

**Climate change, and adaption and mitigation technologies, call for focused think-tank cooperation!**

Hans Holzacker

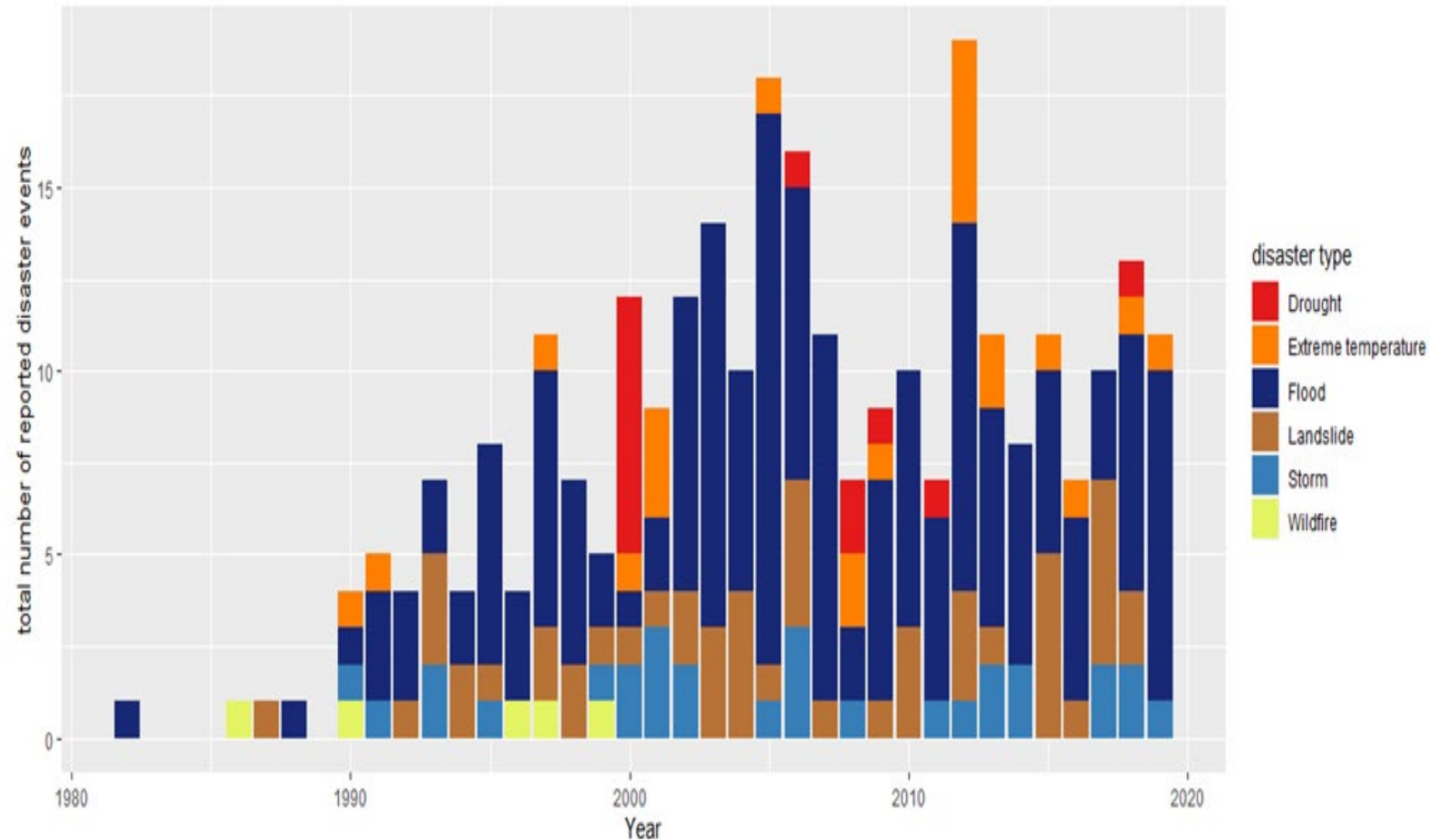
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*Knowledge for Prosperity*

