

## Enabling the Energy Transition

**ZINC** | international  
zinc association

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- Global champion and advocate for zinc industry
- Grow and Protect Zinc Markets
- Ensure License to Operate
- Coordinate Industry and Customer Networking
- Promote and Develop a Positive Image of Zinc
- Leverage Member Funding

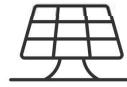
## Energy Transition Sectors



Zinc coatings extend the life and durability of electrical grids.



Zinc coatings ensure that wind turbines meet their intended design life.



Zinc coatings support solar structures and co-products In, Ga and Ge provide power.



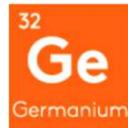
Zinc batteries supply grid backup, long-duration storage, and mobility applications.

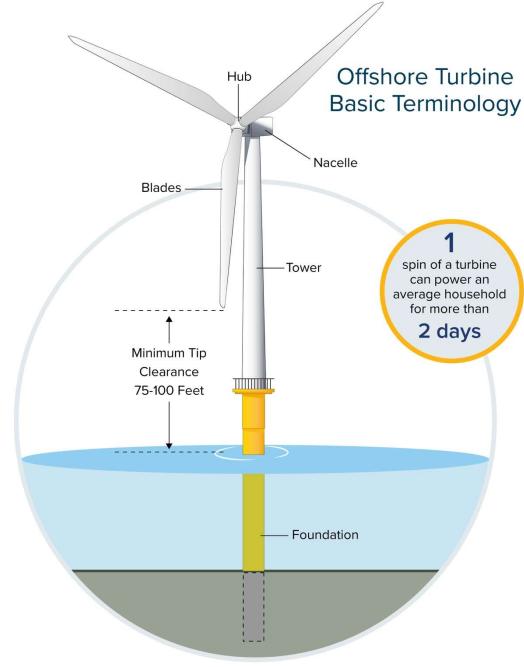


Most mass production EV's rely on zinc-coated steel for safety, longevity and low cost.

## An Illuminating Past & Bright Future

- ④ A 100MW solar park – enough to supply 110,000 homes – requires roughly 240 tons of zinc.
- ④ Zinc co-products Ga, Ge and In are used in solar cells to create advanced semiconductor materials with unique properties that improve the efficiency and performance of photovoltaic devices.





Offshore Turbine Basic Terminology

1 spin of a turbine can power an average household for more than 2 days

Figure Not to Scale

## Supporting the Winds of Change

- ④ Offshore wind generation increased by a record amount, but faster growth is needed
- ④ A single offshore 8 MW wind turbine requires, on average, four tons of zinc.



The first-ever electricity from offshore wind was generated at Vindeby. It's thermal sprayed zinc coating helped the wind farm survive six years longer than its intended lifespan – operating for 26 years and powering about 2,200 homes annually during that time.



High power density;  
Short duration storage

## Energizing the Storage with Zinc-Based Batteries

- ④ Zinc has been developed across a wide range of chemistries and applications.
- ④ Hybrid systems offer potential for zinc to meet most critical needs.



