

WORKSHOP ON CENTRAL ASIA
AN EXPLORATION OF CLIMATE SCIENCE IN CENTRAL ASIA
- MOVING TOWARDS FRONTIERS OF KNOWLEDGE AND ACTION
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Climate change and capacities to face it: the state of education and science in Central Asia

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Why am I presenting here?

Social Scientists

Doctoral Candidate/ Lecturer in Water Conflict, Cooperation and Diplomacy at IHE Delft
Institute for Water Education, the Netherlands

but also:

I worked:

- SDC Consultant on water education in CA, 2020-2021
- Consultant on youth empowerment in the Aral Sea Basin countries, International Secretariat for Water, 2018-2020
- International Fund for saving the Aral Sea 2011-2017
- German-Kazakh University 2017-2018

I studied:

- International Relations in Kazakhstan
- IWRM in German-Kazakh University, Kazakhstan
- Water Cooperation and Diplomacy in Costa-Rica, Netherlands and US

Content

①

**Challenges of education
& science in CA**

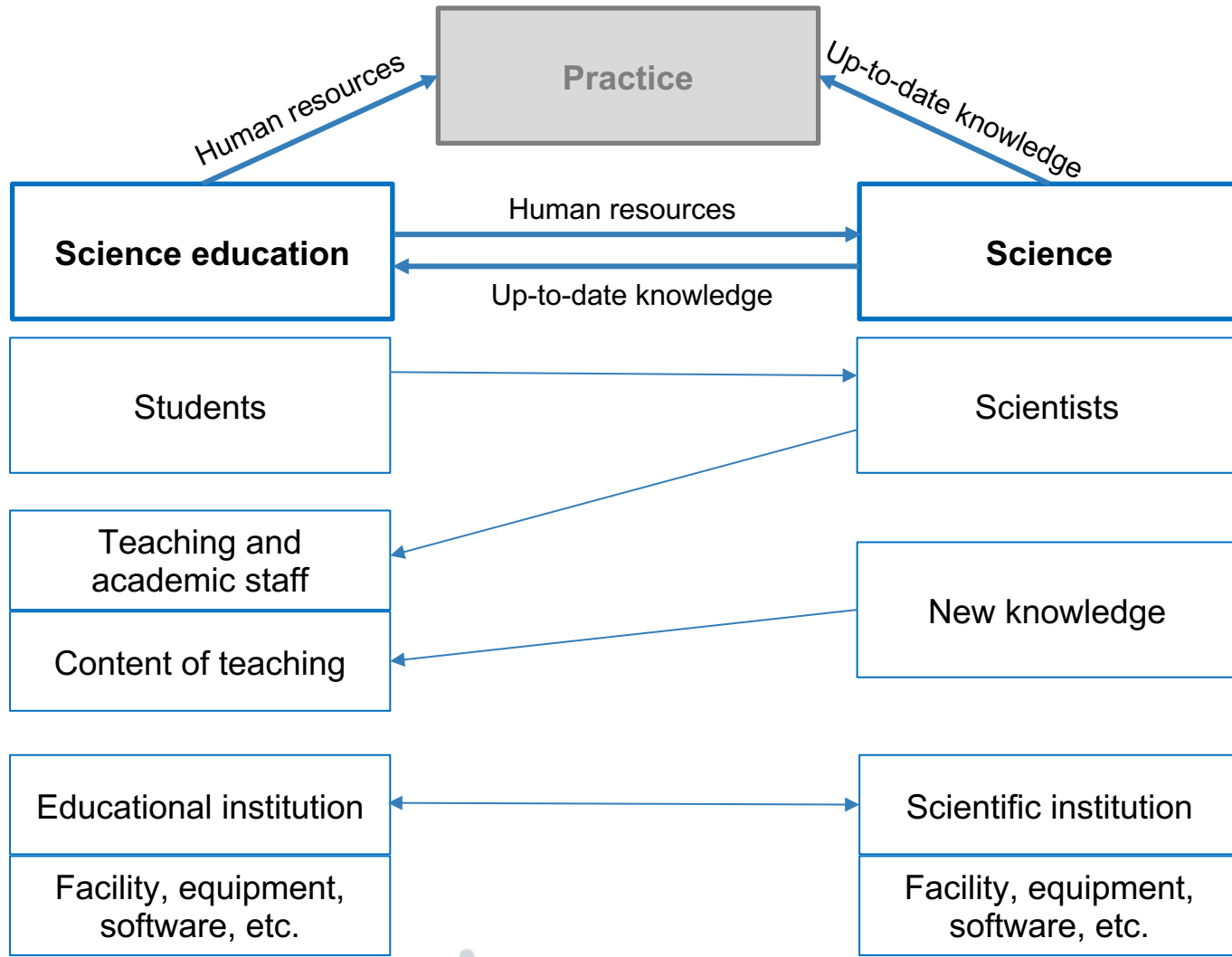
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**Climate education &
knowledge**

③

**Science & capacity
building for climate action**

Elements of education – science - practice model (simplified)



Central Asia, contextual factors:

General – global processes

- Anthropocentrism/ hydraulic mission -> human needs are prioritized over nature
- Global North -> insufficient financial, technical, human capacities to deliver and improve (high quality) education and science

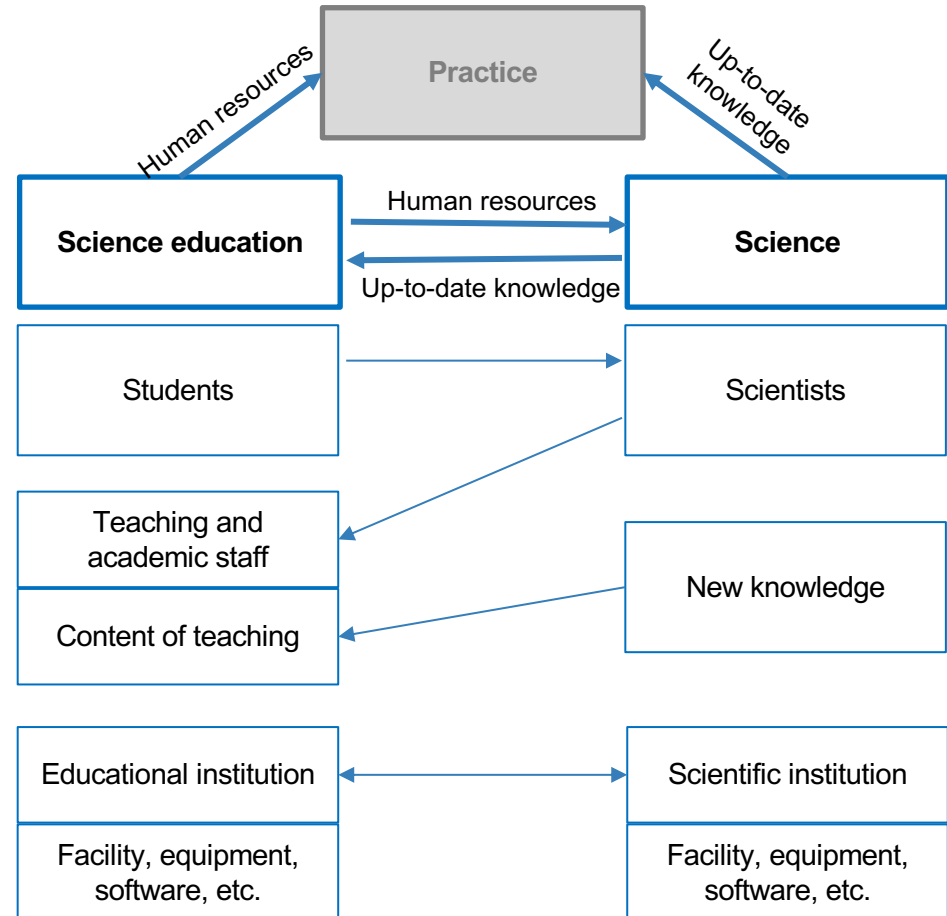
General – regional/ national processes

- Multi-layered colonialism in science and research -> domination of Russian/ Soviet & Western academia
- Soviet heritage -> philosophical and institutional features of education & science
- Nation- and state- building processes -> multiple reforms in education, aspiration to join global processes
- Non-democratic regimes -> corruption, weak civil society

