Biosphere Reserve Integrated Monitoring
Austria

Back to the Main-Page

- THE FINAL REPORT
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What we do

According to the decisions taken in the Austrian MAB committee in March 2002, the committee plans to re-design its research activities so as to better suit the priorities set by the International MAB Council for research in and for biosphere reserves.
The primary goal of this study is to support the Austrian MAB committee in developing an explicit medium term research agenda that will:

1. suit the priorities set by the International Council, in particular concerning the further development and implementation of "Biosphere Reserve integrated Monitoring" (BRIM)
2. fit well to the particular opportunities and needs of Austrian Biosphere reserves
3. utilize existing excellence and develop further Austrian research capacity
4. help to link to and complement existing research programmes and initiatives on the international level and in other countries so as to create favorable synergisms
5. be able to mobilize additional funding opportunities
6. enhance the visibility and impact of Austrian MAB research, nationally and internationally

More information about our work (requires Adobe Acrobat)

Last update 3.01.2005

Login - area

- Project Group
- Austrian MAB committee
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Re-designing the Research Agenda MAB-Austria

in special consideration of BRIM - the Biosphere Reserve Integrated Monitoring

BRIM - What does it mean

The Biosphere Reserve Integrated Monitoring (BRIM) Programme undertakes abiotic, biodiversity, socio-economic and integrated monitoring in the World Network of Biosphere Reserves. Its goal is to provide a platform for the integration of the resulting information/data, thus contributing to a better understanding of the changes that take place in the areas being studied and of the factors triggering these changes.

Objectives of Biosphere Reserve Integrated Monitoring include:
- Assessing and monitoring the threats/pressures on the ecological services and values maintained by each biosphere reserve;
- Evaluating and cataloging biodiversity in the core areas through surveys and research;
- Assessing whether the state of the biota in each biosphere reserve is improving or declining;
- Illustrating how well the combination of core/buffer/transition areas reduces the

Events and Date

Meeting of the Austria Committee
Date: 01.07.04
more Infomation...

International Worksho
Date: 17.06.04
more Infomation...

Local Workshop
Date: 27.05.04
more Infomation...

Interview Lange/ECO
Date: 08.04.04
more Infomation...

Interview Lange/ECO
Date: 02.04.04
more Infomation...

Interview Lange/ECO
Date: 02.04.04
more Infomation...

Interview IFF/IECB 14
Date: 01.04.04
more Infomation...

Interview Lange/ECO
Date: 01.04.04
more Infomation...

Interview Lange/ECO
Date: 01.04.04
more Infomation...

Interview IFF/IECB 9
Date: 16.03.04
more Infomation...

Interview IFF/IECB 10
Date: 16.03.04
more Infomation...

Interview IFF/IECB 11
Date: 16.03.04
more Infomation...

Interview IFF/IECB 13
Date: 16.03.04
more Infomation...

Interview IFF/IECB 12
Date: 16.03.04
more Infomation...

Interview IFF/IECB 8
Date: 15.03.04
more Infomation...

Annex 2.2

Details on website and further proposal

Informationstechnische Lösungen beim Aufbau eines BRIM

Es soll hier auf zwei Aspekte der Präsentation von Arbeitsergebnissen durch informationstechnologische Lösungen eingegangen werden. Es wird sowohl auf die das Projekt begleitende Präsentation des Projektverlaufes eingegangen als auch auf die Notwendigkeiten, die eine nationale Lösung einer BRIM – Database verlangen würde.

Die Projekthomepage zu BRIM - Austria

Technisch wurde die Webpage über einen Server des Instituts für Ökologie und Naturschutz der Universität Wien realisiert, der mit der Adresse http://www.biosphaerenparks.at bei den zuständigen Stellen registriert ist. Der Webserver, der mit einem RAID5 System ausgestattet ist verfügt neben dem *MS- Informationmanger II* als eigentliche Serversoftware über ein WebGIS auf Basis des *ARCIMS* (ESRI – ArcInfo Internet Map Server) und als zentrales webbasiertes Datenbankmanagementsystem *ColdFusion*. Cold Fusion ist ein Tool zur Datenbank-Anbindung im Internet. Cold Fusion ist primär ein Server, welcher die Aufgaben mit der Datenanbindung erledigt und läuft dabei als CGI-Skript. Cold Fusion verwendet ein tag-basiertes Server-Scripting in der an HTML angelehnten Cold Fusion *Markup Language*, die ideal für die Programmierung von Webanwendungen geeignet ist. Die offene Integration von Datenbanken, HTML, XML, E-Mail etc. macht es zu einer produktiven Umgebung für die Erstellung von Webanwendungen.

Die Zukunft der Webpage BRIM - Austria

Sofern durch das österreichische MAB- Nationalkomitee die Initiative zum Aufbau eines echten BRIM verbunden mit einer zentralen BRIM - Database gesetzt wird, sollte die gegenwärtige Webpage in ein Web-Portal für BRIM – Austria umgewandelt werden. Aus der Erfahrung unsere Arbeitsgruppe durch den Aufbau großer internationaler Datenbanksysteme wie z.B. die GLORIA – Worldwide – Informationdatabase können hier einige Kennwerte genannt werden über die ein webbasiertes Informationssystem verfügen muss. Webpräsentation – Geographische Informationssysteme – Datenbankmanagementsysteme sind drei Begriffe, die mit dem Verfügbarmachen der BRIM – Daten untrennbar verbunden sein müssen.

Daten mit Raumbezug als Basis eines BRIM Austria

Ausgegangen wird in dieser Darstellung davon, dass Monitoringdaten aus den Biosphärenreservaten direkt auf einem zentralen Server abgelegt werden. Der direkte online Zugriff auf die Server der einzelnen Biosphärenreservate – sofern vorhanden - scheint aus sicherheitstechnischen Gründen und wohl auch Gründen der Datendurchsatzkapazität nicht möglich. Die Daten, die hier vorliegen, haben zu einem großen Teil einen direkten Raumbezug. Sowohl punktuelle Informationen in Form von Maßdaten verorteter Sensoren als auch flächige Informationen aus landschaftsbezogenen Erhebungen werden in ein derartiges Informationssystem einfließen. Aber auch die Daten ohne direkten Raumbezug, wie dies Daten aus dem sozio-ökonomischen Bereich teilweise darstellen, haben aber durch die räumliche Definition der Biosphärenreservats-Region (der Begriff Biosphärenreservats-Grenze sollte hier nicht verwendet werden) einen begrenzten Raumbezug. Es ist daher naheliegend, dass ein harmonisiertes Geographisches Informationssystem zu den Biosphärenreservaten aufgebaut werden muss. In Ansätzen gibt es ein derartiges System – vor allem der Berichterstatter kann auf einen reichhaltigen geographischen Datenbestand zu österreichischen Biosphärenreservaten zugreifen, da im Zuge der Zonierungen der Biosphärenreservate Wienerwald und Großes Walsertal eine Arbeitsgruppe des Instituts für Ökologie und Naturschutz in die damit verbundenen Erhebungen führend involviert war. Auch durch die Einbeziehung dieser Arbeitsgruppe in Projekte in den Biosphärenreservaten Lobau und Neusiedlersee liegen vielfältige Daten mit Raumbezug vor.

Harmonisierung räumlicher Daten

Eine Harmonisierung der räumlichen Datenbestände ist dringend anzustreben. Ein zentrales Datenverwaltungssystem eines BRIM soll als "Meta-Informationssystem" die umfangreiche und komplexe Menge der biosphärenreservatsbezogenen Datenbestände, die von verschiedensten Wissenschaftlerinnen und Wissenschaftlern erhoben, aufbereitet, weiterbearbeitet, verwaltet und gespeichert werden, überschaubar und damit nutzbar machen, was besondere Anforderungen an Erhebung und Strukturierung dieser Datenmengen stellte. Es scheint daher unumgänglich einerseits allgemein akzeptierte Erhebungsvorschriften zu den biotischen und abiotischen Gegebenheiten zu erarbeiten bzw. es müssen auch Harmonisierungswerkzeuge zur Bearbeitung bestehender Datenbestände geschaffen werden.
Direkte Nutznießer dieser Entwicklung sind nicht nur die Bewohner und Bewohnerinnen der Biosphärenreservatsregionen, denen damit der Zugang zu Umweltinformationen erleichtert wird, sondern ermöglicht auch den Entscheidungsträgern ein frühes Erkennen von Abweichungen vom Leitbild und ein Gegensteuern.

Wesentliches Augenmerk muss bei der Harmonisierung räumlicher Daten auf den Maßstabsbezug gerichtet werden. Als Beispiel sei hier erwähnt, dass die Landschaftsinventarisierung im Großen Walsertal auf Basis von Satellitenbildern im Maßstab 1:220000 erfolgt. Im Gegensatz dazu stellen im Wienerwald Messdatenbilder im Maßstab 1:10000 die Grundlage der Landschaftsinventarisierung dar.

Auch die methodische Vorgehensweise bei der Erstellung der Karten zu Landbedeckung bzw. Landnutzung ist sehr unterschiedlich bzw. nur rudimentär vorhanden. Beim Großen Walsertal und Wienerwald ist es eine Kombination aus rasterbasiertem räumlichen Informationssystem in Verbindung mit einer multivariaten Analyse, was zur Definition eines synoptischen Landschaftsinventars führte. Im Gegensatz dazu basiert das Landschaftsinventar in der Lobau auf einer forstliche Standortskartierungen und einer visuellen Luftbildauswertung. Eine Vergleichbarkeit der landschaftlichen Vielfalt und ein darauf aufbauendes langfristiges Beobachtungssystem mit standardisierten Methoden verlangt eine einheitliche Vorgehensweise bei der Erstellung von Landschaftsinventaren (vergl. Reiter 2003).

Project proposal for Web-Portal (meanwhile accepted)

In the course of the MAB- funded project Redesign of the MAB- research Agenda as a non stipulated additional demand a Web-Portal for the Austrian Biosphere Reserves was pre-designed. Over http://www.biosphaerenparks.at a simple, less informative website to the Austrian Biosphere Reserves can be reached. The website displays a Web-Portal, that refers to the official website of UNESCO/ MAB on which the five Austrian biosphere reserves are described only with their main characteristics. The Web-Portal offers at this time particularly the access to the project related website on the topic Biosphere Reserve Integrated Monitoring (BRIM). On this page the project stages are displayed in detail and the deliverables of the MAB-Illmitz - workshop are presented.

The proposed small project aims in the long-term serving of the fees for the allocation of biosphere reserve related web-addresses (biosphaerenparks.at, biosphereregionen.at, biospherenparks.or.at are reserved since one year by the project canvasser), the additional cost element at the procurement of the hardware components, multimedia material for website design and the financial covering of the costs to prevent the web-servers from attacks through hackers. The actual programming of the website will be carried out mainly by the project canvasser within the frame of his employment as Ass. Prof. of the University of Vienna. He acts as webmaster for the web-servers of the department. The leading idea for the design of the proposed website consists of five principles: the site should be easy to read, easy to navigate, quick to download, easy to find and finally the page layout and design should be consistent throughout the site. It is intend to present the content of the website in German and English. The main resources for the text-elements, images, maps and additional information for each of the recent five Austrian Biosphere Reserves are represented by the “Biosphere Reserves Weißbuch” and the research results of the project canvasser (Landschaftsinventar Großes Walsertal,

Vegetationsmodell Donauauen). For the proposed Biosphere Reserve Wienerwald the results of the project "Zonierung Offenland" (project canvasser is involved in the project team) will be a important resource for the design of the information sheet of this Biosphere Reserve.

For the proposed website the project canvasser can offer three web-servers, which are connected as a cluster. The safeguarding against technical failure is very high, since all three web-servers can replace themselves mutually and are supplied with a RAID-5 system. The used software will be the Microsoft Information Server, the ColdFusion Database Server and the ESRI Interactive Map Server to display maps over the web. For the content-management a system based upon ColdFusion will be introduced.

With the re-launch of the proposed website in six month after project start a continuous business can be guaranteed, because a professional firewall against the present hacker – attacks will be installed by the ZID of the University of Vienna.

Weiterführende Literatur:

Reiter, K., Wrbka, T, Grabherr, G. (2003): The Compilation of a modern Landscape Inventory by the Synopsis of Spatial Layers; In: Strobl, Blaschke, Griesebner: Angewandte Geographische Informationsverarbeitung XV, Beiträge zum AGIT-Symposion Salzburg 2003: 369 - 374

Schönthaler K., Meyer U., Pokorny D., Reichenbach M., Schuller D., Windhorst W. (2003): Ökosystemare Umweltbeobachtung – vom Konzept zur Umsetzung; Bayer. Stattsm. F. Landesentw. u. Umwetlfragen; UBA; Erich-Schmidt-Verlag

Annex 2.3

United Nations Educational, Scientific and Cultural Organization
Organisation des Nations Unies pour l'éducation, la science et la culture
Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura

Ref.: SC/ECO/SA/5864/503

EINGANG
05. MAI 2004
Erl.: .....

29 April 2004

Dear Professor Fisher Kowalski and Dr Karlheinz,

Austrian MAB workshop, 17-18 June 2004

I am pleased to confirm our willingness in participating in the workshop under consideration. I designate hereby Salvatore Arico as the person who will represent the Secretariat of UNESCO's Man and the Biosphere Programme at the workshop.

In particular, Mr Arico will identify in coordination with both of you, specific interlinkages of the workshop's themes and objectifs with the MAB.-Biosphere Reserves Integrated Monitoring programme, as well as with relevant research activity being coordinated by UNESCO's Division of Ecological Sciences and its MAB programme.

Yours sincerely,

Mireille Jardin
Director a.i.
Division of Ecological Sciences
Secretary a.i.
Man and the Biosphere Programme

Prof. Dr Marina Fisher Kowalski
Head of the Institute
Dr Karlheinz Erb
Project coordinator
Institute of Social Ecology
Universität Klagenfurt
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Annex 2.4

Workshop Participants

Re-designing the Research Agenda of MaB-Austria,
in special consideration of BRIM

Arico, Salvatore
Programme Specialist, Biodiversity, MaB Programme, UNESCO Division of Ecological Sciences, France

Baumgartner, Christian
Nationalpark Doanau-Auen GmbH, Austria

Brondizio, Eduardo S.
University of Indiana, U.S.A.

Chytil, Josef
MaB Committee Member Czech Republic

Cibien, Catherine
MaB France

Erb, Karlheinz
IFF, Soziale Ökologie, Vienna, Austria

Ertl, Siegrun
IECB, Institut für Ökologie und Naturschutz der Universität Wien, Austria

Fischer-Kowalski, Marina
IFF, Soziale Ökologie, Vienna; Austrian MaB Committee

Fuhrmann, Elfriede
Bundesministerium für Land- und Forstwirtschaft, Abt. II/1; Austrian MaB Committee

Gaube, Veronika
IFF, Soziale Ökologie, Vienna, Austria

Gooch, Pernille
Human Ecology, Lund University, Sweden

Grabherr, Georg
IECB, Institut für Ökologie und Naturschutz der Universität Wien; Chair of the Austrian MaB Committee

Grünbühel, Clemens
IFF, Soziale Ökologie, Vienna, Austria

Haas, Willi
IFF, Soziale Ökologie, Vienna, Austria

Haubenberger, Gottfried
National Park - Forstverwaltung Lobau, Austria

Herzig, Alois
Head of the Biological Station, Scientific Director of the National Park Neusiedler See; Austrian MaB Committee

Jungmeier, Michael
E.C.O. Institut für Ökologie, Klagenfurt, Austria

Kalivoda, Henrik
Institute of Landscape Ecology, Slovak Academy of Sciences, Bratislava, Slowakia

Kaufmann, Rüdiger
Institute of Zoology and Limnology, University of Innsbruck, Austria

Kaushal, Praveen
SOPHIA, Society for the Promotion of Himalyan Indigenous Affairs, Dehradun, India

Köck, Günter
Austrian Academy of Science

Korff, Katja
Landesamt für den Nationalpark Schleswig-Holsteinisches Wattenmeer; Dezernat Monitoring, Germany

Lang, Alois
Public Relations Manager of the National Park Neusiedler See, Austria

Lange, Sigrun
E.C.O. Institut für Ökologie, Klagenfurt, Austria

Loiskandl, Günther
Management BR Wienerwald, Austria

Mattes, Wolfgang
Umweltbundesamt; Austrian MaB Committee

Medeiros, Rodrigo
MaB France

Mirtl, Michael
Umweltbundesamt; Austria

Plössnig, Christian
Amt der Tiroler Landesregierung, Abteilung Umweltschutz; Austrian MaB Committee

Popp, Marianne
IECB; Austrian MaB Committee

Psenner, Roland
Head of the Division of Limnology, Institute of Zoology and Limnology, University of Innsbruck, Austria

Recheis, Magdalena
IFF, Soziale Ökologie, Vienna, Austria

Reiter, Karl
IECB, Institut für Ökologie und Naturschutz der Universität Wien, Austria

Reusswig, Fritz
Potsdam Institute for Climate Impact Research, Department for Global Change & Social Systems, Germany

Reutz-Hornsteiner, Birgit
BR Großes Walsertal, Austria

Ringhofer, Lisa
IFF, Social Ecology, Vienna, Austria

Ruoss, Engelbert
Scientific Director, Entlebuch BR; Swiss UNESCO Commission, Committee World Heritage & Biosphere Reserves, Switzerland

Singh, Simron
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Stoll-Kleemann, Susanne
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Vijaykumar, S.P.
ANET, Port Blair, India

Vogel, Michael
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Wrbka,Thomas
IECB, Institut für Ökologie und Naturschutz der Universität Wien, Austria

Zollner, Daniel
E.C.O. Institut für Ökologie, Klagenfurt, Austria

Annex 2.5

United Nations Educational, Scientific and Cultural Organization

Workshop Programme

Re-designing the Research Agenda of MaB-Austria,
in special consideration of BRIM

Thursday, 17.06.2004
Moderation: Willi Haas

9:00-9:20 ***Inaugural Welcome*** (Prof. Georg Grabherr, IECB, Austria, Chair of the Austrian MaB Committee)

9:20-9:30 ***Introduction "Re-designing the research agenda of MaB Austria, in special consideration of BRIM"*** (Karlheinz Erb, IFF-Social Ecology, Vienna, Austria)

9:30-9:50 Sigrun Lange, Michael Jungmeier, Daniel Zollner (E.C.O, Austria)
Biosphere Reserves in Austria - Overview and Status quo of Research
The presentation focuses on the content and layout of the overview-brochure on Austrian Biosphere Reserves, which is a publication targeted to Biosphere Reserve managers as well as to the public. Furthermore, the presentation will highlight past and recent research activities in the region of the Biosphere Reserves.

9:50-10:10 Simron Jit Singh (IFF-Social Ecology, Vienna, Austria)
Stakeholder Composition in Austrian Biosphere Reserves
The presentation provides an overview of the complex stakeholder network in Austrian Biosphere Reserves and comments on the importance of decision support tools to meet the sustainability challenge.

10:10-10:30 Birgit Reutz-Hornsteiner (BR Grosses Walsertal, Austria), Günther Loiskandl (BR Wiener Wald, Austria)
Research and Monitoring in BRs From the Perspective of BR Managers in Austria

10:30-11:00 Coffee break

11:00-11:30 Arico Salvatore (UNESCO-MaB, France)
Interlinkages Between Scientific Research, Scientific Monitoring and Scientific Assessments: The Case of UNESCO's Man and the Biosphere Programme and its Biosphere Reserve Integrated Monitoring

11:30-12:00 Fritz Reusswig (PIK, Germany)
Social Monitoring of Biosphere Reserves as a Social Process
The issue of monitoring is presented as a kind of self-monitoring of human-nature-interactions, linked to the pressure-state-response approach, however, from a sociological point of view. Finally, thoughts for the further development of the BRIM process and indicators are discussed.

12:00-12:30 Prof. Georg Grabherr, Karl Reiter, Siegrun Ertl (IECB, Vienna)
Natural Science Perspectives for Biosphere Reserves
BRIM requires basic observations and monitoring activities on ecosystem health (natural, semi-natural and anthropogenic ecosystems) for exploring sustainability options and management success.

12:30 Lunch

14:15-15:15 Prof. Marina Fischer-Kowalski (IFF-Social Ecology, Vienna, Austria)
"One Step further": Towards an Austrian MaB Research Agenda
The point of departure in this presentation is the status of BRIM. Building on the Rome report, the presentation offers a conceptual framework/model that lays emphasis on becoming more specific and operational and offers new directions in operationalising integrated monitoring in Biosphere Reserves.

15:15-16:30 **Working Groups:**
"One step further": Commenting on the MaB research agenda proposal

16:30-17:00 Coffee break

17:00-17:30 **Report of the working groups**

17:30-18:00 **Plenary discussion and comments. Conclusions by the MaB committee**

Friday, 18.06.2004
Moderation: Karlheinz Erb

9:00-11:00 **Working Groups: Exploration into MaB research questions**

11:00-11:30 Coffee break

11:30-12:00 **Reports of working groups**

12:00-12:30 C**oncluding session**
Final statements: Prof. Marina Fischer-Kowalski and Prof. Georg Grabherr

12:30 Snack lunch

14:00 Bus departure for Vienna

Annex 2.6

Re-designing the research agenda of MaB-Austria,

in special consideration of BRIM

IFF – Social Ecology

IECB – Institute of Ecology and Conservation Biology

Illmitz, 17.-18. June 2004

United Nations Educational,

AUSTRIAN ACADEMY OF SCIENCES

ÖSTERREICHISCHE AKADEMIE DER WISSENSCHAFTEN

The Austrian MAB-National Committee at
the Austrian Academy of Sciences
(Chair of committee: Univ.Prof.Mag.Dr. Georg Grabherr)

Welcome

to the Project -Workshop

Re-designing the Research Agenda MAB-Austria

The Project Consortium
IFF – Institut für Interdisziplinäre Forschung und Fortbildung – Soziale Ökologie, Vienna
IECB – Institute of Ecology and Conservation Biology, Vienna
Project co-ordinators: Dr. Karl-Heinz ERB (IFF), Ass.Prof.Dr. Karl Reiter (IECB)

Main goal of the project

”Re-designing the Research Agenda MAB-Austria” :

Support *developing an explicit medium term research agenda* which suit MAB-research activities in Austria to the priorities set by the International MAB-Council with special consideration of research in and for biosphere reserves, in particular the coordinated implementation of BRIM (Biosphere Reserves Integrated Monitoring)

The research agenda should

- *fit well to the particular opportunities and needs of Austrian Biosphere Reserves;*
- *utilize existing excellence and develope further Austrian research capacity*
- *help to link to complement existing research programmes and initiatives on the international level and in other countries so as to create favorable synergisms*
- *be able to mobilize additional funding opportunities*
- *anhance the visibility and impact of Austrian MAB research, nationally and internationally.*

Dipl.-Biol. Sigrun Lange
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Brochure and status quo of research

Sigrun Lange, Michael Jungmeier & Daniel Zollner
17/18. 06. 2004, Illmitz, Informationscenter Nationalpark Neusiedlersee
MAB-CONSULTANCY WORKSHOP

Content

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1 Project context

Dipl.-Biol. Sigrun Lange
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AUSTRIAN BIOSPHERE RESERVES BECOME AIRBORNE

- Implementation of the Seville-Strategy
- New Biosphere Reserve sites
- Research concept

1 Project context

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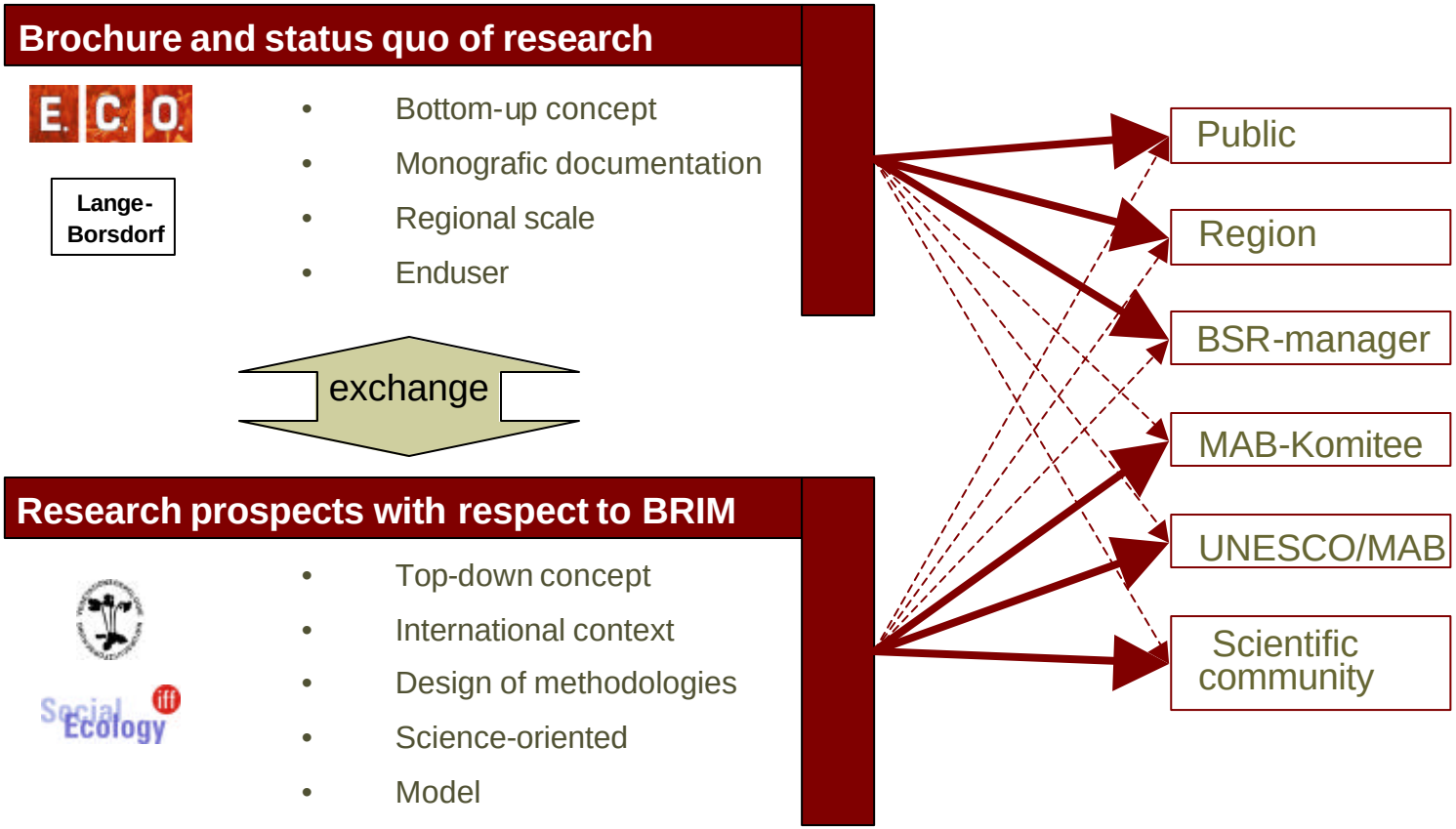

