



ArcelorMittal

# IEA dialogue on Sustainable Transition of Iron and Steel: Policy mechanisms effecting the sustainable transition

Karl Buttiens March 29 2019

# What is possible? What is necessary?

## What is doable?

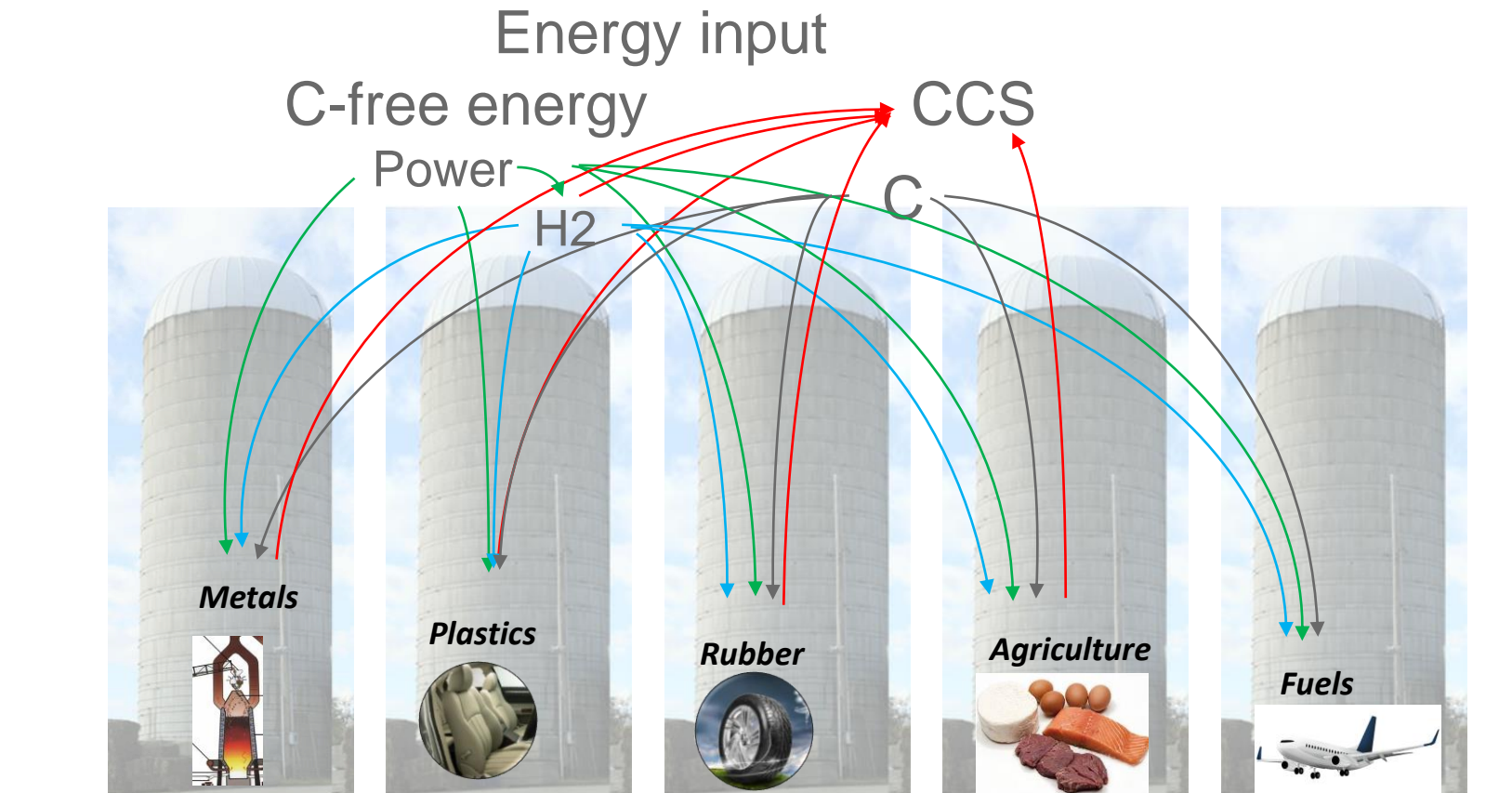


ArcelorMittal

- 2050 roadmaps and Material demands assessments are extremely useful to explore what could possible – thinking out of the box
  - What will happen is likely to be very different, nevertheless it is helpful to imagine what policy instruments could be needed
  - Danger is when it leads to technology driven policies: phase out BOF because of forecasted material needs or desired technologies
- Not everything that could happen will happen
  - Policies can enable (remove roadblocks) not enforce –avoid “promoting” specific technologies unexpected or unforeseen evolutions can create different outcome
  - Possibility to strike a fair deal between different companies or sectors is key

- Present roadmaps study evolutions per sector
  - H2 economy allows for total shift in industry: but will it happen? when? Where? and for which sector? Who will have access and who not? What if CCS, Blue hydrogen is also available?
  - How will the transformation happen? Is there a risk that entire sectors are wiped out because of bad timing, bad technology choice..., imports? Will there a big shift in material use, needs (adaptation)?
- Scenarios that can be the result of gradual evolution with high flexibility are less appealing but more realistic
  - Shift to more circularity is unavoidable and offers graduality