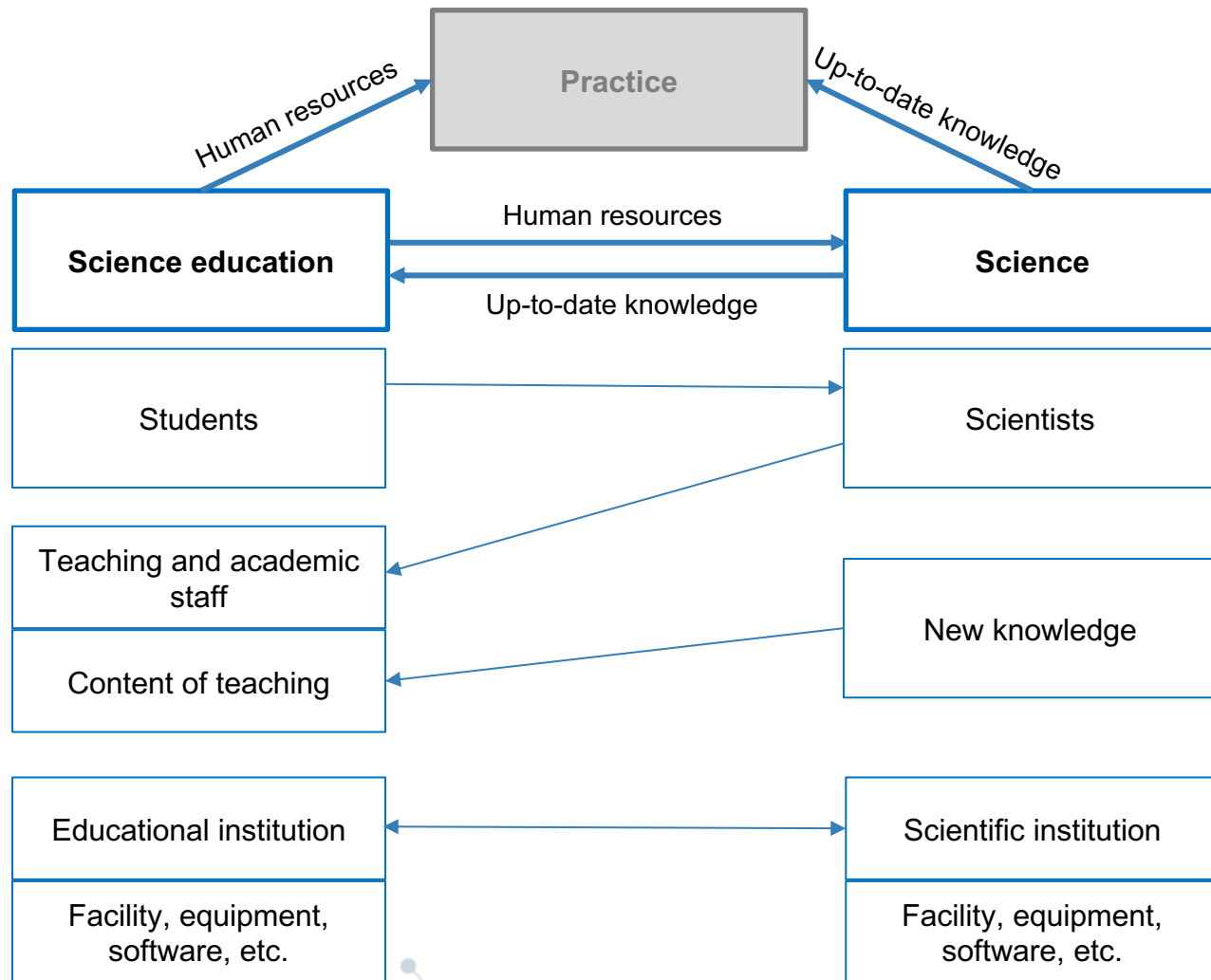
Natural resources-specific

- Soviet heritage -> focus on engineering & technical aspects of NRM
- Environment/ water sectors are not profitable -> not attractive for young people

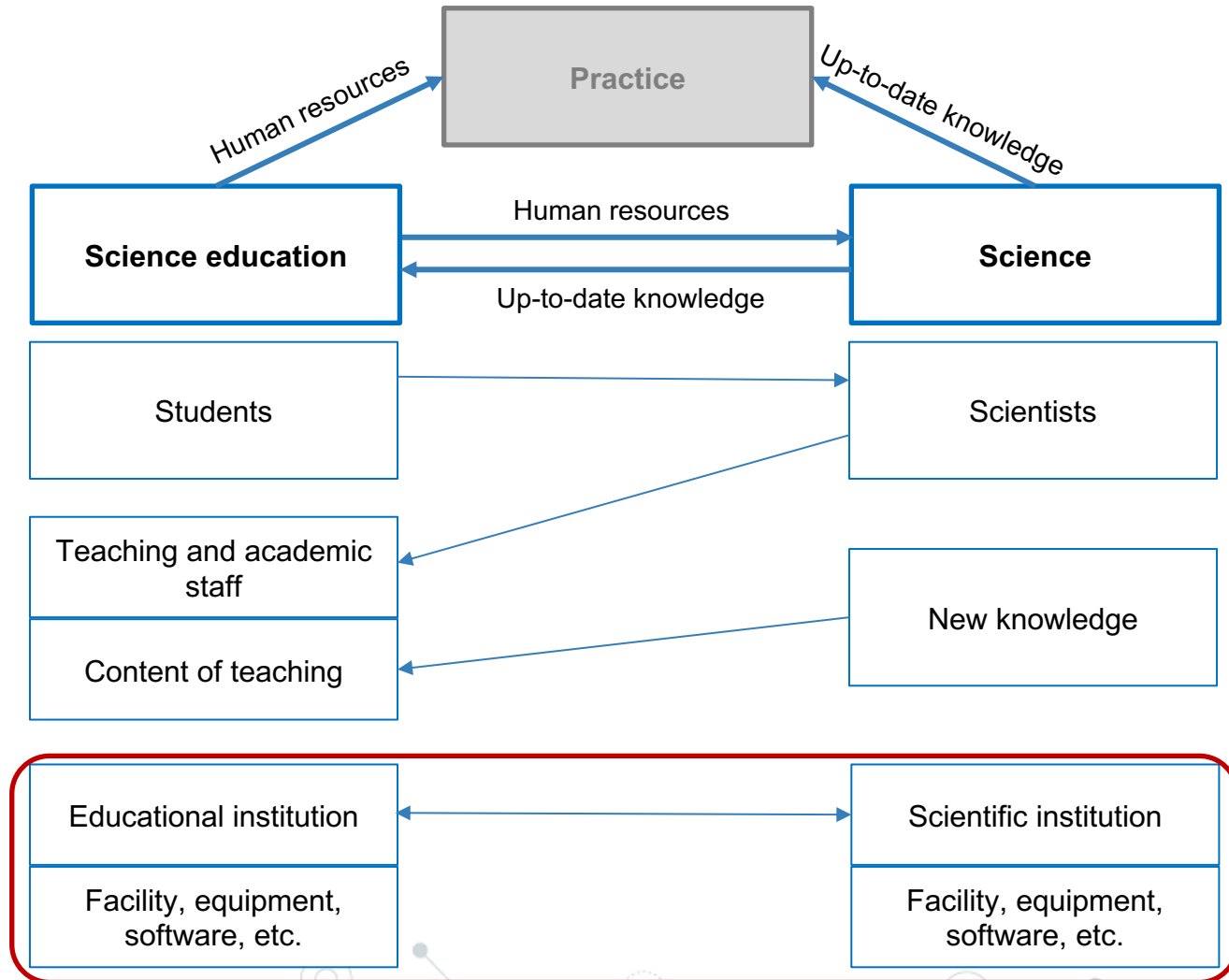
Elements of education – science - practice model