2 Brochure

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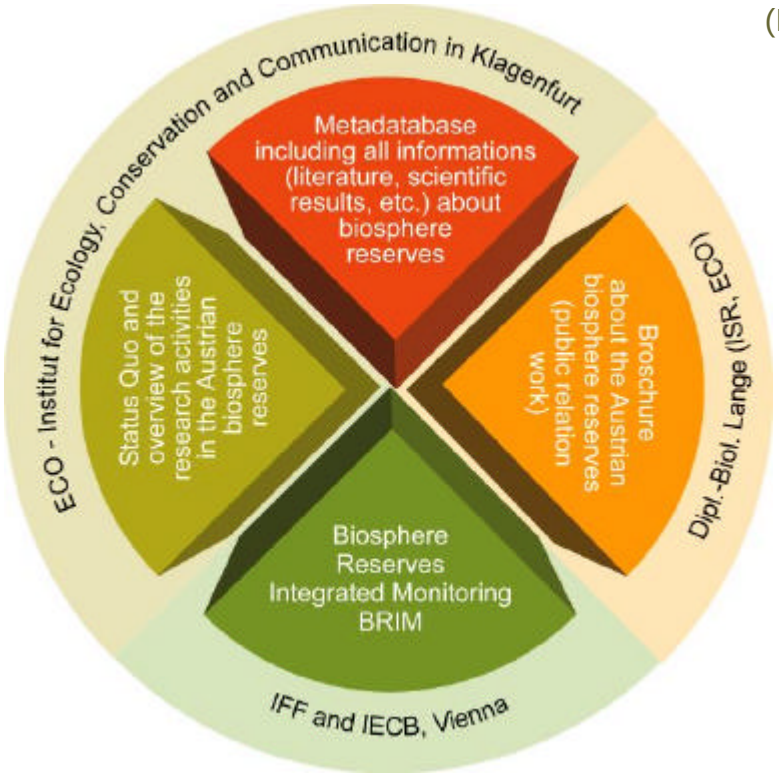

Brochure about the Biosphere Reserves in Austria

(Duration of the project: February till September 2004)

- **Overview of UNESCO´s MAB Program: Development of a challenging concept**
- **Presentation of the existing Austrian Biosphere Reserves (+ Wienerwald) –** including a discussion of the problems
- **Best practice examples from Austria**
- **Contributions of experts, interviews, etc.**
- **Outlook on the establishment of new BSR**

Brochure

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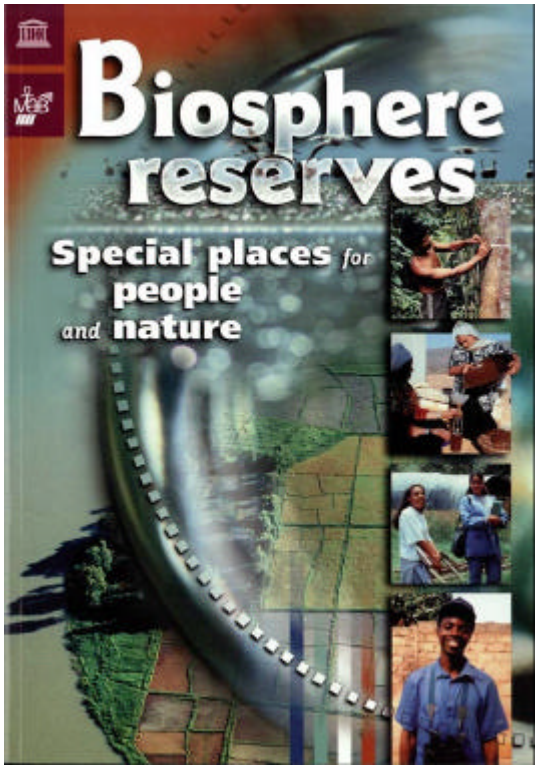
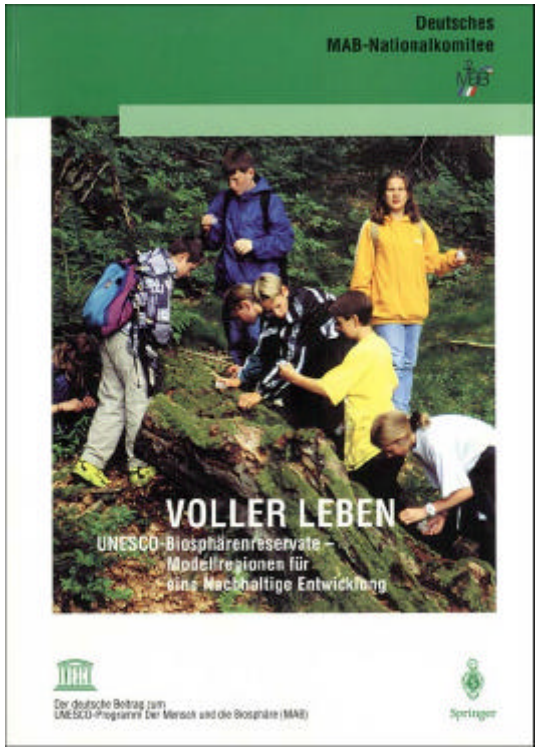
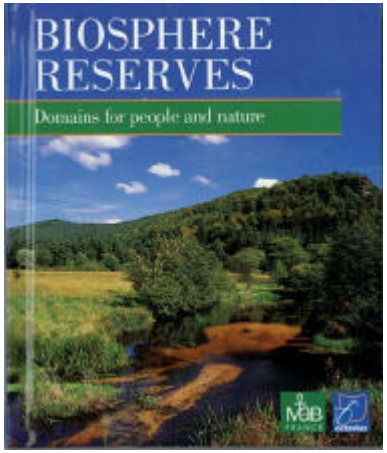
Austria is still lacking a brochure about its five Biosphere Reserves







2 Brochure

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Challenging concept – still unknown
Inquiry: What is a Biosphere Reserve?

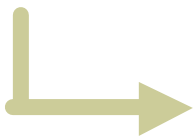
"…something **like a National Park** but less protected"

"…an **artificially constructed world** where endangered plants and animals are conserved.. "

"…a region to **oppose global warming**.. "

"…a **techno event** in Vienna which is called „biosphere"

"… the name reminds of **Indians** who were sent to **reservations** after they were almost wiped out."



"Biosphärenpark" instead of "Biosphärenreservat"

2 Brochure

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Three ways to inform the stakeholders and the public

Brochure / Whitebook
(A4 format, ~ 80 pages, full color)
German language

"Leben in Vielfalt" – BSR als UNESCO Modellregionen für ein Miteinander von Mensch und Natur

Target group: Stakeholders

Website of the Austrian BSR
(www.biosphaerenparks.at)
German + English language

Target group:
Internal use;
BSR manager + researcher;
Interested public

Image-Brochure
(Folder of 2-3 pages)
German language

Target group:
General public;
wide distribution within Austria

Suggestion during the last BSR-Manager workshop;

not yet agreed!

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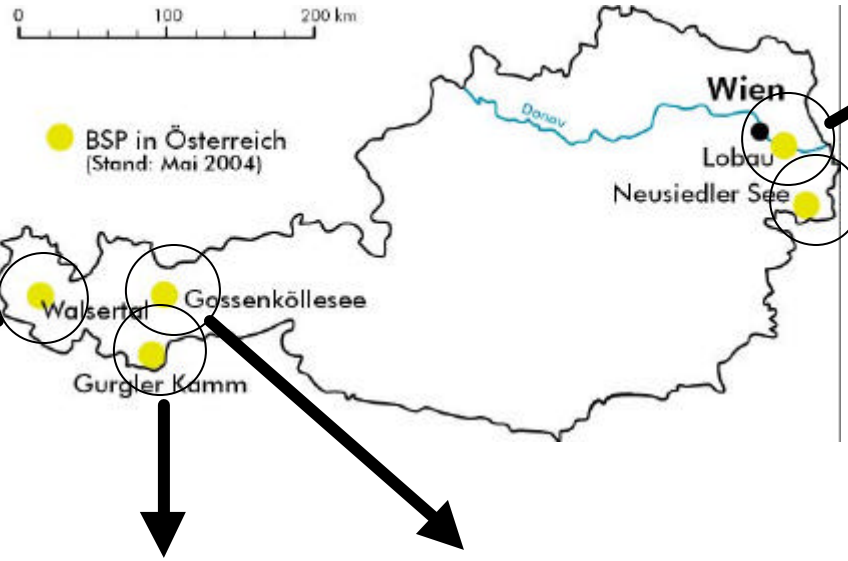
Status Quo of the Austrian BSR:
Four of the five existing BSR do not meet the standards of the "International Seville Strategy"



No adequate management; no zoning; no people; borders not clear; National Park more prominent
→ at present is discussed if the category makes sense or not

mplements Seville Strategy: management, people, focus on regional development; more research activities desirable

No adequate management; no people; zoning exists; again National Park more prominent
→ extension possible: BSR as a frame for the different conservation categories in the area

No adequate management; no zoning; no people;
→ Extension possible towards Ruhegebiet and Italy (Texelgruppe)

Smallest BSR of the world; no adequate management; no zoning; no people; intensive scientific activities, research station;
→ Seville Strategy can hardly be implemented; BUT: Important site for global monitoring activities (MRI-MAB-Initiative)

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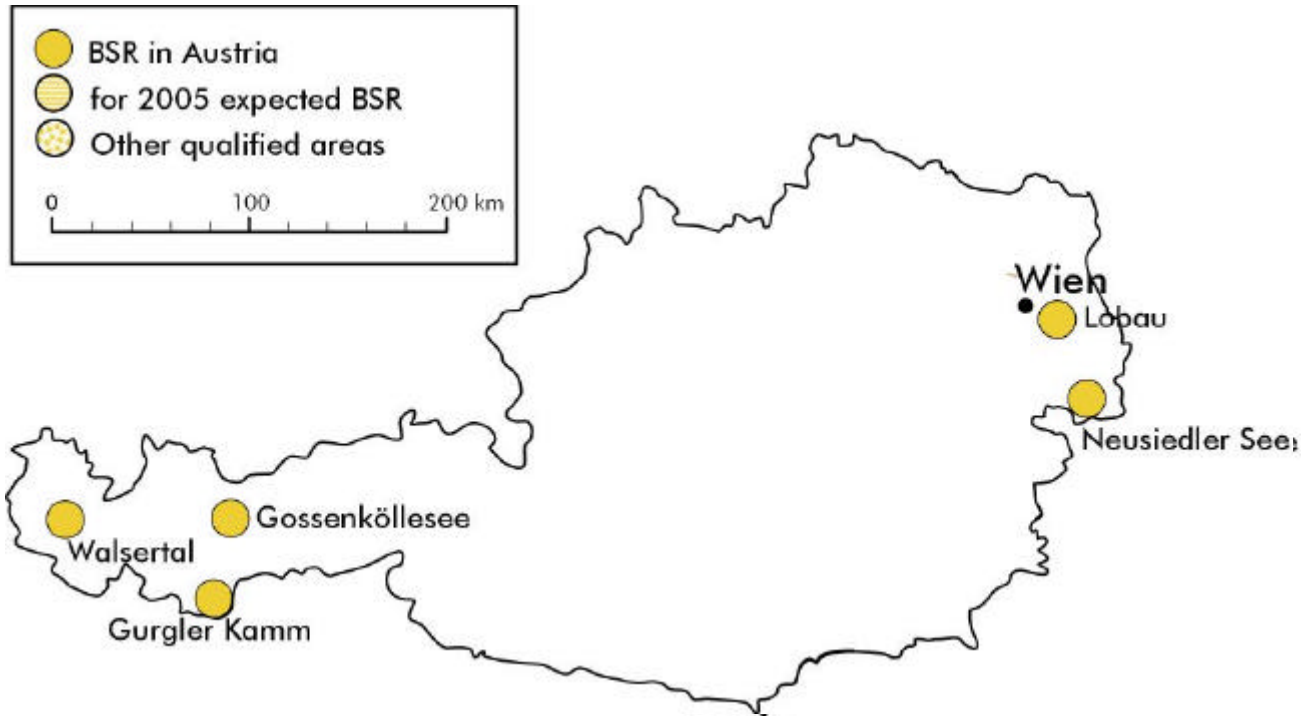
Austria is facing a challenging situation



3 Status quo of research

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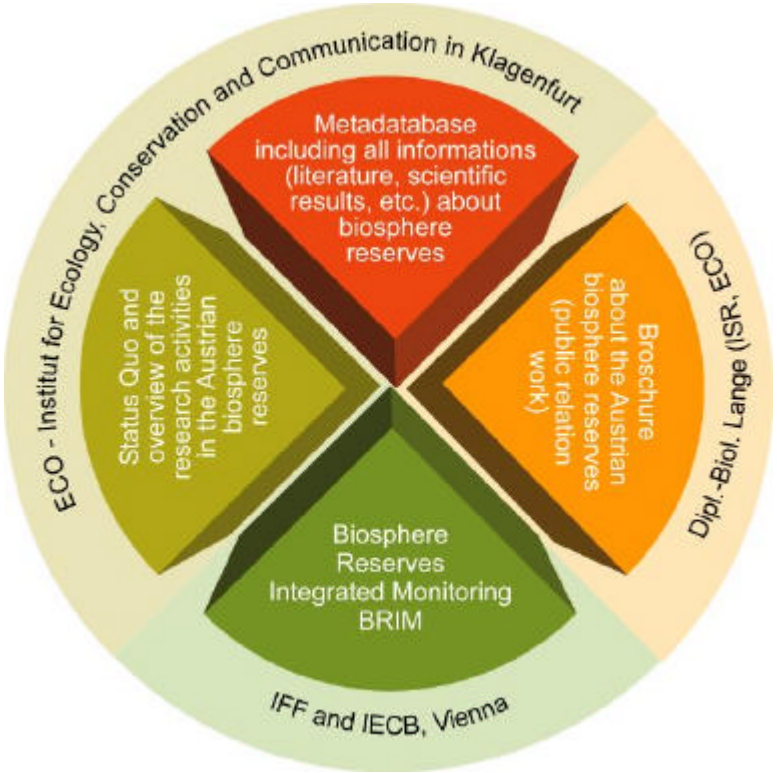
- **Overview of research**
- **Outlook**



Status quo of research

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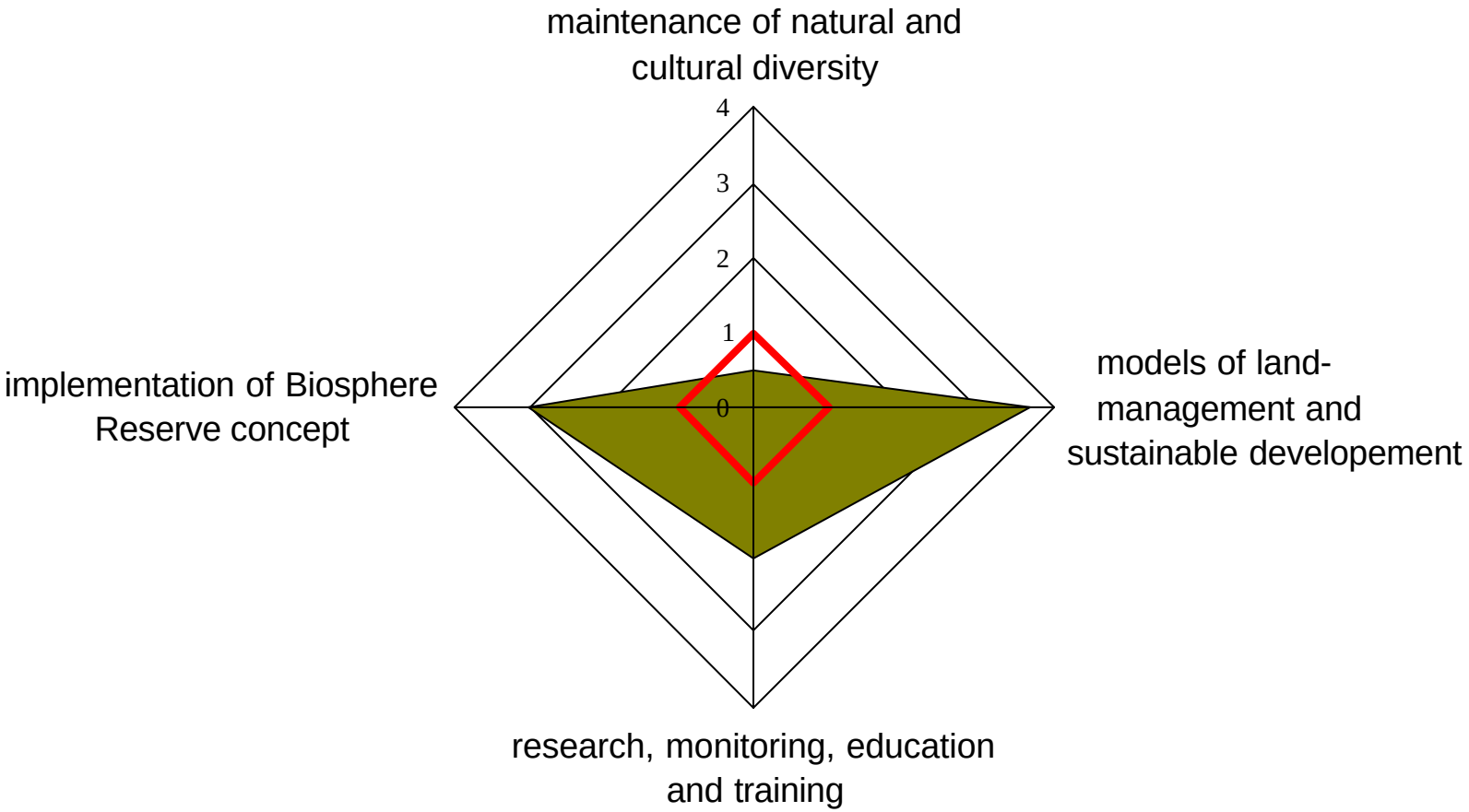
Seville-strategy – implementation (example Walsertal)



Source: expert interviews, expert opinion

Status quo of research

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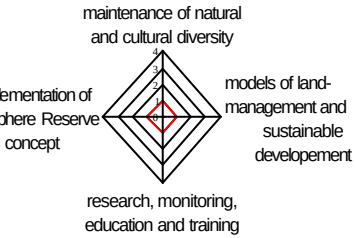
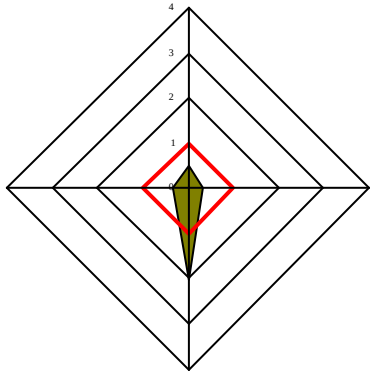
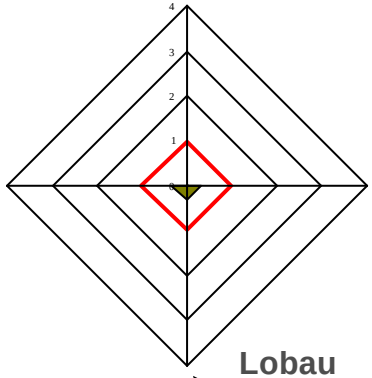
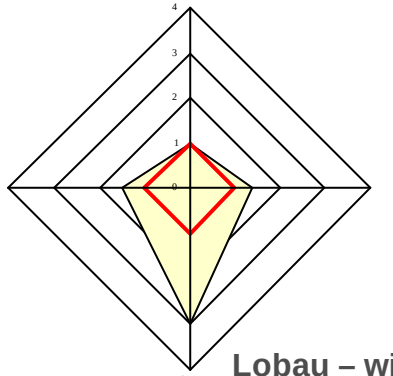
Seville-strategy – implementation



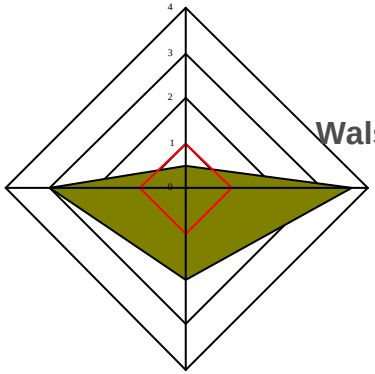






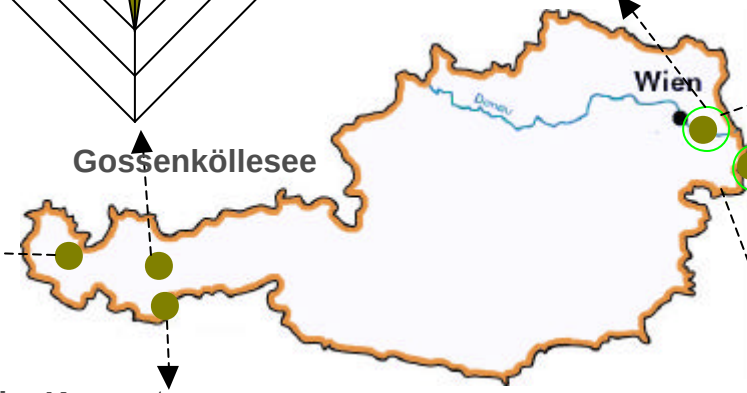
Lobau

Lobau – with respect to the N

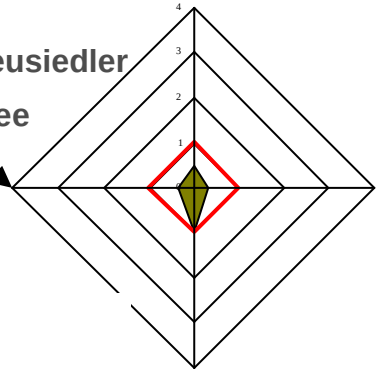


Walsertal

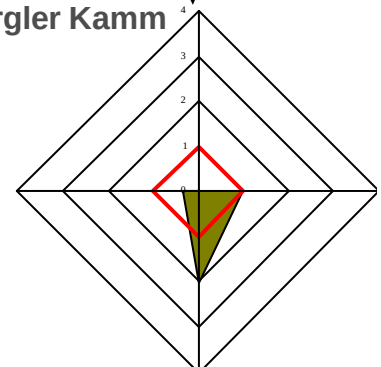
Gossenköllesee

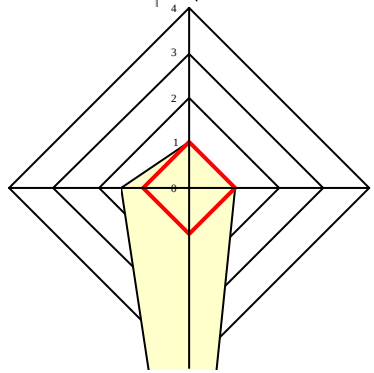


Neusiedler See



Gurgler Kamm





Neusiedler See- with respect to the NP

Status quo of research

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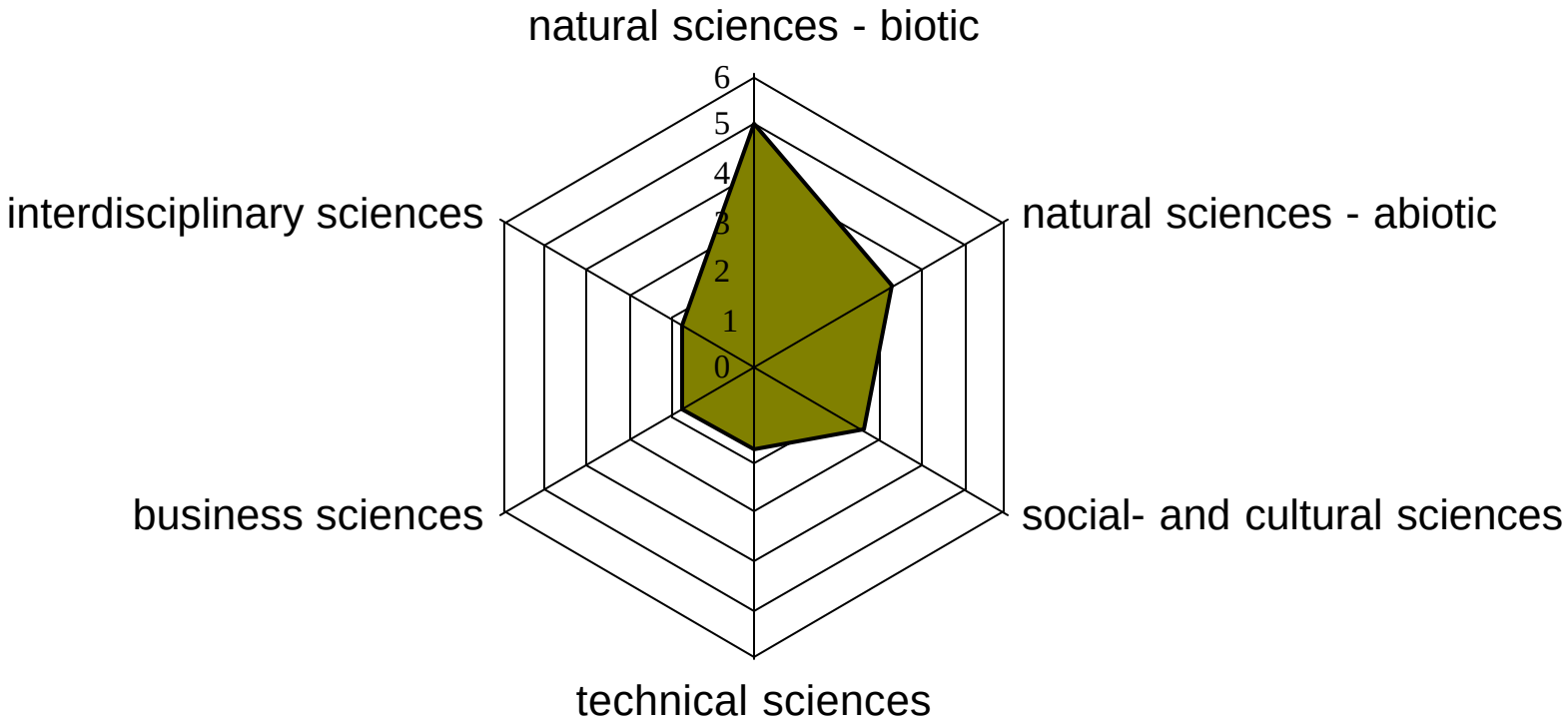
Disciplines of research - mean



