



# **The Worldwide Opportunity for Cooler Surfaces**

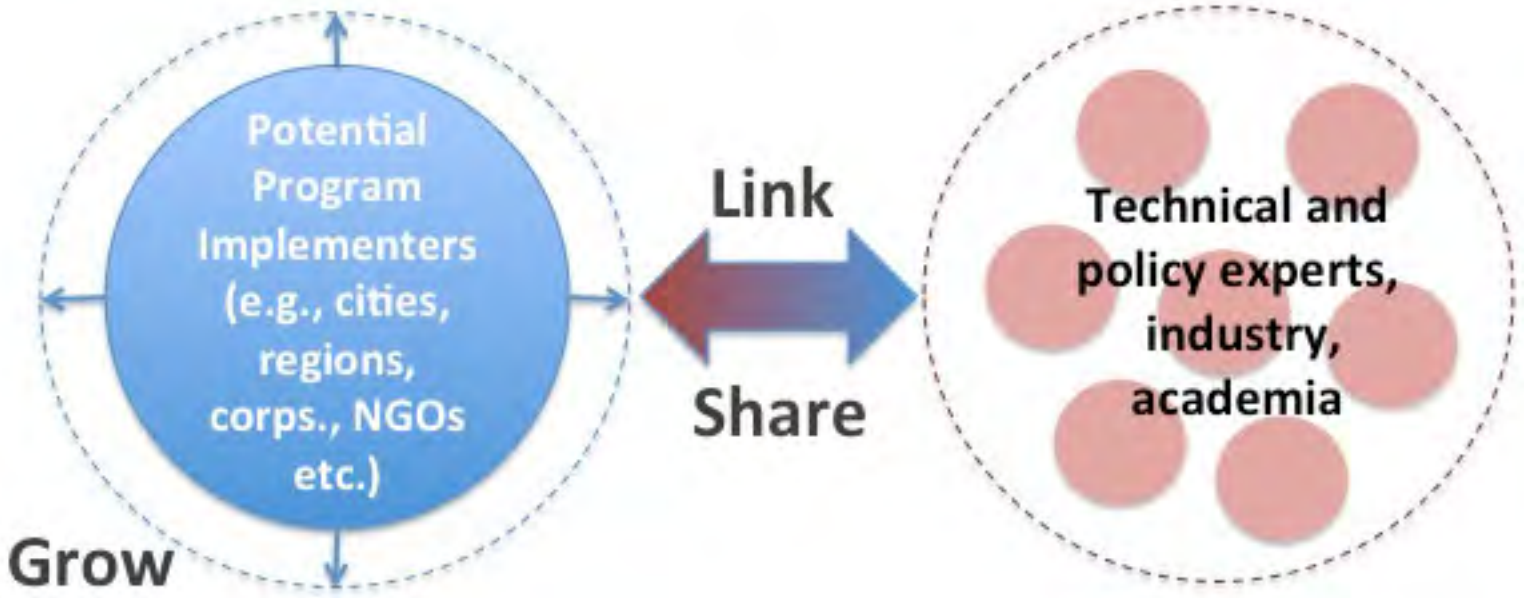
Kurt Shickman  
Global Cool Cities Alliance

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# Global Cool Cities Alliance (GCCA)

The Global Cool Cities Alliance is dedicated to advancing policies and actions that reduce excess urban heat in order to cool buildings, cool cities, and to mitigate the effects of climate change through global cooling.



