Public Money - the ultimate building block for a Circular Economy ?

(Some preliminary reflections)

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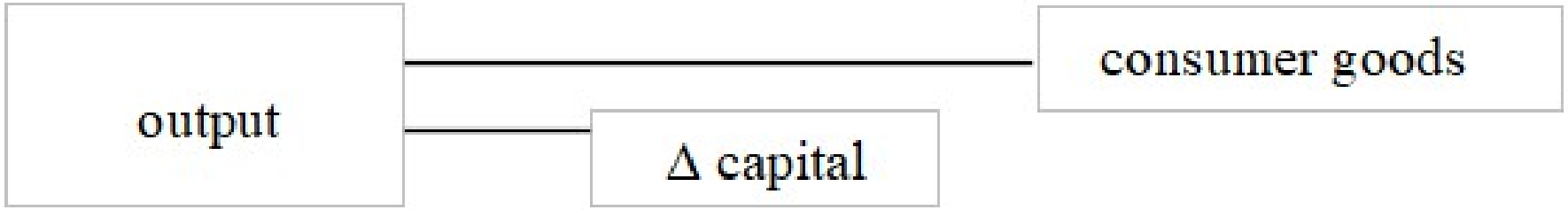
overview

- approach
- the ‚ideal' economy - as seen by mainstream economics
- the ‚real' ‚linear' economy - with collateral damage
- the circular economy - as the alternative
- the transition from ‚linear' to circular - with simple model
- the role of Public Money - too make Circular Economy feasable
- summary / conclusion

approach

- NOT:
  - find out how our present economy works
- BUT:
  - realize what is necessary for a sustainable future
  - respect the physical planetary limits
  - design the economic system so that it is economically, ecologically and socially sustainable
  - model this design and check its dynamic behavior (incl. stability, ...)

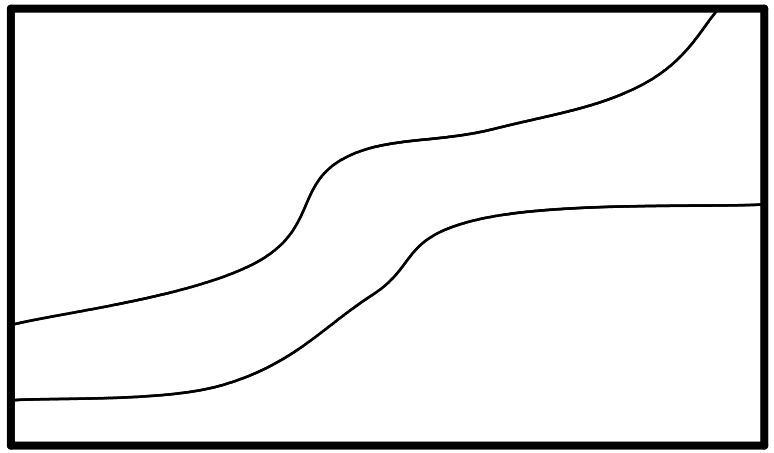
the economy as seen by mainstream economics



- only monetary values: Y = I + C
- ‚linear' (only throughput material flow)
- no nature
- no raw materials (no scarcity of raw materials)
- no waste

