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Diversification of CDDCs and Carbon Emissions

By

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ENERGY INTENSITY OF DIVERSIFICATION

- Historically, diversification via industrialization entailed high energy intensity, hence high GHG emissions

- Need to mitigate climate change has changed the context

- Central questions:
  - can or should CDDCs diversify following traditional model, the only one that has been tested, so far?
  - will imperatives of mitigation and energy transition constrain them? What policy space do they have?
  - if not, what model should CDDCs follow?

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GDP LEVEL AND GHG EMISSIONS BY COUNTRY GROUPS

Group	Average GDP (million 2015 US$)	Average CO2 emissions (kton)	Average GHG emissions (kton)
CDDC Status			
CDDC	99 530.3	90 625.4	92 149.4
DDC	479 519.8	436 640.1	440 073.1
DC	1 257 598.3	332 915.6	334 622.3
CDDC Type			
Agricultural CDDC	91 161.1	65 651.8	67 046.5
Fuel CDDC	178 541.1	186 131.2	188 776.9
Mineral CDDC	32 638.4	26 396.4	26 980.9
CDDCs by region			
East Asia and Pacific	836 530.8	604 463.5	608 522.5
Europe and Central Asia	455 144.1	159 638.6	160 860.4
Latin America and the Caribbean	163 974.0	91 145.5	92 748.4
Middle East and North Africa	172 692.4	138 910.7	140 765.2
North America	10 605 611.4	3 159 749.2	3 175 319.9
South Asia	412 373.7	544 152.7	550 193.2
Sub-Saharan Africa	38 702.6	47 105.9	48 029.2
Income			
High	921 396.8	264 144.3	265 685.4
Low	17 510.0	27 449.2	28 161.1
Low middle	151 436.7	175 408.2	177 784.2
Upper middle	436 648.4	383 338.0	386 605.5

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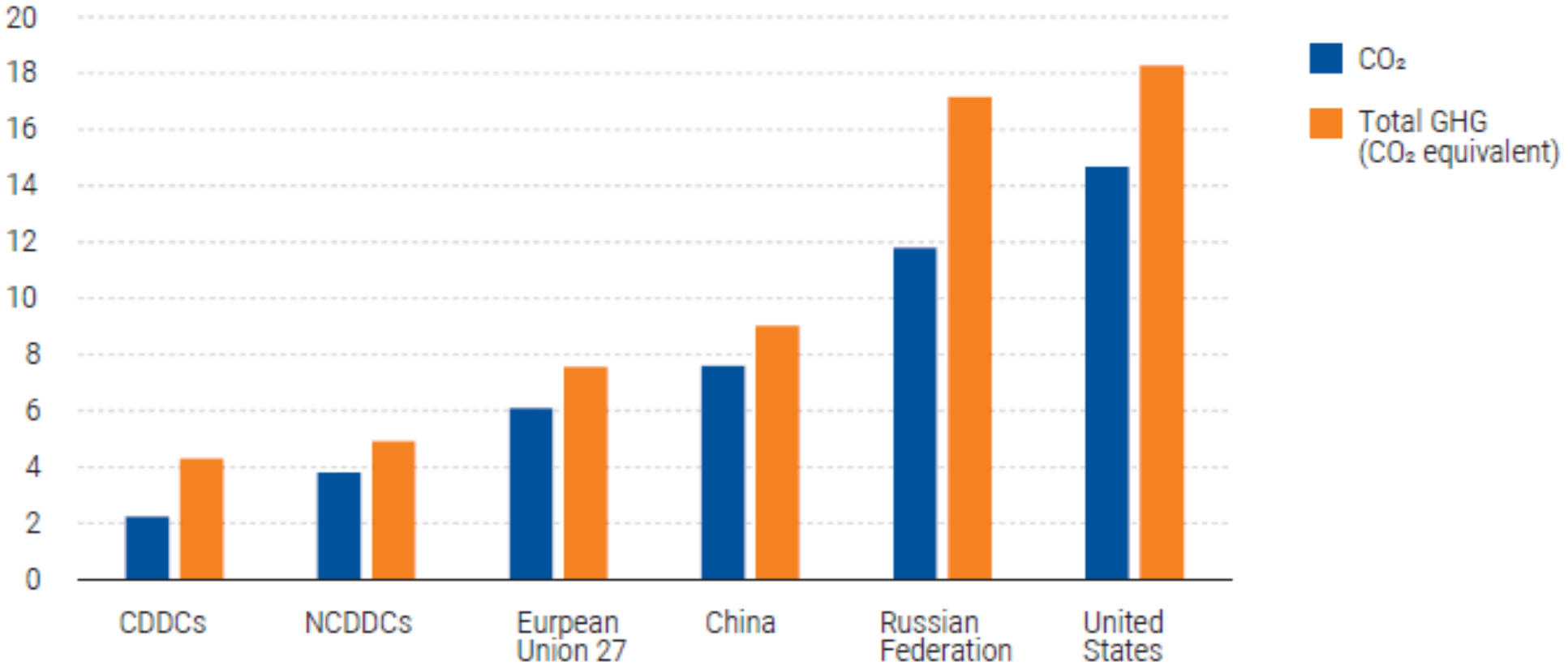
GHG EMISSIONS PER CAPITA