Source: expert interviews, literature analysis, expert opinio

Status quo of research

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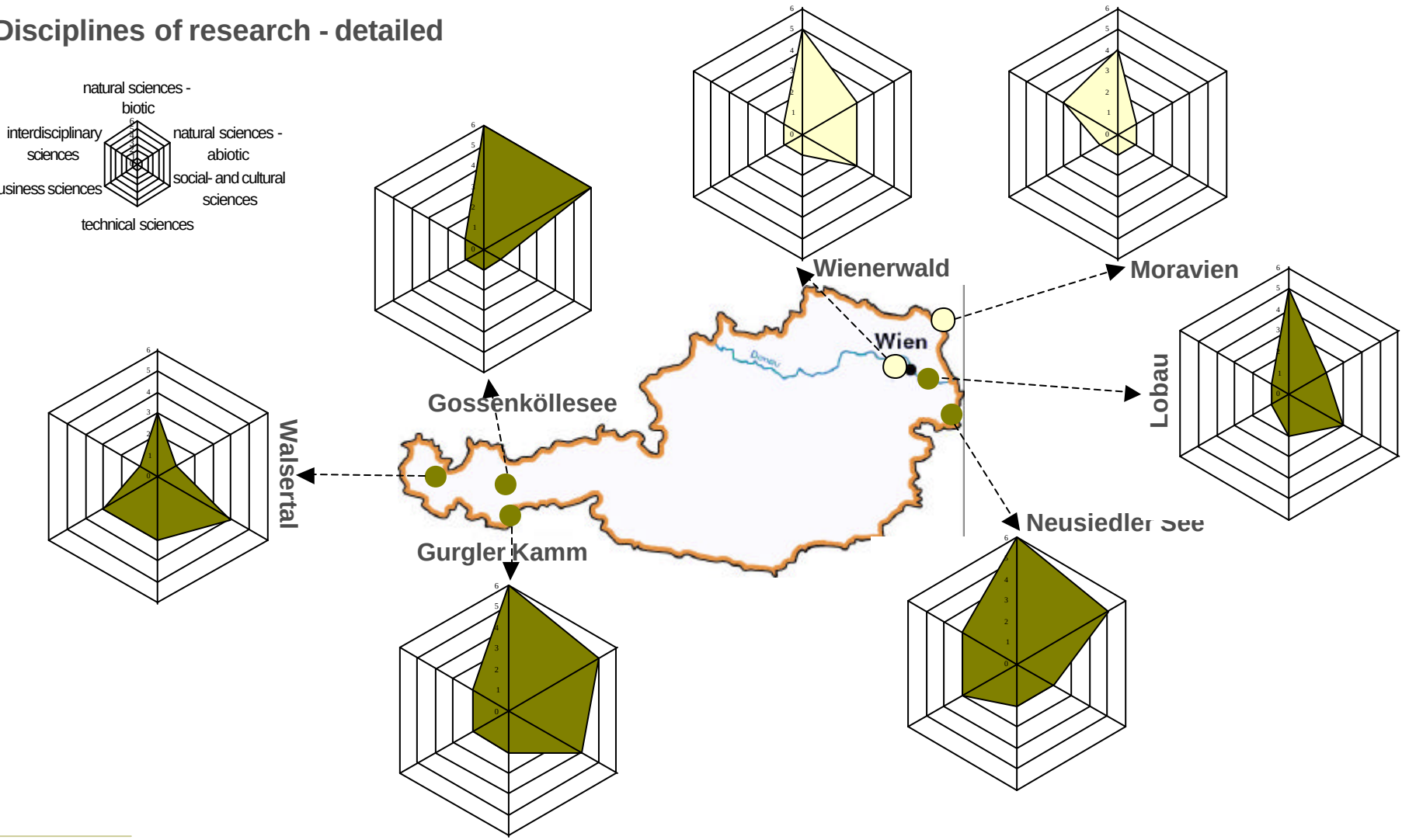
Disciplines of research - detailed



Status quo of research

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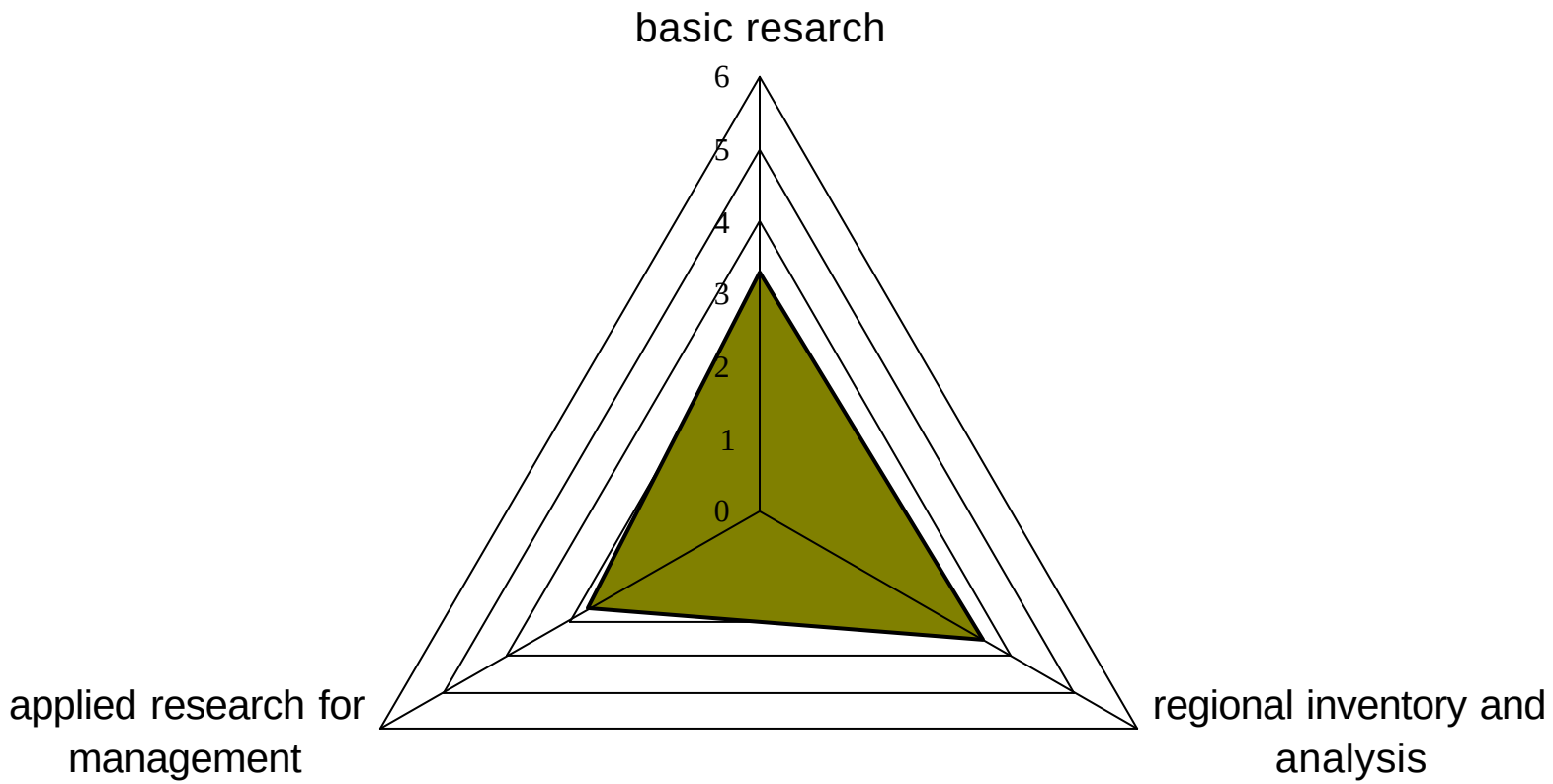
Type of research - mean



Source: expert interviews, literature analysis, expert opinio

Status quo of research

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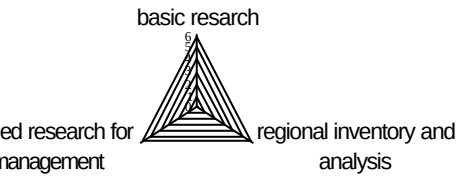
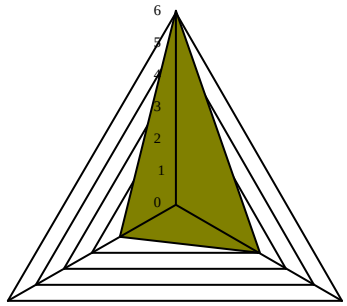
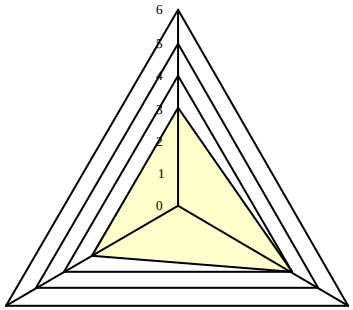
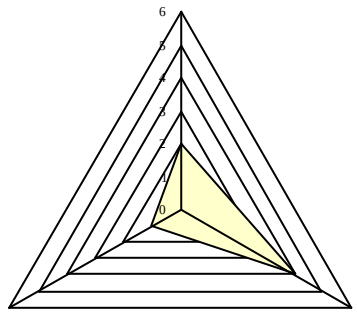
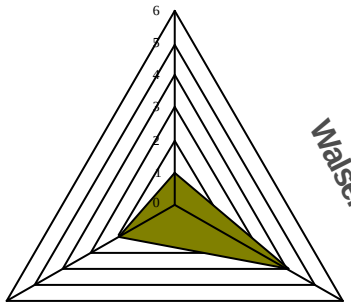
Type of research - detailed

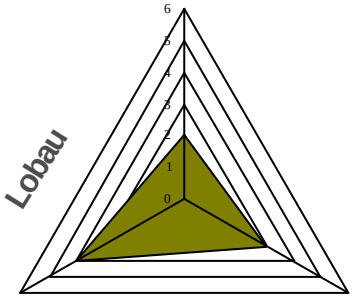


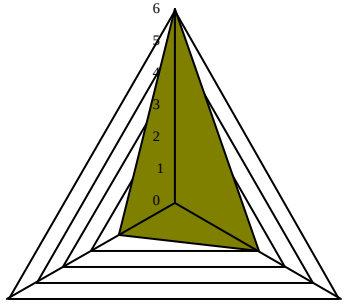


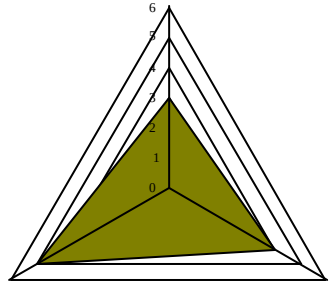


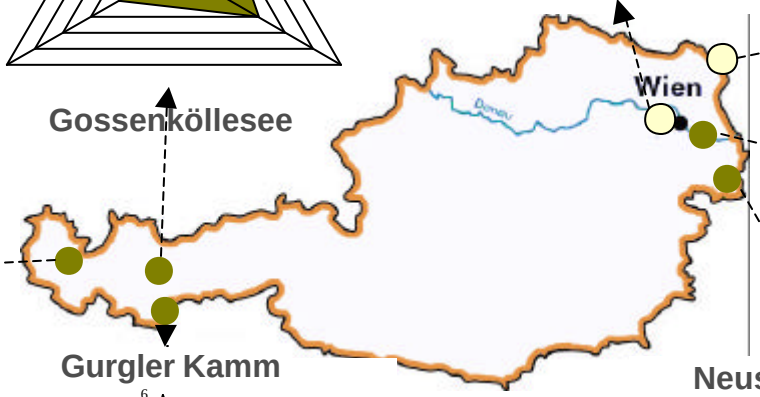












4 Outlook

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Implementing the Seville Strategy / turning away

Adequate management structures

Detailed research concepts

Variety as challenge

Establishment of new sites

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Thank you for your attention!

Stakeholders
in Austrian Biosphere Reserves

Simron Jit Singh

Institute for Social Ecology, Vienna

[with help from Karl-Heinz Erb, Veronica Gaube, Marina Fischer-Kowalski, Magdalena Recheis and Lisa Ringhofer]

Brief inputs to show

- the two representative cases of Biosphere Reserves in Austria: pre-Sevilla and post-Sevilla
- the difference in the stakeholder composition as a consequence
- Insights for stakeholder science

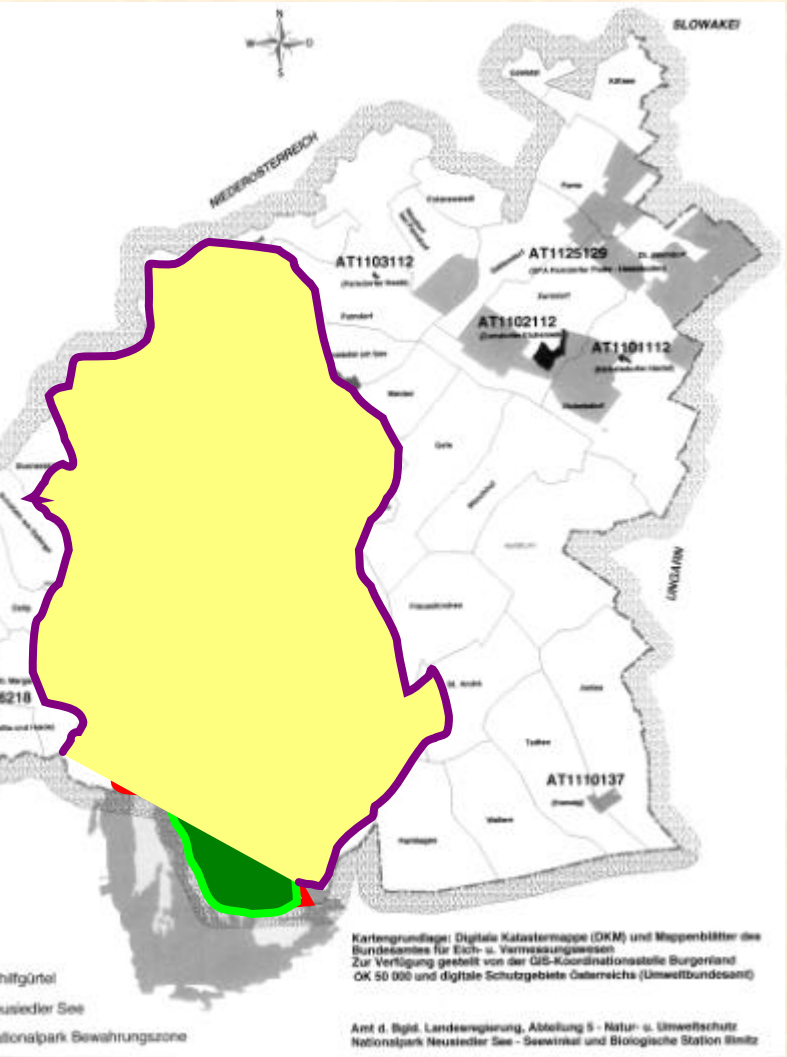
Neusiedlersee (pre-Sevilla) and Grosses Walsertal Biosphere Reserves (post-Sevilla)

The Neusiedlersee Biosphere Reserve (pre-Sevilla)

- The area is an important wetland site in Europe and is characterised by a mosaic of different habitats such as the lake, wet-meadows reed-beds etc. that provide a home to a variety of birds.

- Consequently, in the 1960s, the region was declared a Landschaftschutzgebiet (protected landscape), and was the site of IBP from 1967-72.

The Neusiedlersee Biosphere Reserve (pre-Sevilla)



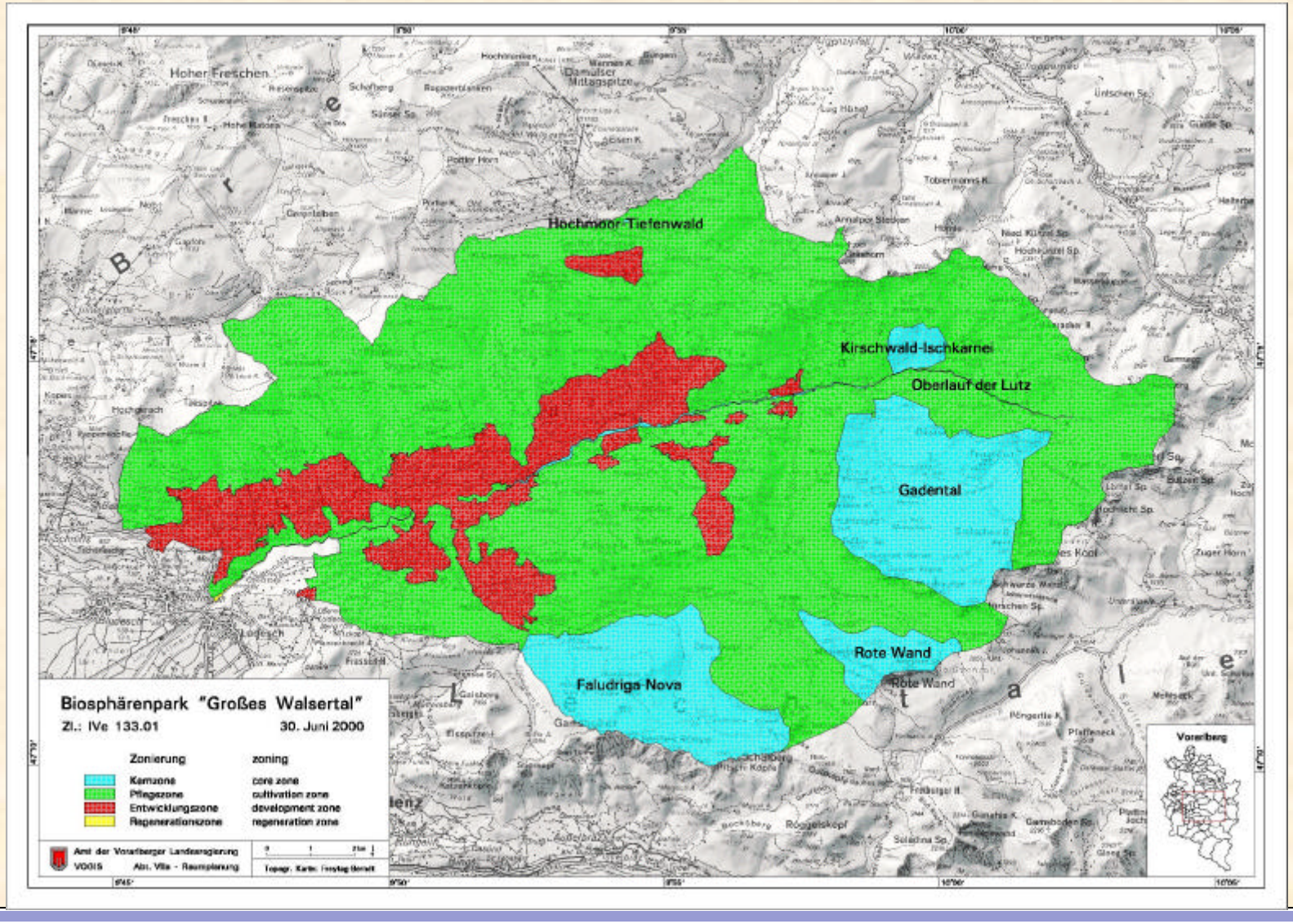
- In 1977, the lake and the surrounding reeds were declared a **Biopshere Reserve** that lent international prestige to the area, afforded some level of protection, and supported natural science research.
- In 1982, more than 60,000 ha. of the area was declared a **Ramsar site** (Convention on Wetlands) of which the BR is a part.
- In 1992, parts of the area were declared a **National Park**
- In 2000, a larger part was brought under **Natura 2000** network.

Sevilla Strategy 1995

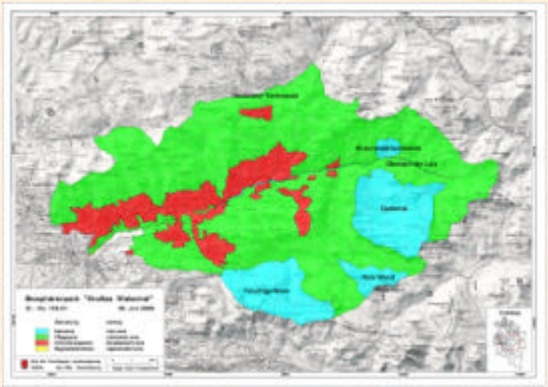
"…Biosphere reserves are thus poised to take on an new role. Not only will they be a means for the people who live and work within and around them to attain a balanced relationship with the natural world; they will also contribute to the needs of society as a whole by showing the way to a more sustainable future. This is the heart of the vision for biosphere reserves in the 21st century."

Seville Strategy 1995

The Grosses Walsertal Biosphere Reserve (post Sevilla)



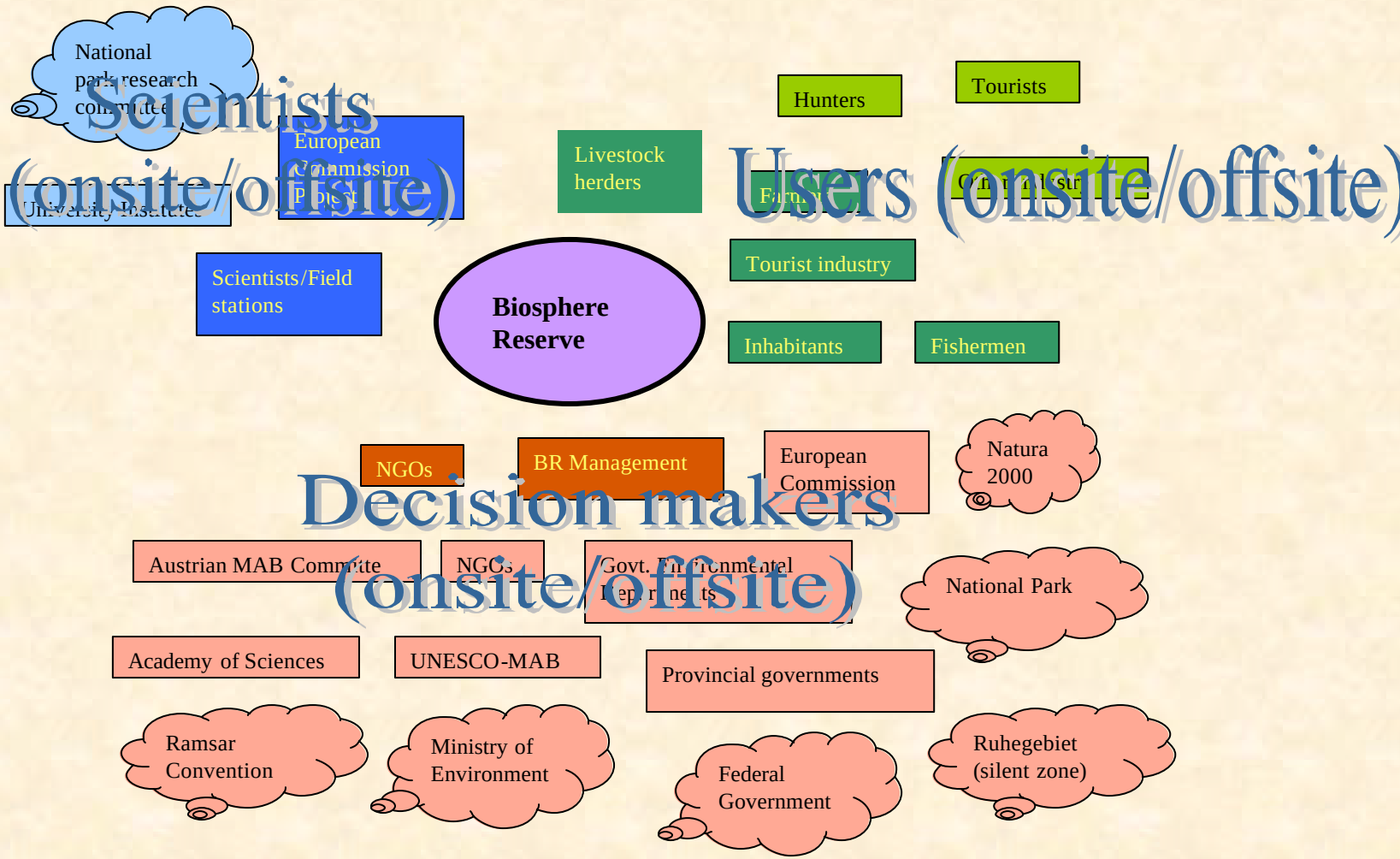
The Grosses Walsertal Biosphere Reserve (post Sevilla)



- The BR follows the Sevilla mandate of zonation (core, buffer and transition), and a vision (Leitbild) that binds all stakeholders within a common framework of sustainable regional development.

