy.⁴⁸
- 4.5 Honorary Members shall be elected by the General Meeting from amongst persons of eminence who have made outstanding contributions to the objectives of the Academy. Honorary Members shall have the same rights and obligations as Active Members.⁴⁹
- 4.6 The General Meeting may, on a proposal from the Board, divide the Academy's total Membership into Classes based on discipline.⁵⁰ It may also set an upper limit to the number of

⁴² It is of course possible not to make a distinction between Active and Emeritus Members, implying that all Members stay in the category "active" until their Membership ends, presumably by death. However, this creates a serious risk that over the years the average age of the Members increases, especially if there is a limit on total Membership and/or recruitment of younger Members is not very successful. The transition from Active Member to Emeritus Member can of course also be set at another age, but 70 seems a good compromise.

⁴³ Having Foreign Members enables an Academy to offer Membership to scientists from other countries who have made real contributions to science in the country of the Academy or to scientists born in the country but now working abroad.

⁴⁴ Introducing a category of "Honorary Member" is not necessary, but it enables an Academy to engage individuals who have helped the Academy in the past – and may do so again in the future. This background also explains why the criteria for Membership are different from those for the other categories.

⁴⁵ But see the discussion of footnote 8. It is conceivable not to link Membership to any nationality at all or to link it to being a resident, rather than a citizen. If Membership is not linked to citizenship, the category of "Foreign Member" should be dropped.

⁴⁶ Here, "only" the right to be elected Officer of the Academy is withheld from Emeritus Members, but it is of course possible to withhold more (the right to vote, for example) or less (for example, the right to become President of the Academy). However, there always should be some sort of distinction.

⁴⁷ But see footnotes 8 and 21, suggesting that there may be no Foreign Members.

⁴⁸ Like in footnote 22: more, but also less may be withheld from Foreign Members. However, it seems logical to differentiate in relation to the two issues mentioned so that it is clear that the Academy of Wonderland is indeed under the control of scientists from Wonderland.

⁴⁹ Again: local circumstances may suggest another approach. However, assuming that there will be only a few Honorary Members and that they will be persons of the highest standing, why take away from the honour to be given to them by withholding from them at the same time any of the rights and obligations of Membership?

⁵⁰ In some cases – especially for larger Academies with, say, more than 300 Members – it may be better if the Statutes themselves already divide Membership into "Classes" – or "Colleges", "Divisions" or "Sections", etc. Indeed, in many Academies this is established practice. However, for new Academies it may be wise to see how Membership develops before considering the creation of Classes. If Classes are created, either directly in the Statutes or later when Membership grows, one of the consequences is that special rules and arrangements need to be introduced on the governance of these Classes. Such arrangements may be minimal in

- Members that may be elected each year into a Class or, in the alternative, it may set an upper limit to the total number of Members in each Class.⁵¹
- 4.7 Members of the Academy shall uphold the Statutes of the Academy and they shall contribute to the achievement of the objectives of the Academy.⁵² Membership ends if a Member withdraws from the Academy, provided he or she has met all financial obligations to the Academy.⁵³ Membership also ends when a Member is convicted of a crime or other serious offence, is declared a bankrupt or is declared to be of unsound mind, each of these decisions to be made by a competent court of law or other legally designated authority.⁵⁴
- 4.8 A Member may be expelled from the Academy when that Member has acted in manifest contravention of these Statutes or has otherwise prejudiced the good name or interests of the Academy. Expulsion shall be a decision of the Board, shall be a last resort and shall be based on grounds that are communicated to the Member. Before taking a decision on expulsion, the Board shall give the Member concerned the opportunity to defend him- or herself.⁵⁵

Article 5: Election of Members⁵⁶

- 5.1 Nominations for election into the Membership of the Academy shall be made in writing by two Members of the Academy. A nomination shall be personally addressed to the President of the Academy.⁵⁷
- 5.2 Nominations for election may be submitted at all times, but nominations received less

nature (making a Class primarily a meeting place for related disciplines), but they may also be more far-reaching (even to the point of making a Class in fact a mini-Academy of its own). In the latter situation, it is likely that the statutes of the Academy will have to differ on essential points from the statutes presented here.

⁵¹ First, the reason that the provision requires the Board and the General Meeting to work together is that the Membership provisions are of such a crucial nature that both bodies must support any decision. Second, it is for each Academy to decide whether or not it wishes to set an upper limit on Membership. However, the fact is that such a limit may make the recruitment of younger Members more difficult – if not impossible – unless there are strict rules on retirement as well. An alternative to a limit on Membership would be a limit on the number of new Members that are accepted every year, either in total or for each Class. In this respect it may also be wise for a new Academy to see how Membership develops before making a definitive choice.

⁵² An alternative approach would be a set of detailed provisions on the rights and obligations of Members - even to the point of specifying the hours during which they have access to the library – but a general provision as suggested here should suffice in most situations.

⁵³ Members should have the right to withdraw at all times, for example if they disagree fundamentally with a position taken by the Academy. However, any financial obligations should be met.

