Lester R Brown's Plan B - A Short Summary of Some Central Issues

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”The western economic model – the fossil-fuel-based, automobile-centered, throwaway economy – is not going to work for China. If it doesn't work for China, it won't work for India or the other three billion people in developing countries who are also dreaming the American dream. And in an increasingly integrated world economy, where we all depend on the same grain, oil, and steel, it will not work for industrial countries either,” Lester R. Brown writes in his new book *Plan B 3.0 Mobilizing to Save Civilization* (WW Norton & Company, 2008). ”The challenge for our generation is to build a new economy, one that is powered largely by renewable sources of energy, that has a highly diversified transport system, and that reuses and recycles everything. And to do it with unprecedented speed.”

”Continuing with business-as-usual (Plan A), which is destroying the economy's eco-supports and setting the stage for dangerous climate change, is no longer a viable option”, says Brown, leader and founder of EPI (Earth Policy Institute), a non-profit interdisciplinary research organization in Washington D.C. ”It is time for Plan B.”

*“*It is a comprehensive plan for reversing the trends that are fast undermining our future.” Plan B is also unique in that it is solidly budgeted, based on reliable data from for example FAO, the Worldbank and other research reports. (See table below.)

No one can argue today, Brown notes, that we do not have the resources to stabilize climate, stabilize population, eradicate poverty, and protect the earth's natural resource base. We can get rid of hunger, illiteracy, disease, and poverty, and we can restore the earth's soils, forests, and fisheries. Shifting one sixth of the world military budget to the Plan B budget would be more than adequate to move the world towards reaching these goals. He suggests we should put a few questions to our political leaders: ”Ask them if $190 billion a year is an unreasonable expenditure to save civilization. Ask them if diverting one sixth of the global military budget to saving civilization is too costly.”

“Plan B 3.0 has four overriding goals: to stabilize climate, stabilize population, eradicate poverty, and restore the earth's damaged ecosystems. Failure to reach any one of these goals will likely mean failure to reach the others as well,” Brown underlines at the website of EPI www.earthpolicy.org, where you may download for example the entire book, updates, monthly news and lectures relating to the themes of the book. The Swedish edition, too, has its own website, www.planb3.se, where you can find translations of texts from EPI among other things.

There are two essential methods to live up to policy challenges – to restructure taxes and to reorder fiscal priorities. ”Saving civilization means restructuring taxes to get the market to tell *the ecological truth*.” That is why Brown advocates a carbon tax in a shift that reduces the tax on income. The carbon tax is to cover all the costs climate change and air pollution is causing society. The tax would be phased in by $20 per ton each year until 2020, for a total of $240.

Stabilizing climate

In late summer 2007, reports of accelerating ice melting in the Arctic Sea were coming at a frenetic pace. The arctic icecover collapsed at unprecedented pace. ”Experts were ‘stunned’ when an area of Arctic sea ice almost twice the size of Britain disappeared in a single week.” Also, the Greenland ice sheet was melting so fast that huge chunks of ice weighing several billion tons were breaking off and sliding into the sea, triggering minor ”earthquakes”. These and similar fast processes in the polar regions become one of the startingpoints when Brown urges us to mobilize all our resources to rapidly, very rapidly, fight carbon emissions that are speeding up climate disruption.

These recent developments in ice melting world wide are alarming scientists, not the least

because their predictions have so obviously failed to foresee them. If we cannot stop the melting of the Greenland ice sheet, sea level will eventually rise 7 meters, inundating not only many of the world's coastal cities but also the rice-growing river deltas of Asia. It will force several hundred million people from their homes, generating an unimaginable flood of refugees trying to relocate after the sea level rise, Brown warns us.

"We need not go beyond ice melting to see that civilization is in trouble. Business as usual is no longer a viable option", says he.