- The area, with six villages and ca. 3,500 inhabitants, was notified as a BR in 2000.
- The notification of this BR was a consequence of the people‘s initiative to follow the example of Rhön BR (Germany) that had benefitted much from a successful sustainable regional development program under the BR label.
- Only parts of the core are doubly protected under Natura 2000, while the rest of the area is only a BR.

Stakeholder Composition



Insights

1. **Stakeholder composition varies according to the history of the Biosphere Reserves**

2. **Stakeholders are endowed with certain resources and competencies (such as legal rights, entitlements, etc) and hence have an impact on the BR by way of direct actions or decisions.**

3. **The possibility of conflicting interest(s) cannot be ruled out, and it may be that such conflicting interests endanger the goals of the BR (sustainability).**

Insights

4. Stakeholder analysis allows for an understanding of these conflicting interests and any possible option space/flexibility towards a common goal.

5. Hence, insights into stakeholder network is imperative for appropriate management decisions and effective interventions

6. Research methods such as the use of "stakeholder analysis/matrix" and one or more "decision support tools" (such as Multi-Criteria Decision Aid, Participatory Agent-based Social Simulation, IA-Focus Groups, etc.) are promising. They help to shape and/or transform stakeholder preferences, or to make decisions in conformity with the goals – "promoting ownership" of the vision

Research and Monitoring

from the perspective of

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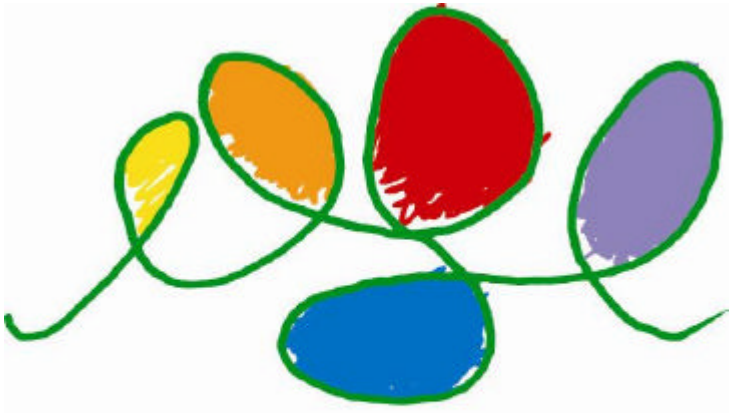
Wienerwald



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Großes Walsertal

Biosphere Reserves in Austria

- **5 existing biosphere reserves with completely different basic conditions**

  4 nominated in the 70‘s, only one after Sevilla

  others in planning process, BR Wienerwald nomination intended for 2005
- **Status of scientific research and monitoring is hardly comparable among these BRs**

  National Park, University research sites

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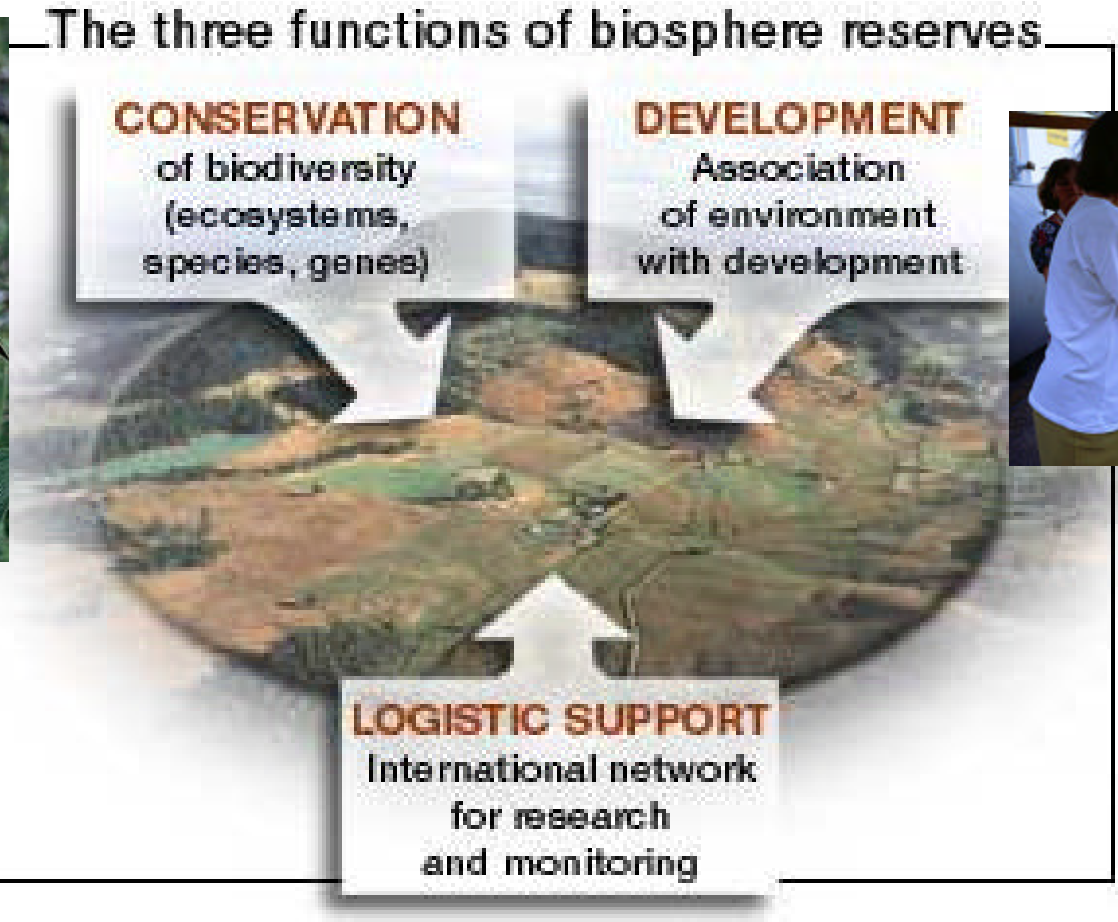
Wienerwald

Biosphärenpark
Großes Walsertal

Functions of Biosphere Reserves



support of research and monitoring related to conservation and sustainable development

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Großes Walsertal

THE SEVILLE STRATEGY FOR BIOSPHERE RESERVES

Recommendations for research and monitoring at the individual reserve level (1):

- reinforce scientific research and monitoring
- all zones of biosphere reserves contribute appropriately to conservation, sustainable development and scientific understanding
- include the human dimensions (connections between cultural and biological diversity, conservation of traditional knowledge and genetic resource, their role in sustainable development)
- improve knowledge of the interactions between humans and the BR

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THE SEVILLE STRATEGY FOR BIOSPHERE RESERVES

Recommendations for research and monitoring at the individual reserve level (2):

- basic and applied research (focus on local issues, interdisciplinary projects, natural and social sciences)
- data management for research and monitoring results
- inventories of fauna and flora, collecting ecological and socio-economic data
- development and testing of evaluation and monitoring methods of biodiversity, sustainability and quality of life of its inhabitants
- indicators of sustainability (in ecological, economic, social and institutional terms)

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BIOSPHERE RESERVE

NOMINATION FORM

Logistic support function: research and monitoring

Estimated number of national and of foreign scientists participating in research within the biosphere reserve, permanent and occasional

Estimated number of masters and/or doctoral theses carried out on the biosphere reserve each year

Research station(s) within the BR: permanent and temporary and permanent research station(s) outside the BR

Permanent monitoring plots

Research facilities of research station(s)

Other facilities (e.g. facilities for lodging for scientists etc.)

BIOSPHERE RESERVE

NOMINATION FORM

Logistic support function: research and monitoring

Description of past, on-going and planned research and monitoring activities, each separated in

- abiotic research and monitoring (climatology, hydrology, geomorphology)
- biotic research and monitoring (flora, fauna)
- socio-economic research (demography, economics, traditional knowledge, etc.)

Does the BR have programmes for research and monitoring?(activities, on-going or planned)

To what extent has the past and planned research and monitoring programme been designed to address management questions in the BR?

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Principle questions on the way to a Concept for research and monitoring in biosphere reserves

What for? Which goals should it go for?

For whom is scientific research? Who benefits?

Just for to meet the recommendations of Sevill strategy?

For the BR Management? answers, argumentatvie support, awareness of problems, decision making support, ..

For scientists? questions, tasks, playfield, soft- and hardware support, fundings, ...

For the public, other stakeholders in (and outside) the BR?

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Principle questions on the way to a Concept for research and monitoring in biosphere reserves

What kind of research and monitoring is BR relevant? Where are limits?

Biotic, abiotic, socioeconomic, technical, interdisciplinarity, communication-sciences, cultural ...?

Basic, applied, management-relevant, econommically relevant, ...?

examples

e.g. Sustainable quality management system in the BR Grosses Walsertal with indicators, aims and measures to success

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Principle questions on the way to a Concept for research and monitoring in biosphere reserves

How much? The role and relevance of scientific research and monitoring in comparison to the other maior functions of BRs (conservation, development)

Difference in „old and new“ type BRs?

Considering different points of view of different stakeholders!

Resource assignement within the BR management?

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Principle questions on the way to a Concept for research and monitoring in biosphere reserves

How? Organisational basis and framework conditions for scientific research?

Who does the research work?

Who coordinates it?

Who is responsible and in competence to make decisions?

What is the role of MAB comitee and UNESCO?

What is the role of the BR Management?

Who pays for it?

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BR‘s scientific research and monitoring concepts should....

- exist (be worked out)
- involve all the BR‘s on the national level and consider, which kind of research makes sense in which BR (idea of an Austrian BR scientific research cluster: special scientific focus for every BR
- help to create university partnerships
- **consider the basic importance of the question of funding**
- guideline to create research facilities in the sites
- involve the local population and the interests of the local people (e.g. Geoday in the BR Grosses Walsertal)
- build a bridge between researchers and the local people

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BR‘s scientific research and monitoring concepts should....

- involve the BR managers in the decision process concerning research
- involve the managers and responsible persons in the choice of the research projects in cooperation with the MAB comitee
- continue the „tradition“ of information exchange among the BR managers and the universities and research institutes
- ensure a transparent flow of the money spent on research
- consider short-, middle- and long-term goals
- pay attention to transdisciplinarity and nature, economic and socio-cultural demands
- aswell consider research and monitoring „out of the MAB research“ (thesis, ...)

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Großes Walsertal


Thanks for your
attention!

MAB Consultancy Workshop

Neusiedlersee, Austria 17-18 June 2004

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Context

- Earth as a system
  - self-regulation, through oscillations and abrupt changes
  - key processes
    - biogeochemical
    - biogeophysical
    - biodiversity
- Anthropocene Era
  - increase in frequency and intensity of global change
  - thresholds and responses
  - scenarios and responses

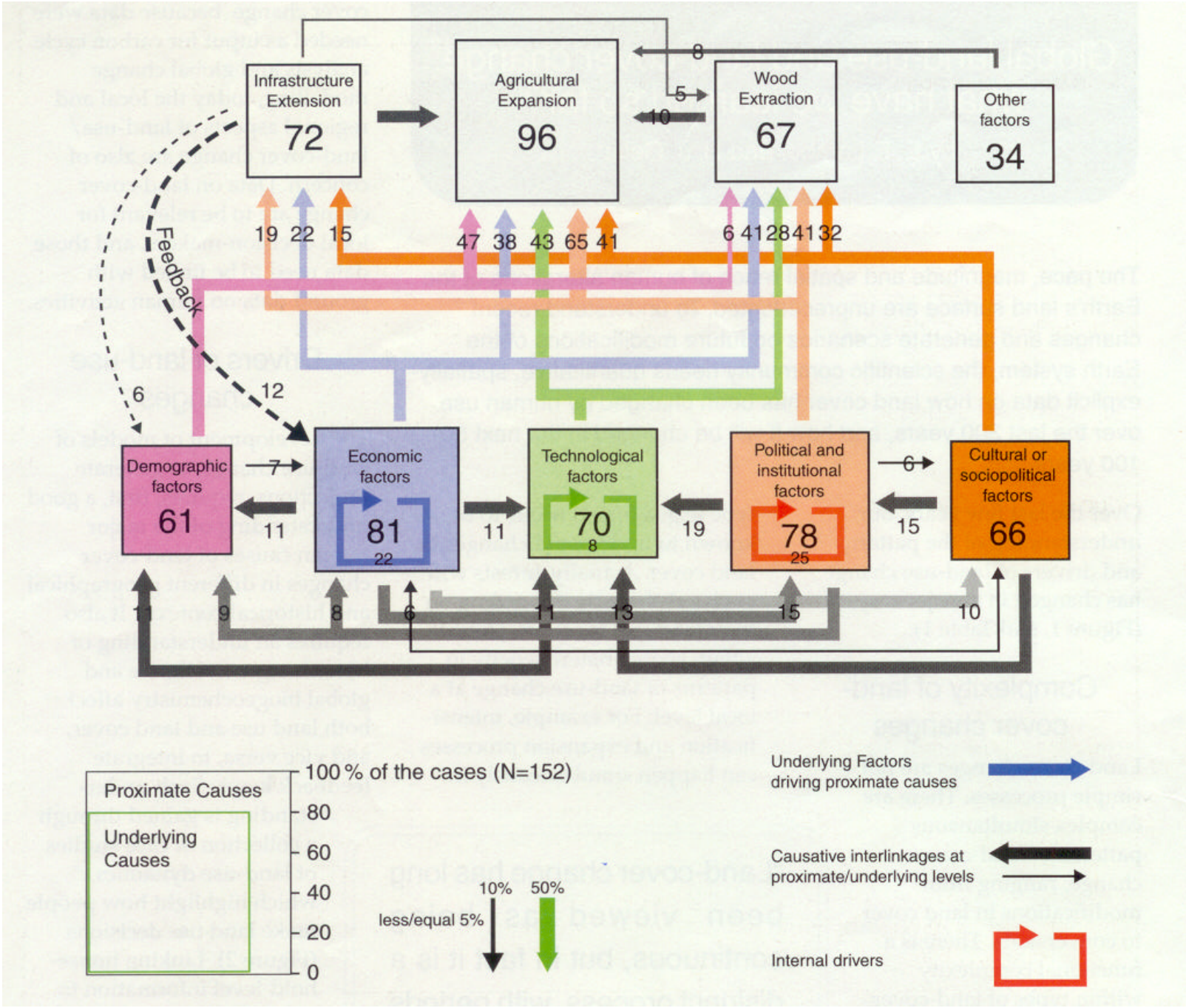
  but also
  - global information village
  - increased environmental consciousness
  - increased mainstreaming of environment into policy making

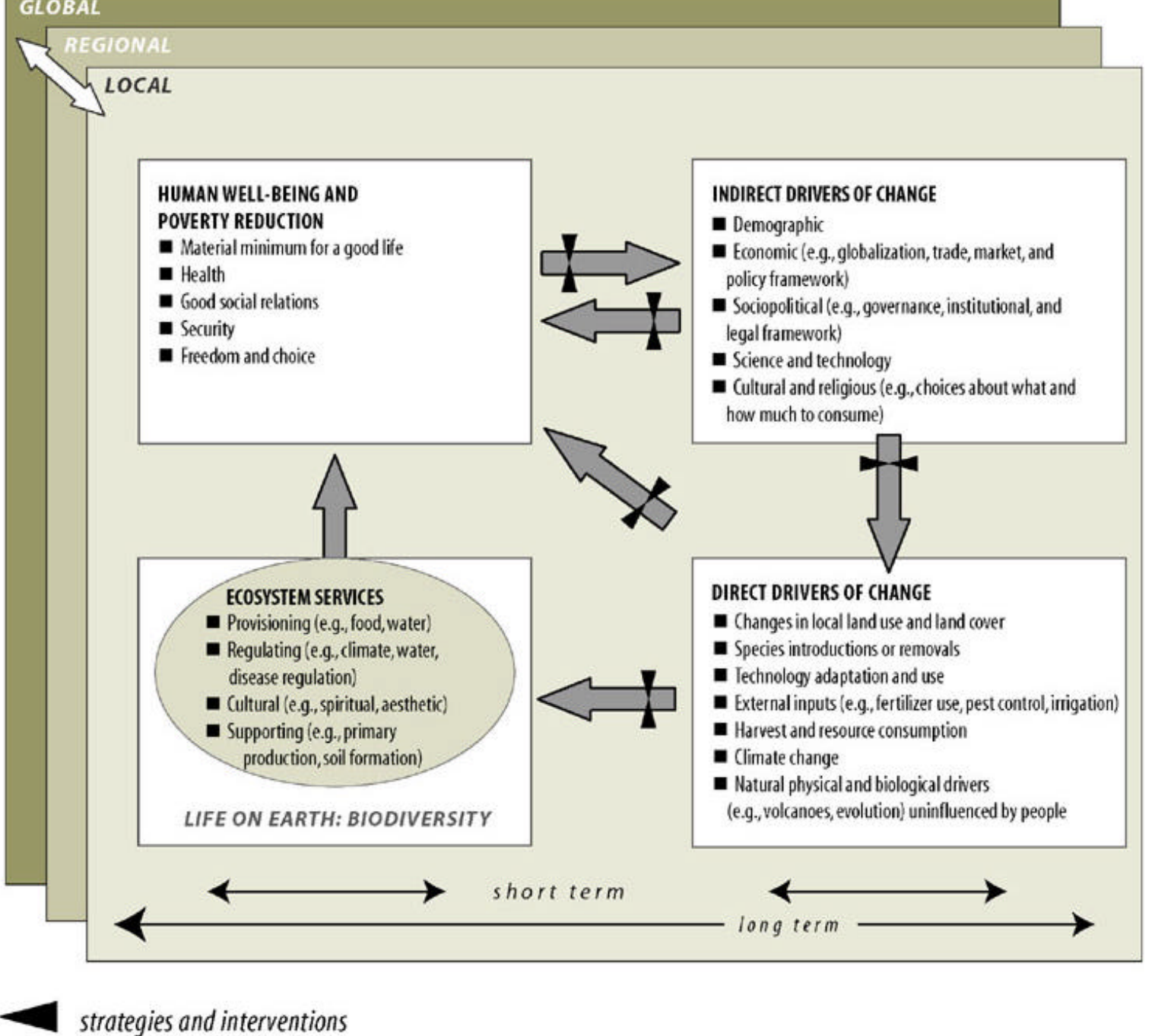
Issue

…from understanding how the earth system functions to…qualifying and quantifying processes of this new form of global change…

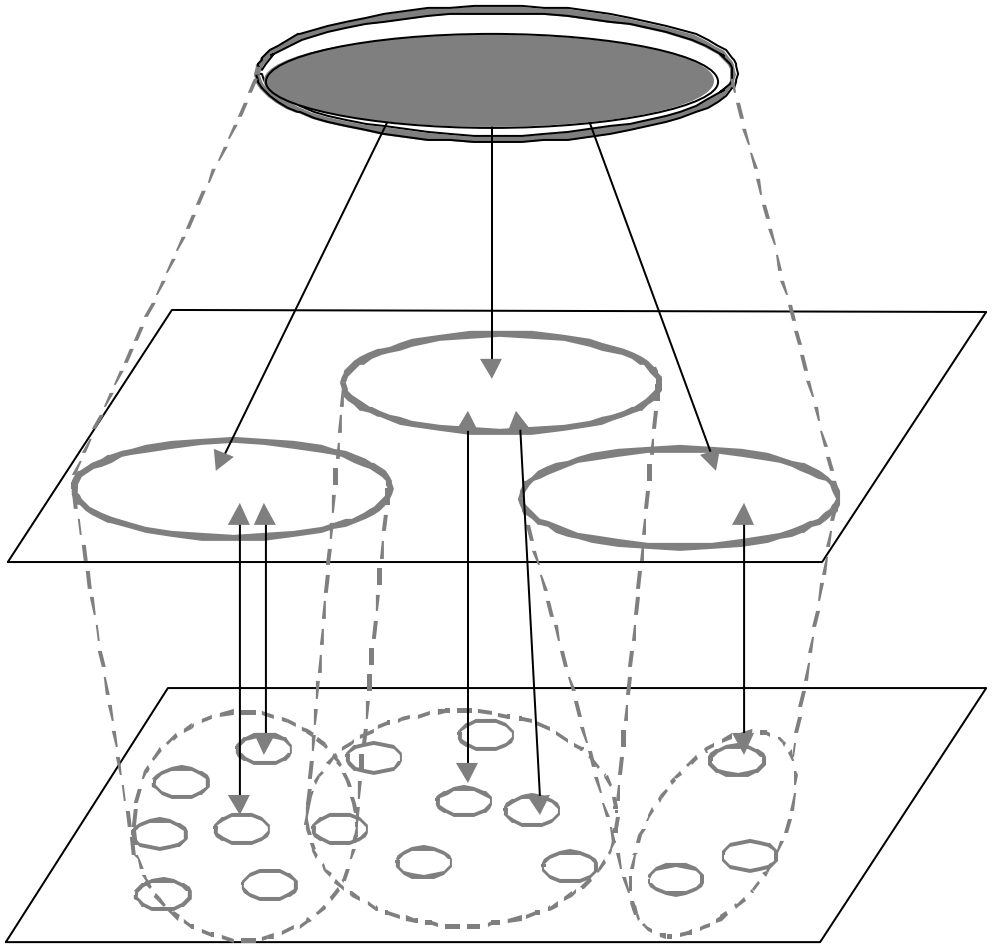
Challenges

- *What to observe, research on, and assess?*
- *Issues related to scale*
- *Appropriate agent representation*
- *How to deal with uncertainty?*
- *Issues related to public perceptions*
- *Integration of traditional and local knowledge*


Infrastructure Extension
72
Agricultural Expansion
96
Wood Extraction
67
Other factors
34
Feedback
Demographic factors
61
Economic factors
81
22
Technological factors
70
8
Political and institutional factors
78
25
Cultural or sociopolitical factors
66
100 % of the cases (N=152)
Proximate Causes
Underlying Causes
80
60
40
20
0
10%
50%
less/equal 5%
Underlying Factors driving proximate causes
Causative interlinkages at proximate/underlying levels
Internal drivers


GLOBAL
REGIONAL
LOCAL
HUMAN WELL-BEING AND POVERTY REDUCTION
Material minimum for a good life
Health
Good social relations
Security
Freedom and choice
INDIRECT DRIVERS OF CHANGE
Demographic
Economic (e.g., globalization, trade, market, and policy framework)
Sociopolitical (e.g., governance, institutional, and legal framework)
Science and technology
Cultural and religious (e.g., choices about what and how much to consume)
ECOSYSTEM SERVICES
Provisioning (e.g., food, water)
Regulating (e.g., climate, water, disease regulation)
Cultural (e.g., spiritual, aesthetic)
Supporting (e.g., primary production, soil formation)
LIFE ON EARTH: BIODIVERSITY
DIRECT DRIVERS OF CHANGE
Changes in local land use and land cover
Species introductions or removals
Technology adaptation and use
External inputs (e.g., fertilizer use, pest control, irrigation)
Harvest and resource consumption
Climate change
Natural physical and biological drivers (e.g., volcanoes, evolution) uninfluenced by people
short term
long term
strategies and interventions

RELATIONS BETWEEN SCALE LEVELS

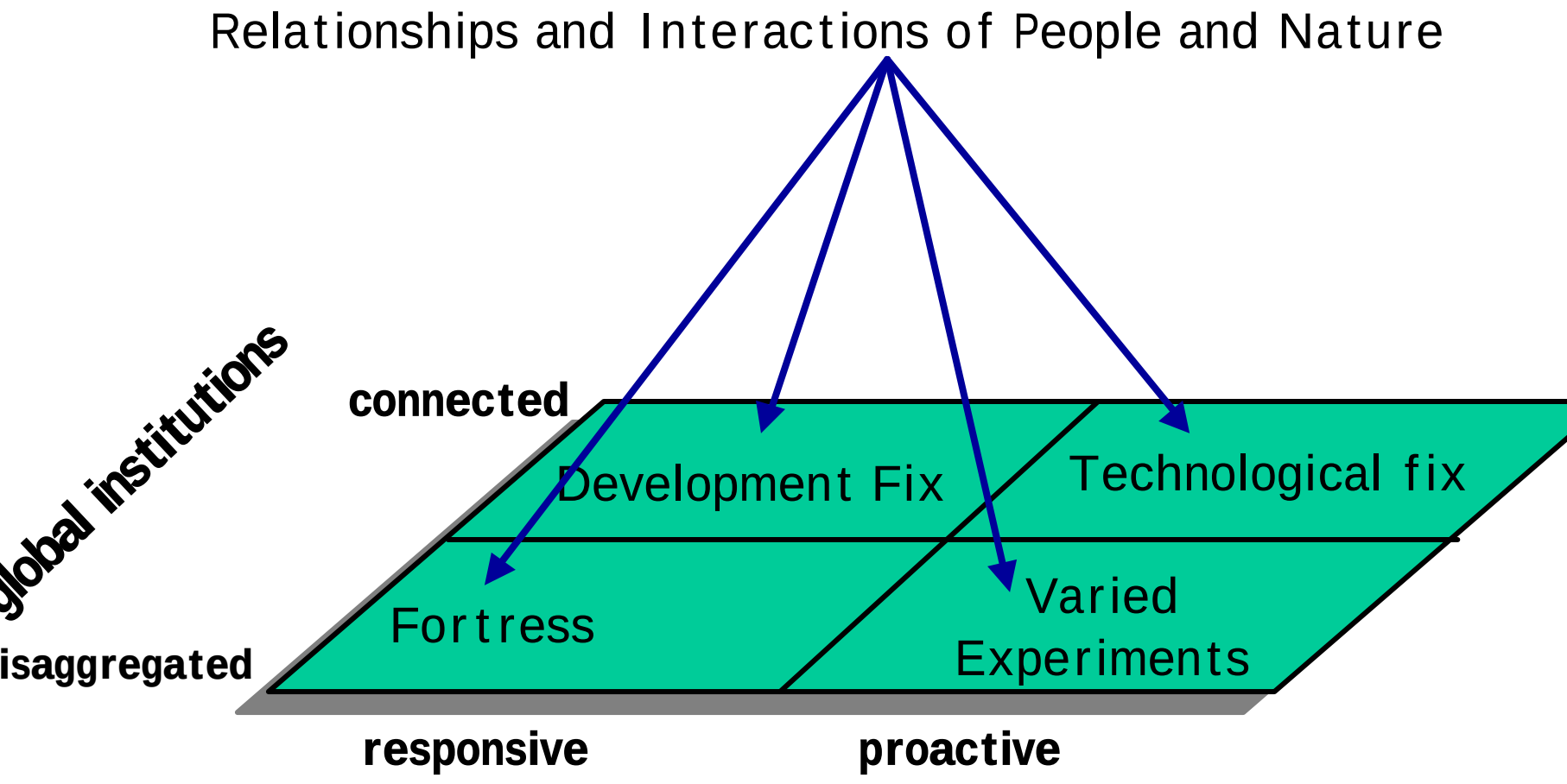


Macro level (landscape)
(trans-)national authorities

Meso level (regimes)
institutions/organisations

Micro level (niches)
individual agents

Scenarios Framework



AGENT REPRESENTATION

- Model that represents the dynamic, cognitive behavior of individual and collective agents

