



Building a Greener Recovery

Implications for Emerging and Developing Countries

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Overview

- Comparison of Great Recession recovery and the post-COVID recovery.
- Structural conditions and priorities of emerging and developing economies.
- Effects of COVID-19 pandemic.
- Greening the post-pandemic recovery in emerging and developing economies.
- Final remarks

Great Recession vs Post-Pandemic Recovery

Great Recession Stimulus 2009-2010^a

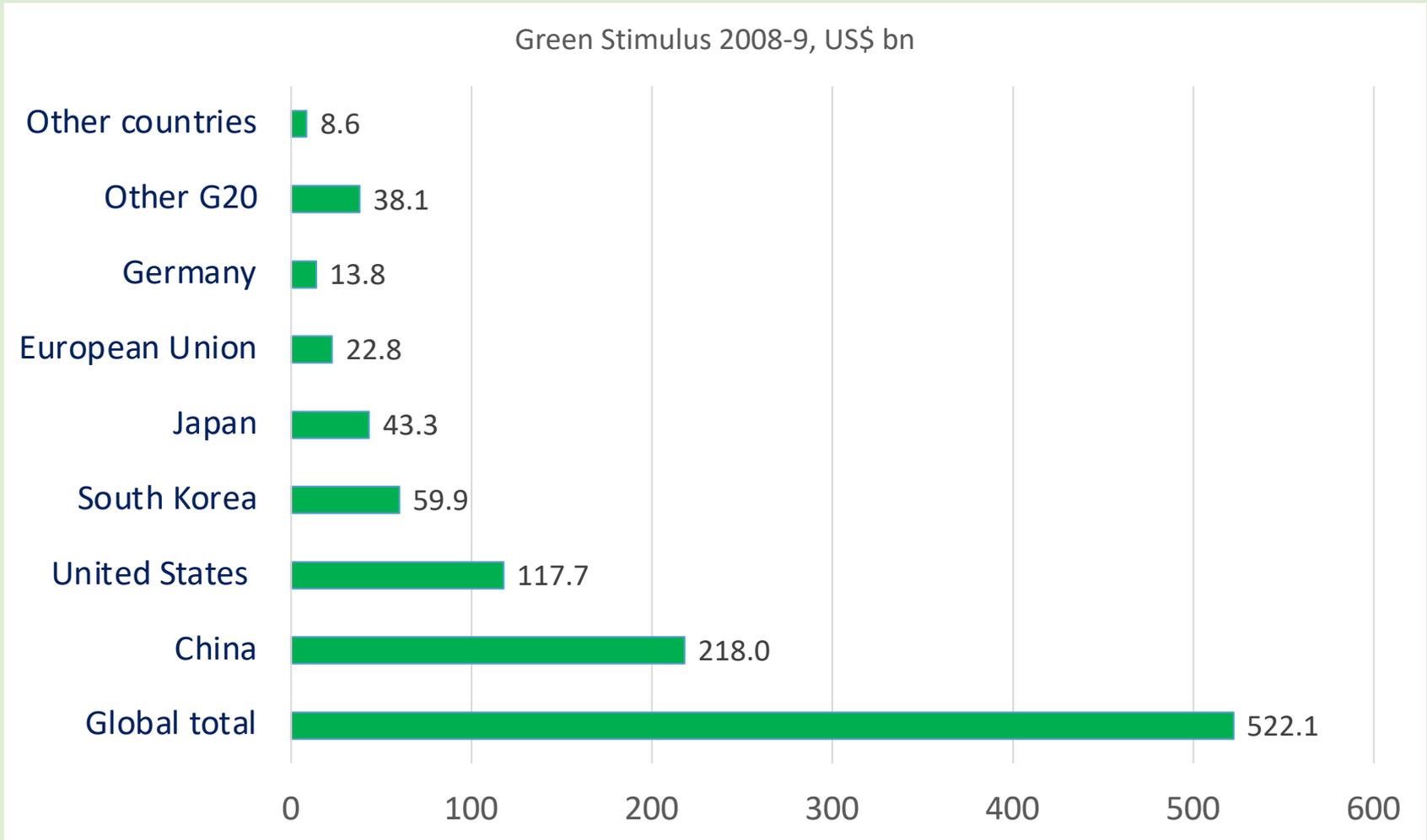
- \$3.3 tn stimulus, \$522 bn green (16%)
- Nearly all by G20
- 2/3 of green stimulus on energy efficiency (\$335 bn) , “shovel-ready” clean energy projects.
- Little impacts on deficits/debt.
- Little/modest pricing reforms
- **Stimulus effects ended by 2012/3, job creation and renewables expansion, little de-carbonization**

Post-Pandemic Recovery 2020-2021

- \$14.6 tn stimulus, \$1.9 tn for long-term recovery, \$341 bn green (2.5% and 18%)^b
- 50 economies, but mainly G20
- 10% on energy efficiency (\$35 bn), 35% on clean energy and transport (\$121 bn), 8% on green R&D (\$29 bn)^b
- Global government debt rose by \$12 tn in 2020 (105% of global GDP), expecting to increase by \$10 tn in 2021.^c
- Pricing reforms?
- **Decarbonization requires:**
 - \$300 bn/year additional spending to clean energy.^d
 - Increased support for green R&D^a
 - Removal of fossil fuel subsidies and carbon pricing^a

Sources: ^a Barbier (2020a); ^b O’Callaghan and Murdock (2021); ^c Tiftik and Mahmood (2021) ^d Andrijevic et al. (2020).

