



The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning

GRAND CHALLENGES – PROCESS OF IDENTIFICATION AND RESPONSES: *FIRST STEPS*

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GRAND CHALLENGES

- **WHAT IS IT?**
- **WHY NOW? (and the process of Lund)**
- **HOW TO APPROACH IT?**

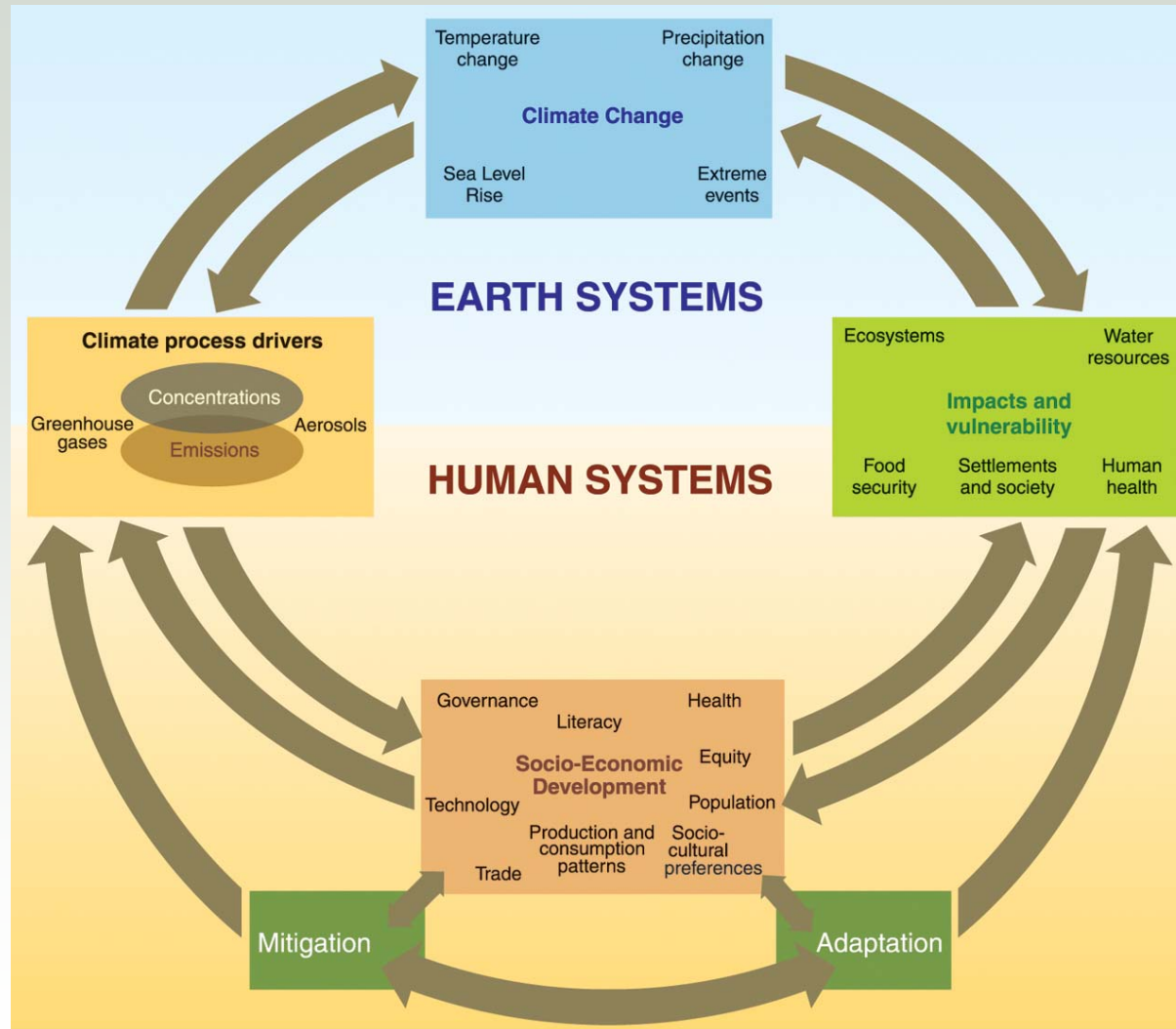
WHAT IS IT? (1)

- **LARGE, COMPLEX, SYSTEMIC CHALLENGES**
- **MAJOR THREAT FOR EUROPE IN A GLOBAL CONTEXT – BUT ALSO POSSIBILITIES**
- **CANNOT BE RESPONDED BY ANY ONE MS ALONE**
- **CANNOT BE UNDERSTOOD BY ONE OR THE OTHER AREAS OF SCIENCE ALONE**
- **HAS TO BE CONNECTED TO THE DOING – IMPLEMENTATION AND INNOVATION ARE HEAVILY INVOLVED**
- **INSTITUTIONALLY COMPLEX – AND POLICY LINKED**

