

## WORLD SCIENTISTS' WARNINGS INTO ACTION, LOCAL TO GLOBAL – SUMMARY

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The full paper on which this summary is based is in press at the SAGE journal, [Science Progress](#).

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- The time for empty commitments for the distant future of 2050 is over. Large-scale, rapid, transformative changes in our economies, societies, cultures and politics are necessary on a timescale of superhuman speed.
- Inertia must be overcome to ensure that essential and massive action is well underway in the five-year period 2022-2026. Unprecedented global collaboration is needed now. Our short-term action or inaction will determine our common future. The science is clear and irrefutable; humanity is already in advanced ecological overshoot.
- Many climate scientists fear that the 1.5 or 2.0 C degree Paris targets are insufficient and will push us irreversibly onto a Hothouse Earth pathway. The carbon and heat already trapped in our oceans and atmosphere guarantee that we will exceed 1.5C. Too many leaders are willing to risk catastrophe when it will be another's problem.
- Protest and other bottom-up demands for change will help break through barriers and instil urgent action.

### ENERGY

- Now and well before 2030 leaders must redouble decarbonization commitments and pursue the major and very rapid energy transition to a less energy-intensive future essential for the survival of civilization and a stable, habitable planet. Leaders and policymakers need to:
  - immediately create an energy transformation roadmap far more assertive and far less platitudinal than the actions being discussed today
  - plot a course for a rapid decrease in global energy demand, take action to get citizens to adapt to a less energy-intensive future, and aggressively pursue a fossil fuel free energy supply
  - re-establish regional economies and commerce to sustain populations as much as possible on regional resources to reduce reliance on carbon-intensive trade goods
  - relocate light manufacturing, food production and processing as much as possible to enhance regional self-reliance, scale up efficiency retrofits and accelerate small-scale energy generation.
  - impose carbon pricing and focus heavy taxes on “luxury” travel and trade, especially flights, inefficient vehicles and imported luxury goods.

### ATMOSPHERIC POLLUTANTS

- Current accumulation of atmospheric carbon, its acidification of oceans, and dangerous increases of methane, nitrous oxide, hydrofluorocarbons and other pollutants in our atmosphere, far exceed the worst case scenarios projected by the scientific community decades ago.
- Having already crossed the tipping point of Arctic sea ice loss, we are approaching another caused by dramatic Arctic warming, with potentially catastrophic impacts from rapid mobilization of substantial reservoirs of methane trapped in permafrost into the atmosphere on decadal-century timescales.
- Leaders in all jurisdictions can aggressively reduce or mitigate emissions of methane at their sources wherever possible - agricultural, industrial, oil and gas production, by:
  - shifting subsidies for large methane-producing meat and dairy firms and FF companies to fees on large methane producers.
  - initiating and investing in development of technologies and natural practices to reduce atmospheric methane safely and effectively, documenting and monitoring atmospheric methane level reduction, and framing and implementing global governance requiring the use of such methods.

### NATURE

- Nature is in freefall decline. Complex, interdependent ecosystem processes - pollination, natural flood control and water purification – have been severely depleted by humanity. Some of the most major tropical and temperate forests are now carbon sources, instead of sinks. National and regional leaders need to:

- by 2030, act at local, regional, national, and global levels to protect land and water ecosystems covering 30% of the Earth's surface. Widespread conservation, restoration and rewilding are needed to help natural habitats recover sufficient resilience to support the survival of humanity.
- Immediately halt the destruction and degradation of critical carbon-accumulating ecosystems like forests, wetlands and grasslands. Protect older trees and forests which lock up vastly more carbon than newly planted trees and leave secondary forests to continue growing to protect existing ecosystems, maximize carbon storage and avoid harvested forest product emissions.
- Halt by 2027-2030 regional and local habitat transformation, introducing policies and bylaws which encourage densification, sprawl reduction, rezoning and repurposing.

## **FOOD SYSTEMS**

- Current agricultural production and consumption patterns have gone well beyond planetary boundaries and cannot sustain 8 bn people. The food system generates >25% of GHG emissions, around 70% of freshwater use, most deforestation and nutrient runoff, leading to freshwater and coastal dead zones.
- To avoid widespread famines this century, leaders must take rapid action at local, regional, national, and global levels across three major components of the food system: production, land, and farming practice:
  - Production must be rapidly shifted from high impact foods (such as animal products) to low impact foods (such as fruits, vegetables, legumes and grains), increasing land and water use efficiency.
  - Farming practices must be urgently transitioned to more regenerative and less environmentally degrading methods to reduce the environmental impacts of farming, increase water efficiency, reduce land requirements, protect and restore soil and other natural habitats.

## **POPULATION STABILIZATION**

- Earth is in overshoot and cannot sustain our population. Climate instability, ecological destruction, famine, social and political instability and insecurity, unprecedented suffering - all effort to alleviate these is undermined by an increase in population of 80 million each year.
- Leaders must acknowledge population and consumption as the two fundamental 'multiplier threats' to a sustainable civilization, and take bold, equitable, just action by 2026 at all levels to bend the curve:
  - embed appropriate, ethical, scalable actions into economic, social and political agendas.
  - include increased wellbeing investments, through ethical and empowering health, education and economic strategies assisting women and girls, as well as men and boys.
  - supporting wealthy families to have fewer children as the single most effective way to individually reduce their future GHG emissions, and poorer families to advance economically and educationally.
  - in developed nations, allocating at least 4% of international aid budgets to family planning.

## **ECONOMIC REFORMS**

- To address the catastrophic effects of climate change, extinction, poverty, and other converging crises, our economic model must be fixed to operate within planetary boundaries. Leaders need to:
  - correct market failures by introducing or increasing carbon and environmental taxes on polluting production and services and remove all perverse subsidies to industries harming planetary systems.
  - create economic frameworks for profitable activities to prioritise urgent protection and restoration of natural capital and ecosystem services (including carbon sequestration, flood control, water purification, pollination, disease control).
  - introduce reforms to ensure that farm and forestry lands, like the oceans, rivers and wetlands, are managed for the long-term benefit of nature and humanity rather than short-term profits.
  - introduce land rights and urban planning models that avoid perpetual land development, loss of carbon and biodiversity, and annihilation of intact wilderness and encourage densification of urban areas, multipurpose land uses, and other forms of efficiency.
  - rapidly introduce policies, including relocalization, to restore socially efficient levels of local production and reduce emissions.
  - on governance, invest in leadership that prioritizes planetary and public-good values, and analyze and reform all routine procedures, practices and policies which prevent bold, transformative action.