

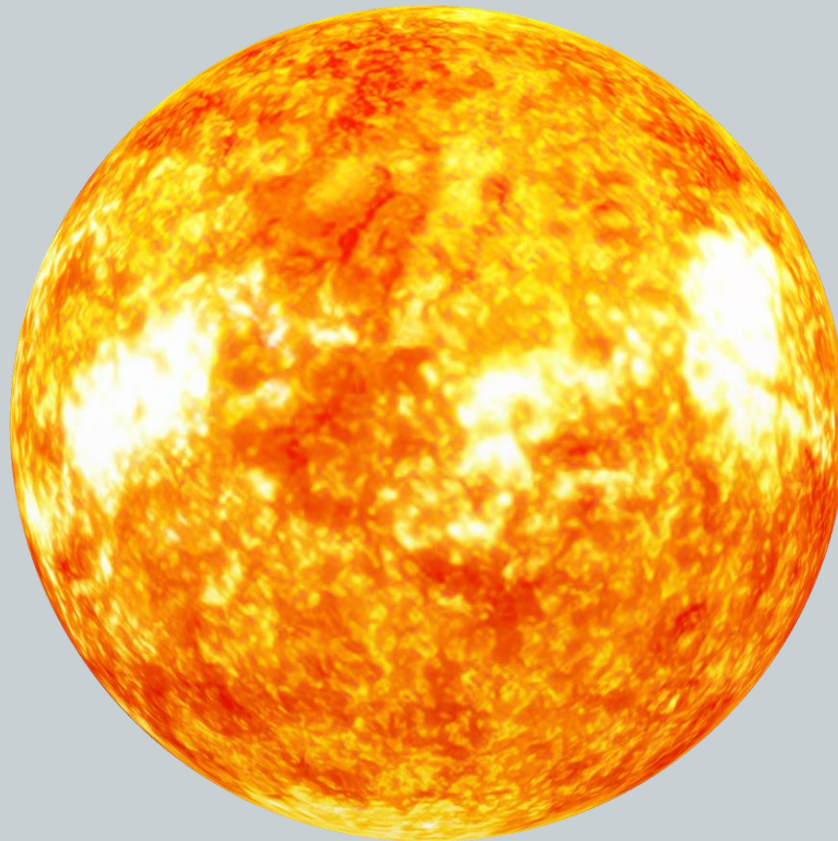
Innovative steel solutions for more efficient and sustainable solar structures

