Interactive Learning for Masters Programs in Environmental Sciences and Policy

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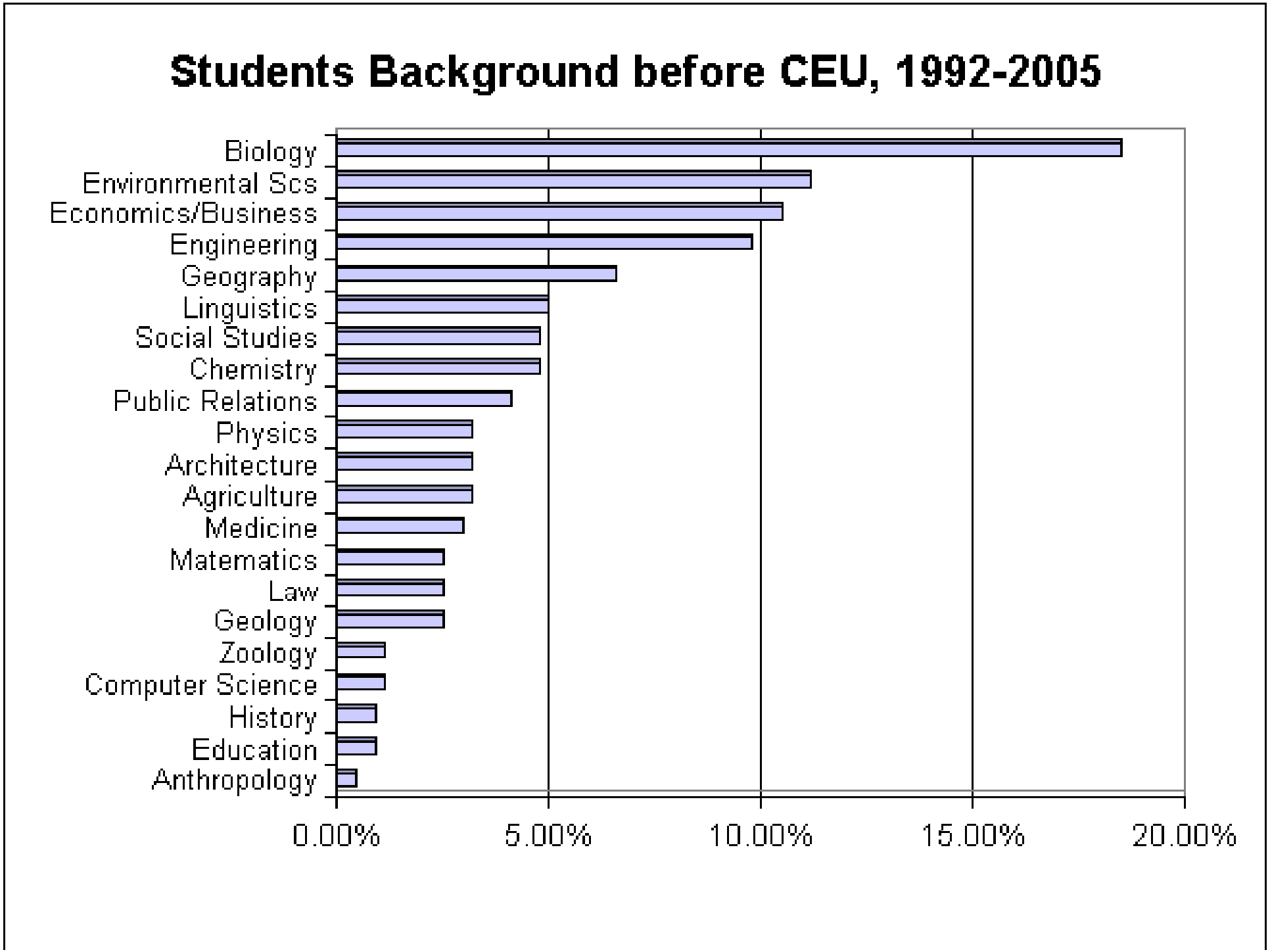
Experience of CEU

- Post-graduate University based in Hungary since 1991 with Master and PhD programs (Hungary legally accepted Master degree within its educational system only in 2006)
- External accreditation of Master programs (through UK and US accreditation bodies)
- Aiming at preparing practitioners rather than scientists.


