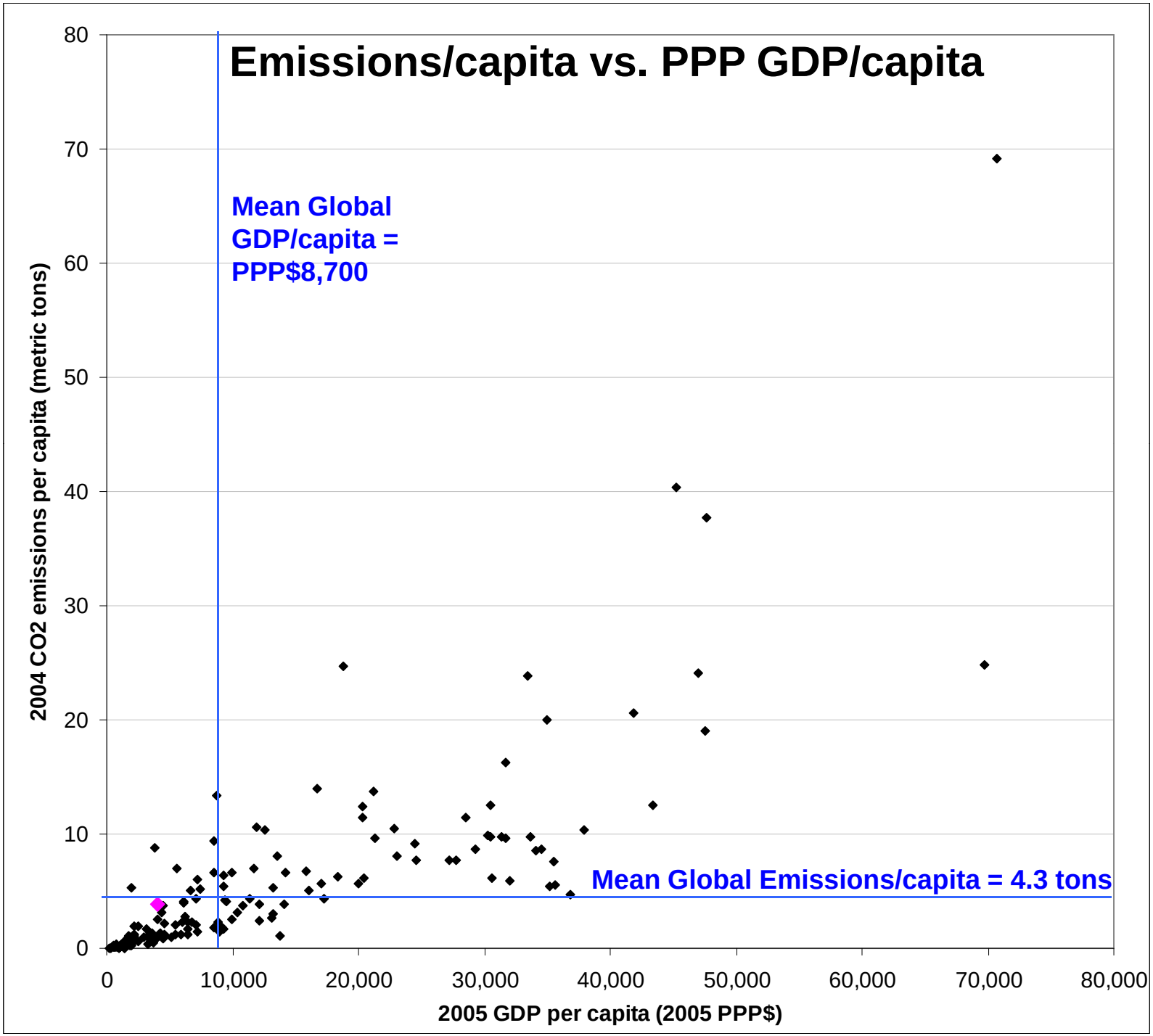
SEI STOCKHOLM ENVIRONMENT INSTITUTE

What Economic Development Will Mean for China's GHG Emissions

Liz Stanton SEI-US liz.stanton@sei-us.org

Scale:
80 tons by
$80,000

Scatterplot of 174 countries; China highlighted



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Scale:
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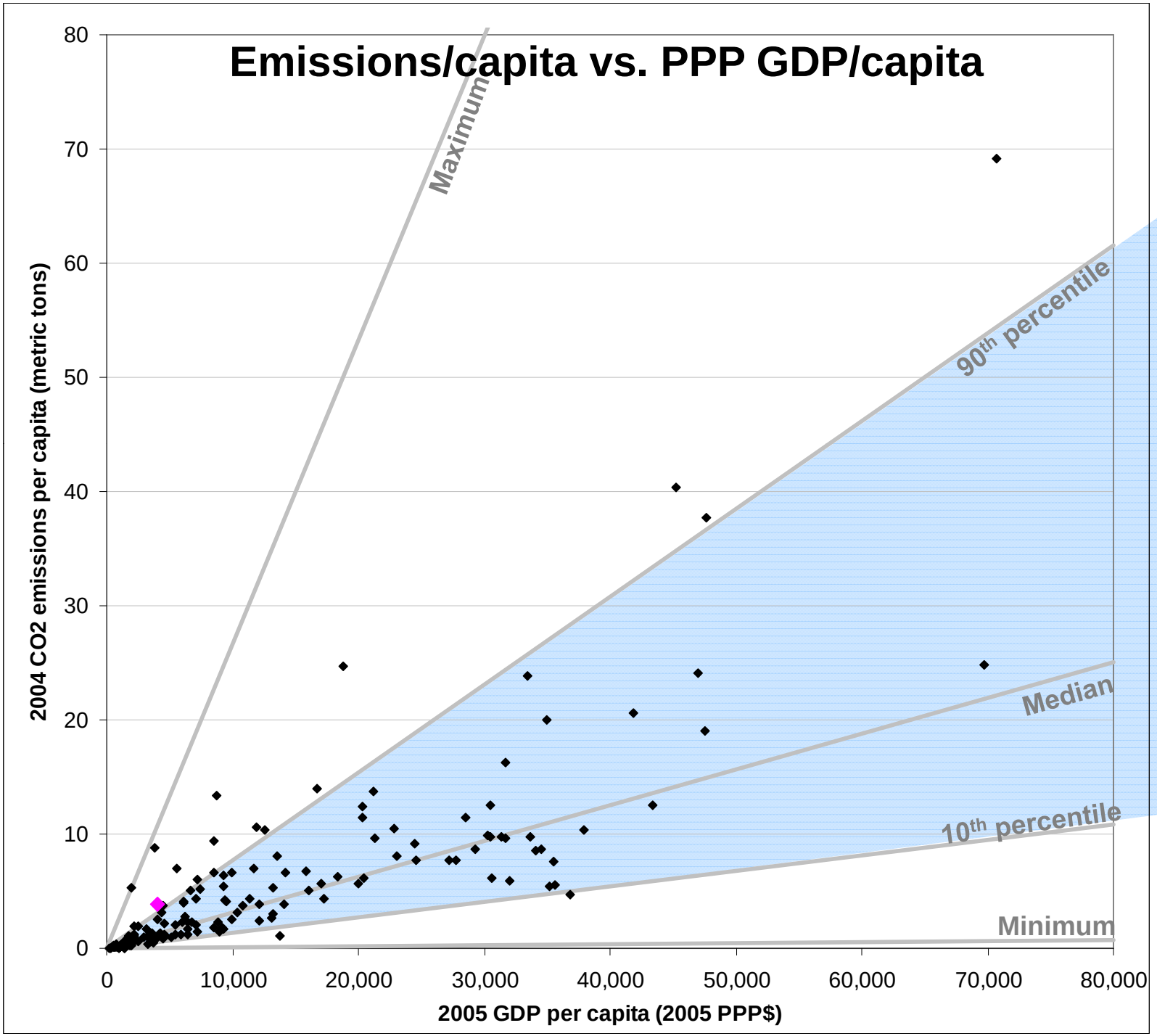
Emissions Intensity is the ratio of emissions to GDP:

Rays from the origin



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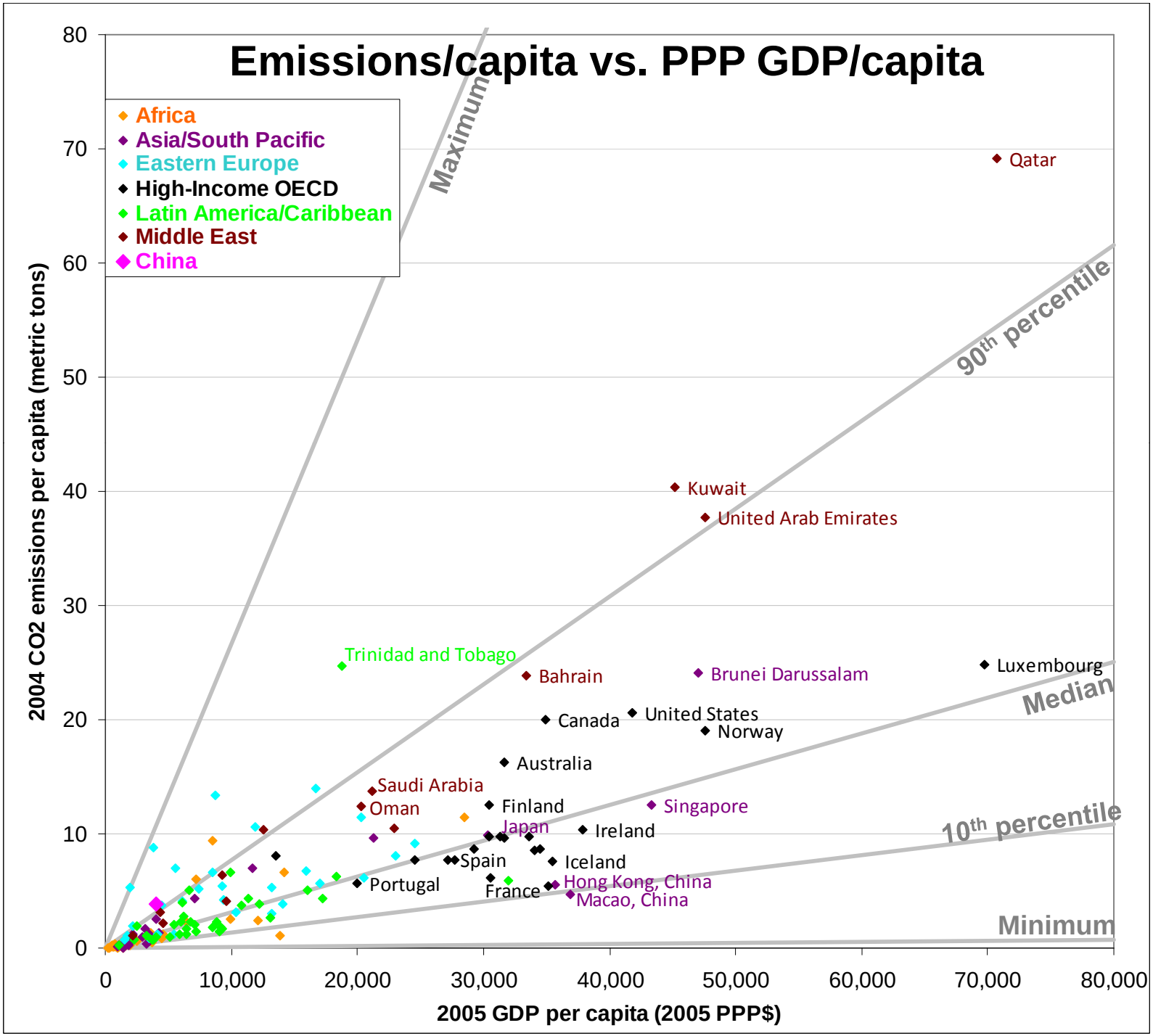

