



June 1, 2005

## Sustainable governance and management of linked ecological and social systems

**Mistra invites Swedish universities to establish an interdisciplinary research centre**

### Invitation for pre-proposals

Mistra invites Swedish universities to submit pre-proposals for a large-scale, interdisciplinary and internationally competitive academic research centre addressing *sustainable governance and management of linked ecological and social systems*. The centre shall be located at one geographical place and be organized by a Swedish university or by a local consortium of universities. The centre should have its own budget and a board with international participation.

Mistra's *vision* is to make a difference for sustainable development by building a world leading research centre that will take the interdisciplinary research on linked ecological and social systems significant steps forward. Ultimate deliverables are new and elaborated insights and means for the development of management and governance practices in order to secure ecosystem services.

To fulfil the vision, opportunities for developing new and common experiences, concepts, languages and methodologies between natural and social sciences shall be provided. The centre must be large enough and be funded for a sufficiently long period of time so that a critical mass for in-depth and qualified interdisciplinary interaction and progress can take place. The centre shall build strong links with similar scientific forefront milieus globally.

The centre should start in January 2007. The level of Mistra funding for a first two-year implementation phase could be up to SEK 15 million and funding of following five-year phases could be up to SEK 100 million. The host university is expected to add funds.

**Applications for planning grants, with pre-proposals attached, must be received by Mistra by September 15, 2005.**

## 1. The rationale of the initiative

The rationale for the initiative could be stated in one sentence:

*The institutional capacities to manage the earth's ecosystems are evolving more slowly than man's overuse of the same systems.*

This follows from the message coming out of the Millennium Ecosystem Assessment: the scale of present human activities is so extensive that the capacity of the planet's ecosystems to sustain also future generations can no longer be taken for granted. The increasing demands for food, fresh water, energy, and materials to a human population aspiring to higher standards of living come with an equally rapidly growing impact on the complex systems of plants, animals, organisms and chemical and biological processes that taken together make the planet habitable. With continuing economic development, the potential pressures on the earth's ecosystems will inevitably increase as well. The effects of climate change will further add to the precarious situation.

Reversing present trends and protecting the potential well-being of future generations will require wiser and less destructive use of the earth's natural systems. This, in turn, will require major changes of today's governance of natural systems.

The key messages from the recently published Millennium Ecosystem Assessment ([www.MAweb.org](http://www.MAweb.org)) are:

- Everyone in the world depends on nature and ecosystem services to provide the conditions for a decent, healthy and secure life.
- Humans have made unprecedented changes to ecosystems in recent decades to meet growing demands for food, fresh water, fibre and energy.
- These changes have helped to improve the lives of billions, but at the same time they weakened nature's ability to deliver other key services such as purification of air and water, protection from disasters and the provision of medicines.
- Among the outstanding problems identified by this assessment are: the dire state of many of the world's fish stocks; the intense vulnerability of the 2 billion people living in dry regions to the loss of ecosystem services, including water supply; and the growing threat to ecosystems from climate change and nutrient pollution.
- Human activities have taken the planet to the edge of a massive wave of species extinctions, further threatening our own well-being.
- The loss of services derived from ecosystems is a significant barrier to the achievement of the Millennium Development Goals to reduce poverty, hunger, and disease.
- The pressures on ecosystems will increase globally in coming decades, unless human attitudes and actions change.
- Measures to conserve natural resources are more likely to succeed if local communities are given ownership of them, share the benefits and are involved in decisions.
- Even today's technology and knowledge can reduce considerably the human impact on ecosystems. They are unlikely to be deployed fully, however, until ecosystem services cease to be perceived as free and limitless, and their full value is taken into account.
- Better protection of natural assets will require co-ordinated efforts across all sections of governments, businesses, and international institutions. The productivity of ecosystems depends on policy choices on investment, trade, subsidy, taxation, and regulation, among other.

Mistra has to date invested about SEK 1.9 billion in some thirty research programmes aimed at solving major environmental problems. The endeavours of these programmes are to develop new products and services for an environmental market, or provide scientific data for international environmental negotiations, or provide new knowledge for sustainable management of ecosystems and renewable natural resources. The last category includes programmes on management of drainage basins, coastal zones, mountainous areas, semi-natural grasslands, sustainable forestry, etc. All together more than SEK 600 million has been invested in programmes aimed at ecosystem management. Several of these programmes involve both social and natural sciences.

