

The world is a very big place.

We share it with 3bn poor.

Open design can help.



# Vinay Gupta

## Hexayurt Project

- [Hexayurt@Gmail.com](mailto:Hexayurt@Gmail.com) - contact me
- <http://Hexayurt.com> - shelter
- <http://Vinay.HowToLiveWiki.com> - blog
- <http://LiveUnplugged.org> - vision
- <http://GuptaOption.com/> - policy
- <http://GlobalSwadeshi.net> - social network



# Ending Poverty With Open Hardware

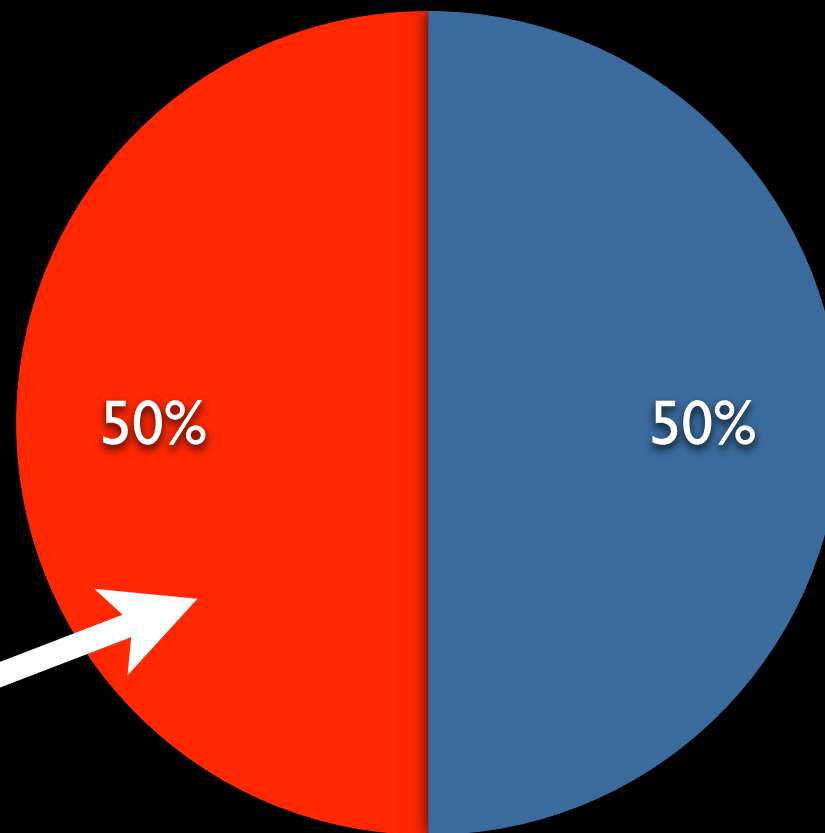




**Absolute poverty means  
dying from being poor**

# Half Of All Death Is Death From Poverty

- Non-poverty deaths
- Poverty deaths



30 million  
people a year



# Real Numbers

- 60 million people die every year (WHO)
  - All causes, all countries, not just the poor
- Two ways to see numbers
  - absolute cause, and
  - contributory effect





# Hunger Data

- About 1 million people die **directly** from lack of proper food (WHO)
- However, FAO says hunger **contributes** to 36 million deaths each year
- Some die directly, but masses are affected
  - This repeats for diseased drinking water, indoor air pollution and so on





