the weekly anthropocene

dispatches from the wild, weird world of humanity and its biosphere

By Sam Matey, January 1 2020

Goldman Sachs. On December 16, 2019, titanic investment bank Goldman Sachs announced a massive new sustainable finance initiative-and pledged to refuse to fund some of the nastiest types of fossil fuel projects. Goldman Sachs pledged to invest $750 billion-*three quarters of a trillion dollars*- by 2030 in projects in nine areas of sustainable development (five of which are grouped under the heading "Climate Transition"), including clean energy, waste reduction, sustainable agriculture, as well as other praiseworthy initiatives such as accessible education and healthcare. (Picture from the Goldman Sachs website, see link below). To give context on just how much money this is, Jeff Bezos, the richest man in the world, is worth about $115.9 billion-so that's over six Jeff Bezoses' worth. This cash infusion will have ripple effects worldwide.

In another, equally spectacular, step, the bank also updated its financing guidelines to state that they will now absolutely refuse to fund any mountaintop removal mining, new thermal coal mining, all new coal-fired power plants that do not use carbon capture and storage technology (i.e. all but one or two of them), or any oil exploration or drilling that takes place in the Arctic. That still leaves funding open for fracking, tar sands, oil drilling elsewhere, and mining for metallurgical coal (the kind used in the steelmaking process, while thermal coal is the kind burned for electricity), but it's still a huge step forward, a level of climate action unprecedented in American high finance. Goldman Sachs eschewing fossil fuels to this extent, combined with the incredible climate-action financing, is a really, really big deal. Remember, this isn't the European Investment Bank or a similar publicly influenced institution, this is *Goldman Sachs*, a for-profit company with a long history of questionably ethical financial dealings. If they're taking this level of committed action on climate change, they're unlikely to be doing it out of the goodness of their heart, but as a shrewd business move to get out of the dying fossil fuel industry and become a leader in the opportunities presented by the transition to a sustainable economy. This is the first step to starving the beast that is the fossil fuel industry of the money that is its lifeblood. Let's hope that this becomes a trend throughout global finance! For *The Atlantic's* take on this awesome development and its implications, see tinyurl.com/tydc8zt. For the bank's own reports on their new investment and funding plans, see tinyurl.com/vcst9t4 and tinyurl.com/r4tth9r.

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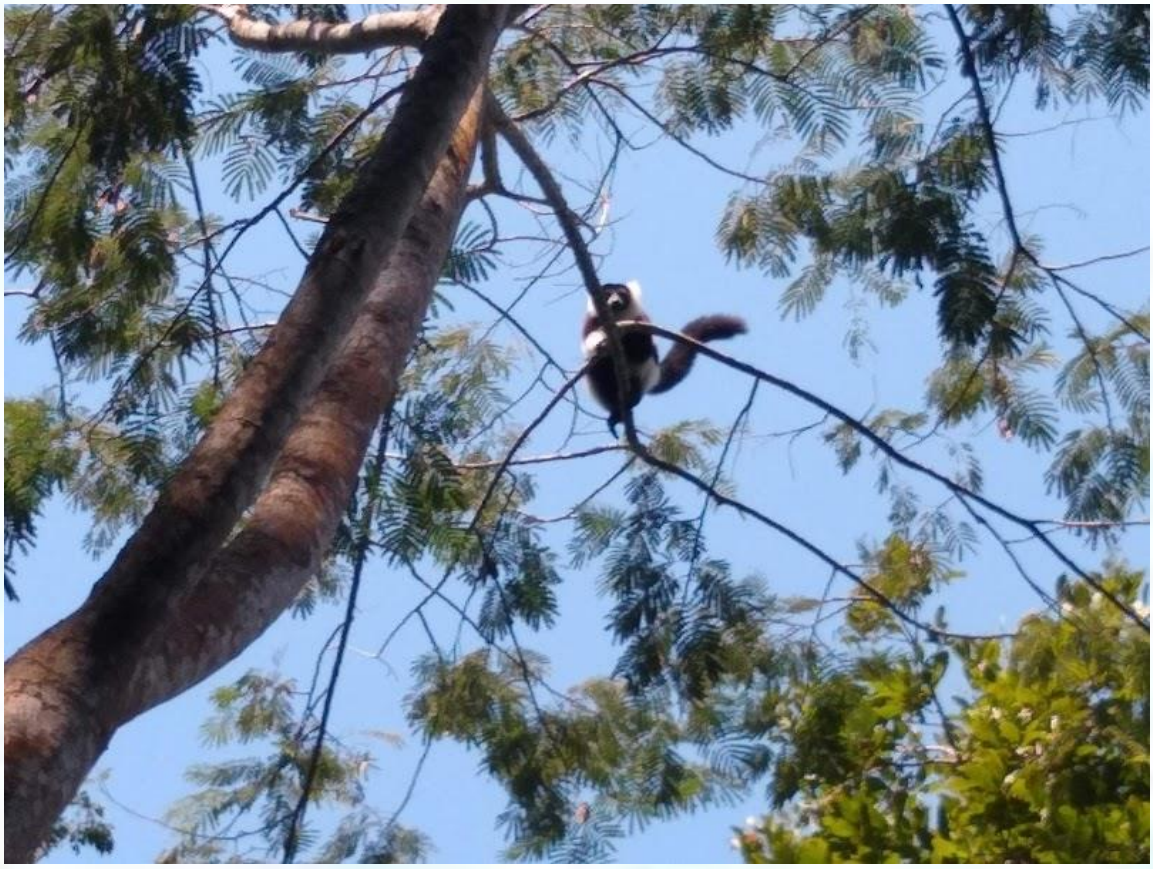
Madagascar.