⁵⁴ Overall, same observation as in footnote 28: these clauses appear to suffice in most situations.

⁵⁵ Expulsion is a serious matter, both for the Member concerned and for the Academy. It should therefore be strictly limited to a set of pre-defined conditions – here: contravention and prejudice - and there should be strict procedural guarantees against arbitrariness. In most cases a general provision like this should be sufficient.

⁵⁶ Like article 4, this is a most crucial set of provisions for the future viability and credibility of the Academy – perhaps even more so as these provisions should make it clear to everyone that it is the Academy that elects new Members solely on the basis of their contribution to science. The various provisions of this article could go in much more detail, but what is suggested here appears to cover all essential elements.

⁵⁷ Two seems a reasonable number, but a higher number is, of course, possible. It is suggested that nominations be sent to the President personally so that he or she may intervene immediately (and with a minimum of loss of face for the nominators) if a nomination is clearly out of order.



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than six months prior to the next General Meeting shall not be considered at that Meeting, but at a later General Meeting.⁵⁸

- 5.3 A nomination shall be supported by the following documents: (a) a statement of at most 50 words on the most significant contribution to science of the candidate; (b) a statement of at most 500 words giving the reasons why the candidate should meet the criteria for Membership; (c) the names of five referees with the widest possible geographical distribution who may be consulted by the Academy; (d) a list of what are considered the 12 most outstanding publications of the candidate; and (e) a full CV of the candidate including a list of all his/her major publications.⁵⁹
- 5.4 For each round of elections the President shall appoint a Membership Advisory Committee for each discipline, or group of disciplines, to assist him or her with the selection of the candidates to be proposed by him or her to the Board. The list of candidates to be submitted to the Board shall be drawn up in a meeting of the Chairpersons of the Membership Advisory Committees, chaired by the President of the Academy.⁶⁰
- 5.5 If there is a limit on the number of new Members that can be elected, the Board shall consider not only the individual qualifications of the candidates, but also the overall balance between disciplines, age and gender in the Membership of the Academy.⁶¹
- 5.6 The Board shall draw up a Final List of candidates to be elected into the Academy. It shall send this list to all Members for a secret ballot. This ballot shall be held as follows:⁶²
- 5.6.1 If the Board has placed more candidates on the Final List than there are vacancies to be filled, it shall indicate its own order of preference;
 - 5.6.2 When sending the Final List to the Members the Board shall include two envelopes, one marked with the name of the Member, the other blank and without any markings;
 - 5.6.3 The Board shall indicate to Members the deadline on which all replies from Members must have been received by it;
 - 5.6.4 The Member shall indicate for each candidate on the Final List whether he or she supports the election of that candidate, opposes election or abstains;
 - 5.6.5 The Member shall then place the Final List in the unmarked envelope and place that envelope in the envelope marked with his/her name;

⁵⁸ An alternative would be to specify cut-off dates and deadlines. The advantage of this provision is that it is self-policing. Note that nominations are “considered at” the General Meeting – and not “approved by” the General Meeting. This as the election as such is done earlier by secret ballot.

⁵⁹ Again, the precise requirements may vary, but these elements seem to cover the essentials.

⁶⁰ Such Committees not only enhance the quality of the information and spread the workload over a larger number of people, but they may also act as a buffer to protect the President if, for some reason, a particular nomination becomes controversial at a later stage. The Chairpersons of the various Committees receive of course all sorts of input from Committee members, but it is they and the President of the Academy that integrate all this input into a single consolidated list.

⁶¹ If there is no such limit, this provision can be deleted. However, even in that case a balanced Membership remains an important issue. The provision also suggests that it is the Board that should consider the overall picture, including aspects that do not relate to individual qualifications.

⁶² The arrangements that follow are fairly typical for the election procedures of many existing Academies. They are designed to make quite clear that it is the Membership that decides, not through a collective raising of hands at a meeting, but through the considered decision of each individual Academy member. An alternative for smaller Academies could be to take the vote, also in the form of a secret ballot, at a General Meeting. The reference to a ballot by e-mail in provision 5.6.10 should need no further explanation.

- 5.6.6 The Board shall verify that all replies received come from a Member of the Academy and it shall then put all unmarked envelopes in a sealed ballot box;
 - 5.6.7 When the deadline has passed, the Board shall open the ballot box and count the number of Members that have responded;
 - 5.6.8 If that number is less than two-thirds of all Members, the Board shall declare the ballot void and initiate a new ballot for which the required number of responses shall be reduced to one-half of total Membership;
 - 5.6.9 A candidate is elected when he or she receives the support of at least one-half of the Members that have responded and if no more than one-fourth of the responding Members oppose his/her election;⁶³
 - 5.6.10 The above arrangements may also be implemented by e-mail provided that their intent and purpose is respected.
- 5.7 The President shall present each candidate that has been elected into the Membership of the Academy to the next General Meeting and he or she shall state the grounds for election. Membership becomes effective once the candidate has stated before the General Meeting that he or she accepts all rights and obligations of Membership.⁶⁴
- 5.8 All information obtained by the President, the members of the Membership Advisory Committee(s), the members of the Board or the staff of the Academy on persons considered for election shall be treated as confidential to protect their privacy.⁶⁵