To stabilize climate Brown has put forth a detailed plan showing how to cut carbon emissions 80 percent by 2020. (See table below.) Developing this goal he didn't start from what is conventionally believed to be politically feasible, but from what he and his research-team at EPI think is needed to prevent climate change from spiraling out of control, getting impossible for us to stop. He stresses: "This is not Plan A, business as usual. This is Plan B, proportionate to the threat that global warming presents to our future," an all-out effort to avert the massive threats we and our earth are facing. It is a plan that calls for a realization as fast and as determinedly as if a war would have fallen upon us.

Climate must be stabilized in order to hold the future temperature rise to a minimum. The Plan B-measures to cut emissions have three major components—raising energy efficiency, developing renewable sources of energy, and expanding the earth's tree cover. "Reaching these goals," says Brown, "will mean the world can phase out all coal-fired power plants."

Raising energy efficiency

"Although efforts have been made in recent decades to raise the efficiency of energy use, the potential is still largely untapped. For example, one easy and profitable way to cut carbon emissions worldwide is simply to replace incandescent bulbs with compact fluorescent bulbs that use only a fourth as much electricity," Brown points out. "Turning to more efficient lighting can reduce world electricity use by 12 percent – enough to close 705 of the world's 2,370 coal-fired power plants." Signalling a positive trend in February 2007 Australia announced that the country would by and by stop selling incandescent light bulbs, replacing them with CFLs by 2010.

In the United States, buildings – commercial as well as residential – account for nearly 40 percent of carbon emissions. Retrofitting an existing building usually cuts energy use by 20–50 percent. The next step, shifting to carbon-free electricity to heat, cool, and light the building will, as Brown notes, complete "the transformation to a zero-carbon emissions building."

"We can also reduce carbon emissions by moving down the food chain. The energy used to provide the typical American diet and that used for personal transportation are roughly equal. A plant-based diet requires about one fourth as much energy as a diet rich in red meat. The reduction in carbon emissions in shifting from a red meat-rich diet to a plant-based diet is about the same as that in shifting from a Chevrolet Suburban SUV to a Toyota Prius hybrid car." (Brown makes this point even though there is no calculations for a shift of this kind in the Plan B-budget.)

Highlighted in Plan B is further the Japanese Top Runner Program, as it is "the most dynamic system for upgrading appliance efficiency standards. In this system, the most efficient appliances today set the standard for those sold tomorrow." Japan planned to raise efficiency standards between the late 1990s and the end of 2007 for individual appliances by anywhere from 15 to 83 percent, depending on the appliance. It is an "ongoing process that continually exploits advances in efficiency technologies." And Brown underlines the great gains: "lighting and appliance efficiencies alone would enable us to avoid building 1,410 coal-fired power plants – more than the 1,382 new coal-fired power plants projected by the International Energy Agency (IEA) to be built by 2020."

Developing renewable sources of energy

”In the Plan B energy economy, wind is the centerpiece. It is abundant, low cost, and widely distributed; it scales easily and can be developed quickly. The goal is to develop at wartime speed 3 million megawatts of wind-generating capacity by 2020, enough to meet 40 percent of the world’s electricity needs. This climate-stabilizing initiative would require 1.5 million wind turbines of 2 megawatts each,” says Brown. That would average 125 000 wind turbines a year. ”These turbines could be produced on assembly lines by reopening closed automobile plants, much as bombers were assembled in auto plants during World War II.”

”It might sound overwhelming to manufacture such a huge number of wind turbines until the initiative is compared with the 65 million cars the world produces each year,” Brown notes. ”At $3 million per installed turbine, this would involve investing $4.5 trillion over the next dozen years, or $375 billion per year. This compares with world oil and gas capital expenditures that are projected to reach $1 trillion per year by 2016.” Indeed, the idled capacity in the U.S. automobile industry would be sufficient to produce the wind turbines needed to reach the Plan B global goal.

A decisive change in modes of thinking is seen now, Brown notes: ”In the development of renewable energy resources we are seeing the emergence of some big-time thinking – thinking that recognizes the urgency of moving away from fossil fuels. Nowhere is this more evident than in Texas, where the state government is coordinating an effort to build 23,000 megawatts of wind-generating capacity (the equivalent of 23 coal-fired power plants). This will supply enough electricity to satisfy the residential needs of over 11 million Texans, half the state’s population. Oil wells go dry and coal seams run out, but the earth’s wind resources cannot be depleted.”

