Crucial parameters for effective innovation support

Second Stakeholder meeting
on post-2020 carbon leakage provisions
for the EU Emissions Trading System

Marco Mensink
Director General
Confederation of European Paper Industries

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The first parameter: aim for 2030, not 2050

In our technology assessment, the CO_2 reduction pathway to 2050 depends on

breakthrough technologies.

This is two investment cycles, or a maximum of two paper machines or boilers away. Breakthrough technologies have to become

available by 2030

to be on time for 2050.

The second parameter – Portfolio, not technology

unfold the future

Breakthrough technologies for the 2050 world

Deep Eutectic Solvents
WINNER

A ground-breaking discovery:
Deep Eutectic Solvents (DES), produced by plants, open the way to produce pulp at low temperatures and at atmospheric pressure. Using DES, any type of biomass could be dissolved into lignin, cellulose and hemicellulose with minimal energy, emissions and residues. They could also be used to recover cellulose from waste and dissolve ink residues in recovered paper.

Flash condensing with Steam
FINALIST

Waterless paper production?
Very nearly. Largely dry fibres would be blasted into a forming zone with agitated steam and condensed into a web using one-thousandth the volume of water used today.

Steam
FINALIST

Using more energy to use less?
You read it right. Using the full power of pure steam for superheated steam drying would save energy as most heat could be recovered and recycled. Steam will then be used as fibre carrier for making and forming paper.

DryPulp for cure-formed paper
FINALIST

Imagine a papermaking process that uses no water. This is it. Fibres are treated to protect them from shear, and then suspended in a viscous solution at up to 40% concentration. The solution is then pressed out and the thin sheet cured with a choice of additives to deliver the end-product required.

Supercritical CO_2
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Neither gas nor liquid but somewhere in between, Supercritical CO_2 ($scCO_2$) is widely used in many applications, to dry vegetable, fruits and flowers, extract essential oils or spices. Suppliers for NIKE, Adidas and IKEA use it to dye textile. Coffee and tea have been decaffeinated with scCO2 since the early 80s. We could use it to dry pulp and paper without the need for heat and steam, and why not dye paper or remove contaminants too, while we're at it?

100% electricity
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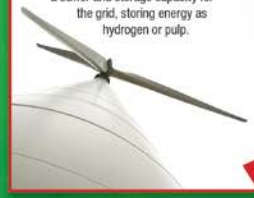
Shifting pulp and paper production to energy-efficient technologies using electricity rather than fossil fuel power to generate heat will cut all CO_2 emissions as the power sector shifts to renewable energy. The sector would also provide a buffer and storage capacity for the grid, storing energy as hydrogen or pulp.



Functional Surface
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The key to unlocking greater added value from fewer resources depends on a shift to producing more lightweight products, and selling surface area and functionality rather than weight. Advances in sheet formation and new cocktails of raw materials will lead the way to the lightweight future.

The Toolbox to replicate
FINALIST

What about the great ideas that never make it? Put together a combination of process, material and equipment innovations as a toolbox of stepping stones to 2050 and the pathway becomes clearer, boosting sector and investor confidence.

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The third parameter: Legal framework