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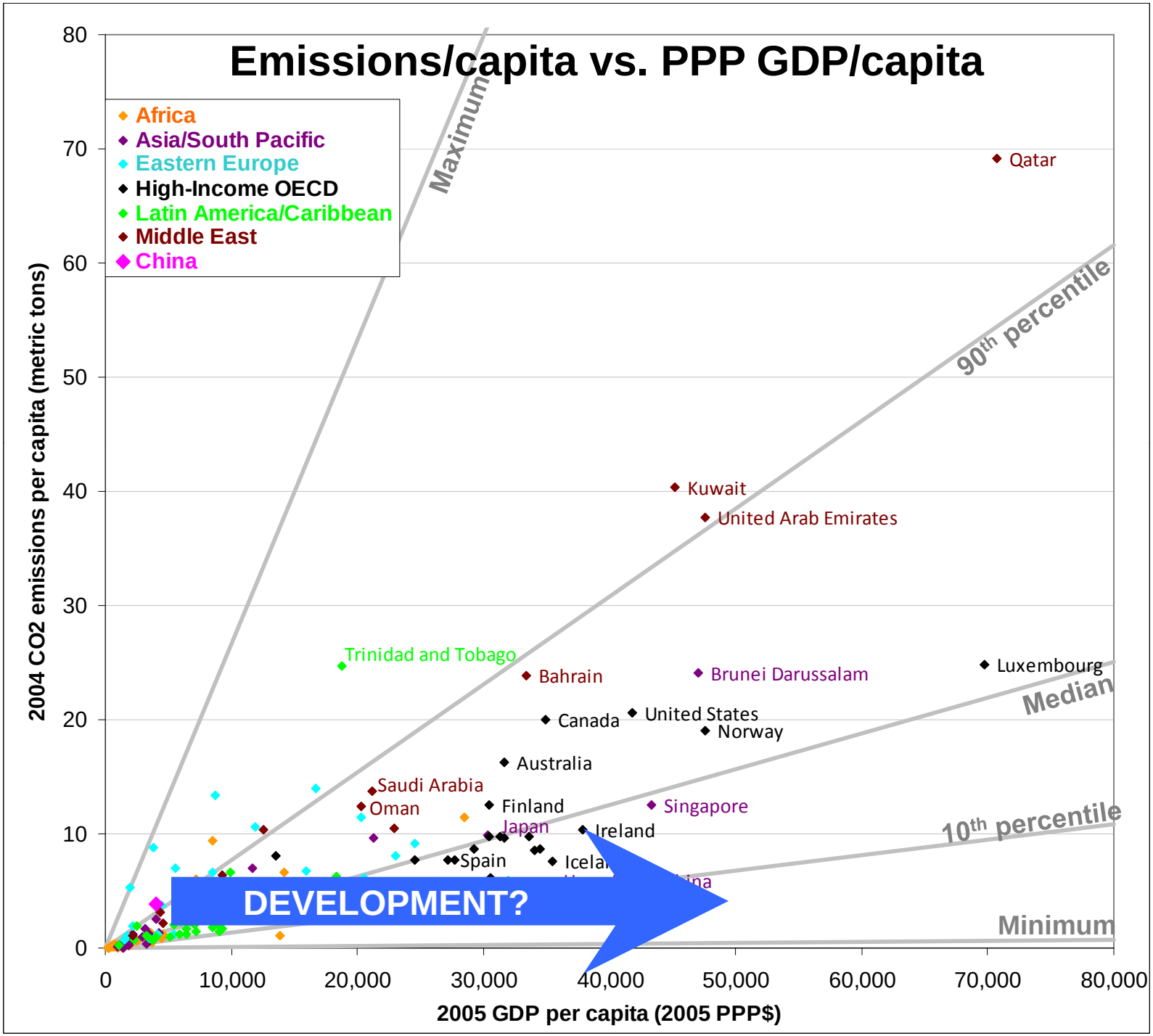
As countries develop, do they tend to maintain a constant emissions intensity?



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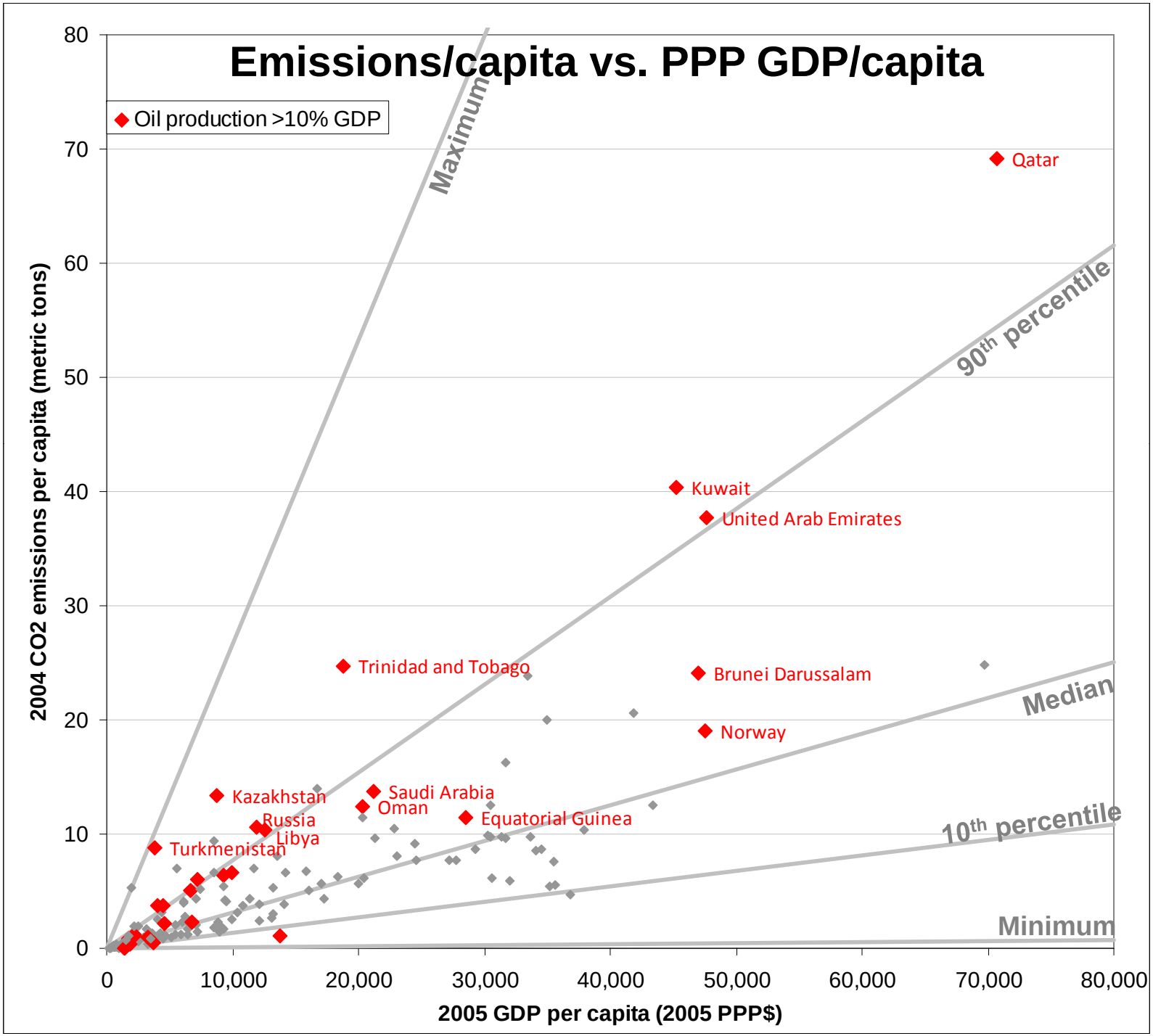
Oil production as a share of GDP



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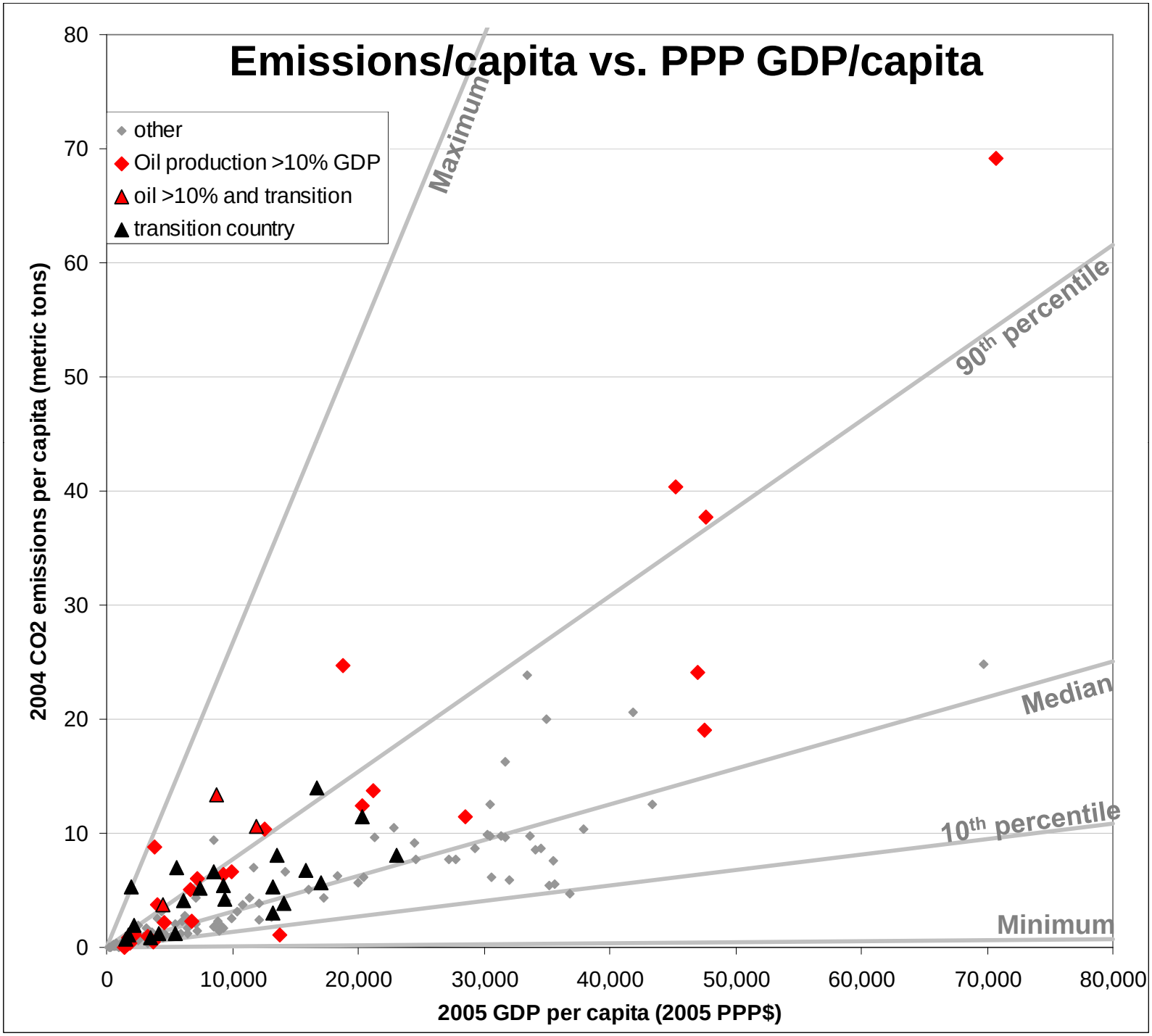
$80,000

