Environmental Implication of the Impending Energy Revolution

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We’re going to have a revolution (10-30 years from now …)

- Battery Technology:
  - Cambridge scientists have developed a working laboratory demonstrator of a lithium-oxygen battery which has very high energy density, is more than 90% efficient over its discharge-recharge cycle, and can be recharged more than 2,000 times.
  - In about 10 years, Li-air batteries could open the way to a 100% renewable future, rendering the internal combustion engine all but obsolete.
- Nuclear Fusion:
  - Large private sector investments and claims of technological breakthroughs promise limitless, clean, low cost energy in 10-20 years.
  - Little to no radioactive waste, no pollution: the by-product of fusion is helium, “which we can use to inflate the balloons for the massive party we’re going to have if it ever works.”
- Other Sources: solar, wind, biomass, etc.

Questions

- All technologies comes with some risks
  - How we do assess the risks from these?
  - What issues are associated with siting, construction, new materials and their management, new waste streams.
  - Who will be the winners and losers?
- How will this new world impact the Federal government?
  - What will be the impact on our regulatory programs (air, water, energy)?
  - How will the carbon free economy effect tax revenue and federal budgets?
  - What role will the Federal government play in educating the workforce to transition from obsolete industries (coal, oil, etc.)
  - What are the implications for the legacy infrastructure (lead-acid batteries, fission and fossil fuel power plants, abandoned coal mines)