



# TIAS Quarterly

No. 03/2014 October

The newsletter of *The Integrated Assessment Society (TIAS)*

<http://www.tias-web.info>

ISSN 2077-2130

## In This Issue:

Feature	p. 1
New Projects	p. 3
New Publications	p. 3
Job Openings	p. 5
Conferences and Other Events	p. 5
Call for Submissions	p. 5



Photo: J. Newig

## The Society

The Integrated Assessment Society is a not-for-profit entity created to promote the community of inter-disciplinary and disciplinary scientists, analysts and practitioners who develop integrated assessment. The goals of the society are to nurture this community, to promote the development of IA and to encourage its wise application.

### Integrated Assessment Defined

Integrated Assessment (IA) can be defined as the interdisciplinary process of integrating knowledge from various disciplines and stakeholder groups in order to evaluate a problem situation from a variety of perspectives and provide support for its solution. IA supports learning and decision processes and helps to identify desirable and possible options for addressing the problem. It therefore builds on two major methodological pillars: approaches to integrating knowledge about a problem domain, and understanding policy and decision making processes. IA has been developed to address issues of acid rain, climate change, land degradation, water and air quality management, forest and fisheries management and public health.

## Feature

### We live in times of science on demand: an interview with Jeroen van der Sluijs

by Liesbeth Sluiter and originally published in the Dutch *Milieudefensie (Friends of the Earth)* magazine, "Down to earth" (June 2014, No. 23). It has been shortened and translated for publication in the *Quarterly* with the permission of the editors and authors.

**Jeroen van der Sluijs** has been associate professor of new risks at Utrecht University's Copernicus Institute, and will soon start his new position on the theory of science and ethics of the natural sciences at the Centre for the Studies of the Sciences and the Humanities (SVT), University of Bergen. He is a long-time member of TIAS. In the mid-eighties, he was among the first group of Leiden University students who could follow the then new interdisciplinary MSc courses in environmental science. From the start, his professional career has been guided by societal issues and early on he published his report "Radiation and nuclear power: Threat to health, environment and democracy". On the cover of the publication are rolls of barbed wire.

#### Why is that barbed wire there?

"A society heavily dependent on nuclear technology can only exist as a police state; it calls for extreme security. One of my conclusions was that this radiation is more dangerous for democracy than for health and environment. I researched the controversy surrounding the risks. This was my first encounter with scientific uncertainties. This interest was fueled by my work on an international research project on climate change, ozone depletion and acid rain. The starting point of the study was 1957, the first year that scientists examined the planet on a global scale and began to measure atmospheric CO<sub>2</sub>. We investigated how society has since that time reacted to these environmental issues, particularly in industry, science, media, politics and NGOs."

#### Uncertainty

Sometimes science is not able to provide certain knowledge, for example because impossibly large samples are required for reliable conclusions on small effect sizes, or because effects will only become apparent in the future. This often results in the decision to undertake more research, resulting in 'paralysis by analysis': the uncertainty grows and decision-making is deferred.

Post-normal science is an attempt to break through this stalemate position. It originated in 1986 with the two disasters of mega-technology projects, Chernobyl nuclear power station and the space shuttle Challenger. Funtowicz and Ravetz, founders of post-normal science, then proposed a new approach that enables decision makers to take a decision in situations of uncertainty.

#### What is new in post-normal science?

"It focuses on uncertainties in terms of their nature, scope and type, and explores the implications for decision-making. By taking into account various possible scenarios, robust, resilient solutions are possible. Instead of designing coastal defenses for the worst-case scenario of 1.30 meters in sea level rise, it is better to set land aside and build a new dike if needed. In Hamburg, there are homes that can be hermetically sealed on the ground floor and have upper walkways. Post-normal science makes that kind of resilience possible.

Ultimately, one has to start thinking this way at the drawing board stage. One must develop green chemistry, sustainable cities, and biodegradable chemicals that do not accumulate in organisms. Currently, we only discover the risks after the market launch. Precaution should give direction to innovation, rather than putting on the brakes afterwards."

#### How do you prevent new disasters?

"You can involve more scientific disciplines in reviewing each others work and keep the door open for non-scientists,

not to vote on the speed of light, but to explain the creation of knowledge, to use local knowledge and invite commentary from an extended peer community. In Australia, community-based auditing developed when a group of civilians, supported by a scientist, began collecting information against a mining project. In the Netherlands, a civic networking organisation provides training to people who want to oppose the construction of a road or a factory."