Figure 4.1 GHG emissions, metric tons per capita, 2019



Source: UNCTAD based on data from UNCTADstat database and World Development Indicators.

Note: Values for country groups represent population-weighted averages.

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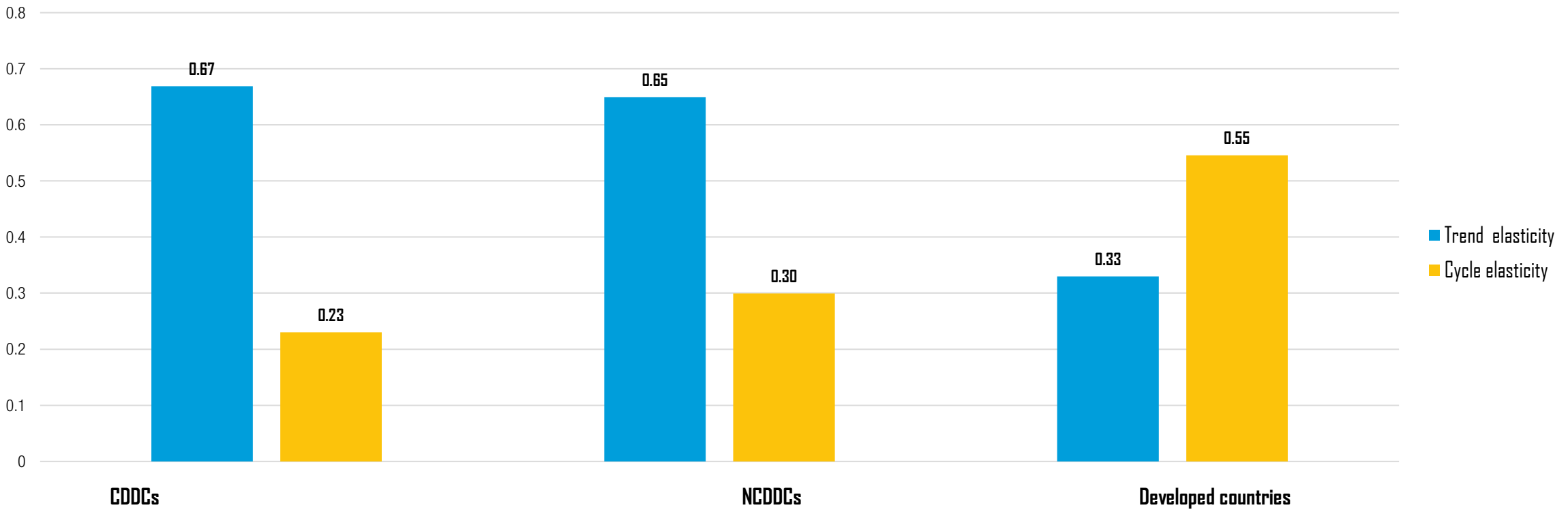
OTPUT ELASTICITIES OF EMISSIONS BY DEPENDENCE STATUS



Developed countries have economies that are les GHG-intensive; but this was achieved after centuries of high-GHG emissions

