

# **Decarbonizing Clinical Research:** Why Climate and Health Should Be a Strategic Priority for TASK

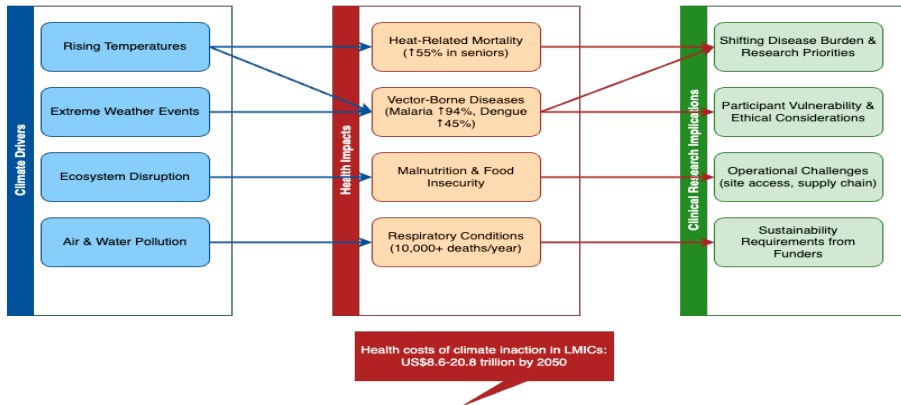
**Craig Parker**

Wits Planetary Health, University of the Witwatersrand

**TASK Clinical Trials Afternoon Lecture, 2025**

# Why Climate and Health Matter

## Climate Change Impact on Health & Clinical Research



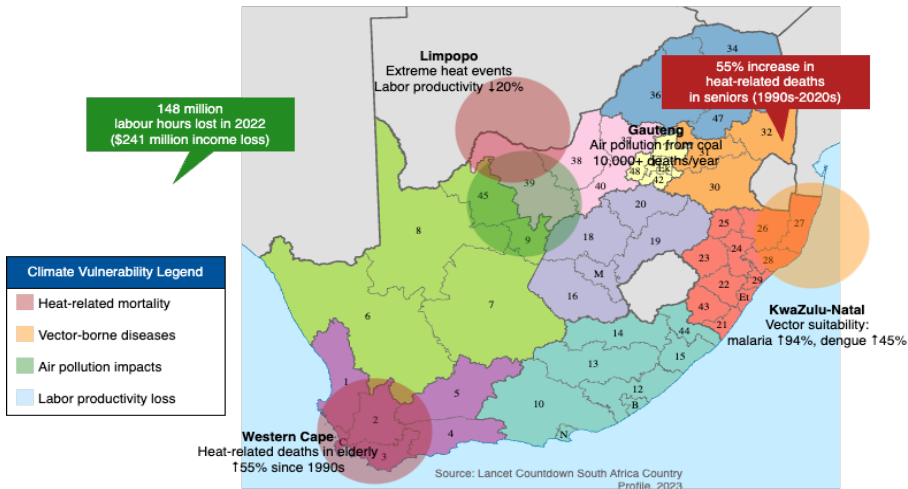
Source: The Lancet Countdown, 2023

## Key Impact

Climate change threatens to reverse decades of progress in global

# South Africa's Exposure

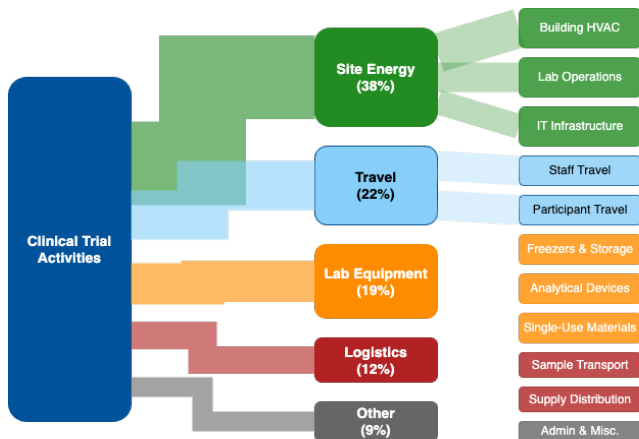
## South Africa's Climate Change Vulnerability



