

# American Meteorological Society

## Strategic Goals—2007

[Adopted by AMS Council on 12 January 2007.]

### **AMS Mission**

*To advance the atmospheric and related sciences, technologies, applications, and services for the benefit of society.*

## Chapter I. The AMS Community in Transition

History may well view the period around this millennium as the era when atmospheric and related sciences<sup>1</sup>, technologies, and services came of age. Those looking back will observe that at or around the present day, a number of new technologies and platforms made it possible to observe and forecast the atmosphere and the other four components of the Earth's system—the biosphere, the hydrosphere, the cryosphere, and the solid portion of the Earth's surface—with global coverage and in unprecedented detail. Scholars will likely note that the simultaneous advance of information technology and high-performance computing made it possible to acquire and digest data, understand how the Earth system operates and changes, draw useful inferences about its condition and future, and communicate this knowledge both to specialized users and the general public. Future historians will judge whether or not our society was able to harness these rapid advances in science and technology for the benefit of humanity and other life on the planet.

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<sup>1</sup> We intend for the phrase “related sciences” to be interpreted broadly and to include not just the physical sciences covering the components of the Earth system, such as oceanography and hydrology, but also the disciplines that further the technology and applications based on or supporting those sciences, as well as economics and other social sciences, and other disciplines that support policy, applications, and services related to the Earth system.

Against this backdrop, how will those historians view the American Meteorological Society (AMS)? Will they see us as a leading agent of this change? A catalytic force helping our community to aid society in realizing these goals? Will we be as relevant to this future world as we are to the world today?

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We can and should address these challenges and seize the extraordinary opportunity before us. It is in the awareness of these high stakes that the AMS is taking this moment to develop new strategic goals. We can no longer assume that the Society will be allowed the luxury to slowly and reversibly evolve. Instead, the AMS must act to enhance our responsiveness and expand our relevance to our members and society. The AMS must be *nimble* (AMS must be able to respond quickly), *perceptive* (AMS must also be able to identify the most effective courses toward that change), *adaptable* (AMS must anticipate and respond to new realities), and *beneficial* (we must offer services that are valuable to our members and the public our members serve).

### **How we got here**

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From its very beginning in 1919, the AMS has had a broad membership, due in part to the breadth of meteorology as a science and

to the range and importance of its practical applications. This dual role—research and applications—was clearly stated in the objectives of our initial Constitution: “The objects of this Society are: The advancement and diffusion of knowledge of meteorology, including climatology, and the development of its application to public health, agriculture, engineering, transportation by land and inland waterways, navigation of the air and oceans, and other forms of industry and commerce.”<sup>2</sup>



Since 1919, our activities have developed in response to new realities. Our field has made enormous progress. For example, meteorology has evolved from a largely qualitative science to one with a firm theoretical foundation that draws heavily on, and contributes to, the fields of fluid dynamics, physics, chemistry, and ecology. We also know that the atmosphere can be understood and predicted only as an element of the Earth system—one that interacts with the other elements in complex ways. We are also witnessing a transition in which weather and climate are increasingly viewed together, with a need for observational and modeling systems that are designed to support both. While climate has often been defined as the average of weather, in fact, it is the accu-

mulated and integrated effect of weather and other dynamical and physical mechanisms that are closely related to weather.

New technologies, including sophisticated remote sensing and in situ instruments and the advent of satellites, computers, and information systems, have helped drive this progress. Advances in the science and observational systems have produced new information and new applications, greatly enhancing our warning capabilities for catastrophic weather events as well as monitoring long-term regional and global climate trends.

The role of products and services has also changed. Both government and the private sector can now make reliable forecasts on multiple time and spatial scales, and provide a variety of science-based products and services in response to a growing demand for timely and accurate environmental information.

The role of the Society in the general areas of formal and informal education has also changed over time. In a society where science and technology play an increasingly important role, it is essential to have a scientifically literate population. The AMS is investing substantial resources in working with educators in elementary and secondary schools and universities to develop curricula and to teach our science and through public outreach to explain the benefits that our science and its applications make available to the many potential users of our services. The educational role of the Society assumes special importance because the atmospheric and related sciences serve as a gateway to introduce both young people and adults to broad scientific issues.