Markus Komulainen

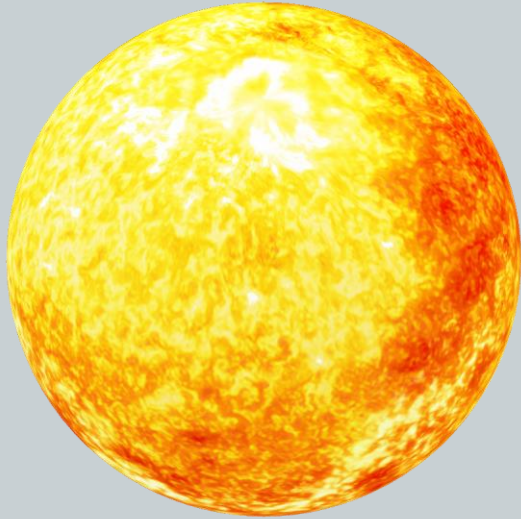
Segments and Applications Manager



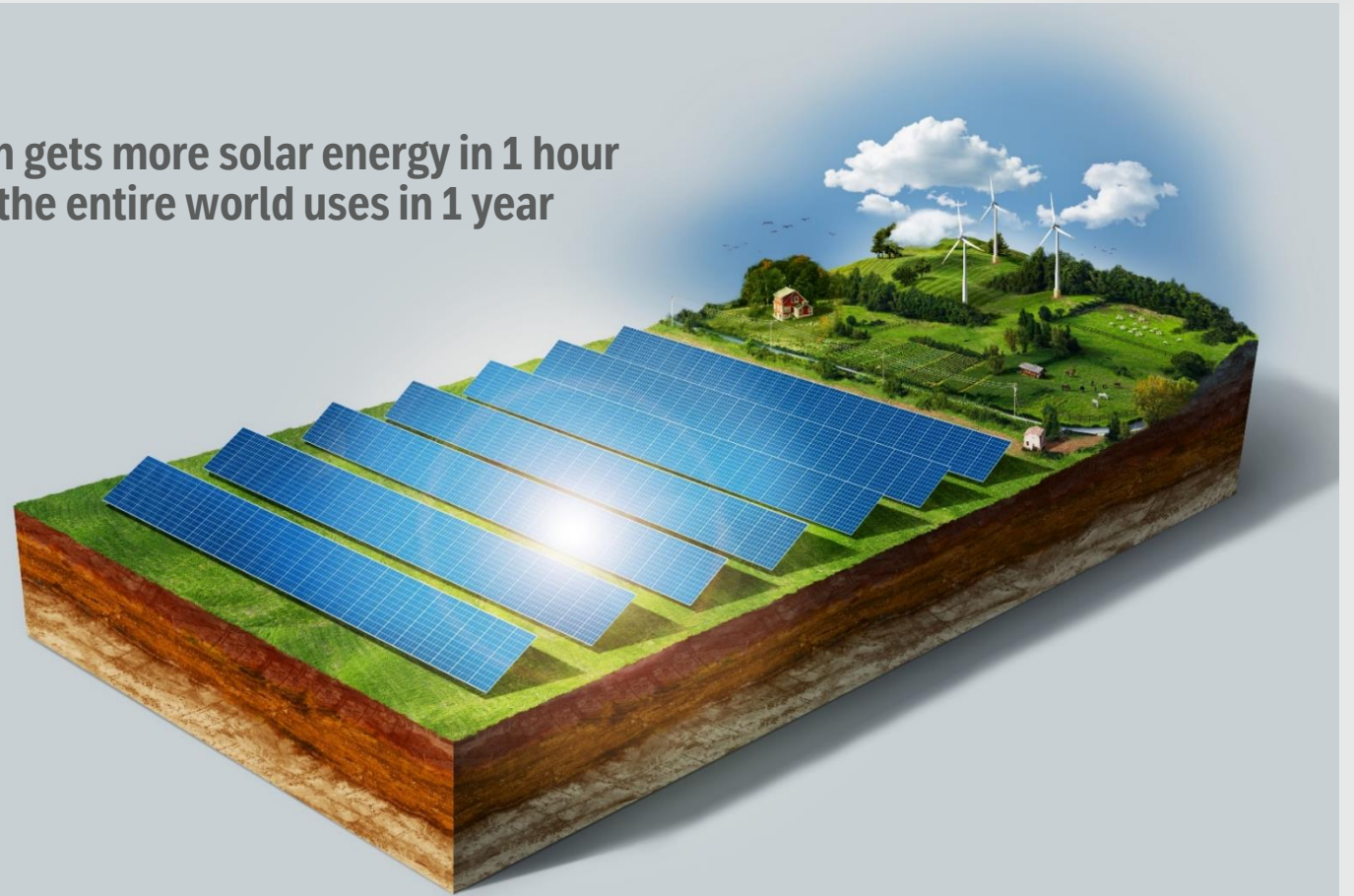
One of the answers going forward is the giant red!



Solar energy could power the world...easily



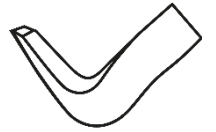
The Earth gets more solar energy in 1 hour
than the entire world uses in 1 year



Content



- ▶ A Sunny outlook: The promising future of solar energy in the world energy landscape
- ▶ Solar energy and steel: A match made in the sun
- ▶ Steel-ing towards sustainability: How innovations are redefining the future of this sector
- ▶ Key takeaways



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STEEL PRIZE

A SUNNY OUTLOOK...