## Climate induced disasters in the CAREC region from 1980 to 2019

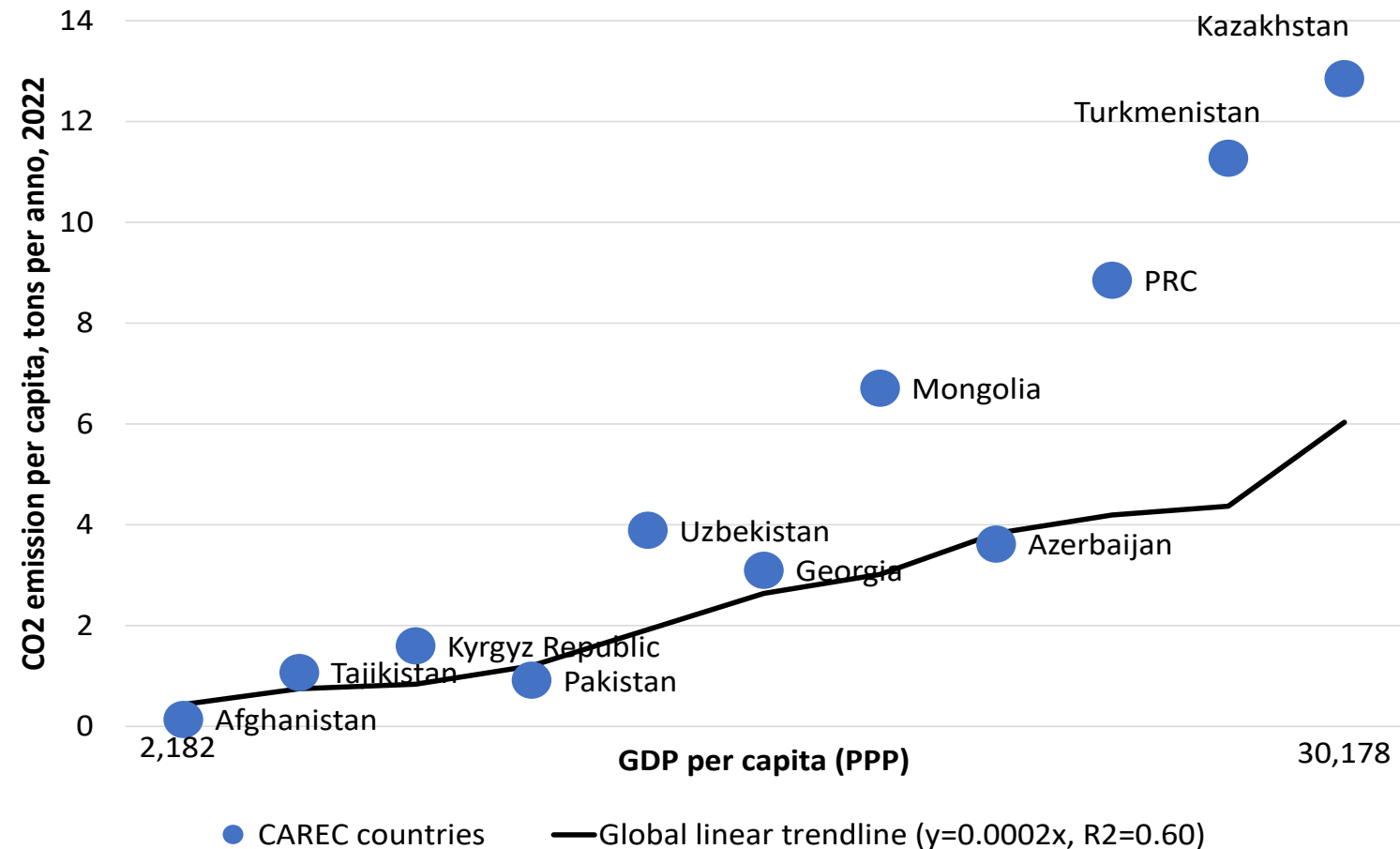
**The CAREC region is heavily - and increasingly - impacted by climate change, resulting in environmental disasters, drought, extreme temperature, flood, and storm.**