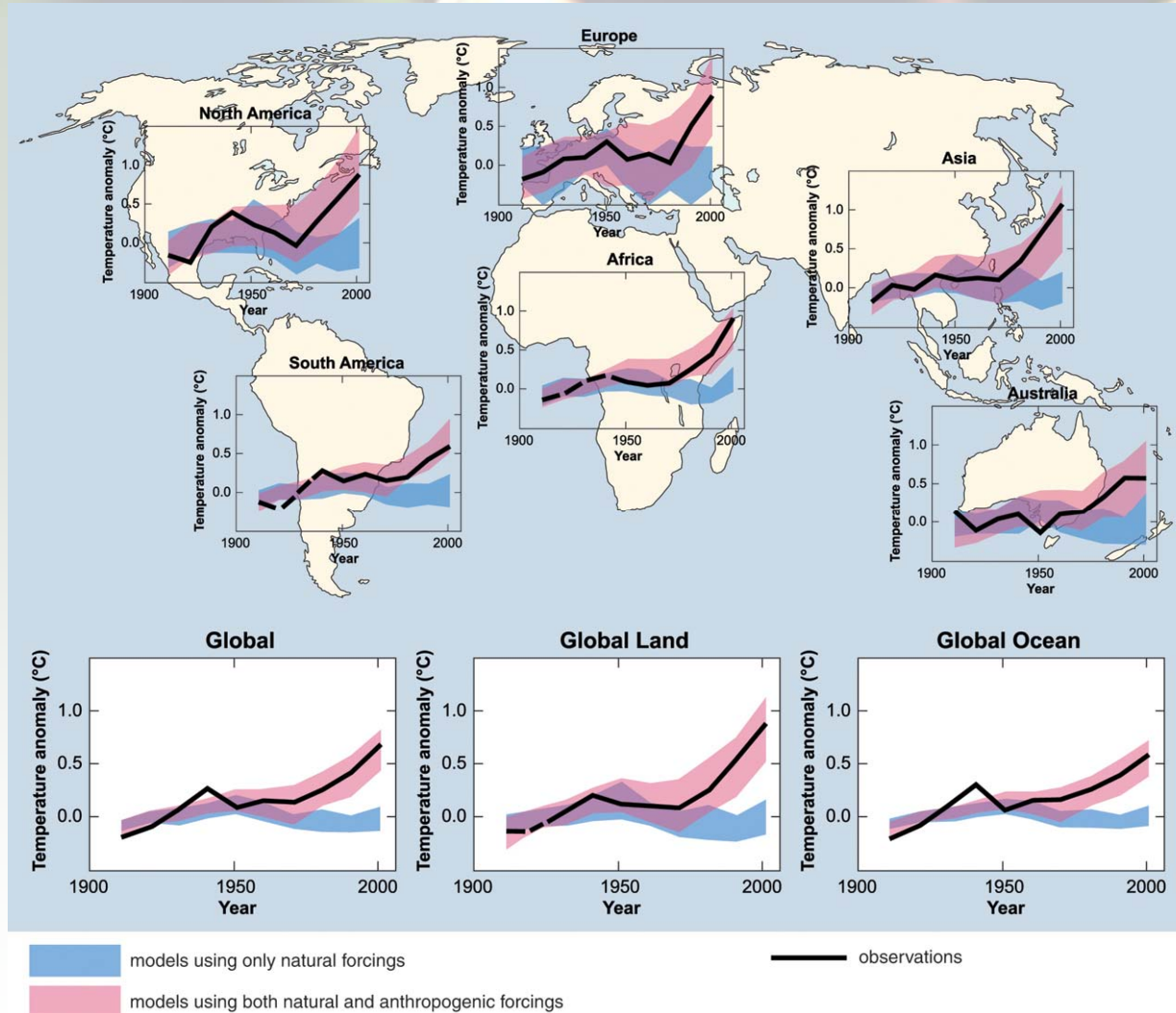
WHAT IS IT? (2)

- **THE POTENTIAL DEPTH OF THE CRISIS**
- **HOW IT PENETRATES MANY WALKS OF LIFE IN THE WORLD**
- **ITS CAPACITY TO TRIGGER OTHER EVENTS – CHAIN EFFECTS**
- **THE RISK OF FLIP FLOPS AND NON REVERSABLE OUTCOMES**