Oil production as a share of GDP

and transition countries



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Scale:
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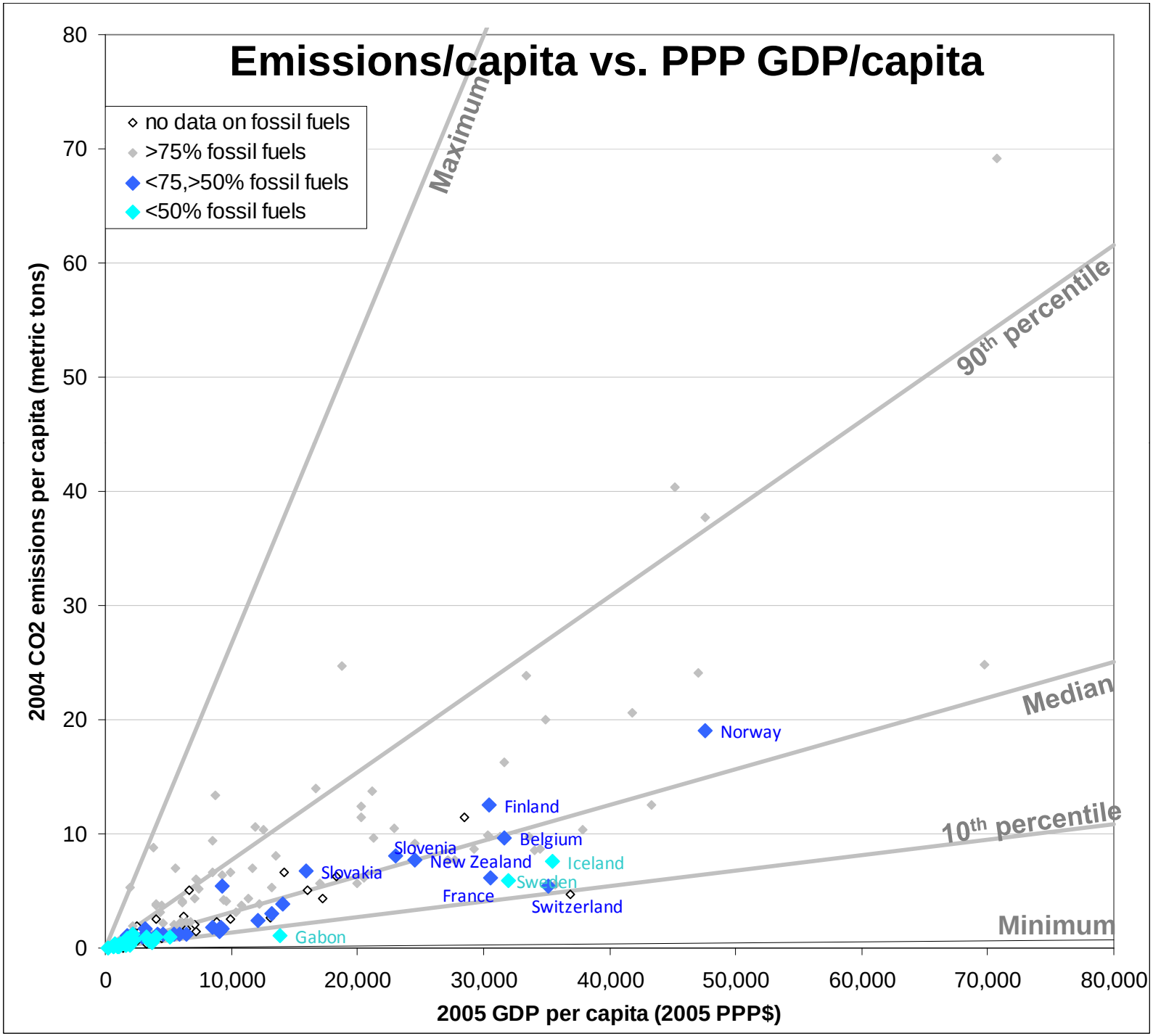
$80,000

Fossil fuels as a share of energy production



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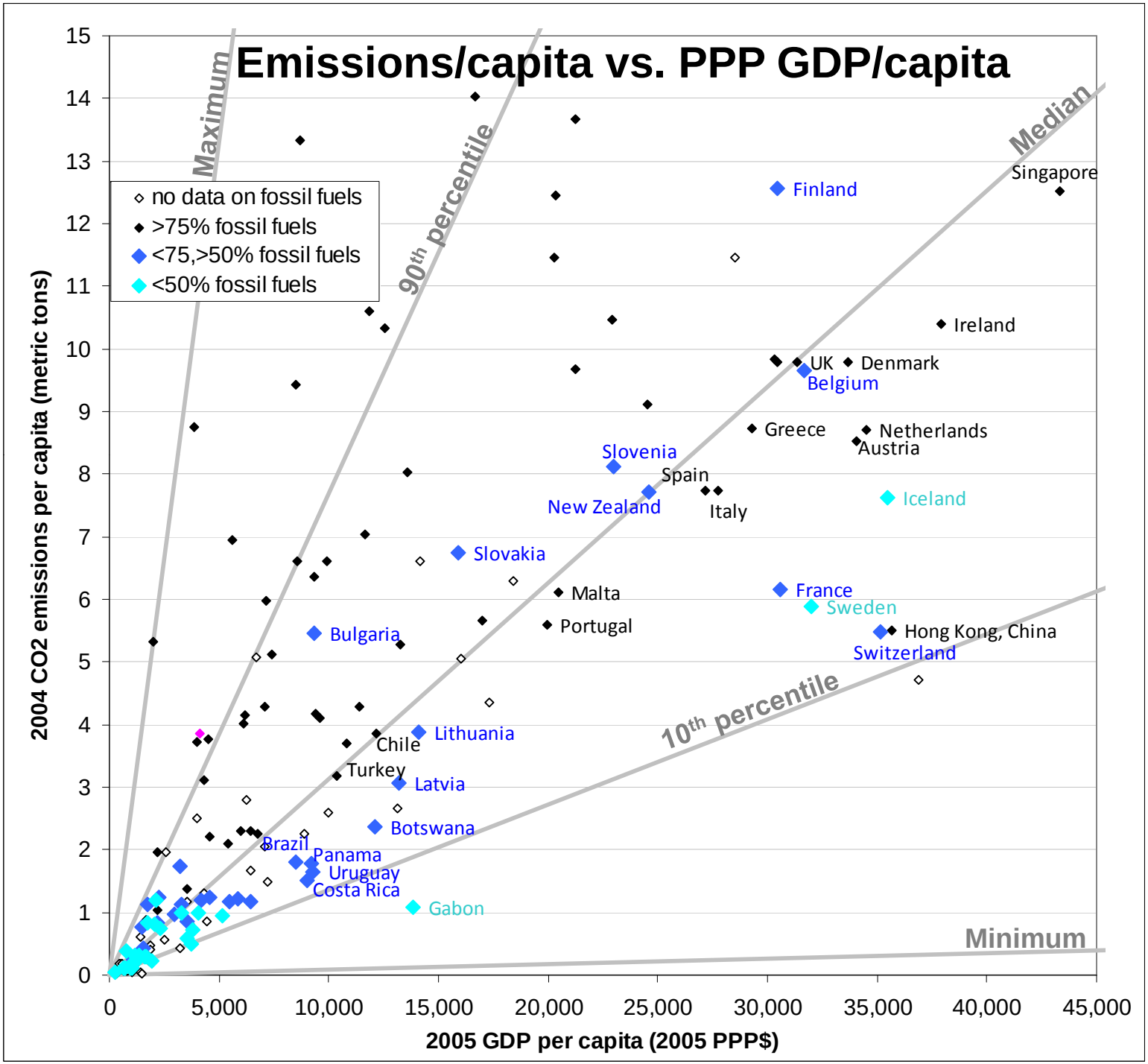
Scale:
15 tons by
$45,000

Low emissions intensity countries:

