**Background and references with ‘environmental and climate checklist for journalists’ january 2022, ronaldrovers.com**

**1 money**

The relationship of money with the environment and climate was abandoned long ago, land and raw materials no longer are intrinsically valued, while they form the basis of our existence. Money is no longer created on the basis of environmental potential or growing ecological services.

As a journalist, don't be convinced by the argument that it is a matter of innovation, before environmentally friendly solutions will be profitable money-wise . That is not possible. If money can be earned , that money will be invested elsewhere, and it bites its tail: then energy and material use increase. (suppose you buy a bicycle (sustainable, do you think!) and the bicycle seller uses that money to go on a flying holiday…? And so on…

The situation with regard to a limited amount of CO2 emissions remaining before we pass the 1.5 or 2 degree limit, can be compared with a wallet containing 1000 Euros. Only with one difference: you can only spend it once, because when you run out, no more Euros are added. Never again.

**2 energy=material= energy etc.**

a) The moment we might have everything running on renewable energy, the energy impact is no longer relevant, since it has become part of an eternally flowing source. The only thing that still counts (and in fact already) is the use of materials: for products but also to capture and convert that renewable energy: our energy problem is a material problem! On the one hand materials to establish that energy system, and abundant energy to further deplete materials stocks.

b) Nothing more is added, in terms of raw materials: we live on an island in space, nothing more is added (except solar energy): either we use renewable raw materials, or we deplete raw materials, that is, we run out of the non-regrowing and concentrated stocks!

According to a recent OECD report, our use of materials will quadruple until 2060. And let's face it, we might have enough (renewable) energy, raw materials will demand more and more energy to extract because of the dilution, the decreasing ore grades of the stocks. It bites itself in the tail.

**3 scale:**

A complete “house make-over” , renovating a house packing it with prefab insulation elements, and providing it with a completely new installation, is interesting: the house can become zero energy-ZEB, or 'nillonthemeter' (generates as much solar energy as it uses per year), and the production energy' (energy for production materials, also called embodied energy) is ‘earned back’ after, for example, 7 years (the solar panels have then produced more solar energy than it has cost to make everything). However, the products did nevertheless cost energy to produce and caused CO2 emissions, already during production! If you add up all that ‘production CO2’ for the renovation of the total housing stock ,almost 7.5 million homes in the Netherlands, that is in total more emissions as are still allowed within the the IPCC 1,5 degree budget (for the part for housing section). So it is not a solution on a large scale. Other solutions are needed.

**4 time factor**

As interesting as a solution often is, it takes time to implement it: To renovate all homes in (as in 3) to zero-energy takes time, time in which the homes that have not yet been renovated continue to emit/cause CO2. If 100,000 homes are renovated per year, then, for Netherlands, it will take 75 years, or until 2095. Well after 2050 in any case. That time factor plays a role in all improvement solutions (not yet counting the material *depletion* question). So always ask how long it takes apply a product or solution to the whole market.

Actually, when it comes to CO2, we should not be interested in the gradual reduction of a single measure, but in the total absolute CO2 emissions, cumulatively (see previous point) and also in time. This is usually out of sight as soon as we talk about practical implementation, then it suddenly becomes about "1 *improved* product".

**5 input output**

Always ask for the system boundary of an environmental evaluation or 'sustainability claim'. Do all effects fall within that? Usually 1 aspect has been optimized, but there are all kinds of side effects in other areas, beyond the considered limits of the evaluation. Consider, for example, material exhaustion and environmental problems as a result of the production of all kinds of energy-saving equipment somewhere in the world, which is often not included. For example, the aforementioned Dutch agriculture: It is called sustainable, mainly because of the world's largest output per hectare. But per hectare, the energy input is 6 times greater than the food energy output. It's an energy destruction machine.[x]

**6 comfort**

There are shower systems on the market that recover the energy from the hot water. Sounds good, but is advertised as: “Now it doesn't matter how long you shower...” That's more comfort! It only works after a few minutes, so it is of no use to anyone who takes a short shower. But more importantly: a huge investment in materials is needed to replace (in principle) all shower systems throughout the Netherlands, with its energy and environmental effects. Shorter and less showering is the real effective route. [x]

**7 sustainability**

In the early 1990s we spoke of 'environmental impact' or 'environmentally friendly'. Next 'sustainable' came into vogue, and has taken on many meanings. One of them: something lasts a long time: how is it possible that almost everything nowadays is replaced within a few years (shoes, telephones, etc) and sometimes a a product can still be called ‘sustainable’? Is investing energy and material for a fast repeating function a *maintainable* situation for all?