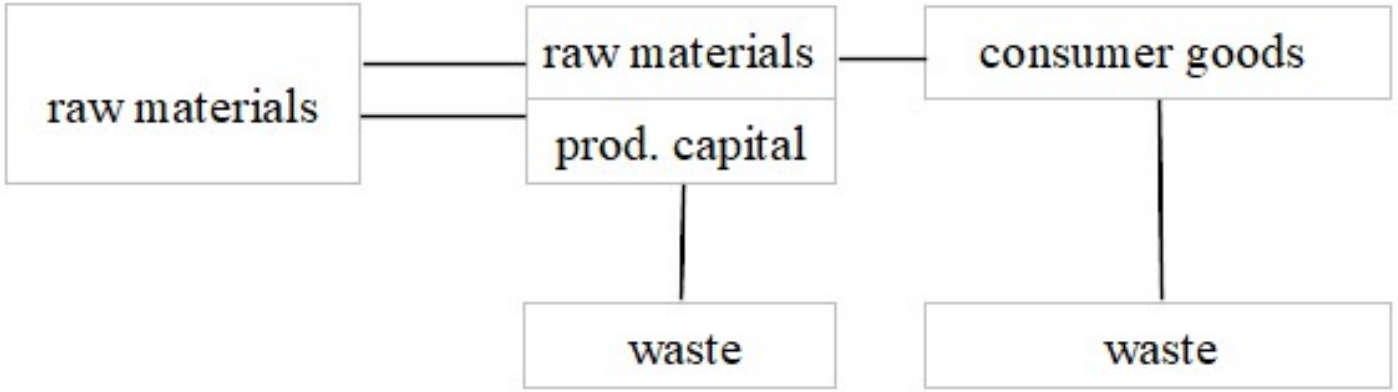
the promise of mainstream economics

- everlasting growth
  - every limit can be surpassed by substitution or innovation („technical progress“)
- for interest there is even exponential growth



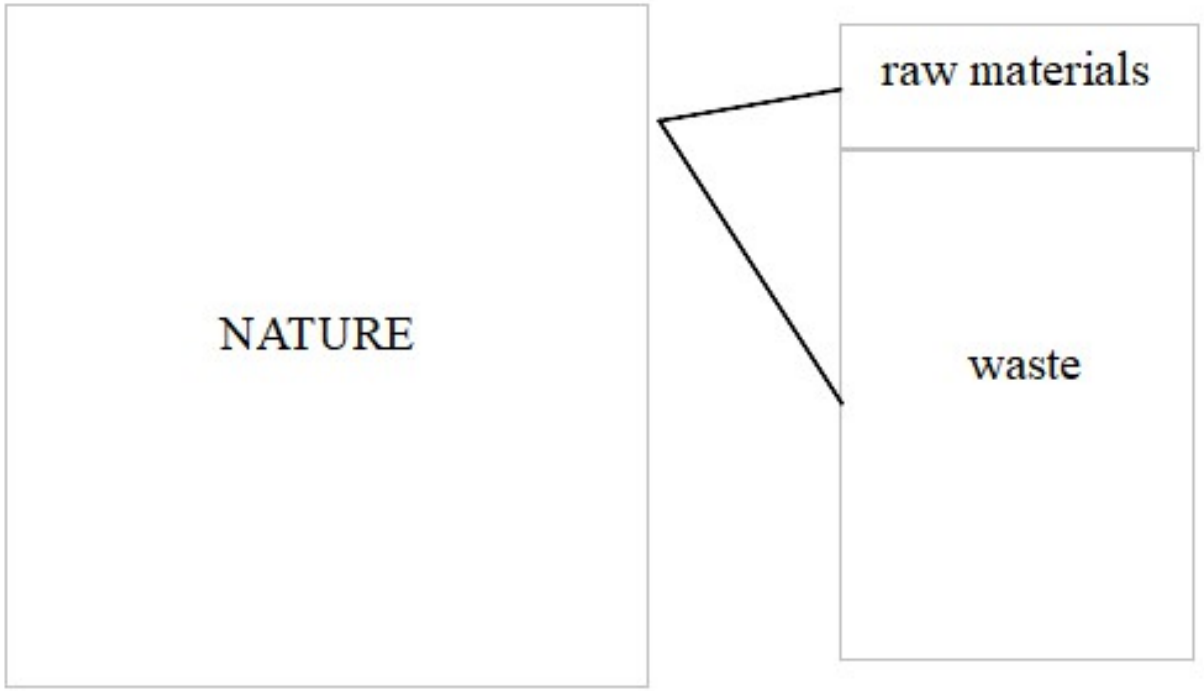
- **reality**: planetary boundaries
  - ‚ceiling‘ to material growth exists (only ‚fancy figures‘ without ‚ceiling‘)
  - only logistic growth possible (as in nature)