Few are high in fossil fuels as a share of energy production



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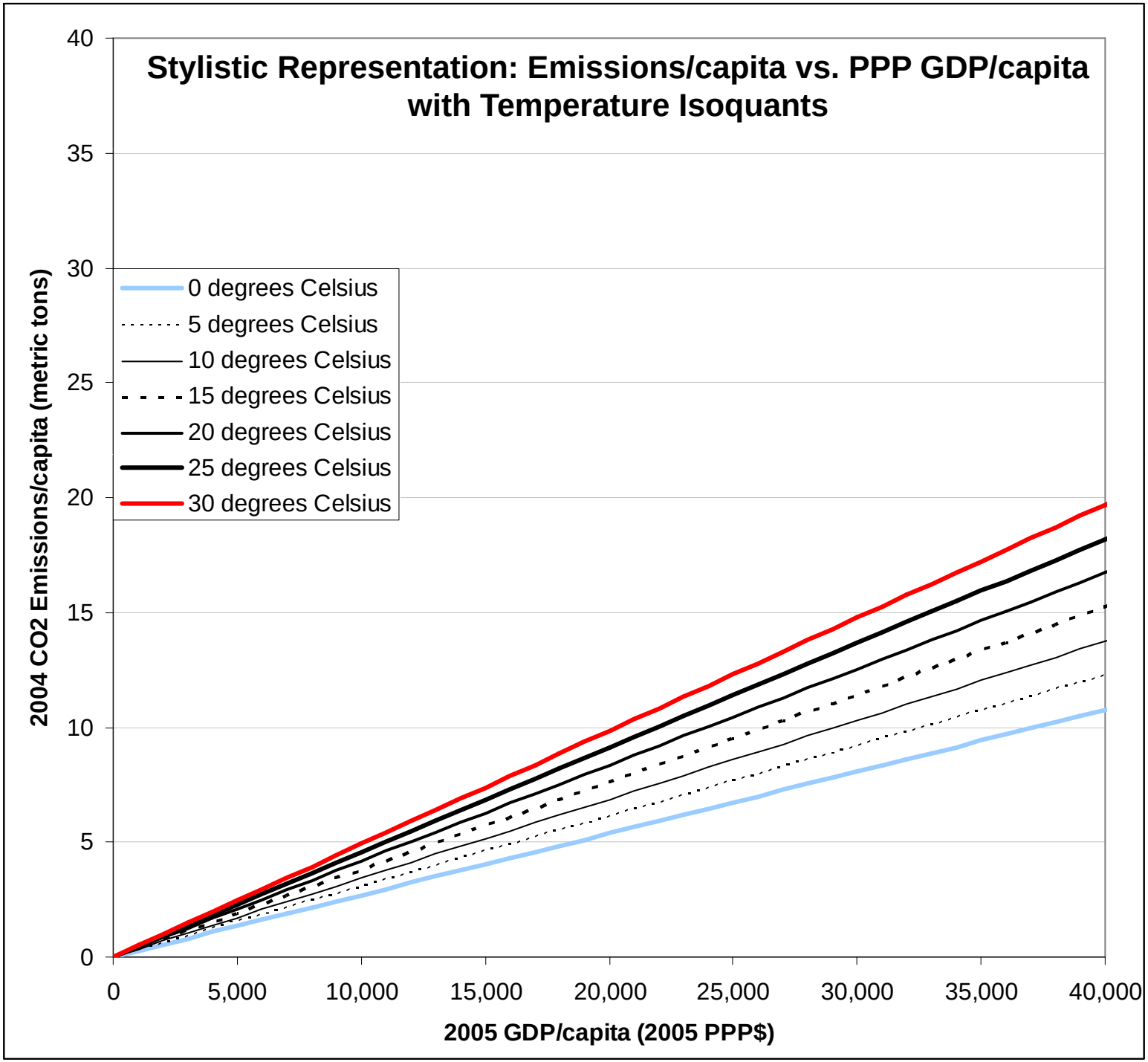
Scale:
40 tons by
$40,000

Higher temperature is associated with higher emissions across the full range of countries



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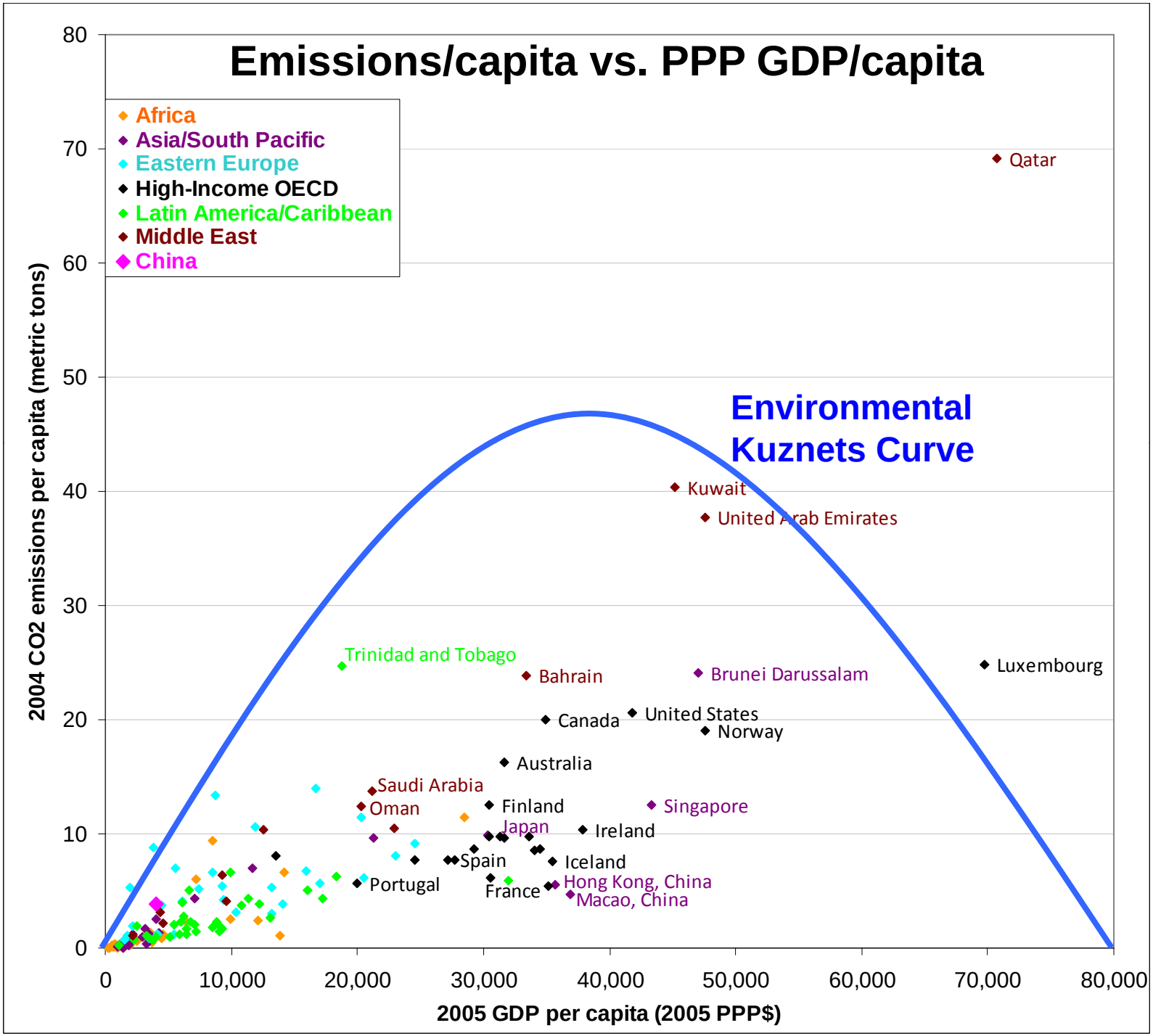
Scale:
80 tons by
$80,000

Is there any evidence for a EKC? Do emissions first grow with income, and then shrink after some threshold?



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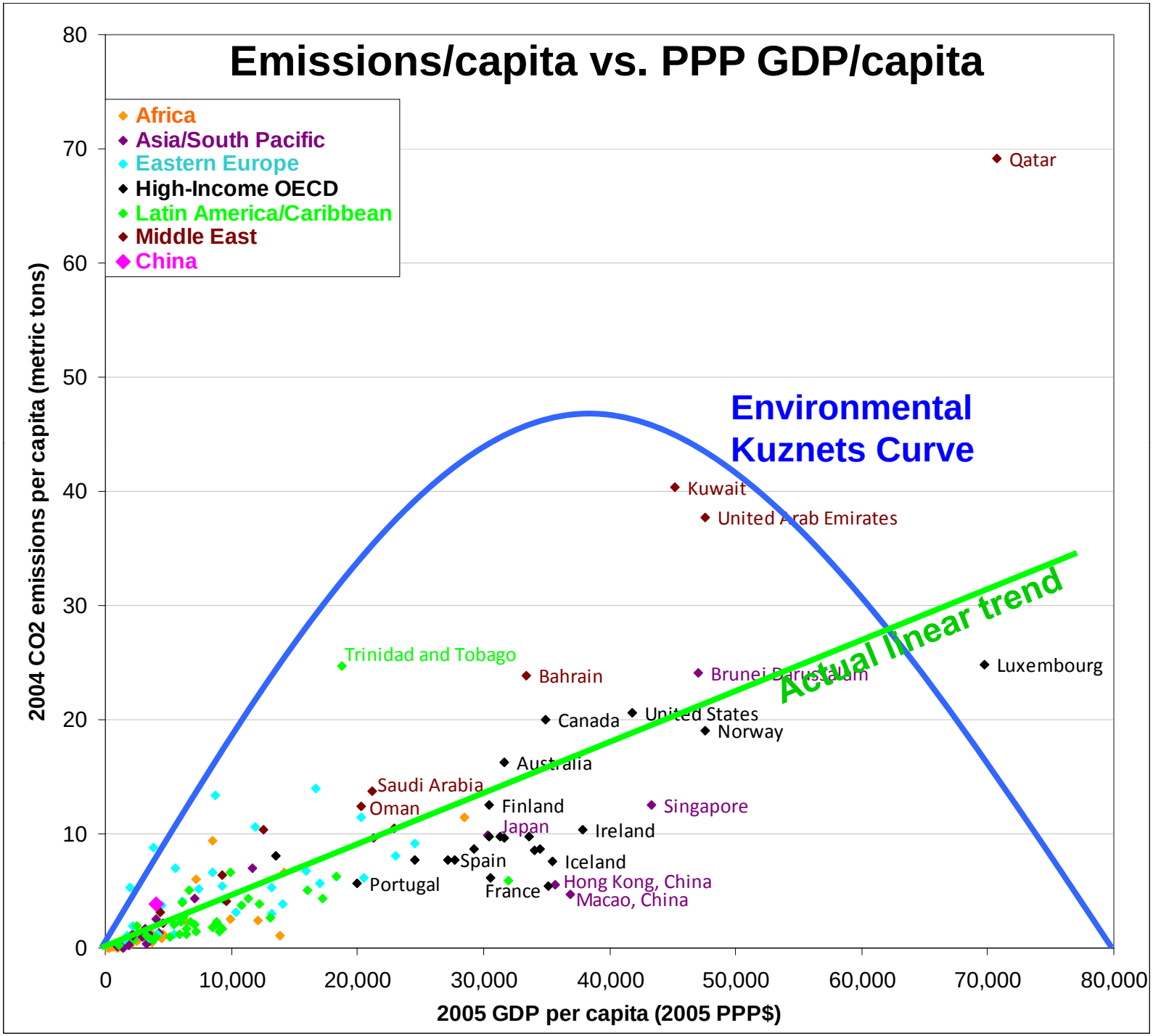

