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Climate change impacts on water, agriculture and energy in Central Asia

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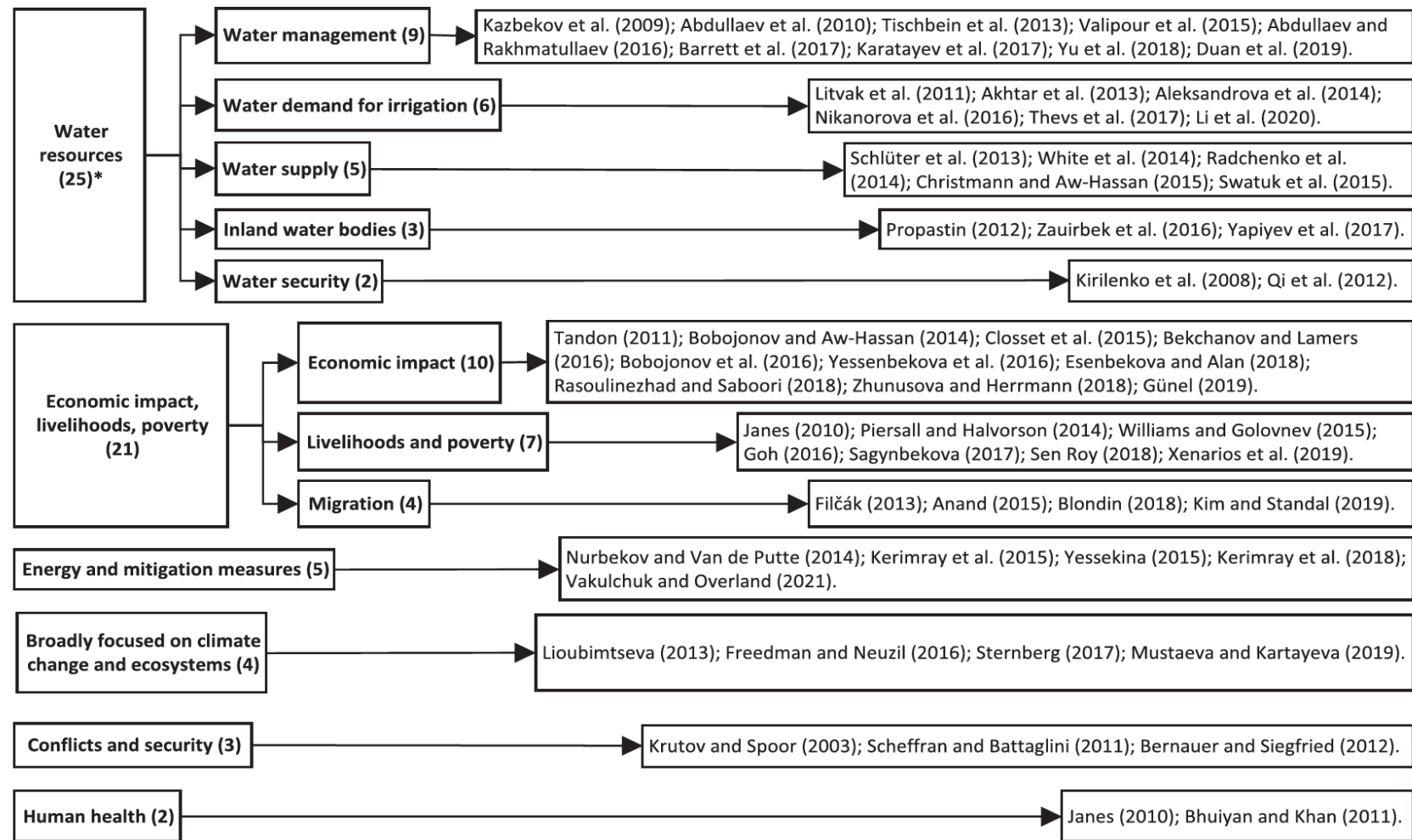
1. Climate change impacts in Central Asia

- The cost of inaction is much higher
 - The reports show that climate change awareness is growing
 - There is a need to scale up mitigation and adaptation efforts
 - Carbon neutrality in 2050-2060 requires short-term implementation plans already now
 - There is a need to study more socio-economic impacts of climate change in Central Asia, and the water-agriculture-energy nexus in particular
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IPCC 2014 report

- Less available research and data on climate change Central Asia than any other Asian region, incl. North Asia, East Asia, Southeast Asia and South Asia
- **Knowledge gaps in 51 out of 54 thematic areas** that are critical to understanding the major impacts of climate change relevant for Central Asia
- International organizations have been the main players in addressing these gaps

Academic publications on climate change in Central Asia, 1991–2022



Source: Vakulchuk, R. et al. (2023). A void in Central Asia research: Climate change. *Central Asian Survey*, 42(1), pp.1-20. <https://doi.org/10.1080/02634937.2022.2059447>

