We take advantage of those correlations and assume that the system is ergodic, i.e., that the process over time and over the statistical ensemble is the same. In other words, we assume that these correlations also hold for each country individually and apply the estimated parameters to each country.

The filled symbols highlight the same countries as in Fig. 1. The solid lines correspond to the function $d_i(t) = a_i + b_i \hat{e}(t)$. In Fig. 2 we display the collapse of the past HDI as obtained from the logistic regression described in the text for six countries that have had high HDIs in the past. The model predicts a more rapid decline than has occurred for most countries. The HDI threshold of 0.8 and 0.9 characteristic of a developed world is contradicted by these results and the HDI threshold of 0.8 above which 90% of the world's population living in countries with an HDI above 0.8. When assessed on a per capita basis, emissions range between 75 and 62 kg CO2 in 2050.

A fair approach implies that an hypothetical developing country should not be forced to cut its emissions of CO2 until it reaches a particular threshold of human development. In practice, the development path may be cut by current developed countries that are able to be possible for a developing country to proceed with their development goals and at the same time to reduce their CO2 emissions. After basic development needs are fulfilled, countries are no longer to be developing and targeted to the Redundancy domain where they engage in CO2 reduction rates proportional to their HDI in order to preserve a global warming limit of 2°C by 2050. The no-show doses need to be avoided by future developed countries and quickly abandoned by current ones on the basis that resulting emissions would be largely incompatible with future climate policies. A generalized convergence of countries towards the Redundancy domain should be operated.

To formalize this, we propose that a developed country reduces its per capita emissions to an arbitrary amount $r_{i,t}$ according to $d_i(t) = \{1-(1-r_{i,t}) \} d_i(t-1)$, where $d_i(t)$ is the development threshold for a hypothetical country which determines how short the reduction rate increases with increasing HDI. Based on the above discussed development threshold $d_i(t)$ we estimate that $d_i(t) < 3.5$ (as a lower bound) would lead to global cumulative emissions ranging between 650 and 1,000 Gt of CO2 by 2050 if reduction starts in 2015 (assuming the same inactivity as in DAU). This amount is within the range of allowed cumulative CO2 emissions that provide between 80% and 66% change of keeping global temperatures below 2°C increase.

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