**NICKEL ZINC**

**ZINC ION**

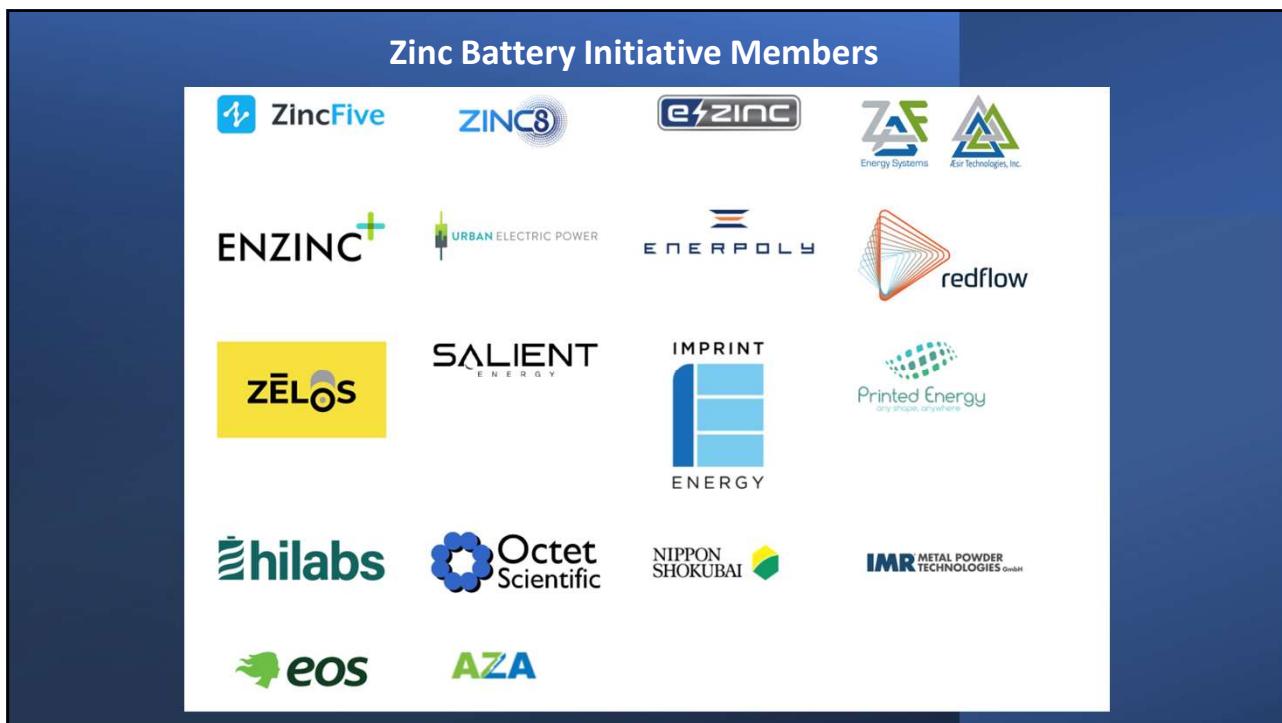
**RECHARGE ALKALINE**

**ZINC BROMINE FLOW**

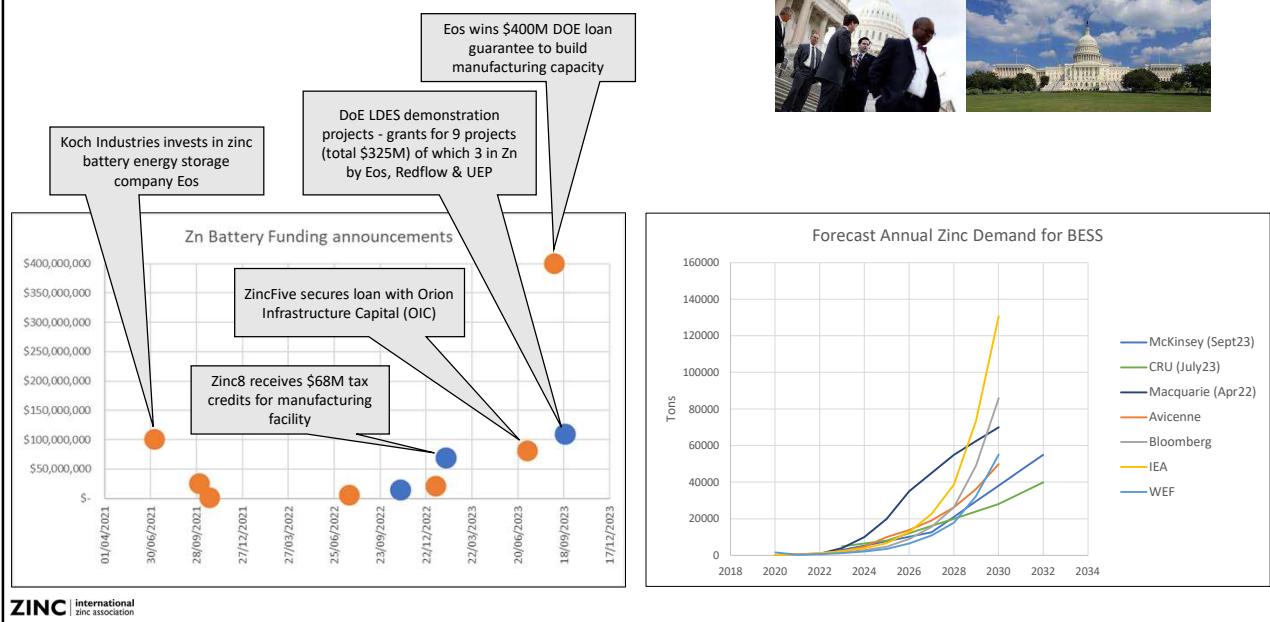
**ZINC AIR**

**ZINC BATTERY INITIATIVE**

High energy capacity;  
Long duration storage



## Zinc Battery Initiative



## Accelerating into a Charged Future

- ⌚ Virtually all manufacturers have adopted zinc-coated steel for their high-volume production electric and hybrid-electric vehicle models.