”Solar technologies also provide exciting opportunities for getting us off the carbon treadmill. Sales of solar-electric panels are doubling every two years. Rooftop solar water heaters are spreading fast in Europe and China. In China, some 40 million homes now get their hot water from rooftop solar heaters. The plan is to nearly triple this to 110 million homes by 2020, supplying hot water to 380 million Chinese.” Reporting on trends like these is a prominent feature of the Plan B-books.

Large-scale solar thermal power plants are under construction or planned in California, Florida, Spain, and Algeria. One of the leading world oil exporters, Algeria, is planning to develop 6,000 megawatts of solar-thermal electric-generating capacity, which the country will feed into the European grid with the help of an undersea cable. ”The electricity generated from this single project is enough to supply the residential needs of a country the size of Switzerland,” Brown concludes.

In Europe, Airtricity, an Irish development firm with windfarms in several countries, and ABB, a leader in building energy infrastructure, have proposed an offshore super-grid for Europe stretching from the Baltic Sea to the North Sea and southwards to the coast of Spain. ”This grid would not only aid in realizing Europe’s huge offshore wind potential, it would link national grids with each other, thus facilitating more-efficient electricity use throughout the continent,” writes Brown.

Investment in geothermal energy is also growing fast both for heating and power generation. ”Iceland now heats nearly 90 percent of its homes with geothermal energy, virtually eliminating the use of coal for home heating. The Philippines gets 25 percent of its electricity from geothermal power plants. The United States has 61 geothermal projects under way in the geothermally rich western states.” The examples above show that Lester Brown advocates a wide range of solutions for electricity and heating, depending om local conditions.

”The combination of gas-electric hybrid cars and advanced-design wind turbines has set the stage for the evolution of an entirely new automotive fuel economy”, Brown underlines – and that would be electricity from wind. ”If the battery storage of the typical hybrid car is doubled

and a plug-in capacity is added so that batteries can be recharged at night, then we could do our short-distance driving—commuting to work, grocery shopping, and so on—almost entirely with cheap, wind-generated electricity. This would permit us to run our cars largely on renewable electricity—and at the gasoline-equivalent cost of less than $1 per gallon. Several major automakers are coming to market with plug-in hybrids or electric cars."

The overall plan is to stop using fossil fuels beginning with the electricity sector, where the development of 5,153 gigawatts of new renewable generating capacity by 2020, over half of it from wind, could easily replace all the coal and oil and even 70 percent of the natural gas now used for electricity. That's one of many pieces of good news in Plan B.

Expanding the earth's tree cover

"At present, net deforestation of the earth is responsible for an estimated 1.5 billion tons of carbon emissions per year. The Plan B goal is to bring deforestation to a halt by 2020, thus totally eliminating this source of carbon emissions. The idea of banning logging may seem novel, but in fact a number of countries already have total or partial bans," Brown informs.

Against this backdrop of growing concern about the relationship between forest decline and climate change, a leading Swedish energy firm, Vattenfall, has examined the large-scale potential for foresting wasteland to sequester carbon dioxide. Of land that once was forestland, cropland, or grassland, 930 million hectares have a decent chance of being profitably reclaimed. Some 840 million hectares of them are situated in the tropical regions, where reclamation would mean much higher rates of carbon sequestration, Brown points out. "Every newly planted tree seedling in the tropics removes an average of 50 kilograms of carbon dioxide from the atmosphere each year during its growth period of 20–50 years, compared with 13 kilograms of carbon dioxide per year for a tree in the temperate regions."

Given Vattenfall's estimates, Brown suggests a global forestation plan of at least 18 percent of these 930 million hectares in an effort to remove atmospheric carbon dioxide. This would sequester nearly 1 billion tons of carbon every year, at a cost of $20 billion. As most of the excess carbon dioxide is emitted into the atmosphere by industrial countries the project should be funded by them. An independent body should be set up to administer, fund, and monitor this vast tree planting initiative, Brown maintains.