Madagascar's eastern rainforests are an incredibly unique, complex and beautiful ecosystem, home to an astonishing plethora of endemic lemur, chameleon, tenrec, and bird species. Among their most notable inhabitants are the ruffed lemurs, *Varecia variegata* and *Varecia rubra*, adorably fluffy prosimians that serve as critical seed dispersers for the forest's flowering trees. (Pictured above: a black and white ruffed lemur (*V. variegata*) photographed in the canopy of Tsitola Mountain by this writer, September 2019).

Now, a comprehensive new study published in *Nature Climate Change* examines the future for this ecosystem, with a special focus on ruffed lemur habitat. (As a side note, among the coauthors of this new study are Doctors Edward E. Louis and Steig Johnson of the Madagascar Biodiversity Partnership, who this writer had the privilege of meeting in the field in Madagascar while working for MBP.) The two greatest threats to Madagascar's eastern rainforests are deforestation and climate change, and the research team in the new study analyzed 88 years' worth of data to model the possible futures of the land of ruffed lemurs. Their findings were extremely disturbing. If current levels of deforestation continue, ruffed lemur habitat will likely decline by 81% by 2080. However, even if protected areas hold and avoid further deforestation, a climate change "worst case scenario" could dry out the rainforests to the extent that ruffed lemur habitat declines 62% by 2080. It appears that the future of Madagascar's irreplaceable wonders will depend both on the incredible work being done on the ground by Malagasy and international conservationists (see madagascarpartnership.org/)-but also on how the world responds to climate change. For *National Geographic*'s take, see tinyurl.com/ujdanpm. For the full study, see www.nature.com/articles/s41558-019-0647-x.

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Green New Deals. Dr. Mark Z. Jacobson of Stanford and his team are some of the world's leading energy researchers, known for their in-depth analyses of how specific jurisdictions, from US states to countries, can power themselves with 100% renewable energy by 2050. Now, the team has a new study that outlines "Green New Deal" transitions to wind, water, and solar energy for 143 countries (representing 99.7% of humanity's CO_2 emissions) by 2050. The researchers calculated that all of 2050's projected energy demand for humanity could be met with wind, water, and solar ("WWS") power, and that storage systems such as pumped hydro and grid-level batteries would be able to prevent any blackouts. This can be accomplished on a footprint of just 0.17% of Earth's land (rising to 0.65% if you count the space between wind turbines, although that area could also be used as farmland). Notably, a renewables-only world energy system would be also able to meet the humanity's energy demands with less actual energy, as, among other reasons, it won't need the considerable energy expended in mining fossil fuels. They further calculated that this "WWS" scenario would create 28.6 million more full-time jobs than a business-as-usual energy scenario, and lead to a reduction in private energy costs of 61%, from $17.7 to $6.8 trillion per year. If the social costs of fossil fuel energy (such as health damage from soot and smog and damage from climate change) the WWS scenario will be 91% cheaper than a business-as-usual scenario. The researchers also note that supplying renewable energy to the world is possible using technologies that already exist, without counting in any possible advances that might occur before 2050. (They do note that one sector that may need a breakthrough or two, though, is heavy aircraft, which as of now is still reliant on jet fuel). Finally, the researchers note that their energy source breakdown of a renewable energy-powered world by 2050 (see infographic above) is just one of many possible routes to 100% renewable energy. If you're interested in seeing what the renewable future could look like where you live, check out Jacobson's team's spectacular interactive map at thesolutionsproject.org/why-clean-energy/! For more, see tinyurl.com/v6t5dv3 and tinyurl.com/qmpvrbx. For the full study, see tinyurl.com/v5a9rws.