<u>These are concepts and technologies</u>

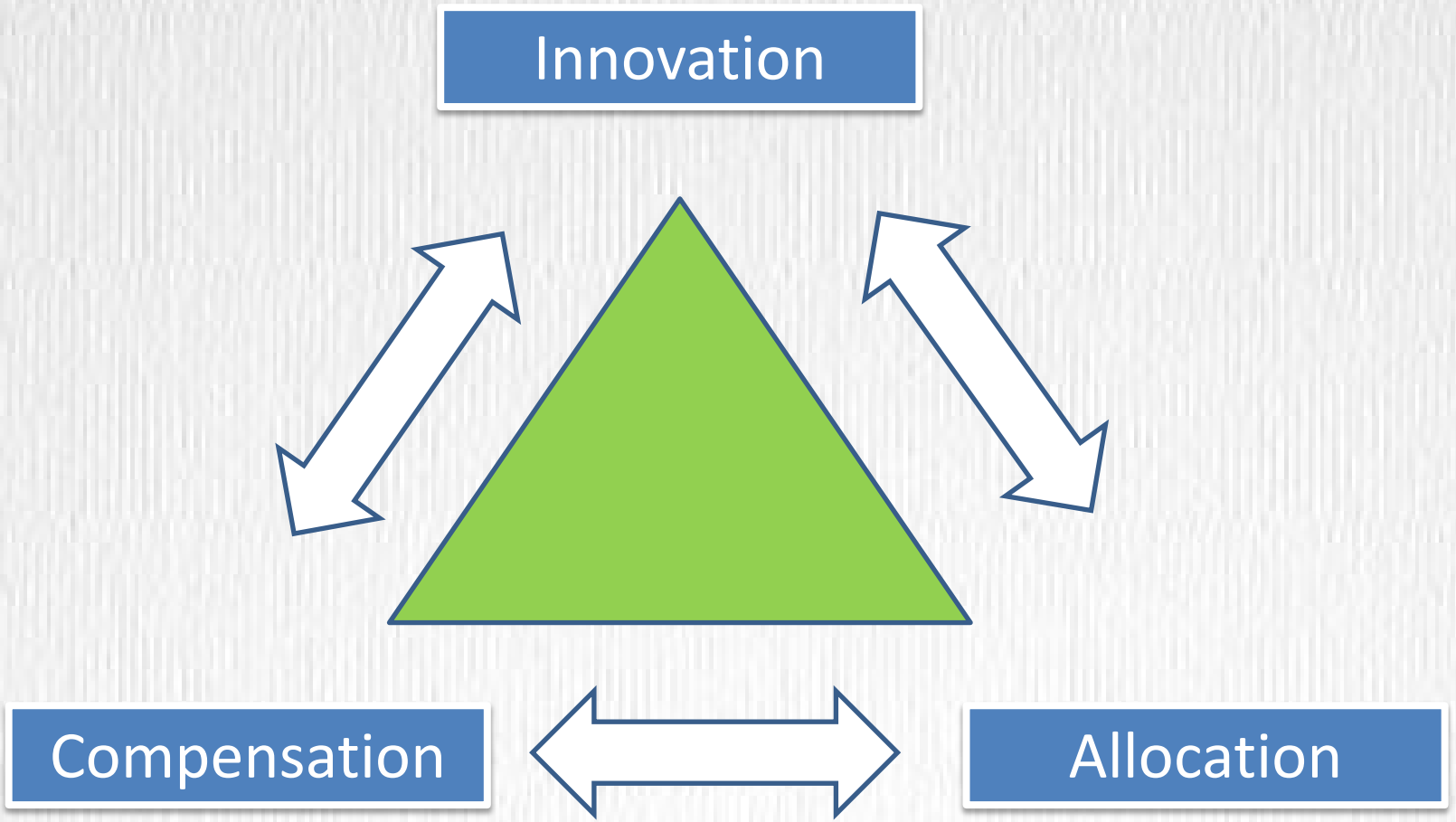
- None of the companies can develop on their own.
- Need strong sector cooperation.
- Need to benefit European industry.
- Will not be in place before 2030.
- Are not BAT/ “reduction potential of a sector”
- Depend on investments in Europe (!)
- Needs an extensive IPR/NDA framework in place – which needs development!

The fourth parameter – The long haul

1. We created awareness. Drafted a sector 2050 Roadmap.
2. Created further awareness, Spread the message. Internalised.
3. Developed a portfolio of technology options.
4. Received the mandate to work for solutions after 2030, far beyond the normal industry scope.
5. And now have a sector technology programme – Eight options, of which 6 start consortia, 5 might succeed, 3 could become pilot, 2 maybe become demo and 1 or 2 turn large scale.

