

# The biodiversity network BioFrankfurt: An innovative strategic approach to integrative research, conservation, and education

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## Abstract

Responding to inadequate awareness of the outstanding importance of biodiversity, the BioFrankfurt network was founded in 2004 in the State of Hesse, Germany. It is presented here as a case study and may serve as a model for other parts of the world, such as the Middle East. In 2007, only about 26% of the German population were familiar with the term “Biodiversity”, and most of them only had a vague idea about its meaning. The BioFrankfurt network of institutions addressed this problem, raising public awareness and supporting research, education and conservation. A regional biodiversity education program has been developed and delivered to more than 500 schools. Since 2007, an innovative public relations campaign combines raising awareness on regional biodiversity issues with activities to improve the public image of the Frankfurt area. Because of its geographical focus, the network’s activities gained the attention of local and regional politicians and other decision makers, culminating in the joint establishment of a new Biodiversity and Climate Research Centre by BioFrankfurt member institutions. The success of current activities attracts interesting partners, resulting in challenging cooperation initiatives. The authors are convinced that the network’s concepts and activities have a great potential to profoundly enhance the notion and acceptance of biodiversity issues elsewhere.

## Keywords

BioFrankfurt, biodiversity network, education, public awareness, scientific communication

## Introduction

Biodiversity is the natural wealth of the Earth, and provides the basis for human life and prosperity (Wilson 1988, Gaston and Spicer 2005). With the launching of the Convention on Biological Diversity (CBD) at the United Nations Conference on Environment and Development (UNCED) in 1992, the maintenance of biodiversity became a global priority. Biodiversity provides ecosystem services, such as access to clean drinking water, clean air, timber, balancing climate, protection from natural hazards, erosion control, pollination, disease and biological pest control, and pharmaceutical substances. It also provides numerous non-material benefits of recreational, cultural, spiritual, aesthetical and intellectual value. Yet, the majority of people, probably in most parts of the world, are unaware of the fundamental significance of biodiversity for their life, and for past, current, and future cultures and economies. In response to this lack of awareness, we founded a biodiversity network, which is presented here as a case study. It may serve as a model for other parts of the world, such as the Middle East.

## Biodiversity – a complex issue

In 2007, a representative survey of 2000 persons from all parts of Germany was conducted, covering all major population subgroups (i.e. various ages, income levels, professions, and urban vs. rural areas). When asked the question: “Have you ever heard or read the term biodiversity (or biological diversity)?” only 25.7% replied with “yes”, while 74.3% replied with “no” (“I do not know” was not offered as an option). Only few of the respondents replying with “yes” knew the proper meaning of the term biodiversity.

In a second step, we asked in more detail what respondents associate with the term “biodiversity” by choosing one out of four possible replies. Here below is the percentage of respondents replying with “yes” to one of the options:

“Does biodiversity refer primarily to a variety of healthy food?”	29.6%
“Does biodiversity refer to a human disease?”	2.4%
“Does biodiversity refer to the diversity of genes, species, and ecosystems?”	52.6%
“Does biodiversity refer to a modern biotechnology?”	15.4%

More than half of the respondents associated “biodiversity” correctly with what it commonly stands for in the conservation sciences. The number of correct replies was significantly higher among persons with high school or university education (70.3%) than in other groups. Persons with the lowest level of education showed a significantly increased tendency to associate biodiversity with healthy food. Inhabitants of larger cities (> 100,000) were significantly more likely to reply correctly, which might reflect a generally higher level of education in cities as compared to the countryside.

When we asked the question „Do you think that threats to biological diversity pose serious problems to mankind, similar to those associated with climate change?“ 48.2%

responded with “yes”, 15.4% with “no”, while 36.4% were undecided. Again, persons with higher education were significantly more likely to reply positively. The results underline that the extent to which agriculture, medicine, and industry rely on natural resources and free ecosystem services is still widely ignored.

### **BioFrankfurt – A unique Biodiversity Network initiative**

The Frankfurt area in Germany has a considerable number of institutions and organisations with international expertise in a wide range of biodiversity issues. Fifteen of them are members of BioFrankfurt. The BioFrankfurt network of institutions was founded in 2004 in order to address a common concern for biodiversity. It aims at stimulating interaction in four areas, in which individual institutions make available their extensive experience: (i) biodiversity research, (ii) conservation management, (iii) sustainable development, and (iv) education. In the networking process, experts in these fields pool their knowledge and experience in order to strengthen public awareness of the significance of biodiversity, and to develop improved conservation strategies. In spring 2007, a local office was established to co-ordinate all network activities, support members in developing and executing joint projects, and to serve as a central contact point.