[GlobalCoolCities.org](http://GlobalCoolCities.org)

[CoolRoofToolkit.org](http://CoolRoofToolkit.org)



# Lack of action on heat is a tax on urban economies and populations

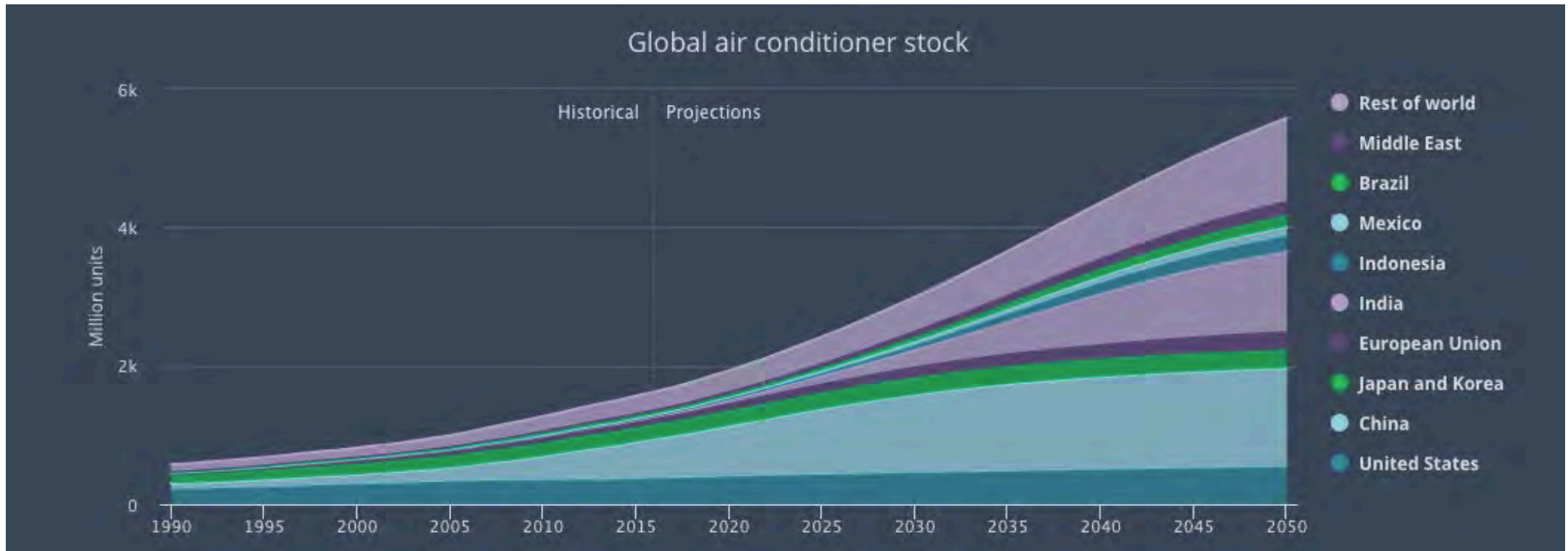
*Once the effects of urban heat islands are considered, the percentages of **GDP lost** in the median city (of 1,692 cities studied) are **1.7%** in 2050 and **5.6%** by 2100*



## A global economic assessment of city policies to reduce climate change impacts

Francisco Estrada<sup>1,2\*</sup>, W. J. Wouter Botzen<sup>2,3</sup> and Richard S. J. Tol<sup>2,4,5,6,7</sup>

“Growing demand of air conditioners is one of the most critical blind spots in today’s energy debate” – Fatih Birol, Exec. Director, IEA



*The new capacity needed to meet global space cooling demand by 2050 = the current capacity in the U.S., Europe and India combined.*