Source: Lancet Countdown South Africa Country Profile, 2023

# Research Sector's Role in Emissions

## Clinical Research Carbon Emissions - 27.5 Mt CO<sub>2</sub>e/year



Healthcare contributes 4-5% of global GHG emissions  
Clinical trials: 27.5 Mt CO<sub>2</sub>e/year from 350,000 trials

Source: Nature, 2021: d41586-021-02696-6

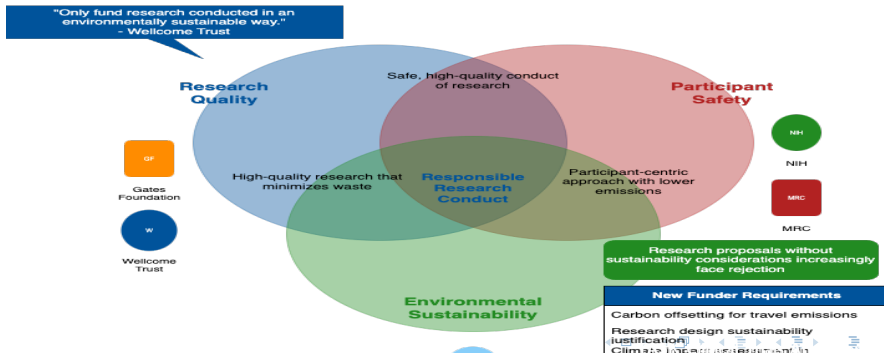
Source: Nature, 2021: d41586-021-02696-6

# Why Funders Care

## Wellcome Trust Policy

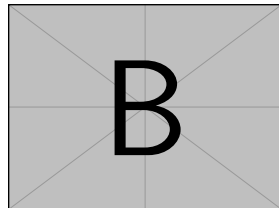
*"Only fund research conducted in an environmentally sustainable way."*

### Modern Research Funding Priorities



# Strategic Benefits for TASK

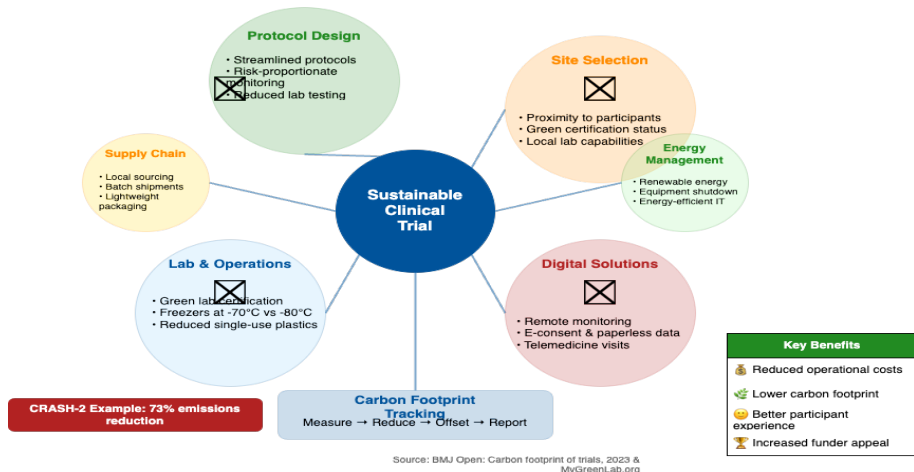
- 📈 Strengthens relevance & resilience of research
- 🌐 Aligns with global and national climate-health agendas
- 🏆 Improves funder competitiveness
- 💰 Enhances operational efficiency



Source: WHO COP26 Health Programme

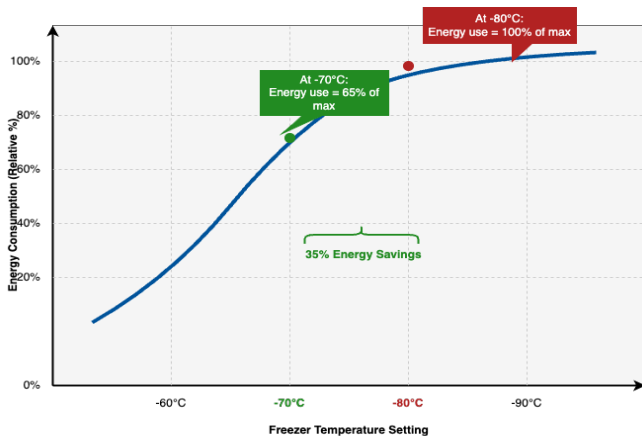
# What Can TASK Do?