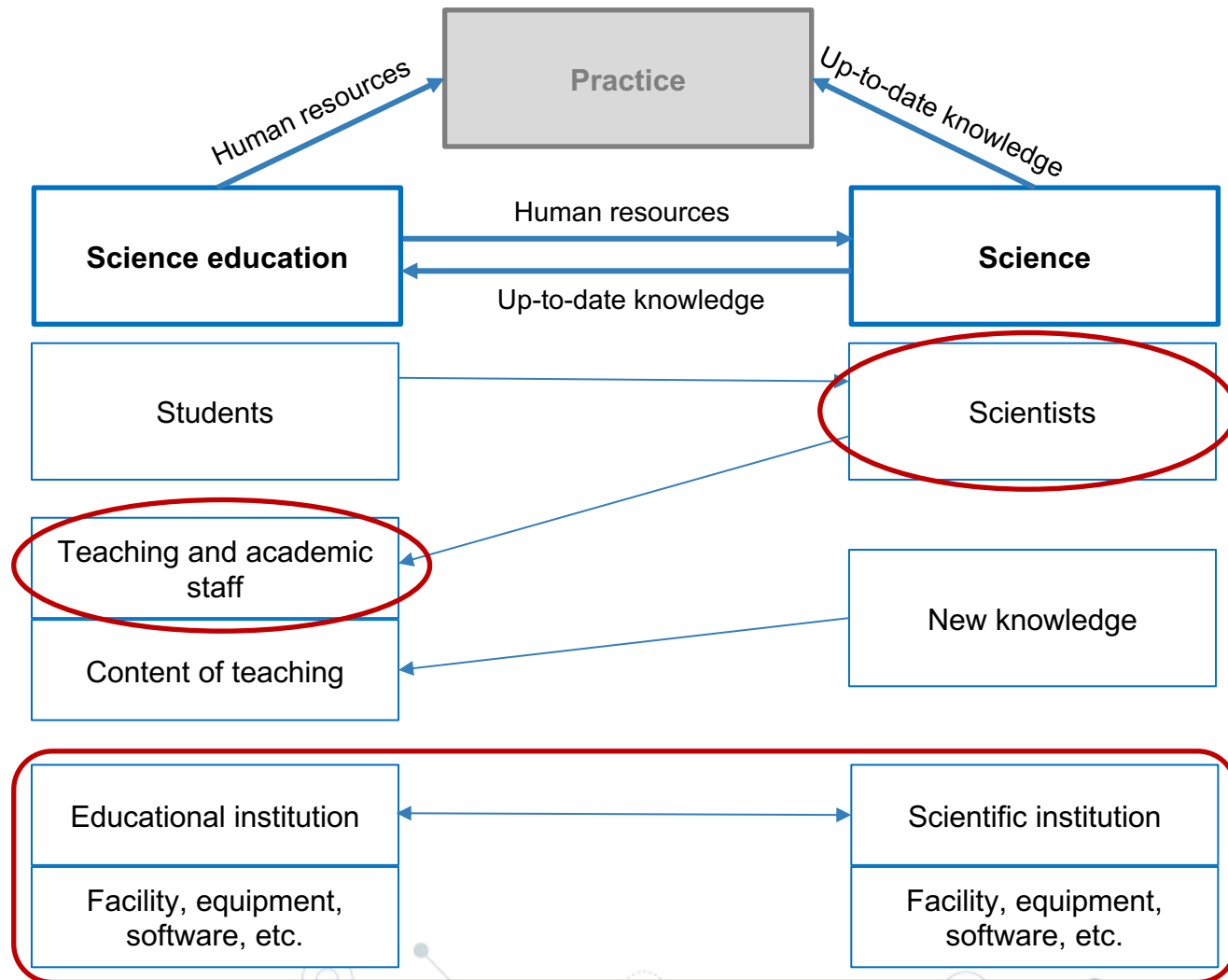
Problems of higher education – science - practice in Central Asia, in particular in water sector (1/6)