Source: CAREC Institute, Climate Vulnerability, Infrastructure, Finance and Governance in the CAREC Region. Research report, 2020

**The CAREC region is also a contributor to GHG emissions: Mongolia, the PRC, Turkmenistan, and Kazakhstan emit significantly more CO2 per unit GDP than the World on average.**

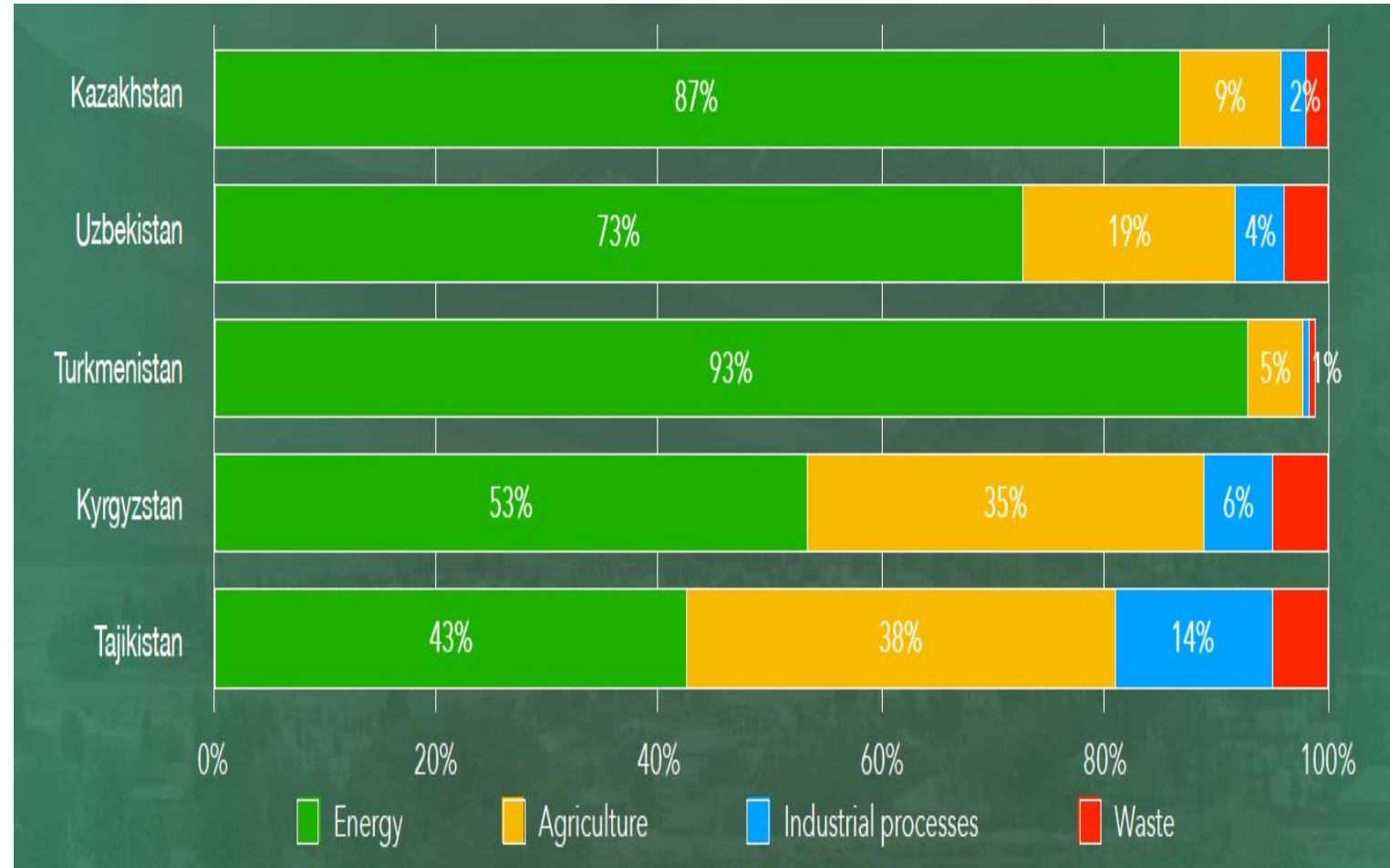
### CO2 emissions versus GDP per capita



Source: Emissions Database for Global Atmospheric Research (EDGAR), national statistics agencies, calculations and chart by the author

**Especially energy and agriculture deserve attention....**

### GHG emissions of Central Asian countries by sector, %



Source: AIFC, GIP, State of Sustainable Finance in Central Asia, Astana 2024