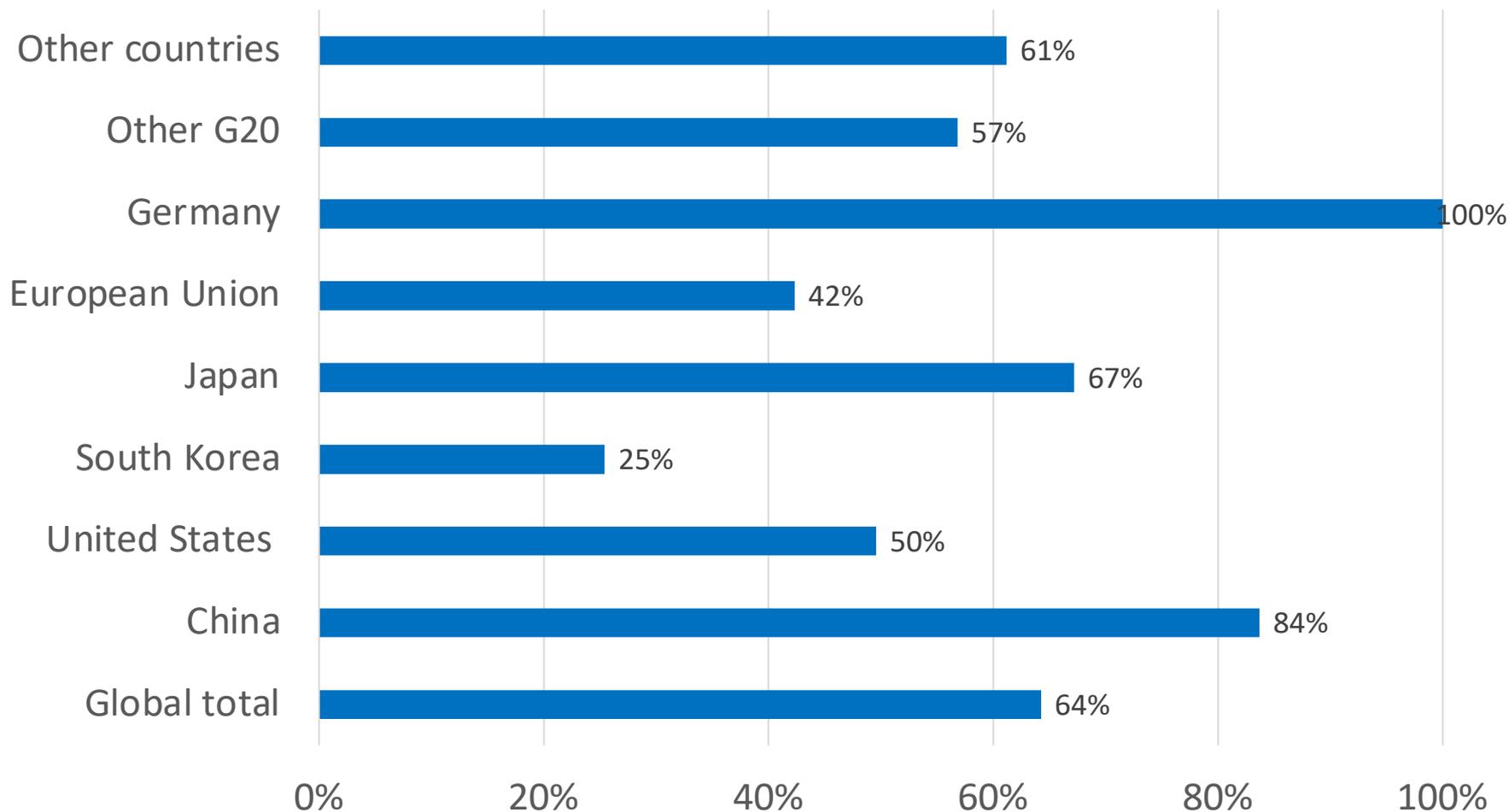
Green stimulus during the 2008-9 Great Recession



Source: [Edward B. Barbier. 2016. "Building the Green Economy" Canadian Public Policy 42 Supplement 1:S1-S9.](#)