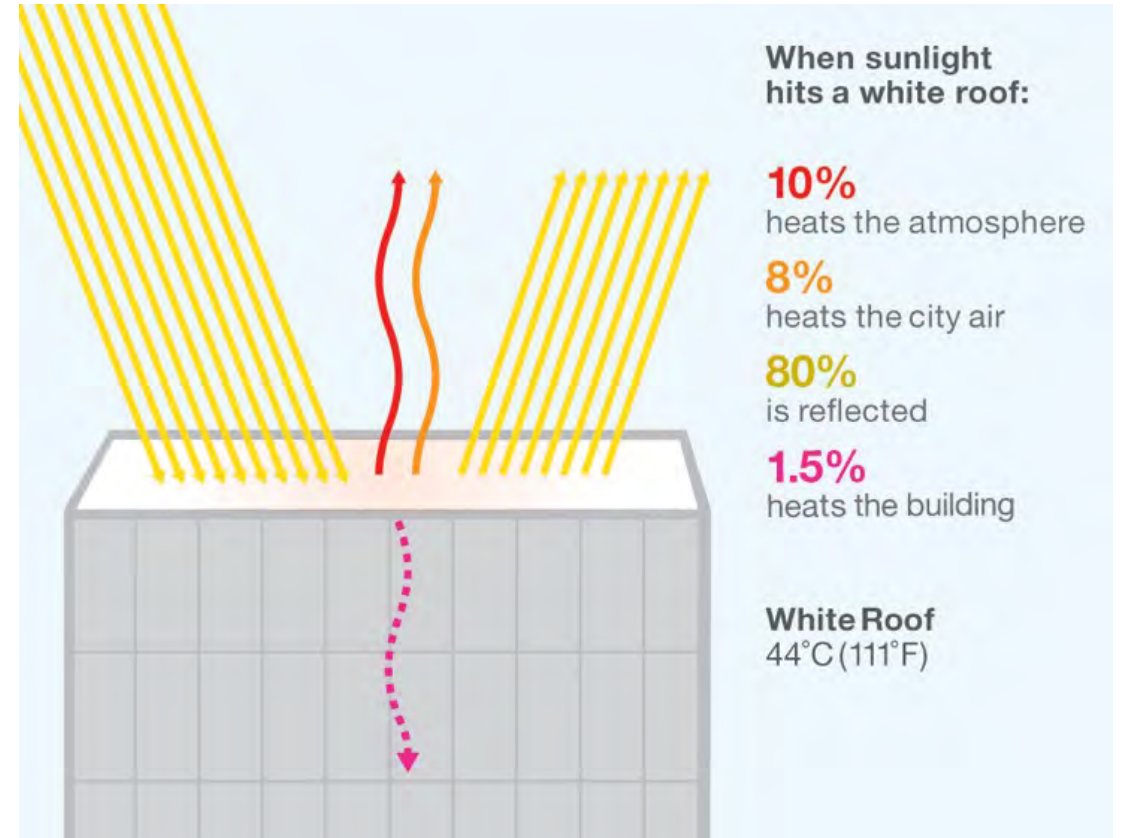
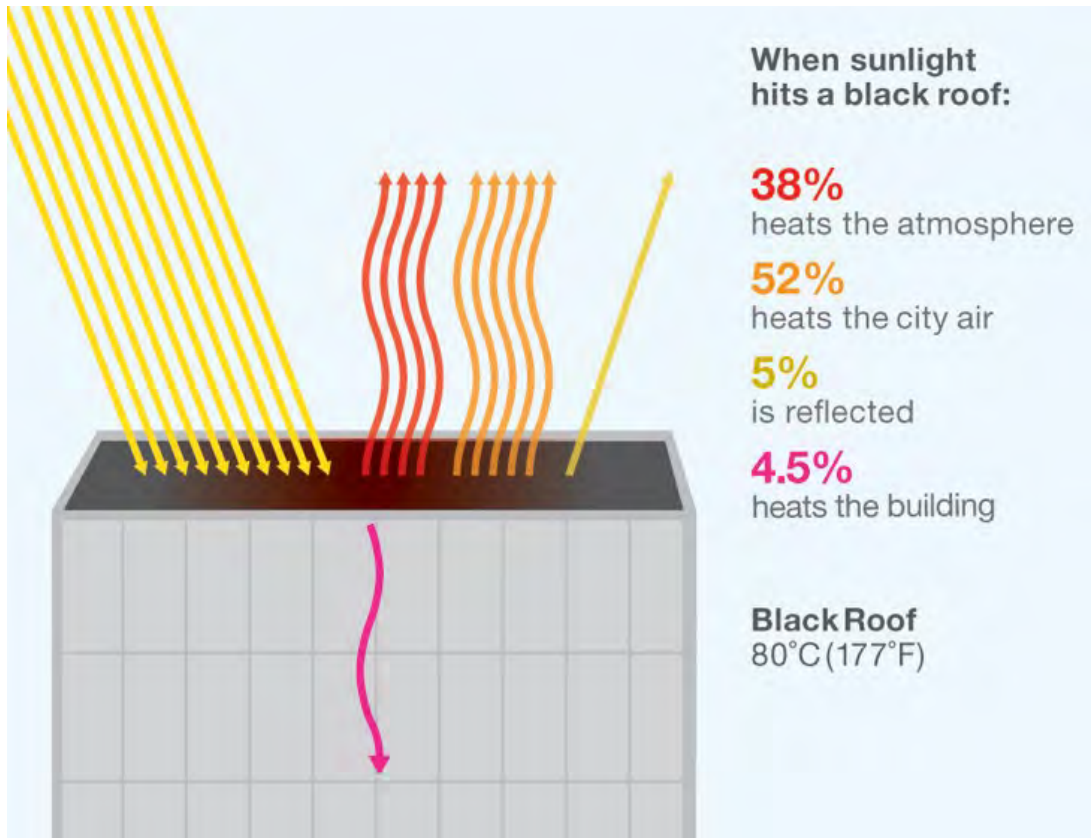
# Reframing cooling strategies around access to cooling services