2. Regulatory environment is improving but investment is limited



The global race for investment in renewable energy

- In 2020, global investment increased by 206% compared to 2006 (from USD 89 billion to USD 272.9 billion)
- 513% increase in developing countries vs. 93% in developed ones
- Central Asia has not benefited much from the global race and received only limited investment

2. Regulatory environment is improving but further action is needed

- 146 countries had renewable energy targets; 138 established support policies 113 passed national renewable energy laws
- Adopting a feed-in tariff/auction scheme is no longer sufficient to attract investors
- Investors *expect* that strong institutions are established to support and implement advanced legislation



Barriers that limit investment

- Private sector has invested less than 5% of the total investment going into clean energy in Central Asia
- Weak financial markets - improve bankability of renewable energy projects
- Facilitate market entry for investors and mobilise domestic investors




3. Initiate major governance reform in favour of climate change adaptation/mitigation

- Climate funding is growing for Asian countries, this is positive, but many funds remain underutilized
- Limited human resources and limited capacity
- Setting up a ministry of renewable energy or similar public body
- Kazakhstan established the Ministry for Water Resources in 2023 to improve the management of water resources



4. Upscale investment in education to improve climate change adaptation and mitigation

- Demand for skilled labour with green skills will rise exponentially
 - Education and capacity to promote climate adaptation/renewable energy need to be strengthened
 - Building capacity for managing the water-agriculture-energy nexus
 - Improving coordination among public bodies
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Original research article

The failure to decarbonize the global energy education system: Carbon lock-in and stranded skill sets

Roman Vakulchuk^a  , Indra Overland^b

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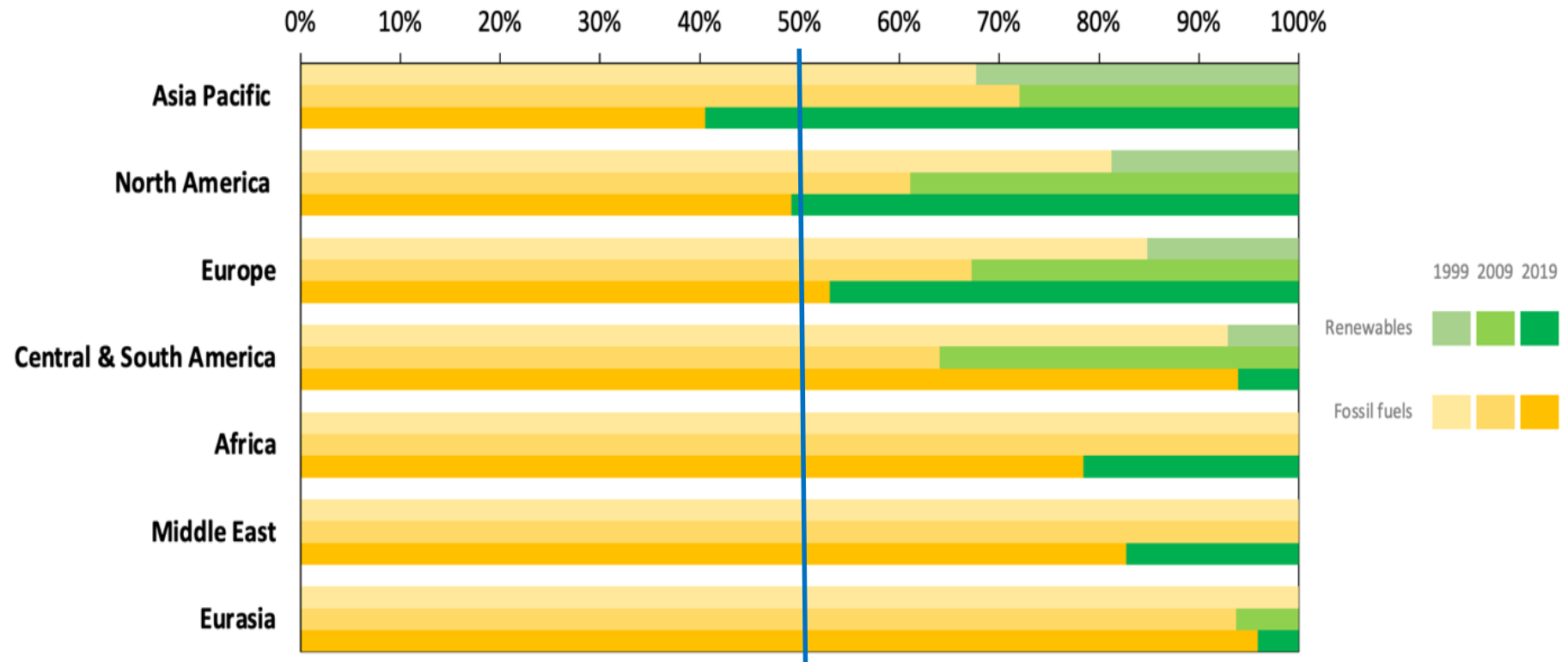
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Universities in Central Asia still produce more workforce for fossil fuel industries

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