Article 6: General Meeting⁶⁶

- 6.1 The General Meeting is the highest body of the Academy and it is composed of all Members of the Academy. It shall meet at least once every year in an Ordinary Session at the offices of the Academy. All Members are expected to attend Ordinary Sessions.
- 6.2 The General Meeting may convene in an Extraordinary Session by decision of the President, the Board or at the written request of at least 1/5 of total Membership.⁶⁷
- 6.3 The venue and dates of Ordinary and Extraordinary Sessions of the General Meeting shall be determined by the Board.⁶⁸ Sessions of the General Meeting shall be convened by a

⁶³ This particular provision is designed to ensure that only candidates are elected who enjoy general support and not much opposition.

⁶⁴ Essentially, this provision is not about electing candidates into the Membership of the Academy, but about confirming the election results before the highest organ of the Academy: the General Meeting of all Members. For that reason, the candidate-elect also has to formally accept Membership before that body, either by making a brief statement or by a solemn vow or oath.

⁶⁵ This provision could be made much more elaborate, but it covers what needs to be said.

⁶⁶ There is an important overall choice to be made here: either (a) the General Meeting has essentially a supervisory role with the Board acting as the main decision-making body on all operational affairs of the Academy; or (b) the General Meeting is the body that takes most of the decisions with the Board charged with their implementation. The statutes presented here opt for the first approach: operational management is in the hands of the Board subject to supervision and guidance by the General Meeting. If the other choice is made – quite feasible for smaller Academies – the provisions on the powers of General Meeting and of the Board need to be reshuffled substantially as what are now powers of the Board need to be transferred to the General Meeting.

⁶⁷ Extraordinary sessions may be convened for celebrations, but also to settle serious disagreements. For that reason, the provision as drafted allows all potential sides in a possible disagreement to convene an Extraordinary Session of the General Meeting so that no side can block the other.

⁶⁸ Even in situations of conflict the Board is still the Board, implying that it is the duty - "shall" - of the Board to make appropriate arrangements (including the allocation of funds) for all General Meetings.



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- written invitation, including a proposed agenda, to be distributed to all Members of the Academy at least one month prior to the Meeting.
- 6.4 The General Meeting shall do, in particular, the following:
- 6.4.1 Receive and approve the Annual Report of the Academy;
 - 6.4.2 Issue overall policy guidelines to the Board;⁶⁹
 - 6.4.3 Review the activities, present and future, of the Academy;⁷⁰
 - 6.4.4 Elect the Officers of the Academy;
 - 6.4.5 Elect the Ordinary members of the Board;
 - 6.4.6 Appoint the auditors of the financial administration of the Academy;⁷¹
 - 6.4.7 Review and approve reports and accounts submitted to it;
 - 6.4.8 Award medals, prizes and other honours on behalf of the Academy.
- 6.5 The General Meeting may make formal decisions only if at least one-half of the Membership of the Academy is present. If within one hour after the scheduled opening of a General Meeting less than one-half of the Membership is present, the session shall be adjourned. In that case the Board shall invite all Members to a second session that may make formal decisions without a quorum requirement provided that there are no changes in the agenda and provided that at least two weeks have lapsed after the adjournment.⁷²
- 6.6 Unless provided otherwise, decisions of the General Meeting shall be taken by a majority vote, abstentions not being considered a vote. Decisions shall be made by a show of hands unless the General Meeting decides to vote by secret ballot. In case of a tie, the President shall have a second vote.
- 6.7 Voting on the election of the Officers of the Academy and of the Ordinary members of the Board shall always be done by secret ballot. If there is more than one candidate for a specific position as Officer of the Academy or as Ordinary member of the Board, the candidate who receives one-half of the votes, abstentions not being considered a vote, shall be elected. If no candidate receives one-half of the votes, the candidate with the fewest votes shall be withdrawn from the list of candidates. Voting shall then be repeated for the remaining candidates until a single candidate obtains a majority of the votes, abstentions not being considered a vote.

Article 7: Board⁷³

- 7.1 The Board shall consist of the Officers of the Academy and three Ordinary members, all elected from among the Members of the Academy.⁷⁴

⁶⁹ See footnote 42. This provision is inappropriate if the General Meeting is in charge of operational management.

⁷⁰ See footnote 42. If the General Meeting were to be in charge of operational management this list should also state explicitly that the General Meeting decides on budgetary matters.

⁷¹ Although it is very specific, it is best to entrust the General Meeting with this decision to ensure a maximum of transparency and credibility. After all, the decisions of Board and Executive Director are the objects of the audit.

⁷² The precise details of this provision need to be determined in the light of the local situation. A quorum of one-half may be too high for one Academy and it may be too low for another. Also, it may be preferable to mention a precise number rather than a percentage. However, one aspect holds true in all situations: the quorum required goes up whenever the decision-making powers of the General Meeting increase. Otherwise, a relatively small group of Members may be able to hijack the decision-making process of the Academy. See also footnote 84.