# Present model & policies: Linear (silo) Energy Model



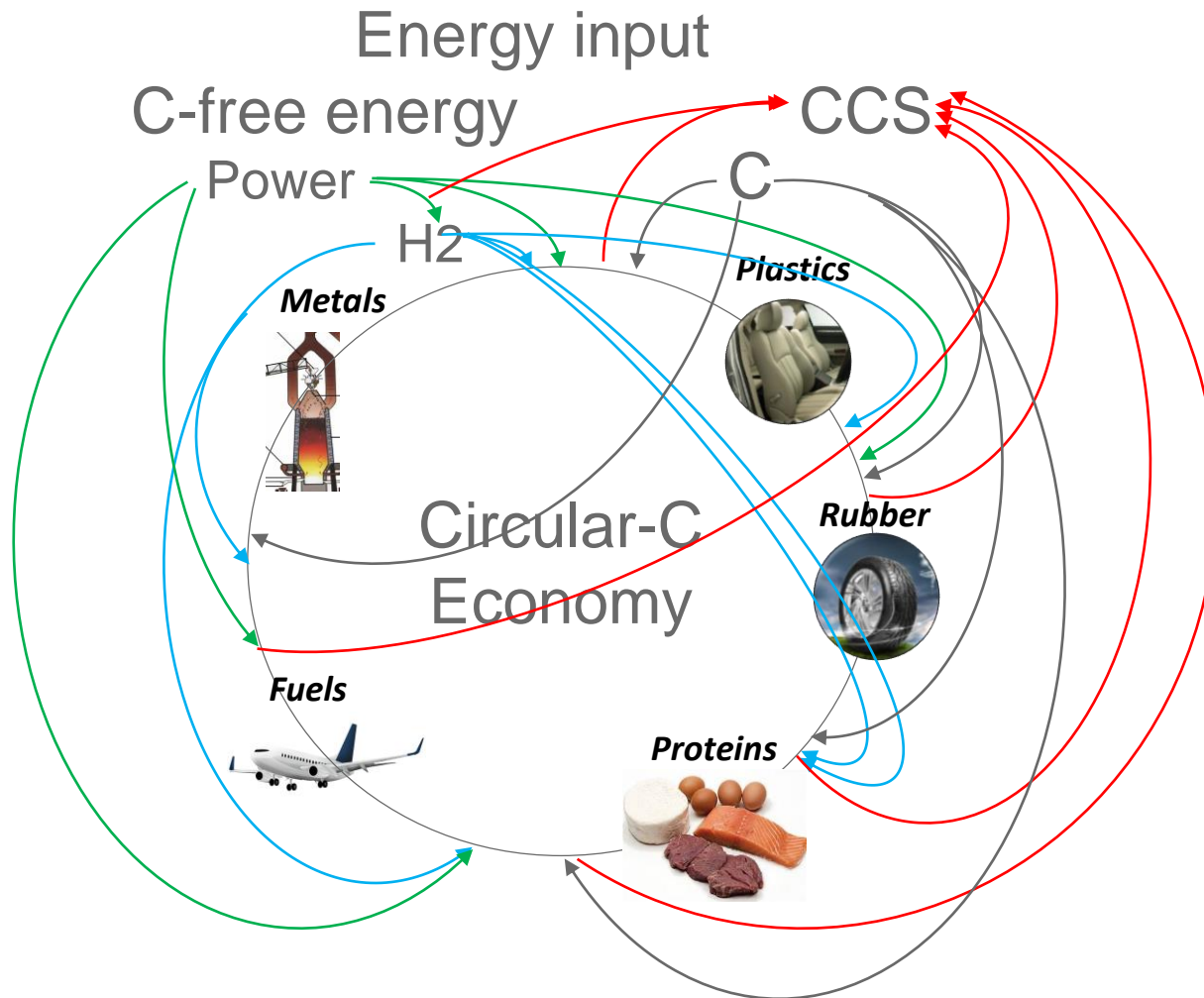
Where is the waste?



# Linear (silo) Energy Model

- Linear model is compatible with present policies:
  - In line with the “polluter pays” principle => (+) assigning responsibilities
  - Simplicity in accounting (individual footprints) => (-) strong incentive to push out emissions to wherever
  - Discourages synergies between silos => sharing of benefits!
  - Enhances impact of mono-, oligopolies and market dominance
  - Blurs measuring overall efficiency => how to track leakage?
  - Waste presently excluded from C-policies