## Green Trial Design Framework



# Lab Sustainability in Action

## ULT Freezer Temperature vs. Energy Consumption



### Sample Integrity at -70°C vs -80°C

- ✓ DNA/RNA stability maintained
- ✓ Protein degradation minimal
- ✓ No impact on downstream analyses
- ✓ Multiple studies confirm equivalence



### Annual Energy Cost per Freezer

-80°C: \$1,500/year

-70°C: \$975/year

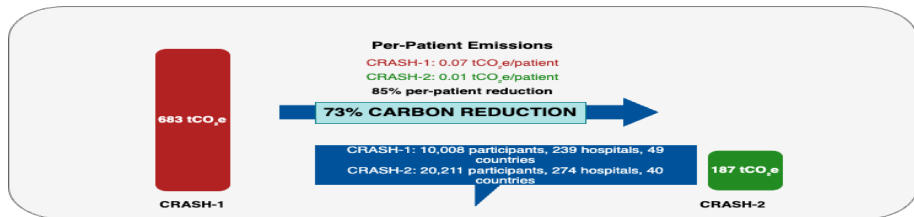
Savings: \$525/year

Source: Royal Society of Chemistry: Sustainable Laboratories Report



# Practical Examples

## CRASH Trials Carbon Reduction: A Case Study



### Key Interventions: How They Achieved This Reduction

#### Remote Monitoring

136 tCO<sub>2</sub>e saved

- Reduced site visits from 8 to 2
- Central statistical monitoring
- Risk-based approach
- Digital verification of records

#### Paperless Data Collection

87 tCO<sub>2</sub>e saved

- Electronic case report forms
- Web-based data entry
- Elimination of paper CRFs
- Cloud-based document storage

#### Shipment Optimization

65 tCO<sub>2</sub>e saved

- Reduced packaging weight
- Batch shipping of supplies
- Local lab processing
- Fewer international shipments

#### Lessons Learned for TASK Trials

1. Carbon footprint reduction is compatible with high-quality research
2. Digital solutions offer the greatest immediate carbon savings
3. Changes can reduce costs while cutting carbon emissions
4. Improvements are scalable across different trial types and regions

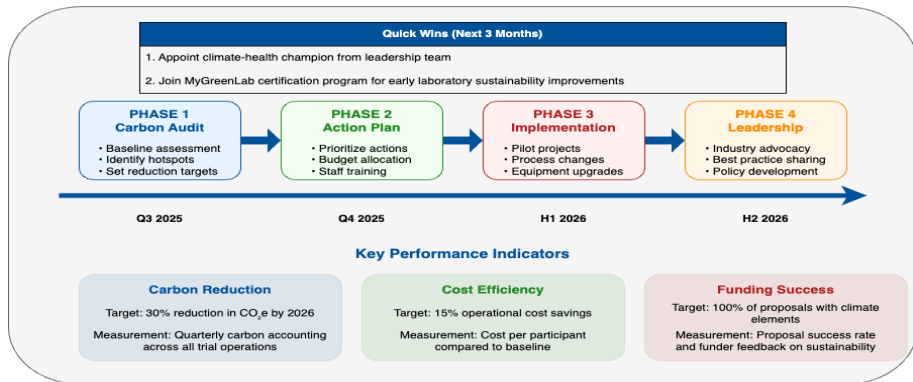
Source: BMJ Open: Carbon footprint of randomised controlled trials, 2023

Source: BMJ Open: Carbon footprint of trials, 2023

# Conclusion

## Healing without harming

### Climate-Health Action Roadmap for TASK



*Healing without harming: Making climate-smart clinical research a reality*

Source: WHO COP26 Health Programme

Climate-health is **core** to effective research

# References I



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# Thank you

Questions?

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