⁷³ To repeat the message: this particular provision also reflects the choice of having a General Meeting with an overall supervisory role and a Board charged with all tasks of operational management, including financial and budgetary matters.

- 7.2 The members of the Board shall be elected by the General Meeting on the basis of a proposal from an *ad hoc* Nominating Committee appointed by the Board at least 12 months prior to the expiration of the terms in office of the incumbent Academy Officers and Ordinary Board members.⁷⁵
- 7.2.1 The Nominating Committee shall consist of at least six Members of the Academy that have been active in activities of the Academy and that do not seek election into the new Board. In the composition of the Committee there shall be balance between disciplines, age and gender;
- 7.2.2 The Nominating Committee shall request all Members of the Academy to submit candidates for election as Academy Officer and/or Ordinary Board member. Self-nominations shall not be considered;
- 7.2.3 The Nominating Committee shall request incumbent Academy Officers and Ordinary Board members who are eligible for a second term to indicate whether or not they seek such a second term;
- 7.2.4 At least one month prior to the General Meeting where the election is to take place, the Nominating Committee shall inform the Board in the strictest confidence of the proposed slate of new Academy Officers and Ordinary Board members;⁷⁶
- 7.2.5 All information obtained by the members of the Nominating Committee, the members of the Board or the staff of the Academy on persons considered for election shall be treated as confidential to protect their privacy.⁷⁷
- 7.3 The Officers of the Academy and the Ordinary members of the Board shall be elected for a term of three years and shall be eligible for re-election for one additional term, either in the same position or in another.⁷⁸ However, if a member of the Board is elected President, he or she may have a total of three terms as member of the Board.⁷⁹
- 7.4 For the purpose of continuity, during the second and final term of an incumbent President the Nominating Committee may recommend a President-Elect who shall be, or become, a member of the Board.
- 7.5 The Board shall fill any vacancy caused by death, resignation or incapacity of any of its members for the remainder of his/her term. A person filling a vacancy shall be eligible for election, thereafter, for two normal terms.

⁷⁴ Local preferences should determine the precise numbers. Also, the number of Officers can be enlarged (more Vice-Presidents?) and that of the Ordinary members reduced.

⁷⁵ An independent Nominating Committee (or Search Committee) is essential as Board members may be up for re-election, which precludes a formal role for the Board itself. In this provision size and composition of the Nominating Committee are left to the Board, but any statutes can of course easily provide guidance or even instructions on these issues.

⁷⁶ This provision is designed to ensure that the incumbent Board can live with the proposal of the Nominating Committee and to minimize the chance of controversy at the General Meeting. It is best if the Nominating Committee were to present a full slate of new Officers and other Board members to the General Meeting so that the Meeting can say yes or no to the group as a whole. However, this may not be possible, in which case the General Meeting must choose between candidates. See the provisions of 6.6.2.

⁷⁷ Same comment as in footnote 41.

⁷⁸ A term of four years (maximum eight) would also be acceptable, but a term of two years (even when it may be extended to four years) seems too short to be effective. Experience shows that most newly elected officials without much relevant background need at least a year or so to come to grips with the job, then need several months to develop their own plans and initiatives plus another year at least to implement these plans and initiatives. Accordingly, a two year term invites a wait-and-see attitude, as well as a risk of inaction, particularly when re-election for a second term is not certain.

⁷⁹ Continuity is especially important for the President, both within the Academy, but also in respect of its external relations. Hence, the option to extend the President's terms in office.



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- 7.6 Subject to overall policy guidelines of the General Meeting, the Board shall be empowered to make decisions on all matters affecting the Academy. In particular, the Board shall carry out the following:⁸⁰
- 7.6.1 Manage, coordinate and supervise all affairs of the Academy, including its financial resources and other assets;
 - 7.6.2 Convene the sessions of the General Meeting and distribute invitations, including an agenda, to the Members of the Academy;
 - 7.6.3 Prepare a draft Annual Report of the Academy and submit it to the General Meeting for approval;
 - 7.6.4 Appoint standing and temporary committees as and when the Board deems such committees necessary;⁸¹
 - 7.6.5 Consider any reports and accounts to be submitted to the General Meeting for review and approval by that Meeting;⁸²
 - 7.6.6 Prepare decisions of the General Meeting to award medals, prizes and other honours to scientists for outstanding achievements;
 - 7.6.7 Adopt bylaws to give effect to the provisions of these Statutes. The Board shall inform all Members of the Academy of any bylaws it may adopt.⁸³
- 7.7 The Board may only take formal decisions if there is a quorum of at least four members. The Board shall decide by a majority of votes, abstentions not being considered a vote. In case of a tie, the President shall have a second vote. Decisions shall be made by a show of hands unless the Board decides to vote by secret ballot. In the interval between meetings of the Board a vote may be taken by email.⁸⁴
- 7.8 The Board shall meet at least four times a year⁸⁵ and the Minutes of its meetings shall, when confirmed, be sent to all Members of the Academy.