Photo: Liesbeth Sluiter

### ***What can post-normal science do for them?***

"It offers tools to describe and analyze uncertainties. NUSAP (Numeral Unit Spread Assessment Pedigree) is a method that involves systematically asking questions: is there insufficient information or too little theoretical understanding? Are the methods too limited? What tools are appropriate for measurements, and when do measurements take place and how often? NUSAP is now also used by the

European Food Safety Authority for assessing the risk associated with, for example, salmonella. The Netherlands Environmental Assessment Agency has been using NUSAP for years."

### ***Post-normal science seems to be not so far removed from common sense.***

"It systematizes common sense. Without systematization, common sense may overlook a lot."

### ***How is the concept of post-normal science received?***

"Scientific publications refer to it more often, and there is much interest from organizations that connect science and policy. Initial IPCC climate reports dedicated little attention to uncertainty; however, in the recent fifth report, qualitative descriptions of uncertainty are included. Thus, IPCC is becoming more post-normal."

### ***Is there opposition?***

"Some scientists prefer to do their own mono-disciplinary research. There is also the fear that openness about uncertainties leads to policy paralysis."

### ***What do policy makers think?***

"Politicians like to use science for their own purposes and have ongoing access to knowledge institutes and companies of the type 'You ask, we deliver'. We live in an age of science on demand, and you can obtain any answer desired."

### ***Which institutes and companies are those?***

"If I mention names, I need to hire a lawyer! One I want to mention is a Dutch traffic assessment consultancy. If a municipality wants to build a road, they deliver the corresponding traffic projections. For the development of a new road in Oegstgeest, for example, the company uses a growth rate that would bring about significant traffic pressure, whereas in the western Netherlands traffic has stopped growing for years now. Incidentally, I have an interest in this statement: my own environment will be affected if the road is developed. Post-normal science is transparent!

Opposing views are not included in policy reports. I'm in some advisory committees concerning bee research: three five-minute speaking opportunities in a two-year long investigation. Your name is used for legitimacy. So I use

other channels to express my objections. Whistle blowers are rarely rewarded which is one of the shameful aspects of modern democracy. Without tenure, I would not have been able to say some things out loud, for example, on the role of pesticides in bee mortality.

### ***Do you encounter professional 'merchants of doubt', who want to get around or avoid policy making?***

"Industries sow doubt, and NGO's certainty. They use the same principle: the more doubt, the less intervention; the more certainty, the more intervention. Casting doubt can be a very sophisticated process. Academic names are purchased for documents that industry writes. For example, DuPont recruited the Weinberg Group, a notorious 'science-for-sale'-company, to state that Bisphenol A (BPA), a high production volume chemical, is harmless at low doses. The company was investigated for fraud by the US Congress in 2008. Furthermore, the Weinberg Group appeared to be proud to announce on their website that they had kept a medication known to have harmful side effects on the market for ten years, so that the manufacturer could recoup its investment.

We are also familiar with the 'red herring' strategy to lead us down the wrong path. On issues that are of widespread interest, investigations delve into a wide range of potential causes. Bee mortality is a good example. The monitoring programmes tend to be full of red herrings: electromagnetic fields, deformed wing virus, and so forth. These programmes gain a lot of attention, and the funds are allocated accordingly, and little remains for pesticide research. Thanks to this strategy, Bayer and Syngenta are able to keep their products on the market for years."

### ***Which topics are in need of post-normal science?***

"Even in the case of genetic modification, more science does not lead to the settling of controversies and moreover there are large interests at play. Organic farmers find patented genes in their seed but lose all their lawsuits against Syngenta and Monsanto. Syngenta has more lawyers than scientists. Values also play a role. Some people believe that tinkering with nature is ethically wrong."

### ***In this respect, scientific arguments also exist***

"You can prove that tinkering could destroy ecosystems, but to regret that is a value. Almost all cultures have two ethical principles: everyone is autonomous; and everyone's autonomy is limited because we should not do harm to one another. Ethical positions are located along this boundary. Autonomy is sacred for neoliberal think tanks: everyone should be able to sell tobacco and anyone should be able to smoke themselves to death; government intervention is out of the question. Environmental groups consider 'not harming' to be important and want the state to be active. If the facts are inconclusive, it is important to find out why the same facts give rise to different interpretations; in this process values and interests are important. To develop policies you need to know them, so you can address them in a transparent way."