BUT: the ‚**real**' ‚linear' economy



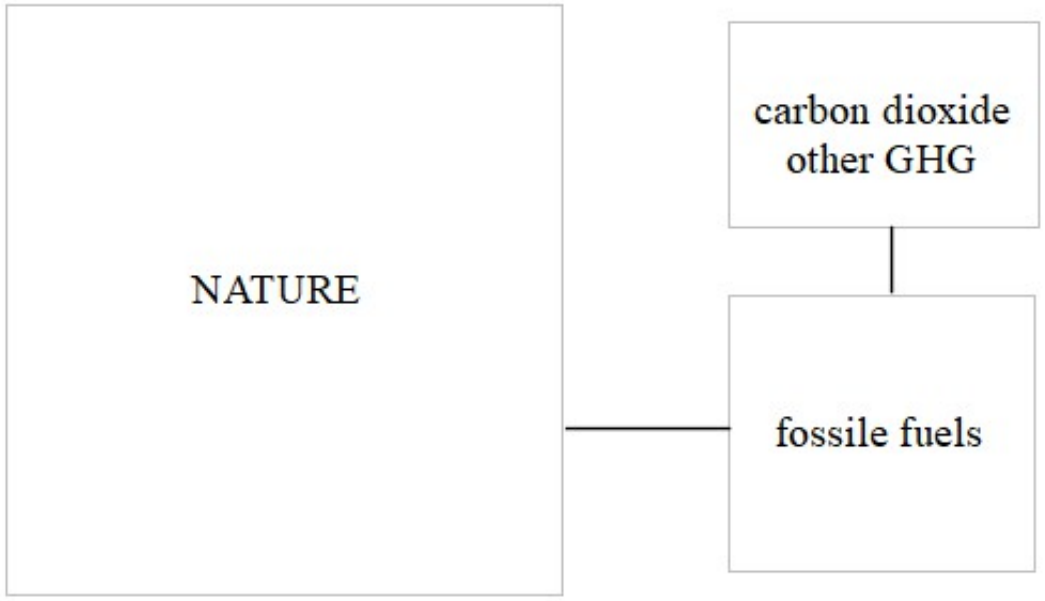
- physical (‚material') flows are as important as monetary flows
- raw materials end partly in production capital and partly in consumer goods
- ‚all' production capital and consumer goods end as waste
- waste is not ‚neutral', i.e. has consequences (e.g. externalities)
- ‚linear' (only throughput material flow) -> nature is ‚consumed'

BUT: ‚**real**' ‚generation' of raw materials



- **huge** amounts of waste
- exploitation and destruction of nature
- waste often highly toxic (in case of metals usually so)

BUT: ‚**real**' use of (fossile!) energy



- **huge** amounts of waste (carbon dioxide, other green house gases, etc.)
- exploitation and destruction of nature (e.g. faring of gas when extracting oil, fracking, extraction from oil sands/ shale, deepwater oil)
- ‚deadly' man-made climate change (e.g. tipping points very close, collapse imminent: coral reefs, Amazonas rainforest, gulf stream)

consequences of this ‚**real**‘ economy

- exploitation and destruction of nature (**far** beyond planetary limits)
  - extraction and ‚dilution‘ of natural resources (‚Thanatia’ (A.Valero))
  - flooding nature with huge amounts of wastes
    (e.g. GHG, microplastic, radioactive materials)
  - destruction of biodiversity
  - ‚deadly‘ man-made climate change
- ‚affluent society‘ here & 800 million hungry people elsewhere
- unfair distribution of wealth (1% super-rich ‚own‘ 50% vs poor own 1%)
- violent securing of profits (e.g. killing of environmental activists)
- ‚business model‘ dependent on (‚deadly’) growth
- ‚green‘ colonialism (the ‚rich‘ think they are entitled to earth’s resources)

summary of this ‚**real**‘ economy

- what looks reasonable from a business point of view is from the ‚overall systems‘ perspective

–NOT ecologically sustainable

–NOT socially sustainable

–NOT economically sustainable

–(NOT geopolitically ‚sustainable’)

sustainability means ...