Finally, Americans are today coping with a broad array of emerging twenty-first century challenges. These include increasing societal sensitivity to disruptive weather events and environmental impacts upon public health and safety, economic growth, national security, sustainability, and air and water quality that intersect our field. Future climate change, while unknown in detail, will almost certainly have a profound effect on society. Some social scientists and economists suggest, for example, that within 20 years water will replace petroleum as a main cause of strategic tension. More broadly, the environment is one of the fundamental elements that influence economies in both developing and developed nations.

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<sup>2</sup> From the perspective of 2006, this 1919 statement seems extraordinarily prescient. Today we might wish to tweak the language (e.g., by explicitly separating out and highlighting the energy sector) but any such changes would be merely editorial.

With respect to these issues, science is not enough. Policy decisions on technology investments and environmental regulations have a profound economic impact. Our success will depend on our ability to make progress in our science and to provide policy makers with reliable and convincing information about it. Informing policy decisions is both an opportunity and a challenge for the AMS. The opportunity is to attract new members to our Society who will strengthen the connection between public policy and our science and products. The challenge is to achieve the needed policy ends without sensationalizing or politicizing the impact of the research findings, that is, to play the role of honest brokers in providing policy-relevant information.

### Who we are

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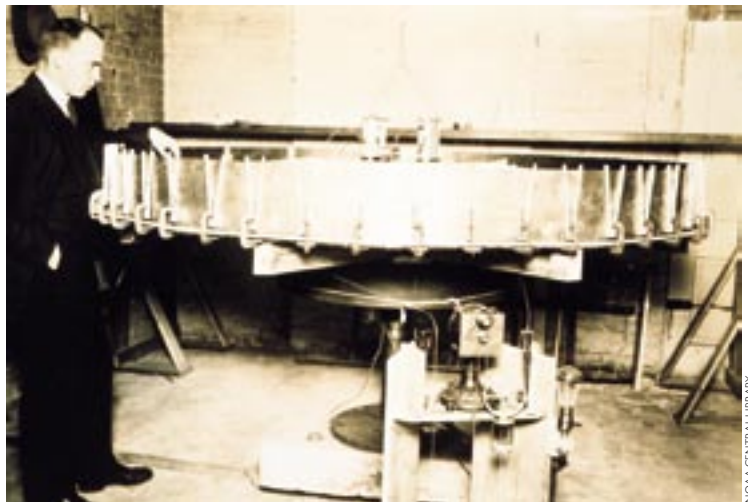
As our science and its applications have evolved, the membership of the Society has broadened. To the historic core of operational and research meteorologists and climatologists who established our Society in the early years, we have added scientists exploring the full spectrum of Earth system science and people working at the interface between our science and its impact on social, economic, and policy issues. The Society includes a significant international component in its membership as well.

The products and services provided by our community have increased and have the potential of further augmenting the membership and expanding the role of the Society. The Society now strives to serve the entire weather and climate enterprise, which encompasses the providers, typically grouped into three sectors—government, private, and academic—and the users who include a broad range of weather sensitive economic sectors such as energy, agriculture, transportation, as well as private individuals. Educators at all levels are key members of the Society. The AMS is also playing an important role in attracting under-represented groups to the field. This too is an important function because each sector of the Society will increasingly depend on our ability to attract a diverse membership.

Thus the AMS membership embraces all people and institutions engaged in 1) advanc-

ing, through research and communication, the basic and applied science and the technology served by the Society; 2) developing, distributing, and using products and services based on that science and technology; 3) addressing societal impacts of weather and climate and ensuring that policy is based on the best available scientific knowledge, and 4) all those organizations and individuals supporting the AMS vision, mission, and goals through teaching, studying, and other means.

By enlarging its membership and by providing a variety of services and benefits to its members the AMS furthers its relevance and its service to society as a whole.