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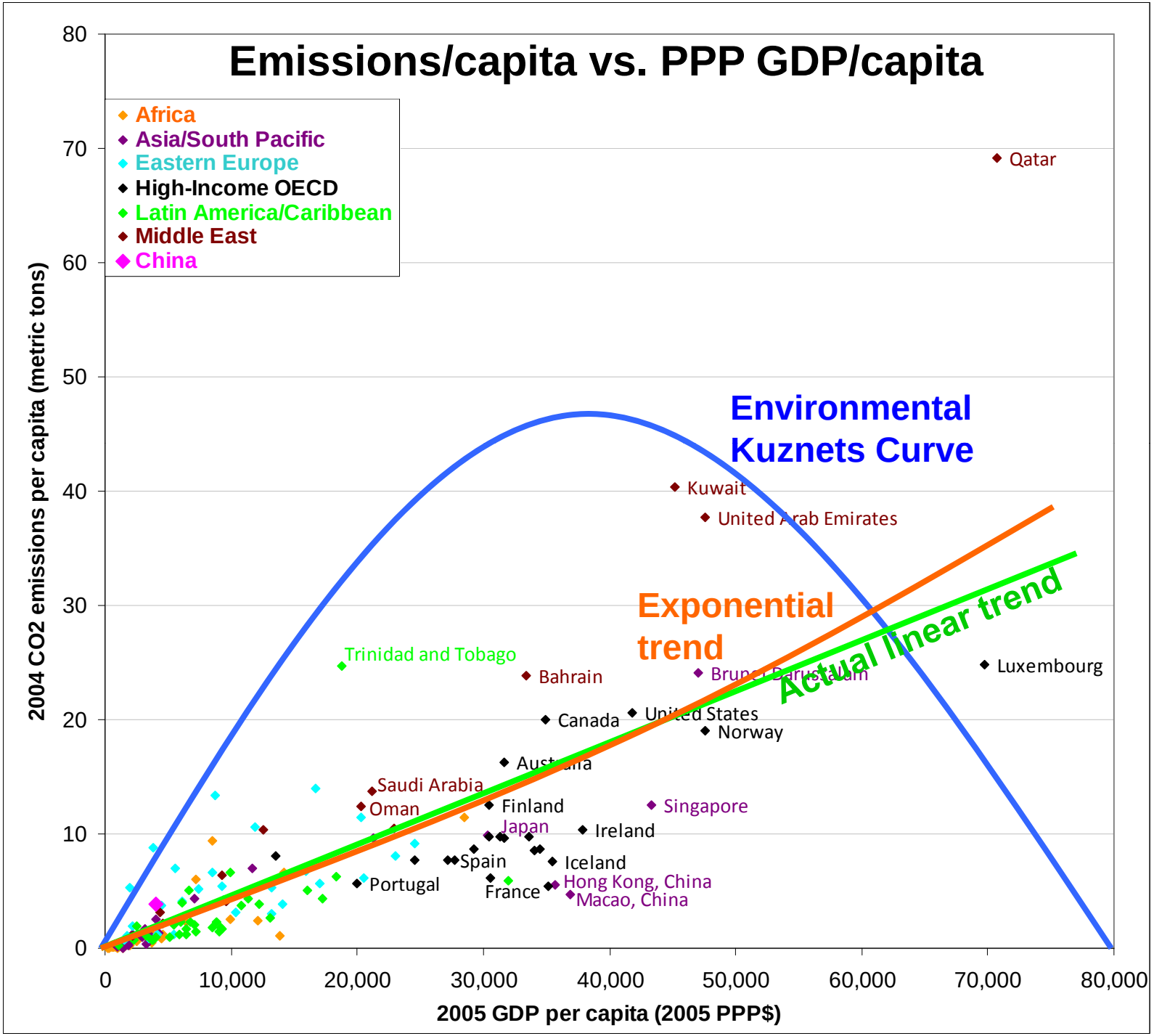
Scale:
80 tons by
$80,000

Across countries:

Emissions per capita increase at an increasing rate



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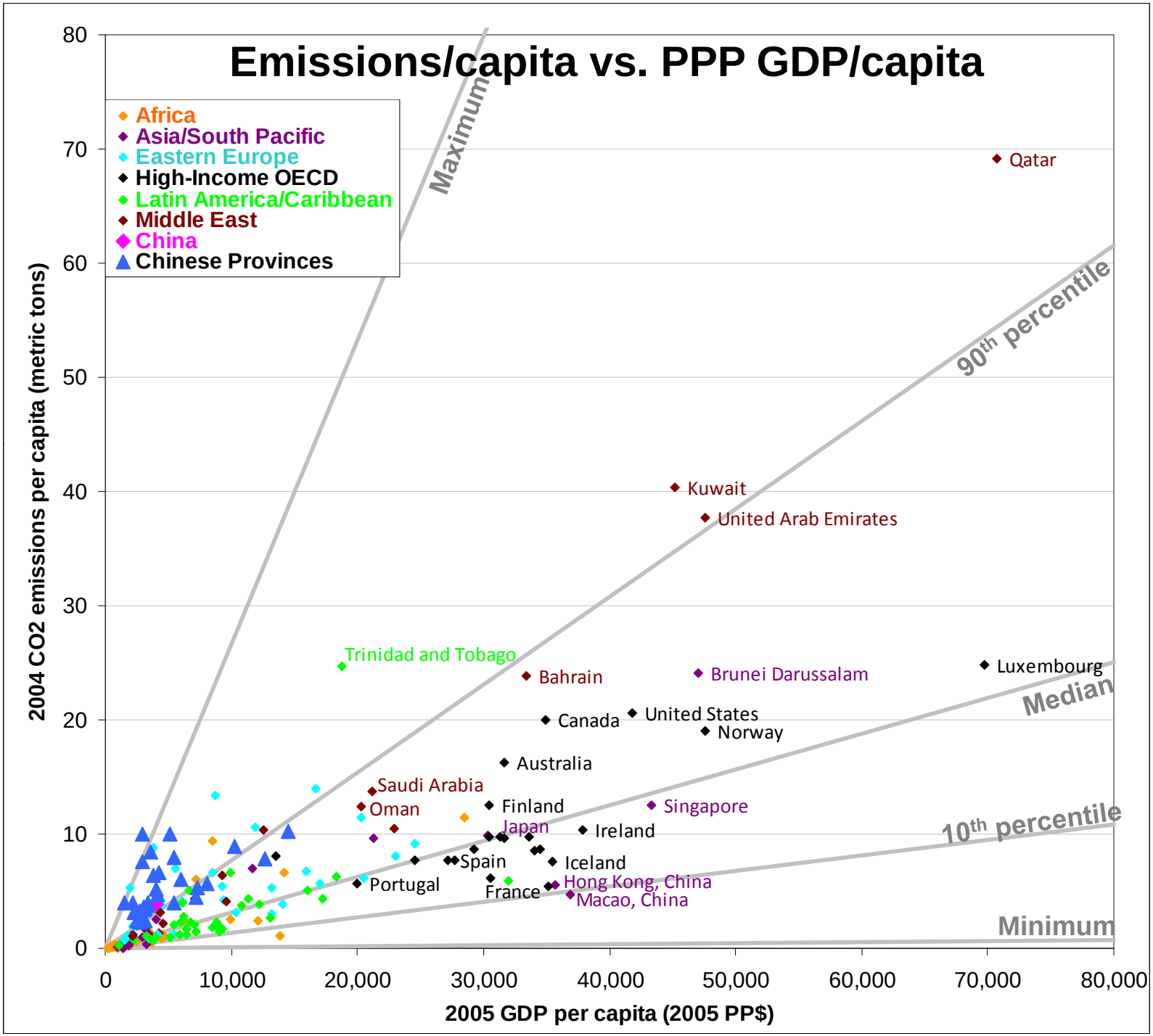
Scale:
80 tons by
$80,000

30 Chinese provinces:

How does China compare to the rest of the world?



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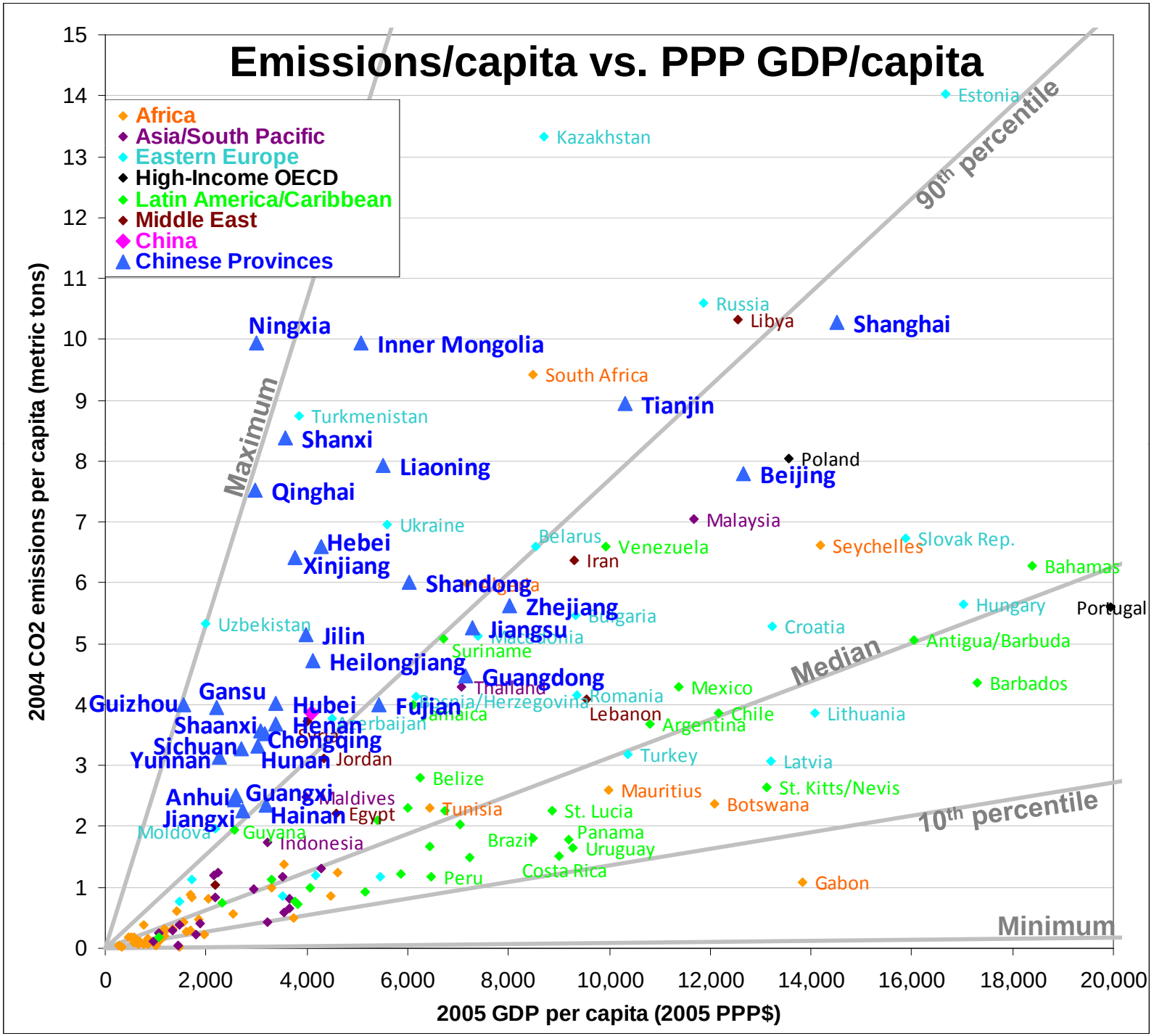
Scale:
15 tons by
$20,000

