

# CHAPTER 35

## MUTUALLY ASSURED DESTRUCTION (MAD)\*: THE BIOSPHERE, *HOMO SAPIENS*, AND THE HUMAN ECONOMY

\*First used by the *Bulletin of the Atomic Scientists* for a major exchange of nuclear weapons.

 **DURING THE “COLD WAR” BETWEEN THE UNITED STATES AND THE USSR, THE *BULLETIN OF THE ATOMIC SCIENTISTS* ESTABLISHED A “DOOMSDAY CLOCK” BASED ON THE HIGH PROBABILITY THAT A FULL-SCALE EXCHANGE OF NUCLEAR WEAPONS WOULD ANNIHILATE BOTH COUNTRIES.<sup>1</sup>**

-  The term describing this horrible situation was *mutually assured destruction* (MAD).<sup>1</sup>
-  The security of the world was based on that probability.
-  During the Cold War, scientists realized that a full-scale nuclear exchange would alter the climate by producing quantities of small particles that would reflect sunlight.
-  A red button that, if pushed, would initiate a nuclear exchange was a prominent feature in stories of nuclear war — both countries had one.
-  Only the older generation remembers those days when a massive nuclear exchange was a distinct possibility, but the danger remains.

**🚩 IN 2012, THE *BULLETIN OF THE ATOMIC SCIENTISTS* ADDED THE CRISIS OF CLIMATE CHANGE TO THE DOOMSDAY CLOCK. HOWEVER, “PEOPLE DO NOT FEAR CLIMATE CHANGE THE WAY THEY FEAR NUCLEAR WAR BECAUSE NOBODY HAS HIS OR HER FINGER ON THE BIG RED BUTTON. INSTEAD IT’S BILLIONS OF PEOPLE PUSHING SMALLER BUTTON ALL THE TIME, AGAIN AND AGAIN AND AGAIN. UNTIL IT’S TOO LATE TO STOP.”<sup>1</sup>**

- 🌍 **Another huge difference in the two situations is that no individuals and organizations were stating that nuclear war was a hoax and a conspiracy.**
- 🌍 **Climate change will not annihilate civilization in numerous mushroom clouds, but will, if business as usual continues to destroy the present Biosphere, end life as we know it.<sup>1</sup>**
- 🌍 **The similarity between nuclear war and climate change is that neither nurtures either the Biosphere or the common good.**



# **WEATHER AFFECTS AGRICULTURAL PRODUCTIVITY, ENERGY USE, AND OUR DAILY LIVES, AND IT IS ALREADY EXTREME. THIS SITUATION WILL CONTINUE TO WORSEN AS LONG AS ANTHROPOGENIC GREENHOUSE GAS EMISSIONS CONTINUE TO RISE.**

- 🌍 *“The [U.S.] National Academy of Sciences reports that the hottest days are now hotter. And the fingerprint of global warming behind this change has been firmly identified.”<sup>2</sup>*
- 🌍 *“In the past several years, the global areas hit by extremely unusual hot summertime temperatures has increased 50-fold.”<sup>2</sup>*
- 🌍 *“The impact of these [climate] changes can be devastating. The drought, heat wave and associated record wildfires that hit Texas and the Southern plains [US] in the summer of 2011 cost \$12 billion.”<sup>2</sup>*
- 🌍 *“In storm-affected areas, many people had no electricity to run fans, air-conditioning and refrigerators.”<sup>3</sup>*
- 🌍 *“Climate scientists have this to say about the record-breaking heat wave rippling across the country: Get used to it.”<sup>4</sup>*

# BOTH FOOD AND WATER ARE CLOSELY LINKED SO IT IS NO SURPRISE THAT SEVERE WORLDWIDE DROUGHTS ARE AFFECTING FOOD SUPPLIES AND INCREASING THE NUMBER OF WATER STRESSED POPULATIONS.