Students Background before CEU, 1992-2005
Biology
Environmental Scs
Economics/Business
Engineering
Geography
Linguistics
Social Studies
Chemistry
Public Relations
Physics
Architecture
Agriculture
Medicine
Matematics
Law
Geology
Zoology
Computer Science
History
Education
Anthropology
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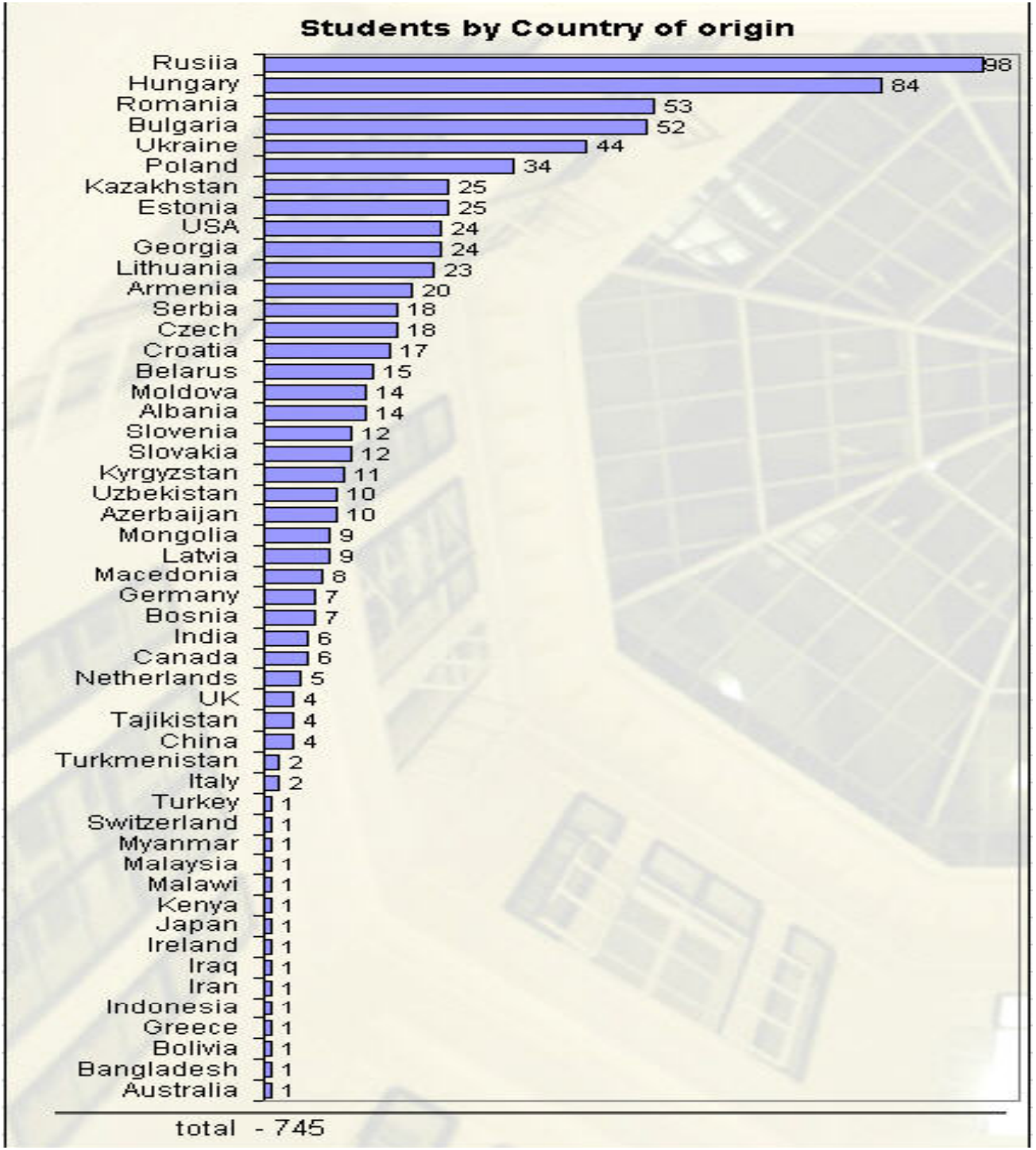
5.00%
10.00%
15.00%
20.00%