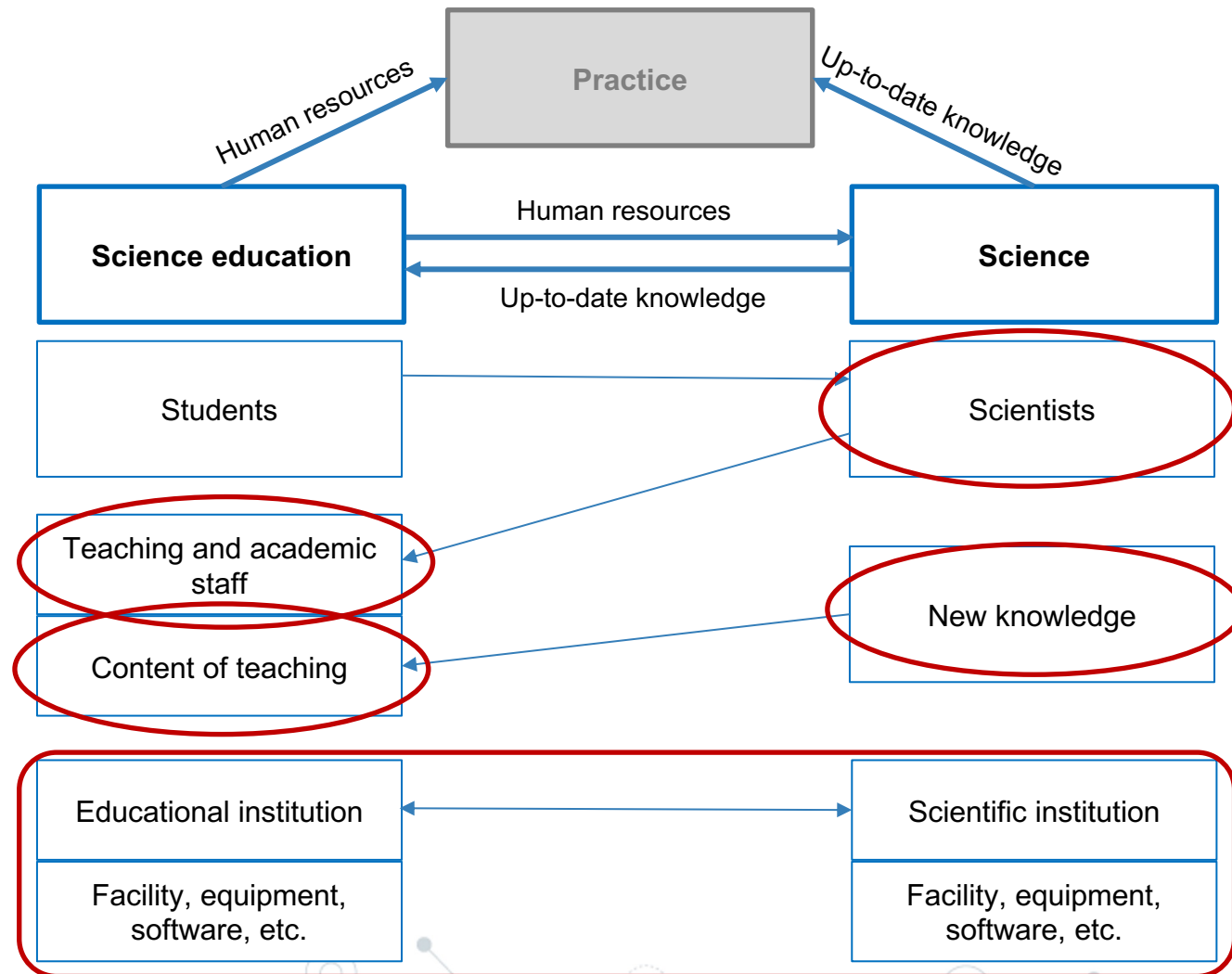
Problems of higher education – science - practice in Central Asia, in particular in water sector (2/6)



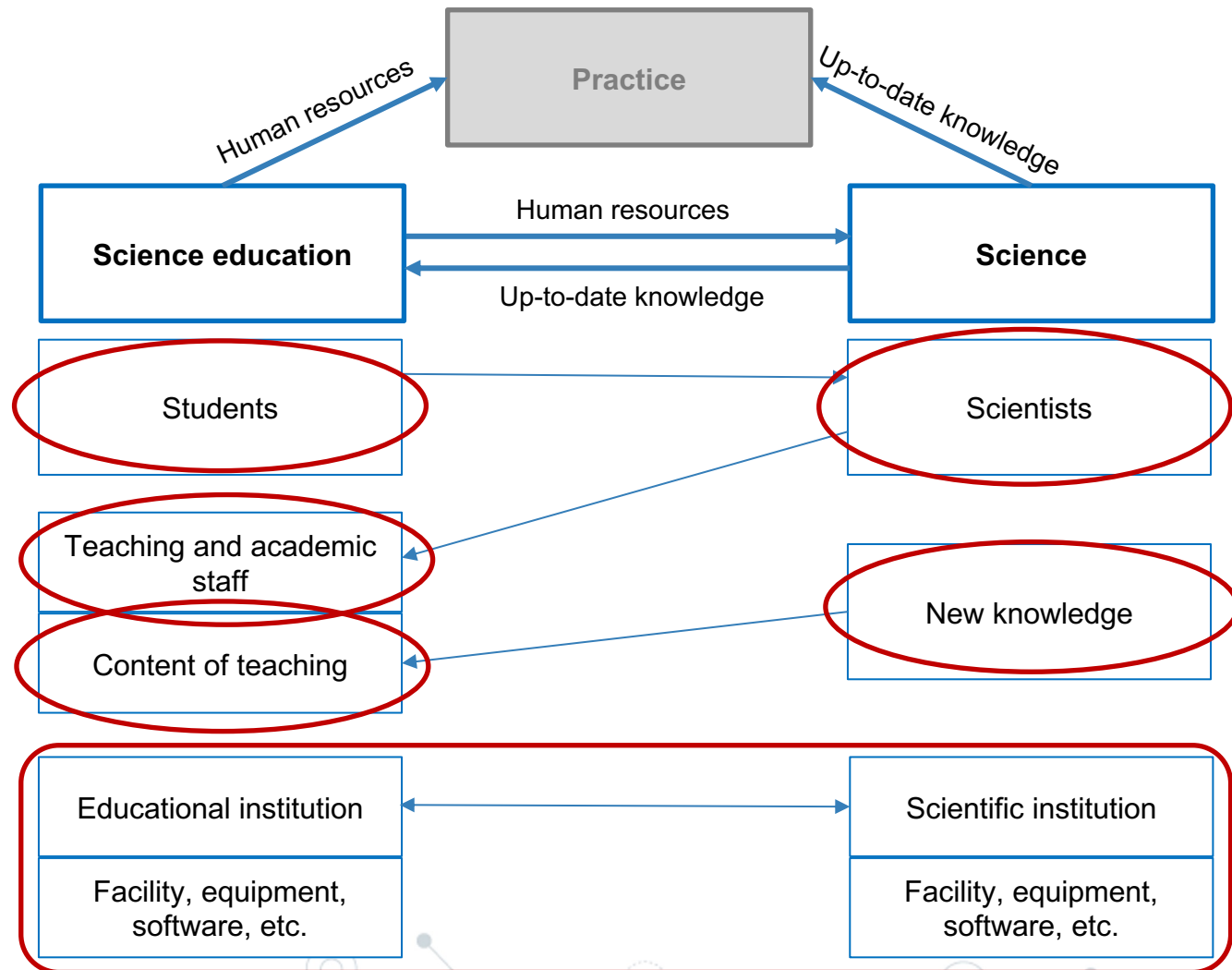
Problems of higher education – science - practice in Central Asia, in particular in water sector (3/6)