**8 sustainable materials**

Concrete is ‘sustainable’ , it lasts a long time, is sometimes the opinion, and cannot be broken. But then plastic that remains in nature for decades is also sustainable, isn't it? And the use of wood is now and then regarded as not sustainable, since trees are cut , and the use does not last long? But if you go to a city like Troyes in Northern France, for example, you will see that the entire city center is built of wood and is already 500 years old. So it's not about the material, but what you do with it, how you use it: for wood construction it's a matter of good design and maintenance. I recently had a discussion with someone from the concrete world: he sometimes felt something like ‘concrete shame’: I was able to comfort him: concrete is not the problem, but for which functions you apply it or not. For simple houses it is nonsense for instance, so it is more ‘application shame’ that he may have to feel: You must choose the material that has the lowest environmental impact for a certain function. And then ‘maintain’ it 'sustainably'.

**9 recycling**

All materials can be reused or recycled, and recycling takes much less energy than virgin material. For all materials. The mutual difference in impact continues to exist in recycled form.

Scale and time also play a role in recycling: A few years ago, 50% of beverage cans were recycled in England. Which are actually made from aluminum, with a production energy 10 times higher than steel, for example. However, 50% seems like a lot. But the cycle time of a can is 6 weeks, from collection, recycling and back on sale: so every six weeks, they lose 50%…. And after 8 cycles a year, about 99% has disappeared….

**10 circular**

To address materials impacts now its hip to promote a strategy like 'circular economy'. Now circular means a cycle is closed, the stock is replenished or restored, like a forest that grows again. However, in circular economy the cycle of most materials is not closed at all, the stocks are not renewed. We only exhaust them, and the claim is framed that they are simply 'not renewable'. So its an excuse to only focus at 'recycle and repair'. Certainly that has to be done as well, but that is linear slowing down, (and only helps a little, if the increase in material use quadruples in the next decades-OECD study [x] ). But its still far from circular. We can only exhaust metals and minerals in this way, so there are organizations who try to keep that out of the picture.

When it comes to organic materials we we do and we do have to include that regrowing or regeneration. This creates a uneven playing field, I call that resource discrimination. If we do not recognize and name that, we will continue to make the wrong comparisons and choices. In other words: a transition to renewable materials is also necessary (and to renew them).

**11 regarding products:**

Since renovating homes, as described under 3 and 4, is not possible within the current climate and CO2 targets and policy, its not anymore about large scale technical solutions and products, but about small-scale adjustments and reorganizing ourselves: So living and heating in only 1 room, during the coldest period. Why retrofit a whole house as if it freezes year round? What we need are sliding doors to limit living area, and solutions to insulate and heat only that one room . Leading to much less material to insulate , and much less energy demand. [x]

E-car: Is the electric car our salvation? Of course not: its impossible that everyone will have a private car (there are still billions of families in the world without a car) But then again: if you have to buy a new car , should it be a fuel or electric one? Purely looking at the car, its electric. But if you include everything, the entire infrastructure and so on, the environmental impact only increases with electric cars. [x]

A tumble dryer: We can make a tumble dryer that is very energy efficient : A+++ and such, and also one that is supposedly ‘circular’, made from recycled materials. But its still a tumble dryer, which requires energy to operate, and wind turbines have to be built for that. If every family in the Netherlands had a tumble dryer, this would require approximately 600 2 MW onshore wind turbines. All in our backyards of course. No Nimby problem, right? Now what if we all hang the laundry to dry on the clothesline, and let the wind do its work immediately instead of taking a huge detour ? Thats how to look at all supposed proposed solutions.

PV panels

Solar energy is not for free, solar panels have to be made for that, which costs materials and energy. And for the moment that energy is mainly fossil fuel and therefore causes CO2 emissions. This is called embodied energy or Embodied Carbon. More about it can be found in this paper [2]. And after about 4 years (in the best case scenario), such a panel has produced more renewable energy than it has cost to produce itself. Nevertheless, the CO2 emissions have already taken place right from the start. And that leads to the following finding, which I described in detail earlier:

If we produce or install more and more panels every year, because we are in transition, it contributes nothing to CO2 reduction. In fact, the CO2 emissions will rise instead of falling. Every year there is more CO2 emissions from the newly installed panels as reduced, since before the earlier emissions were compensated. [3] The accumulated emissions are higher than the replacement by CO2 emission free energy. And that will last until 4 years after stopping to accelerate production of PV panels.

RR jan 2022.

**Further reading:**

1

[*http://ronaldrovers.nl/people-depleting-planet-making-profit/*](http://ronaldrovers.nl/people-depleting-planet-making-profit/)

[*http://ronaldrovers.nl/de-groei-mythe-een-pyramide-spel/*](http://ronaldrovers.nl/de-groei-mythe-een-pyramide-spel/)

# *The Value of Everything-*Making and taking in the global economy, Mariana Mazzucato, 2020, isbn 978-1541758247

*And: Mazzucato,* Avoiding a Climate Lockdown, https://www.project-syndicate.org/commentary/radical-green-overhaul-to-avoid-climate-lockdown-by-mariana-mazzucato-2020-09?