Article 8: Officers⁸⁶

- 8.1 The Academy shall have the following Officers: a President; a Vice-President; a Secretary General; and a Treasurer.⁸⁷

⁸⁰ Again: all this applies only to a Board with managerial responsibilities.

⁸¹ Most existing Academies have a range of committees, such as: Finance Committee, Awards Committee and Foreign Relations Committee. Whenever such a Committee is established, it is appropriate for the Board to also adopt special bylaws to govern its operation.

⁸² This also implies that no reports will go the General Meeting without having been considered first by the Board – which is as it should be.

⁸³ There is quite a range of possible bylaws. Some may be needed to add detail to the provisions of these statutes – for example, in relation to the administrative aspects of the membership election procedure. Other bylaws may cover aspects not dealt with in these statutes at all – such as the operation of newly created committees. One other possible topic for bylaws is Membership fees: level or levels, method of payment, consequences of non-payment, etc.

⁸⁴ The provisions on decision-making by the Board can be simpler than their equivalent for the General Meeting, not because Board decisions are less important, but because the Board is a much smaller body. For obvious reasons a provision on e-voting has been added. Again, the provision may have to be adapted to local conditions, especially when it is decided to have a larger or smaller Board.

⁸⁵ But in many situations that may be on the low side.

⁸⁶ Of course, every Academy will have a President and should have a Vice-President, but a Secretary General and a Treasurer are not strictly necessary, while putting them collectively in the category “Officers of the Academy” is also a matter of choice. However, having Officers elected from among the Membership conveys the message that the Academy is truly managed by the Members themselves. Also and more practically: even if here is no Secretary General or Treasurer, their work has to be done anyway.

- 8.2 The President shall be the principal officer of the Academy and he or she shall represent the Academy externally.⁸⁸ The President shall preside over all meetings of the Board and all sessions of the General Meeting. He or she shall present reports on the Academy's activities to the Board and to General Meetings.
- 8.3 The Vice-President shall take the place of the President if the President is unable to attend meetings of the Board or sessions of the General Meeting or is unable to represent the Academy externally. The Vice-President may discharge such other responsibilities as the President assigns to him or her.⁸⁹
- 8.4 The Secretary General shall be responsible for all official records, including the Register of Members, of the Academy and for all official correspondence of the Academy, except that which relates to finance. He or she shall preside at meetings of the Board and at sessions of the General Meeting if the President and Vice-President are unable to attend.
- 8.5 The Treasurer shall be responsible for the financial records and administration of the Academy and for the management of all its financial resources and other assets. The Treasurer shall report annually, and at such times as the Board may determine, to the Board on the finances and accounts of the Academy. He or she shall present a report to each Ordinary Session of the General Meeting on the audited accounts of the Academy.
- 8.6 Any Officer of the Academy or an Ordinary member of the Board who behaves in a manner that is incompatible with the responsibilities of his/her office or who accepts a position that is in conflict with those responsibilities, including a paid position at the Academy, shall resign his/her office. If he or she refuses to do so, the Board shall propose to the General Meeting to remove him or her from office.⁹⁰ If an Officer is expelled as a Member of the Academy, his/her term in office ends automatically.

Article 9: Executive Director⁹¹

- 9.1 The Board shall appoint an Executive Director of the Academy as the highest administrative officer of the Academy for a term in office set by the Board, but not less than three years, and for a salary and other benefits also set by the Board.⁹²
- 9.1.1 Not later than 12 months prior to the end of his/her term in office the Board shall request the incumbent Executive Director to indicate whether or not he or she seeks appointment for another term in office;

⁸⁷ The number and type of Officers is a matter of choice as well. For example, many of the larger Academies have a special Foreign Secretary to strengthen the position of the Academy in international relations. There also may be more Vice-Presidents, which makes it possible to assign specific responsibilities to them (such as: Membership issues, Science education, Awards, etc.).

⁸⁸ The term "representation" here refers to flying the flag – it does not refer to entering into financial or legal commitments. See the provisions on Financial Management.

⁸⁹ This should also make clear that ultimately there is only one boss: the President.

⁹⁰ That is: he or she may stay on as Member. Strictly speaking, the last sentence is not needed as all Board members must be Academy Members. However, in case of conflict.

⁹¹ Again the observation that this position assumes that the Academy has a certain size. For smaller Academies it may just not be realistic to have a salaried Executive Director, not even part-time. In that case, one or more of the members of the Board have to do the work – as volunteers.

⁹² Accordingly, the Executive Director is a paid employee of the Academy, full-time or part-time. This is not only a matter of expediency, but it also is a matter of principle to make clear how the position of Executive Director relates to the elected positions of the Officers of the Academy.



