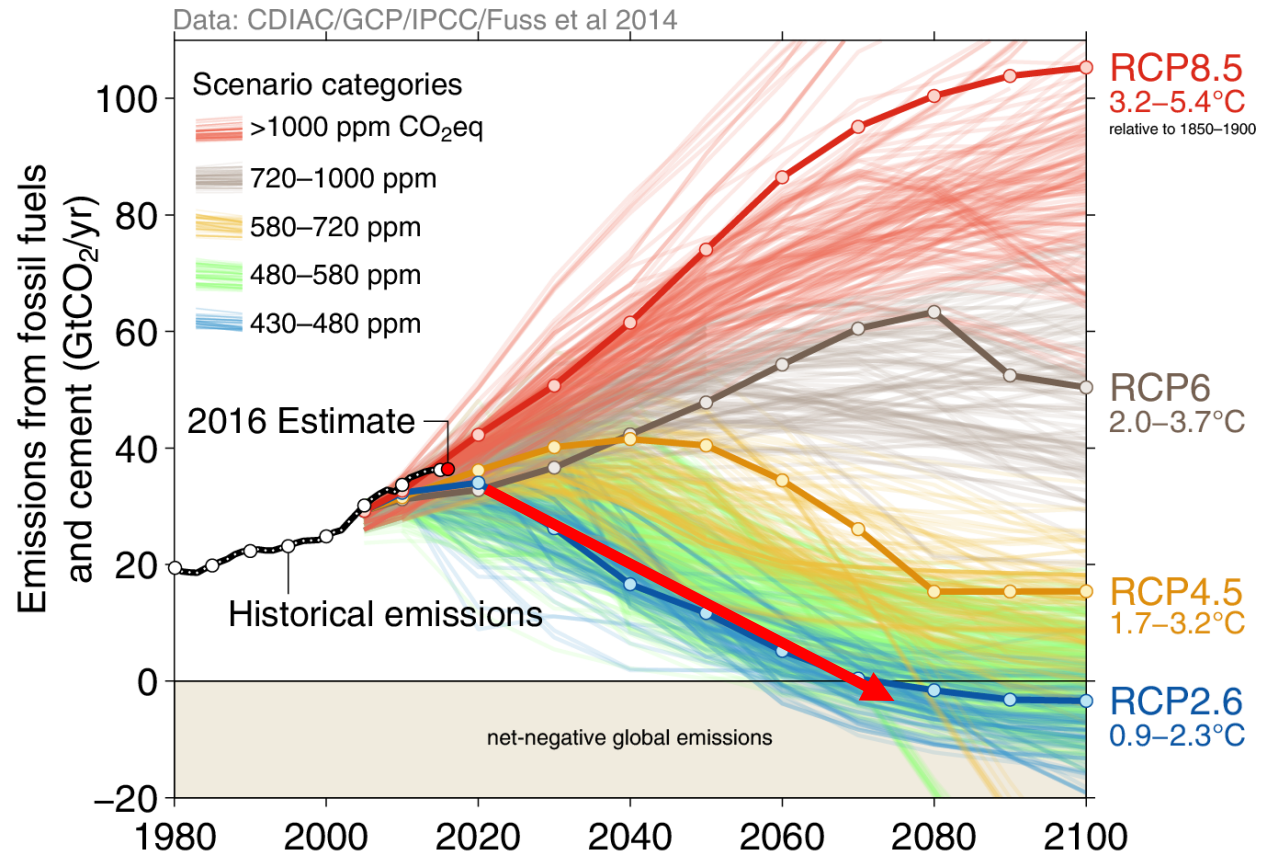


The global carbon budgets & what the 2015 Paris Agreement « well below 2°C » means