Stabilizing population

The ongoing rapid population growth undermines governments in many countries. The yearly addition of 70 million people in the world is predominantly taking place in countries where human impact has caused falling water tables and wells going dry, shrinking forests, eroding soils, and grassland turning to deserts. Climate change worsens these problems further. Brown highlights the alarming interconnections: when the amount of stresses goes up, the pressure on the governments rises in many a country and causes break down.

Typical for a failing state is that its government cannot keep up the personal security of the citizens. Somalia, Sudan, the Democratic Republic of the Congo, Haiti and Pakistan are among the most wellknown. Conflicts often spread to neighboring countries. The number of failing states increases year by year. "Such failing states", Brown concludes, "are early signs of a failing civilization."

The governments of failing states also struggle with higher prices of oil, as the world gets closer to the point where oil production will begin to decline. Another enormous threat to stability are the increasing food prices as an ever larger part of the U.S. grain production is converted into automotive fuel and causes food shortage, not the least in countries with severe water scarcity.

There is explosive population growth in countries most plagued by multiple stresses, and this is one of Browns greatest concerns – for example Ethiopia's 83 million inhabitants are projected to be 183 million by 2050. Under such circumstances the per capita resources to sustain life are shrinking year by year. Due to population growth the standard of living is sinking below the subsistence level for millions of people, and that again might end in humanitarian catastrophes and unmanageable social tensions.

It is essential that the international community helps countries that want to slow their population growth to do so quickly. This brings with it what economists call the demographic bonus, Brown reminds us. Therefore filling the family planning gap might be the most important and most urgent item on the global agenda. ”The benefits are enormous and the costs are minimal.” Smaller families turn the trends. Productivity surges, savings and investment climb, and economic growth accelerates.

Slowing world population growth means that all women who want to plan their families should have access to the family planning services they need. Unfortunately, at present 201 million couples cannot obtain the such services. Brown quotes J. Joseph Speidel who notes that “if you ask anthropologists who live and work with poor people at the village level...they often say that women live in fear of their next pregnancy. They just do not want to get pregnant.”

Fortunately countries that want to help couples plan their family size can do so quickly. Brown refers to Iran where in May 1993, a national family planning law was passed. Iran introduced a full panoply of contraceptive measures, including the option of male sterilization, as the first among Muslim countries. All forms of birth control, including the pill and sterilization, were free of charge. Television was used to disseminate information on family planning throughout the country. As a result of this initiative, family size in Iran dropped from seven children to fewer than three. Brown here points out that Iran's overall population growth rate of 1.3 percent in 2006 is only slightly higher than the growth rate in the USA.

Eradicating poverty

”To be poor often means to be sick. As with illiteracy, ill health and poverty are closely linked. Health is closely related to access to safe water, something that 1.1 billion people lack. Waterborne diseases claim more than 3 million lives each year, mostly as a result of dysentery and cholera, and mostly among children.” No wonder eradicating poverty is one of the four main Plan B goals. ”Poverty is largely inherited. The overwhelming majority of those living in poverty today are the children of people who lived in poverty.” Plan B here rests on the assumption that ”the key to breaking out of the culture of poverty is education – particularly the education of girls. As female educational levels rise, fertility falls.”

”Slowing population growth helps eradicate poverty ... and, conversely, eradicating poverty helps slow population growth. With time running out, the urgency of moving simultaneously on both fronts is clear”, Brown sums it up.

But, he also points to the need of so much more than traditional aid programs to eradicate poverty. ”For many developing countries, the reform of farm subsidies in aid-giving countries and debt relief may be even more important. A successful export-oriented farm sector – taking advantage of low-cost labor and natural endowments of land, water, and climate to boost rural incomes and to earn foreign exchange – often offers a path out of poverty. Sadly, for many developing countries this path is blocked by the self-serving farm subsidies of affluent countries. Overall, industrial-country farm subsidies of $280 billion are roughly 2.5 times the development assistance flows from these governments,” notes Brown.