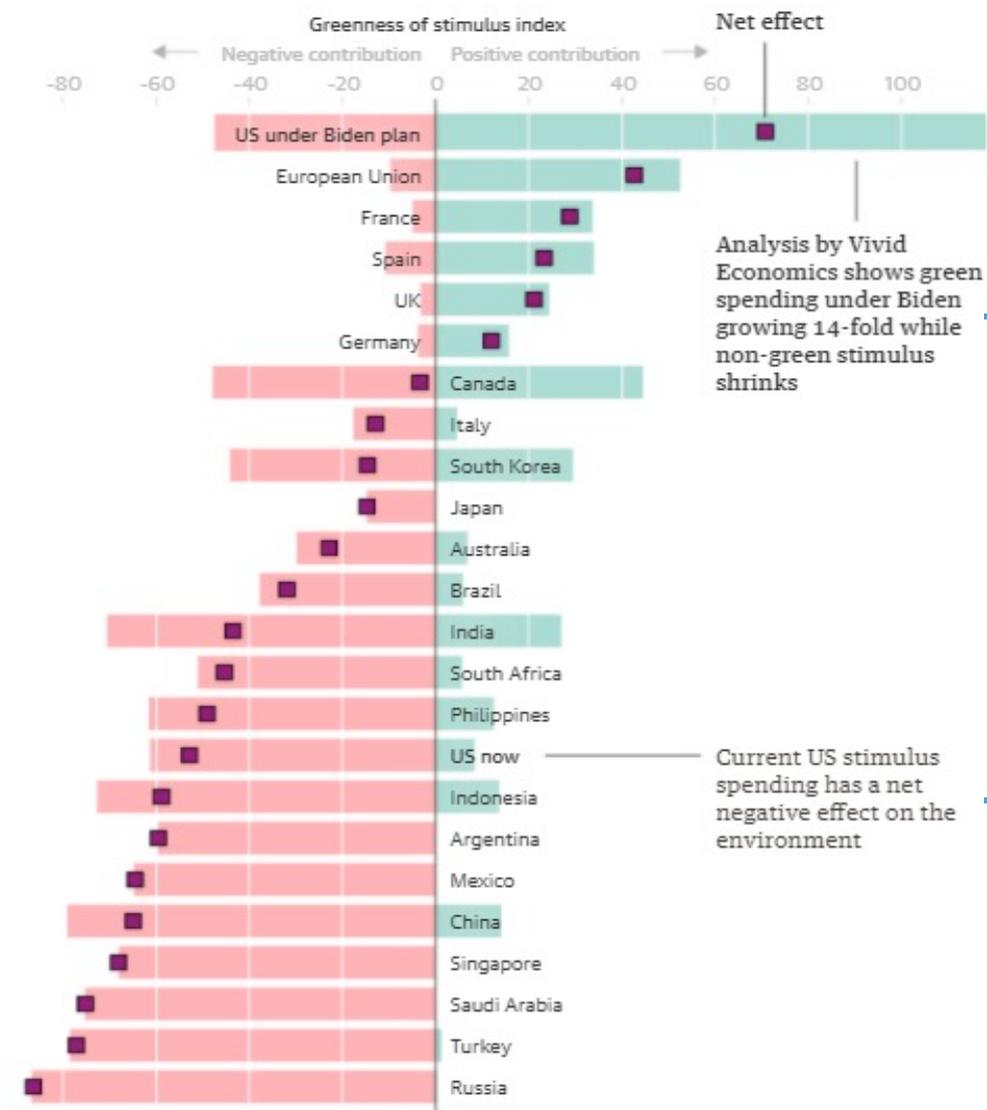
Energy efficiency and 2008-9 green stimulus

Energy Efficiency Share (%) of Green Stimulus, 2008-9



Source: [Edward B. Barbier. 2016. "Building the Green Economy" Canadian Public Policy 42 Supplement 1:S1-S9.](#)

How a Biden presidency plans to lead a global green recovery



Guardian graphic. Source: Vivid Economics

<https://www.theguardian.com/environment/2020/nov/09/revealed-covid-recovery-plans-threaten-global-climate-hopes>

07/01/21

Barbier - ECA Talks

The \$1.9 trillion American Rescue Plan signed into law on March 11, 2021 has very little green elements.

Key Lessons

- Short-term stimulus is insufficient. Policies for a greener economic recovery require longer term commitments (5 to 10 years) of public spending and pricing reforms.
 - **Major challenge:** Most packages and pricing reforms are tailored to major economies (G20), not emerging and developing countries.
- The package and reforms should be different for most emerging and developing countries, reflecting their different structural conditions and needs.
 - **Major challenge:** How to reconcile “greening” with poverty alleviation and other development priorities.
- Any post-COVID strategy must be fiscally sustainable.
 - **Major challenge:** Fiscal burden of pandemic is substantial and is not over, especially for emerging and developing economies.

Major economies and a greener world

- G20 comprise nearly two thirds of the world's population and land area, 82% of GDP and 80% of global CO₂ emissions.
- Eight G20 economies - China, France, Germany, Italy, Japan, South Korea, the United Kingdom and the United States - dominate the “green race” for environmental competitiveness and innovation in key global industries.
 - Machinery, motor vehicles, engines and turbines, steam generators, iron and steel, batteries, electricity generation and distribution, and domestic appliances.
- Same eight economies account for 83% of green R&D worldwide (G20 accounts for 95%).
- **Bottom line:** The policies that these economies adopt for their post-pandemic recovery and beyond will have important implications not just domestically but also for the future greening of the world economy.

