MIAC ENERGY
ASSOCARTA
Lucca, 12 ottobre 2017

Girolamo Marchi
Presidente Assocarta

ASSOCARTA

Roadmap 2050 «Costruiamo il futuro»

L'Europa ha assunto l'impegno di ridurre le emissioni di gas serra dell'**80%** rispetto al 1990.

Il settore cartario ha realizzato la propria **visione** sul percorso che può essere seguito per contribuire a questo obiettivo entro il 2050.

La sfida è mantenere il settore competitivo creando ulteriore **valore aggiunto** e guidando la decarbonizzazione **senza delocalizzare** la produzione.

La *Roadmap* che ora ci presenterà Nicola Rega è stata sviluppata nel 2011 e nel 2016 abbiamo fatto il punto sui progressi fatti sinora.

La carta nella bio-economia circolare

L'industria cartaria è un perfetto esempio di economia circolare in quanto realizza, attraverso processi ad **alta efficienza energetica,** un **biomateriale rinnovabile, riciclabile e biodegradabile.**

La carta è pertanto un **materiale del futuro** dalle infinite applicazioni, ma per rispondere alle sfide dell'economia circolare e raggiungere gli ambiziosi obiettivi di decarbonizzazione è **necessario creare un contesto favorevole per l'industria** che faciliti gli investimenti e riduca:

- i costi normativi
- l'incertezza normativa
- i costi energetici

Il contributo italiano

Negli ultimi 20 anni abbiamo aumentato l'efficienza energetica del **20%** e utilizziamo già il **gas naturale** nel modo più efficiente, attraverso la **cogenerazione** ad alto rendimento.

Non dobbiamo smettere di lavorare sul miglioramento continuo dell'**efficienza energetica** e della **cogenerazione**, e al contempo dobbiamo aprire all'opzione dei **combustibili rinnovabili**, ricorrere a **energia elettrica** e **trasporti** a bassa emissione di CO2 e investire in nuove **tecnologie fortemente innovative** ancora da sviluppare.

Il contributo italiano

Una sfida ambiziosa e non facile per le imprese italiane, che sono mediamente il **50% più piccole** della media europea.

L'industria cartaria inoltre è per il **90% non integrata** con le biomasse e abbiamo già terminato la conversione dai combustibili fossili più inquinanti al **gas naturale**.

Siamo già oggi i principali utilizzatori di **cogenerazione** e abbiamo **costi energetici** più alti dei nostri competitors europei.

Inoltre ci penalizza l'**impossibilità di realizzare impianti per recuperare i residui** che provengono dal riciclo come fanno tutti i nostri competitors europei.