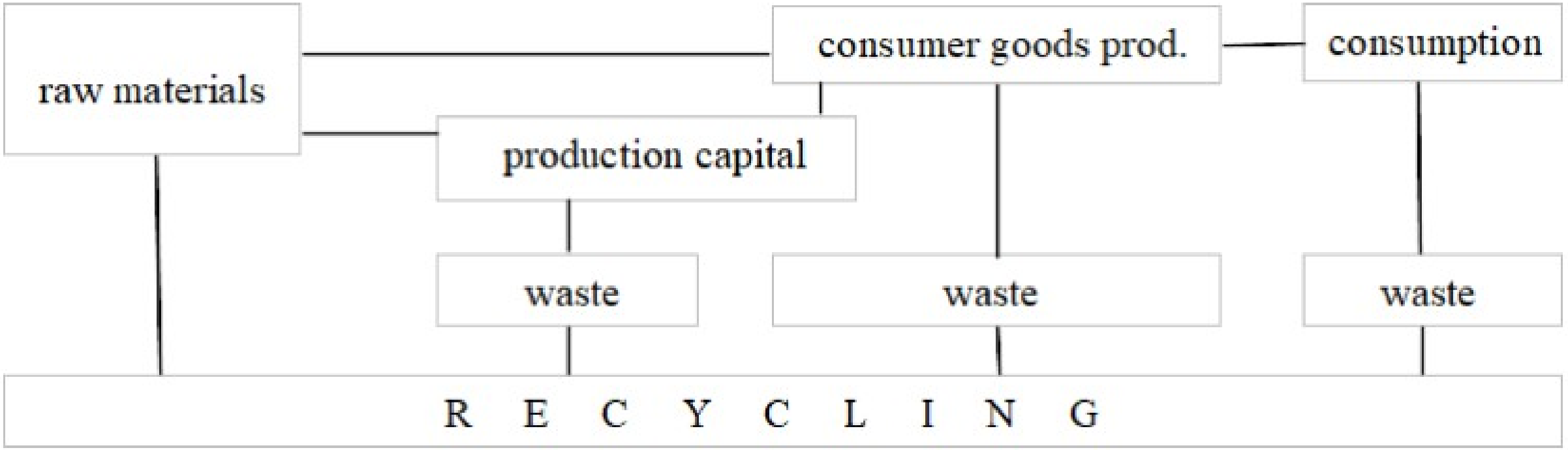
- to be able to continue with present way of living forever
- to respect the rights of all future generations (mankind & nature)
- to respect the viability of nature, society and economy
- ecologically: to live as part of Nature within planetary boundaries - securing its precious ecosystem services
- socially: to live as part of a fair & just society in human dignity - enjoying the ‚safe harbor' of human rights & democracy
- economically: to be a respected part of an economy that focuses on our well-being (and not on profit & wealth maxim.)

(and yes, these are the priorities - from top to bottom)