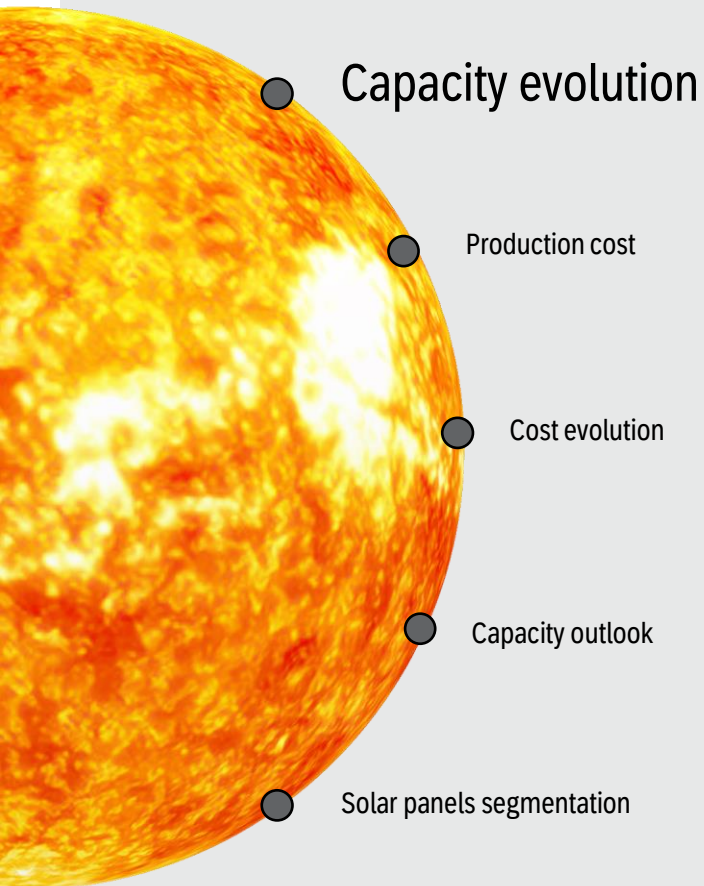
THE PROMISING FUTURE OF

SOLAR ENERGY IN THE WORLD

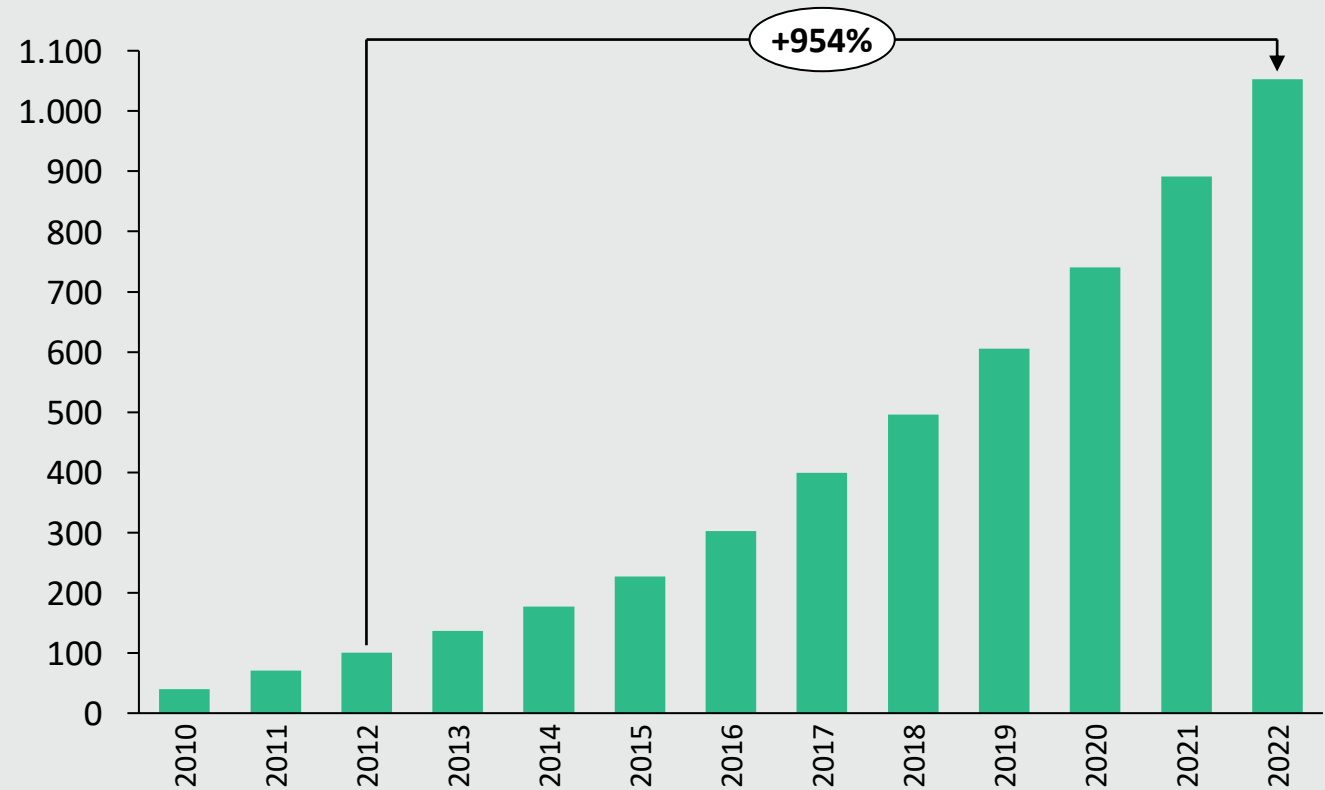
ENERGY LANDSCAPE