Grazie

CEPI 2050 Roadmap to a low-carbon bioeconomy

Nicola Rega

Climate Change and Energy Director, CEPI

MIAC, Lucca, 12 October 2017

Unfolding our future…

2011

2013

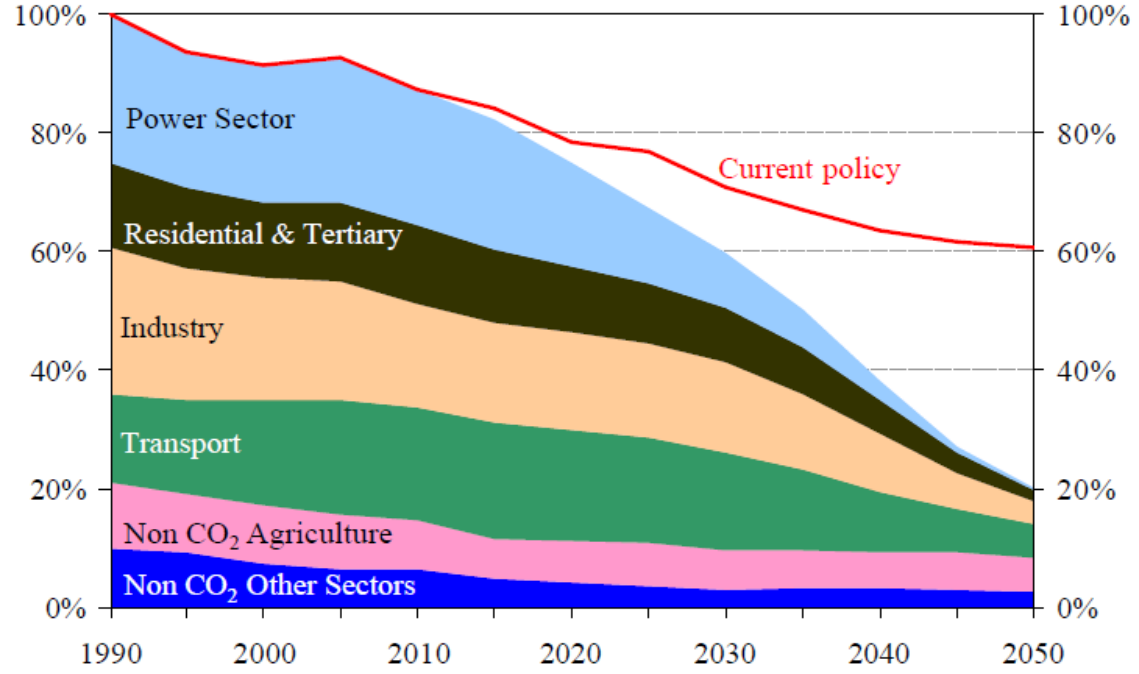
2015

2017

Why a Roadmap?

The 2010 EU Roadmap for moving to a competitive low carbon economy in 2050:

Figure 1: EU GHG emissions towards an 80% domestic reduction (100% =1990)



" The transition towards a competitive low carbon economy means that the EU should prepare for reductions in its domestic emissions by 80% by 2050 compared to 1990 "

A crucial sentence

…….”As solutions are sector-specific, the Commission sees a need to develop specific roadmaps in cooperation with the sectors concerned”.

Key question:

What to do?

The challenge

50% more value, 80% less fossil CO2,

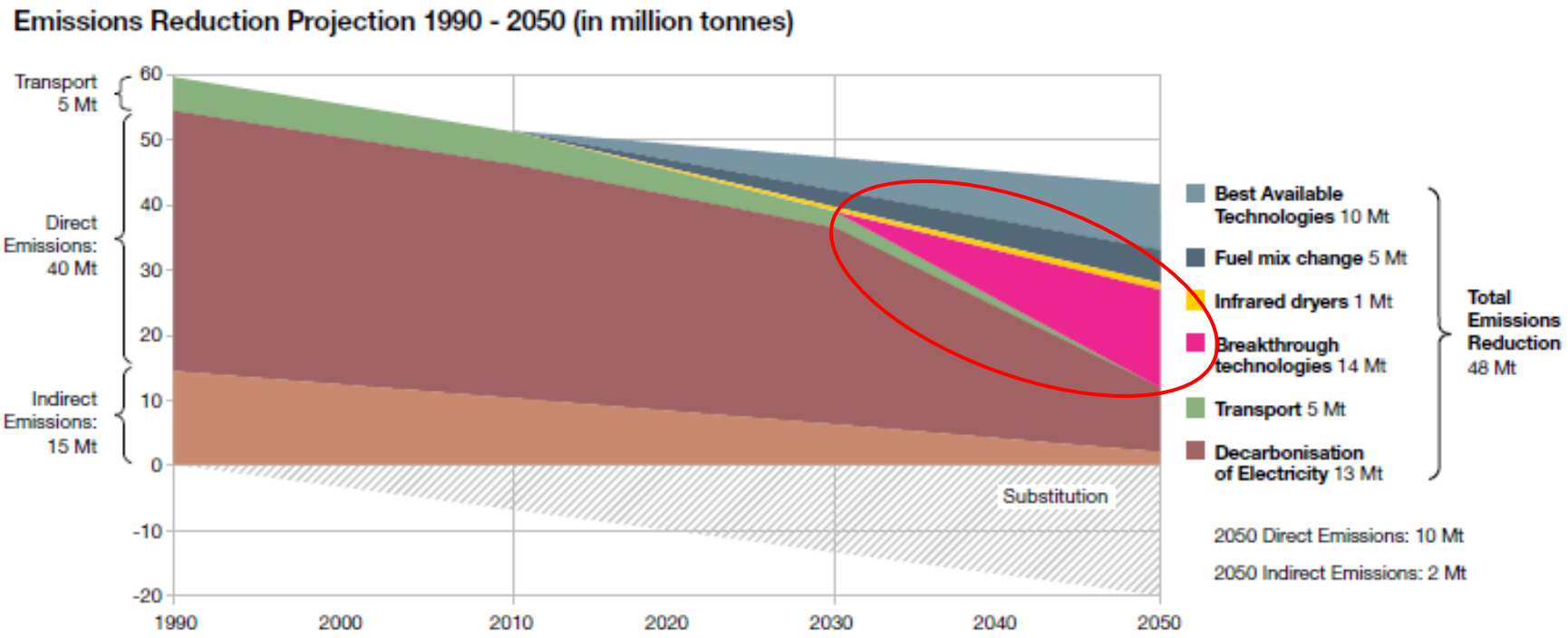
40 years to go

(in two investment cycles)

In a broad sector scope – the forest fibre sector

The first 2050 Roadmap (2011)

-80% carbon – How ?