**A new wave of (green) electrification takes place...**

**Many initiatives and projects are under way... but more will be needed.**

*Just to mention some big companies that are active in the region and their countries of origin....*

- ❖ ACWA Power of **Saudi Arabia**,
- ❖ Masdar (Abu Dhabi Future Energy Company) of the **UAE** ,
- ❖ Total Eren, Voltalia of **France**,
- ❖ Gezhouba Group Company Co. of **China** ,
- ❖ Tepelen Group AG of **Switzerland**
- ❖ “Powerchina International” launched the construction of a 400 MW PV power Plant in Andijan in the **Fergana Valley** on 13 September 2023

(Various media sources)

**The energy system performance scores still only average or below throughout the CAREC region on the WEF's ETI,**

**and the transition readiness scores remain significantly below the global average for most CAREC countries.**

### Energy Transition Index (ETI)

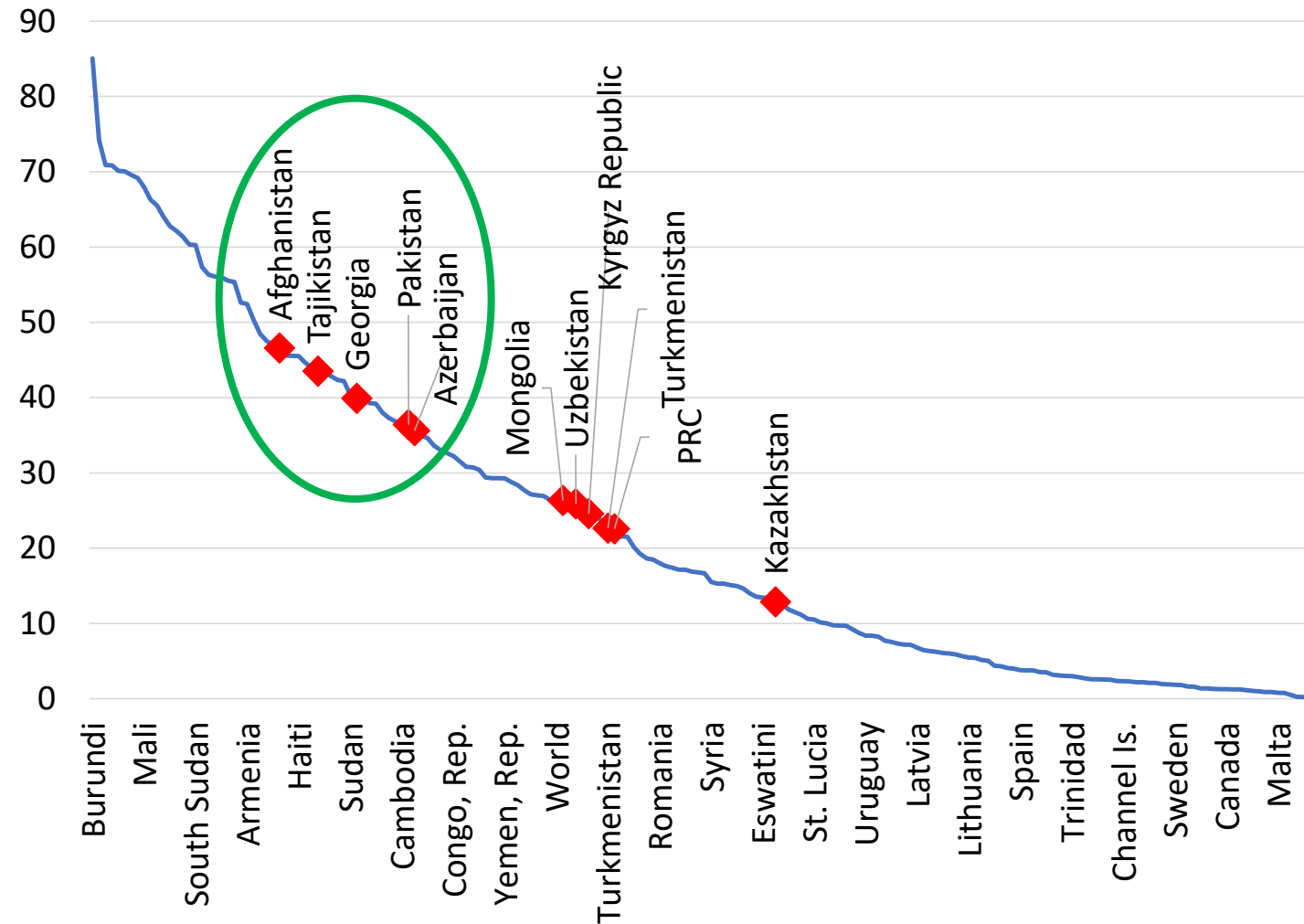
Rank	Name	ETI	System Performance	Transition Readiness
17	PRC	64.9	65.0	64.8
32	Azerbaijan	62.0	69.6	50.7
62	Georgia	54.8	64.0	41.0
73	Tajikistan	53.6	66.4	34.4
76	Kazakhstan	53.0	61.1	40.9
91	Kyrgyzstan	50.6	61.7	34.1
107	Pakistan	46.9	55.2	34.5
111	Mongolia	45.4	56.3	29.0
	<b>Global average</b>	<b>56.4</b>	<b>63.1</b>	<b>46.4</b>