# Poverty

- Death from poverty comes in many forms
  - Lack of good food, disease from bad toilets and drinking water, breathing smoke from cooking fires, lack of vaccinations and so it goes - people die of many contributory causes
- This is the **poverty cluster**

open technology  
can reduce  
poverty cluster  
deaths to zero\*

\*or at least damn near it

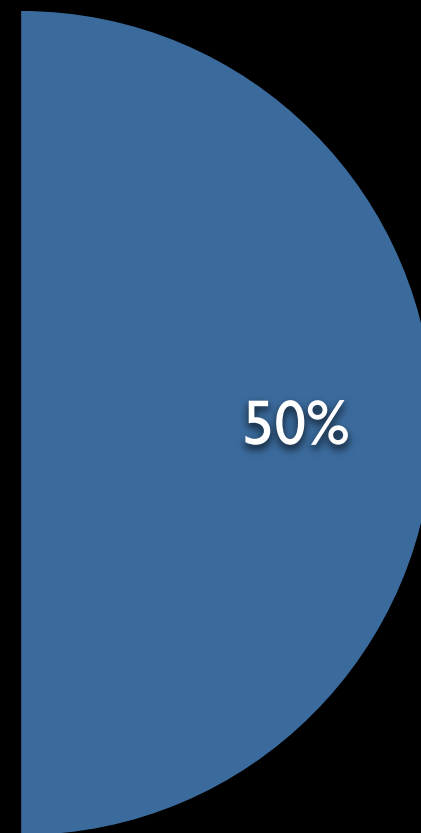
# Half Of All Global Death Is Preventable

● Non-Preventable

30 million  
people a year  
can be saved  
with simple  
technology



50%



being poor does not  
have to mean dying  
from being poor

any more than it  
means not being  
able to afford an  
operating system



# Solutions

- Londoners were dying of cholera in **1854**
- Infrastructure to protect public health more-or-less **defines** the developed world
- **But there's a problem**
  - you need stability to borrow money to pay for things like water treatment plants
  - that is hard to come by in poor places

# Local Infrastructure

- Gather power on each roof (sun, wind)
- Purify water in each kitchen (SODIS)
- Dispose of human waste in each back yard
- Stability and a higher standard of living
- **without massive borrowing to finance centralized infrastructure systems**

# Population

- If 1 in 5 (20%) die before they are adults
  - 90% odds of two adults needs 3 children
  - 99% odds of two adults needs 5 children
- This is why the poor have large families
  - But reducing infant mortality quickly reduces family size!

# Open Appropriate Technology Systems

- Solar and clean-burning wood stoves (5m)
- Purify water in each kitchen (5m combined)
- Dispose of sewage in back yards
- Farming education to double food (30m?)
- Generate power in each household  
(education, connectivity)