Students by Country of origin
Rusiia 98
Hungary 84
Romania 53
Bulgaria 52
Ukraine 44
Poland 34
Kazakhstan 25
Estonia 25
USA 24
Georgia 24
Lithuania 23
Armenia 20
Serbia 18
Czech 18
Croatia 17
Belarus 15
Moldova 14
Albania 14
Slovenia 12
Slovakia 12
Kyrgyzstan 11
Uzbekistan 10
Azerbaijan 10
Mongolia 9
Latvia 9
Macedonia 8
Germany 7
Bosnia 7
India 6
Canada 6
Netherlands 5
UK 4
Tajikistan 4
China 4
Turkmenistan 2
Italy 2
Turkey 1
Switzerland 1
Myanmar 1
Malaysia 1
Malawi 1
Kenya 1
Japan 1
Ireland 1
Iraq 1
Iran 1
Indonesia 1
Greece 1
Bolivia 1
Bangladesh 1
Australia 1
total - 745

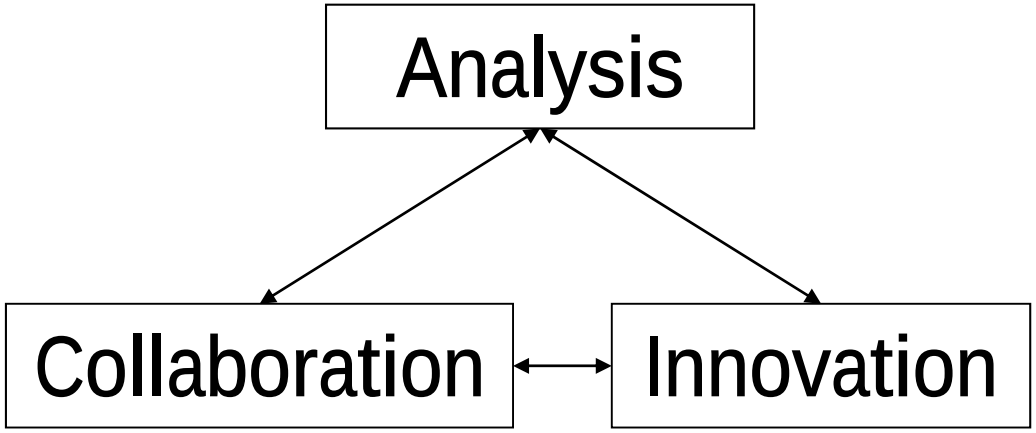
Peculiarities of Master Programs as seen from CEU experience

- Allowing people to expand their knowledge, to re-direct their interests if necessary (for example, shift from natural sciences to environmental management, etc.)
- Dealing with mature people, sometimes having already professional experience, knowing exactly what they would like to take from the program
- People are usually coming to MSc program not just to learn in general, but to learn how to do some very practical and concrete things
- Lack of “common denominator”, common school of thought among students in the beginning

In order to be effective, learning at Master level should

- (**Guidance**) be guided so that students' reflections, analysis and creativity be facilitated by teachers and instructors;
- (**Focus**) be focused on key sustainability topics and issues
- (**Structure**) ensure the progression of learning through systematic development of students' capacities to tackle sustainability issues.

Crucial generic capacities which we would like to develop through the Master course



Analysis

- (i.e. the ability to systematically analyse sustainability issues and strategies and to program strategies using a variety of analytical and planning tools and techniques)
- How is the information about an issue is currently gathered, analysed and interpreted? What are the trends and potential scenarios? How big are uncertainties? What are the models used for analysis or prediction? How is the effectiveness of programs in this area planned and evaluated? How can all of the above be improved?

Collaboration

- (i.e. the ability to identify and interact with diverse interests related to sustainability challenges, design and implement collaborative solutions, secure commitment, as well as effectively confront and transform non-supportive attitudes);
- What are the different interests and stakeholders related to the issue? How do they perceive it? What are the potential tensions or conflicts? How is the awareness, attitudes and commitments in this area? How can collaborative platforms or mechanisms be created and function?

Innovation

- (i.e. the ability to foster structures and mechanisms for identifying, refining, selecting and disseminating innovative solutions to sustainability problems)
- What are the non-mainstream approaches to deal with the issue? How is research and innovation fostered? Are there networks of knowledge or communities of practice where this innovation can be tested and discussed?

Concept of Mindsets for Sustainability

- Dealing with sustainability challenges requires particular ways of thinking, particular *mindsets*. So the question is not about *what* sustainability practitioners need to achieve neither about *how* they should do it, but about the ways they should *think*, their mind-sets. This vision clearly affects ways of teaching of the future practitioners

Why can’t we have one “sustainability” mindset?

- Sustainability practice is faced with contradictory requirements: analyzing ecosystems, making budgets, empowering people, advising companies, manipulating politics, just to name a few. While they are all part of the same challenge of sustainable development they require quite *different* ways of thinking.
- There is a multitude of approaches to sustainable development claiming to be universal: for example, eco-theological, eco-feminist, or eco-socialist theories of sustainable development (Mebratu, 1998). It is pointless to discuss which of them are *wrong*, on the contrary, we are saying they are all *right*.