Developing and Emerging Economies

- Low and middle-income economies have gross national income (GNI) per capita of less than \$12,535.
 - LMICs in ECA \$8,037 Atlas method 2019.
- Structurally, their economies are different
 - Agriculture contributes significantly to development, employment and food security
 - Primary products are a major if not dominant source of exports
 - More dependent on exploiting natural resources, and other capital (human, physical) are relatively scarce.
 - Poverty is widespread, especially in rural areas.
 - “Geographic” poverty traps: Substantial rural populations located on less favored agricultural land and in remote areas.

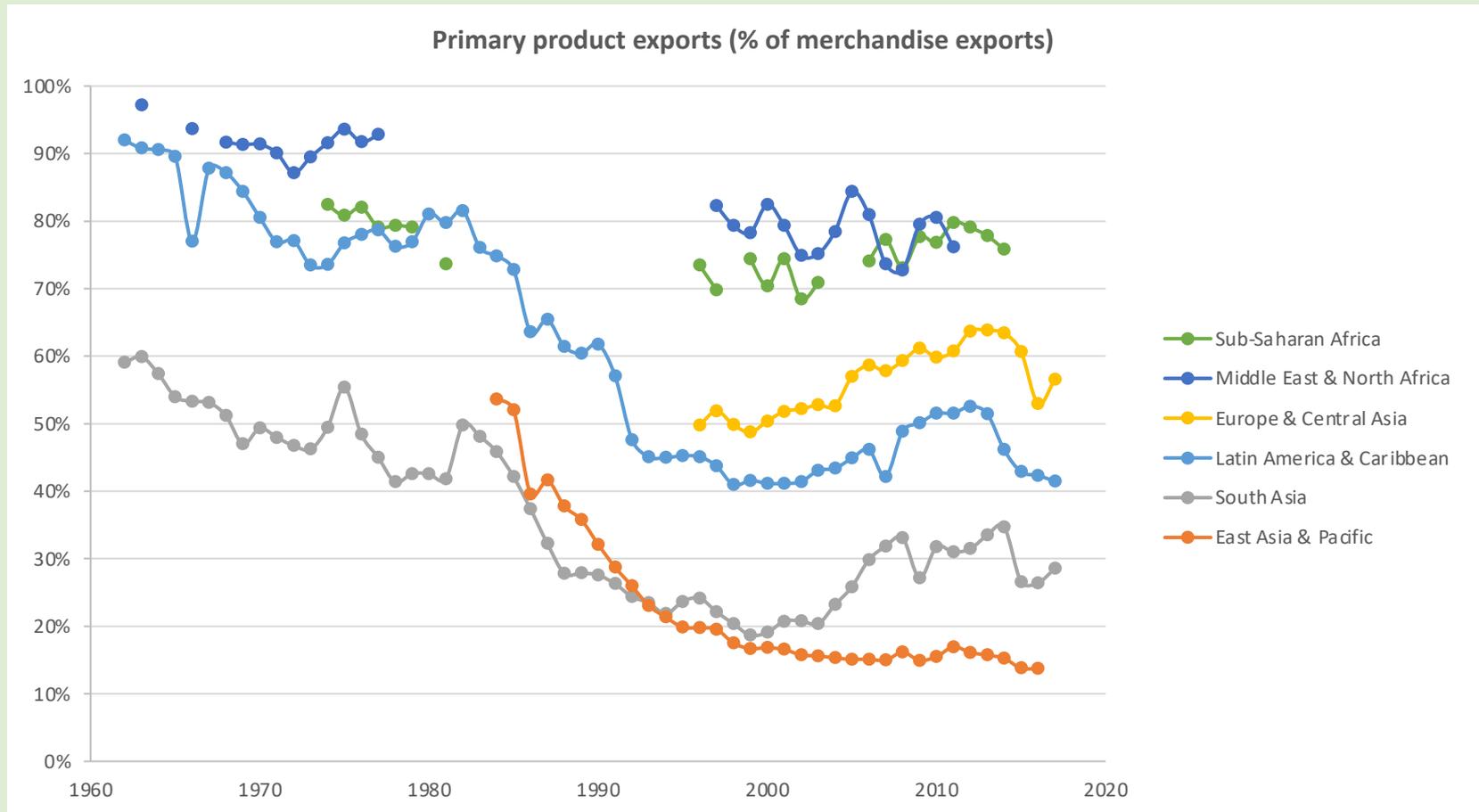
Summary of key structural features

	All Developing	Low Income	Lower Middle-Income	Upper Middle-Income
GDP per capita (constant 2005 US\$), 2000-2017 average	\$3,114	\$598	\$2,009	\$6,392
Primary product exports (% of merchandise exports), 2000-2017 average	62.2%	74.5%	61.8%	52.9%
Poverty headcount ratio (% of population) 2000-2016 average	22.6%	45.5%	21.0%	6.6%
Agricultural land change (%), 2000-2015	4.4%	10.3%	5.0%	-0.7%
Annual rural population growth (%), 2000-2015	0.6%	1.7%	0.8%	-0.5%
Share (%) of rural population on remote less favored agricultural land, 2010	9.0%	9.6%	9.9%	7.5%
Number of countries	95	25	38	32