Source: World Economic Forum, Global Energy Transition Index 2023

**Agriculture is strongly affected by climate change....**

**...while the share of agriculture in employment is still above 30% in parts of the CAREC region.**

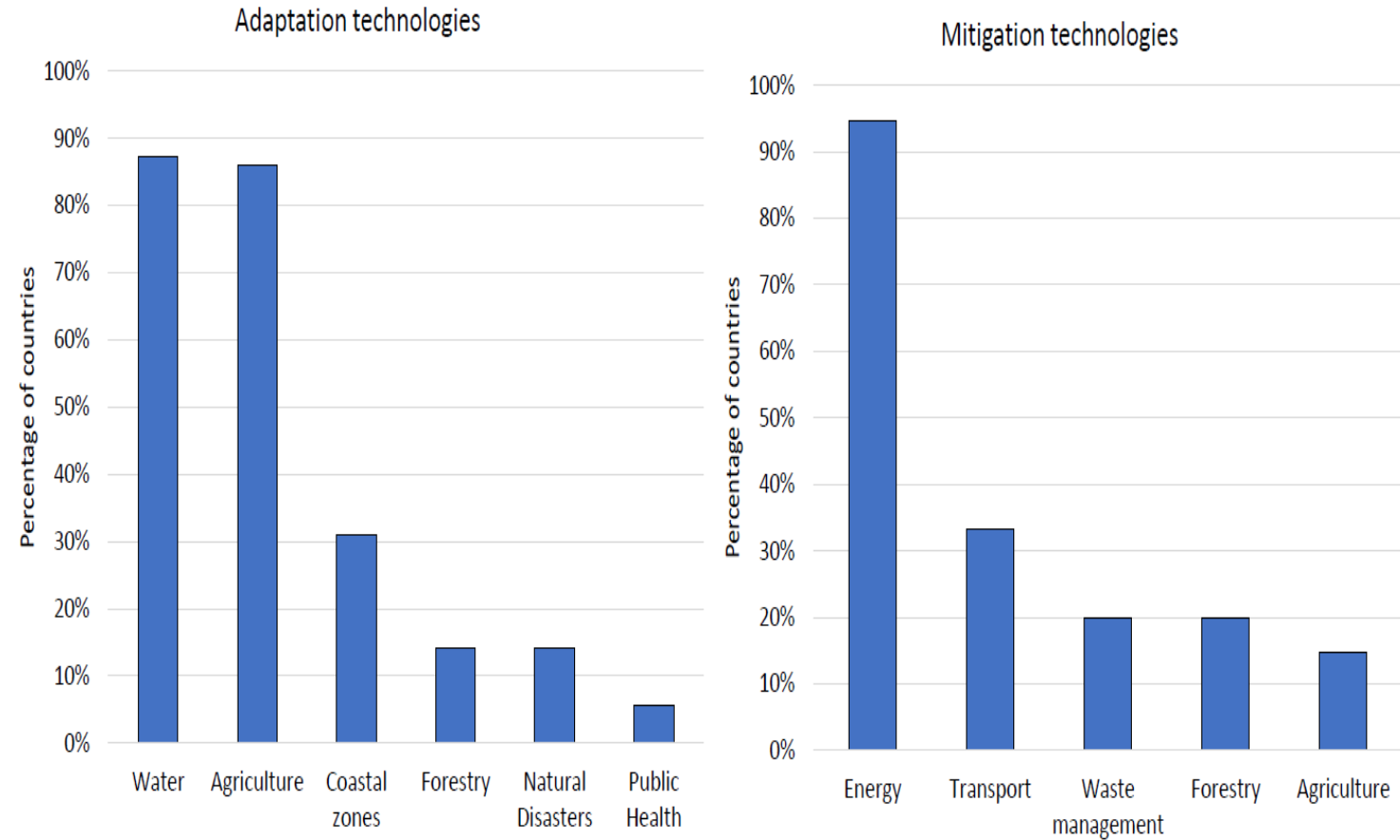
Share of agriculture in employment, 2022, (%)



Source: World Development Indicators database, author's calculations

## Key priorities identified through Technology Needs Assessment

As a percentage of respondent countries



**To cope with climate change, the CAREC region needs technology.**

**The UNEP's global Technology Needs Assessment is an indicator for what also the CAREC region needs.**

Source: UNEP, <https://unepccc.org/wp-content/uploads/2023/06/tech-transfer-policy-brief-oecd.pdf>