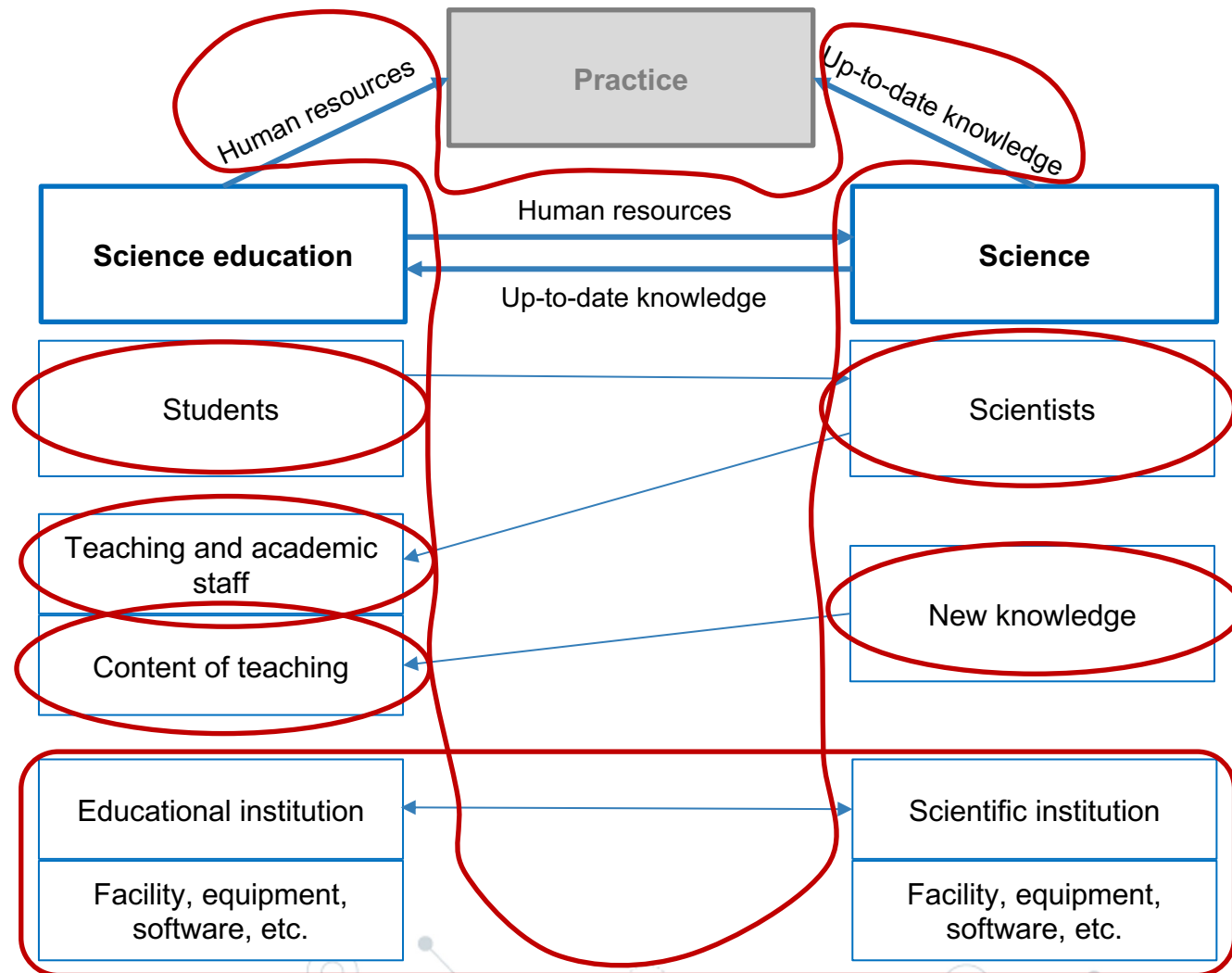
Problems of higher education – science - practice in Central Asia, in particular in water sector (4/6)



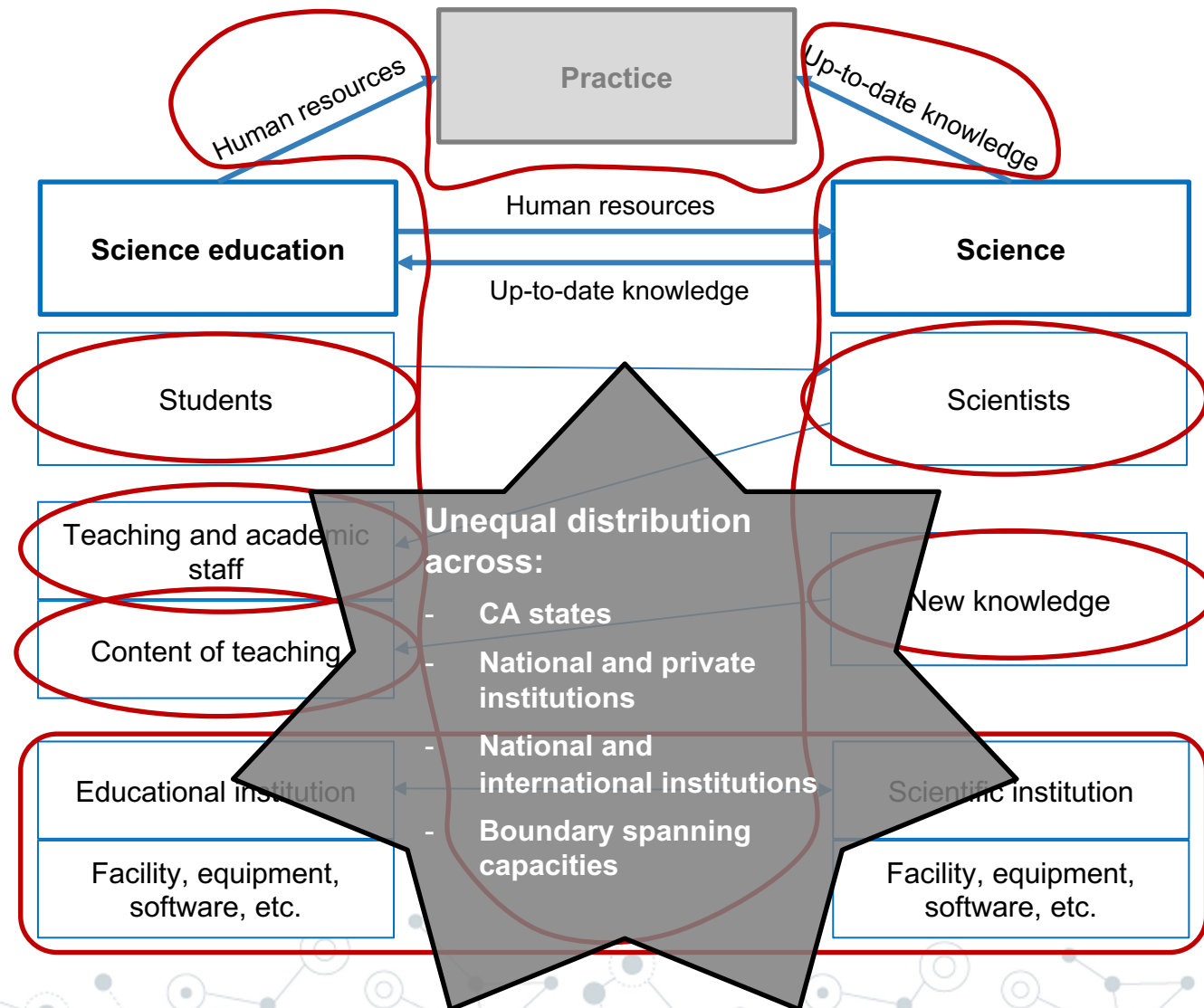
Problems of higher education – science - practice in Central Asia, in particular in water sector (5/6)



