Energy's Path from the 1992 Earth Summit to Today—Will the Politics of Energy Change in Time to Address Climate Change?

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The International Solar Energy Society was one of only 175 United Nations accredited NGOs that were engaged in the United Nations Conference on Environment and Development process. Michael Nicklas led ISES's UNCED involvement that included attending and participating in PrepComs 2, 3, and 4 as well as the Earth Summit.

For twelve days in June of 1992, delegates from 175 nations, 118 heads of state, 2,400 members of non-governmental organizations (NGOs) and more than 9,000 members of the press converged in Rio de Janeiro, Brazil, for the United Nations Conference on Environment and Development (UNCED) to address an issue that we still face today – how can the world develop in a sustainable manner. Commonly called the Earth Summit, the event was the largest environmentally focused conference in history. Knowing full well what was at stake, a parallel event called the Global Forum drew over 17,000 environmental advocates representing 7,650 organizations and institutions from 165 countries – all coming to make their voices heard.

The results of the Earth Summit would ultimately be impacted by many factors - none more influential than the fossil fuel industry. In the 1990s 85% of the world's primary energy came from fossil fuels, and oil sales represented one fifth of all worldwide financial transactions.

Of the most contentious issues debated during the preparatory meetings (PrepComs) as well as in Rio were the specific references to the support of renewable energy, energy efficiency and the inclusion of societal cost considerations, which were strongly resisted by oil interests. Agenda 21 was the heart of the sustainability efforts. It outlined policies, laws, institutional changes, financing requirements and processes for achieving the environmentally sound manner in which future development could occur. But, throughout the PrepCom process, the OPEC countries and the US Bush Administration used their powers to water down the Climate Change Treaty as well as the Atmosphere section of Agenda 21.

Led by the delegations from Saudi Arabia and Kuwait, the oil-producing countries threatened to reject the entire Protection of the Atmosphere Chapter unless all references to the development and implementation of renewable energy, energy efficiency and societal cost accounting were removed. In one meeting addressing the Atmosphere Chapter, an OPEC delegate made their position quite clear by stating that they recognized that global warming was a serious problem but it would not manifest itself for fifty years and they wanted the money now. At the conclusion of this remark US and OPEC country delegates stood and applauded loudly.

The Bush Administration's impact on the UNCED process cannot be understated. During the final PrepCom 4, 139 nations voted for stabilization of mandatory greenhouse gases at 1990 levels by 2000. The United States voted against this, effectively killing the most promising component of the Earth Summit treaties. Justifying his position, President Bush incorrectly claimed that the American public supported his views. At that time, 84 percent of the American public supported renewable energy and energy efficiency while only 16% support non-renewable energy.

Today, the impacts of climate change that were so feared in 1992 are now being realized. The lack of political will to pursue a more sustainable energy path then still exists today.

In 1992 the UN Solar Energy Group for Environment and Development (UNSEGED) determined that the economic potential for renewable energy's global contribution could reach 34% by 2000 and reach 36% by 2030. Globally, renewable energy's contribution, due mostly to politics, was limited to 14.8% in 2020 and, if we remain on our current path, renewables will only contribute 19.2% by 2030.

In 1991 a joint study conducted by the Alliance to Save Energy, American Council for an Energy-Efficient Economy, Natural Resources Defense Council and Union of Concerned Scientists concluded that to stabilize the United States' impact on climate change, the US by 2030 would need to reduce total energy consumption from 85.3 quads (quadrillion BTUs) to 61.9 quads and increase renewable energy use to 32.8 quads or 53% on primary energy.

At this same time the US Department of Energy projected that with increased research, development and demonstration initiatives, the contributions from renewables in the US would reach 20% in 2010, 30% in 2020 and surpass 40% by 2030.

Currently, energy consumption in the United States has regrettably not been reduced to 61.9 quads. It has increased energy consumption to 100 quads and renewable energy's contribution in 2020 has only reached 11.6%. And, despite the leveled costs of electricity from photovoltaics (US$.040/kwh) and wind (US$.041/kwh) both being less than that of combined cycle gas (US$.056/kwh), coal (US$.109/kwh), nuclear (US$.155/kwh) and gas pikers (US$.175/kwh), the US Energy Information Administration is still predicting that only 42% of electricity and 16% of overall energy in 2050 will be provided by renewables.

During the Earth Summit the world discovered much about the causes of our environmental and developmental problems and how these problems could be solved. We learned that, at that time, returning to a sustainable path would have required collectively redirecting $US1.5 trillion in resources - $US150 billion a year for the next decade, to address the world's non-sustainable environmental path. And, we learned that two-thirds of the problems which separated us from achieving sustainability were energy related. Thirty years later the lack of commitment at the time of the Earth Summit to address sustainable development and particularly climate change has only magnified the problems we face today. The cost today to address these same critical issues are magnitudes greater. And with inaction, the many costs to society will grow even more.