Annex II: Model Statutes for a Medium-Size Academy of Sciences with Comments and Alternatives

- 9.1.2 If the Executive Director seeks another term, the Board shall decide whether or not to re-appoint the incumbent Executive Director;⁹³
- 9.1.3 If the incumbent Executive President is not available or if the Board decides that a new Executive Director needs to be appointed, the Board shall appoint a Search Committee from among its members;
- 9.1.4 The Search Committee shall publicly advertise the vacancy, as well as the criteria for appointment. It shall also seek input from Academy Members;⁹⁴
- 9.1.5 The Board shall appoint a new Executive Director not later than two months before the end of the term of the incumbent Executive Director.
- 9.2 The Executive Director is accountable to the President of the Academy.⁹⁵
- 9.3 Subject to guidelines and instructions of the Board, the Executive Director shall be responsible for the administration of the Academy and for the management of the office of the Academy, including the appointment of staff, the setting of salaries and other benefits and the general conduct of the staff.⁹⁶
- 9.4 The Executive Director shall support the Board in formulating and implementing the policies of the Academy and he or she shall maintain working relationships with all organizations that pursue objectives similar to those of the Academy.⁹⁷
- 9.5 If the Executive Director behaves in a manner that is incompatible with the responsibilities of his/her office, he or she shall resign his/her office. If he or she refuses to do so, the Board shall remove him or her from office.⁹⁸

Article 10: Financial Management⁹⁹

- 10.1 The Academy is authorized to accept and receive grants, donations, gifts, bequests, trust funds and prizes from national or international entities, public or private, or from individuals, as well as fees from its members or for any services it may render. Acceptance of such financial contributions shall be affected by the Executive Director under guidelines issued by the Board.
- 10.2 The Officers of the Academy, the Ordinary members of the Board and other Academy officials elected from amongst the Members shall not receive any salaries or other honoraria or fees. However, they shall be reimbursed for any personal expenses made in

⁹³ It is only fair that an incumbent Executive Director has a right of first refusal, especially when he or she does a good job.

⁹⁴ In most cases a maximum of transparency is best.

⁹⁵ The Executive Director can also be made accountable to the Board as a whole, but this may cause confusion if the Board is divided.

⁹⁶ No doubt, a more detailed and elaborate provision can be formulated, but this describes clearly two important components of the job: administration and office management. Accordingly, the Secretary General and the Treasurer may have ultimate responsibility for the correspondence and the finances of the Academy respectively, but it is the Executive Director who does most of the actual work.

⁹⁷ A good Executive Director may do much more than administration and office management – if an Academy lets him or her, as all larger Academies should. Based on his/her specific role as the highest administrative officer of the Academy, he or she can also have a voice in the decision-making processes of the Academy and in the contacts with other organizations. Presidents and Board members may come and go, but a good Executive Director is essential to bring a degree of continuity and stability to an Academy.

⁹⁸ The Board appointed the Executive Director and so the Board should fire him or her.

⁹⁹ This provision aims to set out some general principles. More detailed provisions may be needed, but these could be adopted as part of the Academy's bylaws.

performing their duties, while the Academy may compensate, in whole or in part, the organization where they work for the costs of their salary.¹⁰⁰

- 10.3 The Academy shall enter into financial obligations in relation to third parties only on the basis of an explicit decision of the Executive Director. The Executive Director shall enter into such financial obligations only for expenditures that are included in a budget approved by the Board.¹⁰¹
- 10.4 The Academy may borrow money from established financial institutions and it may invest any funds it does not need to disburse. Investments shall be made only in financial instruments that carry a minimum of risk. Transfer of Academy funds for investment purposes shall be affected by the Executive Director upon a written instruction from the Board signed by the President.¹⁰²
- 10.5 The accounts of the Academy shall be audited in accordance with generally accepted accounting and auditing standards.¹⁰³

Article 11: Publications and Statements¹⁰⁴

- 11.1 Publications or statements on behalf of the Academy shall not be made public until their public release is approved by the Board. In particularly urgent matters the President of the Academy may decide on the public release of a publication or statement provided that its content is in line with standing policies of the Academy.
- 11.2 The Board shall appoint an Editor or Editorial Committee of the Academy, preferably from amongst its members, to supervise the preparation of publications for public release on behalf of the Academy.¹⁰⁵
- 11.3 If the Editor or the Editorial Committee considers a publication ready for release, he/she/it shall submit a proposal to the Board on the manner and mechanisms of publication and dissemination.¹⁰⁶

¹⁰⁰ In most situations it may be appropriate to provide that any work for the Academy is done on a pro bono basis and not for a salary or honorarium. However, the home-organizations of an Academy Officer may be compensated for the time “lost” by that organization to the Academy. There also may be situations where the position of Academy Officer should carry a salary. Accordingly, this provision needs to be adapted to the local situation.

¹⁰¹ One (intended) result of the way this provision reads is that the Executive Director will have considerable discretion in entering into financial obligations if the Board adopts a budget with only a few very broad categories. If the Board does not wish to give so much freedom to the Executive Director, it should adopt each year a comprehensive budget for all major (categories of) activities of the Academy. An alternative would be to stipulate that the Executive Director needs approval from the Board (or the Treasurer) for every transaction or for transactions that exceed a certain amount. However, such an arrangement appears feasible only for smaller Academies.