### ***Does nanotechnology also lends itself to a post-normal approach?***

Nanoparticles have excellent qualities. For example, they inhibit bacterial growth and can make plastic so strong that packaging can be thinner. They can be found for different reasons in all sorts of products: sunscreen, cosmetics, textiles, food. But they have an unknown degree of toxicity and we have no satisfactory methods yet to assess the risks. There are concerns about health, the environment and life cycle of nanoparticles. Silver particles that inhibit bacterial growth in socks end up in sewers for example, where bacteria are necessary. It is the law of conservation of misery"

## Conservation of misery?

"The first law of environmental science: a problem that has been removed leads to another kind of problem popping up elsewhere, or new complications arise. A good example is ammonia in refrigerators, bad for the lungs, and thus replaced by CFC's, until it appeared that the chlorine reacted with ozone in the stratosphere. This discovery is also a prime example of a scientific pitfall. Low levels of ozone were measured, but the computer interpreted those measurements as inconsistent outliers, therefore unreliable, and threw them away. A computer maintenance technician discovered a huge file of discarded measurements, and that was the hole in the ozone layer! CFC's were then replaced with HFC's which turned out to be a powerful greenhouse gas.

Another example: sulfur hexafluoride, SF<sub>6</sub>, found in high-performance double glazing, which saves energy and CO<sub>2</sub>. A fairly inert gas, holds heat well and absorbs shock, which is why we put it in the soles of sports shoes. But it is the most powerful greenhouse gas ever produced and lingers in the atmosphere tens of thousands of years.

## Don't you go crazy from all the doomsday scenarios and risks?

"People around me sometimes go crazy, but I don't. I find it enjoyable to imagine worst-worst case scenarios; it gives me confidence in my estimates."

---

In addition to his academic positions, **Jeroen van der Sluijs** is a member of the Health and Environment Surveillance Committee of the Health Council of the Netherlands, and advisor to the Netherlands Chemical Industry Association, the Bee Foundation and the Knowledge Platform on Electro-magnetic Fields and Health. **Web:** [www.jvds.nl/](http://www.jvds.nl/)

**Liesbeth Sluiter** is a freelance journalist and photographer based in the Netherlands. She has written about and photographed extensively a wide range of social, cultural and environmental subjects. **Web:** <http://www.liesbethsluiter.nl/>

*The views expressed in this article are those of Jeroen van der Sluijs. The newsletter editors extend their thanks to him, to the author, Liesbeth Sluiter, and to the editors of "Down to earth" magazine for agreeing to have it published in the Quarterly.*

---

## New Projects

### Dutch-German Collaboration

#### Promoting the manifold benefits of floodplain restoration for society: Opportunities and challenges for implementing the payments for ecosystem services in transboundary river basin management

River basins provide many services to the benefit of society: Flood protection, food production and biodiversity are only a few of the much larger number we can enjoy. For increasing societal awareness and appraisal of these services the concepts of ecosystem services (ES) and of payments for ecosystem services (PES) have been developed. These concepts are expected to support the protection of ecosystems and thus also their capacity to deliver their services to society. However, one challenge in the practical implementation of the ES concept is that it is data rich and scientifically ambitious. Therefore, in 2011 the Dutch and German

ministries of environment initiated the implementation of a pilot study to assess the practical applicability and value of an ecosystem services approach in regional/local water management in a trans-boundary study area. The pilot study has operationalized the ES concept, aiming to develop a regional PES scheme for the transboundary Vecht region. In our specific case, we looked at the expected changes caused by a planned restoration of a trans-boundary part of the floodplain of the Vecht river. The pilot study demonstrated that floodplain restoration generates a wealth of benefits to society – also at local level. It showed that an integrated planning process is required to optimize those benefits. Turning the benefits into financial support of stakeholder groups may be more difficult, in particular if the benefits are too uncertain and the measure implemented is too small.

