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Recognizing the urgency of our climate crisis

ASU Global Futures Laboratory response to the IPCC Special Report on Climate Change and Land

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Land is fundamental to human livelihood because it sustains our global food sources, freshwater supplies, multiple ecosystem services and biological diversity. According to the recently-released *Special Report on Climate Change and Land* from the Intergovernmental Panel on Climate Change (IPCC), growing human pressure from agriculture, food production, urbanization and deforestation is significantly contributing to climate change. Climate change, in turn, is adding pressure on land resources, creating a vicious cycle.

This report clearly outlines that climate change is increasing global temperatures, with direct and

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indirect impacts such as water scarcity, soil erosion, vegetation loss, wildfire damage, food supply instabilities and shifts in disease patterns. Our food systems and food security are further threatened as a result of the effects of climate change on the basic functions of the terrestrial and aquatic ecosystems that impact soil integrity and heighten the risk of desertification and therefore human health.

The IPCC report demonstrates that the impacts of climate change, including more frequent occurrences of extreme heat on top of steadily rising temperatures with significant death tolls (including the more than 14,000 deaths in France in 2003, or the more than 55,730 deaths in Russia in 2010, both due to excessive heat waves), changes in amount and timing of precipitation, increased frequency and severity of floods (recently demonstrated by the 2019 floods in the Midwestern US), droughts (such as the continuous

drying of the Southwest of the US with related higher frequency of wild fires) already affected global food security and led to desertification and land degradation. Peter Schlosser, vice president and vice provost of the Global Futures Laboratory at Arizona State University, says, “it shows that we are pushing against planetary boundaries. In other words, we are extracting more resources than the planet has to give. We must develop and rapidly deploy response options for proactive planetary management to maintain habitability and improve human well-being.”

The IPCC report was written by 107 leading scientists from 52 countries, who synthesized more than 7,000 scientific papers to draw carefully crafted conclusions based on our current state of knowledge. The latest in a series of compelling reports documenting the severity of the climate crisis, this volume explores issues of land degradation, desertification, sustainable land

management and, perhaps most importantly, food security. Kathleen Merrigan, executive director of the Swette Center for Sustainable Food Systems at ASU, says, “For those fighting in the trenches for sustainable agriculture, the news in this report is not new. Rather, it is confirmatory that policies to promote agroforestry, perennial crops, biodiversity, subsidy reform, and dietary change are urgently needed. Top of the list is the empowerment of women, who represent the majority of the world’s farmers yet face so many barriers, such as limited access to land tenure, rendering them disproportionately vulnerable to climate change.”

It is important to note that the report identifies a number of critical sustainable land management strategies that would contribute to the limiting of global warming to less than 2° C, if not 1.5° C — but immediate implementation of these options for solutions is necessary to

avoid further progression of the climate crisis and its adverse effects.

According to the IPCC, agriculture, forestry and other land uses account for approximately 23% of total human greenhouse gas emissions. The report identifies sustainable land management and forest management practices that could enhance food security, including sustainable food production, improved forest management, land restoration, reduced deforestation and degradation, and reduced food loss and waste. These response options also generate co-benefits to human health and livelihoods, supporting sustainable development.

Klaus Lackner, director of Center for Negative Carbon Emissions at ASU, acknowledges the utility of the land management options identified in the IPCC report, but also points out that it fails to address a fundamental challenge: the CO2 emissions into the atmosphere. “Removing CO2 from

the air and from point sources, and storing it safely and permanently, together with immediate and drastic cuts in GHG emissions, appears to be the only approach that can operate at the necessary scale to halt further global warming" says Lackner. "Storage capacity exists, and technologies for removing CO2 at point sources and from the air are at the cusp of commercial availability."

Many of the response options discussed in this report focus on new approaches to policy, governance and institutions. Such reforms can enable climate-adaptive development pathways to manage resources more sustainably, enhance social resilience and facilitate collaboration among stakeholders. They also lead to more sustainable economic growth.

It is particularly important to engage those most vulnerable to climate change, who often are poor and marginalized communities, women and indigenous communities. This is

critical because, according to Dave White, deputy director of the Julie Ann Wrigley Global Institute of Sustainability, “The policies that have designed the system we have now cannot be marginally tweaked to produce different outcomes. We have to transform our policy system so that it is flexible, innovative, adaptive and fast moving enough to address the physical and social changes we are seeing. This is why climate induced migration has become a global flashpoint issue. This is why food security is a problem all people are confronting. This is why water scarcity is essential to any conversation we have about the planet’s health.”

Ultimately, the solutions to this climate crisis will require new approaches to managing planetary systems that sustain global food security, preserve freshwater resources, protect biodiversity and enhance human livelihoods. Although the task seems daunting,

Gary Dirks, senior director of the Global Futures Laboratory and Julie A. Wrigley Chair of Practice of Sustainable Energy Systems says, “We have to imagine ourselves transforming the big human/natural systems in their entirety. We have to imagine new food systems, new energy systems and new urban environments, and then we can think about what solutions might look like.”

Such changes have to be seen as critical drivers of a global transformation of the societal and political structures that determine the choices and decisions we are making concerning the present and future state of our planet. We have the means to address the problems outlined in this special IPCC report. It is up to us to recognize the urgency of this global climate crisis, use these means now and avoid further escalation of the impacts of climate change.

This is why we are inspired by the creativity and innovation of our students here at ASU as they face the challenges of the coming decades. This is why we are inspired by global youth movements like Greta Thunberg and Fridays For Future who are making declarative stands to address the climate crisis now. They look forward with determination and optimism about the potential for change in themselves, their communities and in the policies and programs that will support enhanced sustainability.

This response was authored by the following faculty at Arizona State University:

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137 | 1