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### Moving forward

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The key challenge for the AMS is how to remain relevant to the community it serves and society at large in the face of accelerating change in both the Earth system and in society itself. As a result, the task before us is that of supporting science and services on the one hand and capturing the benefits of that science and those services on the other. This task is becoming more complex and demanding while the urgency continues to increase.<sup>3</sup> The result is that the work is necessarily growing more politicized and contentious, even

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<sup>3</sup> The growing urgency in dealing with a rapidly changing world is amply documented in books such as *High Noon: Twenty Global Problems, Twenty Years to Solve Them* by J. F. Rischard (Basic Books, 2002).

as the stakes grow and the outcomes become more uncertain.

The future is always about change. The AMS has successfully adapted to change in the past and will continue to do so. The nature of journals is changing in response to new technologies and methods for publishing, the growing difficulties and expense in conducting scientific peer review and editing, and new threats to long-established business

models for publications. The nature and role of face-to-face meetings is also changing in response to the rise of electronic alternatives, as is the need for including policy and commercial dimensions to what were formerly purely scientific and technical exchanges.

With the above perspective, and toward the above ends, we articulate the goals and strategies that follow, and include a brief discussion of implementation.

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## Goals

- 1) To advance scientific and technological knowledge and foster applications through first-class publications and meetings
  - 2) To accelerate the development and utility of applications, products, and services
  - 3) To promote science-based decision making
  - 4) To create a more scientifically literate population
  - 5) To attract highly talented and committed people into the professions served by the AMS
  - 6) To develop greater synergies among all sectors of the enterprise
  - 7) To support national and international programs including those of socioeconomic value
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## Chapter II. Elucidation of Goals

### **Goal 1: To advance scientific and technological knowledge and foster applications through first-class publications and meetings**

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Advancing weather and climate science and technology has always been one of the core AMS goals and has been achieved primarily, but not exclusively, through our publications and meetings. The function and nature of journals and meetings are evolving in response to advances in information technology and societal change. In the past, meetings have primarily emphasized scientist-to-scientist communication. Increasingly, however, these traditional meetings have been augmented by special sessions and symposia focusing on policy, on advances in education strategies, on users and their needs, on the mutually dependent roles of the public and private sectors in provision of services, on international issues involving national meteorological and

hydrological services worldwide, and so on. Thus, today, AMS annual meetings and specialty meetings have become important and valued opportunities for our community to collaborate and conduct a wide range of business. Similarly, complementary vehicles for accomplishing these ends are emerging (e.g., teleconferences, virtual workshops, satellite and cable programming, webcasts) and AMS journals now must compete with and adapt to a variety of online publications and reporting formats, including Weblogs or “blogs.”

The AMS thus faces a key challenge: adapting tools for and approaches to communication among those in our community in ways that expand, not simply maintain, our relevance to scientists, technologists, service providers, and users of those same sciences, technologies, and services. The AMS journals must maintain the highest scientific quality publications through rigorous peer review and must ensure that technology is used in

ways that provide the best dissemination of the scientific content. While the revolutionary transformation that saw journal content move from the printed page to online is mostly complete, there remain many questions on the role for print in the future and on the most appropriate business models for the journals that can provide stable funding while ensuring that scientific results can be published and made widely available.

Despite the connectivity and nearly instant communication available to the scientific community, the efficacy of face-to-face exchanges remains powerful. The organizational and logistical components of meetings must be optimized to make the exchanges occurring at meetings as effective as possible, using technology where appropriate. In particular, we should greatly further exploit the technology options that allow for disseminating content presented at meetings in ways that provide remote access to those who cannot attend physically.

### **Goal 2: To accelerate the development and utility of applications, products, and services**

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As science, technologies, and applications develop, user needs become more complex. Translating science and technology advances into applications, products, and services that lead to broad societal benefit grows more difficult even as it becomes more urgent. Interactions among the scientific, technological, and the user community are critical to ensure that the products and services meet the users' needs. The AMS must facilitate this dialogue and must continue to integrate users into the AMS community.