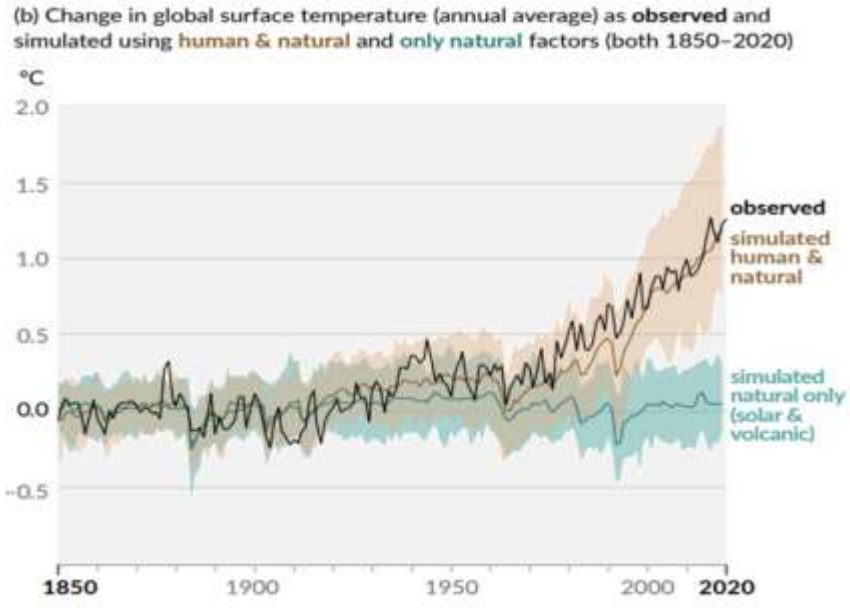
In the United States the societal costs associated with its annual US$400 billion energy bill in 1990 was estimated to be as high as US$258 billion. Today, because of inaction, the annual negative impacts on American's exceeds $319 billion and by 2050, without immediate action, are expected to reach $530 billion.

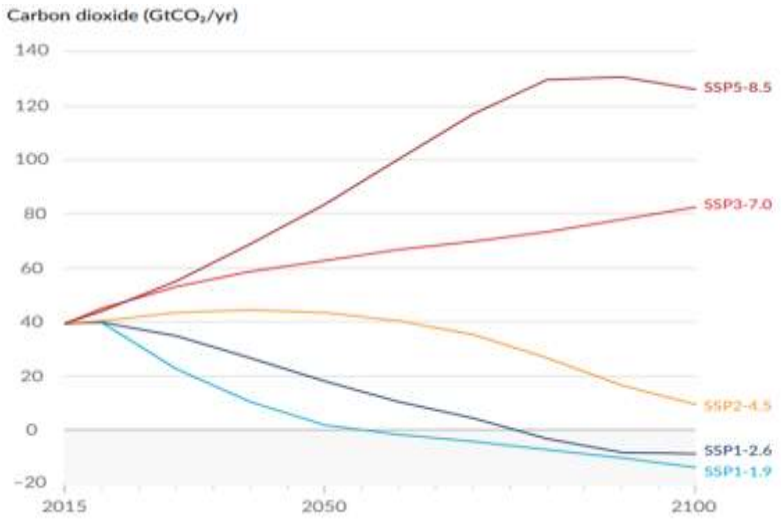
We now know that for at least 800,000 years before the start of the industrial revolution the atmospheric concentration of CO2 never exceeded 300 parts per million. At the time of the Earth Summit in 1992 it had increased to 355 parts per million. In May of 2022, we have now reached 422 parts per million and the impacts of climate change are rapidly escalating. Renewable energy has now proven that it has the capability to positively address this, the most critical issue of our time.

We just need to muster the political will to make it happen.

Reported in the Intergovernmental Panel on Climate Change (IPCC) April, 2022 documentation on the need for Mitigation of Climate Change, was the determination that the average annual global greenhouse gas emissions were at their highest levels in human history and that actions must be taken immediately to reduce emissions by 43% by 2030. The IPCC Co-Chair, pointing to the need to move swiftly to a low-carbon society stated "*It's now or never, if we want to limit global warming to 1.5°C.*"

With total human-caused global surface temperature having increased by 1.07°C (0.8°C to 1.3°C) from the time of the Industrial Revolution to today, and with our current business as usual energy path, the IPCC projects that "*global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO2 and other greenhouse gas emissions occur in the coming decades.*" The IPCC's clear warning is that achieving global net zero CO2 emissions is required for stabilizing CO2-induced global surface temperature increase.





