CHAPTER 41: ALTRUISM FOR THE SAKE OF FUTURE GENERATIONS


6. Ellis, E. C., Klein Goldewijk, K., Siebert, S., Lightman, D., & Raman-kutty, N. (2010). Anthropogenic transformation of the biomes, 1700 to 2000. Global Ecology and Biogeography, 19(5), 589–606; Taylor, L., The Healing Power of Rainforest Herbs: A Guide to Understanding and Using Herbal Medicinals, Square One Publishers, 2004. As much as 90% of Western Africa’s coastal rainforest has disappeared since 1900. In Southern Asia, around 88% of the tropical rain forest has been lost. A large part of the remainder of the world’s tropical rainforest is located in the Amazon basin, covering an area of around 4 million km². In Central America, two thirds of the low-altitude tropical rainforest has been transformed into farmland since 1950, and 40% of all forestry has been lost over the course of the last forty years. Madagascar has seen the destruction of 90% of its eastern tropical rainforest. For all scientific references, see the Wikipedia article on “Deforestation.”

7. Some scientists place the start of the Anthropocene further back, in the eighteenth century. Most environmentalists, however, consider
the “Great Acceleration” of 1950 as the beginning of this era, by virtue of the wide-ranging ecological shifts that began happening then.


9. Deforestation and resulting forest fires represent as much as 20% at least of man-made CO₂ emissions.


16. Aerosol particles in the atmosphere are responsible for around 800,000 premature deaths each year worldwide. The quantity of aerosols is significant enough for them to feature among the “planetary boundaries,” but the safety threshold has not yet been determined in sufficiently accurate quantitative terms.


18. According to the “2014 Living Planet Report” issued by the WWF.


22. According to an evaluation by the Millennium Ecosystem Assessment (MEA), a United Nations initiative.


25. This global warming, which reflects the general changes in climate over the course of the last century, must not be confused with variable meteorological patterns, which—though sometimes extreme—come about whatever the circumstances in some places. The winter of 2010, for example, was particularly cold in Scandinavia, Russia, and the east coast of the United States, but it was hotter than normal in the rest of the world. In the Arctic and in Canada, temperatures were 4°C above average.


31. I am grateful to Clare Palmer, professor at the University of Texas, for these clarifications and references. She is the author of several books and coeditor of a five-volume collection on environmental philosophy. Palmer, C., & Baird, Callicott J., *Environmental Philosophy*, Routledge, 2005.


45. Study carried out by the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD), an organization founded by the United Nations and the World Bank.
46. These five boundaries concern: soil usage, levels of nitrogen and phosphorous released into the biosphere, loss of biodiversity, chemical pollution, and climate change.


58. Ray Chambers, via personal communication.


60. WBGU (2011), A vision for a renewable energy future by 2050.


62. See in particular the following reports McKinsey CO₂ Abatement: Exploring Options for Oil and Natural Gas Companies; Carbon &


67. Including Fredrick Robelius, a member of the Swedish team headed up by Kjell Aleklett (Global Energy System in Uppsala), who looked into the world’s entire oil reserves; the APSO (Association for the Study of Peak Oil and Gas), also presided over by Professor Aleklett; the German Central Bank and Merrill Lynch & Co.; the “Sustainable Energy and Security” report published by the insurance market Lloyd’s; “The Oil Crunch,” a report written by several business heads assembled by Richard Branson; and the UK Industry Task Force on Peak Oil and Energy Security. All cited in Wijkman, A., & Rockström, J., *Bankrupting Nature: Denying Our Planetary Boundaries*, Routledge, 2013, p. 69.


80. There are about twenty species of rice numbering thousands of varieties often classified according to the speed with which they ripen (precocity) and the length of their vegetative cycle (which ranges from ninety to over two hundred and ten days).
89. Ibid., p. 79, 105.
97. “Harmony with Nature” report, presented by the Secretary General of the United Nations on August 19, 2010. This aspect of the report is