¹⁰² No speculation with Academy funds on the stock market.

¹⁰³ With the auditors being appointed by the General Meeting. See provision 6.4.6.

¹⁰⁴ A provision on publications and statements may not be necessary for all Academies. However, in view of the impact a publication or statement may have on the reputation of an Academy, it may be wise to set out some basic principles in the statutes.

¹⁰⁵ Note that the Editor or the Editorial Committee is charged with supervising the preparation of a publication for public release and not with the task of preparing it for publication. If the Editor/Editorial Committee is recruited from among Board members, there is less need for formal reporting and consultation.

¹⁰⁶ This implies that the Board is not asked to approve the contents of the publication or statement. In essence, the approach suggested here is that any publication or statement must meet strict (methodological) quality standards, but that within an Academy there is no room for censorship.



Annex II: Model Statutes for a Medium-Size Academy of Sciences with Comments and Alternatives

11.4 The President or the Vice-President shall supervise the preparation of all Academy statements. If the President or Vice-President considers a statement ready for release, he or she submits a proposal to the Board on the manner and mechanisms of dissemination.

Article 12: Final Provisions

12.1 Amendments to these Statutes may be made by the General Meeting on the basis of a proposal from the Board. Proposed amendments shall be put to a vote only if at least two-thirds of the Members of the Academy are present at the General Meeting. Approval of a proposed amendment shall require a two-thirds majority vote, abstentions not being considered a vote.¹⁰⁷

12.2 The Academy may be dissolved at an Extraordinary General Meeting, especially convened for that purpose. A proposal to dissolve the Academy shall include arrangements to dispose of the assets of the Academy.

12.3 The proposal to dissolve the Academy shall be put to a vote only if at least two-thirds of the Members of the Academy are present at the Extraordinary General Meeting. Approval of the proposal shall require a two-thirds majority vote, abstentions not being considered a vote.¹⁰⁸

12.4 If within one hour after the scheduled opening of the Extraordinary General Meeting less than two-thirds of the Membership is present, the President shall adjourn the session. He or she shall then invite all Members to a second session that may take the decision to dissolve the Academy without a quorum requirement and by a majority vote, abstentions not being considered a vote.

¹⁰⁷ For such an important decision Board and General Meeting should be required to work together, while the decision should not only require a two-thirds majority, but also a higher quorum. This to prevent a relatively small group of Members to amend the statutes for their own purposes, in effect hijacking the Academy. By way of example: if an Academy has 200 Members, provision 6.5 sets the regular quorum of a General Meeting at 100 Members, implying that as few as 51 Members could change the statutes. With the increased quorum requirement of two-thirds, these numbers become 134 (quorum) and 90 (vote), which are better thresholds for these (potentially) crucial decisions.

¹⁰⁸ For quorum and voting requirements, see the previous footnote. However, in case of dissolution the actual number of Members participating in the decision may be quite small.

Programme of the Chisinau Conference

4 May 2007 – GLOBAL SCIENCE

08.30

Welcoming Speeches

Vladimir VORONIN, President of the Republic of Moldova
Gheorghe DUCA, President, Academy of Sciences of Moldova

Opening remarks

Engelbert RUOSS, Director, UNESCO BRESCE
Thomas ROSSWALL, Executive Director, ICSU

SESSION 1

09.30

Science for knowledge and sustainable development

Science – in the broadest sense – brings basic knowledge of nature which in turn is essential for progress and achieving the Millennium Development Goals and, more generally, to making the transition to sustainable development. Relevant international programmes and initiatives will be reviewed and discussed. Speakers from the region will examine regional and national perspectives and policies, as well as the actual and potential contributions of science in the ESEE region to sustainability.

Moderator: Rem V. PETROV, Russian Academy of Sciences

Speakers: Bedrich MOLDAN, Director, Charles University Environment Centre,
Prague, Czech Republic

Zvonimir BALETIČ, Croatian Academy of Sciences and Arts

Panel: Georgii KVESITADZE, Academy of Sciences of Georgia

Momir DJUROVIC, President, Montenegrin Academy of Sciences and Arts

Rapporteur: Valentin ORLOVICH, National Academy of Sciences of Belarus

Discussion

SESSION 2

11.30 Mitigation of natural and human-induced environmental disasters

Disaster mitigation relates not only to natural events like tsunamis and earthquakes, but also to those such as river flooding and landslides brought on by poor environmental management. Hence, a range of science and social science disciplines needs to be mobilized. ICSU and other like-minded organisations are currently developing comprehensive, interdisciplinary research programmes related to disaster mitigation. These programmes will be described, followed by presentations on challenges and opportunities in the ESEE region.

