

Why develop a biobased economy?

An insight in the necessity for biobased products

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Growing population



Increasing waste



Climate change



Loss of biodiversity



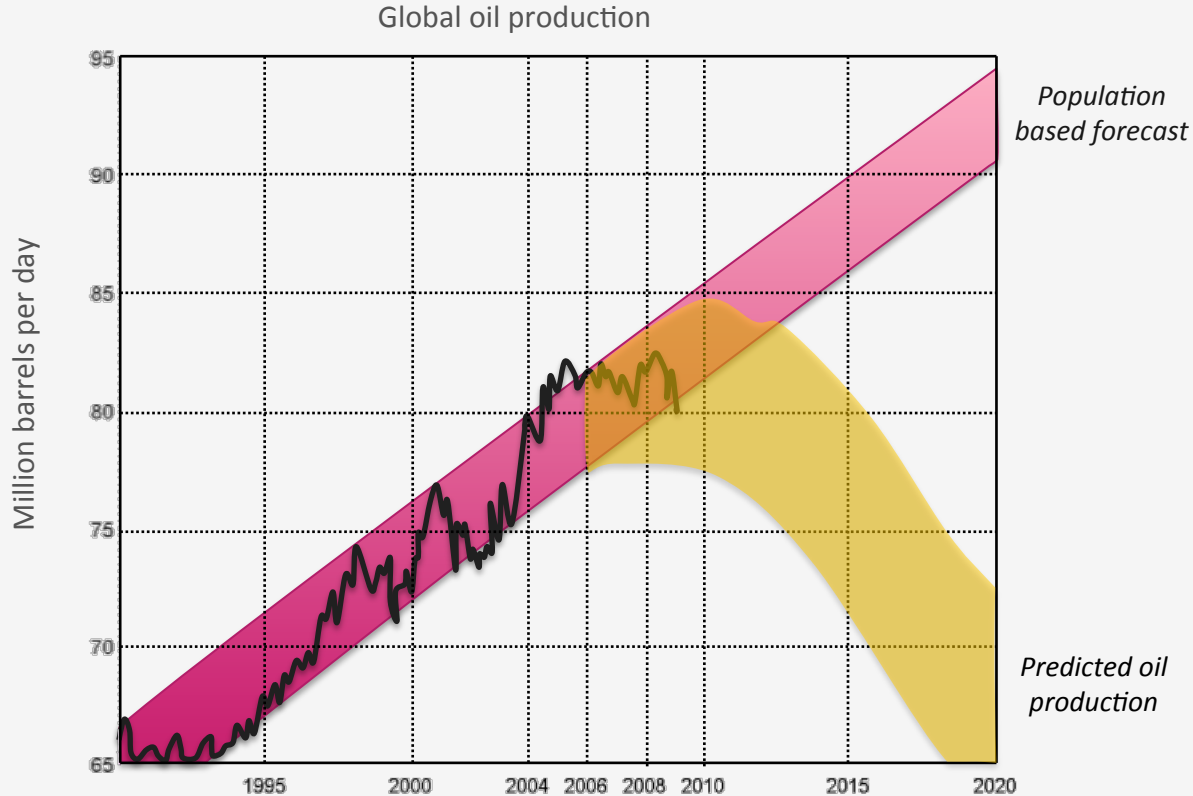