As the knowledge base for atmospheric science grows, it is important for the applications of that knowledge to be in lockstep. Through AMS statements, publications, workshops, and other means, the Society will strengthen its role in establishing and promoting "best practice" guidelines for those in the profession who provide products and services to the user community. Such guidelines help connect the research and applications communities. To achieve this goal, the AMS will have to build the rigor and reach of its Certified Consulting Meteorologist (CCM) and Certified Broadcast Meteorologist (CBM) programs.

It is important to ensure that those being trained as professionals have access to the latest findings and that the curricula used for them is consistent with those findings. The science and applications will progress only if a diverse mix of talented individuals is being entrained into the science and those being trained to pursue it are receiving the best possible education.

### **Goal 3: To promote science-based decision making**

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Approximately one-third of the U.S. economy is *directly* weather or climate dependent.<sup>4</sup> Indeed, virtually all sectors are vulnerable to natural hazards such as floods, drought, or severe storms. Recent research has further shown that climate and weather variability can produce year-to-year swings in our economy of plus or minus \$100 billion; weather forecasts can influence some fraction of this total. The growing understanding of the Earth system is allowing a broader and more important role for the AMS community to support better decisions across a broad range of government, private, and individual activities. The Society can and must carry out advocacy in support of programs, technologies, policies, and research initiatives and in support of education about the science, technology, and products coming from the AMS community, their economic benefits to society, their impact on reducing risk to life and property, on homeland security, and, generally, on ad-



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<sup>4</sup> National Research Council, 2003: *Satellite Observations of the Earth's Environment: Accelerating the Transition of Research to Operations*. National Academy Press, 163 pp.

vancing the quality of life of our society. The Society must also help the community educate decision makers on what can and cannot be accomplished given the current state of the science and the technology. The AMS is committed to enhancing its role in these forms of advocacy and education. This is a form of advocacy that is within the constraints of the Society's nonprofit status, does not jeopardize its ability to represent all aspects of the



community, and does not impede service by government employees within its governance. In advocating this role for the profession, the AMS will work with our community to foster useful interaction between the research and operational communities and then promote best practices

coming from that interaction, as discussed under Goal 2.

This goal is not just limited to economic decision making. It has become increasingly clear that the governing framework of policies at international, national, state, and local levels influence the effective use of results from our community. Achieving this goal therefore depends not only on supporting those within the community, but also on carrying out policy analysis and participating effectively in policy formulation at all levels.

The AMS has established itself as a reliable source of unbiased scientific information on broad environmental issues through its publications and statements, as well as the studies, forums, and seminars organized under the AMS Policy Program. In realizing its potential as an agent for change, the AMS must help the broader community build its capacity with respect to engaging effectively in the policy process. This includes developing policy skills and experience among the leaders in our field, equipping universities to add a societal impacts and policy dimension to their science curricula, fostering collaborations among policy makers, scientists, private enterprise, and the media to harness our community's advances in science and technology, and sharing progress with the broader public.

#### **Goal 4: To create a more scientifically literate population**

For a number of years, the AMS has worked to improve basic scientific literacy by using the atmosphere, oceans, and water cycle to engage students from grade school through college with pedagogically sound materials. Because of its applied nature, our science readily lends itself to familiar everyday illustrations. By taking advantage of students' natural curiosity about the environment, broad scientific concepts can be taught effectively. It is critical that this long-term effort of creating a more scientifically literate population be continued in order for it to have a growing impact. These efforts contribute significantly toward drawing young people, especially women and minorities, into the sciences in general, and into the sciences served by the AMS in particular.

Furthermore, a more scientifically literate population is required to make wise decisions regarding some of the most pressing environmental issues facing society. Policy decisions on an array of such issues can and should be guided and informed by science, and the Society must represent a respected source for that science.

Increased education and outreach to the general public and continuous dialog with the public will also allow science-based decision making at the level of individuals, who can use the products and services from our community to make choices that increase their safety and improve their well-being. Broadcast meteorologists play a very important role in this education and outreach as the one component of the Society that directly reaches vast segments of the population on a routine basis. The AMS has a responsibility to provide guidance and assistance, through its certification programs and other initiatives, to those who present science to the public to ensure that those presentations are consistent with the current state of understanding and known limitations of science.