The exploration shows that a reduction of 50 to 60% of CO_2 emissions is possible given the right circumstances. To achieve a minus 80% reduction, however, the sector will need breakthrough technologies.

Pulp and paper tomorrow

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

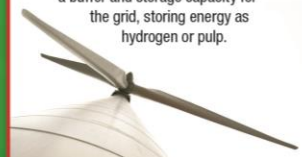
FINALIST

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

FINALIST

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

FINALIST

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.

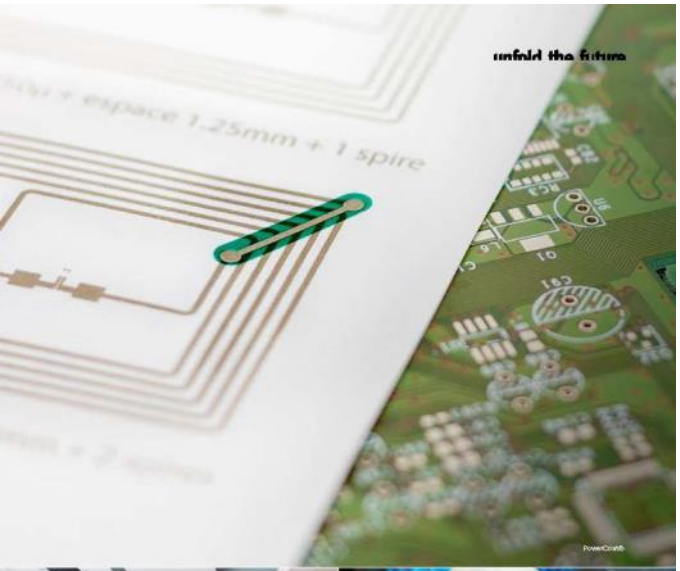
The Toolbox to replicate

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.

cepi

Creating added value out of fibre



Fibre from everywhere

Fibre takes on plastic

Fibre on a mission

Designer fibre

Fibre for creativity

Sci-fibre

Fibre for everyday

But the world has changed since 2011…

- EU 2030 Climate and energy package
  - > At least 40% cuts in **greenhouse gas emissions**
  - > At least 27% share for **renewable energy**
  - > At least 27% improvement in **energy efficiency**
- Changes in electricity systems/markets
- Paris agreement: keep temperature rise this century well below 2°C
- U-turn in US climate policies
- In what Europe are we today? And tomorrow?
- The pulp and paper industry has changed (and the change is not over yet)

Key questions leading to a review of the 2050 roadmap

- Where are we in our journey?
- Can we still deliver? How?
- What financing is needed to drive the industry transformation?