Solar Photo Voltage capacity is increasing rapidly

World Solar PV Capacity, GW



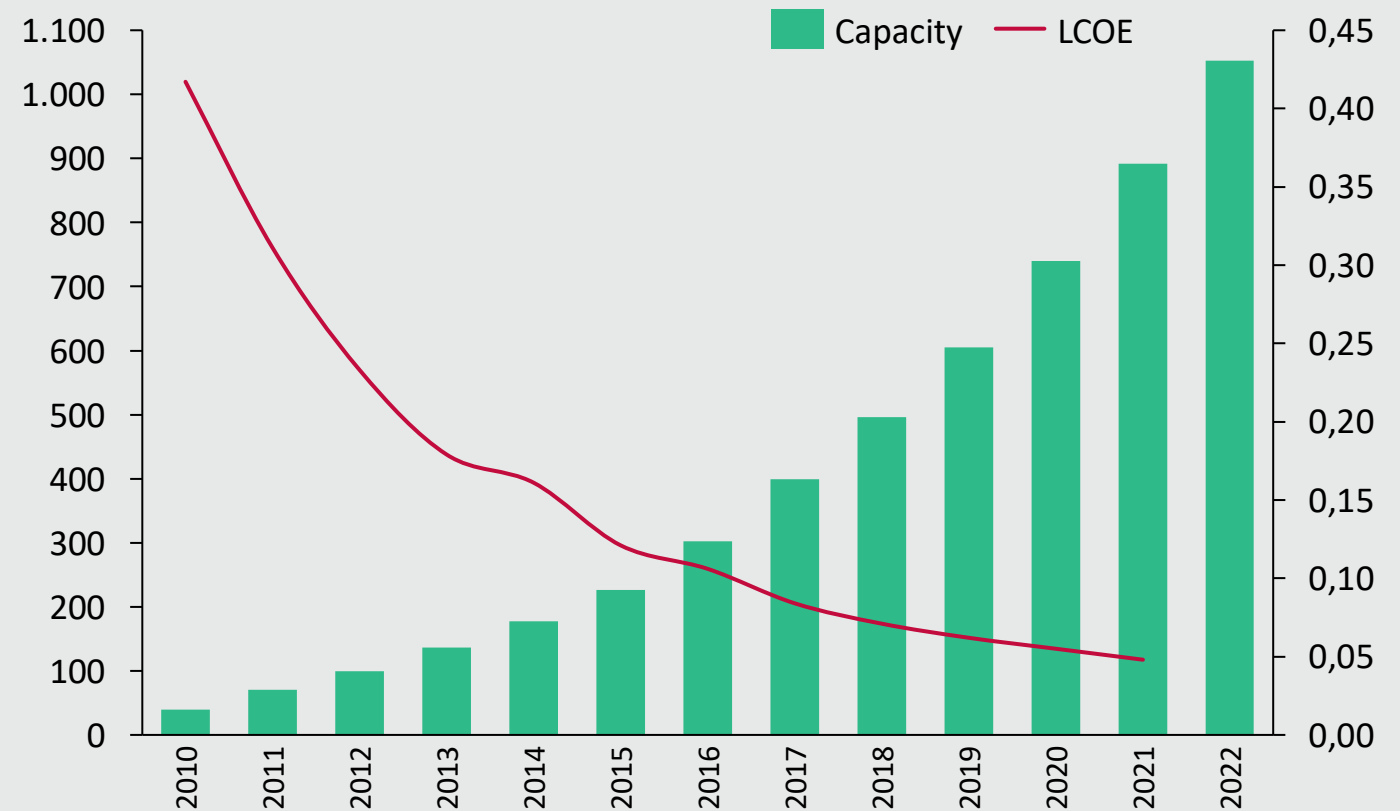
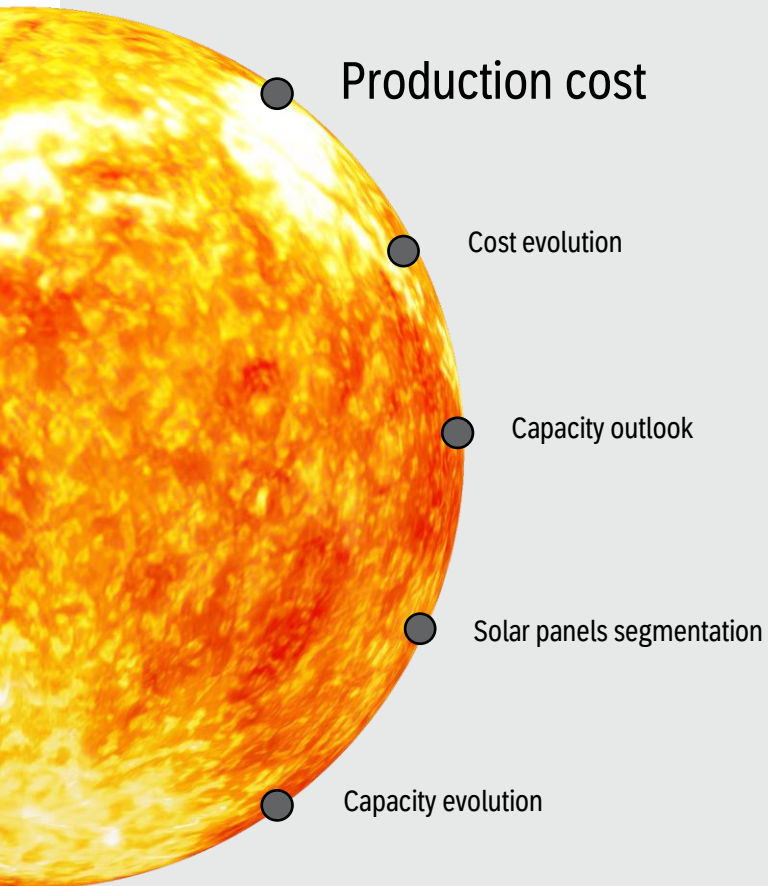
Source: IEA



