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Using carbon pricing revenues to finance sustainable development goals

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Parallel Session 2.1

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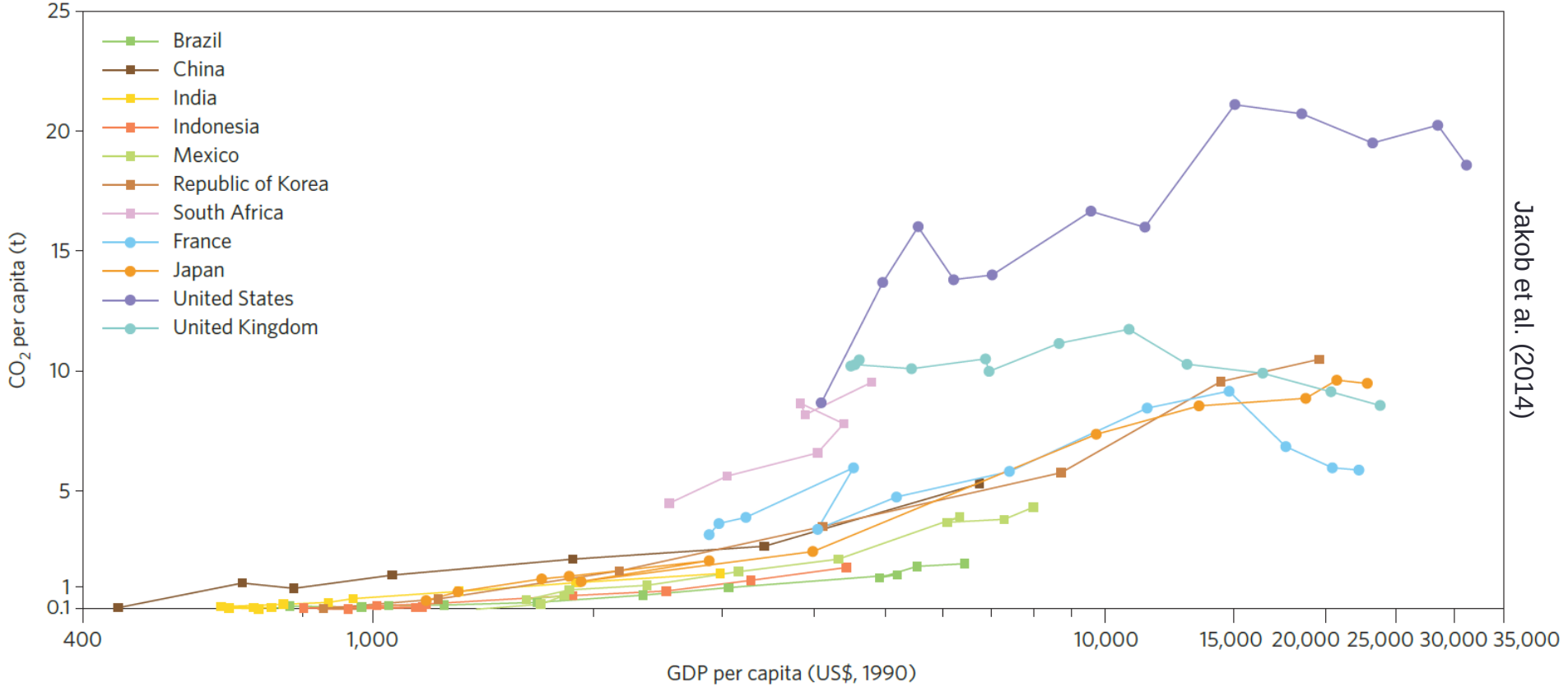
Motivation



Two of the most fundamental challenges in the 21st century: poverty reduction and climate change mitigation

Reducing emissions and promoting development?

- Limited access to basic infrastructures (e.g. > 2.4 billion people world-wide without access to sanitation in 2010).
- Carbon pricing is arguably the economically most efficient policy to reduce GHG emissions.
- Revenues from carbon pricing could be used to advance human development objectives, e.g. infrastructure.
- Emission reductions and socio-economic development could be combined in the framework of the sustainable development goals (SDG).

Carbon Pricing as SDG Finance

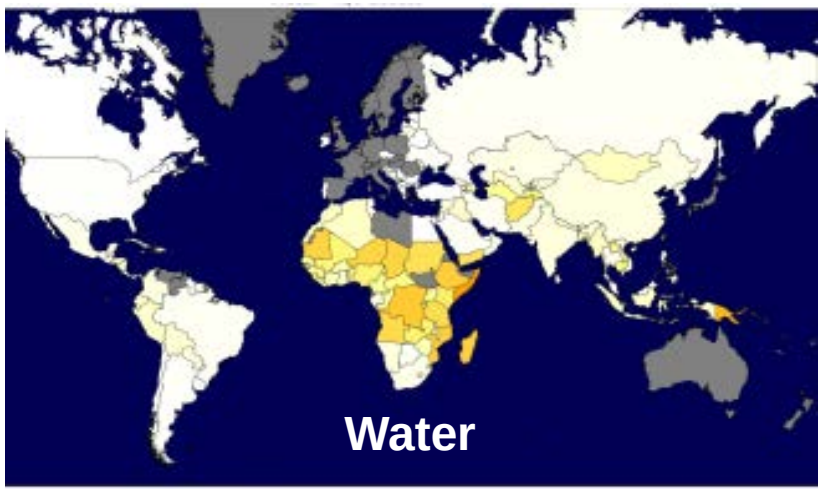
1. Project **access gaps** in 2030 for sanitation, water, and electricity, assuming that share of population without access remains constant.