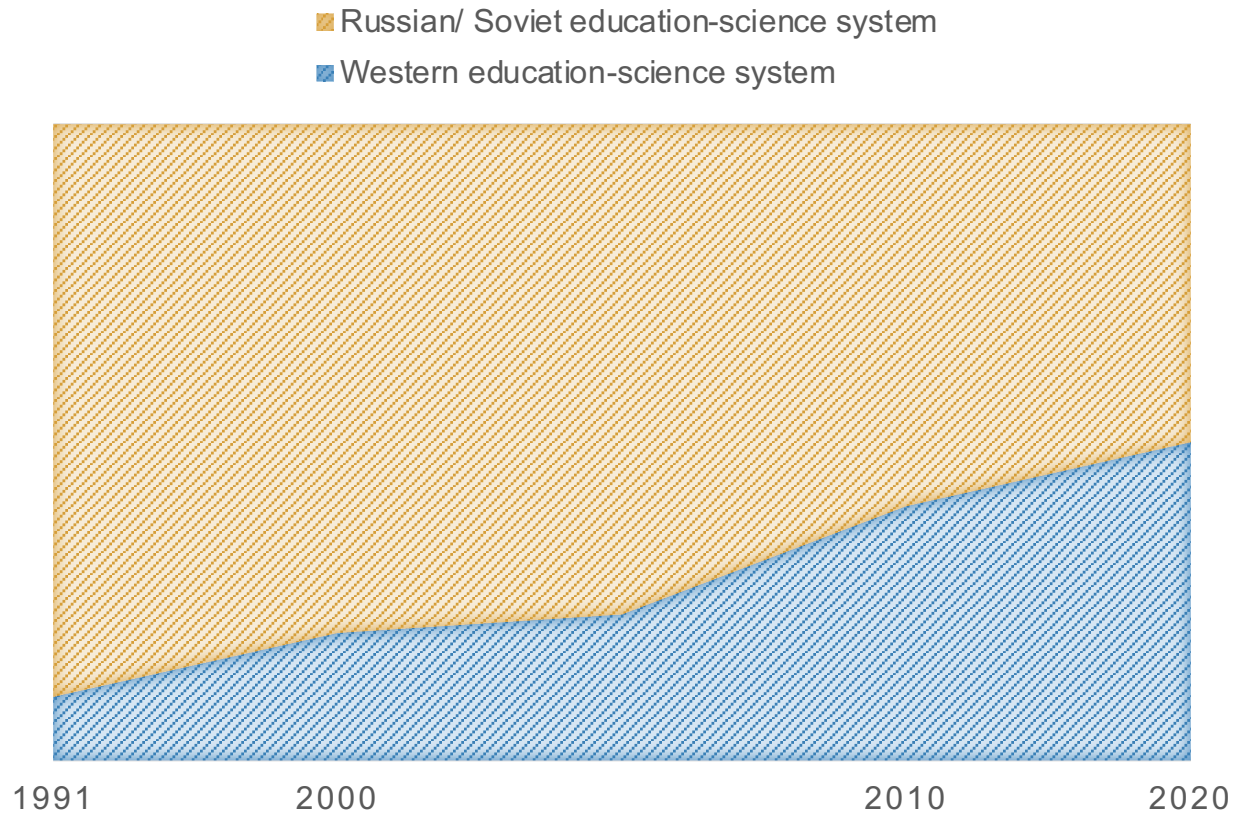
Problems of higher education – science - practice in Central Asia, in particular in water sector (6/6)



Problems of higher education – science - practice in Central Asia, in particular in water sector (6/6)





Domination/ influence of Russian/ Soviet and Western academia on education and science in Central Asian states



*Disruptors: Joining Bologna Process,
national (educational) reforms*

Based on author's expert opinion

Education for climate change (1/3)

Academic literature, cases of effective strategies (based on Monroe et al., 2017, and others)	 
Conveying factual information about climate science	Cognitive learning objectives
Acknowledging the psychosocial, evolutionary, and ethical aspects of climate change	Socio-emotional learning objectives
<ul style="list-style-type: none">- Build critical thinking skills- Prioritize problem solving skills	Behavioural learning objectives

Education for climate change (2/3)

Cognitive learning objectives

1. The learner understands the greenhouse effect as a natural phenomenon caused by an insulating layer of greenhouse gases.
2. The learner understands the current climate change as an anthropogenic phenomenon resulting from increased greenhouse gas emissions.
3. The learner knows which human activities – on a global, national, local and individual level – contribute most to climate change.
4. The learner knows about the main ecological, social, cultural and economic consequences of climate change locally, nationally and globally and understands how these can themselves become catalysing, reinforcing factors for climate change.
5. The learner knows about prevention, mitigation and adaptation strategies at different levels (global to individual) and for different contexts and their connections with disaster response and disaster risk reduction.

Source: UNESCO, 2017

Education for climate change (3/3)

Socio-emotional learning objectives

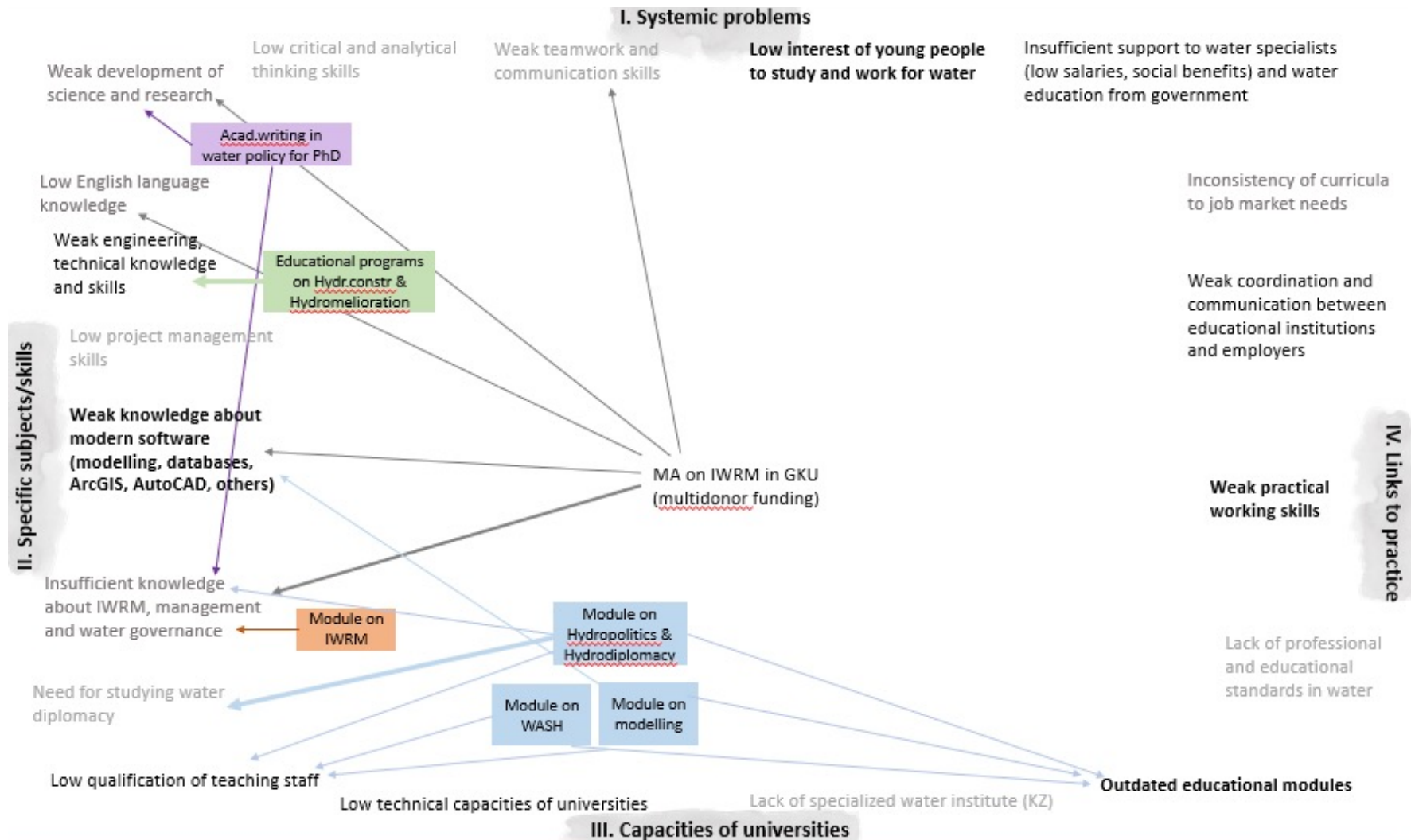
1. The learner is able to explain ecosystem dynamics and the environmental, social, economic and ethical impact of climate change.
2. The learner is able to encourage others to protect the climate.
3. The learner is able to collaborate with others and to develop commonly agreed-upon strategies to deal with climate change.
4. The learner is able to understand their personal impact on the world's climate, from a local to a global perspective.
5. The learner is able to recognize that the protection of the global climate is an essential task for everyone and that we need to completely re-evaluate our worldview and everyday behaviours in light of this.