The study in the Dutch–German Vecht basin has been funded by Dutch Ministerie voor Infrastructuur en Milieu and the German Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit in the context of their activities for the implementation of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (adopted 1992 in Helsinki, short: Water Convention). Additional funding was provided by Niedersächsische Ministerium für Umwelt, Energie und Klimaschutz.

The full citation for and the link to the report are:

Borowski-Maaser, I; Sauer, U., Cortekar, J., van der Meulen, S.: Final Report (DII.6 – V13) on Phase II of an ecosystem services project in the Vecht basin: Developing a proposal for a regional scheme on payments for ecosystem services. Hannover, 2014.

Downloadable from: [http://www.interessen-im-fluss.de/wp-content/uploads/2014/09/VechtPES\\_FinalReport\\_09Septemb er2014\\_small.pdf](http://www.interessen-im-fluss.de/wp-content/uploads/2014/09/VechtPES_FinalReport_09Septemb er2014_small.pdf) (available in English with German and Dutch executive summaries).

---

## New Publications

Two new articles (refs. below) have been published on the development and application of a novel conceptual model to integrate human and environmental health impact assessment. This novel conceptual model, the ecosystem-enriched DPSEEA model, brings together impact pathway methodology originally based on the Driver-Pressure-State-Impact-Response approach, and ecosystem services concepts, in an attempt to bridge the gap between typically divergent disciplines. The starting point for the development of eDPSEEA is that many environmental drivers of adverse (as well as beneficial effects) on humans and ecosystems today have the same underlying causes, affecting similar environmental states and operate in comparable socio-ecological contexts, hence it makes sense to address them in a common, integrated framework. This will help to avoid unintended consequences, as well as to explore synergies of policy measures in a more comprehensive way.

Reis, S., Morris, G., Fleming, L.E., Beck, S., Taylor, T., White, M., Depledge, M.H., Steimle, S., Sabel, C.E., Cowie, H., Hurley, F., Dick, J. McP., Smith, R.I. and Austen, M., 2013. Integrating health and environmental impact analysis. *Public Health*, Available online. 4 October 2013, <http://dx.doi.org/10.1016/j.puhe.2013.07.006>.

Dick, J., Smith, R., Banin, L. and Reis, S., 2014. Ecosystem service indicators: data sources and conceptual frameworks for sustainable management. *Sustainability Accounting, Management and Policy Journal* 5(3): 346 – 375.

Stein, C., Barron, J., Nigussie, L., Gedif, B., Amsalu, T. and Langan, S., 2014. **Advancing the Water-energy-food Nexus: Social Networks and Institutional Interplay in the Blue Nile**. Research for Development Learning Series. Colombo, Sri Lanka: International Water Management Institute. CGIAR Research Program on Water, Land and Ecosystems.

This report was recently published as part of CGIAR's Water, Land and Ecosystem Research for Development (R4D) Series. The study fills a gap in the nexus debate by focusing on concrete actors and the nexus challenges they struggle with, instead of on abstract systems and the resource flows between sectors. Based on participatory, visual network mapping and focus group discussions, the paper illustrates three interdependent challenges of the water-energy-food nexus in the Upper Blue Nile in Ethiopia.

The full report is available from:  
<http://wle.cgiar.org/resources/r4d-learning-series/>

**Green Infrastructure Guide for Water Management: Ecosystem-based management approaches for water-related infrastructure projects.** UNEP-DHI Partnership - Centre on Water and Environment, IUCN, TNC and WRI.

The guide makes clear that increased efforts to work with green infrastructure solutions in water management can result in viable and cost-effective alternatives to gray water infrastructure, as well as support goals across multiple policy areas, including adaptation to climate change.

The guide takes the position that the most efficient and cost-effective approach for any given situation must therefore be found by evaluating all available options, grey and green, based on their suitability to local hydrology, resource availability, and other variables, on a case-by-case basis.

Link: <http://www.unep.org/newscentre/Default.aspx?DocumentId=2796&ArticleId=10970>

de Coninck, H., Sagar, A., Lorch, R., Jaeger, C., Klinsky, S., Schwarte, C., Zhang, X., Garibaldi, J., Rossi, C. and Clapp, C., 2014. **The Way Forward in International Climate Policy: Key Issues and New Ideas 2014**. Climate Strategies

This new report from the CDKN and Climate Strategies presents some of the ideas discussed during the Global Climate Policy Conference. These range from the creation of climate 'club goods' to the role of green investment vehicles, technology and innovation in supporting mitigation and adaptation activities. This report also explores the social psychology of messaging and how this applies to our communications with the public and the private sector; and considers how personally held concepts of justice and equity might influence negotiations on adaptation, mitigation and loss and damage.