#### **Goal 5: To attract highly talented and committed people into the professions served by the AMS**

The health of the professions served by the Society depends on our ability to attract

highly talented and committed people to our field, a challenge brought about by changes in the U.S. demographics and affecting all areas of science, technology, and education. The AMS is committed to increasing its efforts in educating and recruiting young scientists and engineers, especially from the traditionally underrepresented groups of women and minorities. The Society is also committed to ensuring that the educational system equips those entering the field for the challenges they will face by supporting efforts to develop meaningful curriculum options. These efforts will require an increase in the activities described in Goal 4, an increase in the number of AMS fellowships, and closer interactions with other professional societies, government laboratories, the University Corporation for Atmospheric Research (UCAR) and universities, and the private sector. This will also require additional development efforts to secure the funds necessary to obtain this goal.

#### **Goal 6: To develop greater synergies among all sectors of the enterprise**

The potential benefits of atmospheric and related sciences, technologies, and services will only be achieved if the broad community works constructively to reach them. The sort of collaborative interactions that are needed will be enhanced by communication, understanding, and partnering among the parties. The Society is the natural candidate to take on the role of facilitator to promote constructive dialog among the academic, private, and governmental sectors, as well as fruitful interaction with the user community. Creating an environment of cooperation and collaboration among the sectors across the enterprise will lead to a whole that is greater than the sum of its parts.

The AMS has increased its efforts to help build effective partnerships among the sectors and groups within sectors through greater communication and effective interactions with the user communities. This has become a critical activity for the community, not just to make the enterprise operate more effectively, but also so that all of its resources can be brought to bear on a variety of urgent environmental issues facing society.



#### **Goal 7: To support national and international programs including those of socioeconomic value**

The AMS has traditionally supported science and applications through means such as refereed journals, scientific meetings, scientific statements, educational activities and scholarships, definition of best practices and professional standards, certification programs, continuing professional development, and dialogue among the academic, government, and private sector. More recently the AMS, through the Policy Program, has developed a number of important programs to foster the dialogue among policy makers, scientists, private enterprise, and the media. In 2005, the AMS established the Weather and Climate Enterprise Commission to bring together the provider and user communities to deal with short- and long-term issues in the weather and climate enterprise. The goals of the Society clearly reflect a strong commitment in continuing and extending these activities.

To these historic roles, the AMS must also add a new one: fostering the formulation and execution of major national and international programs. To cope with increasing challenges related to the understanding of Earth as a system and applying this understanding for societal benefit, a number of programs have been proposed or are under development. Some of these programs are national, such as the U.S. Weather Research Program; some are international and involve many nations, such as the Global Climate Observing System (GCOS); the International Geosphere–Biosphere Program (IGBP); the World Climate Research Program (WCRP), which includes the major subprojects of GEWEX, CLIVAR, SPARC, and CLiC, addressing water and energy cycles, coupled ocean atmosphere land modeling, stratosphere, and polar issues;



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THORPEX; and the Global Earth Observation System of Systems (GEOSS).

These programs aim at producing major socioeconomic benefits in such areas as weather forecasting and warning, mitigation and adaptation strategies responding to climate variability and change, water resource management, flood forecasts, crop yield forecasts, management of terrestrial,

coastal, and marine ecosystems, conserving biodiversity, air quality forecasts, and epidemics forecasts. Attainment of these objectives depends on a very broad agenda of research and development and applications at the interfaces between many scientific disciplines—meteorology, climatology, hydrology, oceanography, public health, water resources, weather-energy dependencies, di-

saster management, ecosystems, agriculture, and biodiversity. The private sector will have major opportunities as well, since many of the adopted strategies will depend on the status of technology and available products and the economic viability of the proposed solutions.

The AMS is well positioned to support these programs by fostering the cross-disciplinary scientific and technical meetings and workshops needed to advance their goals and organizing forums in which policy aspects of these programs are discussed and communicated to the public and policy makers. The AMS can be effective in performing this role because it has the reputation of providing information to the public and policy makers in a neutral manner.

