

Researching Topic #24 – TECHNOLOGICAL INNOVATION (CLEAN, RENEWABLE ENERGY); GREEN CITIES

[last revised 3/14/2021]

This prompt offers two kinds of help:

- A brief overview of the kinds of questions you might wish to explore as you study how climate change is likely to affect the food supply;
- A suggested strategy for how to search the literature as you prepare to write your paper.

[NOTE: This is a late addition to the list of topics, so the prompt is not complete at this point]

OVERVIEW:

This is one of the positive developments:

A series of realizations: the realization that societies need to find viable alternatives to fossil fuel-based energy; the realization that the social geography of the modern city (built around the private automobile and the freestanding houses of suburban sprawl); the realization that existing technologies are too energy-intensive, too resource-intensive, generate too much waste.

The responses:

- the drive to technologically invent and continue to improve clean, renewable sources of energy, then to make those new energy technologies increasingly affordable and find ways both to increase demand and to expand production to supply that demand. All this being done both by private sector actors (such as investors in renewable energy) and by governments that mandate changes, through regulation, and facilitate changes via market mechanisms, subsidies, taxes on pollution.
- forward-thinking urban design: “smart growth;” higher density housing; renewed commitment to building public transit systems; walkable cities.
- greener, more climate-friendly consumer products. The highest profile example would be the hybrid and the electric automobile.

Someone researching this topic should gather data on:

- The variety of green energy/products/technologies that have already been invented
- Actual market penetration (how far has the transition gone. For example, what percent of total national energy consumption is, now, solar and wind? What % of cars sold, say, in the past 3 years are hybrid or electric cars?)
- what have been the drivers of successful adoption/transition? Private entrepreneurial initiative? Government policy/mandates? Government subsidies?
- what other ideas are out there, proposed or envisioned but not yet implemented?

## SUGGESTED STRATEGY FOR SEARCHING THE LITERATURE

I recommend the following sequence for searching the literature:

- 1 Start with a search of the most recent **reports from top scientific bodies and government agencies**;
- 2 Search **academic articles** using Google Scholar (scholar.google.com);
- 3 Do a **more general search** using Google or another search engine;
- 4 Search the **best newspapers** and **reputable climate websites**.  
(NOTE that I do not suggest using Wikipedia.)

- 1 Search the most recent **reports from top scientific bodies and government agencies**

(NOTE: I typically suggest that research start with these kinds of sources, but they may not be all that helpful for working on this topic... Most relevant: these kinds of documents *are* examples of attempts to communicate climate science findings!)

These publications should, in most cases, supply you with all you need:

IPCC's most recent full set of reports:

<https://www.ipcc.ch/report/ar5/>

EPA: [https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-society\\_.html](https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-society_.html)

U.S. Global Change Research Program:

<https://science2017.globalchange.gov/> (the science)

<https://nca2018.globalchange.gov/> (the impacts)

American Meteorological Society:

[www.ametsoc.net/sotc2017/StateoftheClimate2017\\_lowres.pdf](http://www.ametsoc.net/sotc2017/StateoftheClimate2017_lowres.pdf)

A more complete list of best scientific and governmental sources:

International

Intergovernmental Panel on Climate Change  
United Nations Environmental Programme (UNEP)  
World Meteorological Organization

Agencies of the U.S. federal government

Environmental Protection Agency (EPA)  
National Oceanographic and Atmospheric Administration (NOAA)  
National Aeronautics and Space Administration (NASA)  
U.S. Global Change Research Program

Scientific bodies – U.S.

National Academic of Sciences  
Climate Change at the National Academies (climatechange@nas.edu)  
National Science Foundation

Other professional bodies – American Meteorological Society

## 2 Search **academic articles** using Google Scholar (scholar.google.com)

(NOTE: Narrow and focus your search by using several phrases in quotes – such as “climate change”. For example, if you are searching for how climate change will increase the frequency of extreme weather events, don’t just enter “climate change,” search, instead for” “climate change” AND “extreme weather events”)

Search terms to use (you may certainly choose others):

“climate change” AND x, where x can be:

- Clean energy
- Renewable energy
- Wind energy
- Solar energy
- Hybrid and/or electric vehicles
- Green technology
- Green cities, sustainable cities
- Smart growth
- Climate friendly agriculture

(NOTE: For some citations you find on Google Scholar, you can directly download the PDF. For other citations, you may be able to find and download PDFs if your University library offers on line access to academic journals.)

## 3 Do a **more general search** using Google or another search engine

Use the same search terms to do a general search on Google or another search engine. This will bring up information more recent than you find on scholar.google.com (it takes several years for research to be published in academic journals).

## 4 Search the **best newspapers** and **reputable climate websites**

New York Times, Washington Post, The Guardian

On line sources

- Climate Central
- GRIST
- Society of Environmental Journalists
- The Daily Climate
- Climate Nexus
- InsideClimate News
- DeSmogBlog
- Skepticalscience.com
- Yale 350