*The Economic Growth Engine: How Energy and Work Drive Material Prosperity, Robert Ayres, Benjamin Warr, Elgar publ. isbn 978 1 84 844 182 8*

2

*geen energie wende maar een resource wende:*

[*https://www.ressourcenwende.net/*](https://www.ressourcenwende.net/)

*en*

[*http://ronaldrovers.nl/van-energietransitie-via-materiaaltransitie-naar-een-welvaartstransitie/*](http://ronaldrovers.nl/van-energietransitie-via-materiaaltransitie-naar-een-welvaartstransitie/)

The Mining of Minerals and the Limits to Growth, 2021, Simon P. Michaux, Geological Survey of Finland <https://tupa.gtk.fi/raportti/arkisto/16_2021.pdf>

Global Material Resources Outlook to 2060, Economic drivers and environmental consequences OECD 2019, <https://www.oecd.org/publications/global-material-resources-outlook-to-2060-9789264307452-en.htm>

Extracted, How the Quest for Mineral Wealth Is Plundering the Planet , Ugo Bardi, Chelsea Green Publishing isbn 9781603585415

3

The sower’s way: quantifying the narrowing net-energy pathways to a global energy transition, 31 July 2016, Sgouris Sgouridis , Denes Csala and Ugo Bardi, Environ. Res. Lett. 11 (2016) 094009 , <https://iopscience.iop.org/article/10.1088/1748-9326/11/9/094009/meta>

[*http://ronaldrovers.nl/zonnepanelen-ze-helpen-niet/*](http://ronaldrovers.nl/zonnepanelen-ze-helpen-niet/)

*4.*

[*http://ronaldrovers.nl/de-kringlopen-in-stand-houden-volhoudbaarheid-vergt-tijd/*](http://ronaldrovers.nl/de-kringlopen-in-stand-houden-volhoudbaarheid-vergt-tijd/)

5

De duurzaamheid van de Nederlandse landbouw : 1950 – 2015 – 2040, Meino Smit, 2018 WUR, isbn 9789463432894; 9463432892 , <http://library.wur.nl/WebQuery/wda/2244882>

*Energy return on investment A unifying principle for biology,economics and sustainability. Charles A. Hall, Springer 2017, isbn 978-3-319-47821-0*

6

1,5 degree lifestyles IPCC: Changing our ways? Behaviour change and the climate crisis. Cambridge sustainability commission <https://www.cambridge.org/core/journals/global-sustainability/cambridge-sustainability-commissions/changing-our-ways>#

1,5 degree life styles, towards a fair consumption space for all, by Club of Rome • D-mat • IEEP • IGES • Hot or Cool Institute, <https://hotorcool.org/wp-content/uploads/2021/10/Hot_or_Cool_1_5_lifestyles_FULL_REPORT_AND_ANNEX_B.pdf>

[*http://ronaldrovers.nl/het-nieuwe-vermogen-is-land-als-kapitaal/*](http://ronaldrovers.nl/het-nieuwe-vermogen-is-land-als-kapitaal/)

Essay: Het land(schap) is ons kapitaal, 2020, in tijdschrift: Landschap, beschikbaar als: <https://edepot.wur.nl/536128>

7 duurzaamheid

*Before the collapse, a guide to the other side of growth, Ugo Bardi, Springer 2020, isbn 978-3-030-29037-5*

8 duurzame materialen

Gebroken Kringlopen, naar een volhoudbaar gebruik van bronnen, R.Rovers, uitg. Eburon 2018 isbn 9789463012034

9 recycling

10 circulair

The Mining of Minerals and the Limits to Growth, 2021, Simon P. Michaux, Geological Survey of Finland <https://tupa.gtk.fi/raportti/arkisto/16_2021.pdf>

circularity gap report , general and NL: <https://www.circle-economy.com/resources/the-circularity-gap-report-2019> and <https://www.circularity-gap.world/netherlands>

IEA role of critical minerals in Clean Energy

Transitions, IEA Publications ,International Energy Agency, May 2021, Website: https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/executive-summary

# From elite folk science to the policy legend of the circular economy, Giampietro M, et all, Environmental Science & Policy, Volume 109, July 2020, Pages 64-72

<https://www.sciencedirect.com/science/article/pii/S1462901120302033>

11 nieuw

Form Follows Fysics, reinventing the Built environment, R.Rovers 2021 , uitg. RiBuilT isbn 9789083144115