Mistra continues to give a high priority to the management of ecosystems and renewable natural resources. However, Mistra's experiences are that the interrelationships between the ecological and social systems are still poorly understood. Institutions, corporations, organizations and individuals engaged in managing ecosystems consequently lack sufficiently adequate scientific concepts and methodologies that can be turned into practical use.

Mistra now intends to contribute to this rapidly developing field of interdisciplinary research. This is a strategic investment for Mistra, also aimed at laying the ground for further research initiatives in the area of sustainable ecosystem management.

## **2. The strategic research agenda for the Mistra initiative**

Man's influence on ecosystems on different scales of geography is so pervasive and so far-reaching that utterly new scientific approaches have to be developed to provide new insights and tools for securing ecosystem functions. Avoiding gradual deterioration or disruptive changes to important ecosystems, which at the worst may be irreversible, will require better incentives for sustainable management and conscious efforts to redesign heavily disturbed natural systems. This will in turn require creation of robust institutions for governance and management.

The policy problem, at the heart of Mistra's invitation for pre-proposals, is about the nature of the links between ecosystems and social systems. The Millennium Ecosystem Assessment demonstrates that the present rate of change of many ecosystems is without precedence and that an increasing set of ecosystem functions, on which man's well-being depends, continues to deteriorate. Much still remains to be understood in terms of natural and engineering sciences. At the same time, our understanding of those elements in the social systems, that are the most critical for successfully managing the continued functions of the ecosystems is, perhaps, even more limited. Thus, man's ability to consciously influence the future evolution of ecosystems and their functions is constrained not only by the lack of natural science knowledge but even more by the lack of understanding of those elements of social systems that are the most critical. Sustainable management requires elaborated conclusions based on in-depth insights of both natural and social systems.

The pressures for ecosystems to continue to provide goods for human consumption (food, fibre, fresh water, genetic resources and so forth) will continue to increase over the years and decades to come. All management of ecosystems should be evaluated against on the one hand the capacity to continue to provide these goods and on the other hand the capacity to maintain the

regulatory functions that is essential for maintaining these ecosystems. Examples of such functions are climate stability, fresh water availability, pollination by insects, et cetera. Also cultural, ethical and spiritual values of ecosystems should be regarded.

It is of particular importance to develop the concept of ecosystem services. Natural and social sciences must together provide more qualified understanding of how man benefit from functions, products, structures, interactions and other features that are coupled to ecosystems in different geographical settings. Better understanding is needed on functions of ecosystems that can be transformed into services that can be marketed and thus generate streams of income and investment for upholding the regenerative characteristics of the ecosystems. At the same time, it is also important to understand where the limits of these market-based policy options lie and where other non-market based policies have to take over and be developed. What are the options of governance of those functions that cannot be turned into marketable services?

The centre must provide opportunity for in depth interaction between natural and social sciences so that new and common experiences, concepts, languages and methodologies can be developed and contribute to the international research frontier.

The centre should be open for several different scientific approaches, and the research should result in general knowledge applicable to various social and ecological contexts in different parts of the world.

### **3. Centre design and application details**

Mistra invites Swedish universities to submit pre-proposals for organizational concepts and indications of scientific capacity for large-scale, interdisciplinary and internationally competitive academic research centres addressing sustainable governance and management of linked ecological and social systems.

This is an invitation for a long-term joint commitment between Mistra and a Swedish university. Thus, Mistra accepts pre-proposals only from the vice-chancellors of the universities. Mistra is of the view that the scale of the commitment necessary is beyond the scope of individual scientists or research groups. Important general criteria for selection are:

- That the applicant shares Mistra's vision for the centre
- Relevant organization including prospects for a long-term commitment and co-funding
- Adequate leadership and recruitment of staff combining interdisciplinary and entrepreneurial visions with academic excellence
- Visions for a research agenda that will make a difference
- Prospects for strong and broad natural and social science platforms to create critical mass for interdisciplinary progress
- Attractiveness as partner in international research collaborations

### **3.1 Organization**

There are several options for the organizational context of the centre and Mistra is not excluding any option in advance. However, to endorse the academic career of the centre's scientists, Mistra advocates the idea that the centre should be integrated in the normal academic context of the university and that the engaged scientists may be affiliated with relevant university departments as well as with the centre.