Moderator: Tarik CELIK, Vice-President, Turkish Academy of Sciences

Speakers: Stephen SPARKS, Fellow of the Royal Society, University of Bristol, United Kingdom

Mihai TATU, Institute of Geodynamics ‘Sabba S. Stefanescu’, Romanian Academy

Panel: Momir POLENKOVIC, Vice-President, Macedonian Academy of Sciences and Arts

Rem V. PETROV, Russian Academy of Sciences

Rapporteur: Nikola HAJDIN, President, Serbian Academy of Sciences and Arts

Discussion



SESSION 3

14.30 Science education

Human capacities are perhaps the single most important aspect of S&T capacity building efforts. Science education at all levels is therefore a crucial element of developing the S&T capacities of a country or a region. There are many global, regional and national initiatives to enhance the quality of higher education in science. This session will focus on these initiatives, as well as on the projects and initiatives that are being carried out within the ESEE region.

Moderator: Zdravko STOYNOV, Bulgarian Academy of Sciences

Speakers: Ivo SLAUS, President, South East European Division of the World Academy of Art and Science

Panel: Eduard SULSTAROVA, Academy of Sciences of Albania

Ion TIGHINEANU, Vice-President, Academy of Sciences of Moldova

Rapporteur: Florin FILIP, Romanian Academy

Discussion

SESSION 4

16.30 Gender issues in science

Recent reports of UNESCO and the InterAcademy Council examine the causes of the under-representation of women in science, as well as its effects on science and society. Both reports also set forth an action agenda, with the IAC report especially focusing on the role of Academies. These reports will be presented with a view to their relevance to the ESEE region. Speakers from that region will explore possible action agendas.

Moderator: Ionel HAIDUC, President, Romanian Academy

Speakers: Ayse ERZAN, Istanbul Technical University, Turkey

Eduardo MARTINEZ, UNESCO

Panel: Marko ANDJELKOVIC, Academy of Sciences and Arts of Serbia

Alexei ONISCHENKO, National Academy of Sciences of Ukraine

Ingrid KISSLING-NAF, Swiss Academy of Sciences

Rapporteur: Radik MARTIROSYAN, President, Armenian National Academy of Sciences

Discussion



5 May 2007 – NATIONAL POLICIES

SESSION 5

09.00 **Science and national development**

Science is not only essential in addressing issues of global concern: it is equally vital for national development, as much in the ESEE countries as elsewhere. Without science there can be no innovation, and without innovation no economic growth and a better quality of life. Countries and regions have followed different strategies in order to harness science for national development. These strategies will be reviewed and regional and national policies will be presented and discussed.

Moderator: Salvator BUSHATI, Albanian Academy of Sciences

Speakers: Denis MONARD, President, Swiss Academy of Sciences

Gheorghe DUCA, President, Academy of Sciences of Moldova

Panel: Slobodan LOGA, Academy of Sciences and Arts of Bosnia and Herzegovina

Rexhep ISMAJLI, President, Kosovo Academy of Sciences and Arts

Rapporteur: Zvonimir BALETIČ, Croatian Academy of Sciences and Arts

Discussion

SESSION 6

11.00 **Role of Academies in the ESEE countries**

Academies are important actors in relation to each of the above issues, actually or potentially. They can help shape international, regional and national research agendas, and are important drivers in implementing these agendas. What roles have proven to be effective? What do the ESEE Academies require if they are to enhance their role in national policy making? And how can these Academies strengthen their ties to, and be active players in, the international science community?

Moderator: Momir DJUROVIC, President, Montenegro Academy of Sciences and Arts

Speakers: Nicholas MANN, Vice-President of ALLEA

Atanas ATANASSOV, Academy of Sciences of Bulgaria

Panel: Rajko KUZMANOVIC, President, Academy of Sciences of Srpska Republic (Bosnia and Herzegovina)

Rapporteur: Zdravko STOYNOV, Bulgarian Academy of Sciences

Discussion



SESSION 7

14.00 Conclusions and recommendations

Moderators: Engelbert RUOSS, Director UNESCO BRESCE

Thomas ROSSWALL, Executive Director, ICSU

Speakers: Rapporteurs of Sessions 1-6

Valentin ORLOVICH, National Academy of Sciences of Belarus

Nikola HAJDIN, President, Serbian Academy of Sciences

Florin FILIP, Romanian Academy

Radik MARTIROSYAN, President, Armenian National Academy of Sciences

Zvonimir BALETIČ, Croatian Academy of Sciences and Arts

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Closing ceremony

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Academies of Sciences and the Transition to Knowledge Societies

*Challenges and Perspectives for the
Academies of Eastern and South-Eastern Europe*

As a follow-up to the World Conference on Science (Budapest, 1999), UNESCO and ICSU decided to take action in order to make a reflection on the role of the Academies of Sciences of Eastern and South-Eastern European countries in the production of global science as well as in their respective national science and research systems.

This Report contains a summary of the discussions held during the Conference 'Global Science and National Policies: the Role of Academies', held on 4-5 May 2007 in Chisinau, Republic of Moldova. It includes series of proposals for possible roles that the Academies from the this part of the world can assume in order to successfully respond to the challenges of the transition towards knowledge societies.



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