”Along with eliminating harmful agricultural subsidies, debt forgiveness is another essential component of the broader effort to eradicate poverty. For example, with sub-Saharan Africa spending four times as much on debt servicing as it spends on health care, debt forgiveness can

help boost living standards in this last major bastion of poverty." And here Brown is talking about HIV and AIDS-afflicted countries in sub-Saharan Africa where life expectancy has fallen to only 45 years.

Restoring the earth's ecosystems

As croplands are eroding and harvests are shrinking, as water tables are falling and wells are going dry, as grasslands are turning to desert and fisheries are depleted, we certainly are in trouble. We cannot overlook that we depend on the earth's natural systems for goods, ranging from building materials to seafood, as well as for services, ranging from flood control to crop pollination. "If civilization's environmental support systems continue to decline, eventually civilization itself will follow." This is one of Lester Brown's most urgent messages.

"Restoring the earth will take an enormous international effort, one far larger and more demanding than the often-cited Marshall Plan that helped rebuild war-torn Europe and Japan. And such an initiative must be undertaken at wartime speed." Plan B shows that this is both doable and necessary. Brown adds: otherwise environmental deterioration will translate into economic decline and state failure, just as it did for earlier civilizations that violated nature's thresholds and ignored its deadlines.

The world's demand for water has tripled over the last 50 years thus creating a global scarcity. The drilling of millions of wells for irrigation has pressed the water use beyond the natural recharge, which actually means that the aquifers are being emptied. Many governments fail to limit pumping to the sustainable yield of aquifers. This failure leads to falling water tables today in countries where more than half of the world's population lives, among them the three biggest grain producers: China, India, and the United States, Brown reminds us.

"Since the overpumping of aquifers is occurring in many countries more or less simultaneously, the depletion of aquifers and the resulting harvest cutbacks could come at roughly the same time", Brown foresees. "And the accelerating depletion of aquifers means this day may come soon, creating potentially unmanageable food scarcity. While most people recognize that the world is facing a future of *water* shortages, not everyone has connected the dots to see that this also means a future of *food* shortages."

At the beginning of the twentieth century, the earth's forested area was estimated at 5 billion hectares. Since then it has shrunk to just under 4 billion hectares, and forest depletion continues. There is however "a vast unrealized potential in all countries to lessen the demands that are shrinking the earth's forest cover. In industrial nations the greatest opportunity lies in reducing the quantity of wood used to make paper, and in developing countries it depends on reducing fuelwood use." And, Brown says, forest plantations can only reduce pressures on the earth's remaining forests as long as they do not replace old-growth forests. Here South Korea is a positive example. With the help of village cooperatives, hundreds of thousands of people were mobilized to dig trenches and create terraces for supporting trees on barren mountains.

Collapsed or collapsing fisheries abound all over the world due to reckless overfishing, relying in turn on subsidized fishing fleets. Brown stresses that governments need to eliminate fishery subsidies. "There are now so many fishing trawlers that their catch potential is nearly double any yield the oceans can sustain. Managing a network of marine reserves governing 30 percent of the oceans would cost only $12–14 billion—less than the $22 billion in harmful subsidies that governments dole out today to fishers." It can be shown that marine reserves can help fisheries recover undisturbed – to the benefit of both fishers and consumers.

Tropical rainforests are among the other ecosystems under severe stress, including the vast Amazon rainforest. "Thus far roughly 20 percent of the rainforest has been cleared either for cattle ranching or soybean farming. Another 22 percent has been weakened by logging and road building, letting sunlight reach the forest floor, drying it out, and turning it into kindling. When it

reaches this point, the rainforest loses its resistance to fire and begins to burn when ignited by lightning strikes."