Decreasing production cost is enabling the growth



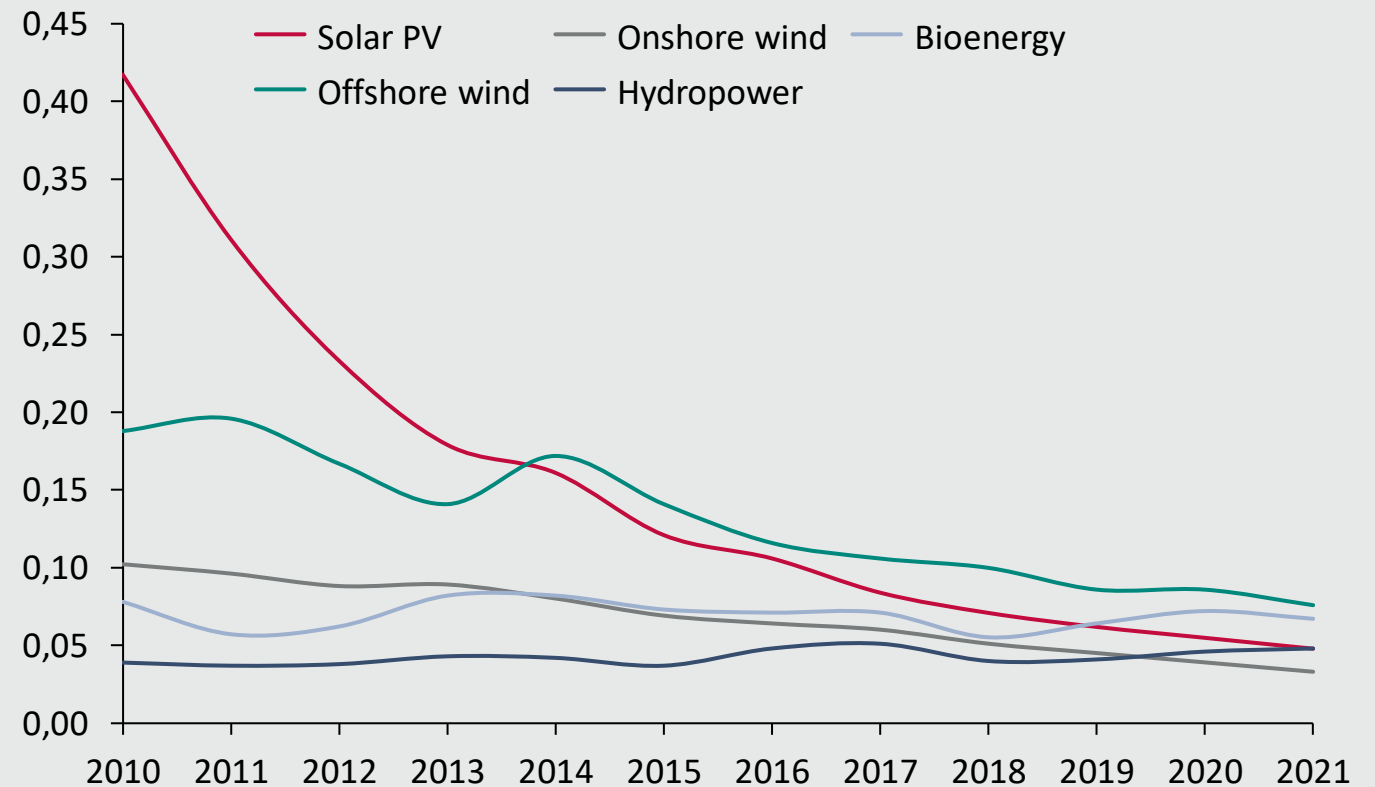
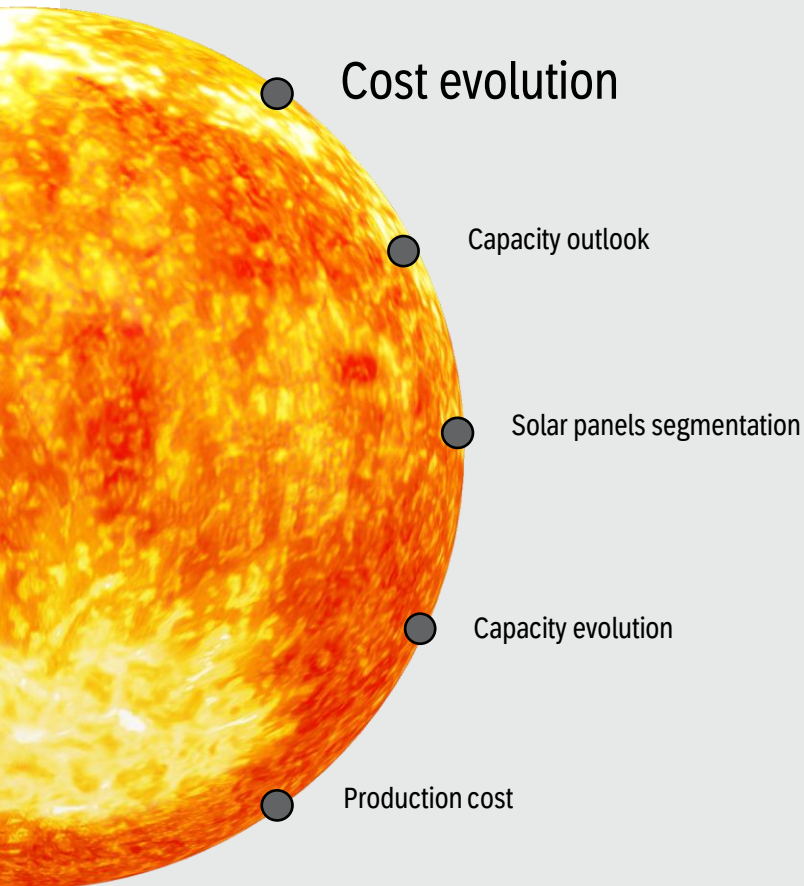
World Solar PV Capacity and utility scale Levelized Cost of Electricity [LCOE], GW & USD/kWh



Source: IEA & IRENA

Solar PV cost has decreased most drastically

Global Average for Levelized Cost of Electricity [LCOE], USD/kWh



Source: IEA & IRENA

Almost 50 GW annual increase in EU...