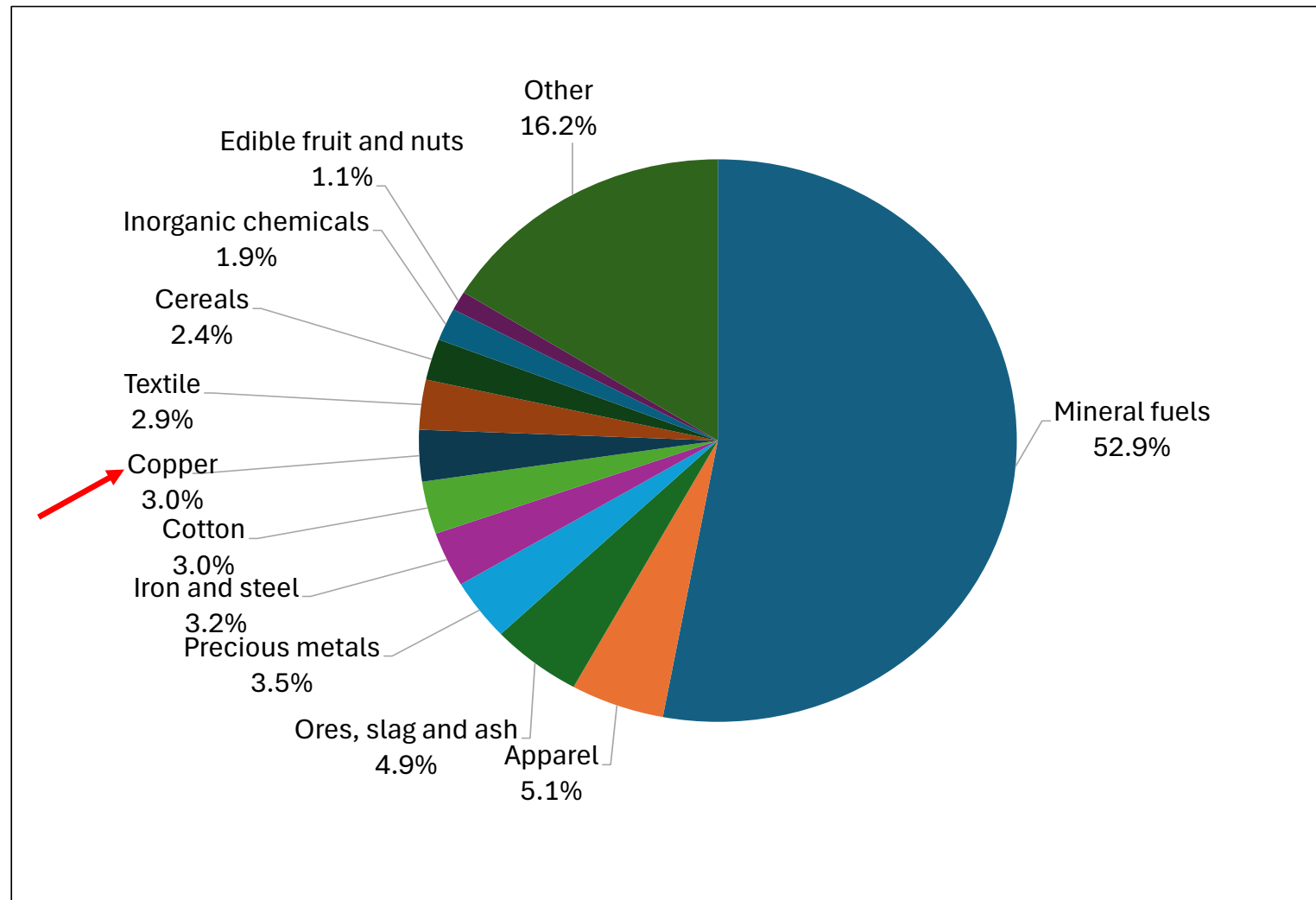


**The CAREC region's export by products (without the PRC) :**

**Metals, textile-apparel, agri-food. However, Mineral fuels account for over 50%. Sustainable?**

**Copper, electricity, hydrogen, and critical materials likely to become more important...**

Share of product groups in CAREC exports (2022, %)