The new 2050 Roadmap

A few starting points: who is the paper industry…

<1% of total EU GHG emissions

4th largest industrial energy user in Europe

3,5 billion euros investments / year

-26% CO_2 emission reduction since 2005

...and where is the paper industry heading

the forest fibre and paper industry in

2050

roadmap

pulp

paper

bio-based products

added-value **+50%**

-80% carbon emissions

cepi

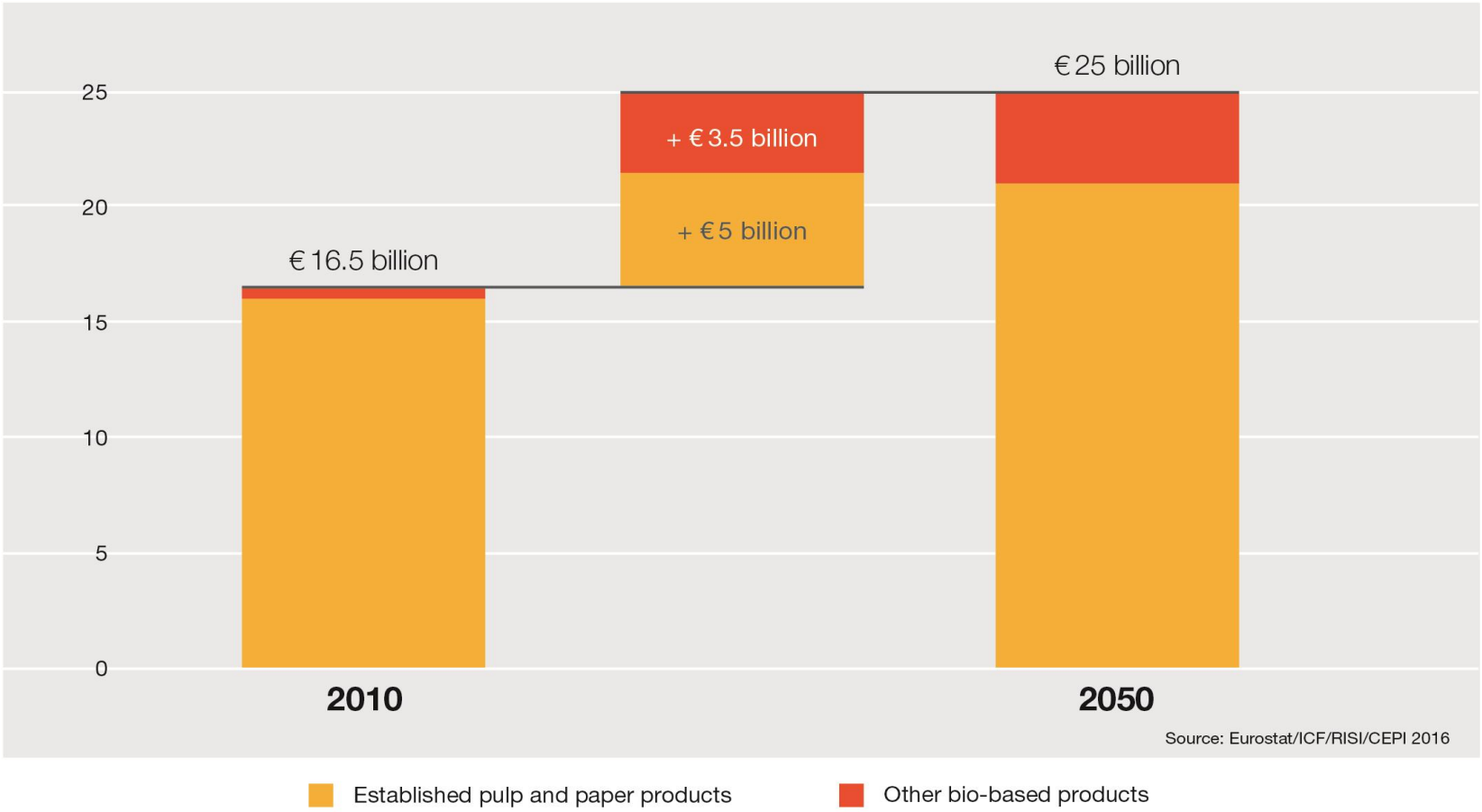
Making it happen *in* Europe!