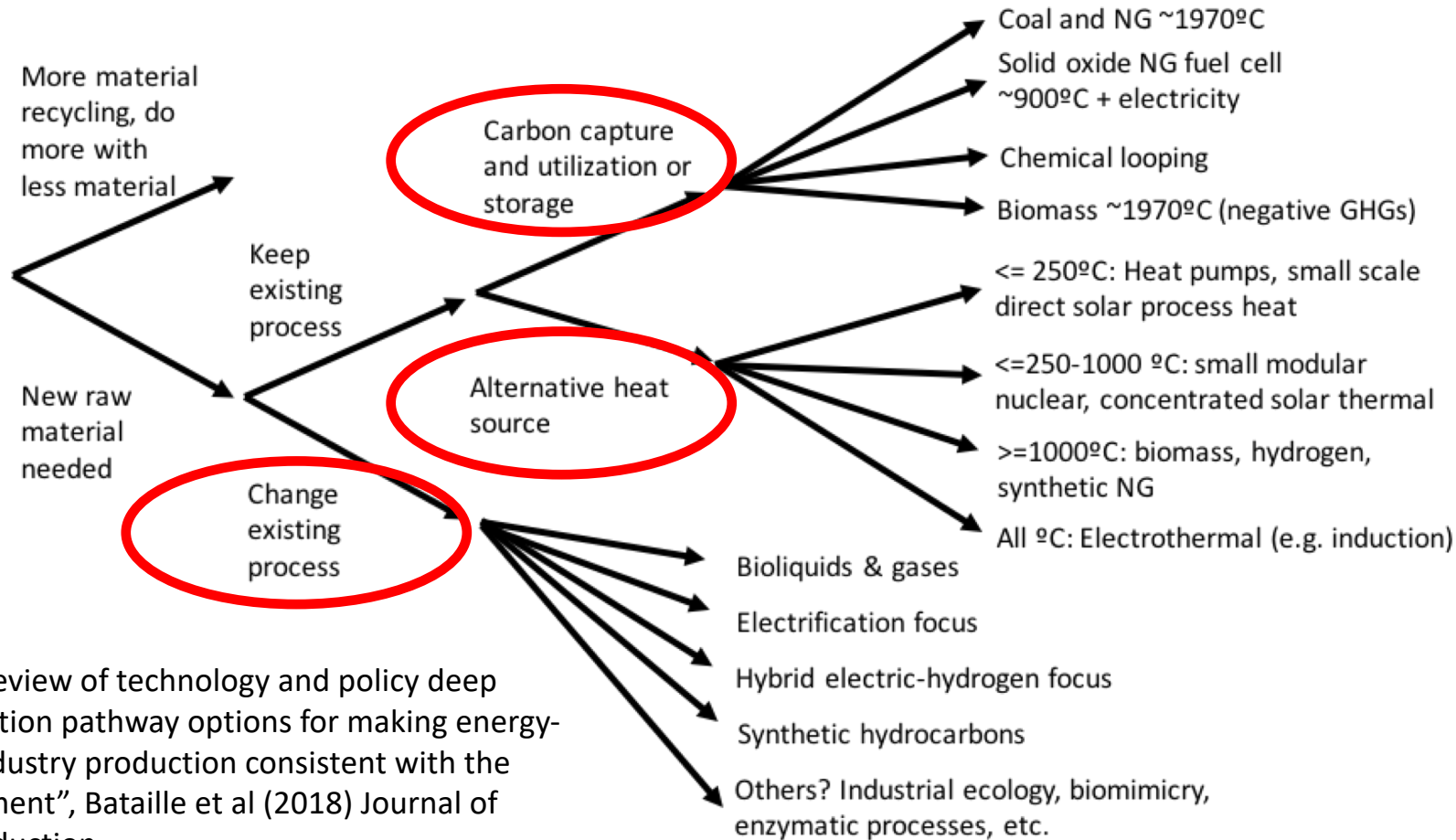
To 2050:

- ❑ Total GHGs >/2
- ❑ GHGs/capita >/3
- ❑ GHGs/unit GDP -> / 10
- ❑ Net-zero ~2070
- ❑ Global peaking ... now

Updated with data from Fuss (2016)