The growth in space cooling demand excludes the **1.1 billion people** who will likely never have physical or economic access to mechanical cooling.

**CHILLING PROSPECTS:**

PROVIDING SUSTAINABLE COOLING FOR ALL

# How reflective “cool” surfaces work



Air Temperature 37°C (99°F)

# The net co-benefits of reflective surfaces are worth 12x their cost.



Up to 20% energy savings, on average



Reduced ER visits, less direct and indirect heat health challenges



Reduced heat wave deaths from small increases in reflectivity and vegetation



Peak demand reductions, improved transmission efficiency



2-4°C indoor air temp reductions



Efficiency gains and lower temperatures reduce ozone



Equivalent of taking 50% of all vehicles off the road for 20 years



Cool surfaces deliver benefits worth 12x their cost



# Cool surface policies in practice

Voluntary	Policy Targeting	Mandatory
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Awareness campaigns	Heat and vulnerability mapping	Municipal procurement specs.
Rebates	Cool islands	Low-income housing financing reqs.
Temp. reduction targets	Reflectivity sensing	Cool roof codes
Strategic goal setting	Sensor networks	
Prescriptive building performance standards		

# Challenges to cool roof deployment

Cool roofs suffer from the same challenges as energy efficiency deployment plus...

1. Solves a problem (excess heat) that no one fully owns
2. Market awareness outside North America and Europe is limited
3. Product testing and rating standards are varied or non-existent.
4. Global spending on heat mitigation is miniscule



## Progress thus far has largely been opportunistic, not systemic. How do we spur the next step change?

1. Raising awareness beyond the sustainability/resiliency community
2. Leveraging existing regulatory/financing/risk management structures (or creating new ones)
3. Making excess heat a tangible, relatable, and actionable issue for the public
4. Developing and setting measurable, human-focused targets for heat mitigation

Seed funding for transformation to a cooler world.



**MILLION COOL ROOFS  
CHALLENGE**

- \$1M in Boost Awards for capacity building, demonstrations, partnership building
- \$1M Challenge Prize for achieving 1 million m<sup>2</sup> of new cool roofs
- [CoolRoofsChallenge.org](http://CoolRoofsChallenge.org)