+ €20 billion → +50% added-value
+ €24 billion → -80% CO_2

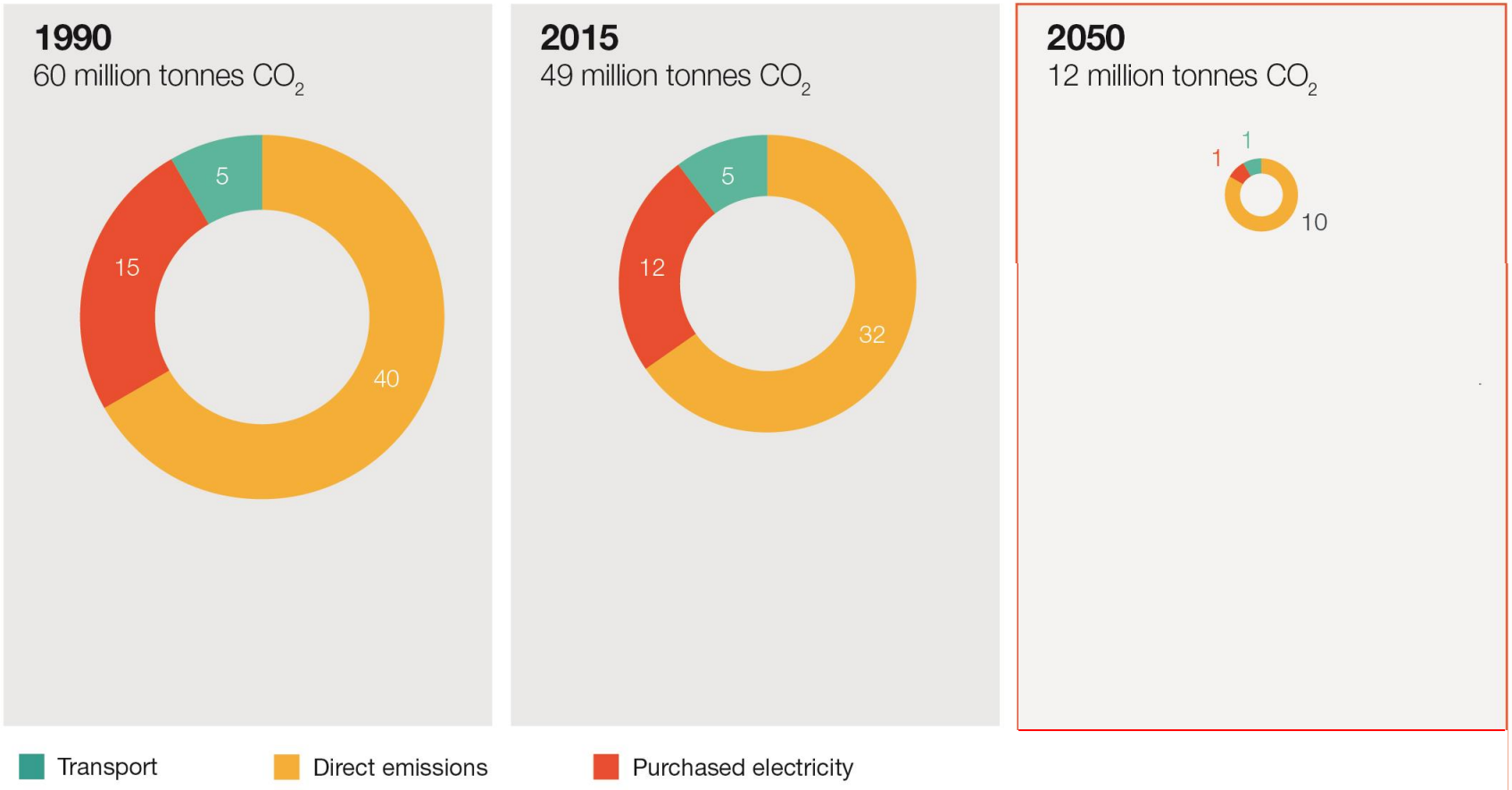
Note: cumulative investments over 2020-2050