### **BioFrankfurt’s strategic approach**

A generally intelligible approach, combined with examples of the role that biodiversity plays in people’s everyday life is needed to arouse public interest in biodiversity. Therefore we use a simplified definition of biodiversity, based on the one given in the Convention on Biological Diversity, which describes biodiversity as “...the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems” (United Nations 1993). We additionally explain that there is much more diversity in biological systems, e.g. functional diversity within the ecosystem, and that today’s biodiversity is the result of past and presently on-going evolutionary processes. Recent results of medical, technical, or biological research, conservation and sustainable development initiatives serve as examples, illustrating the close interaction between (global) biodiversity and human welfare.

Based on this concept, an educational program focussing on biodiversity has been developed to raise public awareness. One example is the selection of annual themes to which members in the network contribute. For example, in the “Darwin Year 2009” numerous events, talks, excursions, guided tours, and symposia were organised to explain the evolutionary processes that resulted in the present-day biodiversity. Additionally, in the month of May, a region-wide annual “Biodiversity Week” sets its main focus on outdoor activities for families.

Schools and teachers are addressed with a targeted information and training program. This includes workshops, guided tours and special teaching aids on different aspects of biodiversity to foster the integration of biodiversity issues into curricula. To ensure long-term availability of the program, the guided tours for schools on selected topics of biodiversity education were integrated into the regular educational programs of four network partners. Themes include specific exhibits (Museum of Nature, Zoo, Botanical Garden), characteristics of regional biodiversity (outdoor events in a local forest), and refer to school curricula. The tours are promoted on the BioFrankfurt website and in a brochure.

An innovative public relations campaign was initiated by one of our members. It combines information on regional biodiversity with image improving initiatives for the Frankfurt area. Scientific results on regional biodiversity are presented on eye-catching posters throughout the city, combined with films, press articles, talks, guided tours, and other activities. The surprising biological diversity of the urban area is considered a valuable contribution to everyone's quality of life. Additionally, comparisons with other regions of the world – closely connected with Frankfurt through its international airport – are used to raise attention to global biodiversity.

These activities also gained the attention of politicians from the city of Frankfurt up to the Government of the Federal State of Hesse. One of the most prominent outcomes at the policy level was the joint establishment of a new Biodiversity and Climate Research Centre (BiK-F) by the Senckenberg Research Institute and Museum of Nature, and the Goethe University of Frankfurt, both members of BioFrankfurt. The mission of this new Centre of Excellence is to carry out research on the interactions of biodiversity and climate at highest international levels, using state-of-the-art methods ranging from satellite-based remote sensing to advanced genomics and mass spectrometry. Scientists of the centre document and analyze past and present biodiversity patterns and processes, providing reliable predictions of future developments. The Centre integrates expertise in the investigation and management of climate-related biodiversity changes.

## **Conclusions**

BioFrankfurt succeeded in fostering awareness of biodiversity-related issues and their implications on human quality of life. Supported by continuous fundraising, a targeted educational program on biodiversity is now available to over 500 schools. Within four years, BioFrankfurt gained wide recognition by politicians and other decision makers. It is also considered an important project partner for Non-governmental Organisations (NGOs) and the private sector. Science and research profit substantially from the network's activities. In addition, the continuous exchange of information and ideas among network partners helps to better understand each other's goals and positions, and promotes the target-oriented design of future projects.

We have no doubt that similar networks in other parts of the world can build on the experience of BioFrankfurt. Given the long tradition of scientific and cultural ex-

change among institutions in Frankfurt and their counterparts in the Middle East, the potential of building up synergies that strengthen biodiversity research and conservation is particularly promising. Local conditions and resources will largely determine how and to which extent the idea can be implemented elsewhere but we are convinced that the basic concept is suitable to be transferred and work successfully under a wide range of social, cultural, economic or political conditions. Even a moderate financial base will help initiating co-operations. We further encourage the establishment of super-networks, linking up biodiversity networks in various parts of the world.

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