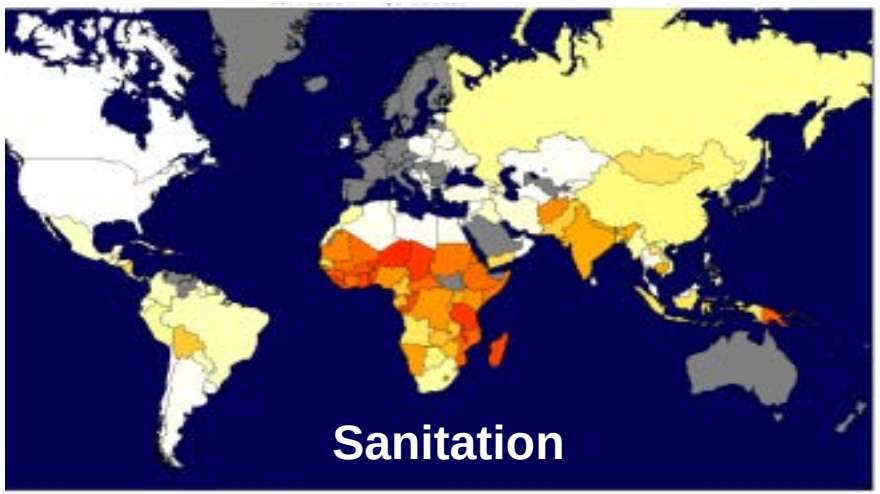
2. Compute **cost** of closing access gaps (Goal: 100% access). Global costs about 1 trn US$.

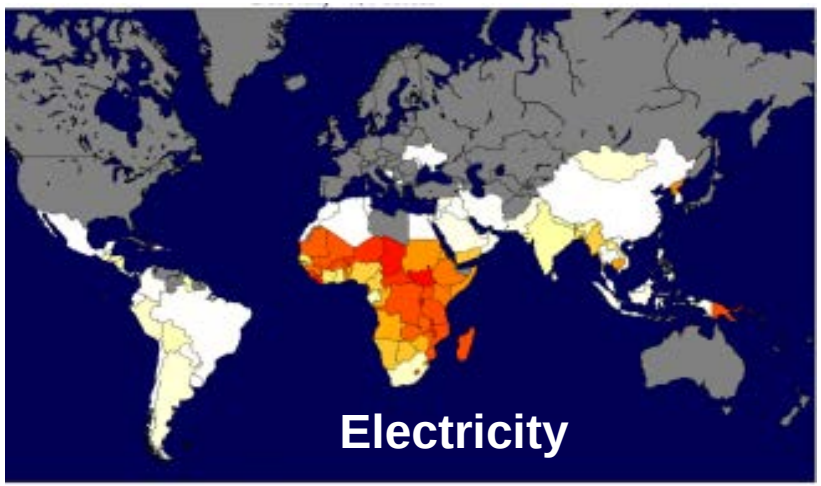
3. **Revenues from carbon pricing** from various integrated assessment models (EMF-27).

4. Divide total costs per infrastructure per country from step 2 by carbon pricing revenues for each country from step 3 to obtain the **share of revenues** needed