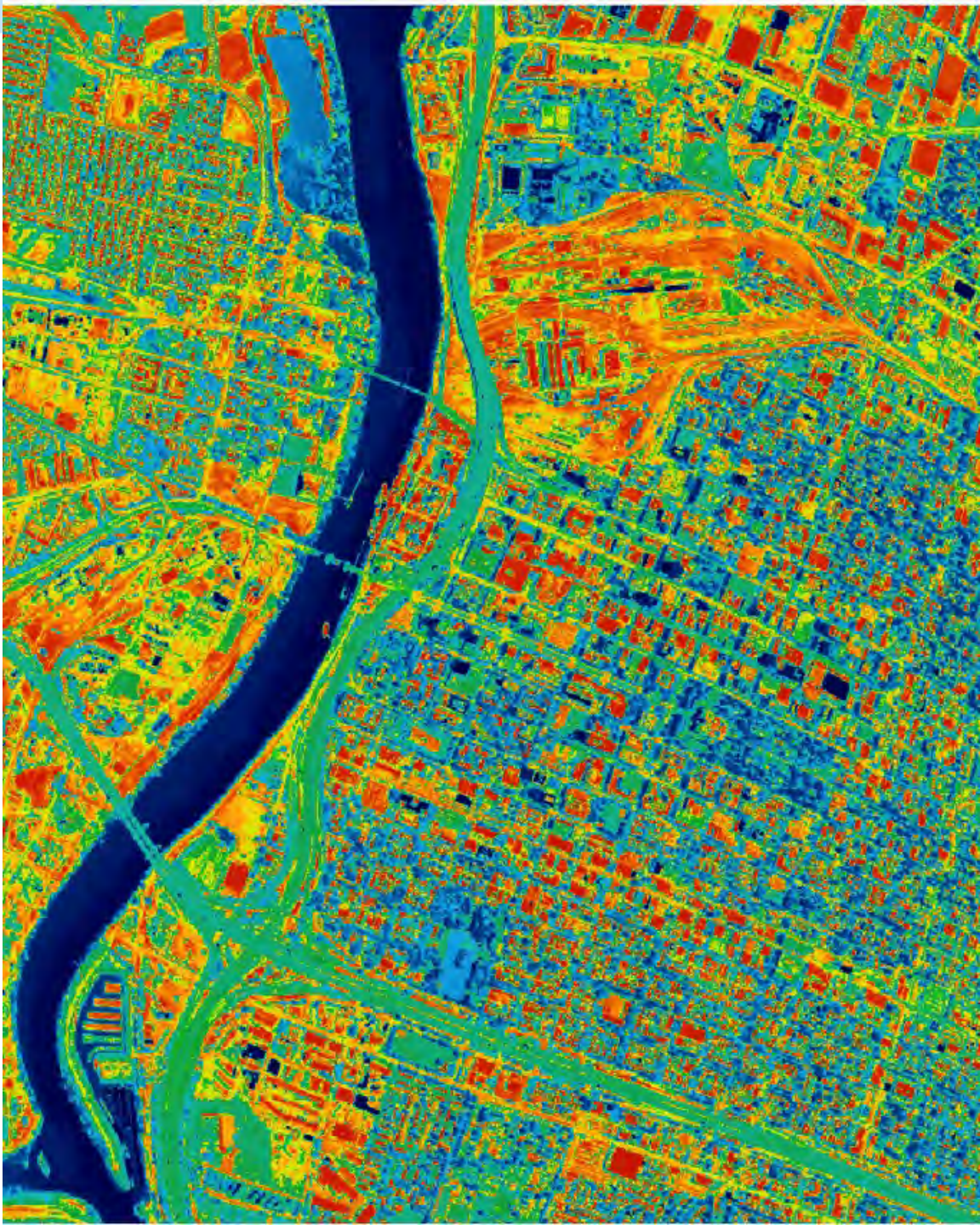
# AI for Earth: A Transformational improvement in Data-Driven Urban Heat Mitigation using Microsoft machine learning tools.

- Enabling quantitative:
  - Baselineing
  - Target setting
  - Scenario planning and cost-benefit analysis
  - Geographic targeting
  - Progress measurement



*Hypothetical tool mock-up: overlay of trees, reflectivity and social vulnerability index (SVI). Darker areas are more vulnerable to heat.*





# Thank you!

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