Scientists believe that if half the Amazon is cleared or weakened, this may be the tipping point, the threshold beyond which the rainforest cannot be saved. Experts warn of a future of "megafires" sweeping through the drying jungle. The carbon stored in the Amazon's trees equals roughly 15 years of human-induced carbon emissions in the atmosphere, Brown reports.

"The traditional approach to protecting biological diversity by building a fence around an area and calling it a park or nature preserve is no longer sufficient." If we cannot stabilize human numbers and stabilize the climate, there is not a single ecosystem on earth that we can save. Everything will change, Brown underlines.

A race against the clock – our mission is urgent

With business as usual the trends that undermine our future continue. More and more states are going to fail and eventually civilization itself will collapse. "Time is running out. We are in a race between tipping points in the earth's natural systems and those in our political systems", says Brown.

Reinforcing feedback loops make the process faster. One of them is the albedo effect. As the Arctic sea ice melts, the incoming sunlight hits the much darker open water. The heat absorbed from the sunlight then increases drastically. This may accelerate the melting of the Greenland ice sheet further.

Another reinforcing feedback loop is the melting of permafrost which will release billions of tons of carbon, some in the form of methane, a very powerful greenhouse gas.

"Can we phase out coal-fired power plants before the melting of the Greenland ice sheet becomes irreversible? Can we gather the political will to halt deforestation in the Amazon before its growing vulnerability to fire takes it to the point of no return? Can we help countries stabilize population before they become failing states?" Brown puts these serious questions to all of us. And, are we able to cut carbon emissions rapidly enough to save the Himalayan glaciers, which supply water to the Asian rivers which in their turn feed hundreds of millions of people?

Individual countries have the capacity to take initiatives on their own. Prime Minister Helen Clark of New Zealand is leading the way. New Zealand will boost the renewable share of its electricity, mostly hydro and geothermal, to 90 percent by 2025. Brown reports that the country plans to cut carbon emissions from transport and to expand its forested area. The challenge, as Clark says, is "to dare to aspire to be carbon neutral."

"We have the technologies to restructure the world energy economy and stabilize climate," says Brown. What is needed now is the political will to do so. "Saving civilization is not a spectator sport. Each of us has a leading role to play."

And he finishes *Plan B 3.0 Mobilizing to Save Civilization* by concluding: "The choice is ours – yours and mine. We can stay with business as usual and preside over an economy that continues to destroy its natural support systems until it destroys itself, or we can adopt Plan B and be the generation that changes direction, moving the world onto a path of sustained progress. The choice will be made by our generation, but it will affect life on earth for all generations to come."

Table 13–1. *Plan B Carbon Dioxide Emissions Reductions and Sequestration in 2020*

Action	Amount (million tons carbon)
Energy Restructuring	
Replacing fossil fuels with renewables for electricity and heat	3,140
Restructuring the transport system	1,190
Reducing coal and oil use in industry	100
Biological Carbon Sequestration	
Ending net deforestation	1,500
Planting trees to sequester carbon	950
Managing soils to sequester carbon	600
Total Carbon Dioxide Reductions in 2020	7,480
Carbon Dioxide Emissions in 2006	9,180
Percent Reduction from 2006 Baseline	81.5

Source: Plan B 3.0, chapter 13, endnote 25.

Table 13–2. *Plan B Budget: Additional Annual Expenditures Needed to Meet Social Goals and to Restore the Earth*

Goal	Funding (billion dollars)
Basic Social Goals	
Universal primary education	10
Eradication of adult illiteracy	4
School lunch programs for 44 poorest countries	6
Assistance to preschool children and pregnant women in 44 poorest countries	4
Reproductive health and family planning	17
Universal basic health care	33
Closing the condom gap	3
Total	77
Earth Restoration Goals	
Planting trees to reduce flooding and conserve soil	6
Planting trees to sequester carbon	20
Protecting topsoil on cropland	24
Restoring rangelands	9
Restoring fisheries	13
Protecting biological diversity	31
Stabilizing water tables	10
Total	113
Grand Total	190

Source: Plan B 3.0, chapter 13, endnote 47.