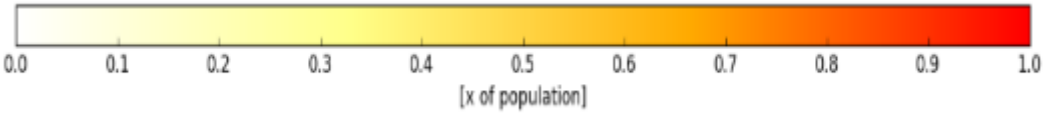
Current Infrastructure Access Gaps



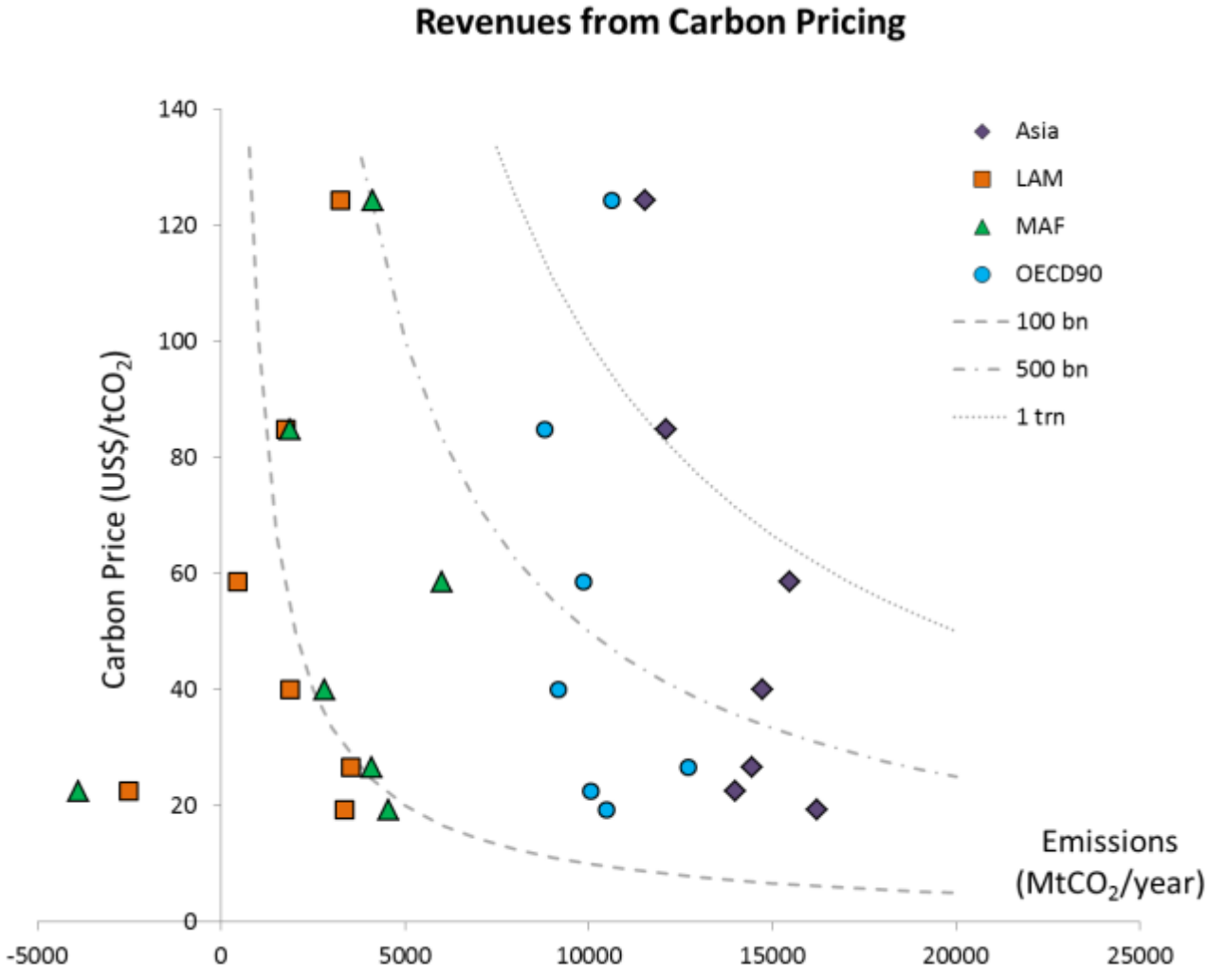




WDI (2015)

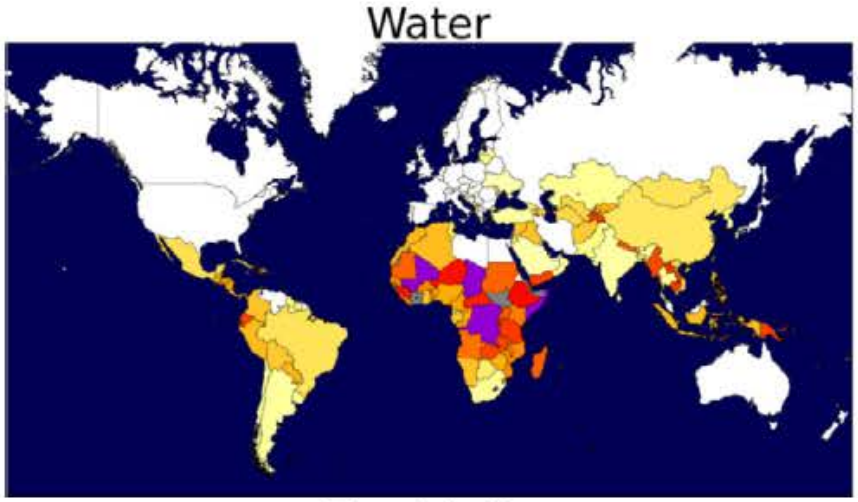


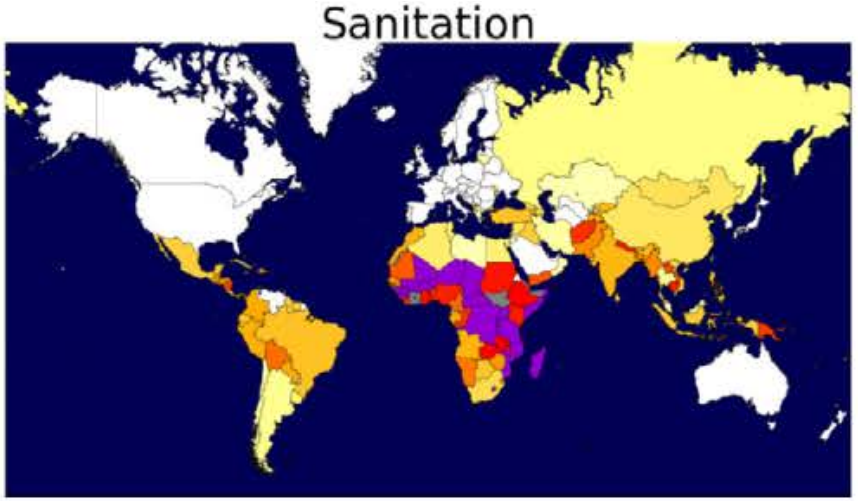
Carbon Prices and Emissions

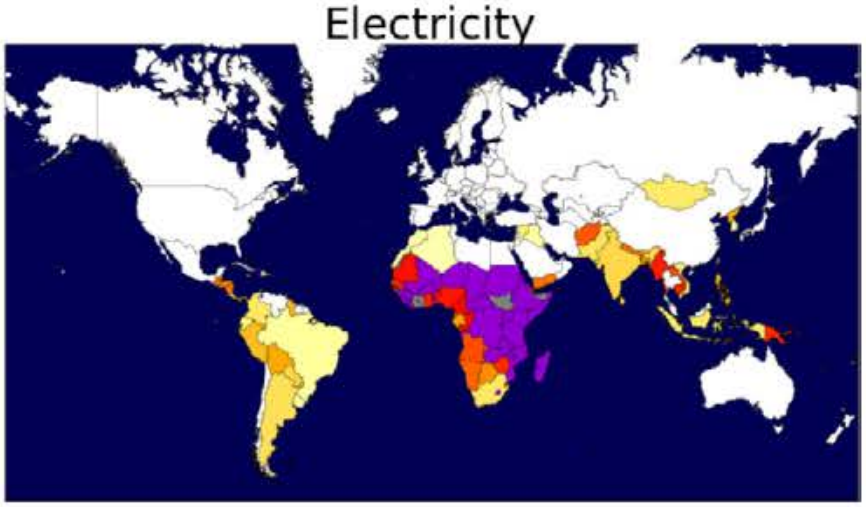


- 7 models from EMF27.
- 450ppm full tech scenario, assuming global carbon price.
- Emissions and prices in 2020.
- Emissions similar, prices very different.
- We use median scenario (POLES).