The IPCC 2022 report assessed differing climate responses ranging from scenarios with high (SSP3-7.0 depicts emissions doubling 2100) and very high (SSP5-8.5 depicts emissions doubling by 2050) GHG emissions increases from current levels to scenarios with intermediate GHG emissions (SSP2-4.5) remaining around current levels until the middle of the century to scenarios with very low and low GHG emissions declining to net zero around or after 2050 followed by net negative CO2 emission (SSP1-1.9 and SSP1-2.6).

The current level of financial commitments by countries across the global is simply not adequate to address the crisis the world now faces. Despite the potential of renewable energy, the hope that a more sustainable energy path has not yet been realized. We are now seeing the results of inaction on climate change. We are now feeling the financial ramifications and experiencing the loss of human lives resulting from extreme heatwaves and droughts, increased precipitation per events and flooding, and the increased severity of hurricanes. Greenhouse gas emissions must be reduced by over 40% within the next 10 years and eliminated within the next 20 years.

If we don't want to see mass extinction of species, the death of our oceans, drought induced food shortages, increased poverty, resource wars and climate refugees, we need to act now. The world is quickly coming to that tipping point where the interrelated impacts of climate change combine to create even greater consequences. Already we are seeing one alarming example where the current level of climate change induced melting sea ice has impacted the amount of radiation reflected back into the atmosphere that in turn has created even more melting resulting in rising sea levels. Once these critical tipping points reach a level that significantly reinforce one another we will face a climate catastrophe.

The only way out of this is to move as quickly as possible to renewable energy and reduce overall energy consumption through enhanced energy efficiency. Inaction in addressing climate change is not acceptable.

World Energy Consumption and Carbon Dioxide Emissions, 1990-2050						
		Source	1990	2020	2030	2050
Total World Consumption (Quads- quadrillion BTUs)		USEIA	**348.4**	**601.5**	**705.2**	**886.3**
Renewable Energy quads			**22.65**	**88.73**	**135.64**	**235.16**
% Renewable Energy		USEIA, BP	**6.5%**	**14.8%**	**19.2%**	**26.5%**
Billion Metric Tons Emissions and Corresponding Temp Rise C	low IPCC 1.9	IPCC, NOAA	**22**	**35**	**21**	**0**
	degree C rise				**1.5c(1.2-1.7)**	**1.6c(1.2-2.0)**
	mid IPCC 4.5				**43**	**45**
	degree C rise				**1.5c (1.2-1.8)**	**2.0c(1.6-2.5)**
	high IPCC 7.0				**55**	**62**
	degree C rise				**1.5c (1.2-1.8)**	**2.1c(1.7-2.6)**
	higher IPCC 8.5				**56**	**82**
	degree C rise				**1.6c(1.3-1.9)**	**2.4c(1.9-3.0)**
Required Billion Metric Tons to result in less than 2c Degree Rise		IPCC, NOAA		**35**	**21**	**0**
Parts per Million (PPM) CO2 355 in 1992		IPCC,NOAA	**355**	**417**	**440** (400-460)	**520** (490-550)
GH Gas Intensity in Million Tons CO2 per Quad				**58.2**	**29.8-79.4**	**0-92.5**
Population billion		UN	**5.94**	**7.79**	**8.4-8.7**	**9.4-10.2**
Energy Intensity in BTUs and KWHs per person	BTUs/person		**58,653,199**	**77,174,750**	**81,057,471**	**86,892,157**
	KWHs/person		**17,185**	**22,612**	**23,750**	**25,459**

United States Energy Consumption and Carbon Dioxide Emissions, 1990-2050						
		Source	1990	2020	2030	2050
Total US Consumption (Quads- quadrillion BTUs)		USEIA	**84.43**	**99.59**	**99.96**	**108.68**
Renewable Energy quads		USEIA	**6.16**	**11.52**	**14.11**	**17.00**
% Renewable Energy			**7.3%**	**11.6%**	**14.1%**	**15.6%**
% Renwable Energ Electricity		USEIA	**12%**	**21%**		**42%**
Billion Metric Tons Emissions (projections by EIA)		EPA,USEIA	**6.437**	**5.222**	**4.622**	**4.738**
Population million			**249.5**	**330.0**	**347.3**	**375.8**
Energy Intensity in BTUs and KWHs per person	BTUs/person		**327,248,062**	**301,787,879**	**288,069,164**	**289,196,381**
	KWHs/person		**95,883**	**88,423**	**84,404**	**84,734**
Annual societal cost of energy		ASES,4thNCA	**$258 billion**	**$319 billion**		**$530 billion**