The AMS should face this challenge for service to science and society. Working toward this goal offers other opportunities as well. It will increase the interaction between researchers and business people within the AMS, and will foster communication with other professional societies in the United States and abroad. This is important since our science and its impact are interdisciplinary and global in nature.

## Chapter III: Implementation

### Process for implementation

The Society carries out its mission and achieves its goals primarily through the efforts of volunteers. Most of these efforts are coordinated through six commissions under the oversight of the AMS Council:

- The Scientific and Technical Activities Commission (STAC)
- The Publications Commission
- The Commission on Professional Affairs
- The Commission on Education and Human Resources
- The Commission on the Weather and Climate Enterprise
- The Planning Commission

While the bulk of the Society's activities are carried out through the many boards and committees of the commissions, there

are also AMS activities coordinated through a combination of staff and volunteer effort in areas such as policy, education, and outreach. In addition, there are many local chapters of the AMS that carry out activities supporting the goals of the Society.

The implementation of these strategic goals therefore falls primarily on the hundreds of volunteers who serve the Society. It is the responsibility of each component of the Society's structure to identify ways that it can contribute to achieving the goals laid out here. This will require the commissions to carry out their own strategic planning processes to determine if substantive changes are needed in order to fully engage the volunteers within each commission toward the implementation of these goals. Coordination among the commissions is also necessary, not only to avoid duplication of effort, but also because many of the initiatives of the Society—and, indeed, many of the goals



presented here—cut across commissions and may include components of the Society outside the current commission structure.

With the adoption of these goals, the AMS Council charges the commissions and all programs within the Society to review their role in light of these goals and to find effective ways to support their implementation. All programs will report to the Council on their efforts to work toward achieving the goals outlined here and will make recommendations to the Council for any changes in organization or terms of reference for commissions, boards, or committees that may allow the Society to better fulfill its mission.

### **Resources for implementation**

Some of the goals presented here can be achieved through evolutionary changes in existing programs of the Society. In those cases, the resources required for those efforts are expected to come from the existing revenue sources for those programs, with an acknowledgment that the business models of some programs may need to evolve over time as well. In other cases, the goals outlined here represent expansions of AMS activities that require new resources.

New responsibilities carry with them substantial additional resource requirements. The AMS will be unable to develop this strong financial foundation through traditional means: publications and meetings charges. For the AMS to be as relevant to our community and the society we serve 15 years from now as we are today, the AMS must substantially, not merely incrementally, augment its resource base.

The challenge is not merely one of *level of finances*. Stability is also a concern. Many of our programs, such as the education initiatives, scholarships, and the Policy Program, depend on financial support from government organizations and the private sector. This support is necessarily year-to-year, and correspondingly uncertain, highly dependent upon economic conditions, the state of the federal budget, and other factors. Moreover, traditional funding sources, such as publications and meetings, are experiencing transformation. Once-stable business models are today less so.

At the same time, AMS activities and programs are vital to the world's future. The AMS

has a strong brand—a reputation for vitality, integrity, and credibility hard-won for nearly a century. For this reason, the AMS and its programs should look very attractive to foundations and donors seeking to leave a legacy in the environment and education. Accordingly, in the coming months and years, the AMS will reach out to these foundations and potential donors. Additionally, the AMS will form new alliances with the private sector, reaching out beyond the usual circle of weather technology and service providers, to the users of such science and services, in sectors such as insurance and finance, agriculture, energy, and transportation and to a growing number of companies that are beginning to recognize that business opportunities exist in dealing with weather and climate change and its associated development of new technologies and products.

Because potential donors as a rule base their decisions in large part on metrics such as the participation and extent of giving by the membership, the AMS will initiate a new dialogue among our members about the reasons for giving and the purposes to which such resources should be used.

### **Continuing review and planning**

In a very real sense, the adoption of these strategic goals does not represent the culmination of a planning process for the Society, but the beginning of one. These overarching goals provide the framework to guide the evolution of the Society toward the vision of a more responsive and more relevant organization that serves our community and all of society to its full potential. That will require an ongoing process of strategic review and strategic decision making at all levels of the Society and through all of its components in the coming years.

