

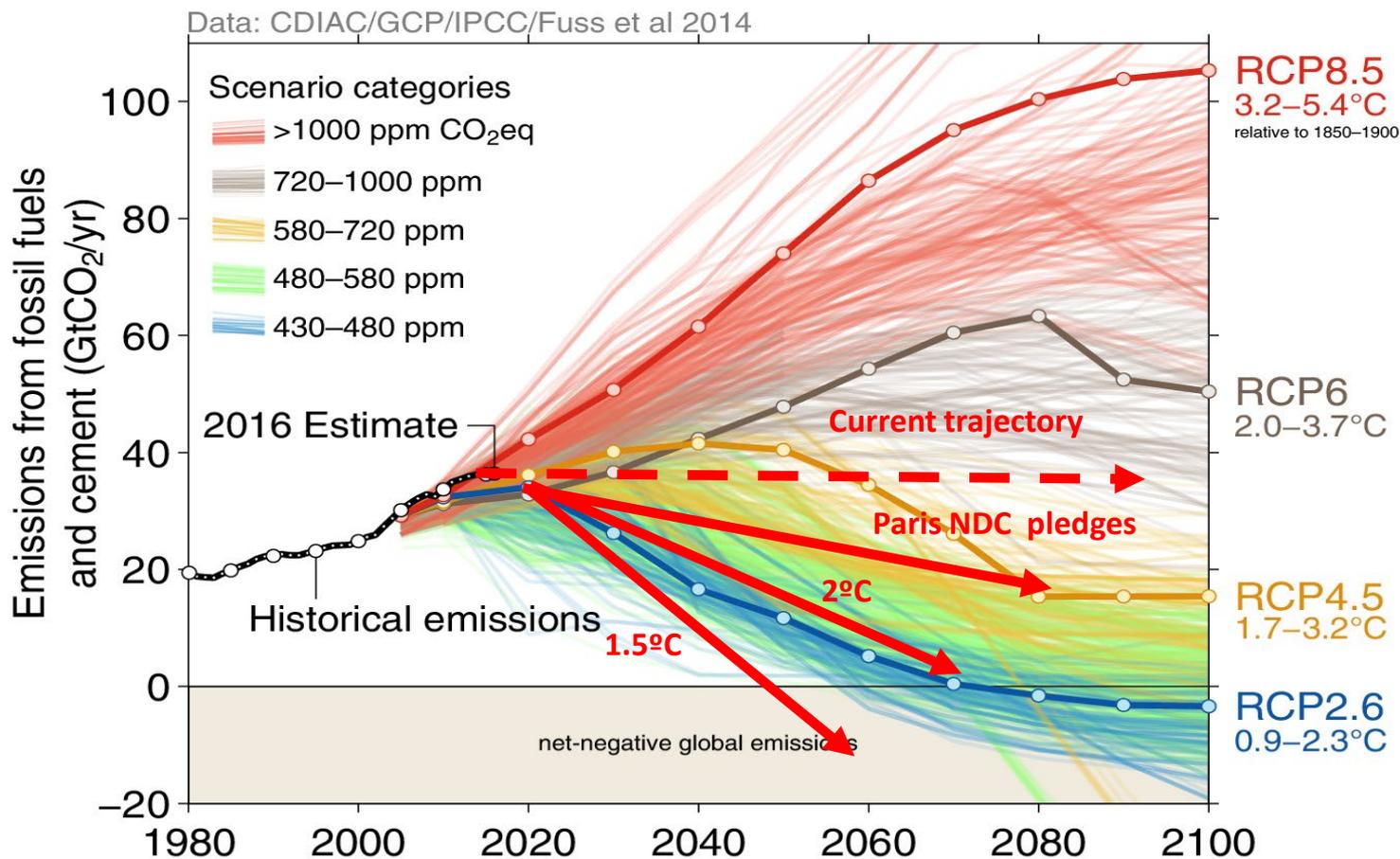
Western Canada and the global low carbon transition

