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Von: post@manfred-brugger.de
Gesendet: Sonntag, 15. Februar 2026 16:01
An: 'madani@unu.edu'
Betreff: Water insolvency

Dear Mr. Madani.

I became aware of your publication on water insolvency through the media and the UN website. Your aim is to draw attention to the overuse of water resources and to the fact that many regions are “living beyond their hydrological means.”
I think this approach of using insolvency or bankruptcy is very effective in principle. It has also been very well received in the media and by the public, although I suspect that many people do not really understand it.
What I find lacking, however, is the question of why and how this is the case.
OK, you are looking exclusively at the use of water and describing these conditions.

On the other hand, however, there is the global water cycle, which ensures that water is transported from the sea to the mainland, filling rivers and lakes and enriching the groundwater. This engine is currently sputtering, and it is clear that the climate system and climate change are once again being blamed for this. It is also the simplest explanation for phenomena for which there is no simple answer.
So when rivers dry up and groundwater levels drop, you can't just look at the debit side; you also have to look at the credit side if you want to stick with your comparison to bank accounts.
You can become insolvent if you consistently withdraw more from your account than you deposit, but also if your withdrawals remain the same but your income declines.

And this is precisely the point I have been focusing on.
The global water cycle describes the continuous transport of water between oceans, the atmosphere, and land through evaporation, precipitation, and runoff. Since water easily changes its state of aggregation, it rises as vapor, condenses into clouds, and falls back as rain or snow.
Around 500,000 km^3 of water evaporates every year. Of this, only 7-8% falls as precipitation over the mainland. Around one third of the rain on land comes from evaporation from the oceans, while the remaining two thirds is caused by evaporation over the land itself. Almost all of the water flows back into the sea via rivers.

Through the water cycle, i.e., evaporation and condensation, around one-third of the solar energy radiating onto the Earth is returned to space.
Differences in evaporation and precipitation arise from the uneven distribution of land and sea, mountain barriers, and atmospheric circulation patterns. For example, the **Atlantic Ocean** is considered a **water shortage area** in terms of **evaporation**, while the **Pacific Ocean** is considered a **surplus area** due to its large tropical water areas.

Plants and oceans are the largest “evaporators”. Interventions by large wind farms influence and disrupt the transport of water vapor from the sea to the land and its distribution inland, leading maybe to regional drought and thus also rising temperatures.
The sun and wind are the driving forces behind this sensitive, stable cycle that has existed for thousands of years. Humans have massively interfered with by extracting of energy by using the Wind the wind.

The term **“renewable energy”** gives the impression that energy can be renewed. **In fact, it** can only ever **be converted.** A wind turbine extracts **kinetic energy** from the wind and converts it into **electrical energy**. **This slows down the wind**. Even if wind is available again the next day, this is not “renewed” energy, but **“newly” supplied, i.e., new energy.**

The slowing down reduces the range of the wind, which in turn affects the distribution of moisture in the atmosphere—with potentially serious consequences for the global water cycle. Areas with too much and too little water in the air are created.

What this means for water vapor transport is explained here using the example of a Vestas V172 7.2 MW turbine with a rotor diameter of 172 meters and a rated output of 7.2 MW: The area swept by the rotor is around 23,200 m^2. At a wind speed of 14 m/s (50 km/h, wind force 7), around 325,000 cubic meters of air flow through this area every second (23,200 $m^2 \cdot 14$ m/s = 324,800 m^3/s). Assuming realistically that the wind speed is halved by the turbine from 14 to 7 m/s, the amount of air is also halved – as is the amount of water transported. With a water vapor content of around 15 g/m^3 of air, this means that – per second – just under 2,500 liters of water are no longer transported (162,400 $m^3 \cdot 15$ g/m^3 = 2,436,000 g = 2,436 kg). Per minute, this corresponds to a volume of 146 m^3 (the annual water consumption of a family!) or per hour to a volume of 8,770 m^3.
A single wind turbine therefore theoretically influences the natural distribution of water vapor by almost 9,000 m^3 of water per hour or more than **200,000 m^3 of water per day.**

Best regards from Germany (The land of the masters of wind industry desasters)
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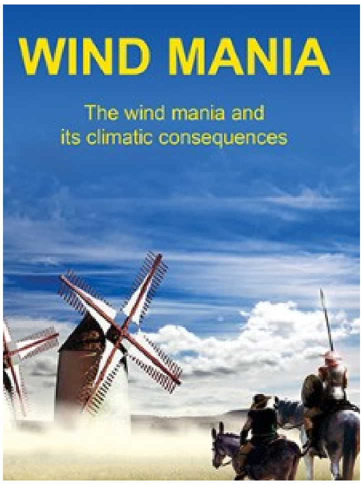

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