Many Chinese provinces are relatively emissions intensive



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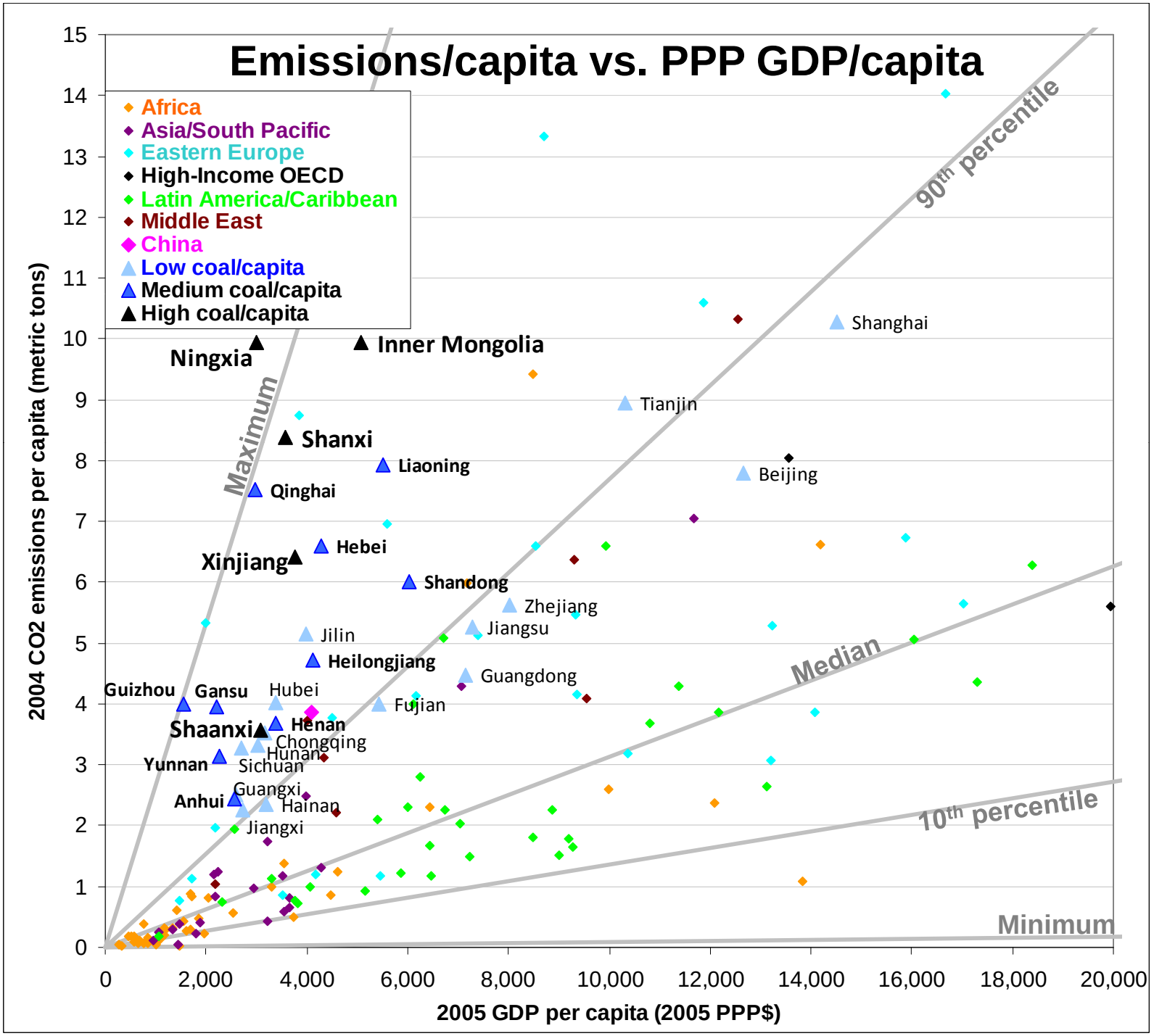
Scale:
15 tons by
$20,000

Provinces with higher coal reserves per capita tend to be more emissions intensive



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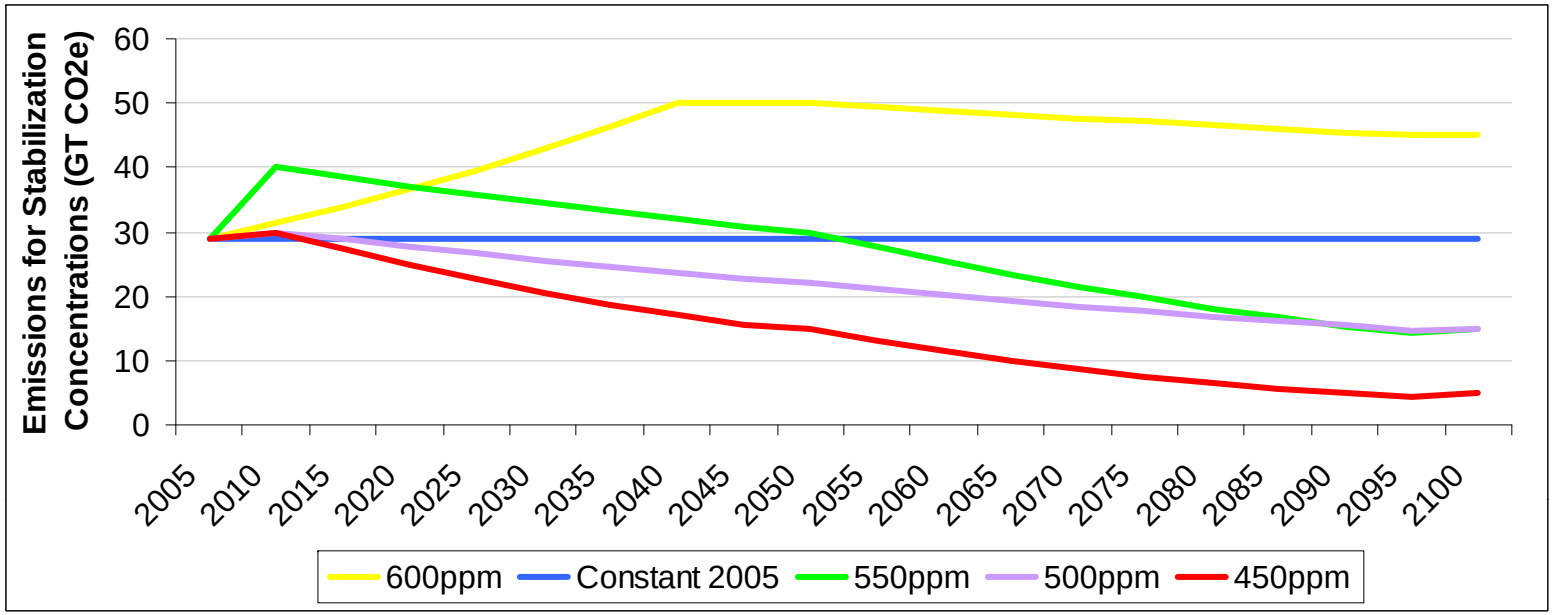
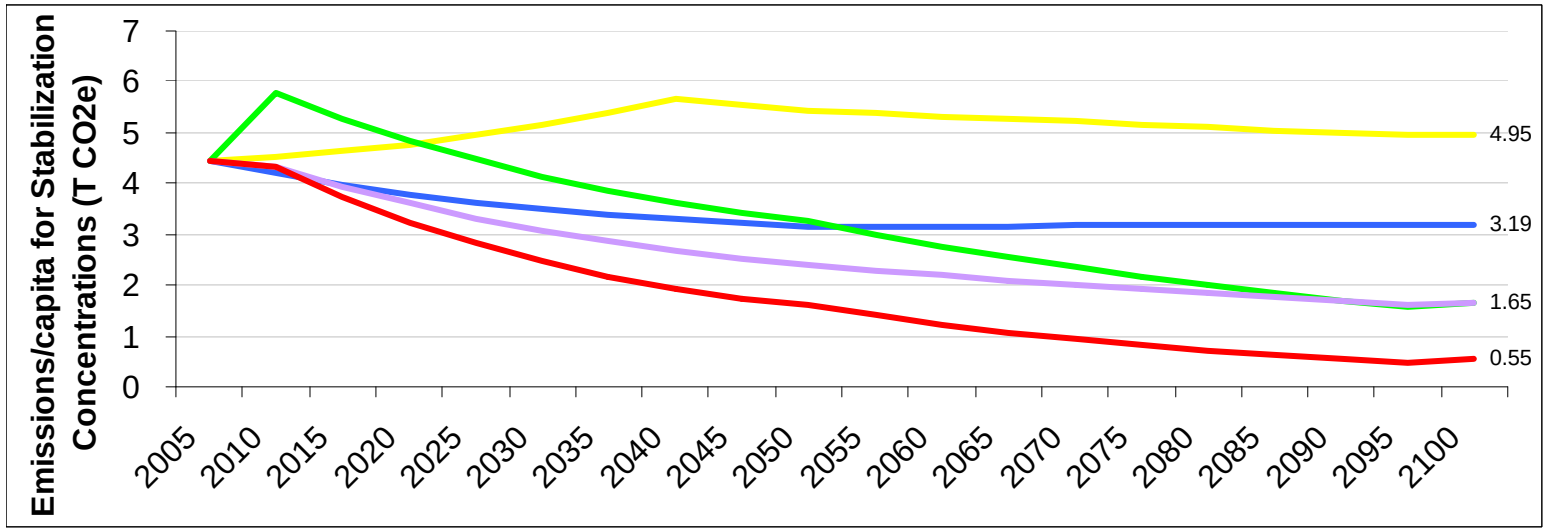
Stabilization Concentrations



What is needed to avoid climate catastrophe?