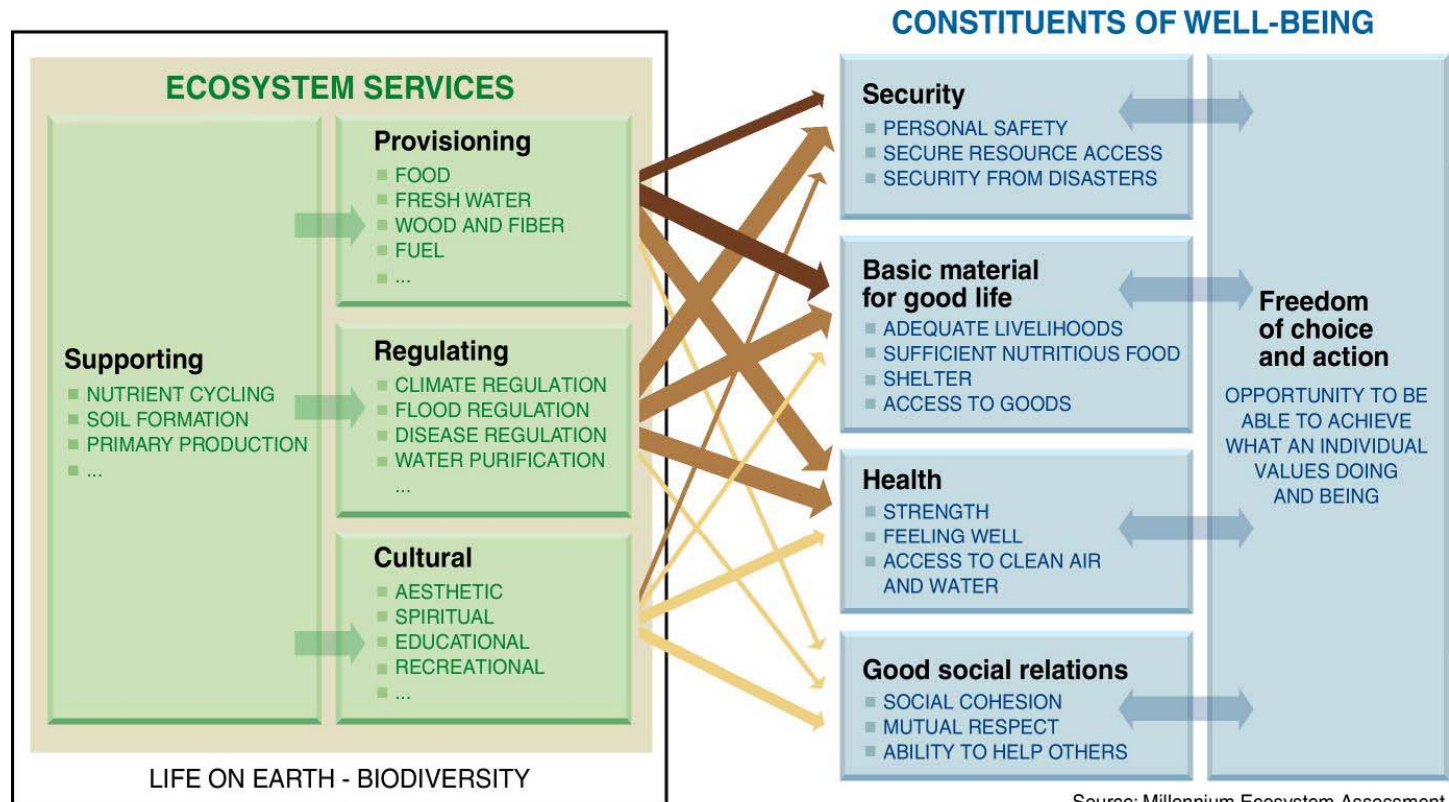
CASE climate, The Overall IPCC Picture



THE IPCC ANALYSIS OF NATURAL-HUMAN INFLUENCES



Consequences of Ecosystem Change for Human Well-being



Source: Millennium Ecosystem Assessment

ARROW'S COLOR
Potential for mediation by socioeconomic factors

- Low
- Medium
- High

ARROW'S WIDTH
Intensity of linkages between ecosystem services and human well-being

- Weak
- Medium
- Strong

The bottom line

We are spending Earth's natural capital, putting such strain on the natural functions of Earth that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted.

At the same time, the assessment shows that the future really is in our hands. We can reverse the degradation of many ecosystem services over the next 50 years, but the changes in policy and practice required are substantial and not currently underway.