- 🌐 For example, both North and South Korea are suffering from the worst drought in a century.<sup>5</sup>
- 🌐 In the United States, “*The narrowing of the contract prices [for corn] has occurred as ‘abnormally dry’ or worse conditions affected 71 percent of the Midwest, the largest U.S. growing region . . .*”<sup>6</sup>
- 🌐 “*Water scarcity already affects every continent. Around 1.2 billion people, or almost one-fifth of the world’s population, live in areas of physical scarcity, and 500 million people are approaching this situation. Another 1.6 billion people, or almost one quarter of the world’s population, face economic water shortage (where countries lack the necessary infrastructure to take water from rivers and aquifers).*”<sup>7</sup>



**CLIMATE CHANGE IS ALREADY A THREAT TO FOOD SECURITY. IN THE US MIDWEST “. . . A GROWING SEASON EXPECTED TO BE ONE OF THE BEST ON RECORD . . . EVAPORATE[D] UNDER A BLAZING SUN.”<sup>8</sup>**

- For example: In Hill City, Kansas, *“For five days last week, a brutal heat wave here crested at 115 degrees. Crops wilted. Streets emptied. Farmers fainted in the fields. Air-conditioners gave up . . . Hill City was, for a spell, in the ranks of the hottest spots in the country.”<sup>9</sup>*
- *“The grinding drought that transformed much of the [US] West into a tinderbox has all but choked off the growing season here.”<sup>9</sup>*
- Even urban families that do not produce food suffered because they often store food in refrigerators and large freezers, and electric power outages during violent storms caused multi-day lost of power during which the food spoiled. Commercial supplies of food were also lost during extended power outages.

# ACCEPTING SEA LEVEL RISE IS ESSENTIAL TO THE DEVELOPMENT OF GOALS AND CONDITIONS NECESSARY TO REDUCE IT OR, MORE LIKELY, ADAPT TO IT.

-  *“Rates of sea level rise due to global warming and climate change are increasing three-to-four times faster along highly populated sections of the US northeast Atlantic Coast than they are globally. . .”<sup>10</sup>*
-  *“As an example, 1 metre of sea level rise could raise the frequency of severe flooding for New York City from once per century to once every three years . . .”<sup>10</sup>*
-  Demand for freshwater has increased sea level rise: *“Trillions of tonnes of water have been pumped up from deep underground reservoirs in every part of the world and then channelled into fields and pipes to keep communities fed and watered. The water then flows into the oceans, but far more quickly than the ancient aquifers are replenished by rains.”<sup>11</sup>*

# **INTRA-NATIONAL CLIMATE REFUGEES MAY OCCUR FOR A VARIETY OF REASONS. THREE ILLUSTRATIVE EXAMPLES FOLLOW.**

-  Refugees may result from denial of scientific evidence — Acceleration of warming, which is not uniform, arises “*. . . from circulation and variations in temperature and/or salinity, and by static equilibrium processes, arising from mass redistributions changing gravity and the Earth’s rotation and shape.*”<sup>12</sup>
-  The assault on science and reason distracts scientists from their primary responsibility, the generation of scientific evidence — scientific evidence and predictions based on that evidence are essential to planning for regional crises.
-  Suppression of scientific evidence may result in refugees — “*Lawmakers in North Carolina, which has a long Atlantic Ocean coastline and vast areas of low-lying land, voted on Tuesday to ignore studies predicting a rapid rise in sea level due to climate change and postpone planning for the consequences.*”<sup>13</sup>