- Decision agents are both individuals, organizations and institutions

[Examples: *consumers, governmental institutions, private companies and NGOs]*

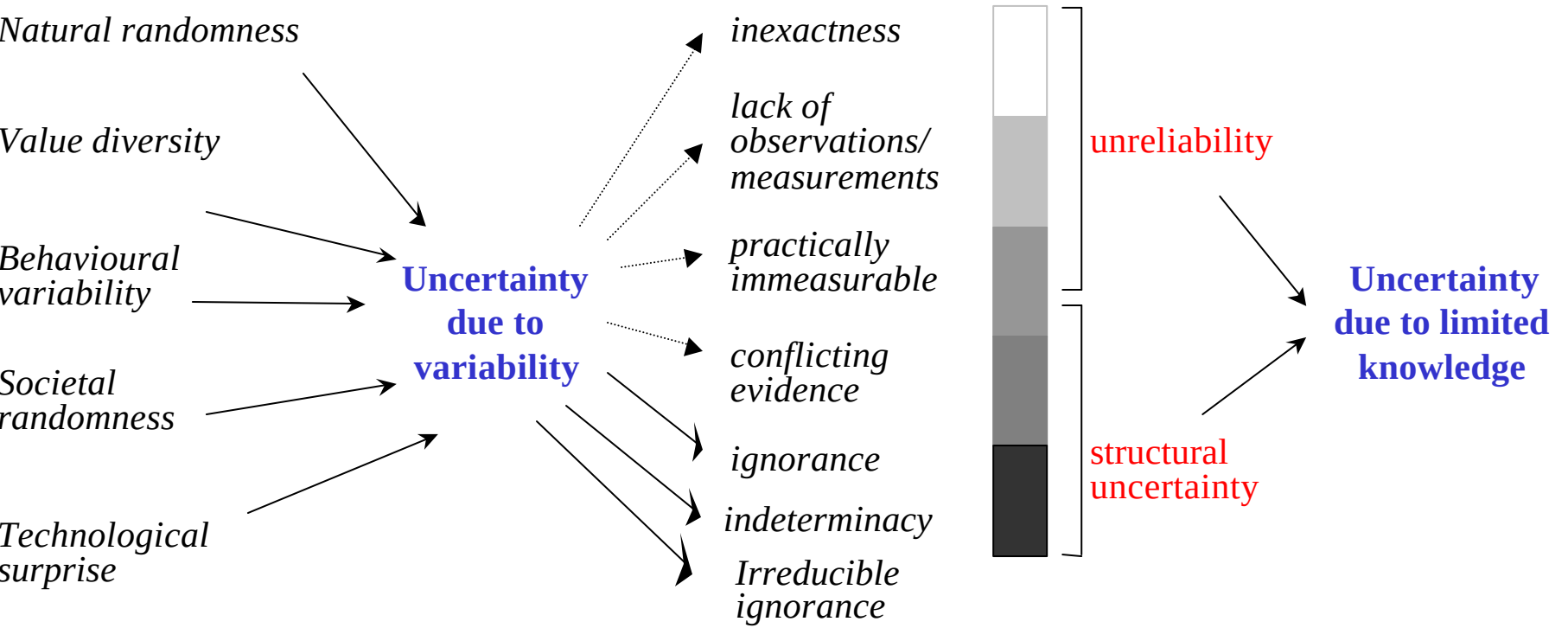
Stakeholders as Agents in/Co-developers of IAMs

- *stakeholder as advisor*
  stakeholder's knowledge and experience are used

- *stakeholder as actor*
  stakeholder's behaviour is part of the model

- *stakeholders as user*
  stakeholder uses model for different reasons:
  strategic/managerial/education/moral

SOURCES OF UNCERTAINTY (IN INTEGRATED ASSESSMENT MODELS)



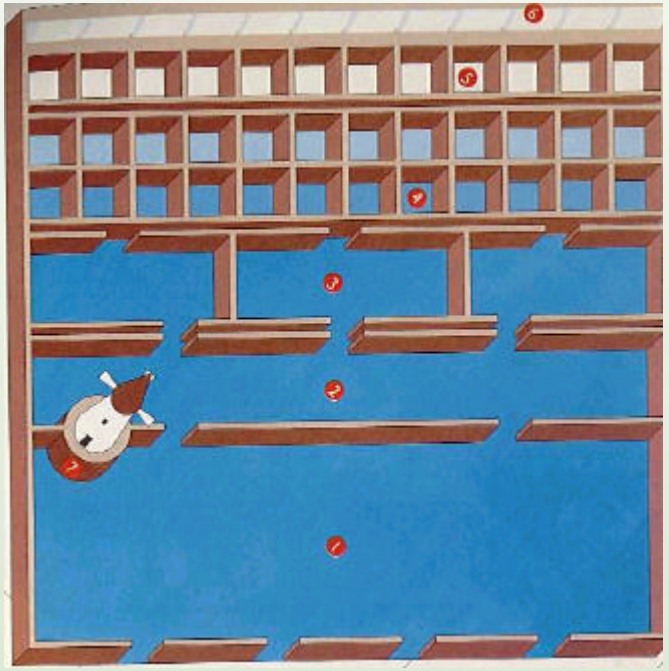
Environmental Values in American Culture

Willett Kempton

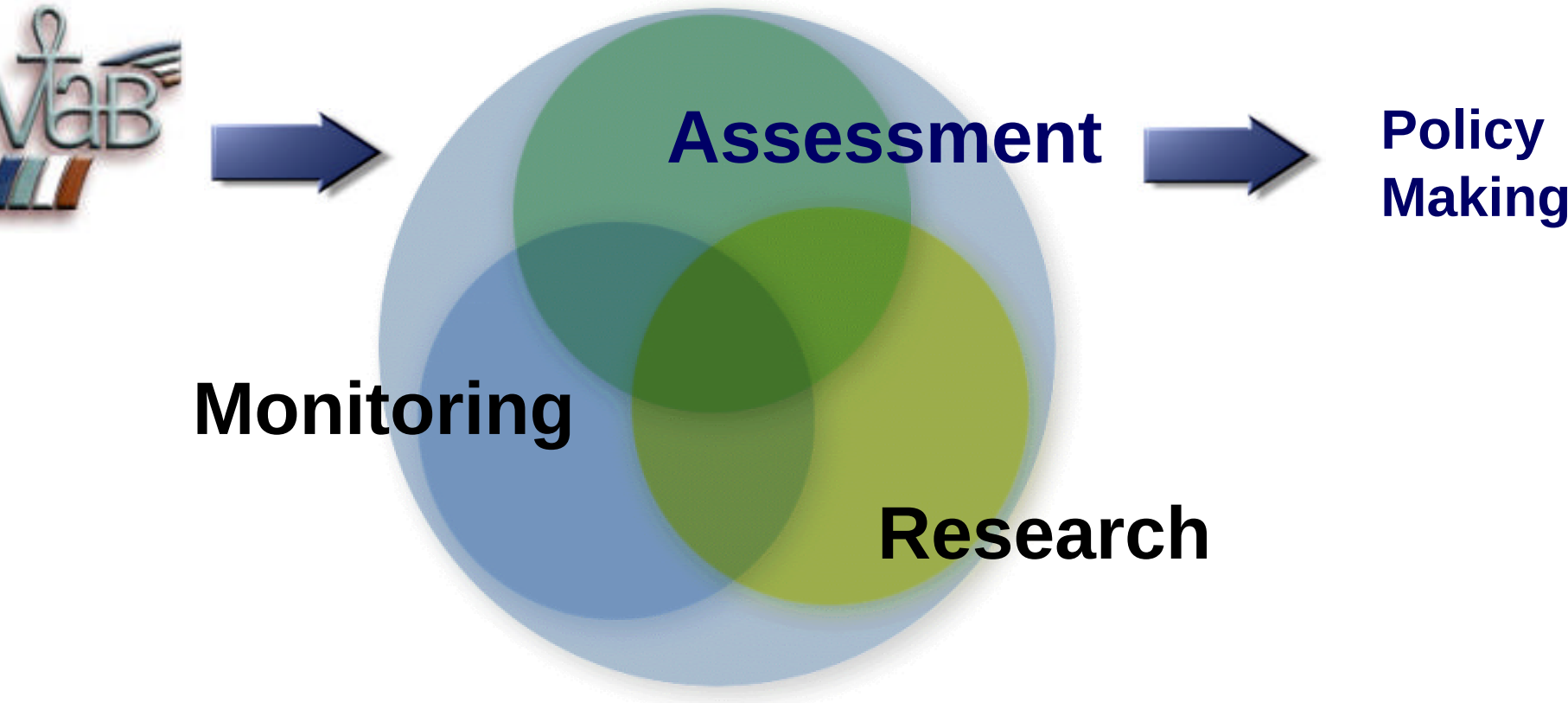
James S. Boster

Jennifer A. Hartley

- Traditional knowledge and traditional knowledge systems -



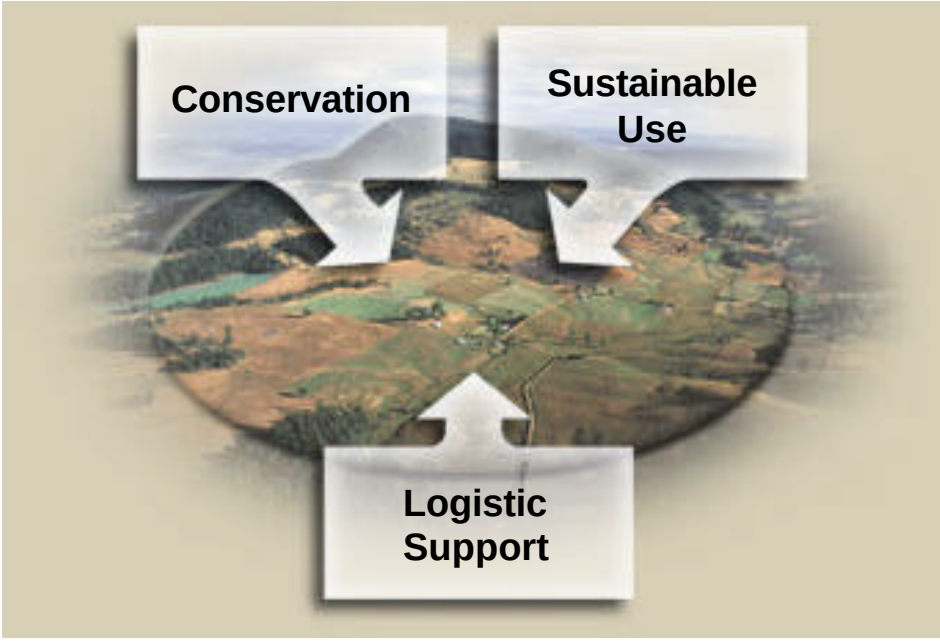
Science/Policy



Assessments

A social process to bring the findings of science to bear on the needs of decision-makers

Biosphere Reserves

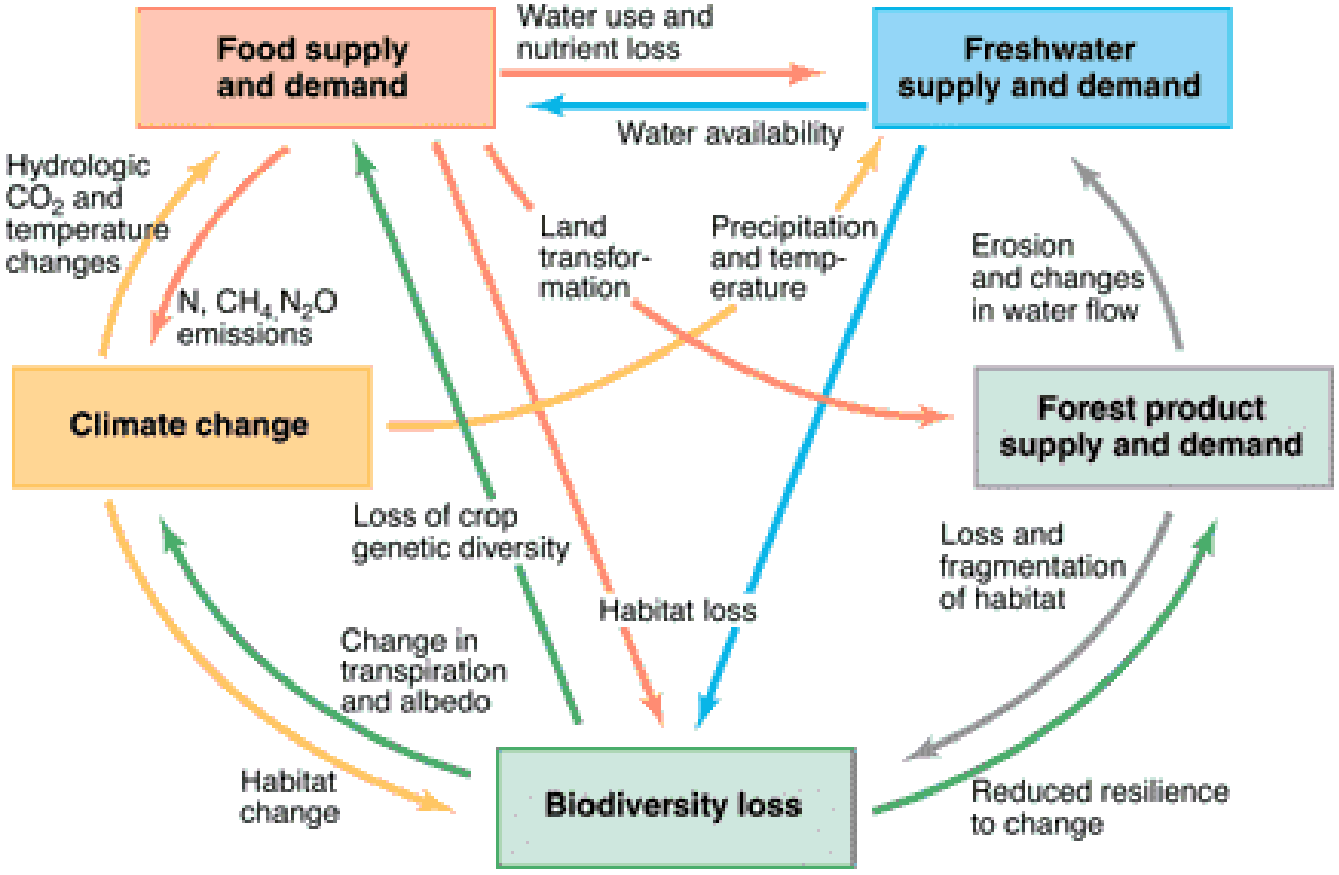


- Conservation *in situ* of natural and semi-natural ecosystems and landscapes

- Demonstration areas for ecologically and socio-culturally sustainable use; and

- Logistic support for research, monitoring, education, training and information exchange

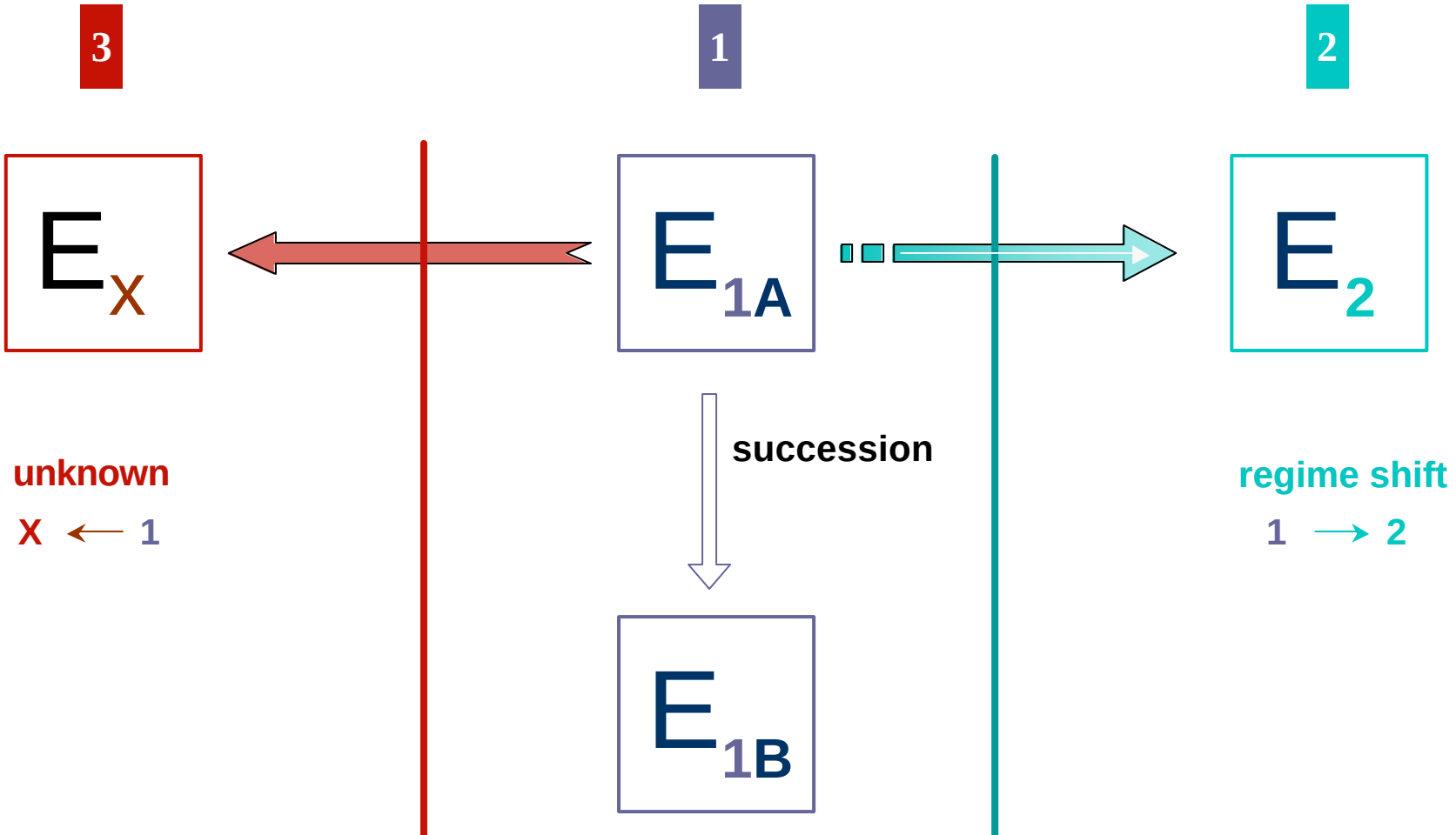
Interlinkages among problems and solutions



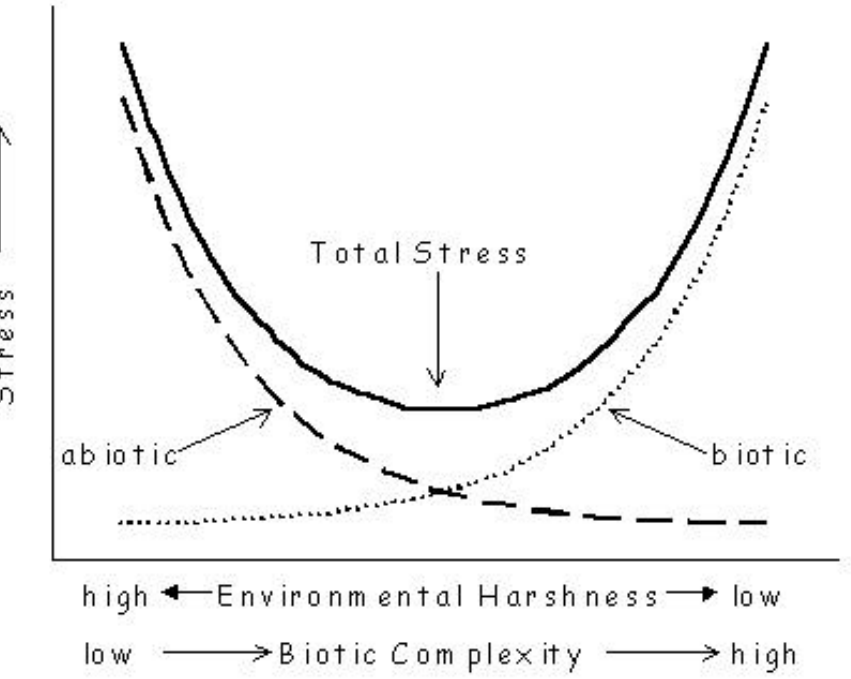
Source: Ayensu et al. 1999. Science 286:685-686.

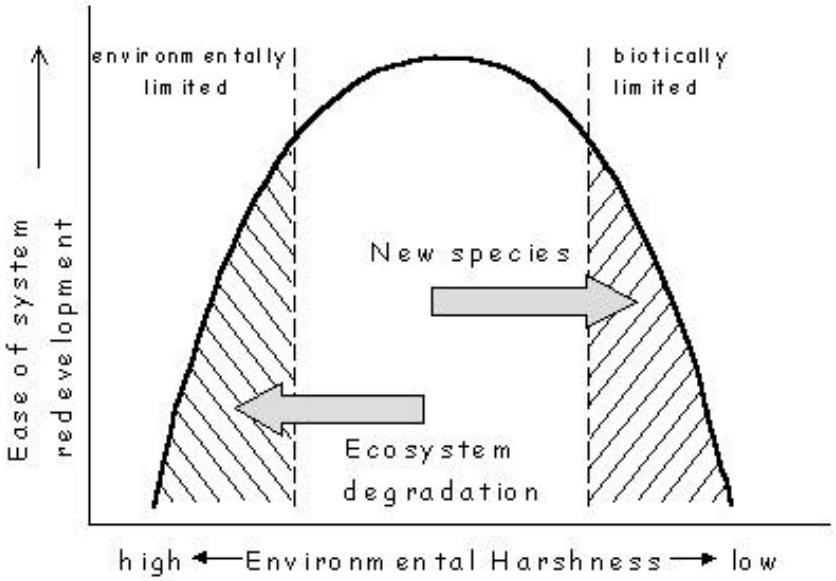
Research

Emerging Ecosystems



Stresses , Thresholds and Responses





New forests in Puerto Rico!