Notes: Developing countries are low and middle-income economies in which 2017 gross national income (GNI) per capita was less than \$12,235. Low-income economies are those in which 2017 GNI per capita was \$1,005 or less. Lower-middle-income economies are those in which 2017 GNI per capita was between \$1,006 and \$3,955. Upper-middle-income economies are those in which 2017 GNI per capita was between \$3,956 and \$12,235. GDP is gross domestic product.

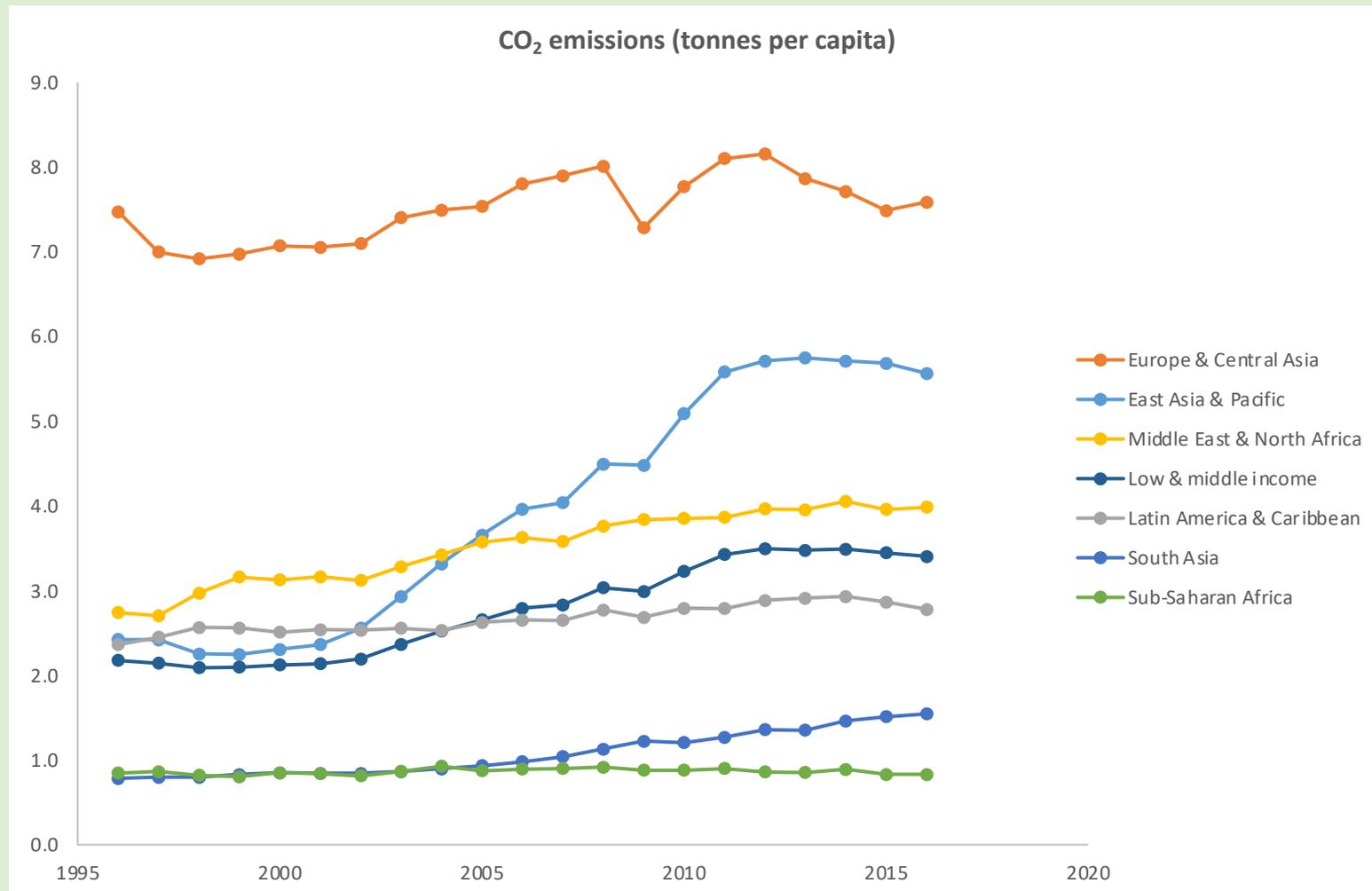
Source: Barbier, E.B. 2019. *Natural Resources and Economic Development*, 2nd ed. Cambridge University Press, Table 1.4.

