



GLOBAL FORECAST 2010-2052

This Document is a compression of the book “2052 – A global forecast for the next forty years” by Jørgen Randers. These pages contain the essence from 400-pages. Maybe not an easy read. But, I hope it will help you get Mr Randers’ important message in a short time. I also hope it will inspire you to read the book.

Noteworthy from the book

Short-termism is prevalent. It makes sustainable change difficult. The central driving force is higher income.

The world is in less than perfect shape to handle ominous second half of 21st Century:

Increasing CO2 might make plants grow faster, but increasing temperatures make it hard for them. They grow slower.

Food production will decline. Many fisheries have or will collapse. Fisheries are difficult to predict due to weak, delayed and noisy signals like natural volatility in fish populations, ocean acidification, in combination with lacking precaution.

Temperature zones move 5 km/a pole-ward and 5m/a up mountainsides. It’s difficult for plants and animals to adapt. Expect more species extinctions.

The problem is not to solve the climate problem (while it is still solvable), but to agree to do so.

Self-reinforcing climate change is worry nr 1. Prime issue is CO2 emissions.

Societies will go from mitigation to adaptation. Governmental influence will increase because of increasing challenges related to climate change. Forced and voluntary investments will increase. Taxes will be higher. There will be more focus on local solutions to build economical resilience => local food & energy + programs to strengthen regional & local economics. Leaders will do what they can to make sure their people will loose last => ensure their nation will float even if others sink.

Resource constraints will produce social upsets way before producing ecological collapse. “Green Operations” will keep armies busy. They will have to fight a new enemy: climate change. And refugees.

There will be fewer children and more elderly.

Internet is omnipresent.

It will become more attractive to recover & recycle metals than to dig and refine.

China has taken the climate problem seriously. Their goal is still a self-sufficient China. They have limited population growth. Reforested devastated areas. Carefully managed urbanization pressures. And, they secure access to resources abroad.

Sustainability standards and guidelines are not enough. Sustainability needs to be systemic and creative.

“Choice editing” will ensure consumers don’t get the opportunity to choose environmentally and socially damaging products. Full Life Cycle Analysis will become mainstream. Higher corporate transparency will be required.

To make a difference in politics:

Never underestimate the power of a short-term effect. Repack your message. Emphasize short-term benefits attractive to e.g. voters.





Table 1. World Wide Forecast 2010-2052

Parameter	2010	2052	Peak	Remarks
Population / billion persons	7	8	2040	Peak 8,1 billion => - 1%/a. 2075: 7 billion. R: Urbanisation; Birth rate down; Life expectancy up. C: slower GDP Growth, more for everyone
Work Force / billion persons aged 15-65	4,5	5,2	2035	Peak 5,4 billion => - 1%/a. Support burden ≈ constant. R: Increased nr of elderly compensated by children decline. C: slower GDP growth
GDP / trillion USD	68	146	2050	Big regional differences. Slow or no growth in mature economies. R: Work force down. Services share growth. C: Less consumption
Productivity / USD	10000	18000	2052	2052 will start to decline. R: Slower GDP growth, less Consumption. C: Less to share. More conflicts. Slower growth.
Consumption / trillion USD	51	93	2045	Peak 95 TUSD => decline. R: forced & voluntary investments will rise C: Less to share. Gap Rich-Poor grows. More conflicts. Slower growth.
Consumption / person / USD	7500	12000	2052>	Population falls faster than consumption. Losers are USA, and OECD.
Investment share of GDP / %	25	36		Expected increase 2015 =>. R: Increasing need to repair and protect from climate change damage. C: governmental influence increasing.
Food Production / Gt/a	7	10	2040	Doubled 1970-2010. -5% 2052. R: Negative impacts of CC starting. C: desertification, sea-level rise, urbanization impact food production.
Food / person / t/a	0,98	1,26		There will be enough food for those who can pay. Amount is 4 times subsistence level
Energy Use / billion Oil Equivalents / a	12	18	2040	Need to eliminate CO ₂ emissions. R: CO ₂ continues to accumulate in atmosphere C: Climate is warming.
Oil use / billion Oil Equivalents / a	3,9	2,8	2025	Peak 4,5 GOE=> fast decline. Conventional oil use has already peaked.
Gas / billion Oil Equivalents / a	2,9	4	2035	Peak 4,8 GOE=> fast decline. Replaces coal. Gas is a cheap short-term solution to decrease 2/3 of CO ₂ emissions in electricity production.
Coal / billion Oil Equivalents / a	3,5	4	2030	Peak 5GOE=> fast decline. Future use of coal might depend on the success of CCS (Carbon Capture & Storage) technology.
Nuclear / billion Oil Equivalents / a	0,6	0,5	2020	Peak 0,7 GOE => slow decline.
Renewable Energy / billion Oil equivalents /a	1,1	6,6		Renewable energy +4%/a => 2010 (10%), 2050 (37%). Main growth in solar and wind energy.
Fraction renewable energy / %	9	37		A lot is done to increase share of renewable energy, but not enough to solve the climate problem.
Unused Bio-capacity / %	28	18		Mining and water collection not included => values lower in reality. R: Human activity. C: Severe suffering in ecosystems. Extinctions
Unused Bio-capacity / person / ha	0,5	0,3		1970: 1,2 ha/person. Total bio-capacity starts to drop 2030. C: Ecosystem resilience weakens further.
CO ₂ Emissions from energy use / Gt/a	33	32	2030	Needs to be decreased. Remaining carbon budget to avoid climate catastrophe is ca. 600 Gt. It will be used up before 2030.
CO ₂ in atmosphere / ppm	391	552		Safe level: 350 ppm. Limit 450 ppm. CO ₂ accumulation due to human activity. C: (uncontrolled) global warming incl. ocean acidification
Temperature rise since 1750 / °C	1	2		Danger threshold: 2°C temperature increase. C: uncontrolled, irreversible global warming. Extreme weather, forest deaths etc.
Sea-level rise without continental glaciers / m	0,25	0,56		R: Thermal expansion of warming sea. C: coastal erosion and collapse. Inundation of arable land.