Behavioural learning objectives

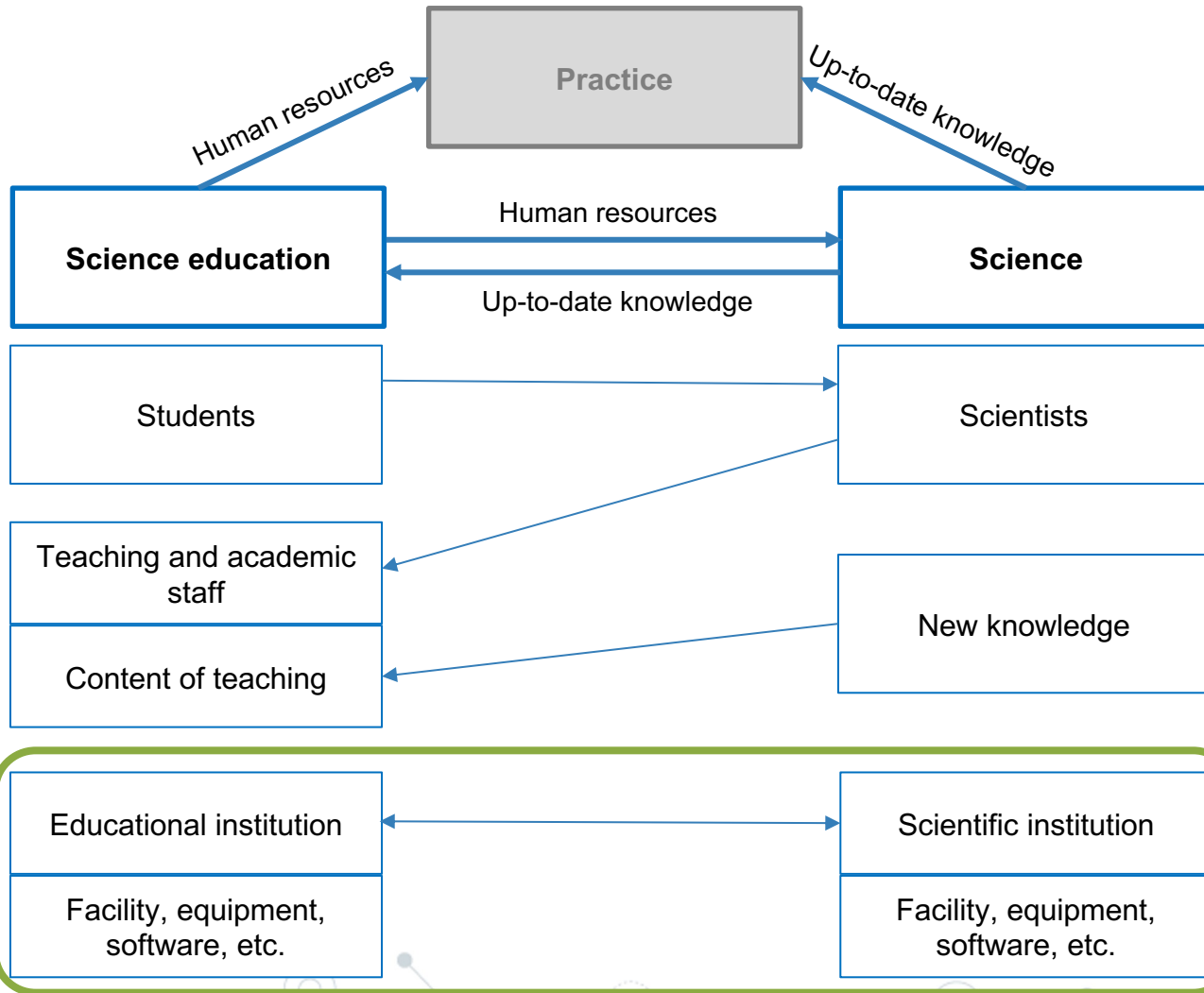
1. The learner is able to evaluate whether their private and job activities are climate friendly and – where not – to revise them.
2. The learner is able to act in favour of people threatened by climate change.
3. The learner is able to anticipate, estimate and assess the impact of personal, local and national decisions or activities on other people and world regions.
4. The learner is able to promote climate-protecting public policies.
5. The learner is able to support climate-friendly economic activities.