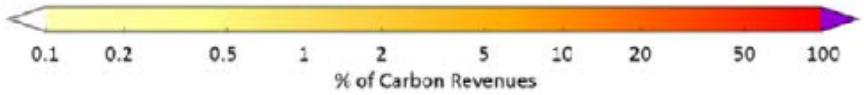
Share of Carbon Pricing Revenues (2015-2030)





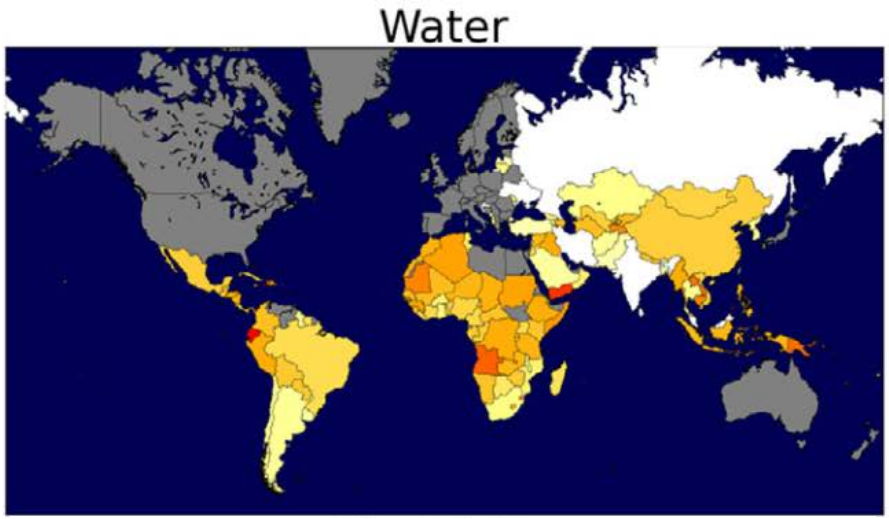


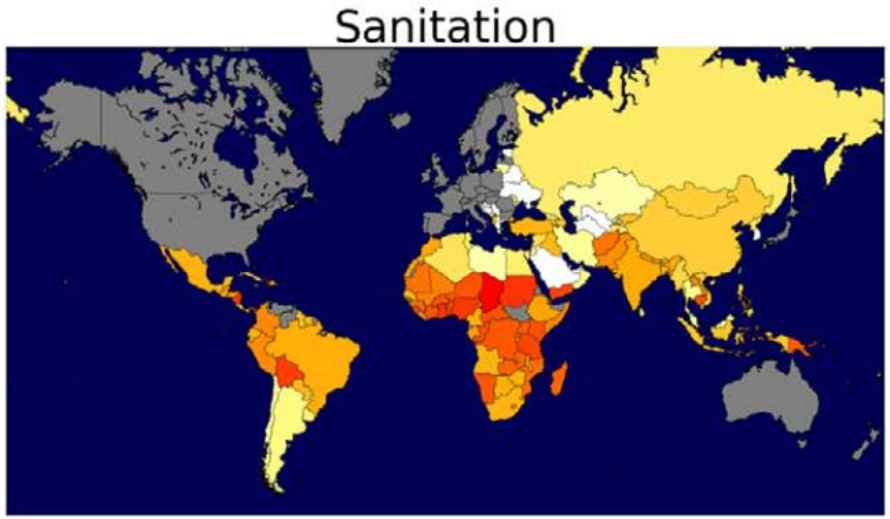
Jakob et al. (2016)

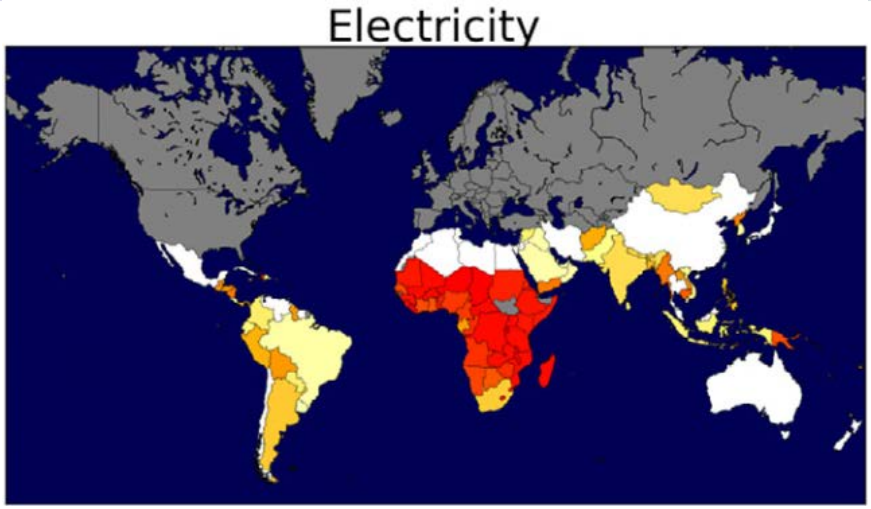


(450ppm, no redistribution)