Growing added-value by 50%

€8.5 bn additional added-value; €20 bn investments in new bio-based products

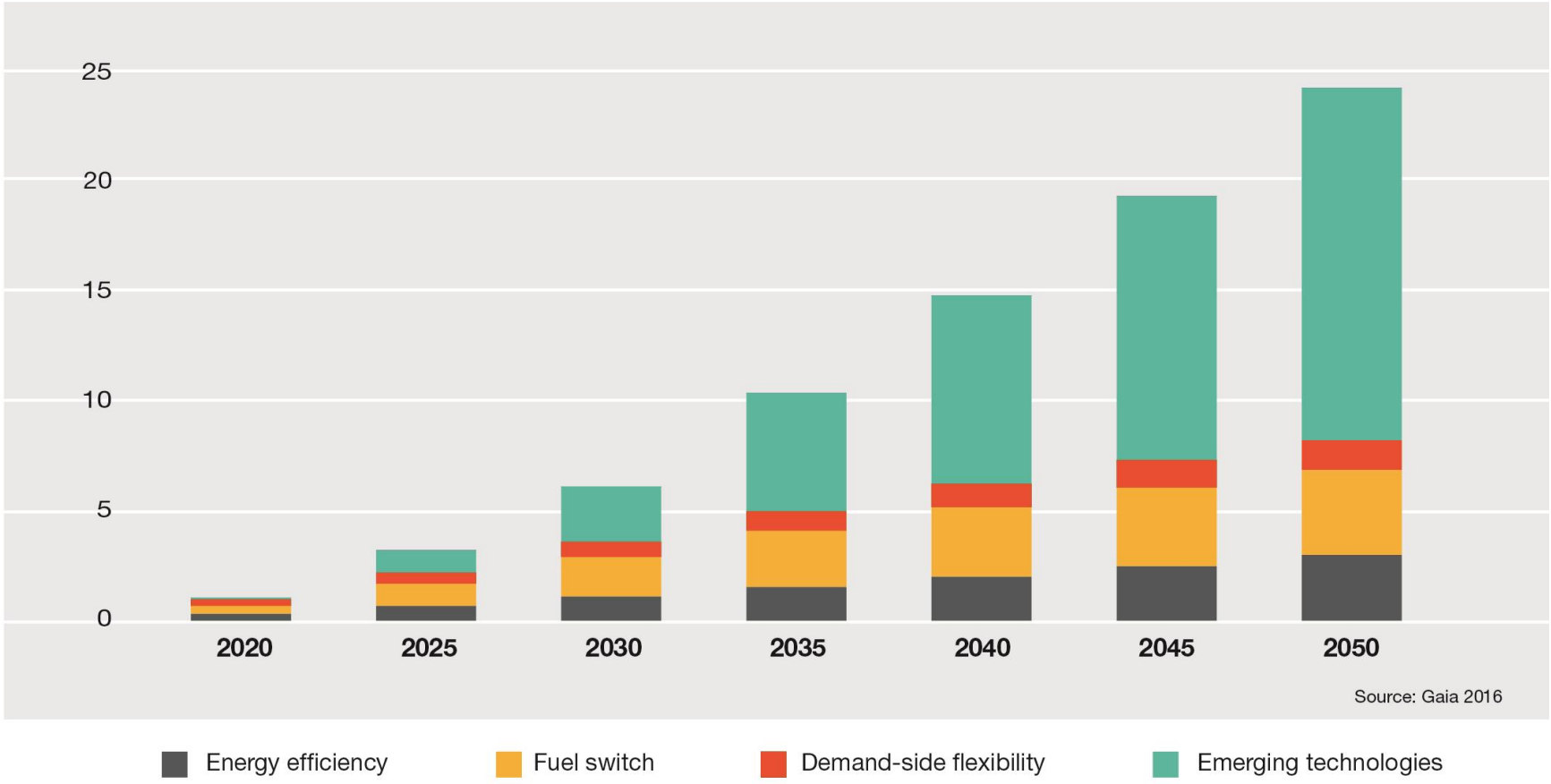


Decarbonising by 80%...

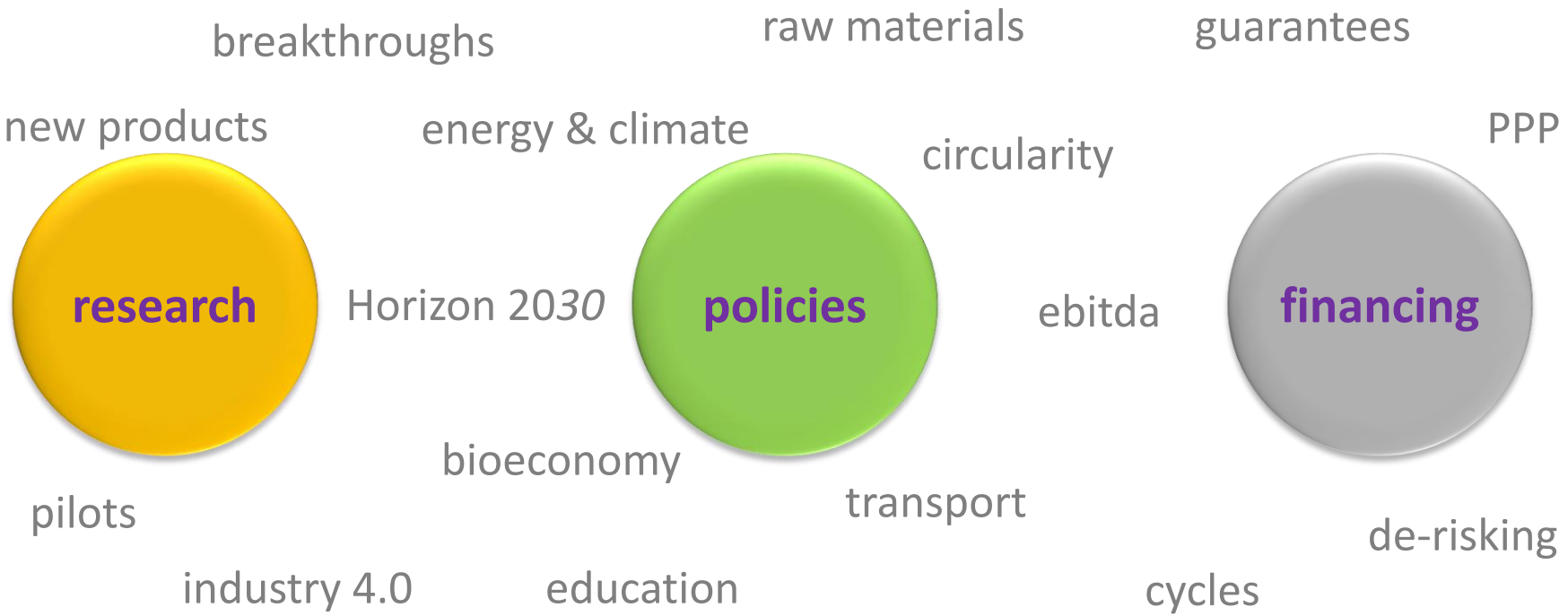


…but decarbonising at what cost?