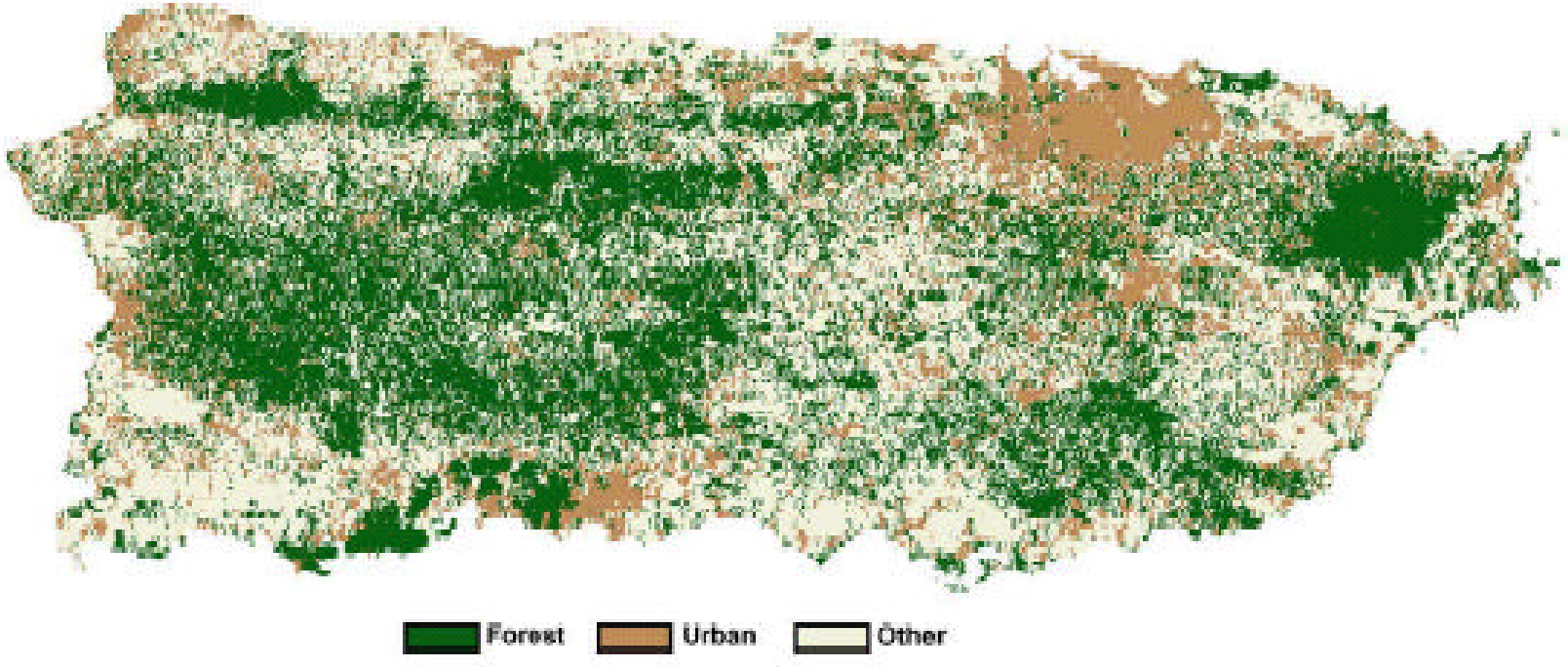
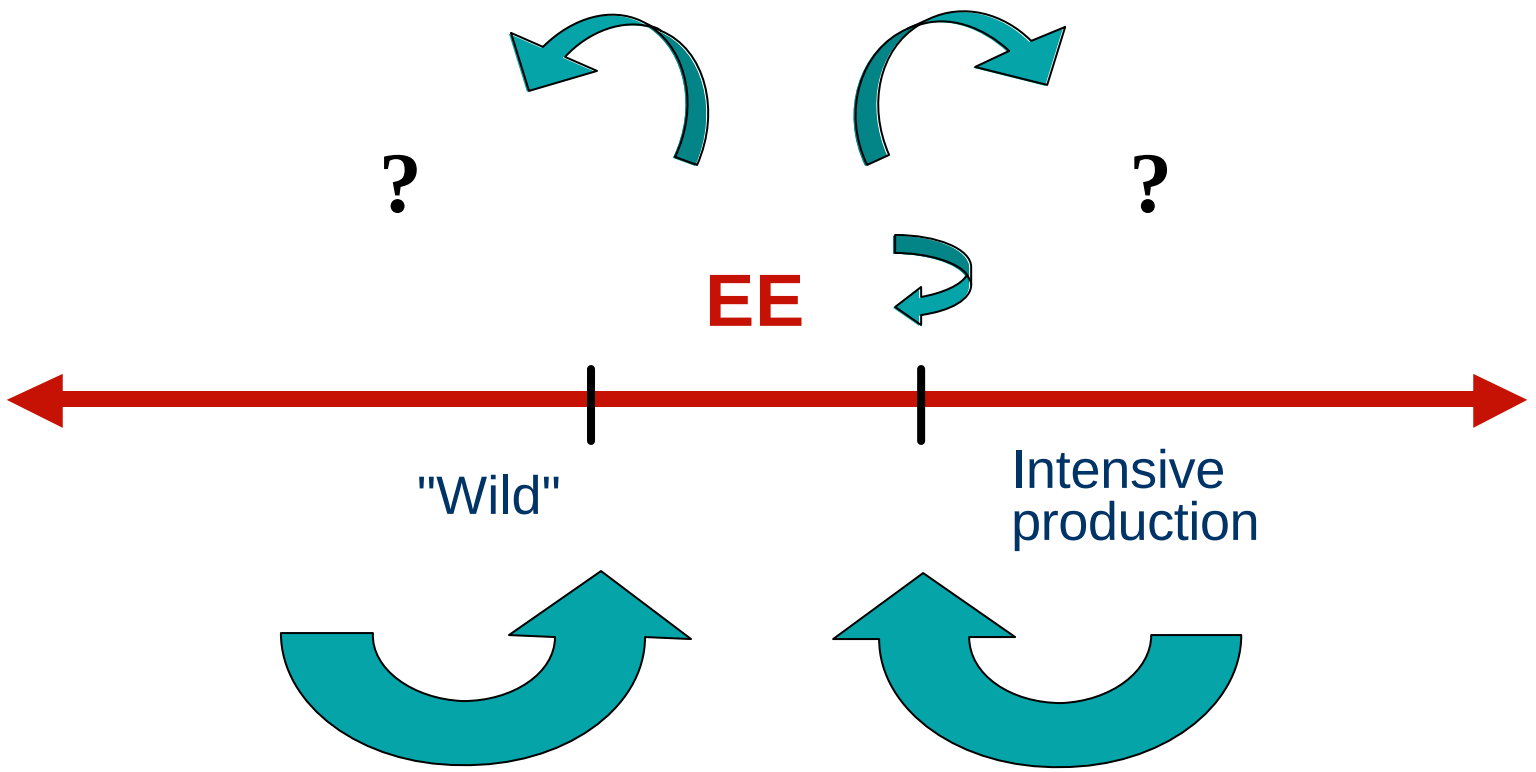


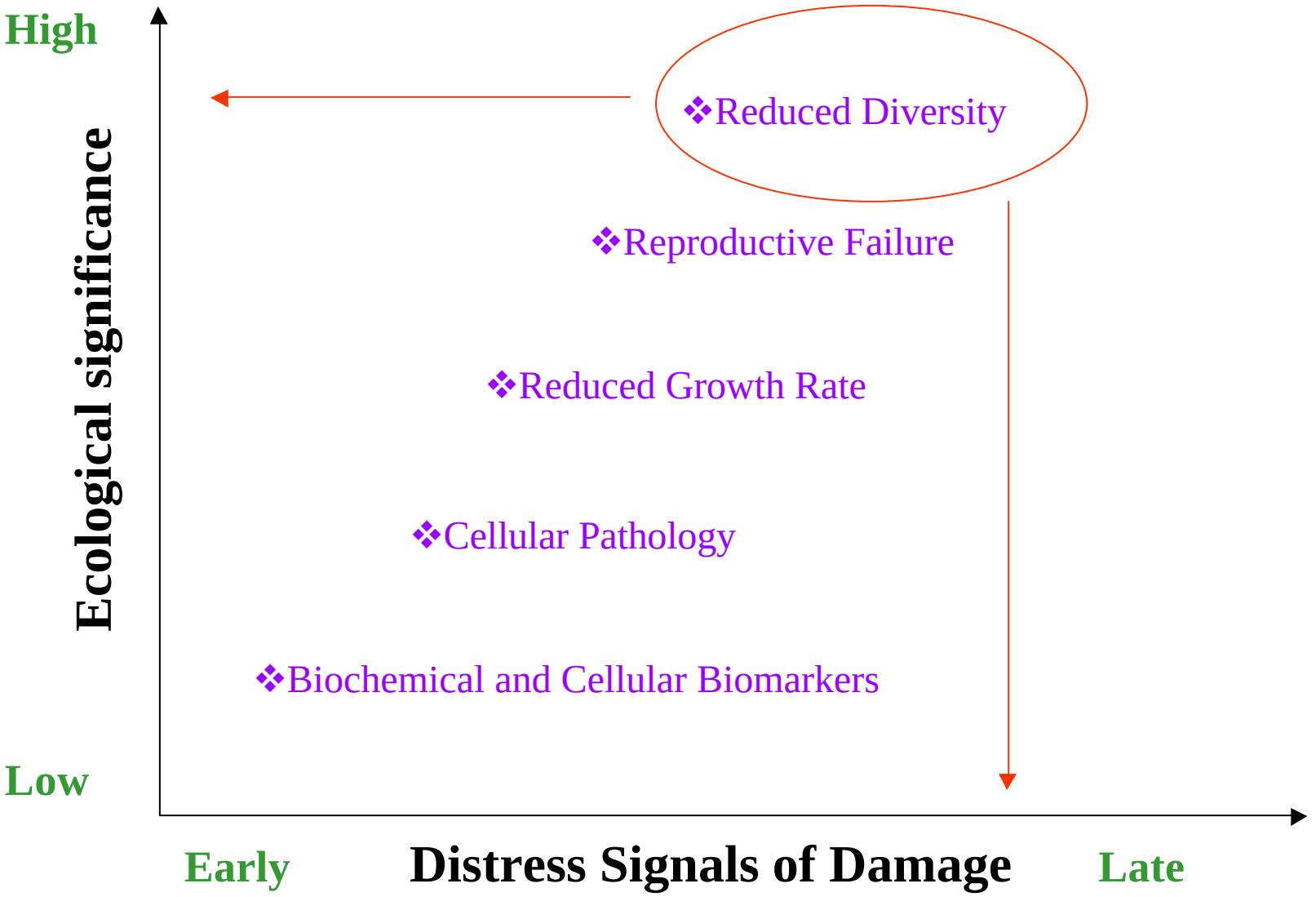
Fig. 2. Map of forest and urban fragments in Puerto Rico. Forest fragments are from Helmer et al. (2002) and correspond to 1991. Urban fragments are from López et al. (2001) and correspond to 1995.

Emerging Ecosystems

emerging ecosystems

EE and Society




High
Ecological significance
Low
❖Reduced Diversity
❖Reproductive Failure
❖Reduced Growth Rate
❖Cellular Pathology
❖Biochemical and Cellular Biomarkers
Early
Distress Signals of Damage
Late

Ecosystem services are the conditions and processes supported by biodiversity through which ecosystems sustain and fulfil human life, including through the provision of goods.

Provisioning

Goods produced or provided by ecosystems

- food
- fresh water
- fuel wood
- fiber
- biochemicals
- genetic resources

Regulating

Benefits obtained from regulation of ecosystem processes

- climate regulation
- disease regulation
- flood regulation
- detoxification

Cultural

Non-material benefits obtained from ecosystems

- spiritual
- recreational
- aesthetic
- inspirational
- educational
- communal
- symbolic

Supporting

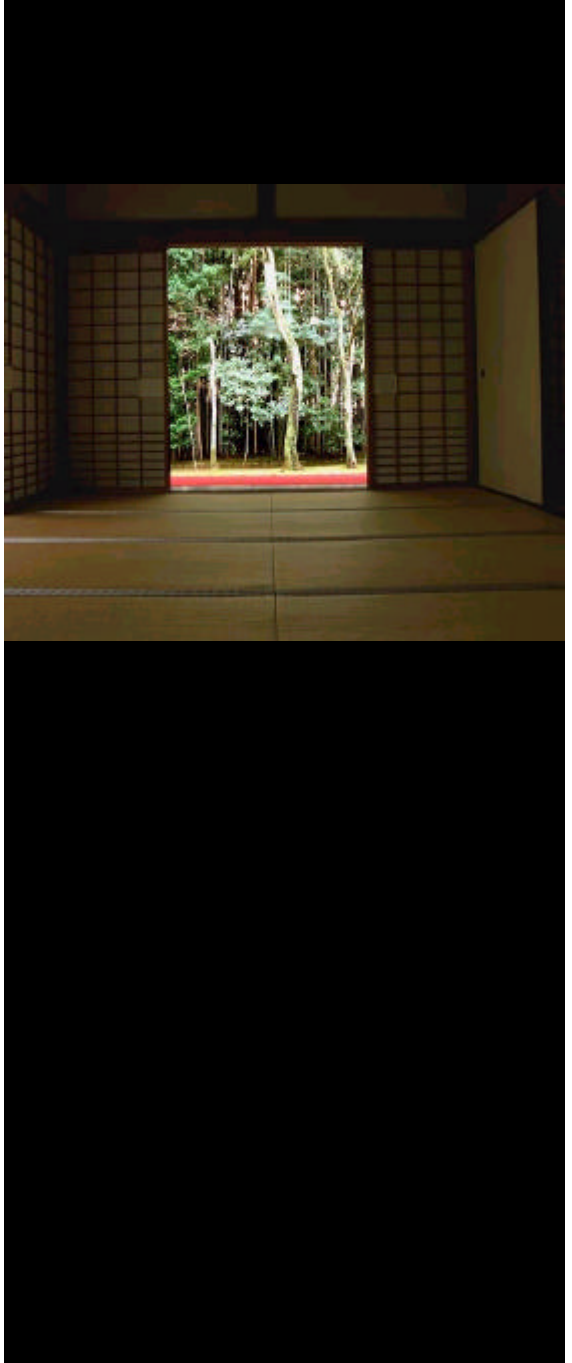
Services necessary for production of other ecosystem services

- Soil formation
- Nutrient cycling
- Primary production

Synergies (research)

ILTER
DIVERSITAS
WCRP
IHDP (MAB; MOST)
IGBP

Monitoring



Pragmatic issues...

- Measurements do not need to be perfect, just agreed
- They need to be measured on ‘activity’ rather than stock measurements
- Many global data products (land cover, demography, etc.) are now available
- Methods are at hand

Monitoring: Challenges

- Monitoring systems in place
- Indicators understandable by policy-makers (combination of ‘academic’ and ‘policy’ approach)
- Adequate integrated models
- Indicators not necessarily adequate to measure goals (BD 2010, MDGs (e.g. 1 and 7, etc.)
- Comparability of information and data
- Issues related to visualization and analytical tools
- Standardized information protocols and monitoring methodologies
- Appropriate and adequate information and data gathering and handling facility

Special Meeting on BRIM
(Rome, September 2001)

ICC 17 (2002) adopted the current *philosophy* and *work plan* for BRIM

ICC 18: …

Objectives of BRIM

At the site level

To assist biosphere reserves (including transboundary ones) in:

- Assessing and monitoring the threats/pressures on the ecological services and values maintained by each site
- Evaluating and cataloging local resources and biodiversity through surveys and research and assessing whether their state is improving or declining

At the level of the World Network of Biosphere Reserves

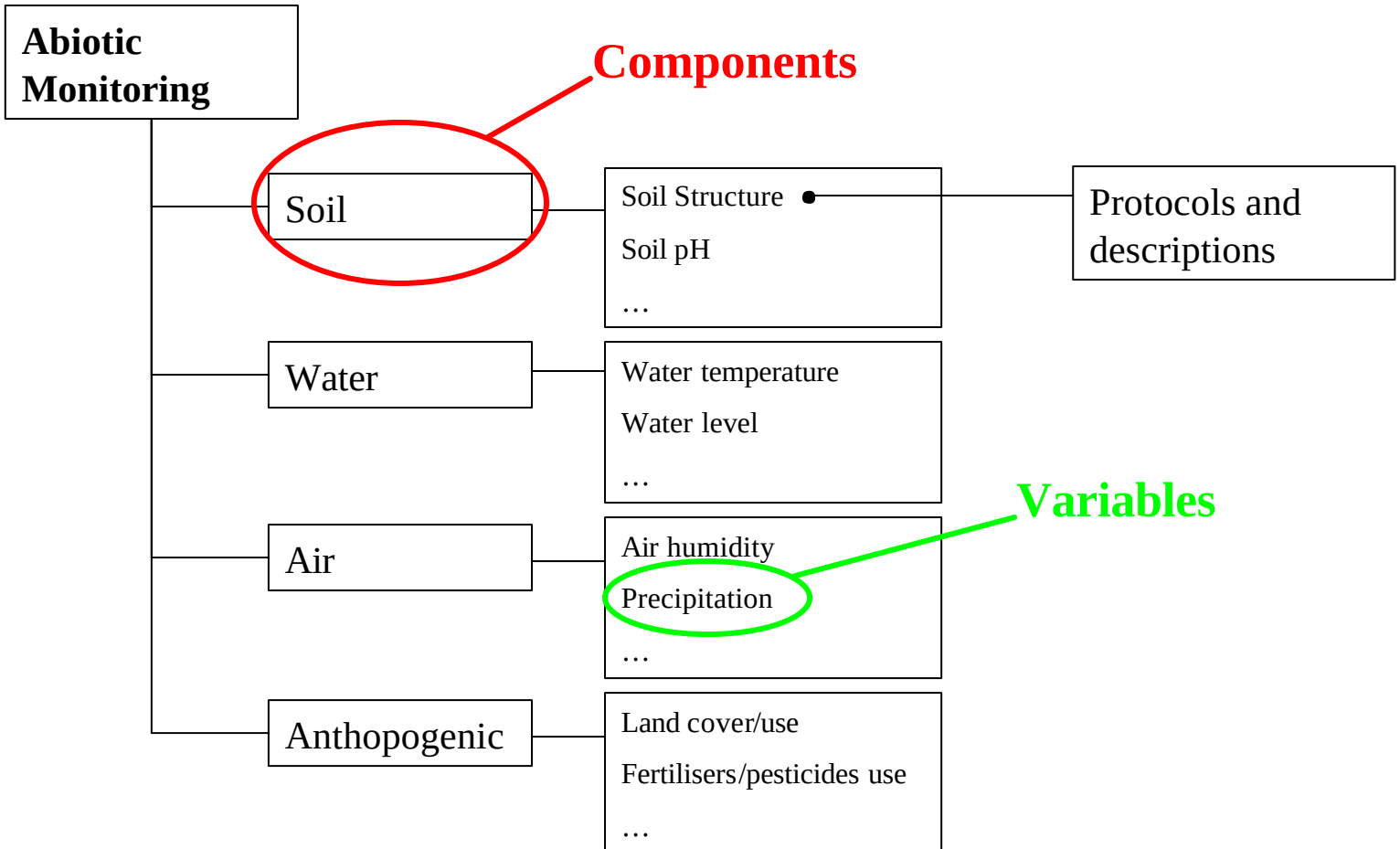
- **To provide technical assistance in the identification and selection of appropriate monitoring methodologies or in their development when not available**
- **To facilitate the integration of findings emerging from both natural and social scientific monitoring programmes and initiatives**
- **To act as a platform where relevant knowledge, information and data on different issues can be shared, analyzed, searched through databases, and managed, and where synthesized findings, lessons learned and best practices (e.g. from case studies) are made available**

Outputs of BRIM

- **Reconciled methodologies and data/metadata sets**
  - **BRIM Special Series 1, 2 and 3 (methodological guides for abiotic and social monitoring)**
  - **A desk study on biodiversity monitoring**
- **Inventorying and analytical tools**
  - **Bioinformatics tools**
  - **GIS**
- **Inputs to relevant assessments (at different scale levels)**
  - **Inputs to the MA, thematic and crosscutting assessments under the CBD, etc.**

- BRIM Abiotic -

- Set of recommended methodologies



Synergies (monitoring)

GTOS
GCOS
GOOS
BD 2010, BD/EEA, etc.
MDG project

Synergies (assessments)

MA

Interlinkages assessment

IAASTD

… (assessment landscape is crowded and confused)

MAB Consultancy Workshop

Neusiedlersee, Austria 17-18 June 2004

Dr Salvatore Arico
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Social Monitoring in Biosphere Reserves as a Social Process

Fritz Reusswig

P I K

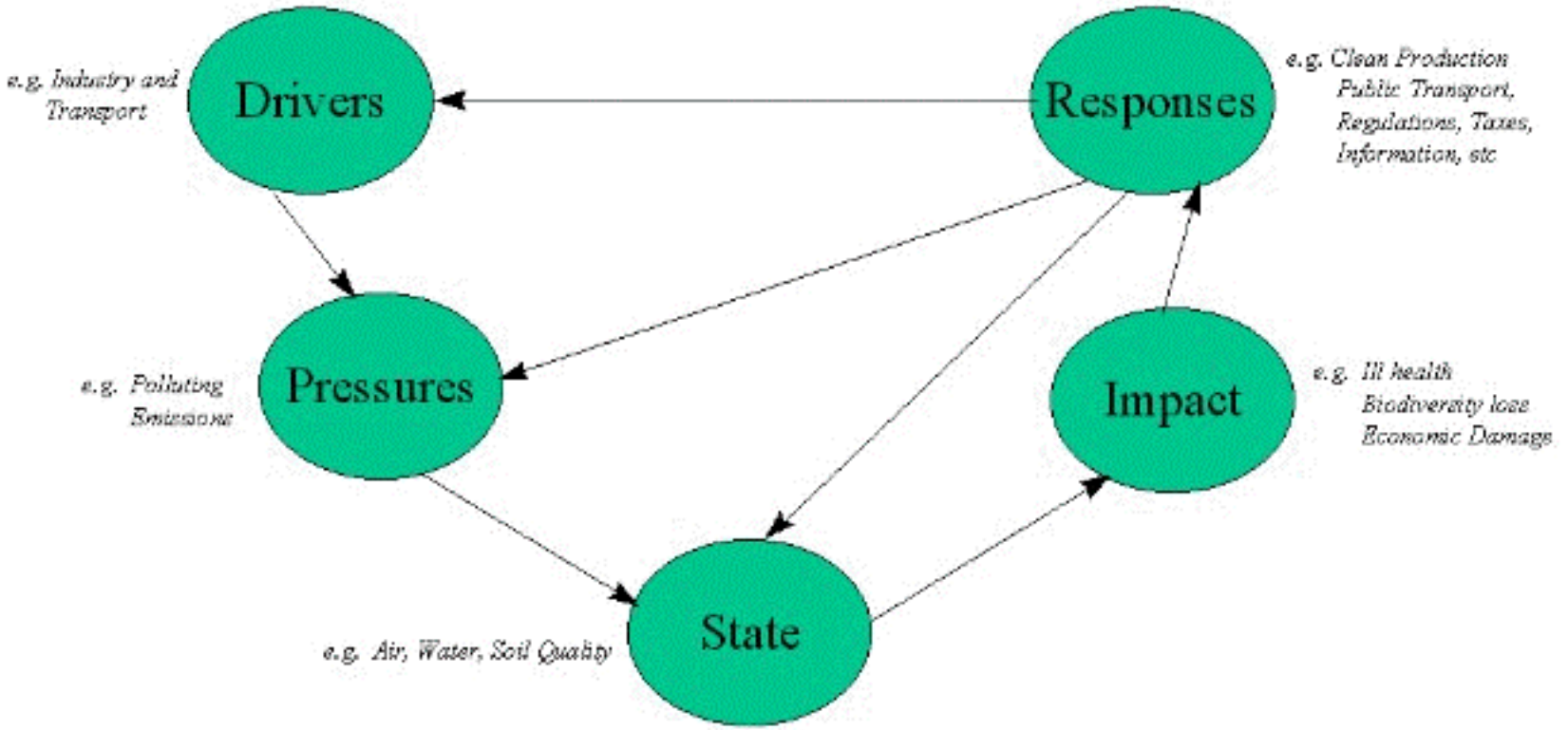
Potsdam Institute for Climate Impact Research (PIK)
Global Change & Social Systems Dept.

Re-designing the Research Agenda of MAB-Austria, in special consideration of BRIM 17./18.6. 2004

Social Monitoring: Some notes

1. We are living in a finite and ‚endogenized' world: human domination/appropriation of the eco-/biosphere is a non-neglectible factor of the Earth system.
2. Science has evolved along the lines of disciplinarity and specialisation. Monitoring as a mainly scientific endeavour shares these features.
3. Monitoring of biodiversity and ecosystems along disciplinary lines (e.g. purely ecologically) more and more misses the point.
4. We need integrated, interdisciplinary monitoring not of ecosystems/biodiversity, but of existing human-nature-*interactions*.
5. This monitoring has to take an ‚interventionist' stance from the outset: if our problem is ‚bad de facto management', we need to monitor actual interactions in the light of possible sustainable futures and better management options.
6. Social Monitoring is self-monitoring of our interactions with nature.