Link: <http://climatestrategies.org/research/our-reports/category/50/387.html>

Edenhofer, O., et al., 2014. **Climate Change 2014: Mitigation of Climate Change. Working Group III Contribution to the IPCC 5th Assessment Report - Changes to the Underlying Scientific/Technical Assessment.**

Concluding four years of intense scientific collaboration, this report responds to the request of the world's governments for a comprehensive, objective and policy neutral assessment of the current scientific knowledge on mitigating climate change.

The quintessence of this work is provided in the Summary for Policymakers. Link: <http://mitigation2014.org/>

Task Force on Systemic Pesticides. 2014. **Worldwide Integrated Assessment of the Impact of Systemic Pesticides on Biodiversity and Ecosystems**. Environmental Science and Pollution Research. Springer Publications. DOI. 10.1007/s11356-014.

The conclusions of this new meta analysis of the systemic pesticides neonicotinoids and of ipronil (neonics) confirm that they are causing significant damage to a wide range of beneficial invertebrate species and are a key factor in the decline of bee populations. The publication presents the results of an examination of over 800 scientific studies over the last five years, including those sponsored by industry. It is the single most comprehensive study of neonics ever undertaken, is peer reviewed, and published as freely accessible. Link: <http://www.tfsp.info/worldwide-integrated-assessment/>

Secretariat of the Convention on Biological Diversity. 2014. **Global Biodiversity Outlook 4**. Montréal.

This mid-term assessment demonstrates the significant progress made towards meeting some components of the majority of the Aichi Biodiversity Targets. However, additional action is required to keep the Strategic Plan for Biodiversity 2011-2020 on course. The report noted that while use of natural resources such as water had become more efficient, our vastly increased consumption levels negated any progress.

Link: <http://apps.unep.org/publications/pmtdocuments/gbo4-en.pdf>

Newig, J., Challies, E., Jager, N. & Kochskämper, E. 2014. **Science for Environment Policy: Public participation in flood risk management: the case of Germany**. European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

How can stakeholders best be involved in the implementation of the EU Floods Directive? According to recent research examining Germany as a case study, three types of strategy are being pursued across the country's 16 federal states: the first draws on Water Framework Directive (WFD) procedures, the second meets only minimum requirements for participation and the third involves stakeholders more intensively.

Link: [http://ec.europa.eu/environment/integration/research/newsalert/pdf/public\\_participation\\_flood\\_risk\\_management\\_germany\\_385na1\\_en.pdf](http://ec.europa.eu/environment/integration/research/newsalert/pdf/public_participation_flood_risk_management_germany_385na1_en.pdf)

McLellan, R., et al. 2014. **Living Planet Report 2014**. WWF.

Since 1970 populations of vertebrate species has declined by more than 50%. In a world where so many people live in poverty, it may appear as though protecting nature is a luxury. But it is quite the opposite according to the World Wildlife Fund.

Link: [http://wwf.panda.org/about\\_our\\_earth/all\\_publications/living\\_planet\\_report/](http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/)



Photo: Ulli Meissner (u.meissner[at]gmail.com)

## Job Openings

**Postdoctoral positions: International Institute for Applied Systems Analysis (IIASA)** in Laxenburg, Austria. Programmes include Energy, Transitions to New Technologies, Advanced Systems Analysis, Ecosystem Services and Management, Mitigation of Air Pollution and GHG, World Population, Risk Policy and Vulnerability, Water.

Deadline: 01 November 2014

Link:

<http://www.iiasa.ac.at/web/home/education/postdocs.html>

**Research Fellow and Senior Research Fellow in Innovation and Energy Demand at University of Sussex** in Brighton, England, UK. Experience requirements are PhD in a relevant area (innovation studies, science/ technology studies, economics, similar); track record of high quality research/publication (innovations studies, energy policy, related); good knowledge of energy/climate policy debates; highly developed skill in communicating with diverse audiences; enthusiasm, flexibility, commitment to working within interdisciplinary; policy-relevant field.