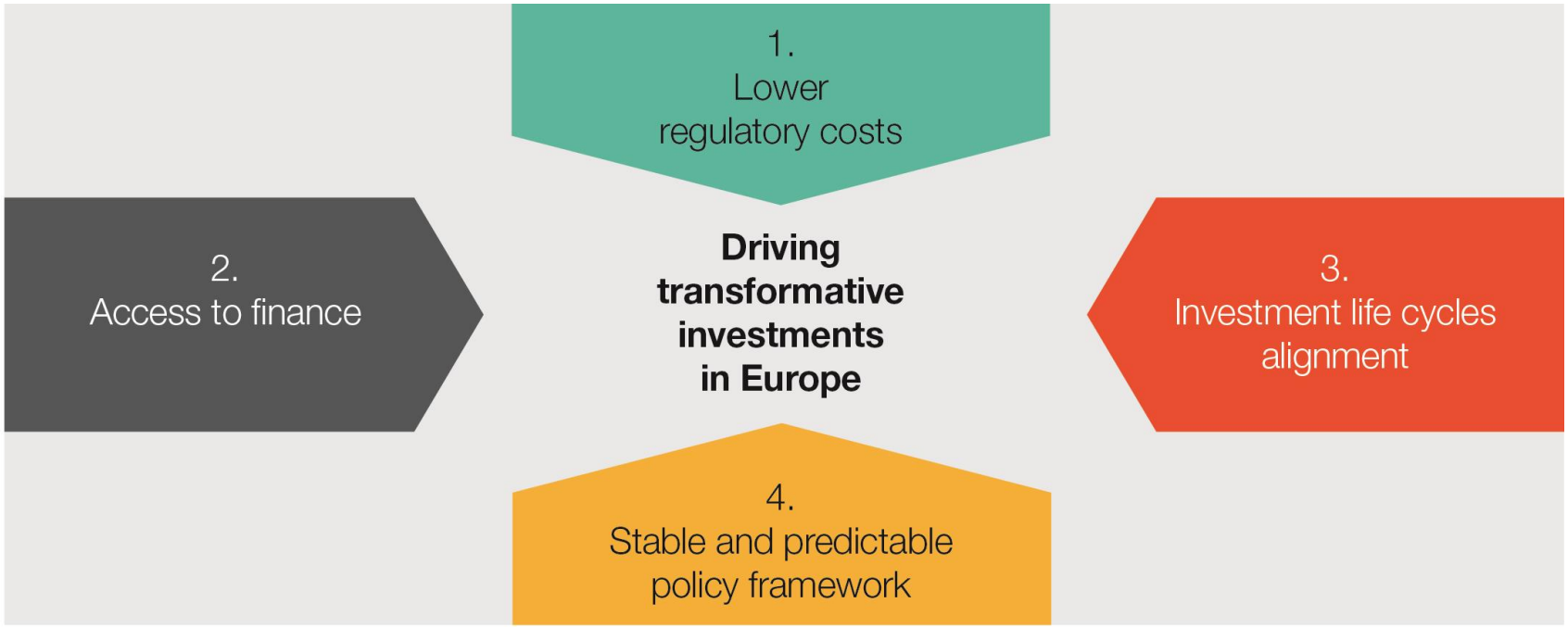
€24 billion cumulative investments for direct emissions reduction pathways by 2050



Aligning the conditions…



…to foster a conducive environment



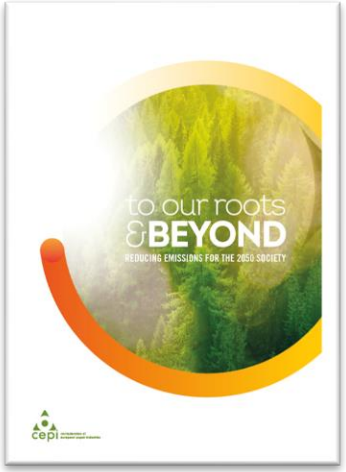
The journey continues

2011

2013

2015

2017



2017

Thank you

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Agenzia nazionale per le nuove tecnologie,
l'energia e lo sviluppo economico sostenibile