(some) layers of sustainability

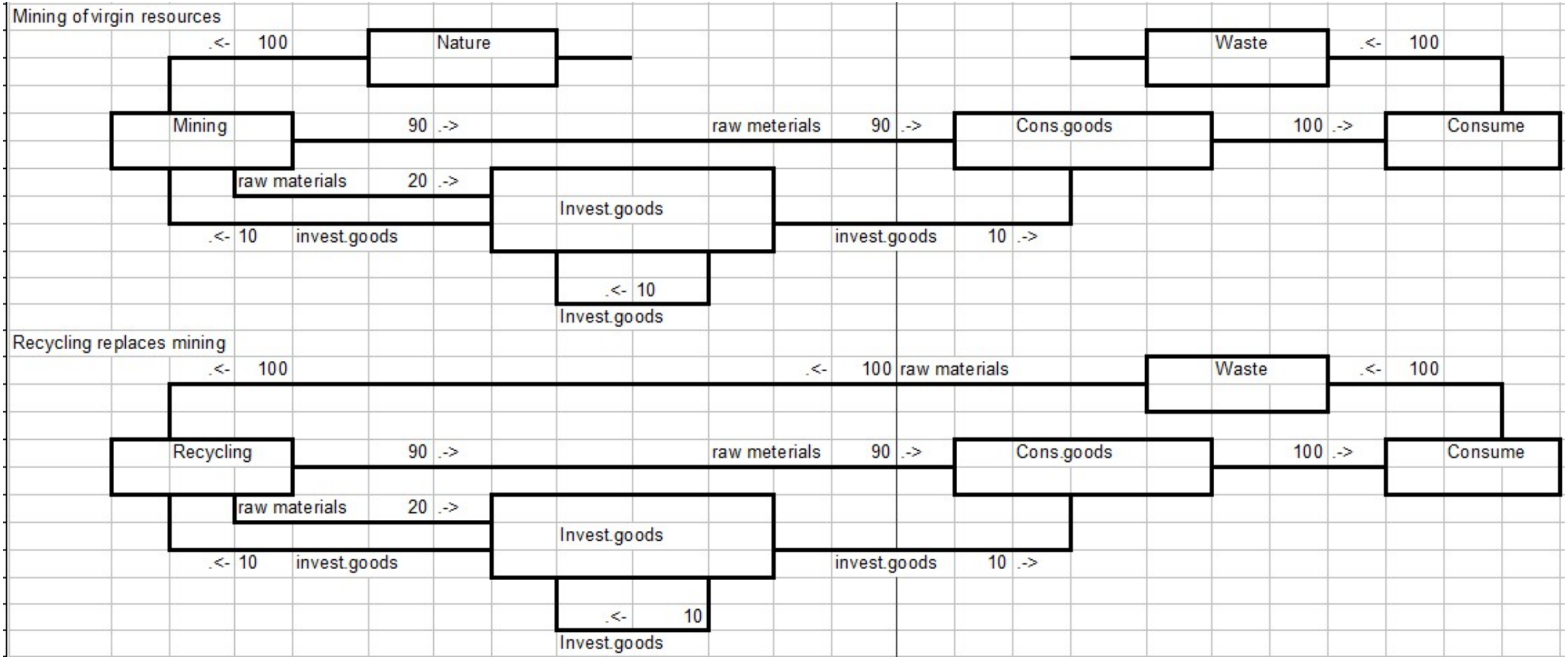
	layer	current economy & society	sustainable economy & society	rationale: to respect...
abstract	control	plutocratic	democratic, 2nd order cybernetics	equal participation & protection of minorities
	communication	‚social' networks, etc to gain maximum attention & profit	public service infrastruture	non-exploitation of private data, politcal neutrality
	taxation	tax richest least	tax ‚equally' (e.g. UTS)	contribution fairness
	law	right of power	equal rights	that all men are born equal
	property	100% private ownership	restricted private ownership. many commons (MuRatopia, Cooperatives)	power neutrality, ownership is obligation to ‚public good'
	money	debt-money	(Electronic) Public Money	distribution neutrality, property protection
physical	climate	exploit until collapse	prevent collapse	as foundation of life
	raw materials	exploit ‚economically' (‚resource economics')	circular economy (raw materials froim waste)	lithospheric limits
	energy	fossile fuels, atomic energy	regenerative sources (e.g. sun, wind)	atmospheric limits (& oceanic limits)
	food	agrobusiness using chemical fertilizers & pesticides, exhausting soil	biodynamic agriculture	biodiversity, soil health
	water	abundant consumption good	potable fresh water is scarce	as foundation of life

‚rescue' by sustainable Circular Economy (CE)