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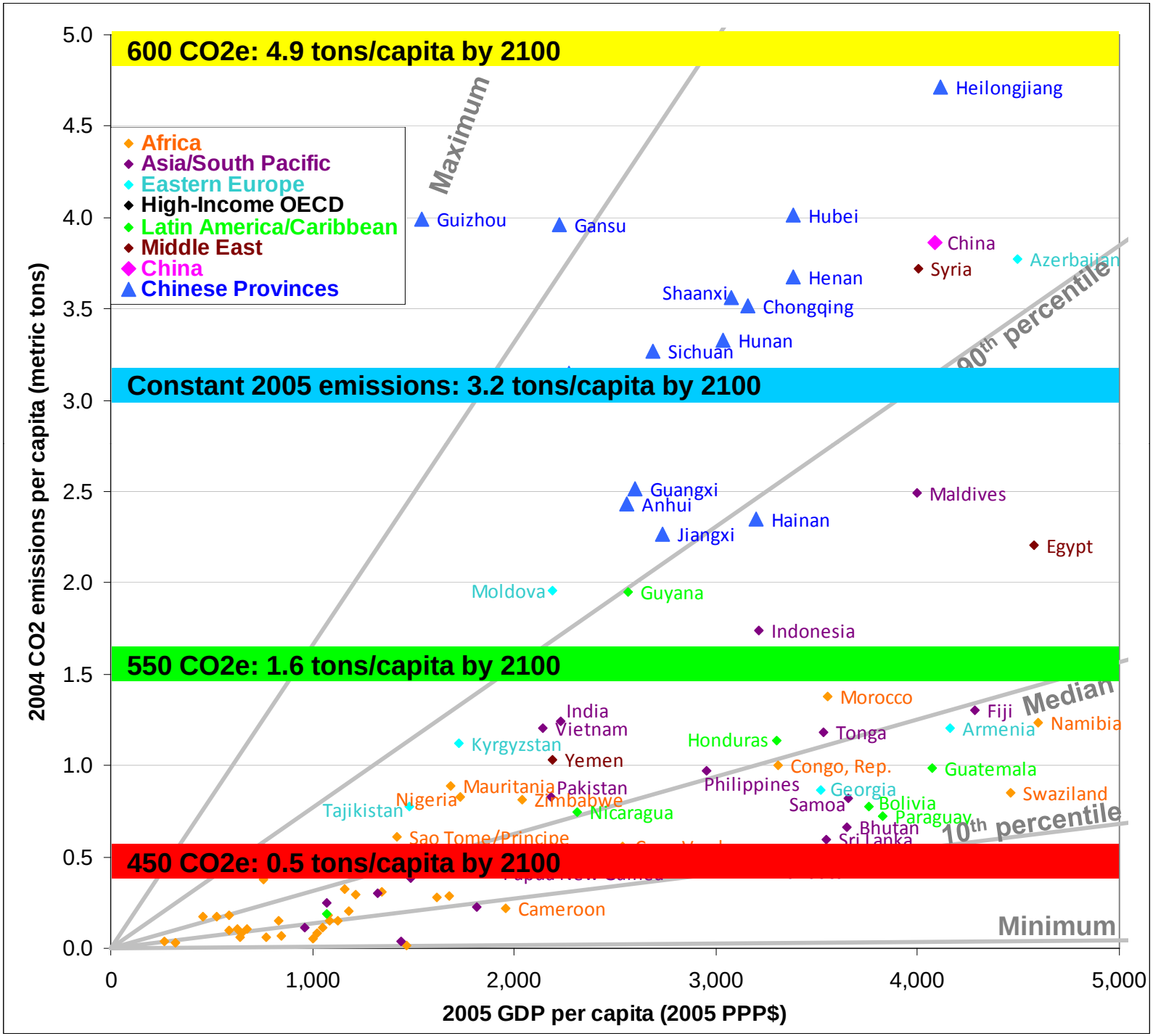
Scale:
5 tons by
$5,000

All stabilization trajectories require very low world per capita emissions



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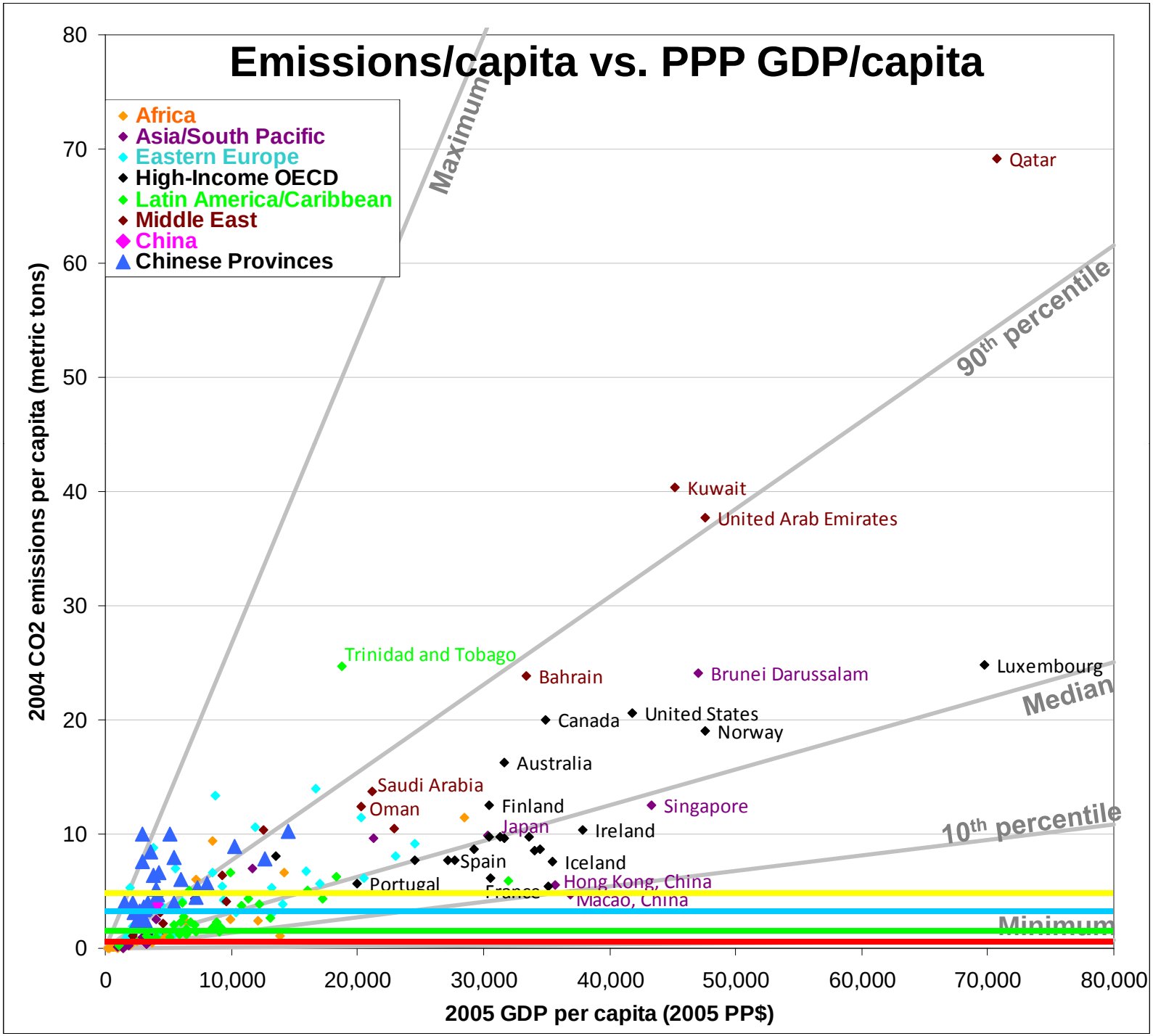
Scale:
80 tons by
$80,000

Emissions reductions cannot wait for new technology: the area under the curve (of emissions over time) is as important as the final emissions level



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China: Climate Change and Development

1. There are no examples of low emission, highly developed countries: global emissions reductions sufficient to stay below a 2ºC increase will not come from following anyone's example.

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Deciles by Emissions Intensity

There are no high income countries in the lowest decile by emissions intensity

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Deciles by Emissions Intensity

From the second lowest decile:

Switzerland stands out as an exceptional case

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2. There is no Environmental Kuznets Curve: as income grows, emissions/capita are growing at an increasing rate.

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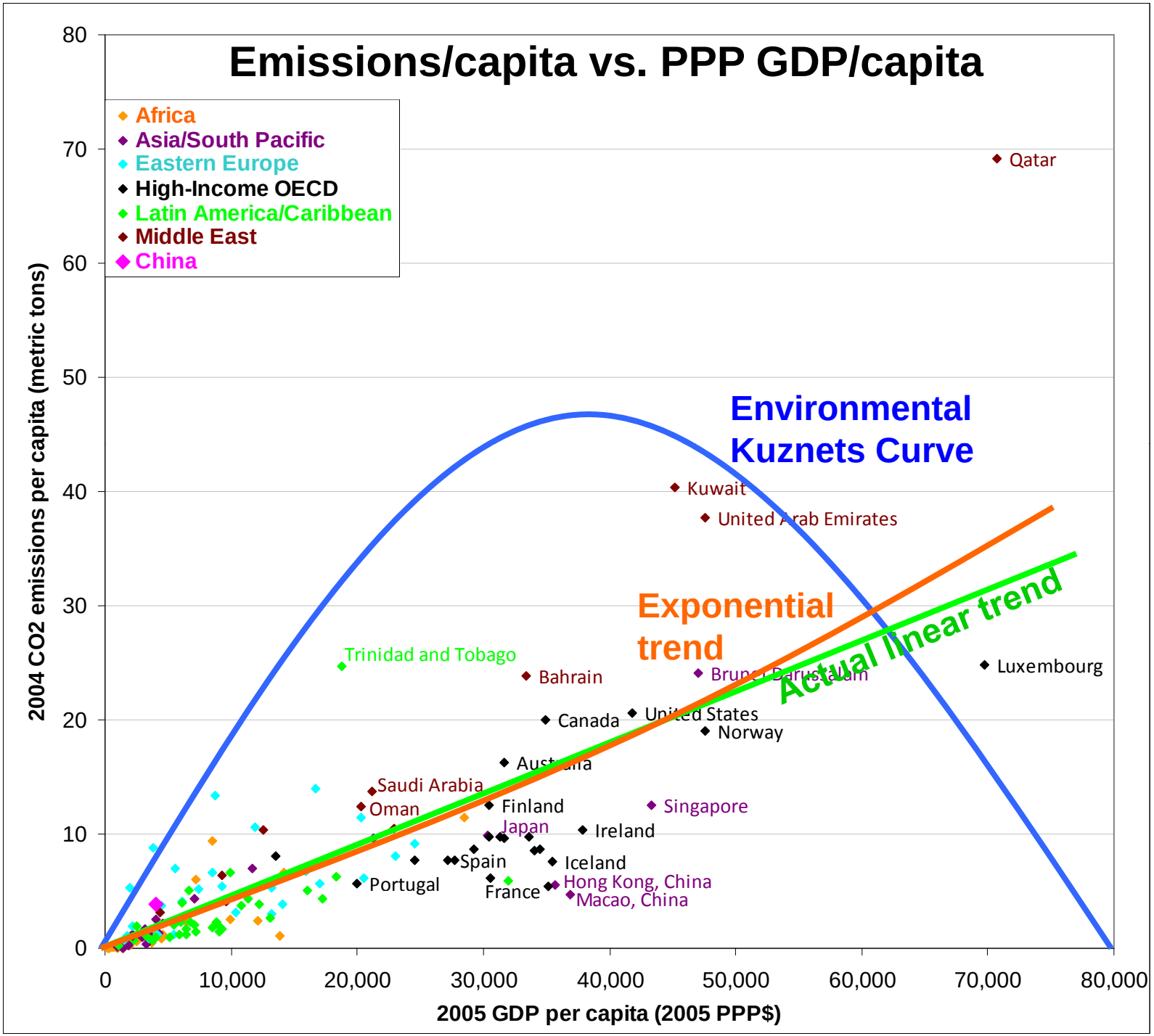

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3. China's emissions intensity is unusually high: the world cannot keep below a 2ºC increase unless China can reduce its emissions as its incomes grow.