EU Solar PV total capacity forecast, GW

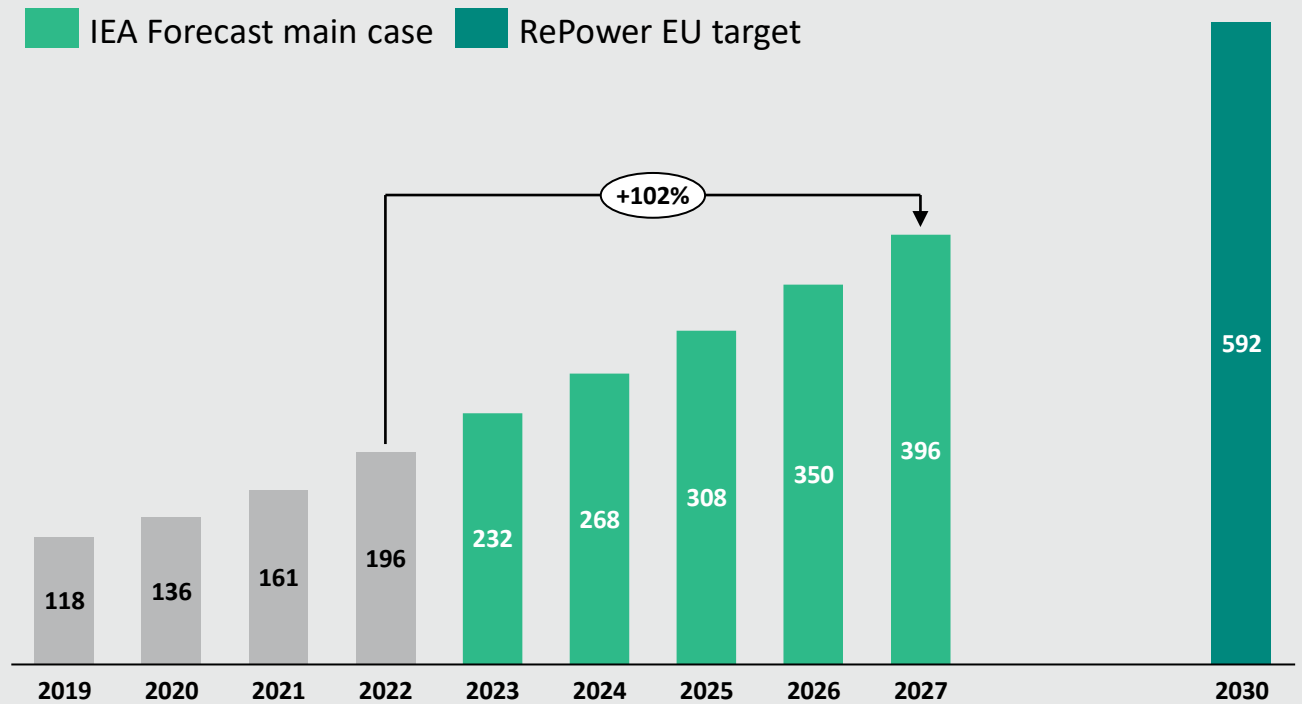
Capacity outlook

Solar panels segmentation

Capacity evolution

Production cost

Cost evolution



Source: IEA, RePower EU

Solar panels are assembled in many ways

Solar panels high level assembly segmentation

Solar panels segmentation

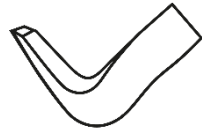
Capacity evolution

Production cost

Cost evolution

Capacity outlook

Utility scale systems		Commercial and residential systems		
Ground mount	Floating	Roof Mount	Wall Mount	Car parks
1 	2 	3 	4 	5 
Various assembly systems are used to mount solar panels				



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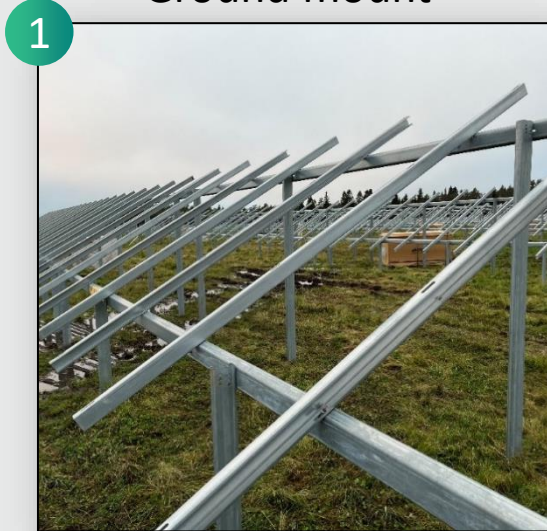
HOW SOLAR ENERGY AND STEELS ARE LINKED TOGETHER?