We have needs



Depletion of resources

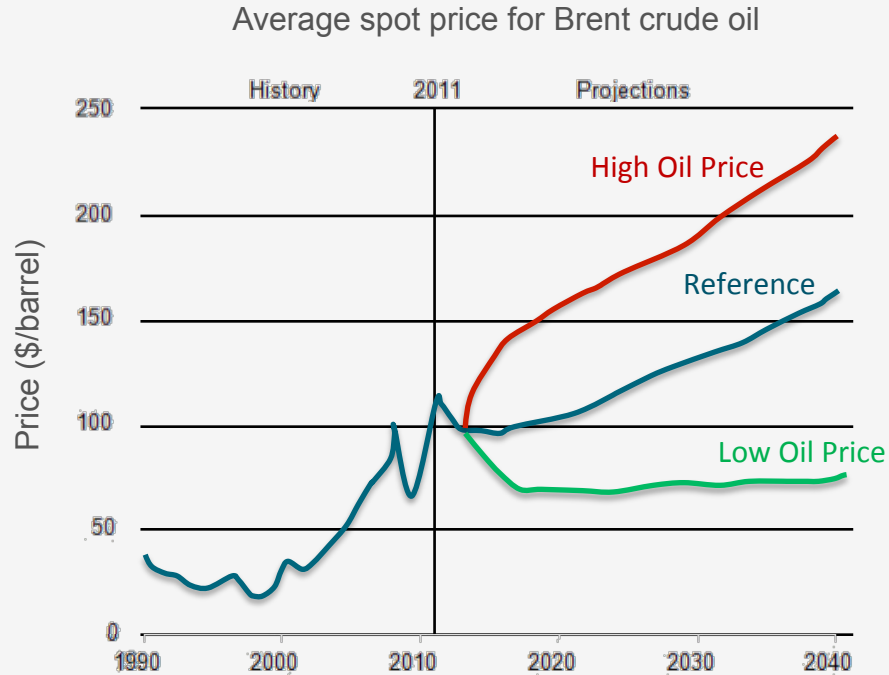


Are fossil fuels running out...



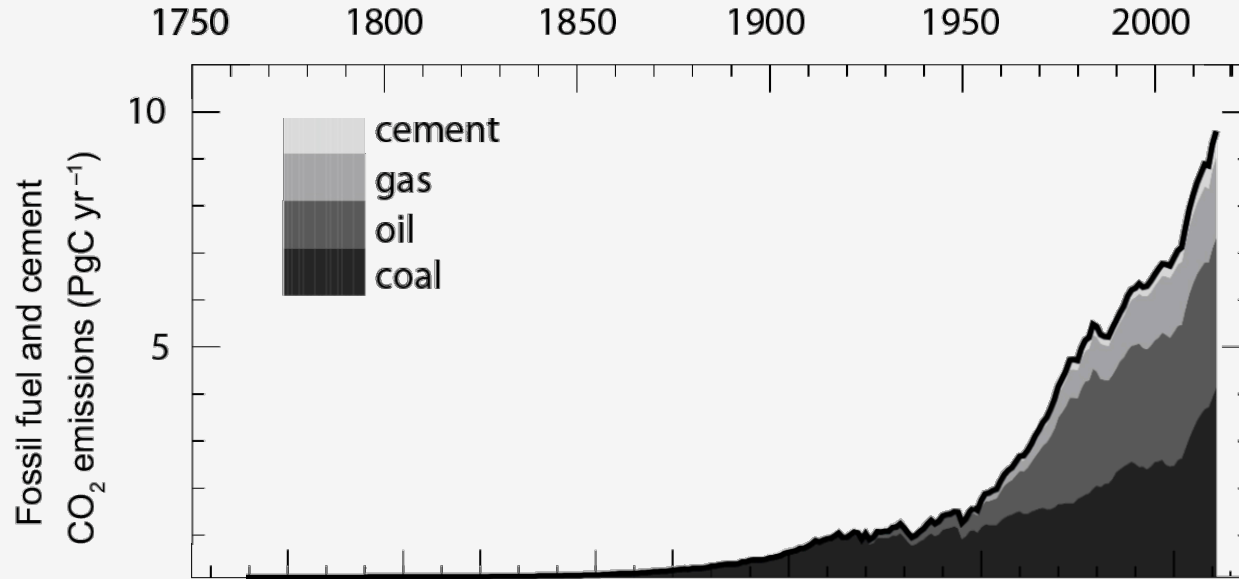
Adapted from: www.theoil Drum.com, forecast 2009

...or just becoming more expensive?