Source: UNESCO, 2017

Interventions in water education in CA



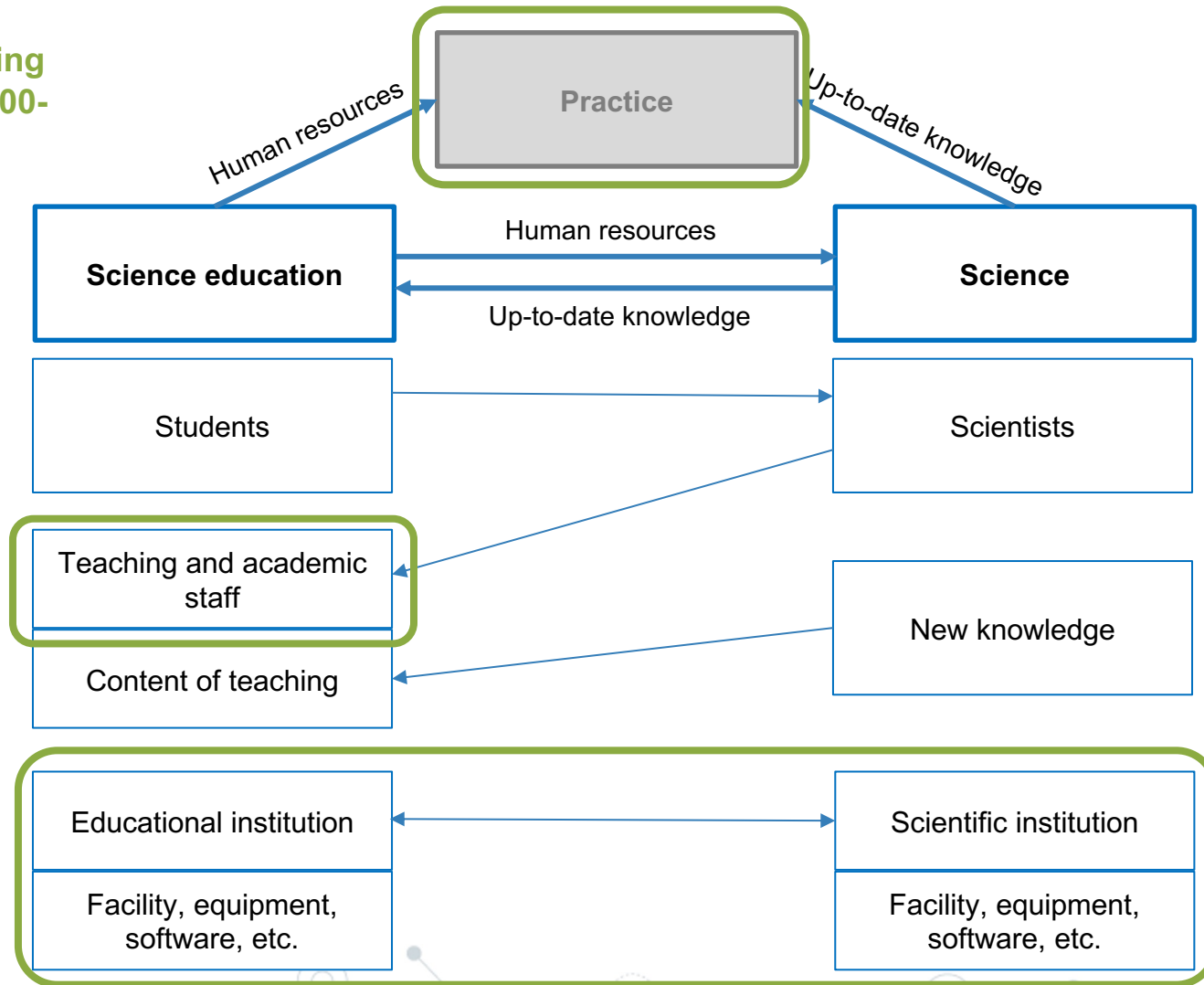
Interventions of international development partners in water education (1/3)



Technical assistance & side payments (~1991-2005)

Interventions of international development partners in water education (2/3)

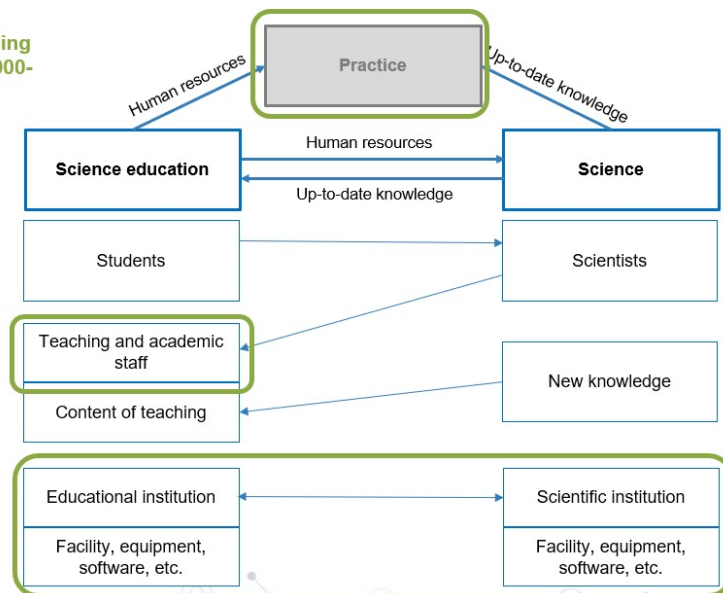
Short term
capacity building
exercises (~2000-
2018)



Technical
assistance &
side payments
(~1991-2005)

Short term
capacity building
exercises (~2000-
2018)

Technical
assistance &
side payments
(~1991-2005)



Lessons learnt:

- There are no low hanging fruits
- Short term capacity building is not landed in fertile ground
- Locally-grown teachers/ scientists don't contribute much in terms of quality
- Working with leading institutions do not benefit the vast majority
- Shift towards interdisciplinary approaches in NRM face opposition of previously (and currently) dominating technocrats
- Capacities of current teachers and scientists seem to be hardly possible to change/build
-> new generation understanding the importance and having skills for interdisciplinarity can become disruptors
- Capacity building should happen in each activity/ step of international intervention

Experiences from the other parts of the world

National capacity building efforts in the Global South:

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/312868347>

Lack of critical thinking skills leading to research crisis in developing countries: A case of Pakistan: Lack of critical thinking skills leading to research crisis



Article in Learned Publishing · July 2017
DOI: 10.1002/leap.1093

Published: 28 September 2021

Managing publication change at Al-Farabi Kazakh National University: a case study

[Renata Kudaibergenova](#), [Sandugash Uzakbay](#), [Asselya Makanova](#), [Kymbat Ramadinkzy](#), [Erlan Kistaubayev](#), [Ruslan Dussekeev](#) & [Kadyrzhan Smagulov](#)



Handbook of the Economics of Education
Volume 5, 2016, Pages 653-743



Chapter 10 - Improving Education Outcomes in Developing Countries: Evidence, Knowledge Gaps, and Policy Implications

P. Glewwe ^{*}, K. Muralidharan [†]

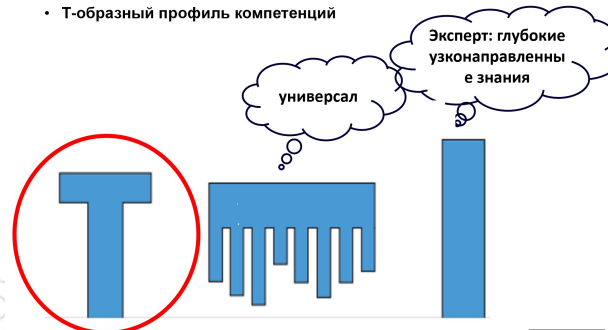
Regional interventions:



Concertación
(Andes, Latin America)

Scientific perspective on water education in the developing countries:

- Обучение на протяжении всей жизни
- Т-образный профиль компетенций



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Science of and for climate change & adaptability

Exacerbates existing technical and institutional challenges

- “Uncertainty monster”
- Governance issues
- Science-policy interplay
- Usability of climate knowledge

Potential interventions (open for discussions)

#	National governments' domain/ duty	Contribution of international partners
1	Increase funding of education and research – technical equipment of institutions	Software (coupled with expertise)
2	Increase salaries of teachers and scientists	-
3	Increase salaries of personnel involved in NRM	-
4	Invite/ involve international expertise to teaching: <ul style="list-style-type: none"> - funding int. experts - funding local PhD studying abroad - legal & institutional support 	Contribute with expertise (coupled with software): <ul style="list-style-type: none"> - bringing experts to the region for teaching & updating curricula - Inviting/ funding local MSc & PhDs to study abroad
5	Invite/ involve international partners to science	Contribute with expertise (coupled with software): bringing experts to the region for research
6	Improve education-science-practice communication: <ul style="list-style-type: none"> - Funding practice-oriented, targeted programs (+legal& institutional support) 	<ul style="list-style-type: none"> - Grants for joint research& implementation - Supporting networking - Usability of climate knowledge



Thank you!

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