In order to create the best possible conditions for interactions between different academic disciplines, the centre shall be located at one place. Prospects of a common and attractive venue will be looked upon positively. Organizationally, the centre could be associated with one university, perhaps with a consortium of scientists affiliated to different universities in the same region. A local consortium of two or more universities could also be possible.

The following organizational parameters are important:

- The centre has to have the full support from the leadership of the university as well as from the relevant faculties (if this is the chosen context).
- The centre shall have its own budget and a board with international participation (Mistra and co-funding organizations may be represented in the board).
- There shall eventually be a mix of gender and age of the involved scientists
- A pioneering plan for attractive, academic career opportunities for researchers involved in interdisciplinary research should be developed.
- The relations between different parts (e.g. the university administration, the faculties, the centre's board, its director and the involved scientists) have to be transparent and contractually regulated once the centre has started.

### **3.2 Leadership and recruitment of researchers**

Plans for the gradual build up of staff should be presented. The leadership of the centre is of paramount importance. Mistra believes that the centre could start with one (or a few) hand-picked, academically excellent and internationally well-respected scientist(s) with interdisciplinary and entrepreneurial visions. Recruitment from abroad or from other universities should be considered.

In the further recruitment of scientists, it is important to allow time to find the right academic competence and individuals to be part of the centre, creating the centre's core values and principals, and to gradually develop the research agenda. One should consider starting on a small scale and recruiting carefully from all over the world to build a group of individuals with extraordinary skills who can work together. Personalities matters.

### **3.3 Research capacity and agenda**

For the pre-proposals, the core values and principals for the development of the forthcoming research agendas have to be defined explicitly.

A successful applicant must show a plan for building sufficiently strong and broad social science as well as natural science research platforms, without preponderance of either. The social sciences could also include economics, law as well as the humanities. The natural sciences could include technological sciences as well.

Joint research efforts and intellectual exchange with leading international scientists and centres should be routine.

The centre shall have a strategy for the academic careers of the researchers involved. Future academic career opportunities shall be eminent for scientists involved in the interdisciplinary research centre, also at single-disciplinary milieus. A strategy should include securing in depth disciplinary and methodological knowledge and confidence, especially for PhD-students.

### **3.4 Funding**

To accomplish critical mass for in-depth interdisciplinary interaction and advancement will require competence from a range of disciplines within both social and natural sciences. A successful applicant must show a plan for sufficient funding of the centre. Eventually, when the centre is running at full scale, Mistra is willing to contribute up to SEK 20 millions per year. The host university is expected to contribute with co-funding so that critical mass will be accomplished. Other funding bodies may also participate. The funding from Mistra will be divided into five-year phases, with reviews proving excellent progress as conditions for further funding.

The first phase will be an implementation phase in order to enable gradual build up and an early review of the progress, before activating a full phase. When the centre eventually is established, Mistra expects the total amount of co-funding, both from the university and external sources, to strive at the order of magnitude as Mistra's contribution. This co-funding could be built up over time.

### **3.5 Time-table**

The two-year implementation phase is expected to commence in January 2007. The planning schedule for the process up to the launching of the centre is as follows:

September 15, 2005	Applications for planning grants (10 pages) to be submitted to Mistra, plus one page CVs of the key persons.
October 2005	Mistra will award planning grants for the preparation of full applications.
April 1, 2006	Full applications (maximum 100 pages) to be submitted to Mistra.
June 2006	Announcement of the proposal to which a two-year implementation grant is awarded (up to SEK 15 million).
January 2007	Commencement of a two-year implementation phase.

Planning grants will thus be provided for the period from October 2005 to March 2006. Each planning grant will be SEK 250 000, including overheads and VAT. In the assessments, Mistra will take advice from an international panel of persons with relevant experiences.

### **3.6 Application details**

The applications for planning grants must not exceed ten pages and shall be written in English. Additionally, one page CVs should be included for the key persons supposed to be involved in the establishment. The application must be received by Mistra by September 15, 2005. The application shall describe how the university can fulfil the vision together with Mistra and it should state how to meet the conditions outlined in this invitation letter. For the pre-proposal, Mistra in particular emphasizes the prospects of proper leadership and promising organizational framework. The application shall be submitted by the vice-chancellor of the university.

Please send your application both by surface mail (15 copies) and by e-mail in pdf-format to:

*Interdisciplinary Research Centre Initiative*

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