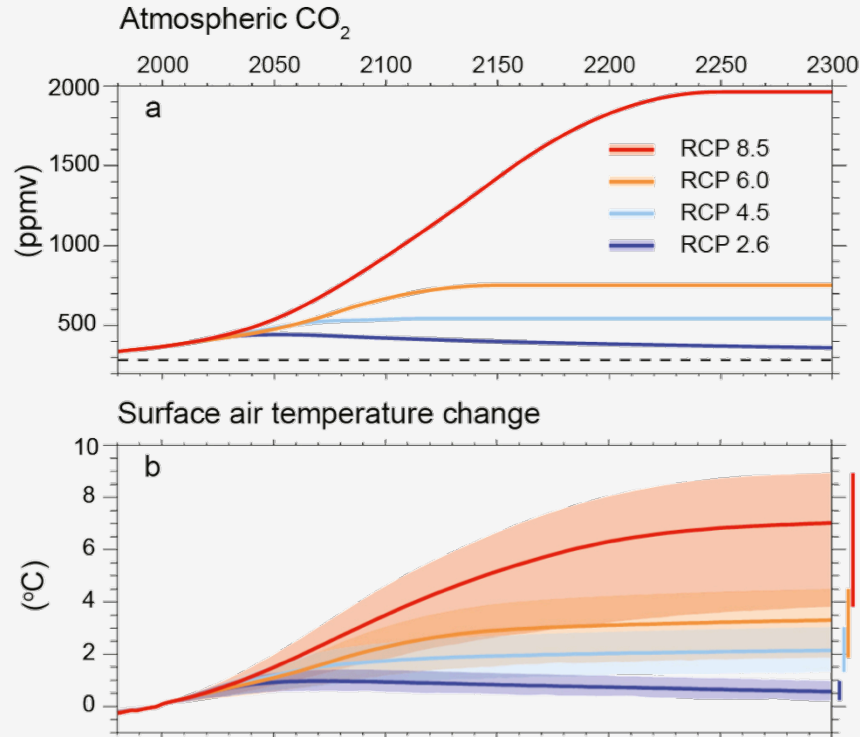


Source: US Energy Information Administration, Energy Outlook 2014

The climate argument



The climate argument



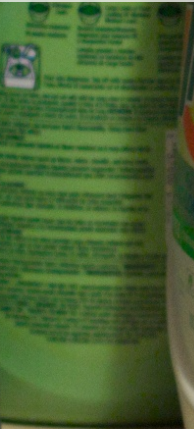
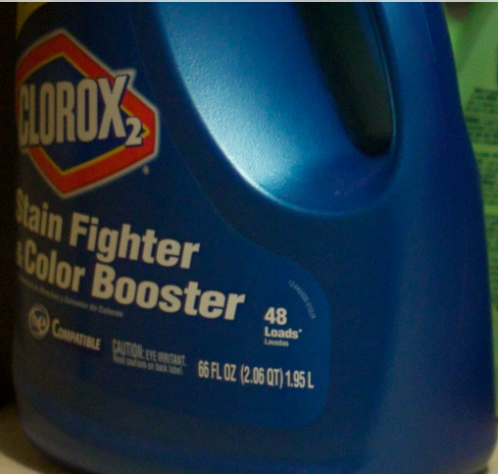
Substituting fossil fuels: energy \neq mass

- Solar and wind generate electrical energy
- ...but they **cannot** provide mass or carbon compounds



Substituting fossil fuels: energy \neq mass

- Carbon is required for making tangible products
 - Paints and chemicals
 - Plastics
 - Pharmaceuticals



Towards a biobased economy

- Using non-fossil feedstocks



Define: Biobased Economy

“the sustainable production of renewable resources from land, fisheries and aquaculture environments and their conversion into food, feed, fiber bio-based products and bio-energy as well as the related public goods”

- European Commission



Drivers for transition

- Economic: variable prices of fossil fuel resources
- Political: energy security
- Environmental: lowering net GHG emissions
- Demographic: rising population and wealth
- Agricultural: rural income and economic development
- Food: add sustainable value to food chain

Integral use of biomass



Food



CO₂



Fuels



Paint



Plastics



Pharmaceuticals

Integral use of biomass



Fuels



Paint



Plastics



Pharma-
ceuticals

Define: “Biobased products”

“Non-food products derived from biomass such as plants, algae, crops, trees, marine organisms and biological waste from households, animals and food production.”

-European Commission

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industrial biotechnology**