Resource dependency in developing country regions



Primary product export share is the percentage of agricultural raw material, food, fuel, ore and metal commodities to total merchandise exports, from World Bank *World Development Indicators*.

Carbon emissions in developing country regions



Carbon dioxide emissions are those stemming from the burning of fossil fuels and the manufacture of cement, from World Bank *World Development Indicators*

Widespread poverty

- 736 million people still live in extreme poverty
- 821 million are undernourished
- 785 million people lack even basic drinking water services, and 673 million still practice open defecation.
- About 3 billion people lack clean cooking fuels and technology
- 840 million people without electricity, 87% live in rural areas.

United Nations (UN). 2019. *The Sustainable Development Goals Report 2019*. United Nations, New York.

Effects of COVID-19 pandemic

- Global public and private debt reached 281.5 trillion in 2020, 355% of global GDP.^a
 - In emerging markets, total debt is \$77.7 trillion, government debt \$18.8 trillion.
- Global poverty has worsened.^b
 - Around 70 to 100 million could fall into extreme poverty, the first rise in over two decades.
 - Shared prosperity – the relative increase in the incomes of the bottom 40% of the population compared to that of the entire population – was projected to drop sharply over 2020–21.
 - Emerging and developing ECA: economic activity contracted by 2% and poverty rose in 2020.
- The crisis has weakened environmental regulations and their enforcement worldwide, with consequences for environmental quality, pollution, land use change, and resource overexploitation.

^a Tiftik and Mahmood (2021). World Bank (2020).

Greening the post-pandemic recovery in developing economies

- Green and inclusive policies that are fiscally sustainable.
- Policies that can achieve immediate progress towards several goals simultaneously (e.g. reducing poverty, environmental goals, inclusive growth), rather than sacrificing some goals to achieve others.
- Align economic incentives for longer term sustainable development.
- Raise or save revenue, generate the necessary funding for any additional investments, and have a proven track record.

Several policies fit these criteria

Three of them that might be relevant to emerging and developing ECA countries:

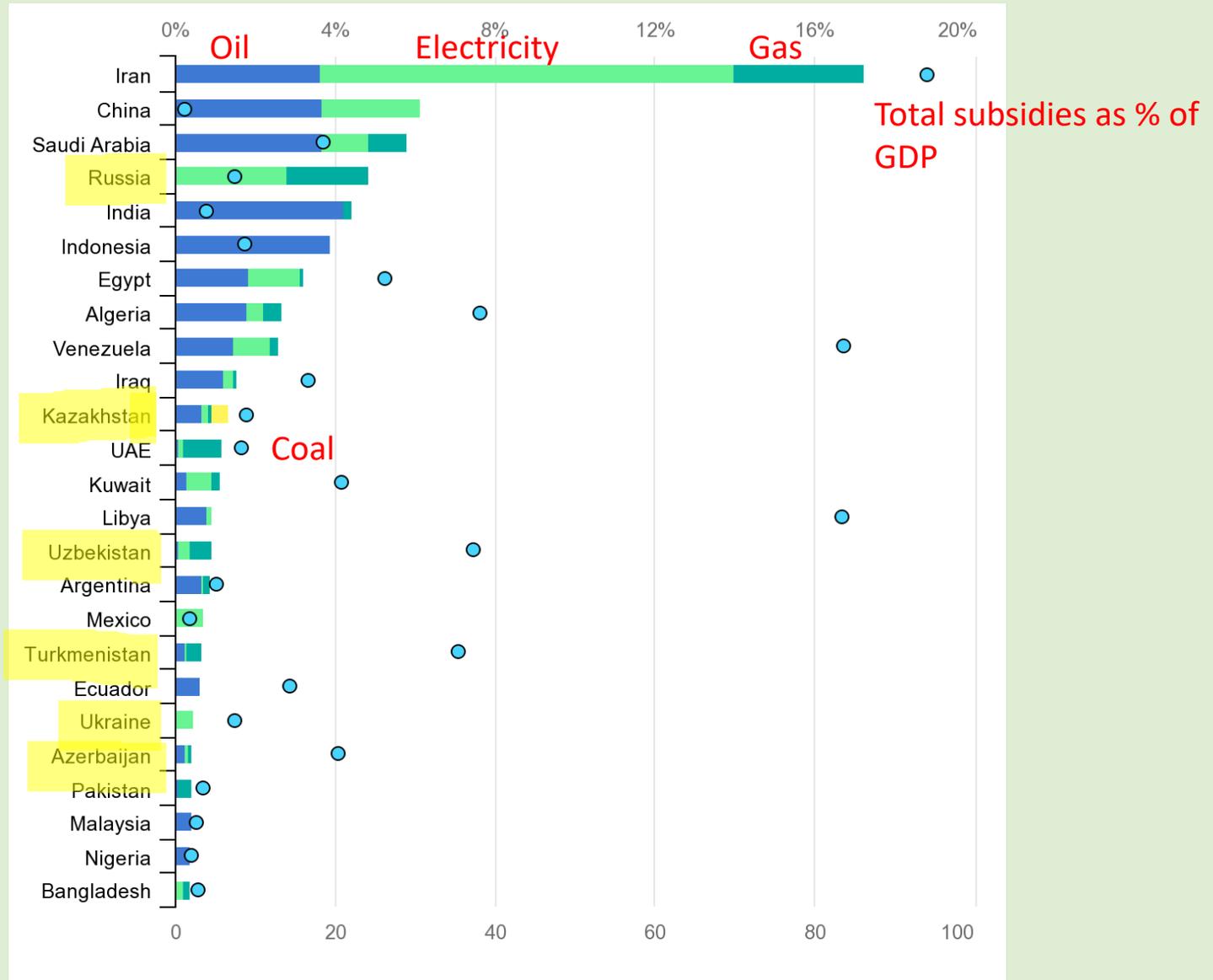
- A fossil fuel subsidy swap to fund clean energy investments and dissemination of renewable energy in rural areas.
- Reallocate environmentally harmful agricultural and water subsidies to improve water supply, sanitation and wastewater infrastructure for the poor.
- Adapting and phasing in key green technologies from more advanced economies, especially to improve energy access by the poor.