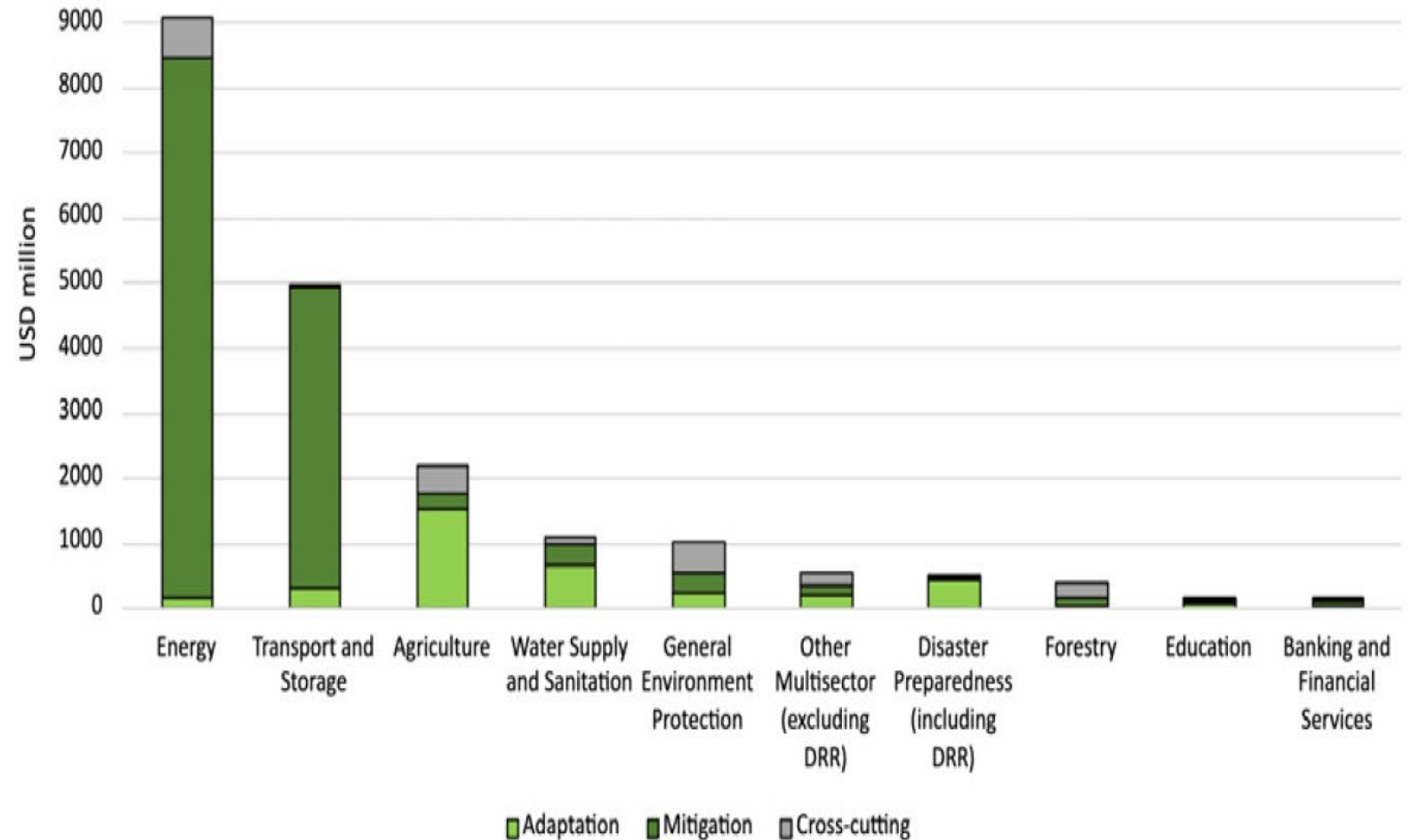


Source: TradeMap, author's calculations

**“Development finance for climate-related technology transfer mainly targets energy and transport and to a lesser extent agriculture and water” (UNEP)**

**However: “Currently, more than three-quarters of global energy investment is financed by commercial sources. Around 25% comes from public finance and 1% from development finance institutions” (IEA)**

**Climate-related development finance flows for technology transfer by sector (2015-19, annual average)**



Source: UNEP, <https://unepccc.org/wp-content/uploads/2023/06/tech-transfer-policy-brief-oecd.pdf>

**Think-tanks still need to refocus on climate change and related technological topics, and on social impact studies...**

- *“In 2019, 546 universities had faculties and/or degrees dedicated to fossil fuels whereas only 247 universities had faculties and/or degrees in renewable energy.*
- *As many as 68% of the world’s energy-focused educational degrees were oriented towards fossil fuels, and only 32% focused on renewable energy....*
- *...This means that universities are failing to meet the growing demand for a clean energy workforce.”*

(Roman Vakulchuk, Indra Overland, “The failure to decarbonize the global energy education system: Carbon lock-in and stranded skill sets”, Energy Research & Social Science, April 2024)

**Climate change and related technological change are imminent.**

**A lot of research, education, training, and think-tank efforts will be needed!**

**Let's cooperate!!**