 **“NO PREVIOUS CIVILIZATION HAS SURVIVED THE ONGOING DESTRUCTION OF ITS NATURAL SUPPORTS. NOR WILL OURS. YET ECONOMISTS LOOK AT THE FUTURE THROUGH A DIFFERENT LENS. RELYING HEAVILY ON ECONOMIC DATA TO MEASURE PROGRESS, THEY SEE THE NEAR 10-FOLD GROWTH IN THE WORLD ECONOMY SINCE 1950 AND THE ASSOCIATED GAIN IN LIVING STANDARDS AS THE CROWNING ACHIEVEMENT OF OUR MODERN CIVILIZATION. DURING THIS PERIOD, INCOME PER PERSON WORLDWIDE CLIMBED NEARLY FOURFOLD, BOOSTING LIVING STANDARDS TO PREVIOUSLY UNIMAGINABLE LEVELS. A CENTURY AGO, ANNUAL GROWTH IN THE WORLD ECONOMY WAS MEASURED IN THE BILLIONS OF DOLLARS. TODAY, IT IS MEASURED IN THE TRILLIONS. IN THE EYES OF MAINSTREAM ECONOMISTS, OUR PRESENT ECONOMIC SYSTEM HAS NOT ONLY AN ILLUSTRIOUS PAST BUT ALSO A PROMISING FUTURE.”<sup>14</sup>**

 Continued economic “progress” that is based on perpetual, resource-dependent growth is simply not possible on a finite planet with finite resources.

 ***“BUT NATURAL SCIENTISTS SEE THAT AS THE WORLD ECONOMY EXPANDED SOME 20-FOLD OVER THE LAST CENTURY, IT HAS REVEALED A FLAW — A FLAW SO SERIOUS THAT IF IT IS NOT CORRECTED IT WILL SPELL THE END OF CIVILIZATION AS WE KNOW IT. AT SOME POINT, WHAT HAD BEEN EXCESSIVE LOCAL DEMANDS ON ENVIRONMENTAL SYSTEMS WHEN THE ECONOMY WAS SMALL BECAME GLOBAL IN SCOPE.”<sup>14</sup>***

-  In short, growth is limited, and carrying capacity for any species is finite because resources are finite.
-  The era of abundance ended about 1987 when ecological overshoot began and humanity began using natural capital to sustain economic growth instead of living on the renewable resources generated by natural capital.
-  Earth's Biosphere is finite and thus has limits to the generation of renewable resources.
-  The universal laws of physics, chemistry, and biology, plus common sense, dictate that perpetual, resources-dependent growth is not possible on a finite planet.



# HUMANITY NOW HAS TWO MEANS OF MUTUALLY ASSURED DESTRUCTION — EACH APPALLING IN ITS OWN WAY. HOWEVER, GLOBAL CLIMATE CHANGE IS A PROBLEM SOMETHING EACH INDIVIDUAL CONTRIBUTES TO ON A DAILY BASIS.

- 🌍 To reduce the risks of a nuclear war, reducing the number of nuclear bombs is a good first step.
- 🌍 To reduce the rate of climate change, reducing anthropogenic emissions of greenhouse gases is an essential first step.
- 🌍 *“How serious is the threat to the environment? Here is one measure of the problem: all we have to do to destroy the planet’s climate and biota and leave a ruined world to our children and grandchildren is to keep doing exactly what we are doing today, with no growth in human population or the world economy. Just continue to release greenhouse gases at current rates, just continue to impoverish ecosystems and releases of toxic chemicals at current rates, and the world in the latter part of this century won’t be fit to live in.”<sup>15</sup>*

# **MANY “SIGNPOSTS” ARE OBVIOUS ON THE PATH TO GLOBALLY ASSURED DESTRUCTION (GAD). A FEW ILLUSTRATIONS FOLLOW.**

-  **The global human population is growing exponentially — global resources are not and may be diminished by global climate change.**
-  **Humanity’s reluctance to cease using fossil fuels is reducing renewable resource regeneration.**
-  **If business as usual continues the collapse of the present Biosphere becomes increasingly probable.**
-  **The war on science will not affect the function of the universal laws — scientists merely report on them.**
-  **When civilization developed after the agricultural and industrial revolutions, resources were plentiful and easily obtained for a comparatively small population. Now they are more difficult to obtain for a huge human population. If the global civilization collapses, restoring it in an era of scarce resources will be difficult (if not impossible).**

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