Barbier (2020a) and (2020b).

Fossil fuel subsidies in developing countries

- Fossil fuel subsidies are costly
 - In 2019, [fossil fuel consumption subsidies](#) were \$312 billion annually, of which \$270 billion were in developing countries (\$37 billion ECAs).
- Fossil fuel subsidies are inequitable
 - In 20 developing countries, the poorest fifth of the population received on average just 7% of the overall benefit of fossil fuel subsidies, whereas the richest fifth gained almost 43% (Arze del Granado et al. 2012).
- Fossil fuel subsidies contribute to excessive use
 - More greenhouse gas emission, pollution, illness and deaths. [A barrier to clean energy adoption](#) (IEA).

Value of fossil-fuel subsidies by fuel in the top 25 countries, 2019 (IEA)



A fossil fuel subsidy swap

- A 10-30% subsidy swap from fossil fuel consumption to investments in energy efficiency and renewable energy electricity generation could “tip the balance” between fossil fuels and cleaner sources of energy.^a
- Removal of fossil fuel subsidies on its own in 26 countries – 22 of which are low and middle income – would reduce greenhouse gas emissions by 6% on average for each country.^b
- A swap would facilitate greater dissemination and adoption of renewable energy and improved energy efficiency technologies in rural areas.^c
 - Support the adoption of clean cooking and heating technologies
 - E.g. Morocco, Kenya, South Africa illustrate different policy approaches to facilitate adoption and deployment of renewable energy and improved energy efficiency technologies in rural areas.

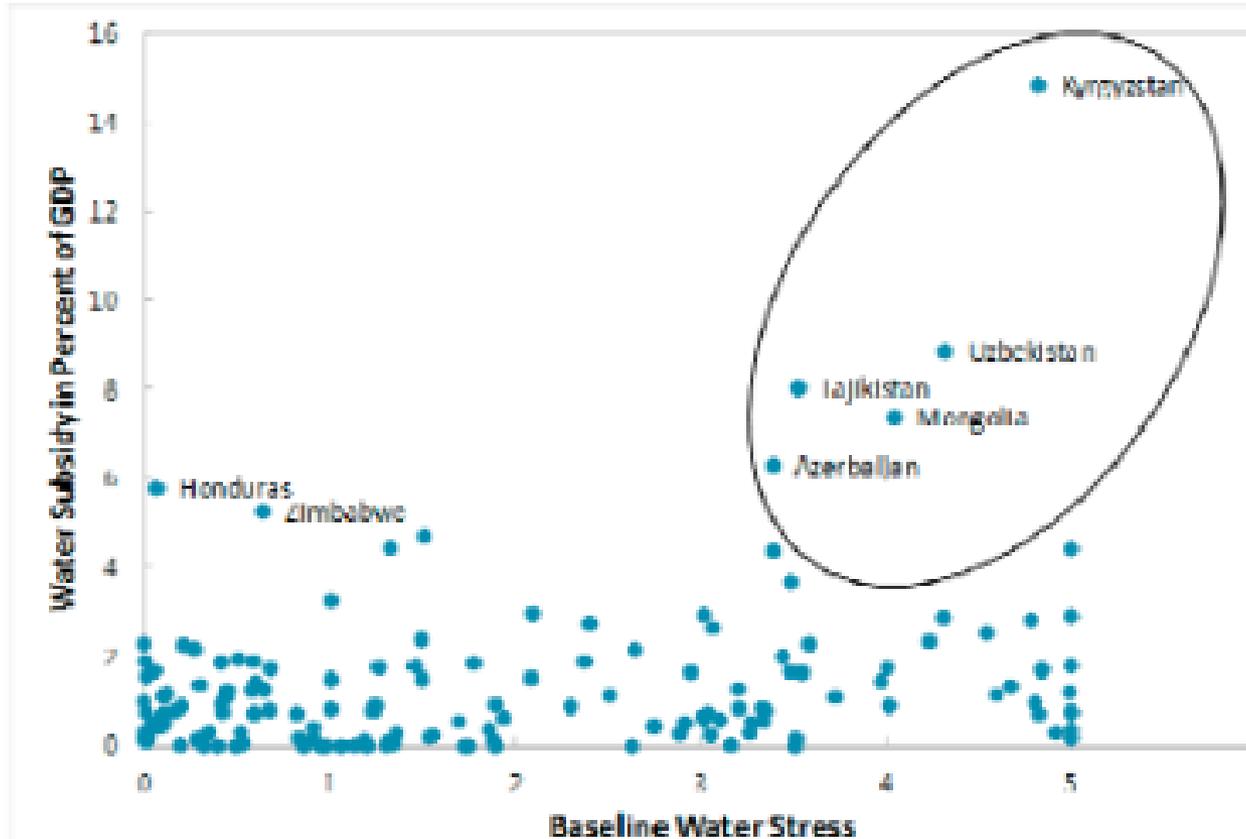
^a IISD (2019a). ^b IISD (2019b). ^c Barbier (2020b).