Source: Millennium Ecosystem Assessment 2005

R&D characteristics (I)

SYSTEMS FEATURES

- interdisciplinarity
- cross sectors
- contextual (including the socio-economic frame)

LONG TERM (but also medium term actions)

MULTI-SCALES (“GLOCALITY”)

(issues of “matches” of different phenomena at different scales)

- natural phenomena
- socio-economic-cultural

(e.g. watershed management)

R&D characteristics (2)

RELATED TO “RISK”/DANGER AND WINDOW OF OPTIONS

- several paths
- avoid non-sustainable directions
- recall path dependence

ACTORS PRESENCE

- upstream presence in the R&D agenda
- “practice orientation”
- also uncommon R&D directions

GOVERNANCE EMBEDDED

WHAT IS IT(3) ARE THERE OTHERS ?

- **DEMOGRAPHY - AGING EUROPE**
- **THE ECONOMIC CRISIS IN THE WORLD**
- **EUROPE´S COMPETITIVE EDGE –
WHAT SHALL WE LIVE ON ?**

THE PROCESS LEADING TO LUND (1)

- **STARTED IN THE BEGINNING OF 2008 WITH THE AIM TO CONTRIBUTE TO THE SWEDISH PRESIDENCY 2009**
- **FUTURE OF EUROPEAN RESEARCH AND INNOVATION, BUT NOT ONLY "STRUCTURE"**
- **LONG TIME FRAME – FP BEYOND 2013. YES, BUT ALSO THE WIDER EUROPEAN SYSTEM (till 2025)**
- **RELATIONS BETWEEN MS – BUT ALSO MS-COMMISSION**
- **EUROPE'S GLOBAL ROLE AND SITUATION**

THE PROCESS LEADING TO LUND (2)

- **BALANCE BETWEEN STRUCTURAL ISSUES AND CONTENT ONES**
- **DISTRIBUTION OF OTHER FUTURE EVENTS DURING THE SWEDISH PRESIDENCY (CREST structure issues, knowledge triangel, innovation issues, security etc.)**
- **RESEARCH AND INNOVATION ARE CONNECTED**
- **ENTRY IN THE GRAND CHALLENGES**
- **FROM SECTORIAL THEMES TO ISSUES**

THE PROCESS LEADING TO LUND (3)

**CRISIS/PROBLEMS/ CHALLENGES
ALSO PROVIDE OPENINGS FOR
OPPORTUNITIES**





NEW WORLDS – NEW SOLUTIONS

- *INTERCONNECTED TWINS*

- **NATURE SHOCKS - OPPORTUNITIES**
- **BUSINESS SHOCKS-OPPORTUNITIES**
- **SOCIAL AND CULTURAL SHOCKS - OPPORTUNITIES**
- **DECLINE AS OPPORTUNITY**

PREPARATORY PROCESS

- **INTERNATIONAL ADVISORY COMMITTEES**
- **FOUR PRE SEMINARS FEBR-APRIL 2009 (Brussels, Berlin, Tallin, Madrid)**
- **START WITH WORK ON A "LUND DECLARATION"**



THE CONFERENCE

- **POLITICAL ENTRIES**
- **WORLD OUTLOOK (Europe, Asia and Africa and the US)**
- **COMMENTS ON RESEARCH POLICY**
- **ON THE ELEMENT OF SURPRISE**
- **STAKEHOLDER COMMENTS**
- **FOUR PARALLEL CASES**



LUND DECLARATION ON THE GRAND CHALLENGES (1)

- **EUROPEAN RESEARCH MUST FOCUS ON THE GRAND CHALLENGES OF OUR TIME MOVING BEYOND CURRENT RIGID THEMATIC APPROACHES.**
- **THIS CALLS FOR A NEW DEAL AMONG EUROPEAN INSTITUTIONS AND MEMBER STATES IN WHICH EUROPEAN AND NATIONAL INSTRUMENTS ARE WELL ALIGNED**



LUND DECLARATION ON THE GRAND CHALLENGES (2)

- **AND COOPERATION BUILDS ON TRANSPARENCY AND TRUST**
- **IDENTIFYING AND RESPONDING TO GRAND CHALLENGES SHOULD INVOLVE STAKEHOLDERS FROM BOTH PUBLIC AND PRIVATE SECTORS**
- **TRANSPARENT PROCESS – GLOBAL OUTREACH**
- **FURTHER PROCESS OF RESPONSE AND IMPLEMENTATION**

HOW TO APPROACH THE GRAND CHALLENGES ?