Dr. Chris Bataille

*Institut du Développement Durable et des
Relations Internationales (IDDRI.org)*

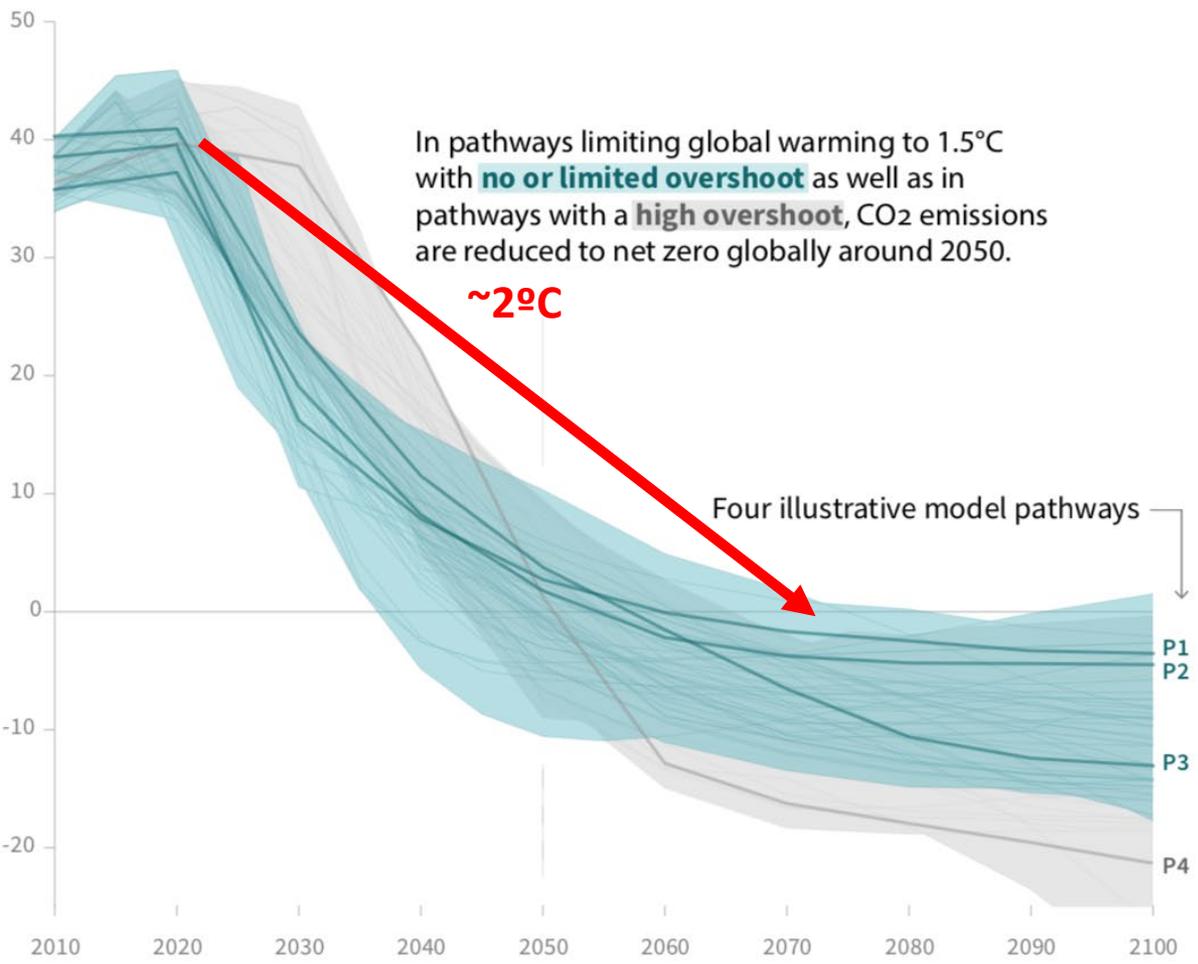
May 8th 2019, Calgary

First things first: the global carbon budget & the objectives



Global total net CO₂ emissions

Billion tonnes of CO₂/yr



In pathways limiting global warming to 1.5°C with **no or limited overshoot** as well as in pathways with a **high overshoot**, CO₂ emissions are reduced to net zero globally around 2050.