The DPSIR Framework
For Reporting on Environmental Issues



The Role of the EEA is:
To provide information on the DPSIR Elements and their Inter-connections, and on the effectiveness of Responses

motives

frames

institutions

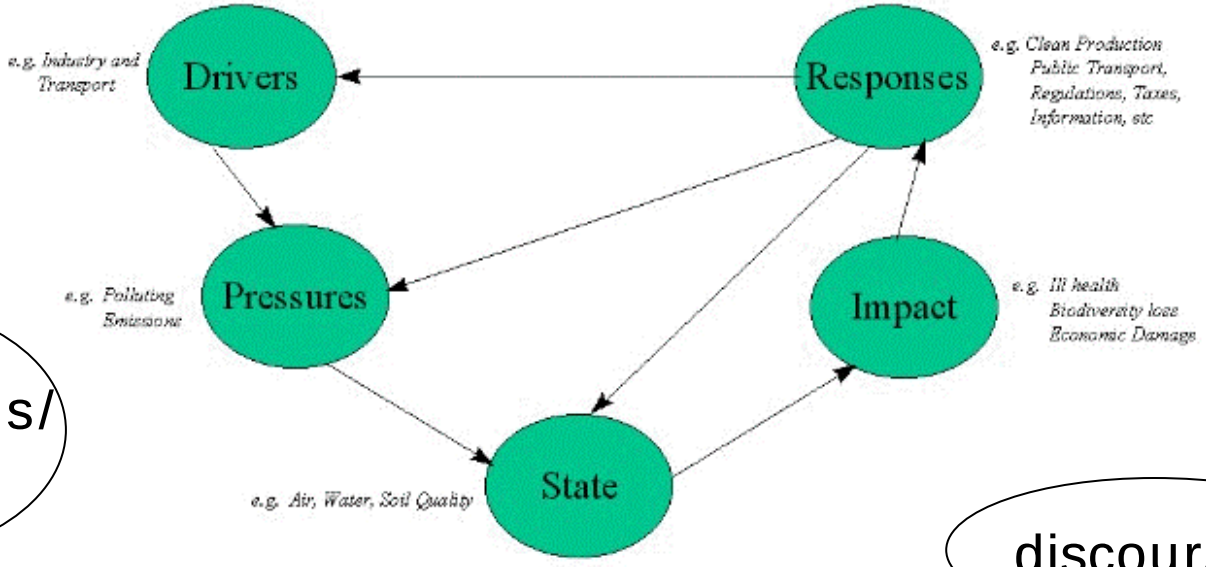
actors

resources

Mechanisms/ rules

discourses

The DPSIR Framework
For Reporting on Environmental Issues



The Role of the EEA is:
To provide information on the DPSIR Elements and their Inter-connections, and on the effectiveness of Responses

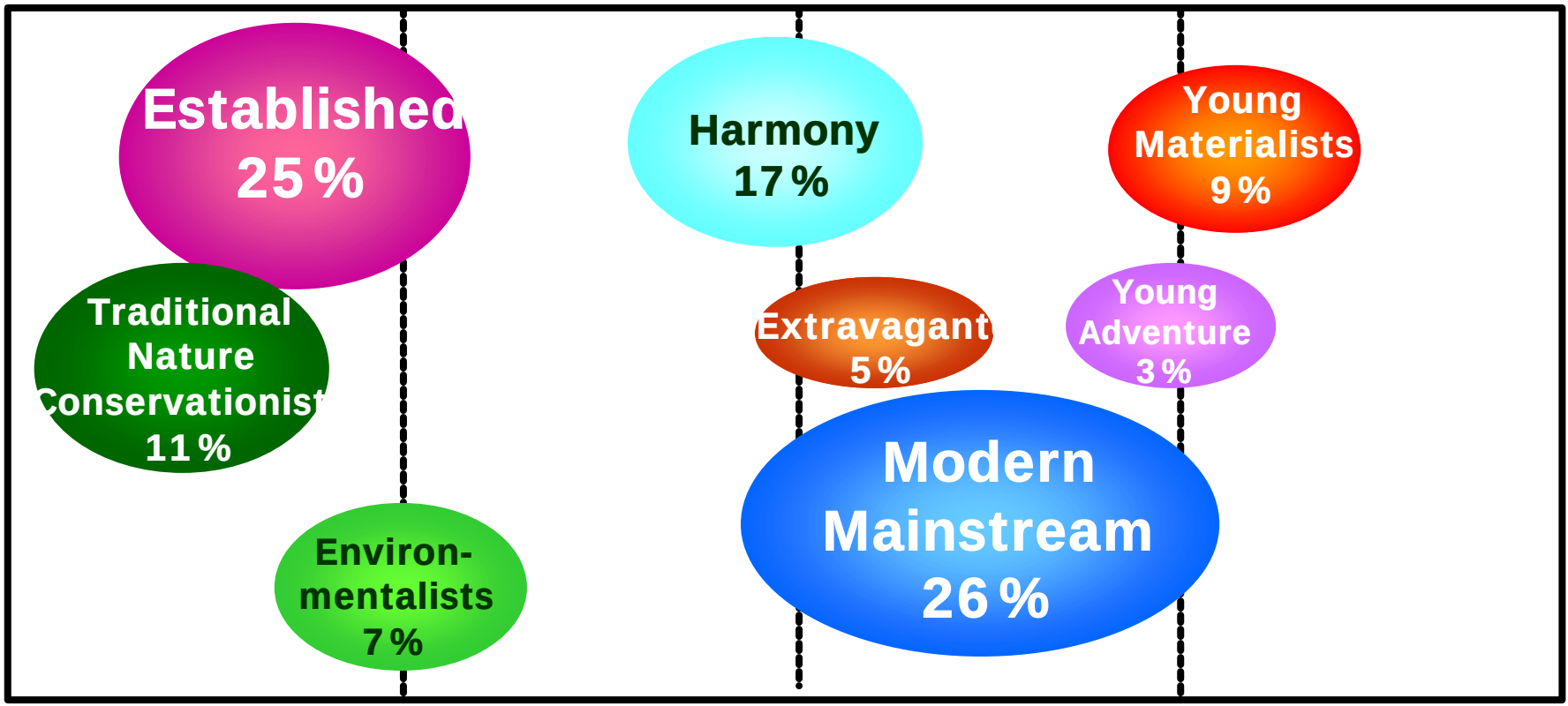
Dimensions of socio-economic monitoring

Dimension	Examples
1. Socio-economic dynamism, basic demographics and well-being of people	Sources and development of income and assets, lifestyle of inhabitants and visitors, age structure, gender aspects, private sector involvement, possible alternatives
2. Ecosystem use	Species use by social groups, land use, goods & services use, material flow, HANPP
3. Management and governance	Financial resources, staff development, effectiveness, management style, participation, institutional framework
4. Values, attitudes, and expectations	Subjective well-being, motives for use, attitudes towards nature conservation, ‚myths of nature', landscape preferences, future expectations
5. Information, education and research	Staff and resources, activities, impacts, networks

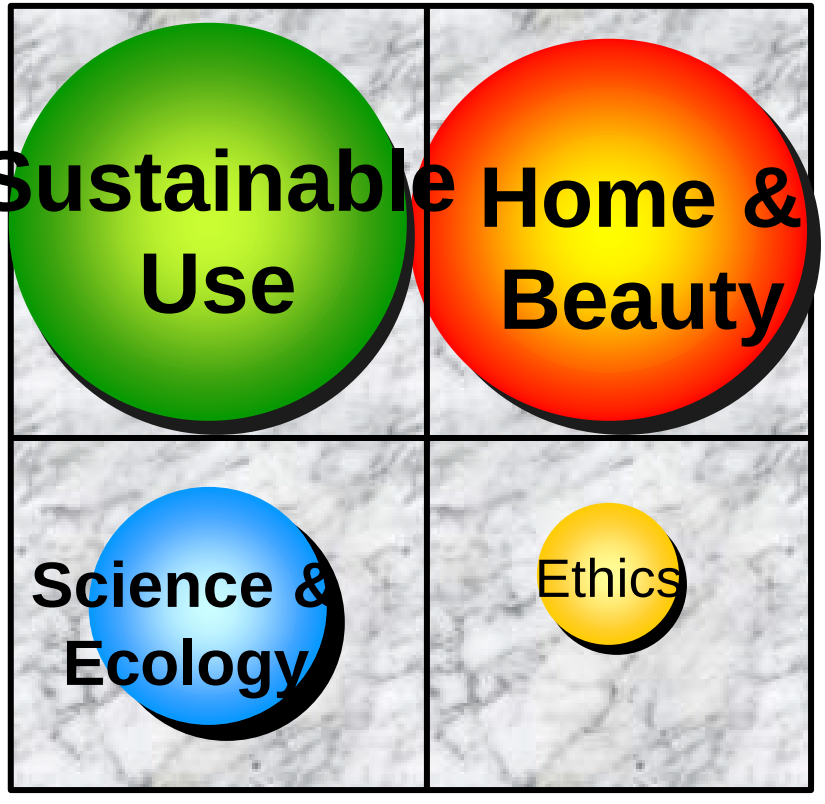
Lifestyle: A Brief Definition

- Lifestyles are **group specific** forms of **individual** ways of life as (a) described and/or measured by an **observer** and (b) as reported from **individuals** by themselves.
- Re-constructing lifestyles requires information on (1) **social situation/status**, (2) **values, attitudes and preferences**, and (3) **behavior and activities**.
- Segmenting societies according to lifestyles is relevant not only for market, policy and social structure research, it could become key for **social monitoring** in BRs.

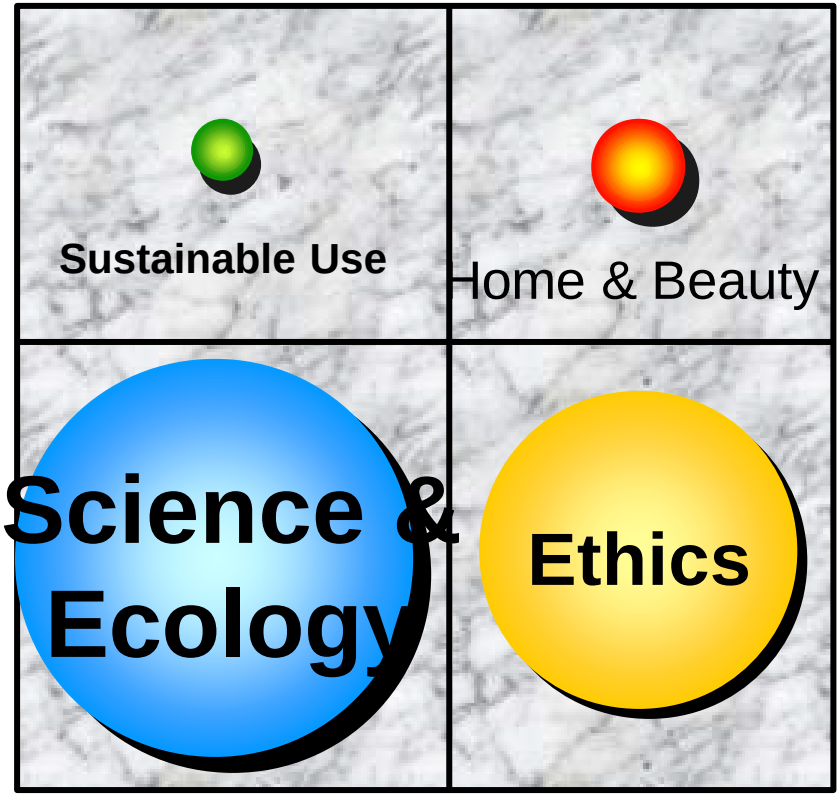
Attitudes towards Nature Conservation in Different Lifestyle Groups



Four different motives/arguments for nature conservation – and their relevance to the general population and conservationists



Population



Conservationists

The natural science perspective for research in biosphere reserves

Two good reasons for research in biosphere research

1. *Research in biosphere reserves for biosphere reserves (applied research);*

2. *Use biosphere reserves as ”Living Laboratories” for testing out and demonstrating integrated management of land, water, and biodiversity (for basic as well as for applied science)*

Research Priorities set by the International Council:

BRIM: Biosphere Integrated Monitoring (focus mainly on the particular biosphere reserve; = predominantly research in biosphere research for biosphere reserve)

Global Change Research: Providing a better understanding of global environmental change through research actvities in biosphere reserves is an explicit priority for the UNESCO-MAB Programme

Aims of BRIM in the natural science are:

Watching nature in the core-zone (nature protection zone) with the help of indicators (e.g. climate change indicators, hemeroby –indicators, neobiota, indicators for overuse, habitat loss etc.)

Registering natural values and adjust models of the land-use in the buffer zone and in the transition zone checking sustainability goals.

Long Austrian tradition in MAB-research (e.g. MAB-Obergurgl, Danube river research, MAB-Hohe Tauern, global change research, hemeroby of Austrian forests), and in developing methodologies (e.g. GLORIA, hemeroby indicators), to create an integrated monitoring system along standardised approaches.

Global change research in biosphere reserves

for a

for a

better understanding of global environmental change through research activities in biosphere reserves

(incl. linkages to BRIM)

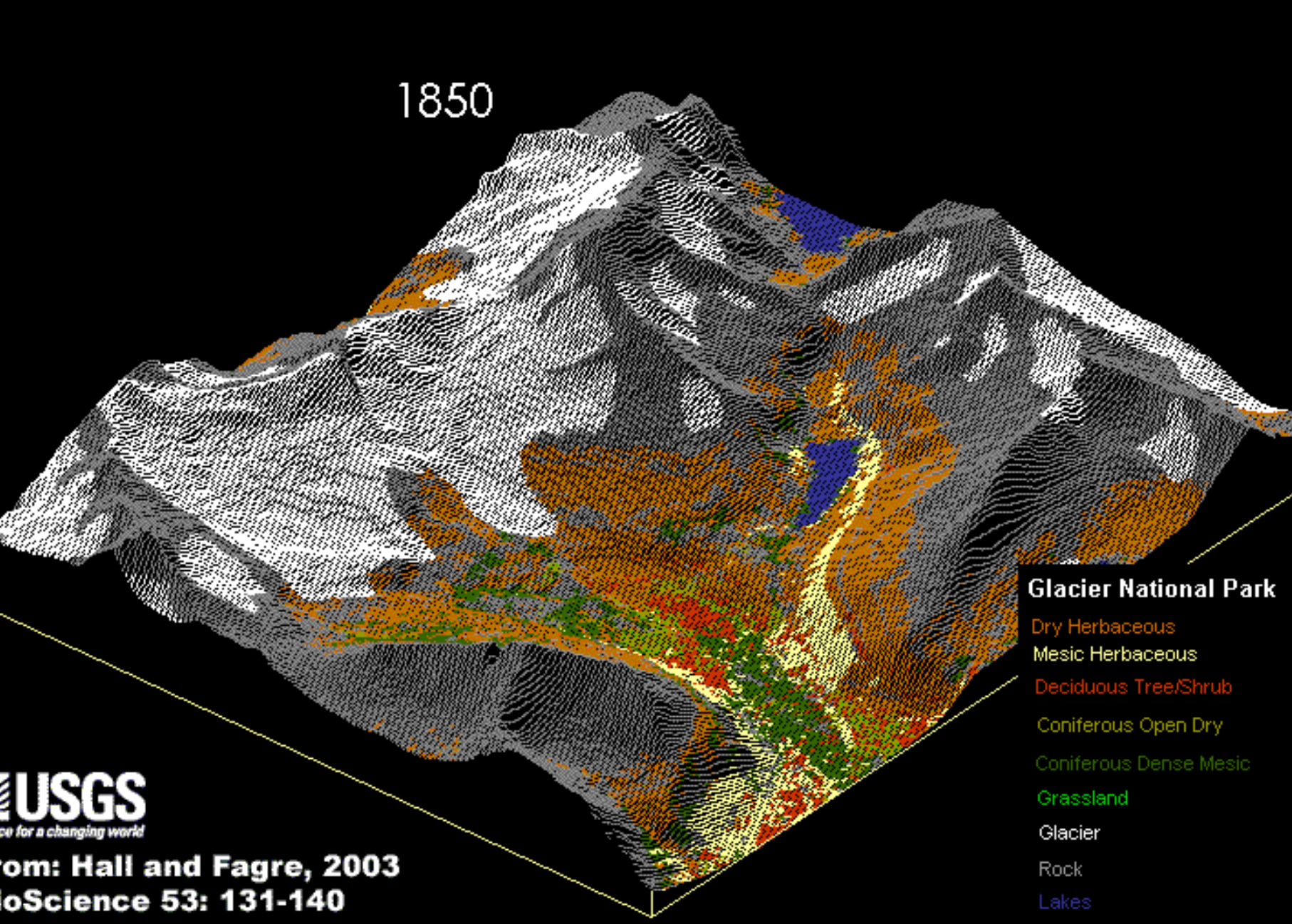
The example of Glacier National Park (USA)

Glacier National Park – established 1910, designated Biosphere Reserve 1976, declared as World Heritage Site 1995

Glaciers: 72% disappeared during last century; applied methodologies: geo-spatial modelling suggest that glaciers will disappear completely until 2030; remote sensing to monitoring changes in ice area; ground-penetrating radar to determine volumetric changes; stream gages to measure glacier discharge; study consequences of glacier disappearance for downstream fauna

Vegetation: treeline shifts and impacts on alpine flora and fauna; Methodologies: remote sensing at 1m resolution; modelling and spatial analysis by cellular automata; tree ring studies, soil nutrient distribution studies etc.; monitoring long term changes in species composition (200 plots; incl. 4 GLORIA sites)

Integrated ecosystem modelling (biogeochemical cycling + hydrology (e.g. daily discharge, temperature, frequent water chemistry, biological inventories) + forest succession + disturbance, e.g. fire); validation by a variety of monitoring


1850
Glacier National Park
Dry Herbaceous
Mesic Herbaceous
Deciduous Tree/Shrub
Coniferous Open Dry
Coniferous Dense Mesic
Grassland
Glacier
Rock
Lakes
USGS
ce for a changing world
om: Hall and Fagre, 2003
ioScience 53: 131-140

Global change research networks

The **MRI*/UNESCO** initiative for global change research in mountain biosphere research as specific contribution to GLOCHAMORE (i.e. 6th EU framework programme on Global Change in Mountain Regions)

What to achieve by the *Mountain Research Initiative as core project of IGBP/IHDP ?

- **improve knowledge of the dominant processes** underlaying global changes and their future developement;
- **comparative analysis of the sensitivity and vulnerability** of ecosystemes represented in biosphere reserves to anthropogenic and natural driving forces
- **identification of suitable indicators** of global changes, and developement of protocolls for the detection and attribution of such changes
- **tools for the integrated assessment** of global changes in specific mountain region
- improve knowledge base for **defining strategies towards the sustainable developement** of regions

Activitivities

Long-term monitoring and analysis of indicators of environmental change in mountain regions: focus on indicators of environmental change which are sensitive to climate, athmospheric chemistry, radiation and land use/ land cover (e.g. cryospheric indicators, terrestrial ecosystems, freshwater ecosystems, watershed hydrology) (e.g. Global environet; GLORIA, CIRMOUNT etc.)

• **Integrated model-based studies** of environmnetal change: developing a framework that permits the analysis and prediction of hydrological and ecological characteristics and their linkages with land use and climate (e.g. 6th framework programme ALARM)

• **Process studies** : ecological and hydrological field studies and experiments along ecological gradients and at sensitive sites to understand and predict potential responses of mountain ecosystems to anthropogenically induced environmental change

Towards an Austrian MAB research agenda: Conceptual considerations

Marina Fischer-Kowalski

Institute for Social Ecology, Vienna

Faculty for Interdisciplinary Studies, Klagenfurt University

Outline

- Status of the presentation: towards an Austrian MAB-research programme
- point of departure: Rome Report 2001 on „Biosphere Reserve Integrated Monitoring“ (BRIM)
- Rome BRIM Report: a rich assembly of considerations, in particular on social monitoring. Next steps required: build on Rome report, narrowing down, becoming more specific and operational.
- Goal of the exercise: not answers, but good questions to be answered by research

The task of BRIM: sustainability monitoring

"…Biosphere reserves are thus poised to take on an new role. Not only will they be a means for the people who live and work within and around them to attain a balanced relationship with the natural world; they will also contribute to the needs of society as a whole by showing the way to a more sustainable future. This is the heart of the vision for biosphere reserves in the 21st century."

Seville Strategy 1995

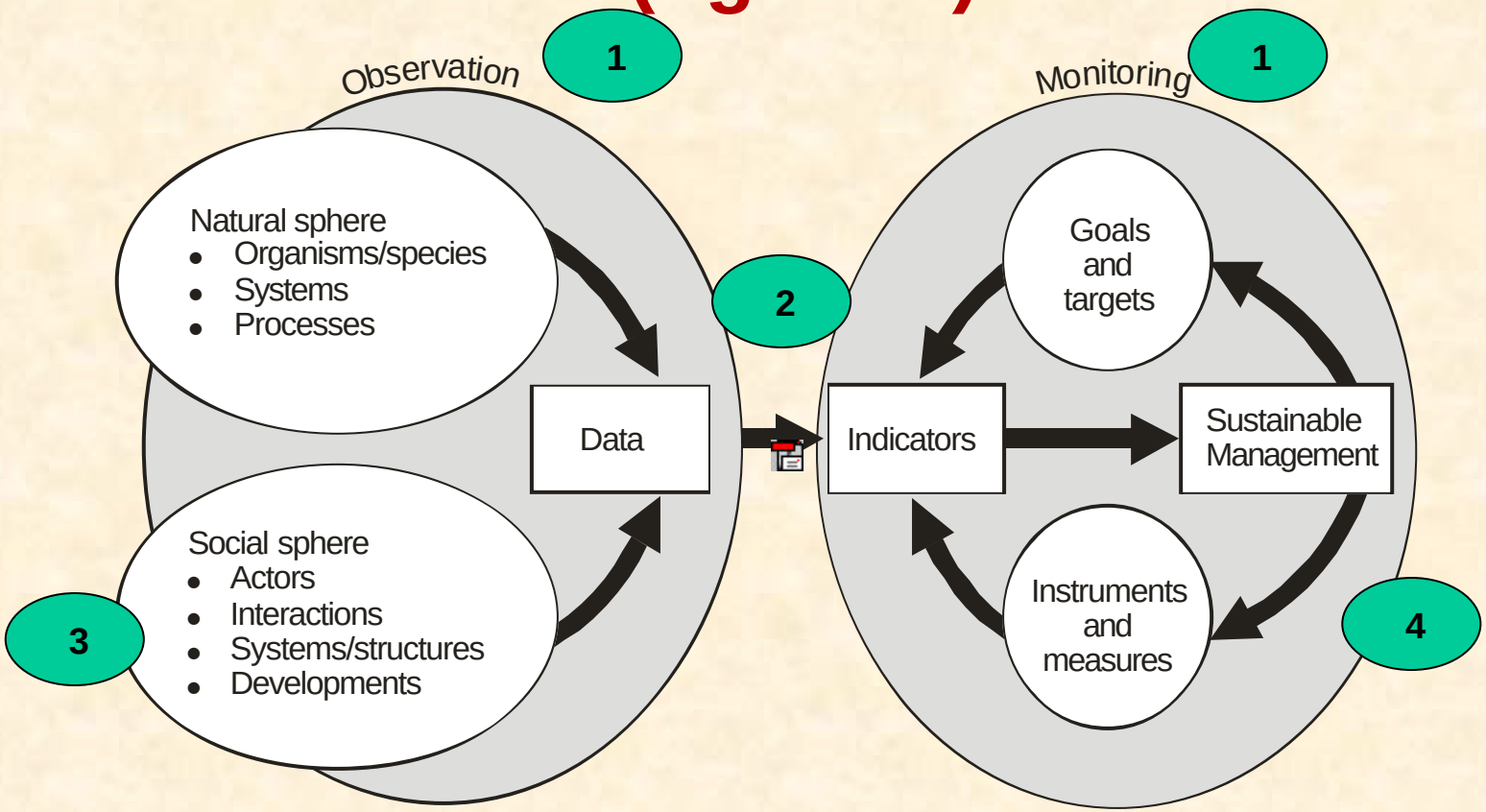
source: Rome Report 2001

Tasks and functions of (social) monitoring

- **Description** of States and Changes in Nature and Society and their interactions
- **Early Warning:** Timely diagnosis of potential damages, critical developments etc.
- **Prospection** of possible future developments
- **Evaluation:** Continuous control of targets, visions and management objectives
- **Decision Support**: Providing decision makers at different levels with relevant information
- **Information and Communication**
- **Science**: Providing data

source: Rome Report 2001

„From observation to monitoring“ (figure 1)



Source: Rome BRIM Report

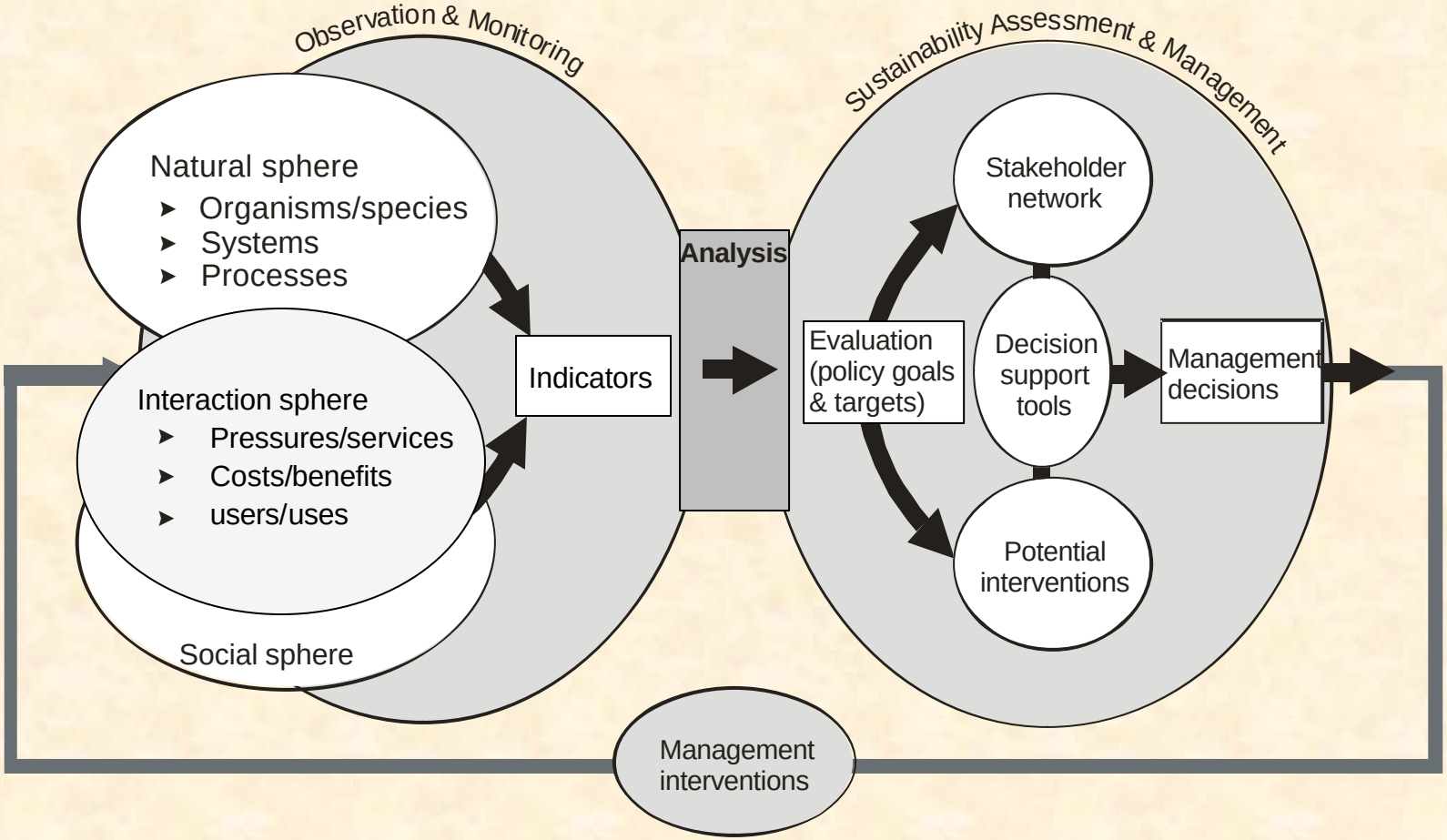
1

Observation, monitoring and management interventions

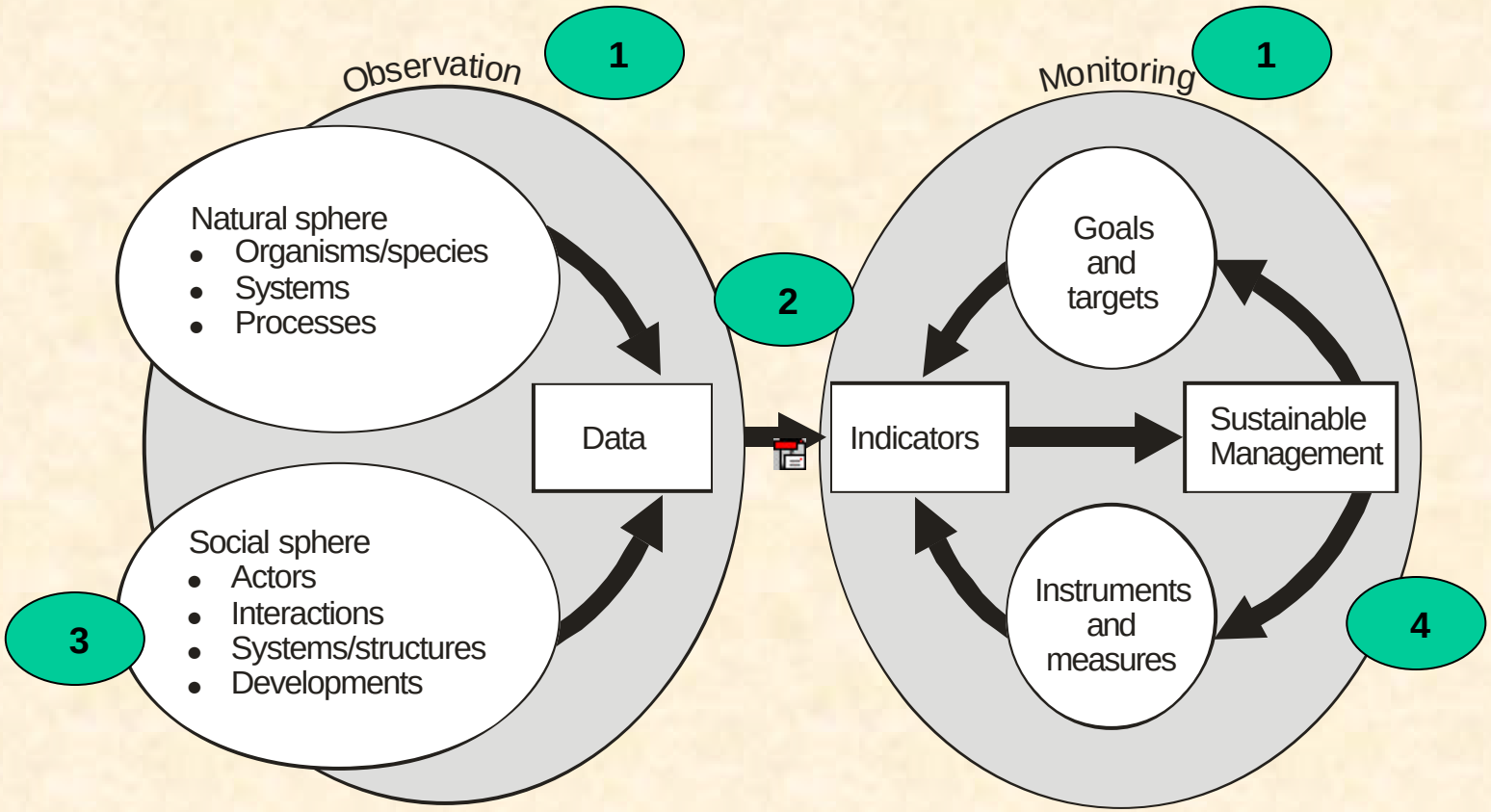
- „Monitoring“ in figure 1 (Rome report) extended very far into management activities and interventions: It contains goals and targets, and instruments, and management interventions.
- Our suggestion: separate „observation and monitoring“ on the one hand, „sustainability assessment and management“ on the other.
- Link „observation and monitoring“ to „sustainability assessment and management“ by **analysis**, non-routine scientific efforts to answer research questions

2

Integrated monitoring – sustainability assessment & management (fig 1*)



„From observation to monitoring“



Source: Rome BRIM Report

3

Monitoring the „social sphere“

- Focus on the key elements of the „social sphere“ relevant for sustainability:
- * users / uses
- * pressures / ecosystem services
- * costs / benefits.