AGENZIA NAZIONALE
EFFICIENZA ENERGETICA

Indicatori di efficienza energetica nel settore industria cartaria

Lucca, 12 ottobre 2017

Silvia Ferrari – Agenzia Nazionale Efficienza Energetica

Studio ENEA- Assocarta

Numero di diagnosi energetiche pervenute ad ENEA:	**92**
Numero di diagnosi energetiche considerate nello studio	**69**
Tonnellate carta prodotta dai siti del campione selezionato: **Anno di riferimento 2014**	**5.784.527 t**
Tonnellate carta prodotta in Italia **Anno di riferimento 2014 – Dato Assocarta**	**8.649.100 t**
Livello di rappresentatività del campione rappresentato dai siti considerati nel campione:	**67%**
Campo di Produzione netta rappresentato:	**5.500 – 545.000 t**

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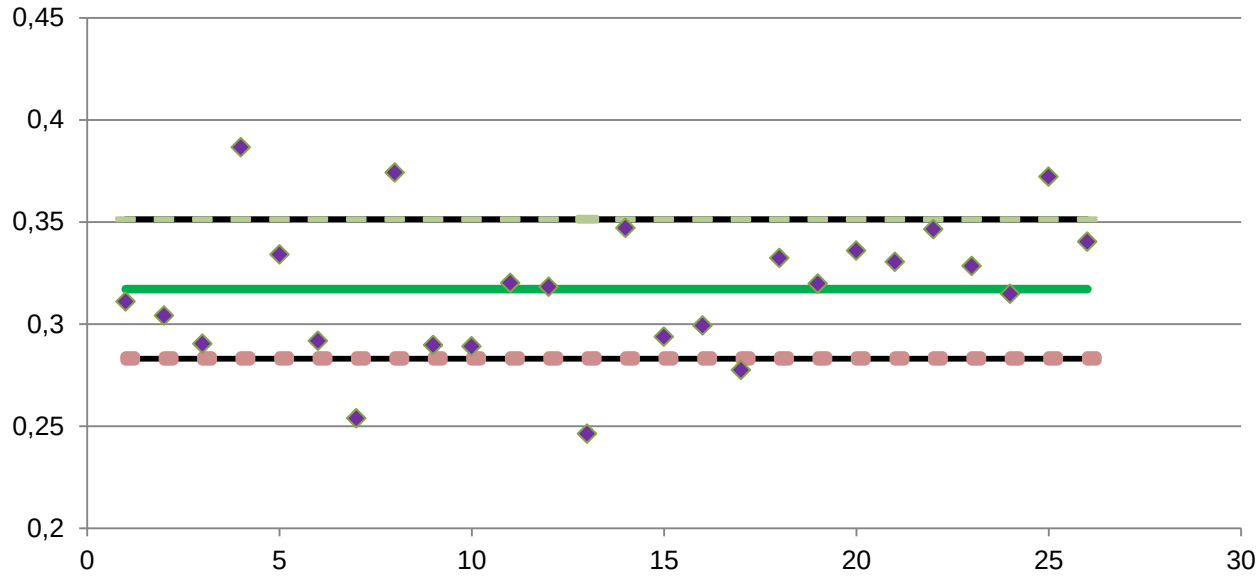
EFFICIENZA ENERGETICA
ENEA

Stabilimento Tissue



$$IPEg\ di\ Riferimento = 0,317 \mp 0,034\ [\frac{\mathbf{tep}}{\mathbf{t}}]$$

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Interventi

Numero totale d'interventi	157
€ totali d'investimento	40.519.285
€ totali risparmiabili annui	14.882.348
Tep totali risparmiabili annui	21.880
MWh elettrici totali risparmiabili annui	66.752
MWh termici totali risparmiabili annui	108.122
PBP medio	3.47

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EFFICIENZA ENERGETICA

ENEA

Interventi

Scenario interventi					
anno di rientro	# di interventi	tep risparmiabili l'anno	€ risparmiabili l'anno	Investimento	% interventi
<1 anno	22	1.855	1.339.878	1.054.430	14,01%
<2 anni	65	9.440	7.771.404	12.382.271	41,40%
<3 anni	101	15.838	12.715.636	24.369.577	64,33%
<5 anni	129	18.714	14.045.764	29.831.345	82,17%
<10 anni	151	19.905	14.610.337	35.800.285	96,18%
totale	157	21.880	14.882.348	40.519.285	100,00%

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