~2°C

Four illustrative model pathways

P1
P2
P3
P4

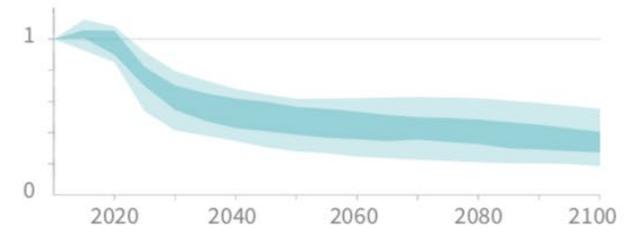
Timing of net zero CO₂
Line widths depict the 5-95th percentile and the 25-75th percentile of scenarios



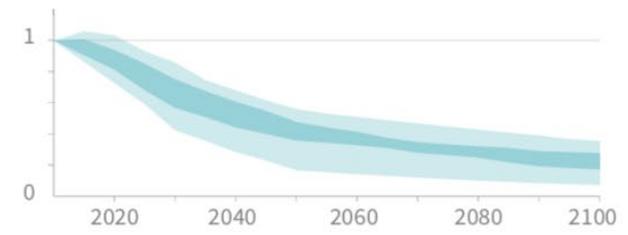
Non-CO₂ emissions relative to 2010

Emissions of non-CO₂ forcers are also reduced or limited in pathways limiting global warming to 1.5°C with **no or limited overshoot**, but they do not reach zero globally.