What we need?
A partnership to share this risk,
not for a project.
But for the entire adventure.

The fifth parameter - Additionality



Complementing not competing approaches!

So what to do

"In line with the Union's innovation and industrial policies, the concept of an expanded NER300 system will, therefore, be explored as a means of directing revenues from the ETS towards the demonstration of innovative low carbon technologies in the industry and power generation sectors"

A policy framework for climate and energy in the period from 2020 to 2030 [COM(2014)15]

EP on 2030: 121. Points out that …..; part of the ETS auction revenues should be earmarked for capital-intensive investments in breakthrough technologies in energy-intensive sectors or for encouraging other means of job creation e.g. reducing taxes on labour

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Options

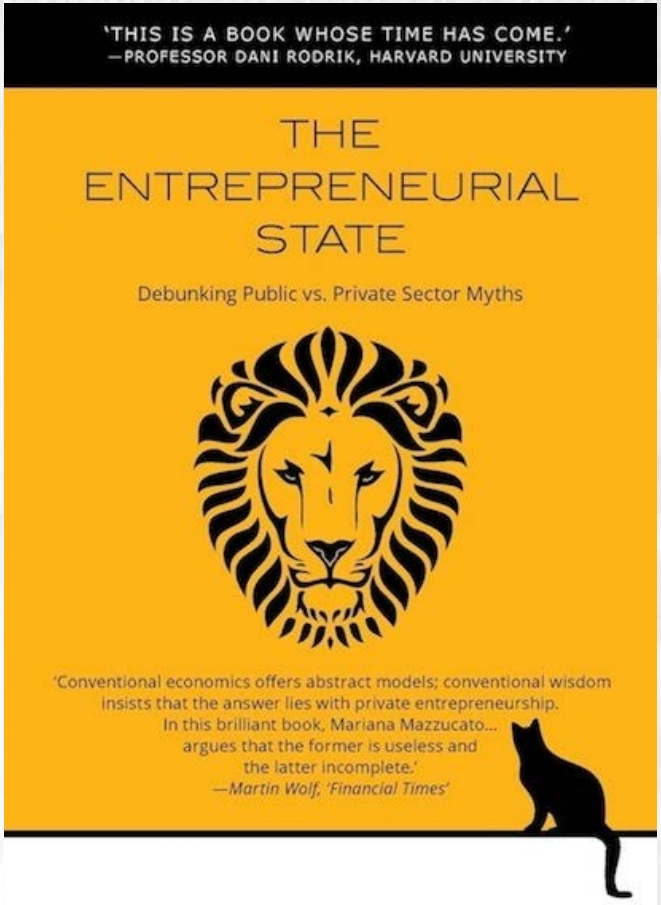
Today	Tomorrow?
• NER 300 funding (CCS + Innovative renewables) • Horizon 2020 general calls/SPIRE • Bio Based Industries PPP • SILC 1 and SILC 2 • Structural/regional funds	• SILC II and SILC III? • NER 300 new or unused? • 900M credits back-loaded? • MSR? • Member state funding? • Horizon 2030?

A Fund for industrial Breakthrough Technology

A support line for each sector mentioned in Annex 1 of the Directive !

The sixth parameter; Innovative innovation

- For the large scale of these breakthroughs :
- Think 2021-2030.
- Can policy change from facilitating RD&I,
- Into governments becoming equity providers,
- With shared risk taking.
- Can we develop new policy thinking – a.k.a. the Entrepreneurial state?



In summary

An EU ETS / Climate Package that

- Provides for investment and growth.
- Supports those who reduce.
- Returns funds to industry.

Uses it's power to help European industry to compete today, *and* be ready for the future.

Thank you!

CEPI aisbl / Confederation of European Paper Industries
250 Avenue Louise, Box 80, B-1050 Brussels
Tel: +32 2 627 49 11 / Fax: +32 2 624 81 37
mail@cepi.org

www.cepi.org / www.unfoldthefuture.eu

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