<http://www.aprovecho.org/>

<http://solarcookers.org/>

<http://www.worldtoilet.org/>

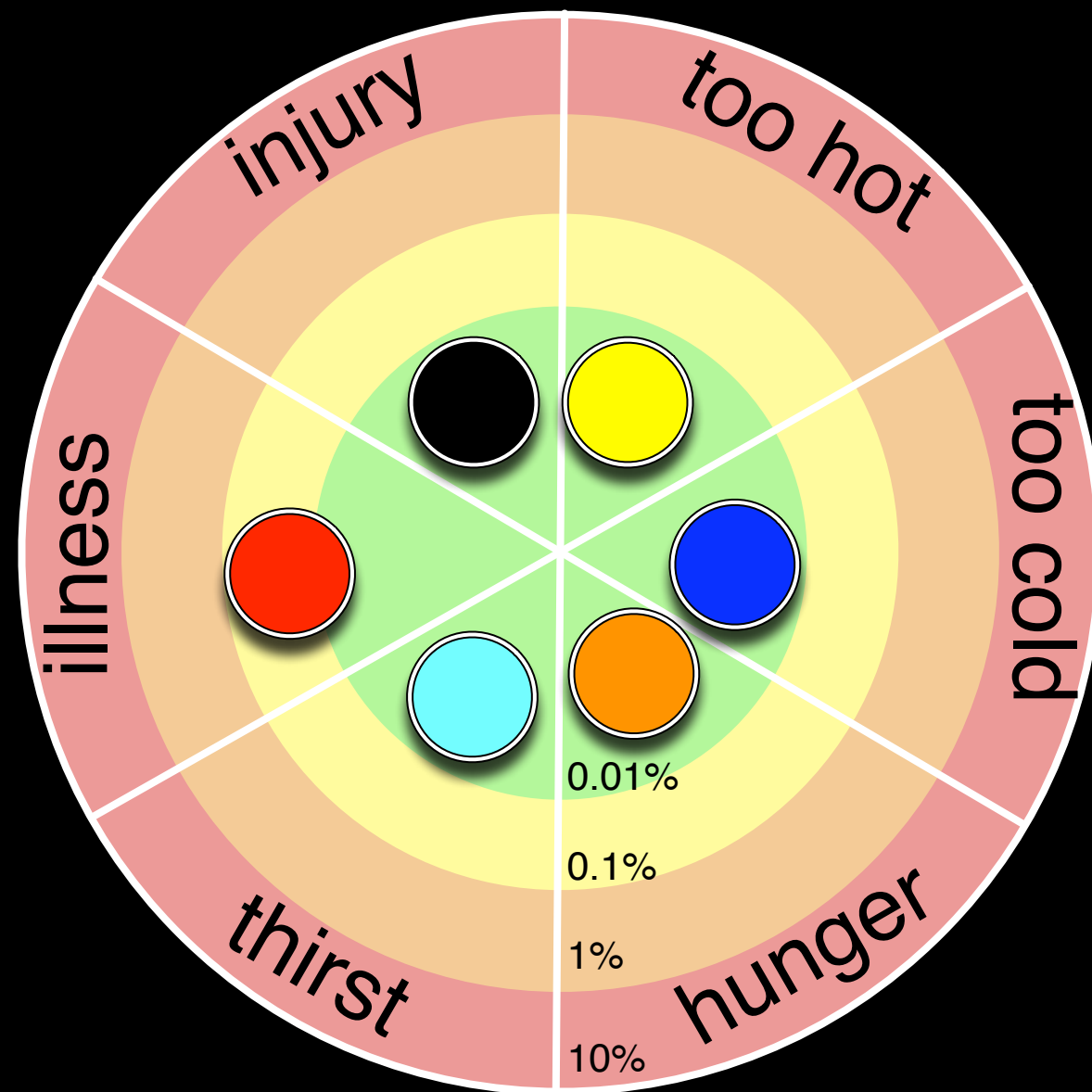
<http://www.ns.umich.edu/htdocs/releases/story.php?id=5936>

# Questions?

- Translation & literacy?
- Networks and devices?
- Why hasn't this happened already?
- Political and economic indications?
- Effect on the global environment?
- Specific technologies?
- Source material?