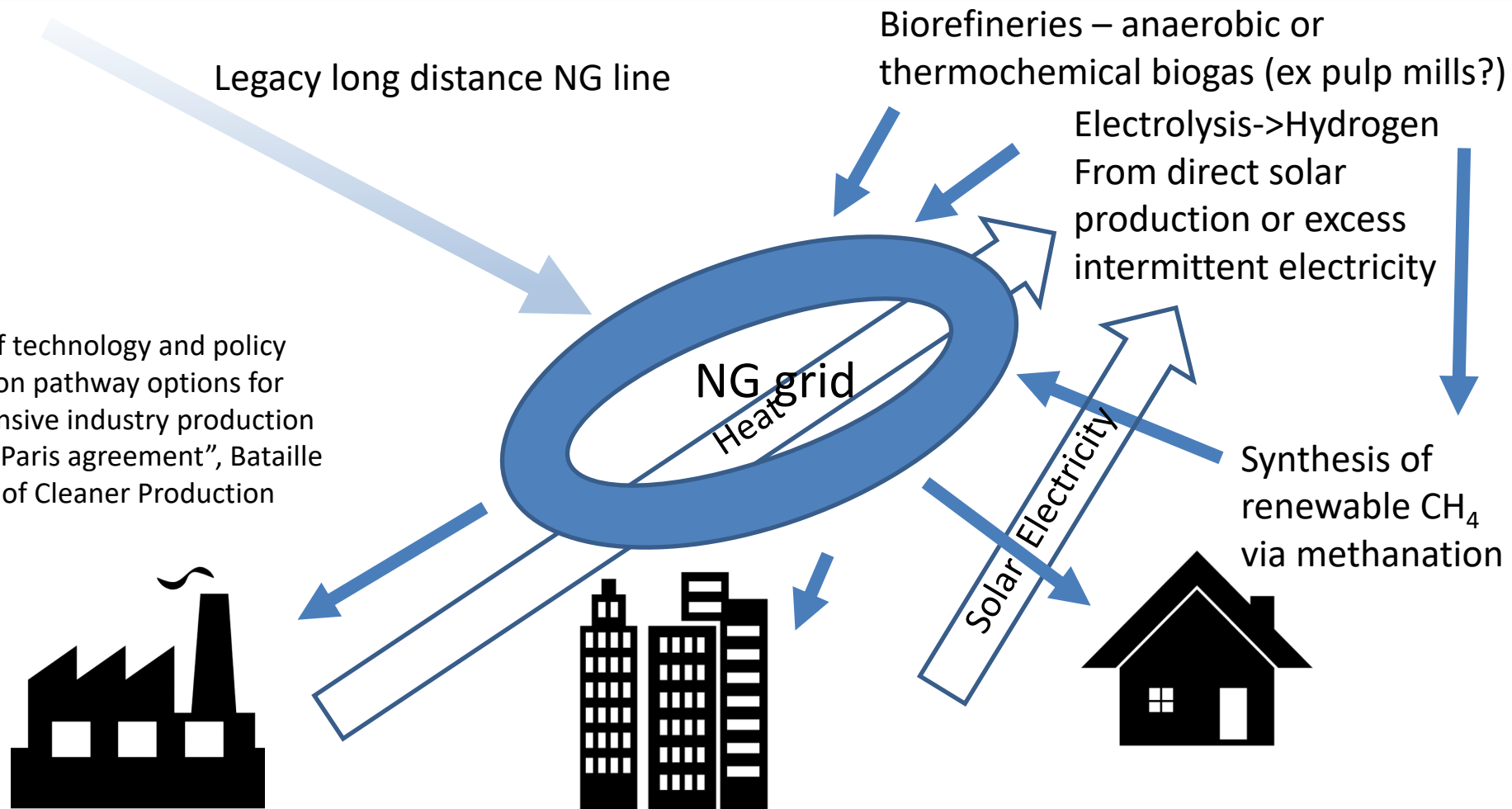


Emerging technologies exist for net-zero heavy industry decarbonization, but need development and market pull



