

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

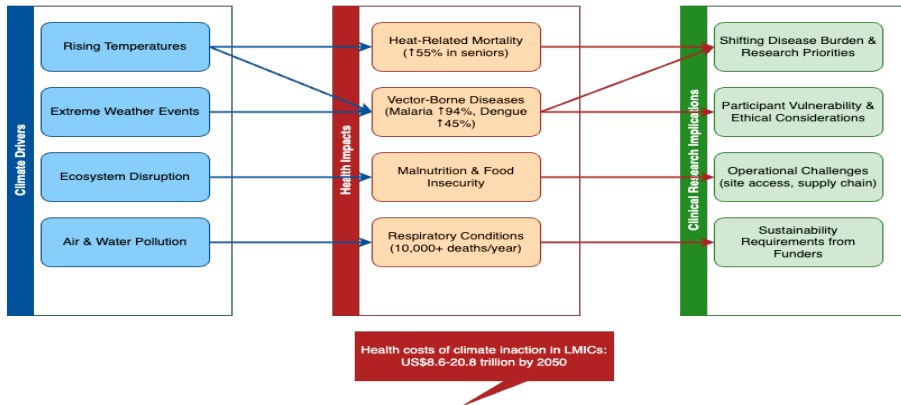
Craig Parker

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



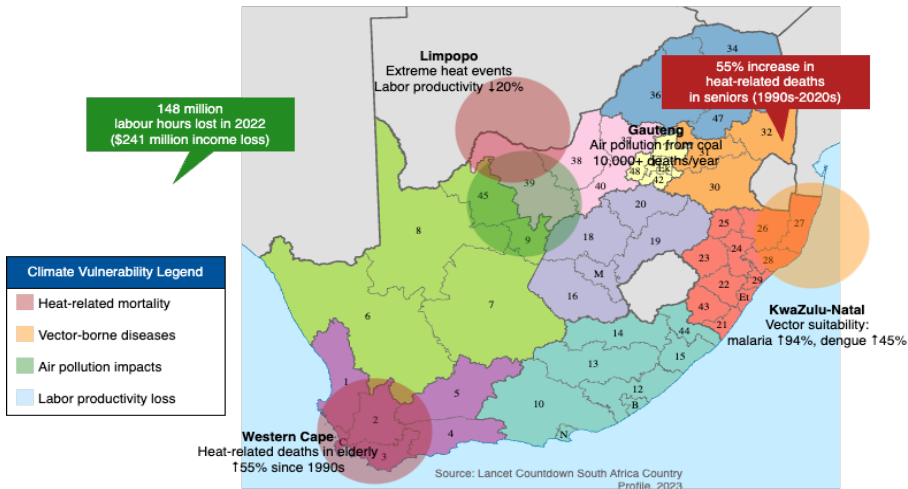
Source: The Lancet Countdown, 2023

Key Impact

Climate change threatens to reverse decades of progress in global

South Africa's Exposure

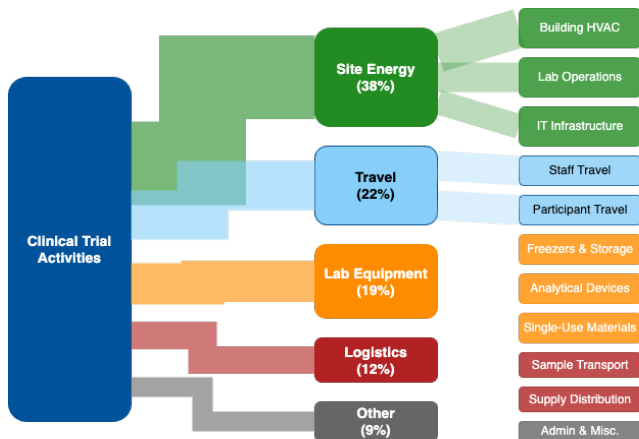
South Africa's Climate Change Vulnerability



Source: Lancet Countdown South Africa Country Profile, 2023

Research Sector's Role in Emissions

Clinical Research Carbon Emissions - 27.5 Mt CO₂e/year



Healthcare contributes 4-5% of global GHG emissions
Clinical trials: 27.5 Mt CO₂e/year from 350,000 trials

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

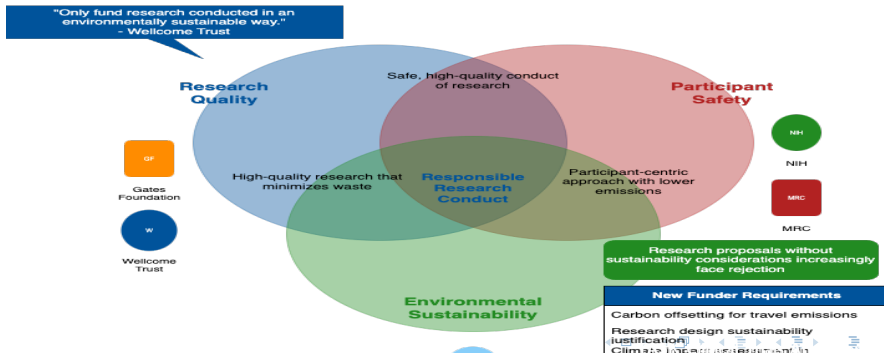
Source: Nature, 2021: d41586-021-02696-6

Why Funders Care

Wellcome Trust Policy

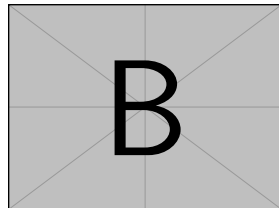
"Only fund research conducted in an environmentally sustainable way."