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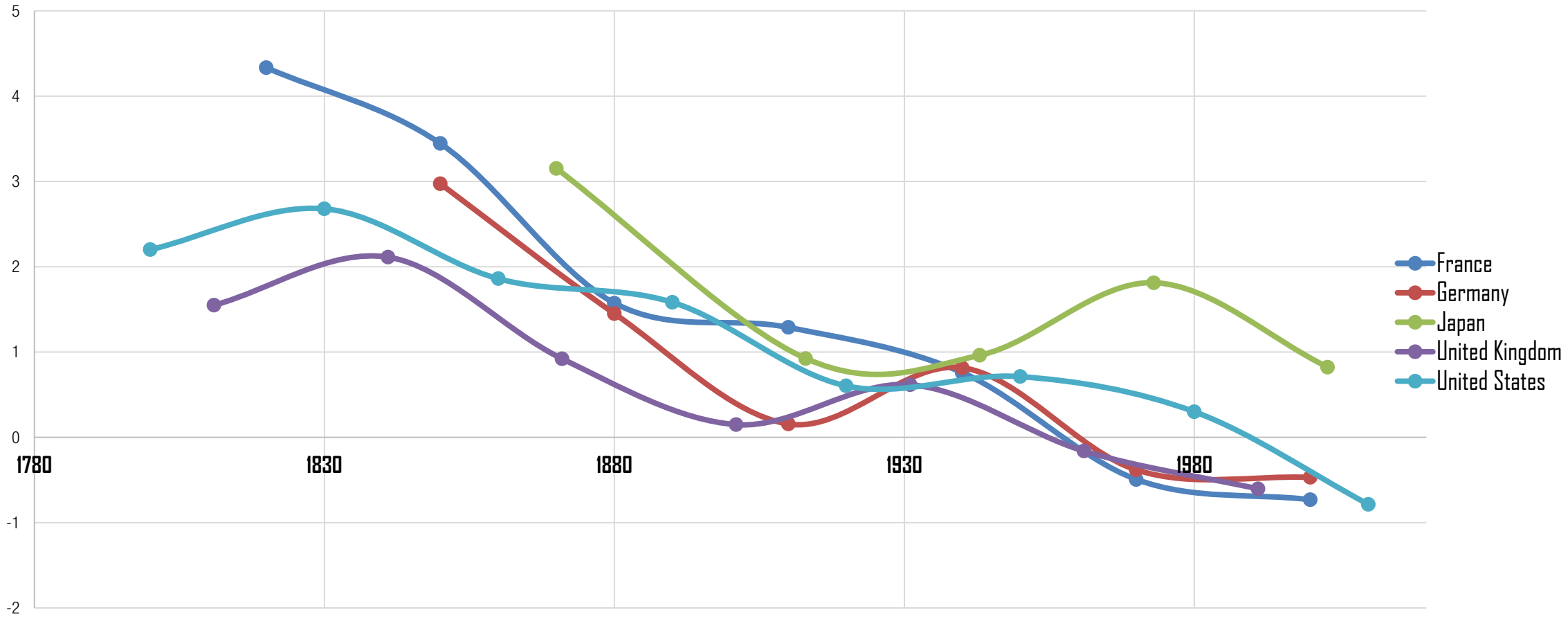
OTPUT ELASTICITIES OF EMISSIONS BY EARLY INDUSTRIALIZERS



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ANALYSING THE EXPERIENCE OF EARLY INDUSTRIALIZERS

- Relative decoupling of output from emissions took a long time; century at least

- Countries followed different paths:
  - France made steady progress, but from very high elasticities (4 units of emissions for a unit of output)
  - Japan & Germany made progress, then lost their progress, before embarking on another period of progress
  - The UK & the USA went through different phases

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Decarbonization creates more constrained diversification space

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LEARNING FROM THE EXPERIENCES OF EARLY INDUSTRIALIZERS

- CDDCs have the misfortune of operating in a more constrained environment

- Expect different pathways depending on country circumstances:
  - Some in Africa for example may increase GHGs before reducing them, to first boost access to energy, laying the ground for sustainable green transition
  - Countries traditionally using green sources of energy (e.g., hydropower in Ethiopia and geothermal in Kenya) may move quickly on decarbonization path
  - Others heavily dependent on fossil fuels (e.g., South Africa) may find no easy way of quickly transitioning to green energy

- Need to consider country circumstances & provide them with required support

- Other speakers will flesh out what could be elements of green pathways

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Thank you!

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