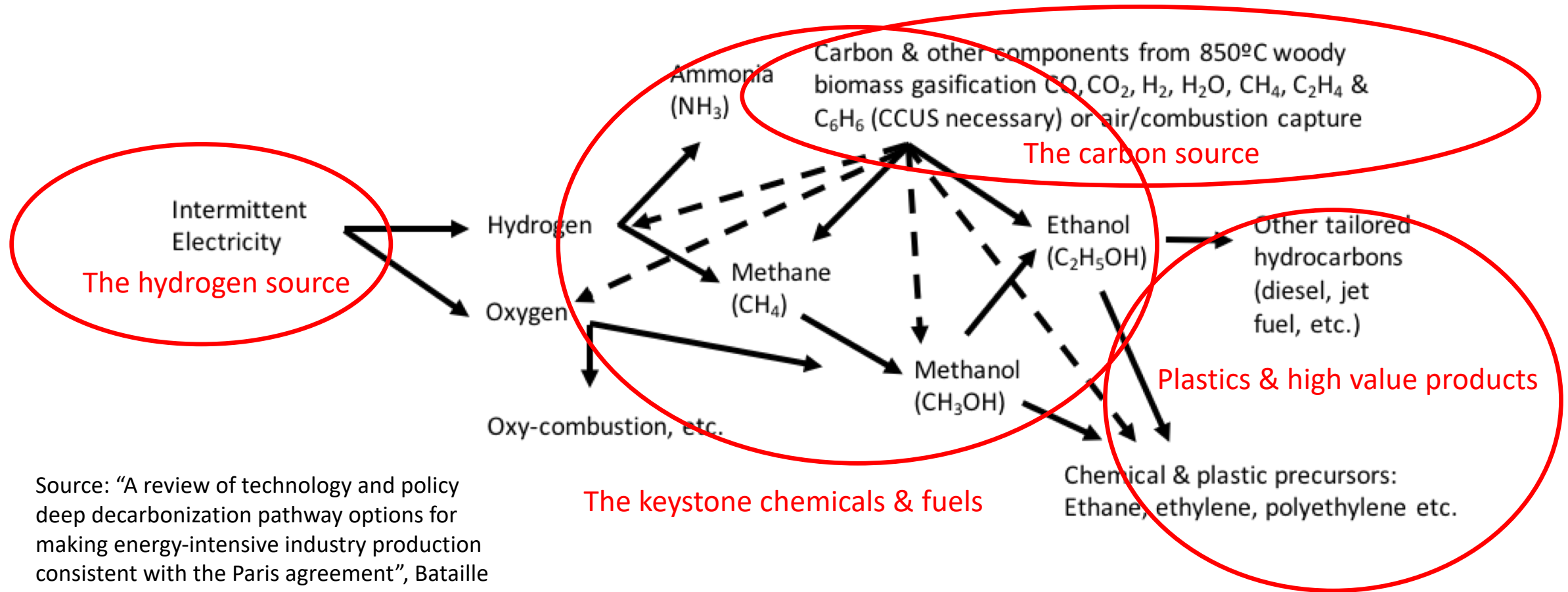
Source: "A review of technology and policy deep decarbonization pathway options for making energy-intensive industry production consistent with the Paris agreement", Bataille et al (2018) Journal of Cleaner Production

While new should be electric based where possible by mid 2030s, the NG transmission grid could be key to transition of legacy buildings and facilities



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

Where is all that net-zero GHG methane (or other high temp burning chemicals) going to come from?



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

Phase II Findings: Pillars of a generalized transition plan

- An initial policy commitment to very low carbon industry
- A regionally and sectorally specific stakeholder pathways process to assess options and build a working consensus
- De-risked R&D support and direct, pragmatic and declining output subsidies to zero carbon production
- Gradual and multistage exposure of all sectors to the full valuation of GHGs via carbon pricing or tradable performance regulations with protections for competitiveness
- Development of supporting institutions for: lifecycle GHG accounting (especially at borders), education, regulatory, insurance and spatial planning.