Agricultural and water subsidies

- [OECD estimates](#) that global subsidies for environmentally harmful agricultural production is \$112 billion annually.
 - Many of these subsidies perpetuate agricultural over-use of water that is worsening problems of water allocation, scarcity and pollution.
 - In emerging and developing countries, benefit mainly wealthier farmers.
- Water subsidies provided through public utilities are estimated at about \$456 billion globally, encouraging wasteful use and exacerbating scarcity.^a
- Public subsidies for water and sanitation services are \$320 billion annually (\$290 billion in developing countries).^b
 - An average of 56% of water and sanitation subsidies are captured by the wealthiest 20% of the population, while only 6% are captured by the poorest 20%.

^a Kochhar et al. (2015). ^b Andres et al. (2019).

Figure A8. Water Subsidies and Stress



Source: World Resources Institute, Aqueduct and IMF staff calculations.

Kochhar et al. 2015

Reform, rationalization and reallocation

- ***Step one***

- Remove annual support to potentially environmentally harmful agricultural production.
- Rationalize annual subsidies for water and sanitation services that benefit mainly wealthier households.

- ***Step two***

- Redirect savings to provide a better balance between rural and urban water and treatment subsidies and to fund measures to make water supply and sanitation affordable for those in need.
- Also consider a “subsidy swap” from irrigation to support investments in clean water and improved sanitation for the rural poor.

Adapting green technologies

- The most effective way for developing countries to foster a green transition to cleaner and more energy efficient production processes is to adopt available and affordable green technologies that coincide with key development objectives.
- Around 840 million live without access to electricity, another billion have only unreliable electricity, and nearly half the world's population lack clean and safe cooking and heating technologies (UN 2019).
- The usual perception is that there is a tradeoff between reducing energy poverty and adopting cleaner and more energy efficient technologies.
- Successful adoption of the latter technologies will depend critically on whether they can overcome this tradeoff.

Prospects for adopting green technologies in developing countries

Design Intensity	High	<p>Technology: Wind turbines Geothermal power Large solar power Large hydropower</p>	<p>Requirements: Complex components and design, some components easily manufactured, large markets</p>	<p>Technology: Electric vehicles Large battery storage High-speed rail</p>	<p>Requirements: Complex components and design, difficult to manufacture and requires scale economies.</p>
	Low	<p>Technology: Micro-hydro Small biogas Solar cook stoves Solar heating Bicycles</p>	<p>Requirements: Key components are standardized and easily designed, manufactured, and assembled.</p>	<p>Technology: Solar PV Energy-efficient lighting Heat pumps</p>	<p>Requirements: Simple components and design, difficult to manufacture, and requires scale economies.</p>
		Low		High	
Manufacturing Intensity					

Source: Based on Schmidt, T.S. and J. Huenteler. 2016. "Anticipating industry localization effects of clean technology deployment policies in developing countries." *Global Environmental Change* 38:8-20.

Key barriers and challenges

- Lack of familiarity with technologies and the economic feasibility of local production and installation.
- Poorer households and communities face problems of available credit, high installation costs and upfront fees, and lack of technical training for installation.
- The costs of disseminating clean energy technologies in rural areas should be compared against alternative off-grid options.
- Lack of long-term financing schemes, poor private sector participation, inadequate institutional structure, lack of coordination between local and national governments, and the weak purchasing power of rural communities.
- ***Subsidy swap from fossil fuel consumption could be important to fund ways to overcome these barriers and challenges.***

Barbier (2020b)

Final remarks

- Any post-COVID green recovery for emerging and developing economies must be compatible with their structural conditions and development priorities.
- Any pricing reforms and policies should conform with sustainability and long-term development goals, such as alleviating poverty, reducing hunger, improving access to basic services and improving equity.
- This requires identifying policies that can:
 - Yield immediate progress towards these goals.
 - Align economic incentives for sustainability and green transformation.
 - Have potential for funding any additional investments.

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