Multi-perspective approach towards sustainability

- One can understand sustainable development only by listening to the whole variety of different voices, theories and values.
- Such a ‘post-modern’ view does not imply that the dialogue between different perspectives should be abandoned, just that they should not be seeking to establish a universal ‘truth’ about sustainability.
- The mindsets interact to produce not a ‘super-theory’ of sustainable development, but successful sustainability practice. Reconciliation of the mindsets and the dilemmas they refer to, occurs not in theory but in practice.

“Earthly” mindset

- At the centre of this mindset are tensions between the environment and development at both the global and local levels.
- The Earth has limited resources which constrain physical expansion of human civilization. Moreover, our planet is a complicated and sensitive system. Climate change is one example of what may occur.
- Yet, we need development to provide billions of people a way out of poverty. The Brundtland Commission secured international political consensus in the mid-1980s by suggesting that these two global challenges can and should be solved together.
- The speeding convergence of global and local issues is a result of the increasing interconnectedness between ideas, people and goods in the contemporary world
- Though the boundary between the global and the local is shifting, they often remain in conflict or tension with each other. The ability to solve specific and local problems requires experience and deep familiarity with their context.
- This is the other side of the earthly mindset, spelled with a small ‘e’, reflecting practicality, sophistication and experience. It focuses on resolving local contradictions between the environment and development as well as ensuring synergy, not conflict, between the global and the local agendas.
- **other four mindsets indicate ways in which such dilemmas can be resolved both in thinking and in action**

Analytic mindset

- It sees complex sustainability challenges as *systems* which can be decomposed into elements and connections, modeled and thus, rigorously, *systematically* examined to find solutions.
- It awakens us to the complexity of the outside world, beyond the immediately visible and the intuitively obvious.
- It allows quantifying, modeling, forecasting, planning and managing. It forces us to calculate one or two steps ahead and to examine the effects of our past, present of future activities on society and the environment.
- It also provides a universal and authoritative language of communication as demonstrated by the strong influence that such great analytical writings as *The Limits to Growth* and the *Stern's Commission* report had.
- The Analytic mindset is well suited to address complicated systems, however, it experiences difficulties when the boundaries or the elements of the system are not precisely known or when there is not enough information on how the connections within the system work.

Analytic Mindset (cont.)

- the popularity of the Analytic mindset related to its ability to decompose complex systems. The decomposition is a very powerful approach, which includes, for example such analytic activities as:
- Breaking down sustainability challenges into social, environmental and economic (or other similar groups);
- Considering the natural environment as a set of ‘media’ (air, water, land), individual ecosystems, watersheds, populations, communities, species, organisms, etc.
- Representing human activities in terms of ‘sectors’ (energy, water management, education, health, etc.), ‘programmes’, ‘projects’, ‘organizations’, ‘products’ or the like (these are often further broken down into ‘measures’, ‘stages’, ‘facilities’, etc.)
- Decomposing planning, decision-making and management processes into such elements as situation analysis, comparison of alternatives, and monitoring of performance.

“Careful” Mindset

- This mindset is framed by appreciation of our constraints in explaining and controlling complex systems, such as the global climate.
- It respects the ability of such systems to have important properties which cannot be predicted, modeled or substituted.
- It stresses protecting such ability through minimizing disruption which we cause to natural and social systems, especially their vulnerable elements such as endangered species, disappearing ecosystems or indigenous people.
- Rules-of-thumb for respecting complexity:
  - Preserve diversity;
  - Preserve interactions, especially feedback loops;
  - Preserve multiplicity of levels, natural hierarchies;
  - Preserve the memory of the system;
  - Maintain openness;
  - Preserve wholeness .
- Precautionary principle

Collaborative mindset

- The Collaborative mindset focuses on securing cooperation which is absolutely necessary for solving sustainability challenges.
- In order to do so it seeks to ‘translate’ different interests and foster cooperative networks so that can they can best serve sustainable development. Questions like:
  - who is or should be involved in sustainable development in a particular situation?
  - What are their interests? Can these be ‘translated’ or reconciled? If not can these be modulated, changed?
  - Is there capacity for collaboration and if not how it can be strengthened?
- It also focuses on transforming those attitudes and perspectives which represent obstacles to collaboration for sustainability.
- Creating pre-conditions for such transformation is often associated with building *capacity* of communities, citizens, organizations, which is also part of the Collaborative mindset.