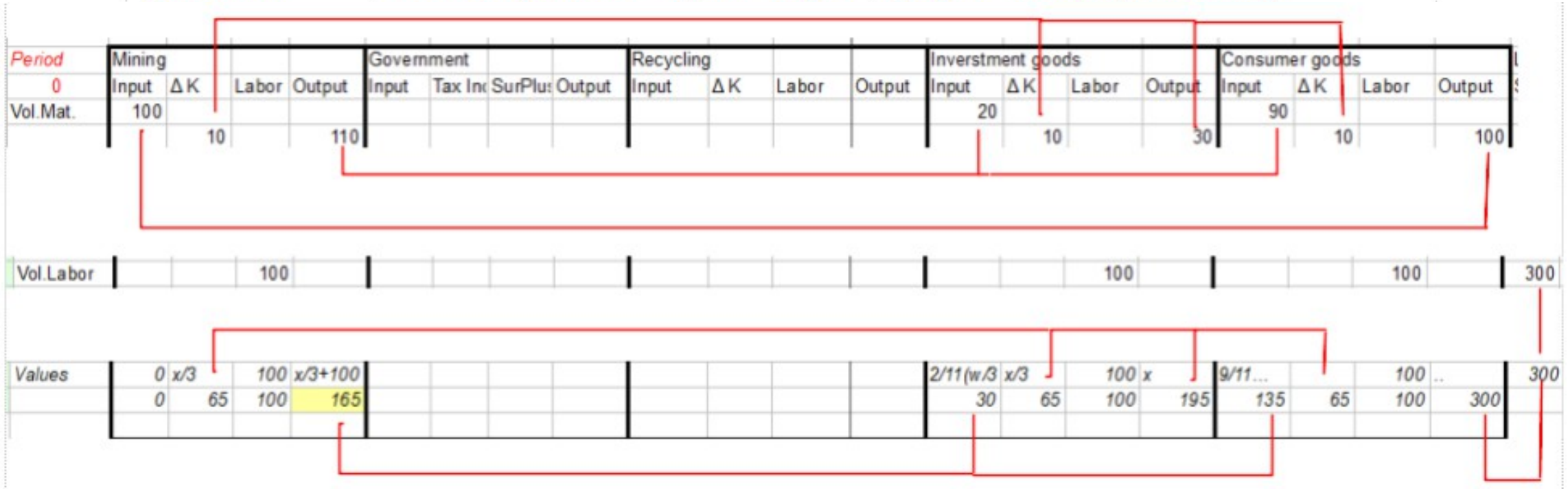
- use of ‚virgin' natural resources phased out, secure ‚rest of Nature'
- no more ‚wasting' of raw materials, recycling provides what is needed
- use of environmental-friendly energy only, no more fossile fuels
- *N.B. also use of other ‚R's (re-duce, re-use, re-pair, re-design, ...)*

‚linear‘ vs. circular economy graph models



(my) minimal model of a Circular Economy

sectors	costs	constraints
mining/ recycling	raw. mat. input + Δ K + labor = output	output = input inv.g. + input cons.g.
investmt goods	dto	output = sum of all Δ K
consumer goods	dto	output = consumption
consumption	cons.g.input (hosuehold consumption)	consumption = wages
government	raw.mat.input + tax + surplus = output	(output = initial output of mining)



-> economy in ‚straightjacket', i.e. constrained by accounting mechanics

(cp. ‚Saldenmechanik' (W. Stützel))

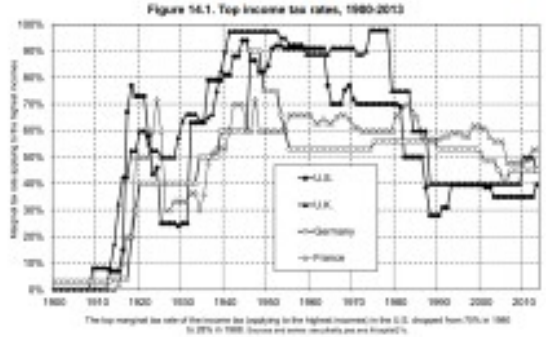
transition from current to Circular Economy

transition phase	characteristic	results
start point	100% of raw mat. extracted from nature (‚at no cost', i.e. no ‚payment' to nature), 100% of waste put back into nature (‚at no cost', i.e. no ‚payment' to nature) (100% throughput economy)	economically: stationary; ecologically: exploitation of nature (nature is ‚consumed' and polluted) -> highly unsustainable
govmt tax	govmt levies 100% ‚virgin' raw mat. tax	recycling competitive/ mining incompetitive
govmt action	govmt buy mining output at increased price & sells it to recycling at initial price	‚downstream' activities as before (demand & sales volumes and prices resp. wages)
period 1 of transition	10% of raw mat. comes from recycling, 90% from mining (anticipating the transition)	govmt's extra cost for mining input are covered by tax, input from recycling need subsidy (assuming ‚high' price for waste)
period 2 ...	20%/ 80% ...	...
...		govmt deficit growing, but always neutral to rest of economy (vols & prices/ wages) because of financing with Public Money
end point	100% of raw mat. from recycling (100% circular economy)	economically: stationary (aside govmt def.); ecologically: nature can recover (hopefully) -> sustainable

