



Response to IPCC Climate Report: Changing How We Make and Use Things Can Avert Climate Catastrophe

By Nabil Nasr Ph.D.

As the United Nations secretary-general recently stated, the latest Intergovernmental Panel on Climate Change (IPCC) climate report is a “code red for humanity.” If we do not reduce greenhouse gas emissions immediately, people everywhere are facing increasingly dire and deadly heat waves, flooding, wildfires, and more. Future scenarios range from bad to worse to catastrophic.

For a real world example, look no further than Hurricane Ida, which in August wreaked havoc from New Orleans to New York.

But we cannot lose hope. For the sake of our children and grandchildren, we must meet our climate goals and achieve net-zero emissions by 2050. This year – this decade – is our last, best chance to find solutions so that future generations can have a better, cleaner, and greener future.

So where do we start?

Many of us have heard about renewable energy solutions. Millions of dollars have been invested in wind and solar, and other renewables. While these solutions are critically important, they will only get us a little more than halfway to net-zero – about 55%. To get to net-zero, we need to deploy renewable energy technologies AND reduce energy consumption. Renewable energy cannot do it alone.

Reducing energy consumption and adopting a Circular Economy approach in how we make and use things – how we manufacture and use everyday products - will make up the remaining 45%. This is how we get all the way to net-zero.

The REMADE Institute is proud to focus on accelerating the nation’s efforts to transition to a Circular Economy. Based here in Rochester and founded in 2017 by a consortium led by the Rochester Institute of Technology, REMADE is a \$140 million, 130-member public-private partnership established by the U.S. Department of Energy.

We work with industry innovators, academic researchers and national labs to develop new technologies that can significantly reduce energy consumption, decrease greenhouse gas emissions, and increase the supply and use of recycled materials, among other performance metrics. We are also part of Manufacturing USA, a consortium of 16 manufacturing institutes across the country dedicated to increasing the resiliency of the U.S. supply chain and increasing U.S. manufacturing’s competitiveness.



We accomplish our mission by focusing on “hard-to-abate” industries: metals, including steel and aluminum; plastics and polymers; fibers, including paper and cardboard; and electronic waste, or e-waste. Each one of these industries faces significant technological challenges when it comes to reuse, remanufacturing, recovery, and/or recycling. They also face considerable barriers in terms of overarching systems analysis, circular design, and materials optimization.

In a five-year period, REMADE is developing technologies in these “hard-to-abate” industries that are capable of:



↑25%
Embodied
Energy
Efficiency



↓20%
Greenhouse
Gas
Emissions



↑30%
Supply and Use
of Recycled, or
Secondary, Materials



↓30%
Use of Virgin,
or Primary,
Materials

Technologies developed by REMADE in these "hard-to-abate" industries, once fully implemented, are capable of increasing energy efficiency by 25%; decreasing greenhouse gas emissions by 20%; increasing the supply and use of recycled, or secondary, materials by 30%; and decreasing the use of virgin, or primary, materials by 30%.

In fact, the Institute has already achieved our energy efficiency and greenhouse gas emissions goals in just the first four years of our existence. These achievements equate to conserving more than 180 million barrels of oil per year and eliminating the annual emissions of about 11.5 million cars.

Manufacturers across the country and around the world understand that time is of the essence in order to avoid the future’s most catastrophic climate scenarios. They are transitioning from the old linear economy of “take-make-dispose” to a Circular Economy of “make-use-reuse-remanufacture-recycle.” Many of our own manufacturing partners - including Unilever and others - have a significant stake in this fight.

John Kerry, the Special Presidential Envoy for Climate who is leading the U.S.’s delegation to COP26 in Glasgow this November, recently stated that “50% of the reductions we have to make to get to net-zero...are going to have to come from technologies that we don’t yet have.”

Kerry is right. REMADE and our partners – along with many, many others - are hard at work developing new technologies every day. One can only imagine what could be accomplished with even more investment in research and technological advances.

We could, in truth, avoid disaster and instead create a cleaner, greener, and more circular future for all of us.

Nasr is CEO of the REMADE Institute and the Director of the Golisano Institute for Sustainability at RIT.