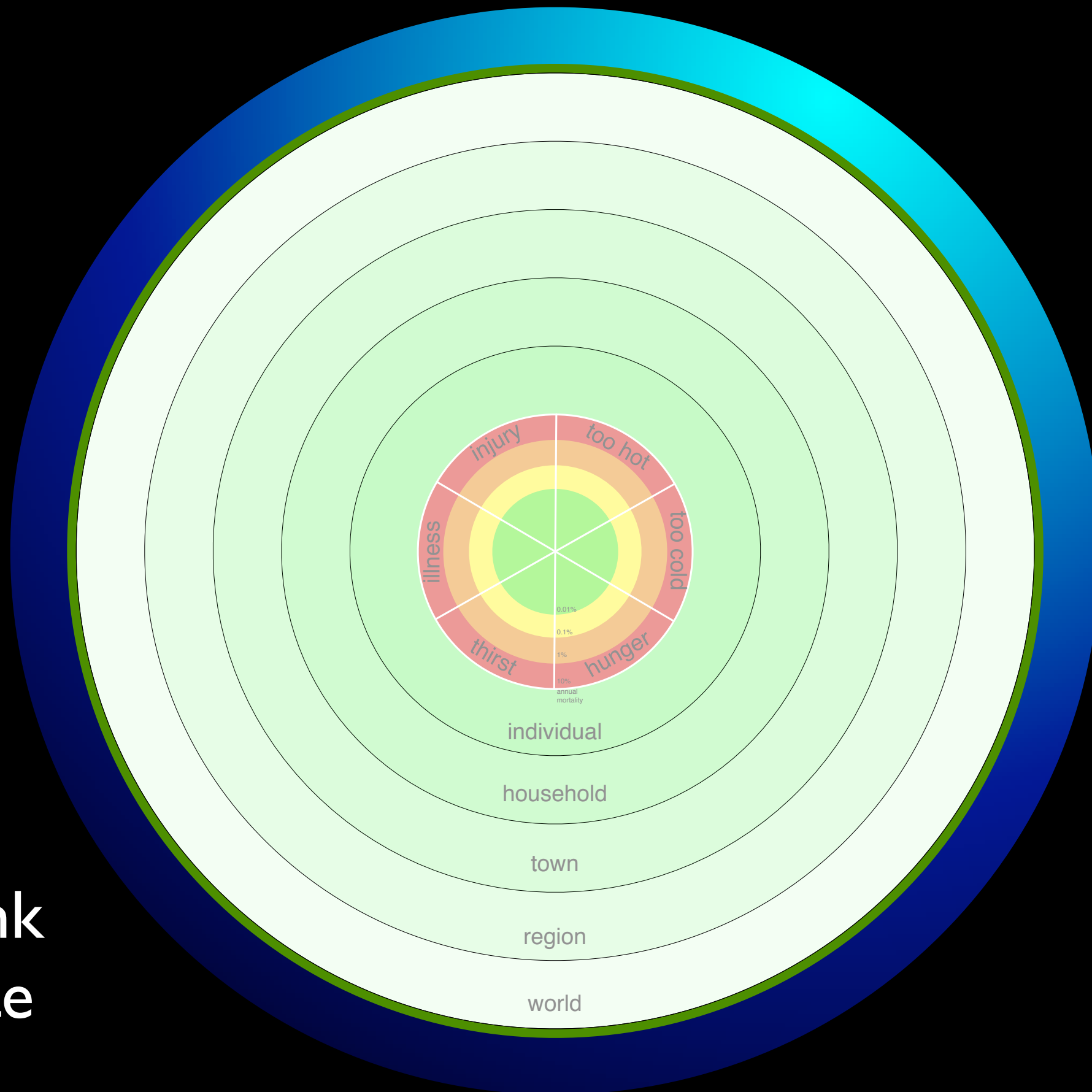


# Mapping Infrastructure

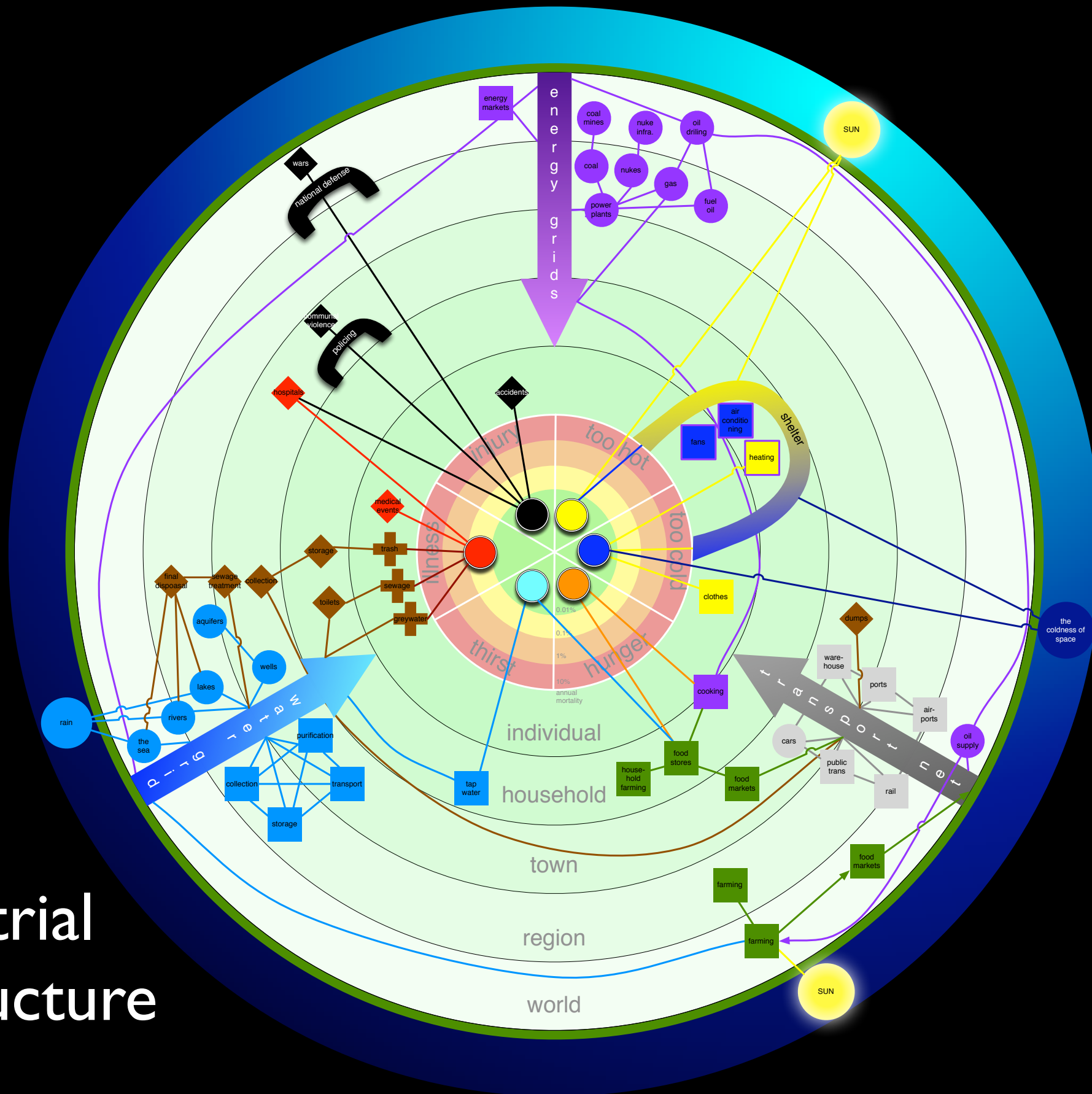


Six Ways To Die

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Slate



# Industrial Infrastructure

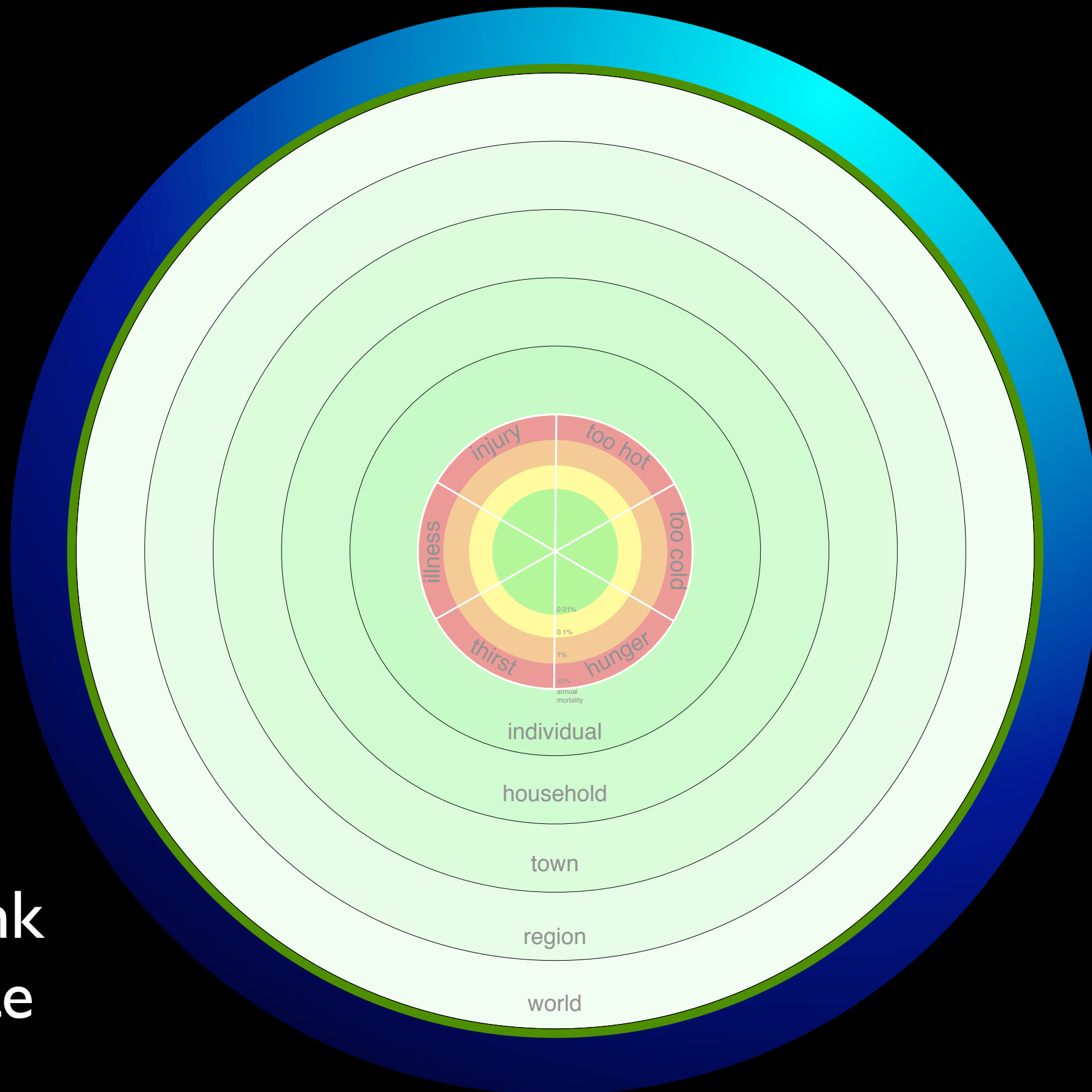


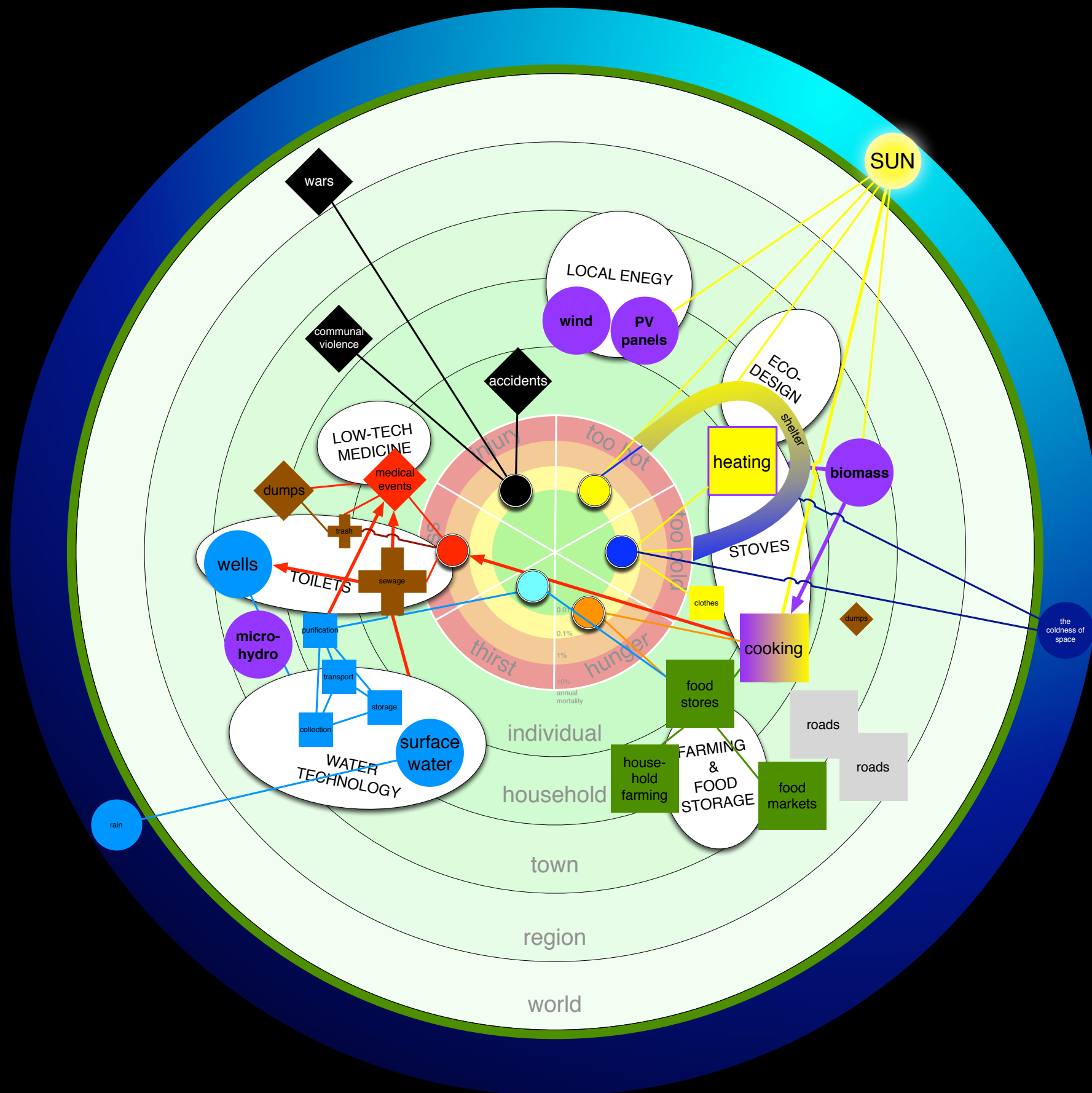
# Apply Critical Technologies

- solar water pasteurization etc. (water)
- simple toilets (brick pits, composting)
- solar cooking and improved stoves (air)
- passive solar house construction (warm)
- improved organic agriculture (nitrogen)
- food preservation (zeer pots)



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Slate





# How Can You Help

- Appropedia - classic wiki volunteer tasks
- PhD students - thesis direction
- Sci / Eng types - system testing and design
- Multilingual? Translate, translate!
- Keep the software (and hardware!) coming!
- **Build bridges for the future**

# Resources

# A word on Gandhi

- Refined the design for the spinning wheel that is his “machine-logo”
- Self-reliance (swadeshi) is the only hope for most of the world’s poor - *at least for now*
- Vertically *and* horizontally integrated morality
- <http://globalswadeshi.net>





# Open Appropriate Technology Projects

- <http://Appropedia.org> - the motherlode
- <http://Aprovecho.org> - stoves
- <http://Akvo.org> - water technology
- <http://SolarCookers.org> - cooking, water
- <http://OpenFarmTech.org> - open everything
- <http://Hexayurt.com> - whole systems,  
emergency housing