Modern Research Funding Priorities



Strategic Benefits for TASK

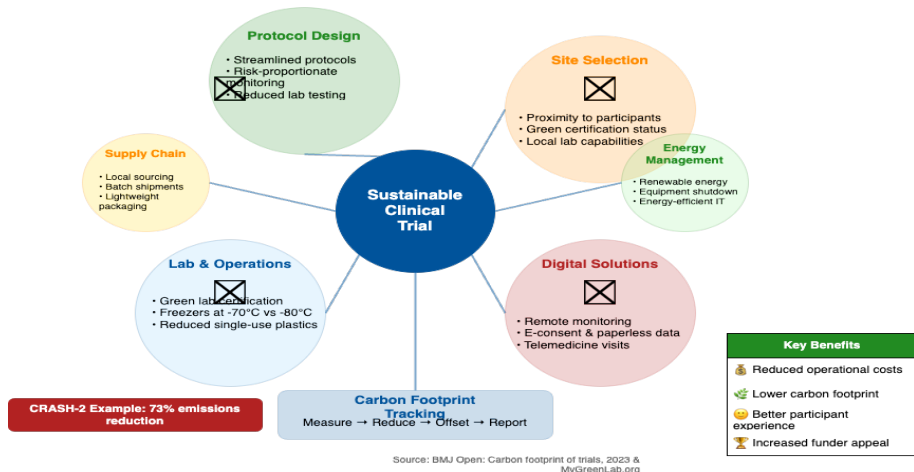
- 📈 Strengthens relevance & resilience of research
- 🌐 Aligns with global and national climate-health agendas
- 🏆 Improves funder competitiveness
- 💰 Enhances operational efficiency



Source: WHO COP26 Health Programme

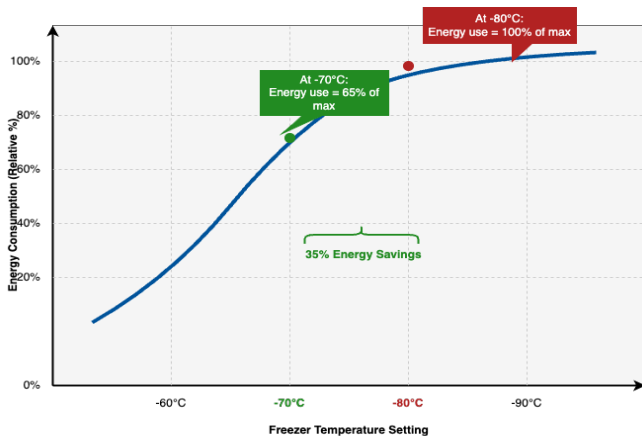
What Can TASK Do?

Green Trial Design Framework



Lab Sustainability in Action

ULT Freezer Temperature vs. Energy Consumption



Source: Royal Society of Chemistry: Sustainable Laboratories Report

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

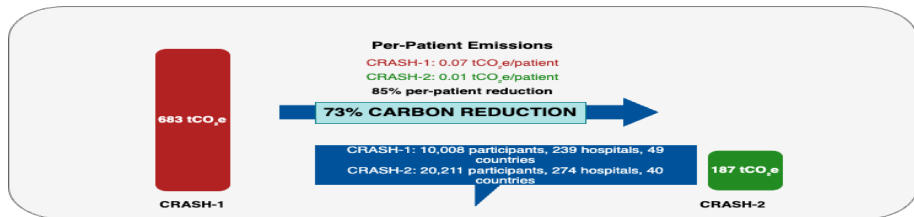
-80°C: \$1,500/year

-70°C: \$975/year

Savings: \$525/year

Practical Examples

CRASH Trials Carbon Reduction: A Case Study



Key Interventions: How They Achieved This Reduction

Remote Monitoring

136 tCO₂e saved

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

Paperless Data Collection

87 tCO₂e saved

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

Shipment Optimization

65 tCO₂e 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

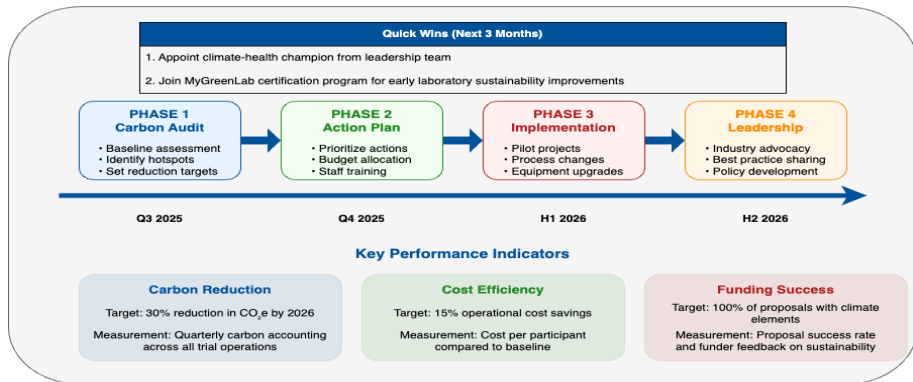
Source: BMJ Open: Carbon footprint of randomised controlled trials, 2023

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?

 craig.parker@wits.ac.za

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