Metal coated steels play a high role

Steel typical usage per solar mounting systems, **tons/MW**

Utility scale systems

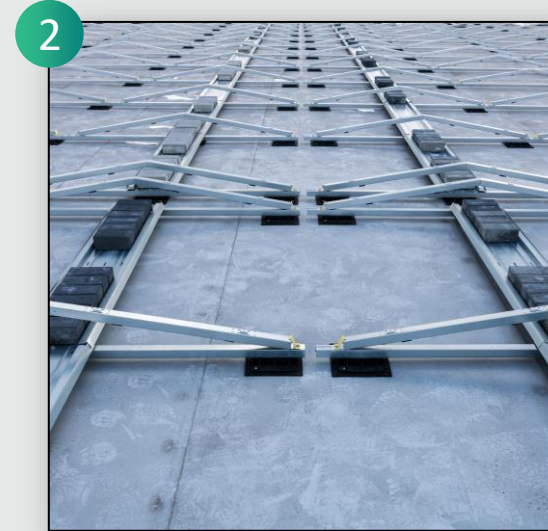
Ground mount



35-45 tons of steel per MW

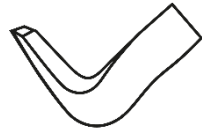
Commercial and Residential systems

Roof mount



5-10 tons of steel per MW

Steel cost only **6%** of total investment cost



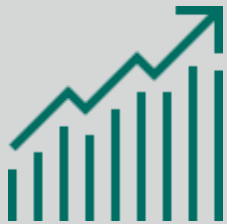
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INNOVATIONS TO REACH NEXT LEVEL

What drives need of improvement?