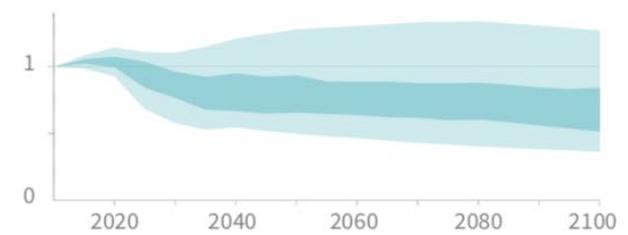
Methane emissions



Black carbon emissions



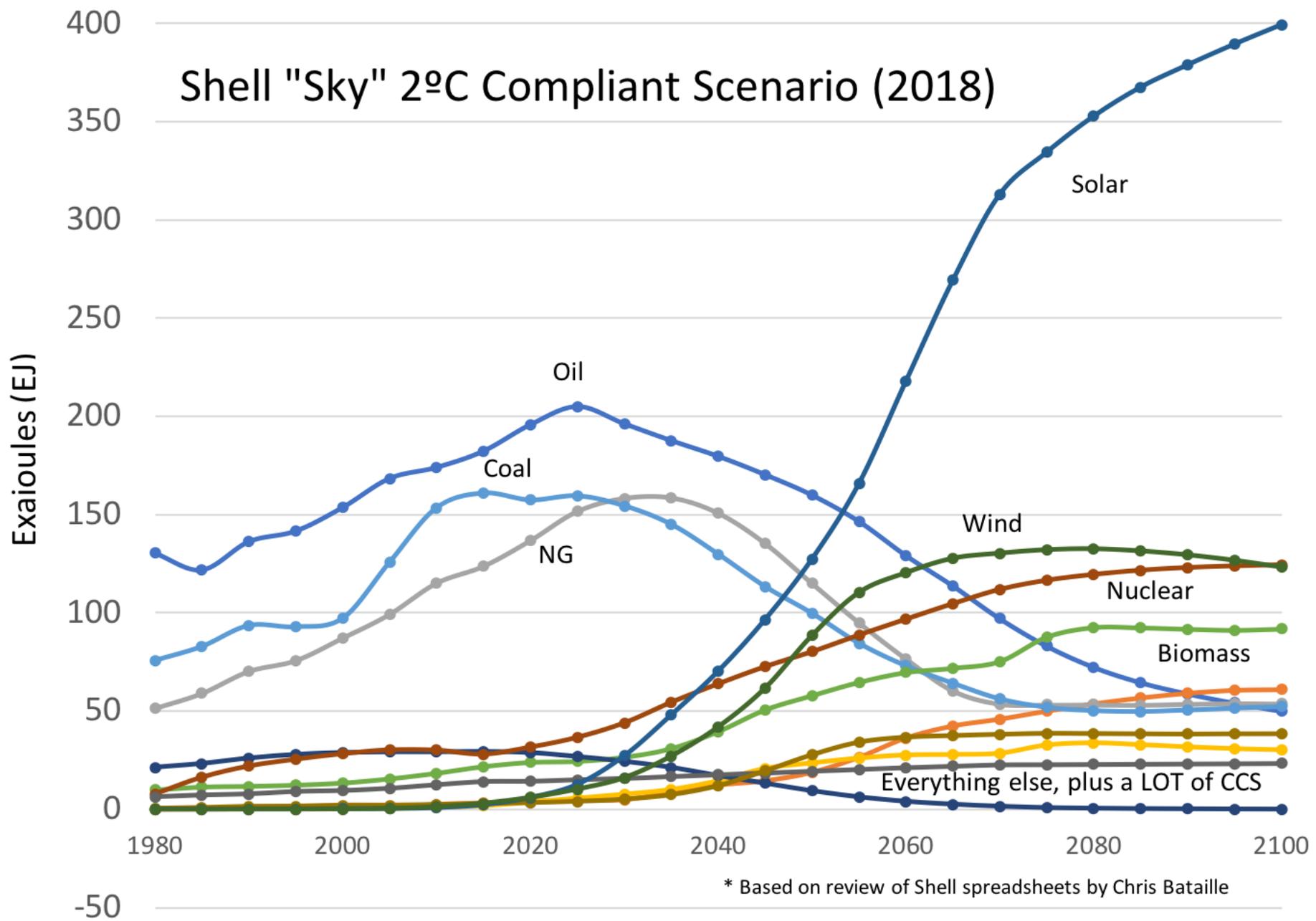
Nitrous oxide emissions



Whenever we get around to it, deep decarbonization is doable

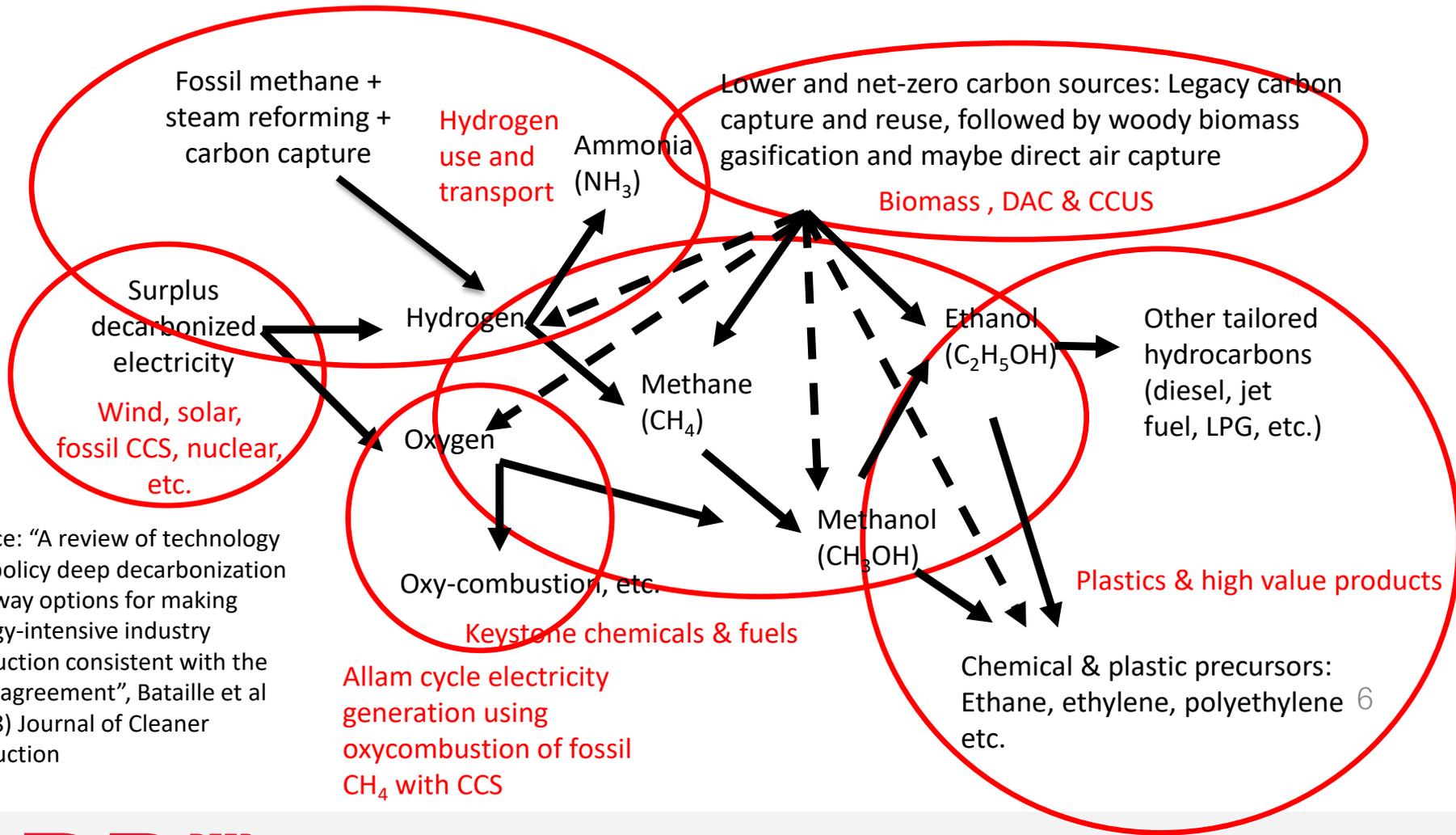
- Increase energy efficiency by 50+%
- Decarbonize our “energy carriers” e.g. electricity, solid, gaseous and liquid fuels
- Transition away from fossil coal, diesel, gasoline, kerosene and natural gas to decarbonized electricity, bioliquids and gases, hydrogen, and **synthetic hydrocarbons (more later)**
- “Rewild” the marginal farms and unused lands and let the forests grow back
- Technological negative emissions using biomass with carbon capture and storage or direct air capture with CCS

Shell "Sky" 2°C Compliant Scenario (2018)



* Based on review of Shell spreadsheets by Chris Bataille

While electrification is the default, we have to face the non or very expensively electrifiables. Can they be addressed with a hybrid electricity, hydrogen, & synthetic hydrocarbons?



Source: "A review of technology and policy deep decarbonization pathway options for making energy-intensive industry production consistent with the Paris agreement", Bataille et al (2018) Journal of Cleaner Production