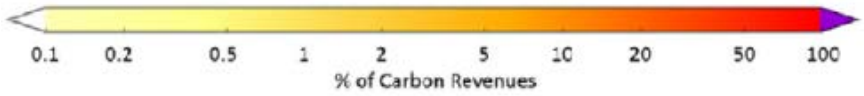
Share of Carbon Pricing Revenues (2015-2030)





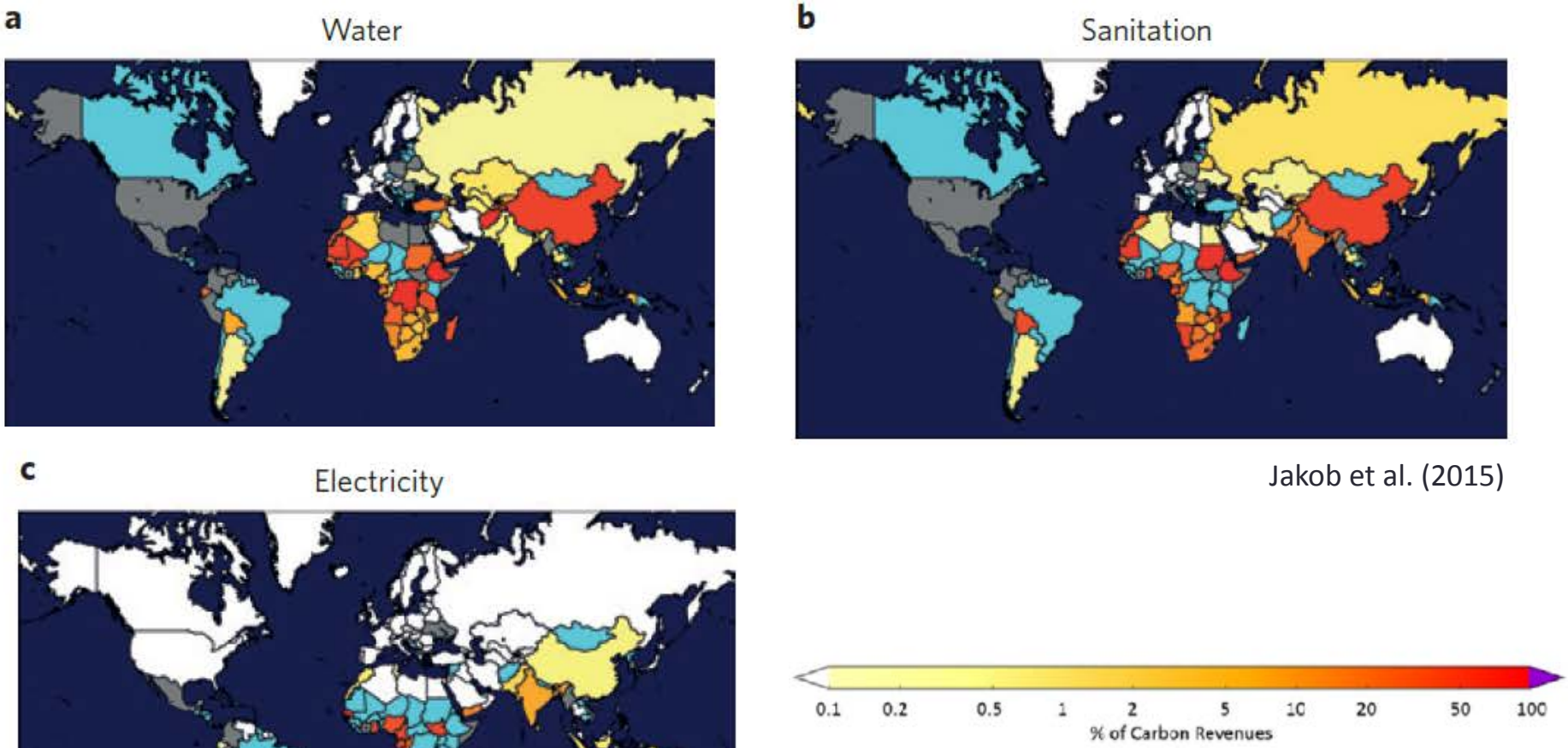


Jakob et al. (2016)