1

Performance



- Lighter structures
- Corrosion resistance
- Adjusted designs

2

Sustainability



- Embedded carbon
- Environmental impact
- Circular economy

3

Cost

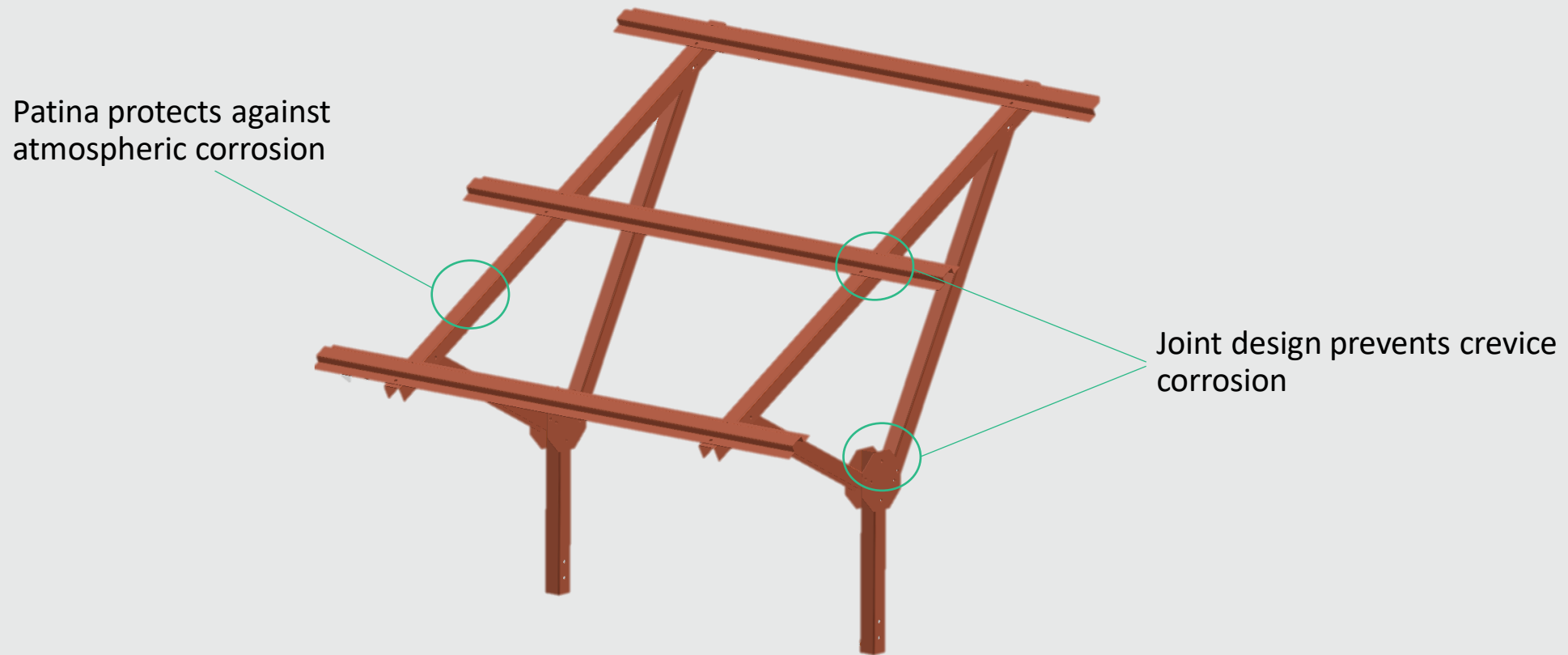


- Total cost of ownership
- Durability
- Assembly

Weathering steel will rise performance and sustainability to the next level



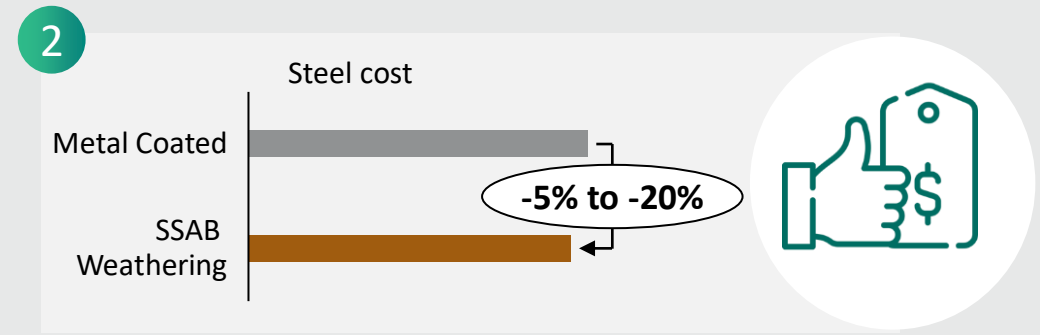
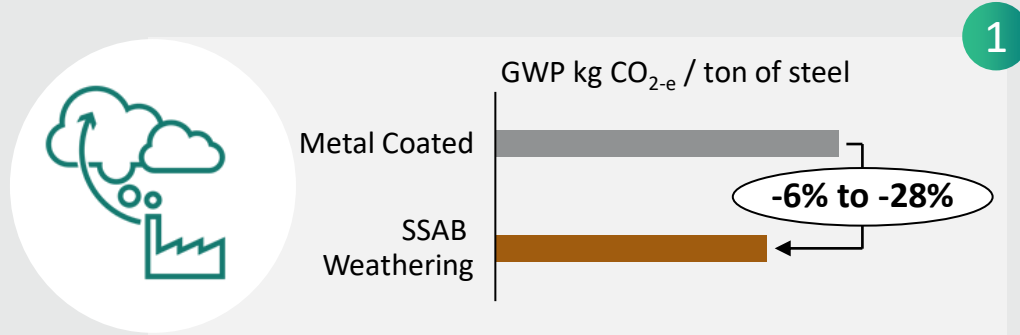
An illustrative model how to utilize Weathering steel in Solar Mounting Structure



Weathering steel will rise performance and sustainability to the next level



Key benefits of Weathering / Cor-Ten for the solar structure



3



No risk for Zinc **run-off** into ground or ground water

4



Patinated surface **blends well** to nature

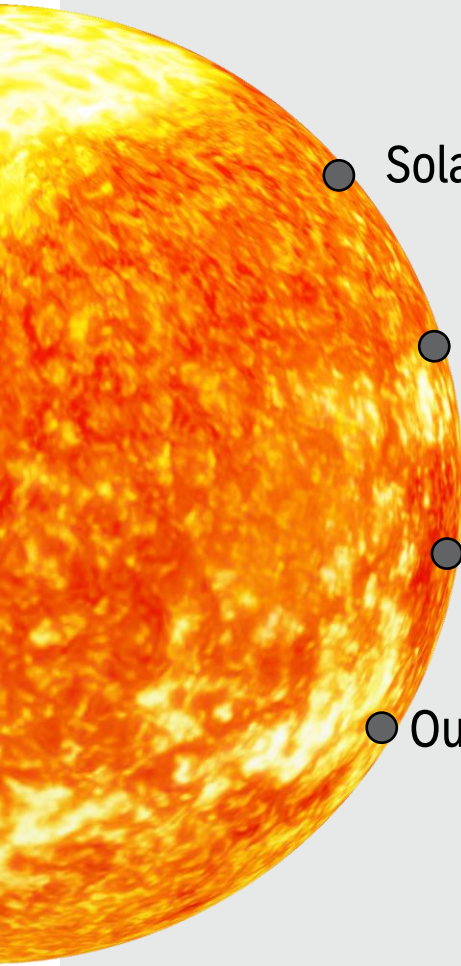
SSAB Fossil free/SSAB Zero + largest Weathering offering



Strip		Thickness (mm)	Yield strength min (MPa)					
COR-TE	Plate	Thickness (mm)	Yield strength min (MPa)					
COR-TE								
COR-TE	COR-T	Cold Rolled	Thickness (mm)	Width (mm)	Yield strength Re min – max (MPa)			
COR-T	COR-T							
SSAB W	SSAB	COR-T	Open sections* (SSAB Weathering 355WH, COR-TEN® A, COR-TEN® B)					
SSAB W	SSAB	SSAB	U-, L-,	Hollow sections		Thickness (mm)	Yield strength min (MPa)	
SSAB W	SSAB	SSAB	Mater					
SSAB W	SSAB Weather	Band	SSAB W	Precision tubes* (COR-TEN® A Tube)				
SSAB W	SSAB Weather	Wall t	SSAB W	Circular	Spiral welded tubes (S355J2W, S355K2W)			
SSAB Weathering 96U			COR-TE	Square	406.4 – 1220 mm			
			COR-TE	Rectan	Thickness			6.3 – 15 mm
					Wall thickness			1.0 – 3.0 mm

Key takeaways



- 
- A large, textured orange sphere, resembling a planet or a sun, is positioned on the left side of the slide, partially cut off by the edge.
- Solar sector will continue to grow
 - Steel is playing a key role in supporting the growth
 - Trends are towards high performance, sustainability and cost efficiency
 - Our answer is largest Weathering portfolio combined with SSAB Zero and SSAB Fossil Free offerings