In summary

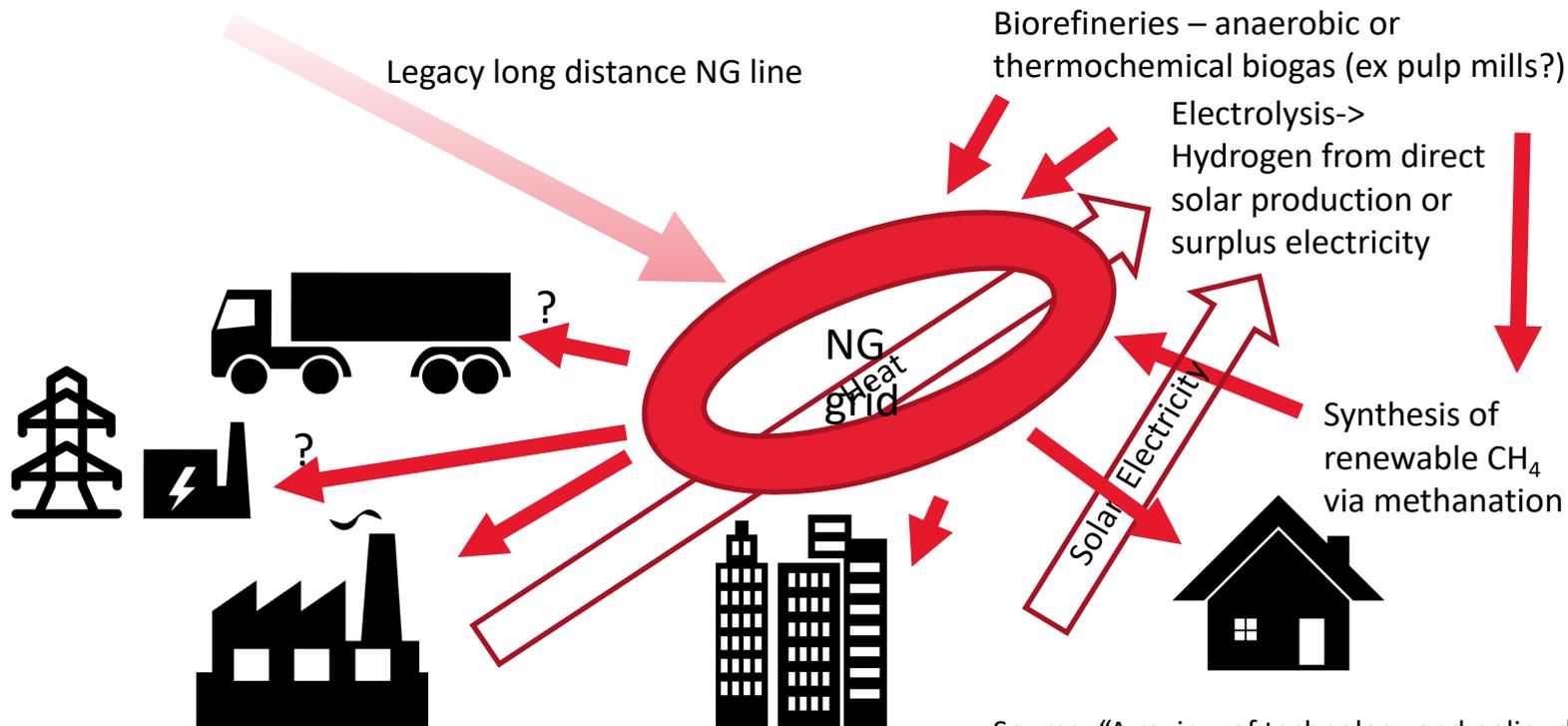
- We're wildly off track for 1.5-2°C in most sectors (transport and buildings are the exceptions)
- However long it takes us to change course, a path exists that allows for a transition, instead of a destructive revolution, but the eventual "snapback" is getting harder each day
- Western Canada has strong competitive advantages, but the R&D and "market making" commercialization for the key technologies (e.g. woody biomass gasification, CCS, etc.) must be done now to be ready for 2030
- The big question? A politically survivable policy package

Questions?

chris.bataille@iddri.org, [@chris.bataille](https://twitter.com/chris.bataille)

DDP-INITIATIVE.ORG

Transition and transformation: While new should be net-zero based by the late 2030s, the NG transmission grid *could* be key to transition of legacy buildings, industry and load following NG electricity generation



Source: “A review of technology and policy deep decarbonization pathway options for making energy-intensive industry production consistent with the Paris agreement”, Bataille et al (2018) Journal of Cleaner Production