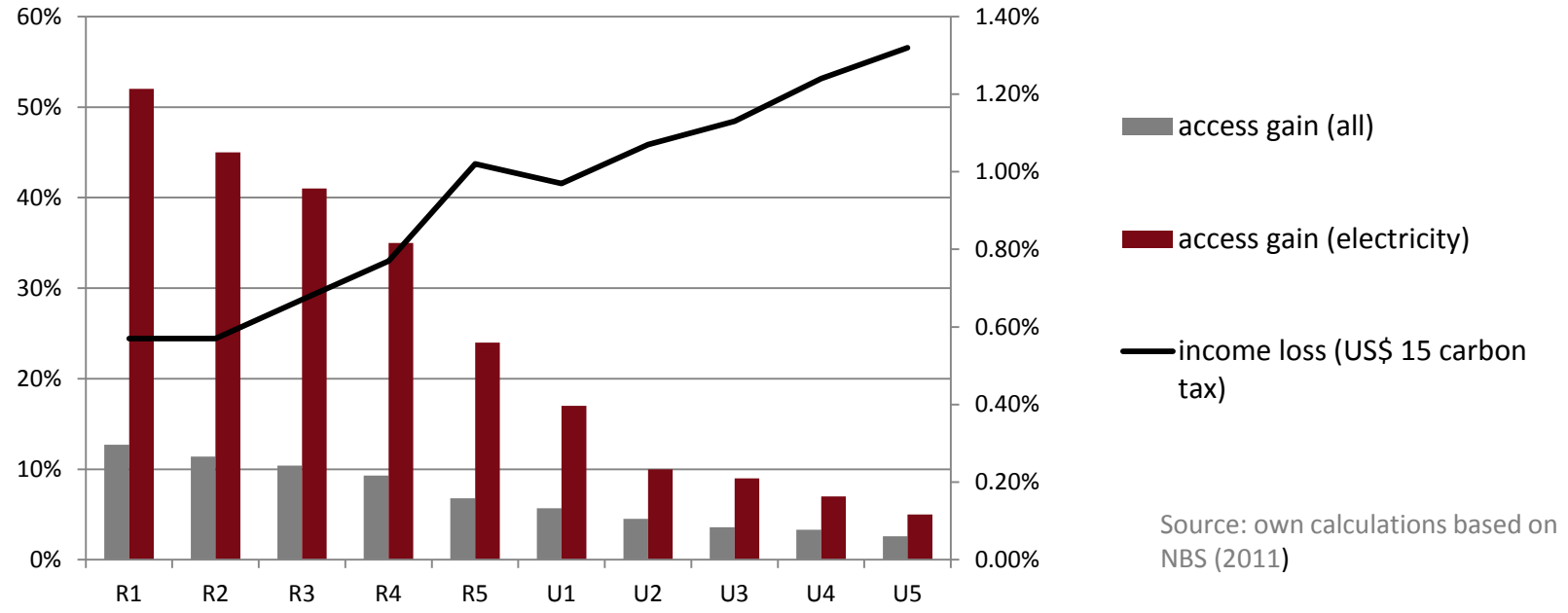
(450ppm, redistribution based on average between population and emissions)

Fossil Fuel Subsidy Reform



Jakob et al. (2015)

Distributional Impacts: The case of Nigeria



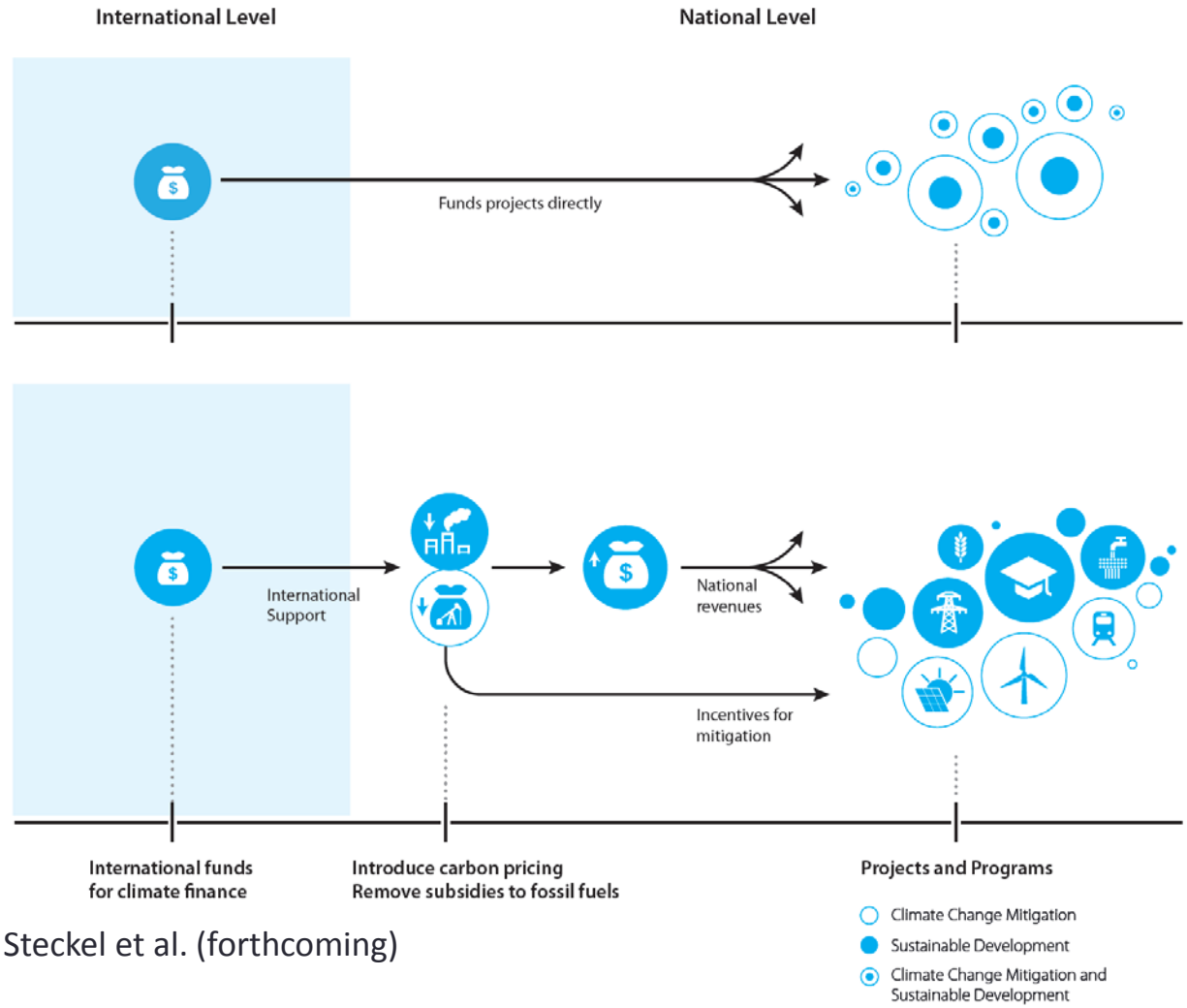
Source: own calculations based on NBS (2011)

Average per capita income loss (line chart) and infrastructure access gain (bar charts) at a 15 US$/tCO2 carbon tax until 2030, assuming an equitable spread on per capita basis, by rural and urban income quintiles as percentage shares (adjusted for PPP).