Definitions & Abbreviations

GDP = Gross Domestic Product = Production of consumer goods and services & investment goods and services,

Productivity = Production / Work Force

Consumption = Production – Investment

Unused bio-capacity = Land not used for food, wood and cities

Renewable Energy= Solar, Wind, Ocean, Hydro, Geothermal, Biomass based energy

C=Consequences, R=Reasons, CC = Climate Change

GOE = billion Oil Equivalents

k= kilo = 10³ = 1 thousand, G= Giga =10⁹ = 1 billion, T= Tera= 10¹² = 1 trillion

t = 1 ton = 1000 kg

USD = USD 2005 converted with Purchasing Power Parity





Table2. Regional and Global forecast 2010-2052

Parameter 2010 & 2052	US	OECD- US	CHINA	BRISE	ROW	WORLD	Remarks
Population / billion persons	0,31 0,34	0,74 0,67	1,35 1,2	2,41 2,7	2,1 3,1	7 8	80 % will live in cities + higher education. => Fewer children.
GDP / trillion USD	12,6 16	22,1 24	10 39	15 42	8,6 24	68 146	Growth 2010 – 2052 corresponds to GDP growth in years 0-2010
Consumption / trillion USD	10,6 10,3	17,6 15,9	5,2 24,6	11,1 27,2	7,3 17	51 93	The world of 2052 will have huge regional and class differences.
Consumption / person / USD	34300 31000	18000 22600	3600 21000	4600 10000	3400 5500	75000 12000	2-3 billion people will remain poor.
Investment share of GDP / %	17 35	21 35	47 38	24 36	12 28	25 36	Societies will go from climate change mitigation to adaptation.
Food Production / Gt	0,84 1,1	0,86 0,7	1,5 1,9	1,9 3,5	1,4 2,5	7 10	Agricultural intensification is must. Use of GMO plants will increase.
Food / person / t/a	3,1 3,4	1,2 1,5	1,1 1,6	0,8 1,3	0,7 0,8	1 1,3	2052: 4*subsistence level. Many poor people will remain hungry
Energy Use / billion Oil Equivalents/a	2,3 1,9	3 2,1	2,4 5,6	2,9 5,6	1,4 2,5	12 18	< Energy industry forecast but, > possibility to solve climate problem
Fraction renewable energy / %	6 37	11 44	7 37	9 37	9 29	9 37	Future energy supplies rely mainly on solar and wind energy.
CO ₂ Emissions from energy use / Gt/a	5,6 3,1	6,7 3,1	6,8 10,8	6,8 10,3	7,0 4,6	33 32	OECD and US forerunners in CO ₂ emission decrease. Not enough.
Unused Bio-capacity / %	37 31	19 25	-5 3	47 45	23 -15	28 18	Key to ecosystem resilience, very much needed in warming climate.
Peaks: Population	2040	2020	2020	2040	2050>	2040	
GDP	2045	2030	2045	2050>	2050>	2050	
Consumption	2025	2025	2045	2050>	2050>	2045	
Consumption/person	2015	2025	2050	2050>	2050>	2052>	
Food Production	2040	2040	2035	2040	2050	2040	
Energy Use	2020	2005	2035	2050>	2050>	2040	
CO ₂ Emissions	2005	2006	2030	2040	2040	2030	

US = United States, OECD = Europe + Japan + South Korea + Australia + New Zealand + Chile + Canada;

BRISE = Brazil + Russia + India + South Africa + Emerging economies (Indonesia + Mexico + Vietnam + Turkey + Iran + Thailand + Ukraine + Argentina + Venezuela + Saudi Arabia);

ROW = Rest Of the World

Source of information

Randers, Jørgen, 2052 – A global forecast for the next forty years, 2012, 392 p. Chelsea Green Publishing.

Co-author of Limits to Growth (1972) and Limits to Growth – The 30-year update.