1. TO IDENTIFY THEM AND SELECT THEM

A. WORLD OUTLOOK (see Lund but also

e.g. the EU-2025 forward look process)

B. START THE PROCESS: PRE-MEETINGS ON DESIGN

C. INSTITUTIONAL SET UP FOR THE SEARCH

(workgroups, calls for ideas, consultation rounds etc)

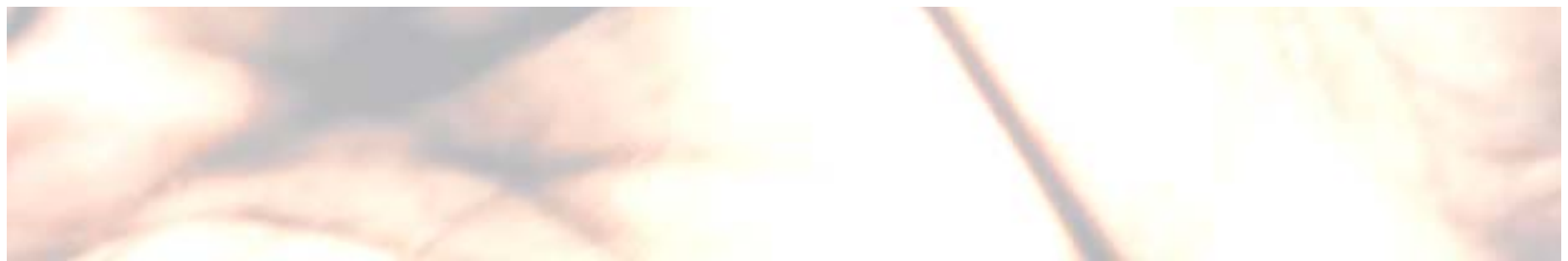
HOW TO APPROACH THE GRAND CHALLENGES ? (2)

2. TO START PARTIALLY TO IMPLEMENT

- E.G. THE CASE OF JOINT PROGRAMMING (JP), EIT, JTI etc

A. DEVELOPING CRITERIAS: CONSULTATION PROCESS

B. EARLY CALLS FOR TESTS



HOW TO APPROACH THE GRAND CHALLENGES ? (3-4)

- 3. EMBEDD THE GRAND CHALLENGES IN THE WIDER STRUCTURE OF ERA DEVELOPMENTS PREPARING FOR THE NEXT FP BEYOND 2013 AND OTHER ELEMENTS**
- E.G. THE CASE OF JOINT PROGRAMMING (JP), EIT, JTI etc
- 4. PREPARE FLEXIBLE MECHANISMS FOR QUICK RESEARCH ACTION FOR EMERGING SURPRISING CASES – EURO-ALERT**

- **SIZE AND SCOPE**
- **SEQUENCE PRIORITY SETTING**
- **DYNAMICS OF GRAND CHALLENGES**
- **CONNECTIVITIES AND HORIZONTAL TRIGGERS OF SYMBIOTIC NATURE**
- **THE KNOWLEDGE PRODUCTION SYSTEM**

THE KNOWLEDGE PRODUCTION SYSTEM

- *THE ORGANISATION OF RESEARCH**
- *BALANCE ISSUES**
- *TIMING ISSUES**
- *FINANCING ISSUES**
- *EXPERTISE – HUMAN CAPITAL**
- *TRUST**
- *THE RTD LINK TO POLICY AND EDUCATION**

NEXT STEPS

- 1. SMALL WORK SHOP TO EXPLORE THE PROCEDURAL ASPECTS AND TO DISCUSS WHAT GRAND CHALLENGES MIGHT MEAN – A TAXONOMY OF CHALLENGES**
- 2. A LARGER CONFERENCE (*LATER TO BE ARRANGED ANNUALLY*) ON THE PATTERN OF GRAND CHALLENGES**
- 3. FORESIGHT SCOPING PROCESSES (*e.g. SCAR case*)**

MESSAGES AND SUMMARY

- 1. GRAND CHALLENGES ARE ALREADY HERE. THE ISSUE IS HOW TO GET GOING.**
- 2. START WITH SCOPING ACTIVITIES AND EXPAND IN STEPS. INVITE IDEAS THROUGH CALLS.**
- 3. USE MECHANISMS ALREADY EXISTING OR EMERGING. ADD FORESIGHTS AND EURO-ALERT**
- 4. INVESTIGATE HOW THESE ASPECTS COULD BE INSERTED IN THE FURTHER ERA STRUCTURIZING DISCUSSIONS**

Issues of Concern

- BUILD TRUST AND CONFIDENCE IN THE FIRST STEPS OF THE PROCESS
- BE EXPERIMENTAL
- HAVE WIDE STAKE HOLDER CONNECTIONS
- ENCOURAGE NEW CUTS IN KNOWLEDGE FORMATION AND PLAY WITH VISIONARY OUTLOOKS AND POSSIBLE SURPRISING FUTURE PATHS