Carbon Pricing in Nigeria used for infrastructure expansion would be doubly progressive.

Dorband et al. (in preparation)

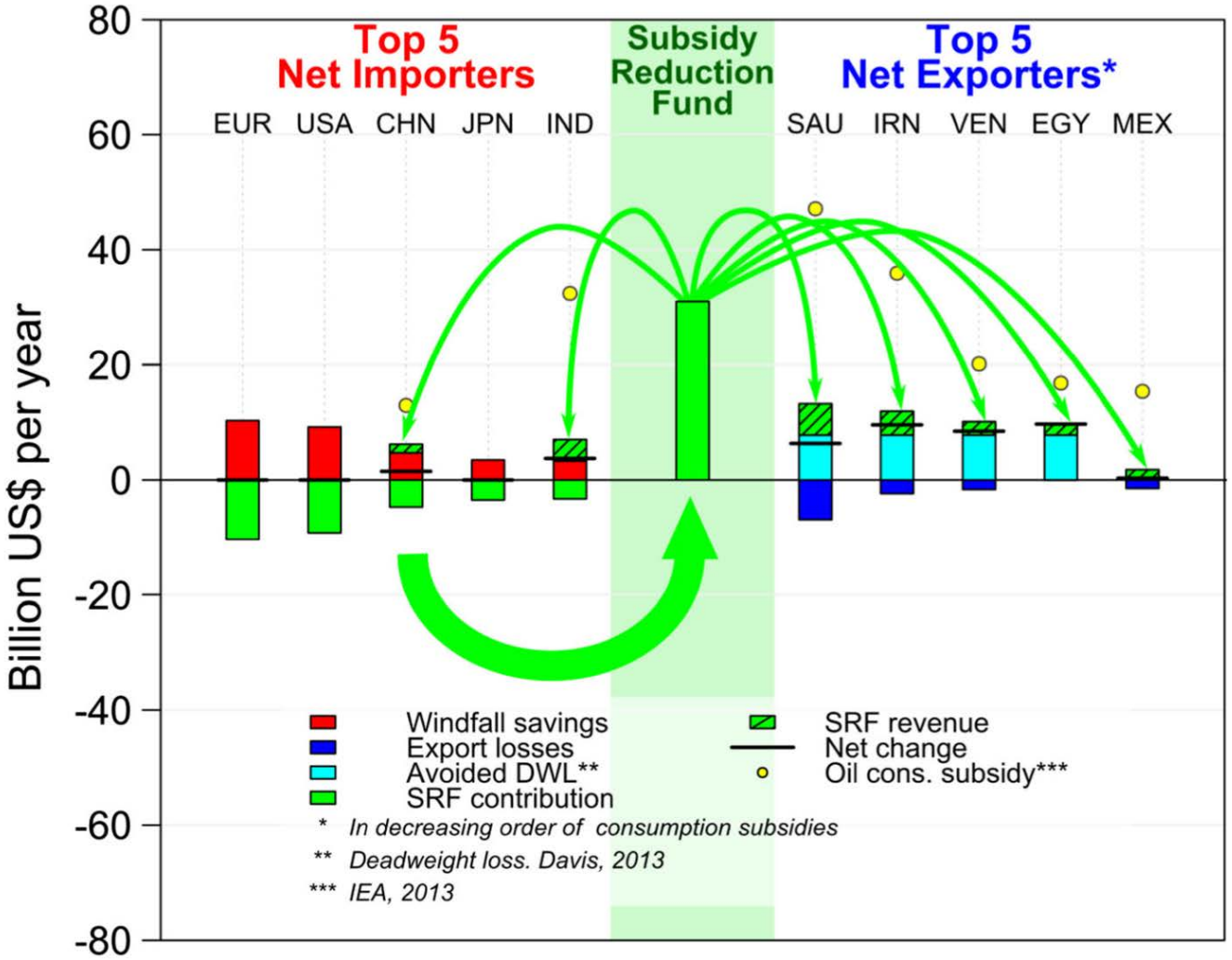
Sustainable Development Finance



Steckel et al. (forthcoming)

- Climate Finance could provide funds in exchange for carbon pricing instead of project-based finance.
- This kind of results-based finance could assist in domestic resource mobilization for SDG financing.

A subsidy reduction fund?



Jakob and Hilaire (2015)

Conclusions

- Revenues from carbon pricing and fossil fuel subsidy reform could close infrastracture access gaps in many countries.
- Additional SDG-relevant areas currently under study (e.g. health, education, social security).
- International climate finance and a subsidy reduction fund could assist the implementation of carbon prices and subsidy reform.
- Distributional aspects are key, possibility of double progessivity.
- Need to understand political economy, institutional barriers and how to overcome them.
- Additional studies on political feasibility in preparation for Ecuador and Peru.

References

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Backup Slides

Assumptions

- Current share of people with access assumed constant to 2030
- Investments undertaken over a 15-year period, as envisaged by SDG process
- Annual recurrent costs averaged over 15 years
- Missing data for countries: regional averages or similar population density.