Deadline: 03 November 2014

Link: <http://www.sussex.ac.uk/aboutus/jobs/745>

## Conferences and Other Events

**TIAS will co-host two training events in 2015**

“**The 2nd Field Academy on Disaster Risk Reduction and Climate Change Adaptation**” in May 2015 in Mexico, Hosted by TIAS and UNAM.

“**Concepts, methods and frameworks for the comparative analysis of water governance**” Summer School in August 2015 in Dresden, Germany.

Both events will be announced on the TIAS site later this autumn. For more information contact: [info\[at\]tias-web.info](mailto:info[at]tias-web.info)

**The 4th International Conference on Climate Services: Climate-informed Decision Support Systems** 10-12 Dec. 2014, Montevideo, Uruguay.

Abstracts are invited from climate information users, providers, and researchers on the following topics: Climate-informed decision support systems, particularly those that engage sectors such as disasters, health, agriculture and energy; Evaluation of climate services and/or the performance of DSS; Identifying & understanding user needs for information and the design of DSS; Ethical considerations around climate-informed decision systems.

Link: <http://www.climate-services.org/icc5/icc5-4/home>

**2015 Zaragoza Conference: Water and Sustainable Development**

15-17 January 2015, Zaragoza, Aragon, Spain.

The UN-Water International Zaragoza Conference will focus on how to bring the post-2015 international agenda on water and sanitation into action. This event will take place during the final year of the International Decade for Action 'Water for Life,' and participants will contribute to efforts to take stock of and learn from achievements as well as planning the next steps. Link: <http://www.un.org/waterforlifedecade/waterandsustainabledevelopment2015/index.shtml>

**3<sup>rd</sup> UN World Conference on Disaster Reduction 2015**

14-18 March 2015, Sendai, Miyagi, Japan.

The World Conference on Disaster Reduction will be hosted by the Government of Japan and organized by the UN International Strategy for Disaster Reduction (UNISDR), and is expected to agree on the post-2015 framework for disaster risk reduction. Link: <http://www.wedrr.org>

**Dresden Nexus Conference 2015**

25-27 March 2015, Dresden, Germany.

The event focuses on the contributions of a WEF nexus approach to the management of water, soil and waste, and will in 2015 address the following issues: maintaining and enhancing environmental resources under global change; facilitating efficient and sustainable use of limited natural resources; engaging international development partners in the promotion of the nexus approach; and facilitating a transition to a green economy, especially with regard to agriculture.

Link: <http://www.dresden-nexus-conference.org/home.html>

**European Climate Change Adaptation Conference**

12-14 May 2015, Copenhagen, Denmark

The conference offers a unique platform for researchers, policy makers, and businesses to share new research results, novel policy developments, and practical implementation experiences regarding climate change impacts and adaptation, as well as highlight opportunities for business innovations aimed at supporting the transition to low carbon societies.

Link: <http://www.ecca2015.eu/>

## Call for Submissions

TIAS members are encouraged to submit feature articles and/or news items for future issues of the TIAS Quarterly and our blog. Contact Johannes Halbe, [jhalbe@uos.de](mailto:jhalbe@uos.de)



Photo: Ulli Meissner ([u.meissner\[at\]gmail.com](mailto:u.meissner[at]gmail.com))

### TIAS Quarterly

TIAS Quarterly is the newsletter of The Integrated Assessment Society.

ISSN: 2077-2130

Editor: Claudia Pahl-Wostl

Associate editors: Caroline van Bers, Johannes Halbe

Layout: Johannes Halbe

### Postal Address:

TIAS Secretariat

c/o Institute of Environmental Systems Research (USF)

Barbarastr 12

University of Osnabrück

D-49069 Osnabrück

Germany

Phone: +49 (0)541 969-2297 or (0)541 970-49400

E-Mail: [jhalbe\[at\]juos.de](mailto:jhalbe[at]juos.de)

Internet: <http://www.tias-web.info/>

Blog: [tiasonline.wordpress.com](http://tiasonline.wordpress.com) (with followers on six continents)

### TIAS Membership fees:

Individuals: € 50 / US\$ 65 annually

Students: € 15 / US\$ 20 annually

Institutions: € 200 / US\$ 250 annually