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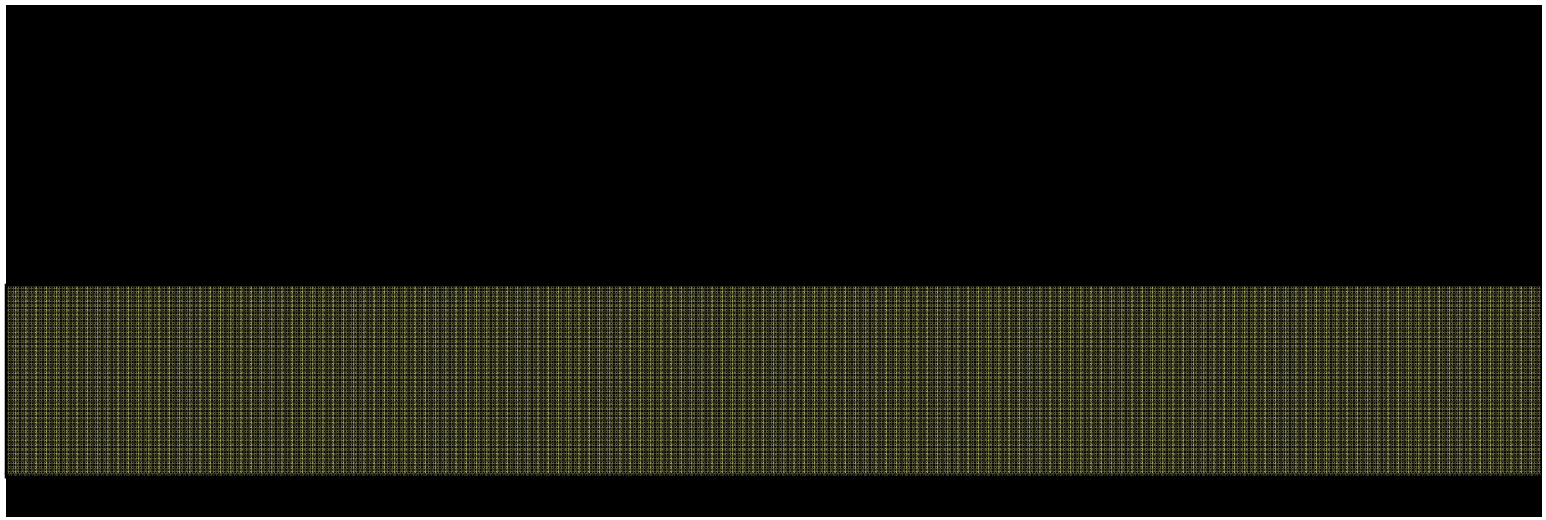
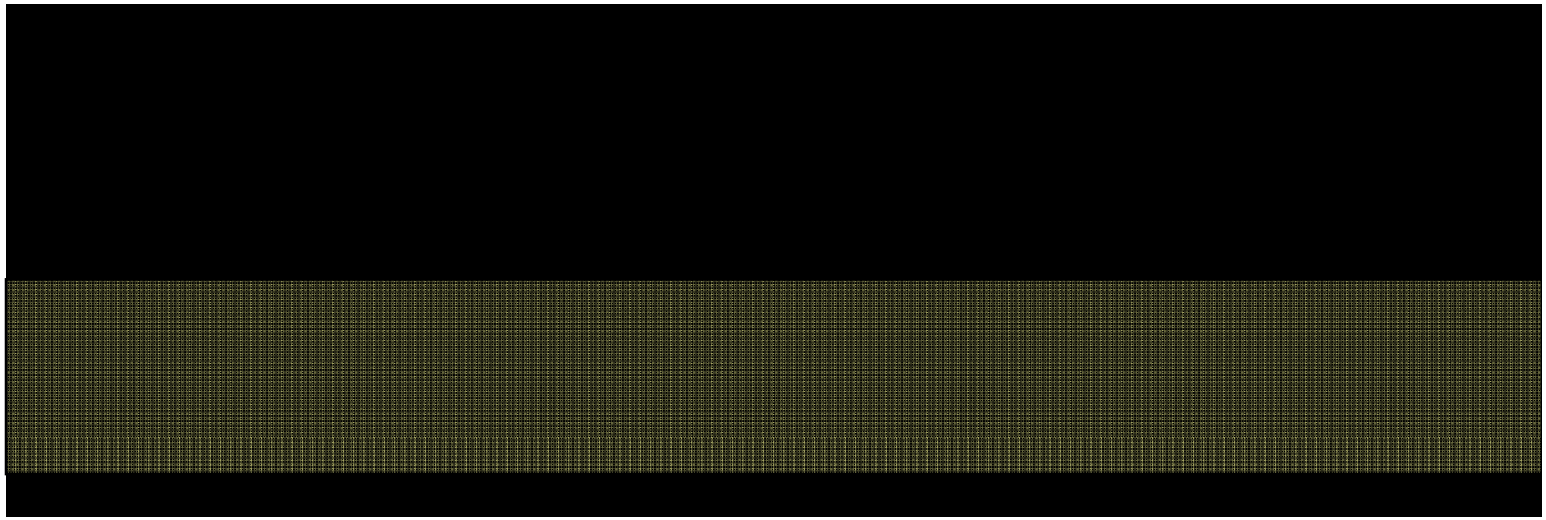
Deciles by Emissions per capita

By emissions per capita decile, China's life expectancy and literacy are slightly lower; GDP per capita is much lower than in comparable countries





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3. China's emissions intensity is unusually high: the world cannot keep below a 2ºC increase unless China can reduce its emissions as its incomes grow.
4. Everyone worldwide must lower emissions (or keep emissions low with development) to keep below a 2ºC increase – but not everyone must or should pay for these reductions equally.

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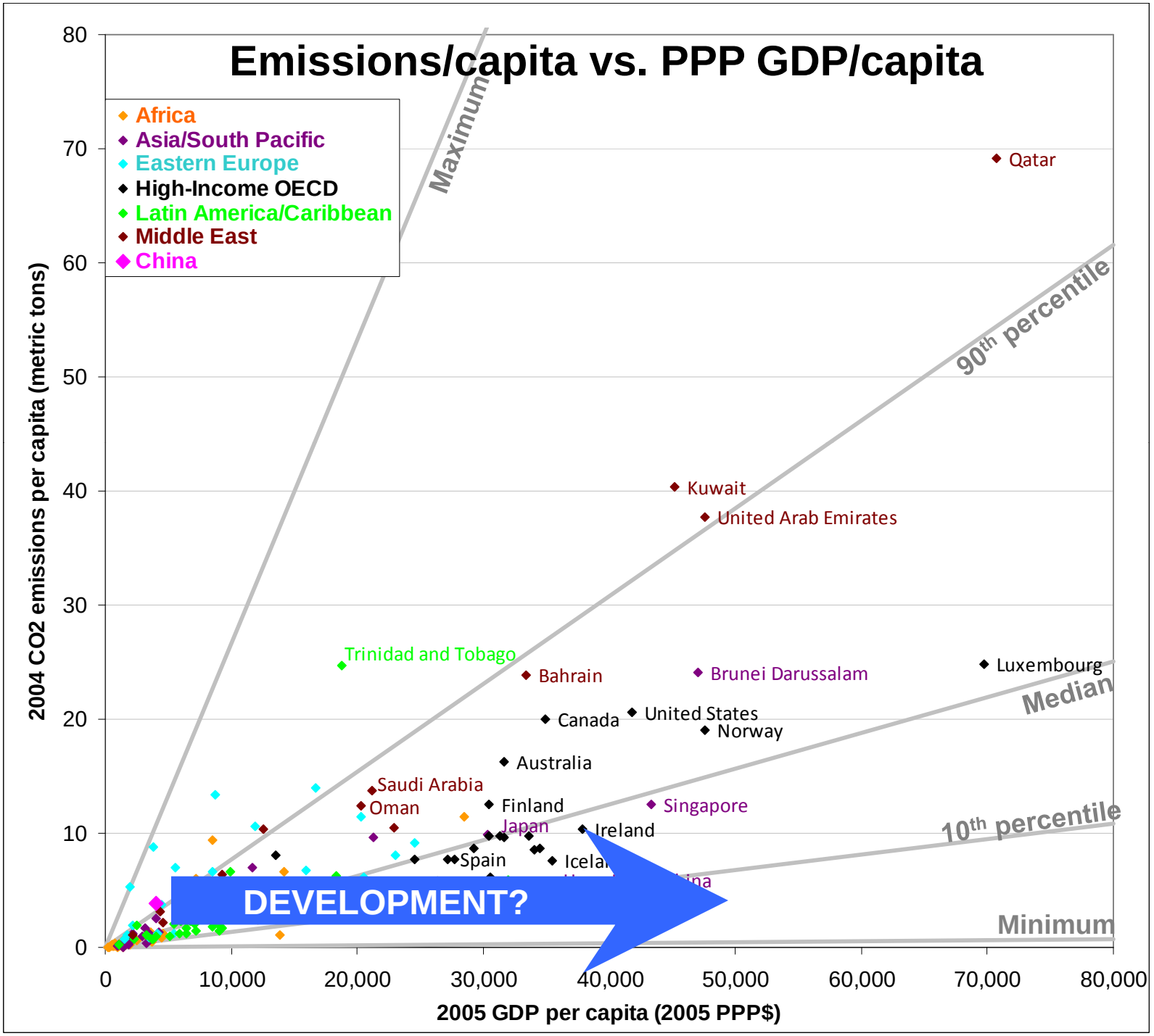

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Qinghai
Henan
Jiangsu
Shaanxi
Shanghai
Tibet
Sichuan
Anhui
Hubei
Zhejiang
Chongqing
Jiangxi
Hunan
Guizhou
Fujian
Yunnan
Guangxi
Taiwan
Guangdong
Hong Kong
Macao
Hainan