# Circular Energy model

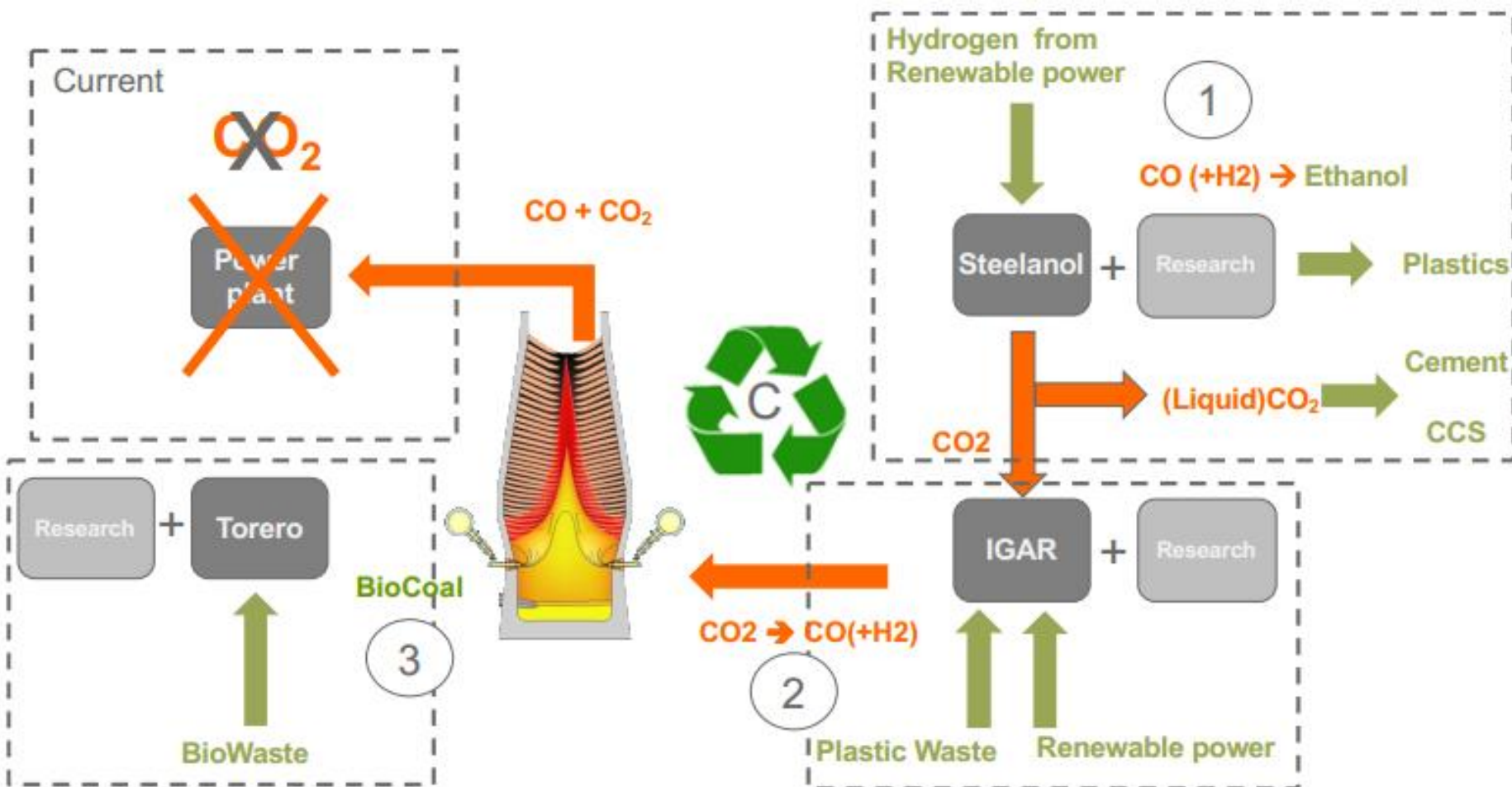




# Circular Energy model

- Circular model is unavoidable to reach net zero emissions
  - There can be no more waste in a circular economy
  - All energy needs to be accounted for, but is lower than the sum of silos for the same result
  - C-accounting needs to be supply chain based – all carbon is included (also feedstock) - leakage cannot be an option
  - Policies and monitoring need to facilitate fair sharing of synergy advantages
  - All production of carbon containing products will need new technologies and raw materials (CO<sub>2</sub> & H<sub>2</sub>O)
  - Changes can be much more gradual and adapted to changing availability of different energy vectors
- A “collaborative” economy is likely to move faster than a “silo” economy

# Example of gradual low risk pathway: smart carbon @ ArcelorMittal





# How to include Circular Economy in the I&S 2050 roadmap?

- A general materials approach might be needed
  - Recycling is a problem in footprint accounting (similar to leakage) shared advantage should go to user of the material
  - Over time the advantage of reuse should be equally included
  - Advantage of simultaneous production & CCU should become clear
- Scenario building becomes more complex as interrelation, availability and price of different energy sources continuously impact scenarios
  - Evolution will be more realistic – no catastrophic changes needed
  - Scenarios to become more robust as they are impacted by many simultaneous evolutions
  - But many will need the same resource: H2 for chemicals, fuels and steel...

# Conclusion

- CO2 footprint accounting leads to a dead end. We need a radical change to supply-chain CO2 accounting
- Policies need to attenuate existing market inequalities not reinforce them to enable the emergence of a circular economy
- Policies need to enable evolutions but should abstain from technology choices
- The H2 economy will be accessible for all: chemistry, airplane fuels, metals... Steel has the lowest ability to pay and will probably be the last to be served



ArcelorMittal

Thank you for your attention

