

Consequences of Renewable Energy

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A couple of months ago, I came across a news article entitled “Unanticipated Consequences of Renewable Energy” where the author outlined a laundry list of potential tradeoffs for ecosystems and society related to renewable energy development. I found humor in the fact that the author outlined a well constructed and obviously well thought out list of anticipated potential tradeoffs but still defined the list of consequences as unanticipated.

This news article reminded me of a life changing experience I went through around the age of 10. Without going into all or the tortured details—my older brother (of the wise age of 13) and myself acquired a half-empty can of stale Copenhagen long left behind in the tack room by our feedlot cowboy. With this contraband in hand, we found ourselves behind a secluded wind-break fence far removed from the eyes of our older sister and younger brother and, most importantly, our disciplinarian mother. We had both watched, many times, others employing the more-art-than-science method of stuffing a bottom lip full of this mysterious (and chest hair sprouting) substance. We proceeded to fill our lips, puff out our chests, and spit and slobber with all the dramatics of a Broadway musical.

Now here’s the point I am trying to get to—I soon learned a lesson in unintended and unanticipated consequences. I never intended or anticipated getting sick or throwing up as much as I did. I did intend and anxiously anticipated instant maturity from my partaking of the Copenhagen. I did not intend for my mother to find out but I did anticipate it. (Side note—I am happy to announce that I still have an aversion to Copenhagen to this day!)

I guess my narrative here is to outline that unanticipated consequences and unintended consequences are often synonymous, but not always. Unintended consequences result from ignorance; I don’t mean that in a negative connotation—something can only be unintended when there is a lack of knowledge or experience. Unanticipated consequences are impossible when knowledge and experience give insight that a certain consequence may occur. For instance, I may make a decision to do something while being totally unaware of any specific result because of my lack of knowledge or experience; if that result comes to pass, it is unintended (because I didn’t mean to) and it is unanticipated (because I didn’t know it could happen). However, if I am aware that a specific result could happen, even if not probable, I cannot justifiably call the consequence unanticipated. I believe that the majority of consequences that any of us face are often unintended but seldom unanticipated. Armed with an understanding of the different types of consequences will help us make informed decisions and to be risk averse towards negative impacts that could happen.

Now, back to the potential consequences of renewable energy; the bulk of current and proposed alternative energy projects in the western U.S. are on rangeland and include, but is not limited to, solar energy, wind energy and geothermal energy. In most discussions about the threats facing our rangelands, you will hear or debate that the immediate threats facing rangelands are the same consequences that could come from unsound development of these renewable energy resources.

For protection of our rangelands and the lives and communities so dependent on rangelands, it is imperative that all renewable and alternative energy development measure up to the assessment of sustainability—development must be sound economically, socially, and ecologically. The definition of sustainability has been compared to a three legged stool with each leg comprising one of the points of sustainability and each adding to the stability and soundness of actions. Real sustainability cannot be achieved without incorporation of each of these factors.

I believe that there are three management objectives that must be met before any renewable or alternative energy development takes place. These objectives are as follows:

Objective 1- Get us where we want to go economically, socially and environmentally.

- Reduced dependency on foreign oil translates to less social conflict, more national security and increased economic stability. If it doesn't reduce our dependency on foreign oil, then maybe it should not be pursued.
- Will it actually reduce any net greenhouse gases?
- Will there be reductions in *net* adverse environmental impacts?
- Will it provide jobs and revenue to the local economy?

Objective 2- More environmentally efficient and less environmentally damaging than current practices.

- Petroleum fuels
- Agricultural commodities production including public lands grazing
- Mineral extraction

Objective 3- Identify, promote and have enforcement abilities on practices and programs that avoid, minimize and properly mitigate secondary impacts.

- Avoid unintended consequences
- Accept and acknowledge consequences that may arise even if unintended
- Plan and fund mitigation up front to address impacts when they occur

Here is a very condensed list of the adverse consequences that may happen with unsustainable renewable energy development:

Social and Economic Impacts:

- Economic impacts mostly to local community citizens, not local government and services
- Loss of grazing land
- Loss of farmland
- Loss of direct and induced benefits
 - Money spent in town and secondary jobs tied to agriculture
- Discrepancy between major industry goals and rural livelihoods
- Jobs associated with alternative energy are usually few after the construction of facilities

- Municipality may be flush with funds but citizens may not
 - A new school, courthouse, or upgraded utilities does little to place bread and butter on the tables of ranchers and farmers
- The social glue of most rural counties in the west is agriculture

Environment:

- Water usage; a major concern on arid rangelands
 - Comparative water usage per 1kWh electricity produced
 - Nuclear- 0.61 gallons per kWh
 - Coal- 0.50 gallons per kWh
 - Oil- 0.42 gallons per kWh
 - Concentrated Solar Power (parabolic troughs)- 0.95 gallons per kWh
 - Wind- 0.0011 gallons per kWh
 - Photovoltaic Solar- 0.03 gallons per kWh
- Fragmentation
 - Immense solar farms encompassing thousands of acres
- Habitat loss
 - Weeds, herbicides, large amounts of bare, unproductive ground
 - Disruption of wildlife corridors
- Targeted impacts to certain sensitive species
 - Bats vs. wind farms
 - Sage grouse
- Not just the site of the main facility
 - Transmission lines
 - Access roads
- Development of ranches and farms
 - Sale of water
 - Pollutants

I am not here to put down efforts being made in the renewable and alternative energy area. I just feel that we must proceed with caution. I believe that there are a lot of answers—smart grids, facilities close to the users, smaller developments, rooftops, etc. Let us be wise, active and vocal in pursuing sustainable energy solutions. As ranchers, farmers, rangeland professionals, and individuals, we should actively engage in these processes. Work to educate local, state, and federal leaders and the public on the possible consequences—unintended, unanticipated, or otherwise. We need to ensure that these projects on rangelands are done with collective economic soundness, social soundness, and environmental soundness.