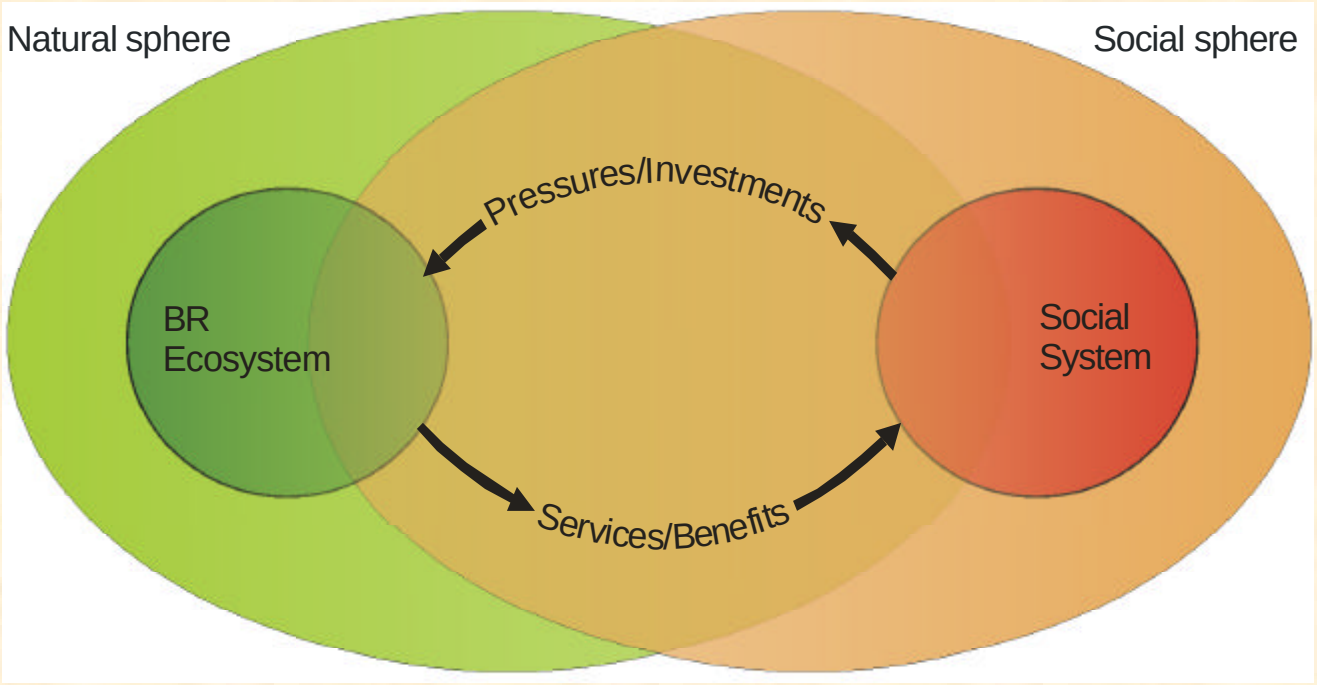
- WHY?

Key to sustainability: interaction between social and natural system

„It is necessary to establish a search process for an integrative framework for both natural and social monitoring that is open and flexible enough to adopt new theoretical and empirical evidence. Guiding principle should be the search for major human-nature interactions in biosphere reserves and the hypotheses that social and natural sciences have with regard to them.“

source: Rome Report 2001

Outline of a simple conceptual model for the interaction social / natural systems



Indicators for social monitoring (Rome)

- Basic demographics and well-being of people
- Ecosystem use
- Socio-economic dynamism
- Management, participation and governance
- Values and attitudes
- Information, education and research
- Future seen through the eyes of experts and inhabitants

source: Rome Report 2001

Towards reducing complexity

- Focussing monitoring tasks (in particular social monitoring) on the core mandates of biosphere reserves: conservation and development.
- Conservation and development can be conflicting goals: Conservation depends on restricting uses, development depends on allowing and even supporting uses of BR.
- „*Internal sustainability*“ of BR depends on resolving such conflicts. Key monitoring task: interactions between social and natural systems – „hard data“. (pressures/investments, services/benefits, states)

4

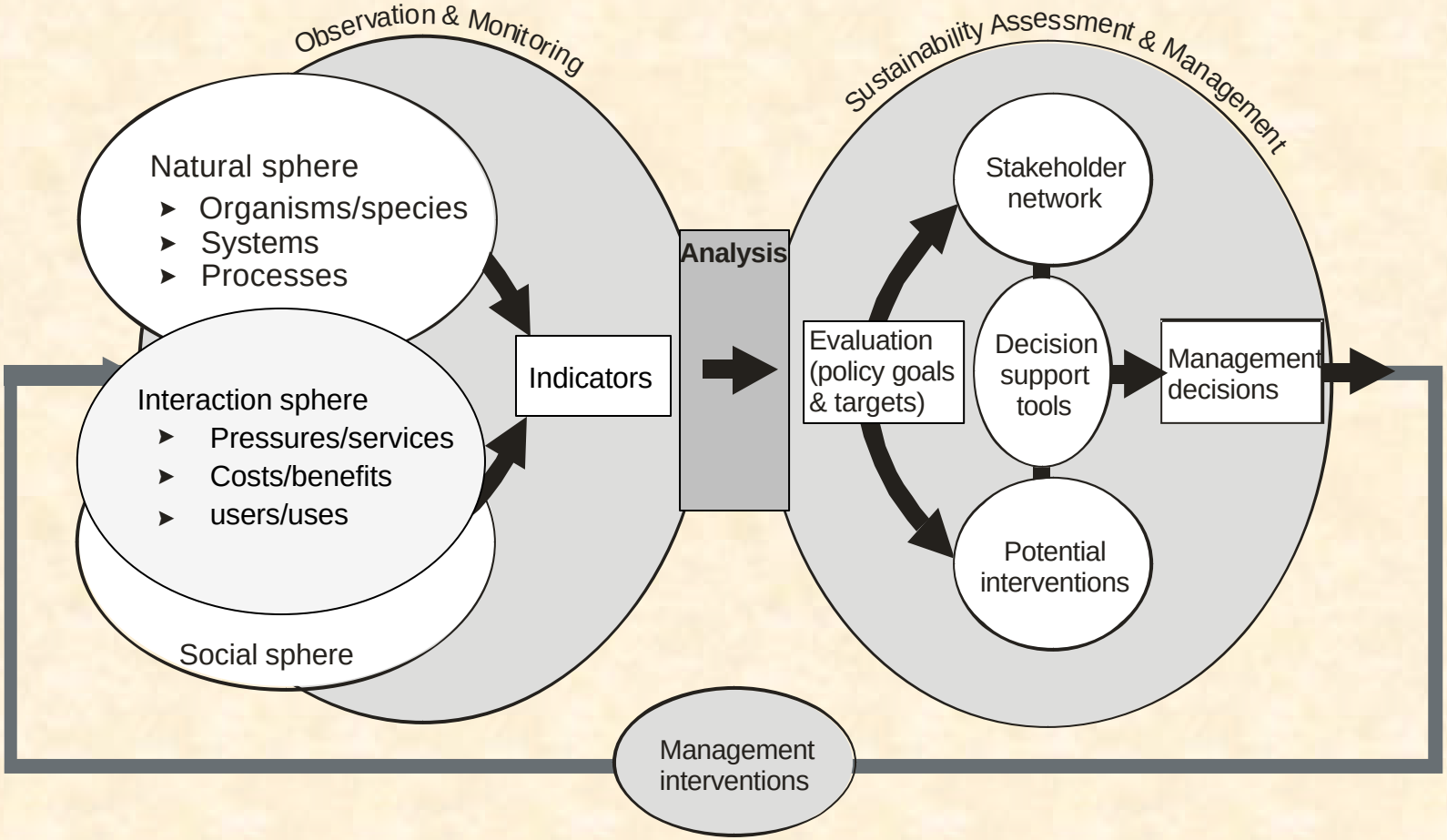
Stakeholder processes and decision support for sustainable management

- The sustainability of a BR depends not only on sustainable interactions between the social and the natural systems („*internal sustainability*“),
- but also on the sustained support from all important stakeholders (*„external sustainability“).*
- Therefore, stakeholder interests and involvement have to be observed and strenghtened. This is not so much a task for monitoring („hard data“), but a case for „soft data“, supported by occasional focussed social research, and analysis.

a framework for describing stakeholder interests and involvement

	scientists	decision makers	users
Interactions with BR ecosystem	▪ measuring, monitoring, assessments	▪ providing framework conditions	▪ invest & exert pressures ▪ receive services & benefits
interests & preference structures	▪ generate knowledge ▪ make a professional living	▪ specific policy goals	▪ good balance of costs & benefits
resources & competencies	▪ expert knowledge ▪ communication	▪ legal & financial ▪ resources ▪ communication	▪ control (property, entitlement, licence,…) ▪ communication
major categories	▪ onsite | offsite ▪ disciplines	▪ onsite | offsite ▪ government | NGO ▪ scale level	▪ onsite | offsite ▪ productive | consumptive ▪ economic sectors

Integrated monitoring – sustainability assessment & management (fig 1*)



Rome principles of a social monitoring programme

1. Conceptual model of the system
2. Set of indicators
3. Methodology for data collection & storage
4. Methodology for calculating indicators
5. Process for synthesis
6. Methodology for reporting
7. Effective communication
8. Broad participation
9. Institutional capacity
10. Guiding vision and goals

source: Rome Report 2001

proposed general principles for (Austrian) MAB research

1. interdisciplinarity across the „great divide“ of natural and social sciences. All research questions should entail a focus on the interaction of natural and social processes.

2. transdisciplinarity („mode 2 research“). MAB research should take stakeholder problems seriously. Stakeholders should have a fair chance to involve science in having their problems resolved.

3. international orientation: Austrian MAB research should be embedded into international research efforts, and and use at least part of its resources for comparative and or cooperative projects.

Monitoring Issues in Euromab Biosphere Reserves

Rodrigo MEDEIROS, Catherine CIBIEN, Doris POKORNY

MAB Consultancy Workshop, Vienne – June 2004

Why this survey?

- The EuroMAB Meeting held in Rome in october 2002, discussed the future work of the Biosphere Reserve Integrated Monitoring (BRIM) Programme in the EuroMAB context.

- One goal was to identify a common thematic list of monitoring issues of relevance to most of the EuroMAB Biosphere Reserves.

- This list could lead to identifying which parameters should be monitored in relation to the main management issues of the BRs, which are already monitored and which need to be done.

What is this survey?

- The survey should be integrative in nature, linked with the management and sustainable development issues, trying to bridge ‘traditional’ (abiotic and biodiversity) monitoring with the socio-economic aspects of monitoring in the BRs.

- The French MAB Committee and the Rhön Biosphere Reserve in Germany have carried out this survey as a joint project, with support of UNESCO MAB Secretariat.

How to survey?

- A questionnaire was sent to all the 225 Biosphere Reserves present in the Unesco's EuroMAB list in July, 2003.
- In order to bridge monitoring with management/coordination issues, the questionnaire asks to each BR to indicate the three main issues, refering to the driving forces, the pressures it causes on the BR, the actual state of the problem, and which response(s) would be given.
- If these main issues were already monitored, a brief description of the system was asked.

Results

- A total of 57 questionnaires from 20 countries were answered, corresponding to 25% of all Biosphere Reserves.
- In a general way, most BRs face problems which are very similar:
- Effects of agriculture changes, i.e. abandonment of less productive areas (with biodiversity loss caused by lack of management) and intensification of others, (water pollution, land erosion…). Idem for aquatic productions (fisheries, shells…).
- Impact of tourism : urbanisation, waste, impact on habitats, disturbance of animals. These phenomenon are accentuated in island situations.
- Water management, quantity and quality. It concerns surface and ground water, river management…

Groups and Categories for Classification the Main Issues Pointed Out by the EuroMAB BRs

ISSUES GROUPS		Description	N	%
	ENVIRONMENTAL	a. Contamination (air, soil, water)	21	14%
		b. Fragmentation	2	1%
		c. Animal Diseases	2	1%
		d. Illegal or Excessive Collection of Species[1]	12	8%
		e. Grazing	4	3%
		f. Overpopulation of species [2]	8	5%
		g. Extinction of species/loss of habitats	11	7%
		h. Fire	6	4%
		i. Changes in Water Availability	8	5%
		Subtotal	***74***	***50,3%***
	SOCIAL	a. Land Use[3]	29	20%
		b. Visitor's Impact (Tourism)	21	14%
		c. Urbanisation / territory management[4]	8	5%
		d. Lack of Specific Policies[5]	13	9%
		e. Non-adequation to MAB criteria	2	1%
		Subtotal	***73***	***49,7%***
		Total	**147**	**100%**

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Is there any monitoring?

	N	%
How many issues are monitored?	67	45,58%
How many are not?	40	27,21%
Not Answered (NA)	40	27,21%
Total	**147**	**100%**

Which Monitoring ?

- Most BRs monitore a lot of parameters as protected areas, and have permanent plots.
- When it exists, it is often biodiversity or conservation oriented.
- From the sustainable development point of view, some economic, social or cultural dimensions should also be monitored.
- Many BRs have no management oriented monitoring to follow the main problems they face. It makes very difficult to assess management efficiency, and to establish or plan further actions, especially involving the main stakeholders.

The Future

- These results indicate that monitoring tasks are not clear linked to the main issues;
- ???
- Many BRs presented similar issues, but different ways to deal with it (and even, for some of them, no tools to do that);
- This opens a great opportunity to promote or stimulate the cooperation between these reserves – *but how to do this?*

PROJECT "COMMOM ISSUES IN THE BIOSPHERE RESERVES: BUILDING THE EUROMAB COOPERATION NETWORK"

The Main Purpose

- Create a cooperation network between BRs, based upon similar needs, profiles and a thematic list of issues
- Share and interchange potential “know-how”
- To establish cooperation in different areas: scientific, administratif, management, formation of human ressources, etc
- Use as a model existing cooperation experiences led by some BRs (e.g., Vosges du Nord BR in France and Berezinsky BR in Belarus)

An hypothetic exemple: Tourism

- 20 BRs indicated problems related to tourism (visitors impact, damages, lack of structure, etc)
- 09 has some monitoring related to this point, 04 don't have and 07 didn't answer
- Some of them implemented (or are in order to) measures to deal with this point, such as:

  - sustainable steering of touristic activities according to interest groups; offers for leisure and sports activities in special areas; conclusion of the ordenation plan; zoning of the territory; tourism planning;

An opportunity to exchange experiences and elaborate research monitoring programs linked to its specific questions

resumé 1

- 1) Unesco Mab welcomes the Austrian initiative to generate a national MAB reseach programme and to take the international BRIM agenda a step further into realization.
- 2) there was also a broad consensus on the new role of science to directly interact with BR management and play a role in problem resolution.
- 3) there is wide consensus on the “general principles of MAB-BR research”. They have been (thanks to Dr. Ruoss) reworded somewhat.

proposed general principles for (Austrian) MAB research

1. interdisciplinarity across the „great divide“ of natural and social sciences. All research questions should entail a focus on the interaction of natural and socio-economic processes.

2. transdisciplinarity („mode 2 research“). MAB research should take stakeholders perspectives seriously and communicate its research results to them. Stakeholders should have a fair chance to invoke research to help in solving their problems.

3. international orientation: Austrian MAB research should be embedded into international research efforts, and use at least part of its resources for internationally comparative and or cooperative projects.

Resumé 2

- 4) there were some mixed feelings about the conceptual approach taken by the Austrians. While some welcomed the sharper focus and stringency, others felt that the richness and encompassing features of the Rome report could be at stake. We will take Arico Salvadore's advice to frame the Austrian approach as selective from, but very much in the spirit of the Rome report
- 5) There was agreement on more use of scientific support for participatory and conflict resolution methodologies and the strengthening of management competencies (Euromab workshop 2005, including BR managers); also introduce local knowledge into the management processes.
- 6) Unesco Mab has agreed to publish the results of this workshop as maybe of "Illmitz report" among its follow up documents

Ruoss- Handlungsfähigkeit des Gesamtsystems

- Medienresonanz (Artikel, Farben,
- Häufigkeit der Kooperation (zwischen usern im System) – erhöhte Innovationswahrscheinlichkeit, Lernprozesse
- neue regionale Services und Produkte
- Nachfolgefragen – Weiterführung
- Konflikte
- Transfer von Wissenschaft in Praxis; Bringschuld
- Ausgangspunkt: integrated sustainability assessment (siehe auch appendix der Sevilla Strategie controlling)
- Prozess der Definition von Goals and Targets (auch um Motivation zu schaffen für monitoring) – Aushandlungsprozesse
- Monitoring als Managementaufgabe in BR
- Etablierung von Strukturen zur Verstetigung und Unabhängigkeit von Personen (sektorale Berufsverbände, Vereine, Konsortien, Verträge – Leistungsvereinbarungen, Partizipationskulturen)

Annex 2.7

Results of working groups (as stated on flipcharts)

Day 1, 17 June 2004

Group 1

Herzig
Kaufmann
Cibien
Rodrigo
Kaushal
Günther
Vijaykumar
Sigrun Ertl

Comment the model

A) – analysis sphere
- decision support tools + stakeholder analysis (entire right sphere)
- interaction between natural scientist and social scientist (controversial)

B) - natural and social scientists not overlapping enough
- time between monitoring and intervention should not be so long
- clear targets

C) The two circles should be within one management. Management helps to form targets.

Guiding principles

- stakeholders active participation
- synergisms and networking should be included

Group 2

- use of resources
- historical perspective
- social demographics (migration)
- land owners ‡ users
- spatial data

Comment the model

systems => structures
processes => (species) functions
users with no economic benefits for BR (sports,...)

Guiding principles

- principle: goals must be clear
- Rome => further? rather look at experience
- clear distinctions (too technical)
- larger national context missing
- marketing issue ?
- model too complicated
- model applicable for existing BRs?
- time frame applicable?

- spatial configuration missing (1st, 2nd, 3rd)
- lifestyles missing
- bottom-up ‡ top-down (expert knowledge by locals)
- model too general ("wilderness") make unique
- impacts of research on BRs, (managers),....
- code of conduct
- historical analysis
- international land use (comparative case studies)
- clear criteria of BRs

Group 3

Psenner
Fuhrmanl
Reutz-Hornsteiner
Korff
Reiter
Baumgartner
Jungmeier

Comment the model

- data
  core process missing
- added value for other users (?Alp. con., bio.div.?)
- position of mab
- whole process
  - conception
  - data mining
- Technical – legal Problem
  - requiring
  - uses
  - standard/ interfaces
  - availability (eg. Emas)
- vision/ hypothesis ⇔ indicators

Guiding principles

-
- added value for other users

STEP 2

- Interaction Sphere
- Modell A positive
  bases for discussion
- maybe too simplified

Monitoring ⇔ research depending on key questions

Day 2, 18 June 2004

Social Science

Brainstorming:
How did landscape come to be?
Variety of units involved (mapping)
What is the institutional framework?
How do people define themselves?
Who are the stakeholders involved?
What kind of tourists, etc.?
What kind of landusers and resources?

How to:
1) design a learning process with stakeholders (management) f. conflict resolution
2) linking of BRs to renewable energy
3) models of sustainability
4) power relations (+cooperation)
5) ownership (social)

economical structure
conflict prevention
integration of scales (data) involved (MSA + MLA)
outline of socio-demographic dynamics – resource flows
tool, frameworks, approaches
stakeholder/monitoring => "actors interests"
governance style and impacts
resource flows – money flows
comparison of (individual) trajectories (relation interregional to region)
economic options → impacts on landuse
relationship agricultural activities ⇔ market
resource ability of BRs => impact on management
influenceof external driving forces => local management
land tenure and ownership

QUESTIONS:
1) study of social demography and resource use
   - population dynamics lifestyles
   - cultural history
2) land use and (resource) management
   - market orientation
   - renewable energy
   - management units
   - stakeholder's interests
3) governance and institutions → impacts on resources and management
   - land tenure and ownership (?L & S?)
   - stakeholders
   - conflict resolution mechanisms

for all 3: historical/ contemporary (?scaling?, multi-spatial, multi-level)

Natural Science

- impact of global change and land use change on values of BR (eg. social values, wilderness)
- tension between decline of trad. land managing and replacement by intens./ "hard"/ industrialized Land management

2 cross cutting questions
optimal design of mon. platf. with special emphasize on
- scaling
- data mining
- revisitations, reassessment
- evaluation and testing of state of the art methods!

QUESTIONS:
Playground vs. consultance
implem. of res into BR management/ social context
how to run the old BR Res? (playground?) or redirect

continuity!
platform
no perm. plots/ infrastructure in new BR
landscape change
specific Austrian contribution "????"

global change impact on the values of ??
matrix also for global change impact
synthesis was missing
priority r. q. incl. data mining
reassessment and revisitation
restoration
multi scalar monitoring
⇨ What is the optimal platform design for M. M.?

landscape change as an integrated approach ("triangle")
pastoral landscapes as an example for "trad" L. Management
Gradient between interns. used/ trad. user ?Semination?
Land use/ L. ? = baseline trajectories => develop questions from ??
Matrix
L-use impact us research to assess the problem solving capacity
adaption of 1st generation BR acc. Seville Strategy

BR Managers

Questions
- concept for research and monitoring
  including: - sampling basic data
  - implementing GIS
  - linkage to process chains

- Future of "old" BR's

- Develop a concept, tools, method and structure for
  - communication
  - education
  - participation

visitor flows – their contribution to regional economy
research on interface of people and nature
efficiency of resource use
interaction of management measures and in the area from small to large land use scale e. g.: reed-harvest and fisheries ??? & meadows
changing in land-use by new techniques and technologies and fashions
communication, education tools
tools and methods for participation and structures
change impact on systems climate
Choice

- development of tools and structures and methods for
  - communication
  - education
  - participation
- sampling basic data, implementing GIS, linkage to process chains

RESEARCH QUESTIONS

- concept for research and monitoring in individual BRs as a model
- potential of BRs all thinkable added values
- future of BRs of "old % new" generation in combination
- How to deal with status of BR + NP in one area and other protected areas
- sampling basic data and link it to process chains
- long-term change of land use at landscape level (from historical basis to future)
- influence of land use on vegetat. cover
- implementing a GIS monitoring
- system in individual BRs and IN
- Linkage of all the Austrian BRs and use

2.8. some photos…


Nationalpark