Access Gaps

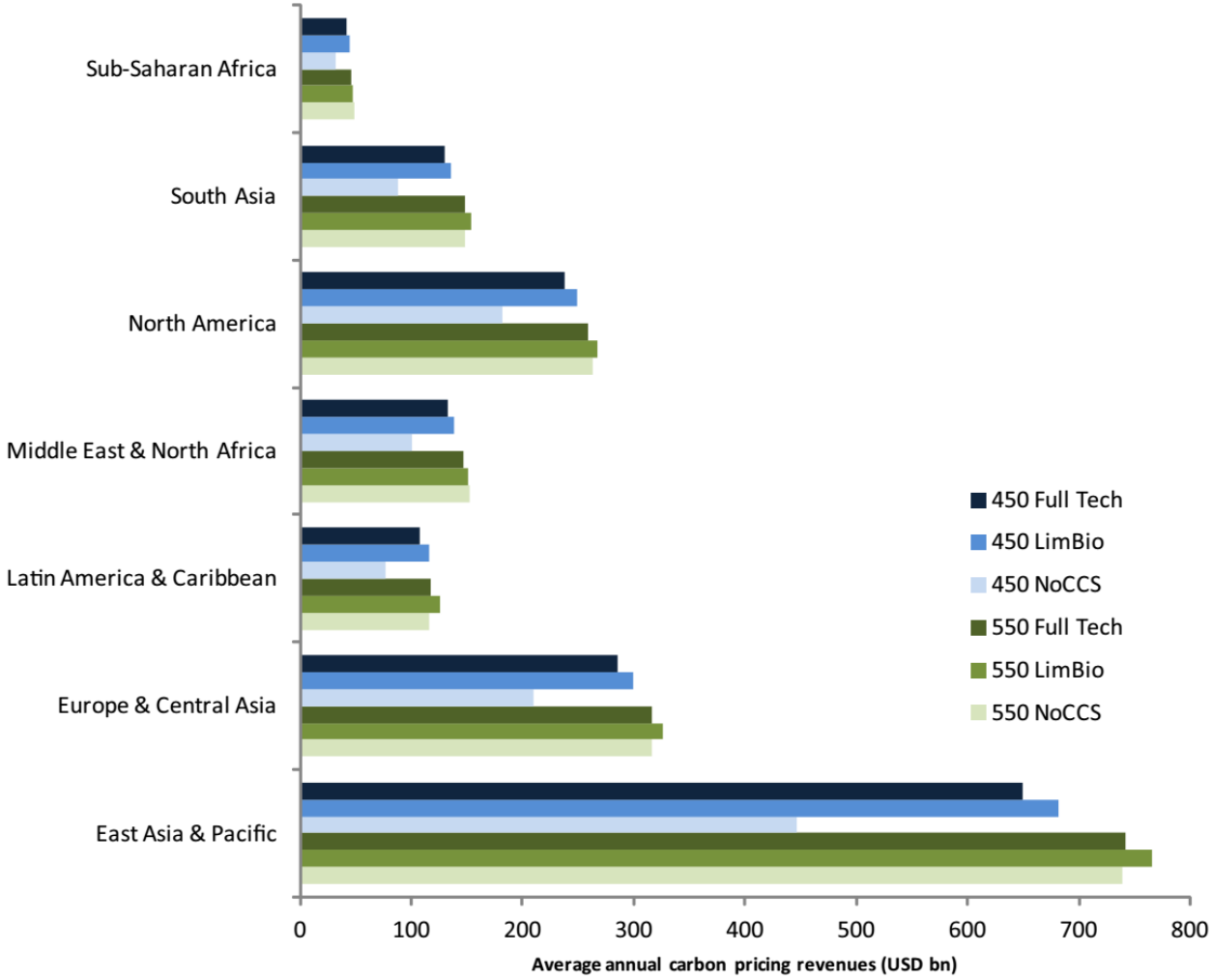
Region	Water (percentage without access)	Sanitation (percentage without access)	Electricity (percentage without access)	ICT (percentage without access)	Roads (percentage unpaved)
East Asia & Pacific	8.8	30.6	4.8	29.3	40.1
Europe & Central Asia	2.0	6.5	0.0	14.2	23.1
Latin America & Caribbean	6.2	18.4	5.2	23.0	81.8
Middle East & North Africa	9.2	11.1	5.3	13.8	21.9
North America	0.8	0.1	0.0	1.1	0.0
South Asia	10.6	61.8	25.6	67.9	46.9
Sub-Saharan Africa	36.7	69.6	68.1	59.8	79.6
Global	11.3	36.0	16.8	37.4	31.6

All data are for the year 2010. Source: World Bank (2014), ITU (2014), Pachauri *et al.* (2013).

Costs (millions of 2010 US$)

	Electricity	Water	Sanitation	ICT	Roads	**total costs**
East Asia & Pacific	22,590	93,145	79,269	564,210	2,486,253	**3,245,468**
Europe & Central Asia	0	5,501	11,011	105,887	676,624	**799,024**
Latin America & Caribbean	13,952	29,057	36,802	130,926	2,461,768	**2,672,505**
Middle East & North Africa	5,170	18,865	12,462	54,487	173,124	**264,108**
North America	0	0	0	3,419	0	**3,419**
South Asia	35,861	4,907	93,847	1,062,650	2,488,990	**3,686,255**
Sub-Saharan Africa	355,554	36,590	135,431	680,365	405,999	**1,613,939**
	433,127	**188,065**	**368,822**	**2,601,944**	**8,692,758**	**12,284,718**

Revenues under different scenarios



Revenues under different schemes