more results from model economy

basic config.	characteristic	results
100% tax	no government action, inv.g. & cons.g. use raw mat. as before	tax shifted to cosumption, wages cannot buy cons.g.output, ...-> downward spiral
	govmt action & raw material effi-ciency increased (input 100-> 60)	annual govmt deficit decreased accordingly (100->60), Public Money still neutral, economy still stationary
	establisment of service sector (takes up 120 labor from other 3 sectors, so full employment)	annual deficit can be avoided - ‚burden' of 60 is shifted to service sector by appropriate wage dumping 50%, economy still stationary
100% price-shock	inv.g. & cons.g. keep input costs constant, i.e. reduce material in-put according to price increase	wages cannot buy cons.g.output, ...-> downward spiral
	inv.g. & cons.g. keep output costs constant	often no solution fulfilling constraints; in other cases wages cannot buy cons.g.output, ...-> downward spiral
	mining reduces output in anticipa-tion of inv.g. & cons.g. buying less (i.e. 100 -> 60)	wages cannot buy cons.g.output, ...-> downward spiral
	mining reduces ..& service sector established (with full employment)	stationary - ‚burden' of 60 is shifted to service sector by appropriate wage dumping 50% (as above)
generally	*downward spiral independent of keeping wage rates constant or decreasing or increasing them*	
adaptation	*adaptation to price shocks is not as easy as neoclassical mainstream pretends (X-diagram)*	
criticality	*raw material efficiency is most important ! - not capital or labor productivity - benefits of labor productivity have to be put into leisure time (not labor reduction, which leads to imbalance)*	

the role of Public Money (PE)

	‚virgin' raw material tax	internalization of external costs
characteristic	tax to discourage further extraction & make recycling competitve	let raw material prices ‚tell the truth' & stop further environmental damage
effect	price-shock to downstream industries	
use of PM to ...	protect downstream industries from price-shock	
PM pays for ...	extra costs that recycling has over mining (e.g. additional energy, auxiliary materials)	extra costs for protecting environment (e.g. more carfulness, auxiliary materials)
primary effect	money injection to cover additional costs, no effect on volumes and costs of downstream industries (incl. employment & wages)	
secondary effect	none *) (PM created bears no interest payments & is not paid back)	
	*) approximation (more analysis needed if downstream industries really kept ‚constant' on **aggregate** level)	
remark	*Public Money is here kind of a replacement of former tax revenues (before taxes on company profits and capital income were cut down during the ‚race to the bottom', as a ‚gift' to the Rich & Super-Rich, who - as was argued - are ‚better' in making good use of money than govmt)*	 

synergy of CE and PM

- Circular Economy
  - -> 100% recycling
    - -> 100% circular
      - -> **Stationary**[*)] Economy
    - -> no interest burden on government
  - -> interest free government investments
- Public Money

*) stationary not static ! - stationary concerning material and monetary flows - nevertheless plenty of room for ‚growth': material efficiency, labor productivity (balanced by more leisure time (J.St.Mill)), personal growth, ...

summary of CE & PM

- vision is a stationary CIRCULARY ECONOMY - enough raw material from recycling of waste - no more material growth, only ‚immaterial qualitative growth' (as circularity of life in nature, with only logistic growth)
- <100% recycling rate can be compensated by improved mat. eff.
- growing population can be offset by improved material efficiency
- PUBLIC MONEY removes ‚growth imperative' (H.Ch.Binswanger) via interest rates and resulting debt (growth)
- Public Money is instantaneously available
  (no nudging of super-rich with high interest rates/ profits at zero/ low risk)
- rules for the ‚wise use' of Public Money need to be developped and implemented, e.g. ‚govmt' = independent state authority

very short summary of CE & PM

- ecologically sustainable
- socially sustainable
- economically sustainable
- geopolitically ‚sustainable‘

... and finally

THANK YOU FOR YOUR ATTENTION