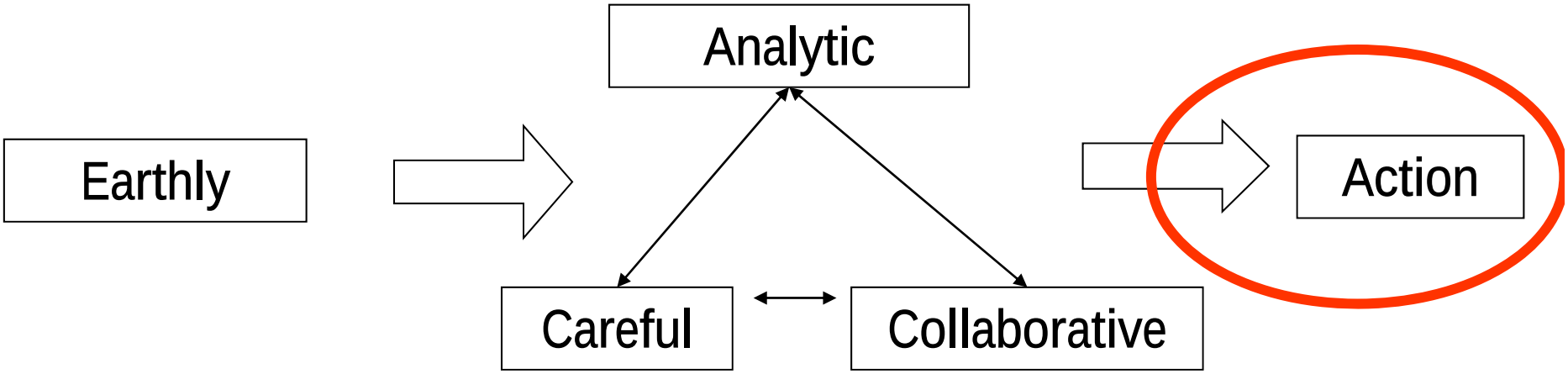
Action mindset

- **Action mindset brings everything together**
- It both conceives and reflects upon action in a constant search for strategic opportunities to manage both change and continuity required for sustainable development.
- It directly relates to Strategies for Sustainable Development and it seeks to synthesize all other mindsets in an action for sustainable development.
- Action is required for *change*. Sustainable development surely needs change in order to reverse the current unsustainable trends. *In*action, absence of change, is potentially catastrophic even if it is accompanied by most refined thinking.
- Other sustainability mindsets are shaped by certain dilemmas, contradictions, such as between the local and the global in the Earthly mindset and between the involvement and the transformation in the Collaborative mindset.
- Tensions and uncertainties arise when we need to ‘switch’ from one mindset to another. How do we establish a boundary between analysis and collaboration, political process and protection of minorities? The truth is that such dilemmas cannot be resolved by theoretical debates. The answers are specific to concrete situations. And they can only be found through practice, through trial-and-error.
- In other words in order to find the right mixture of various mindsets and the right way of applying each mindset we need concrete, not abstract knowledge, that can only be acquired in an action followed by reflection.
- To summarize, all mindsets deal with systems, but see these systems in a different way. Each mindset also has its own central dilemmas:

The five mindsets for sustainable development

Mindset	System in focus	Dilemmas
Earthly	Ecological and economic	Environment vs. Development & Global vs. Local
Analytic	Complicated	Manageability vs. Relevance
Careful	Complex	Respecting vs. Harnessing Complexity
Collaborative	Reflexive, social	Participation vs. coordination
Action	Activity	Continuity vs. change

The five mindsets for sustainable development



How Master Program can ensure that it gives students right balance of knowledge and skills between different mindsets?

- **There is limited amount of information that can be provided by lectures. Only explanation of some basic principles, especially in the beginning of the course**
- **Work within the framework of one large project (for example, student version of the "State of the World" or "GEO" report.**
  - In this case assignments for individual courses can be amalgamated within one general work, where place and validity of every sectoral exercise can be clearly seen within the general framework
- **Heavy reliance on group work and group assignments. Students often learn more from each other than from professors, especially if the group is diverse and includes students with different backgrounds.**
  - Sustainability is about multidisciplinarity, we can not properly address sustainable development issues staying within one traditional discipline (be it biology or economics, for example).
- **Trying to give them as much practical experience as possible, especially during the project preparation period. Internships in companies, NGOs, international organisations, governments are extremely important in this respect**