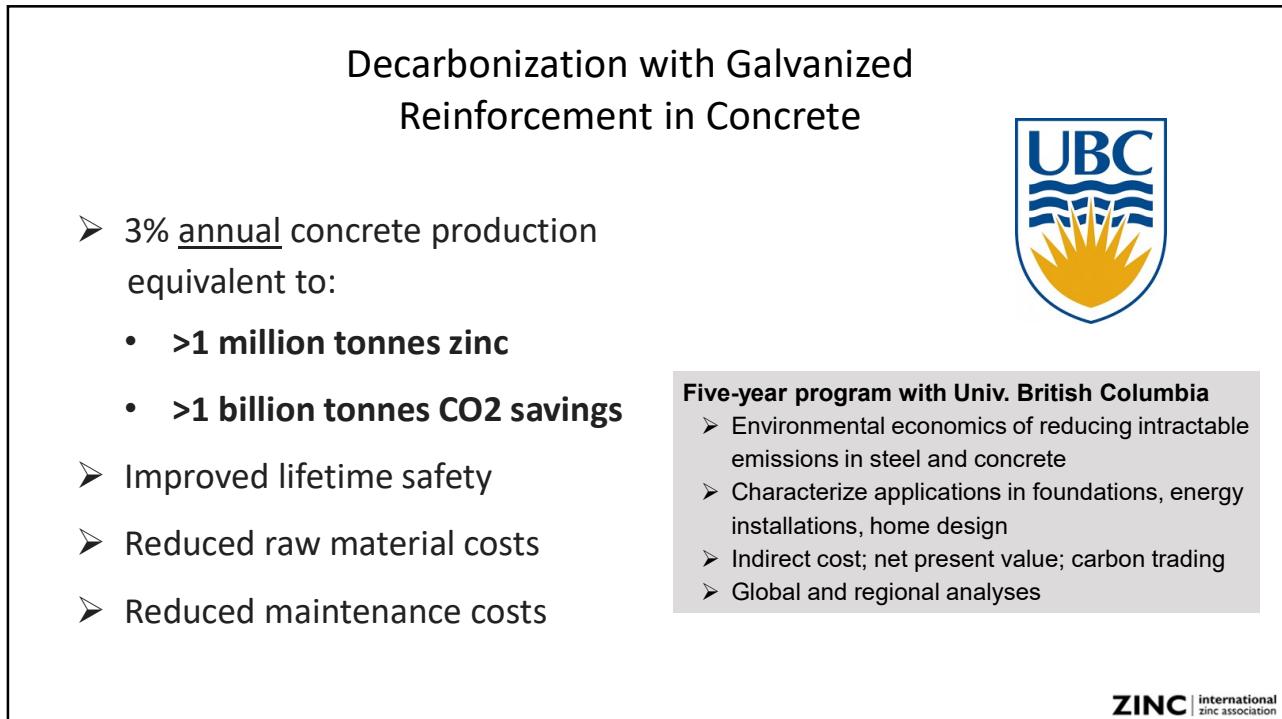
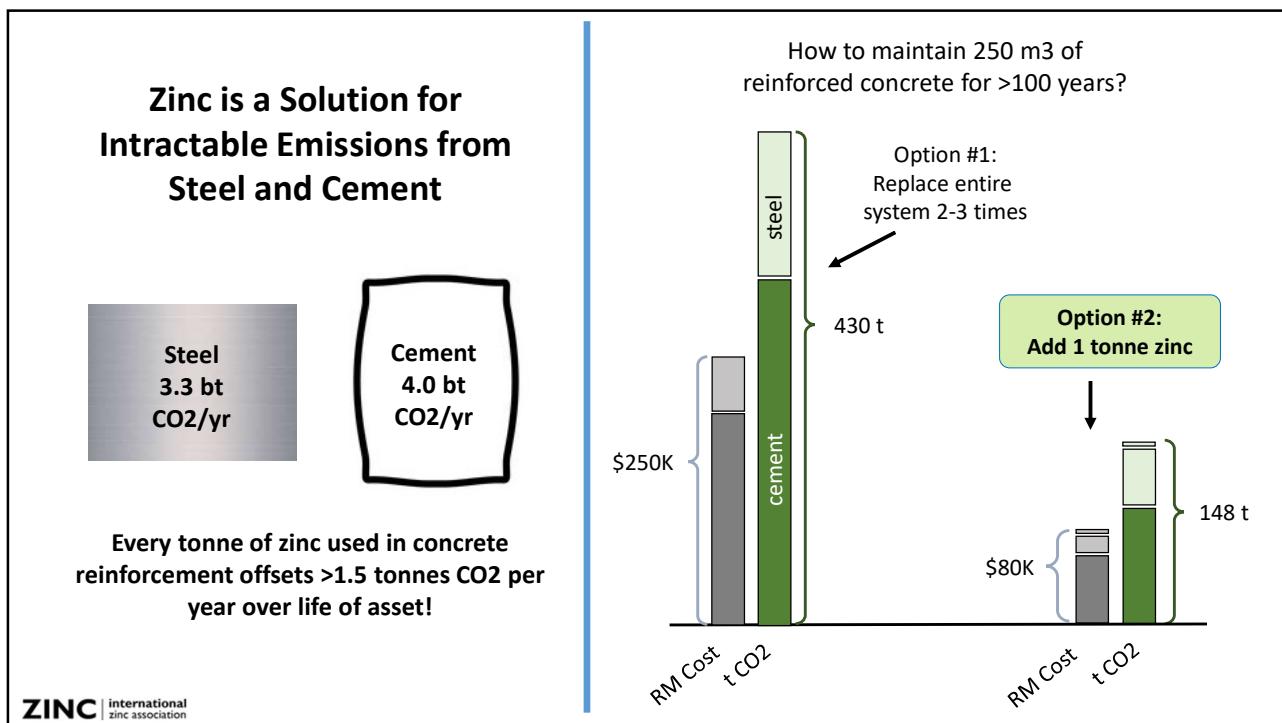
## Infrastructure Decarbonization Initiative



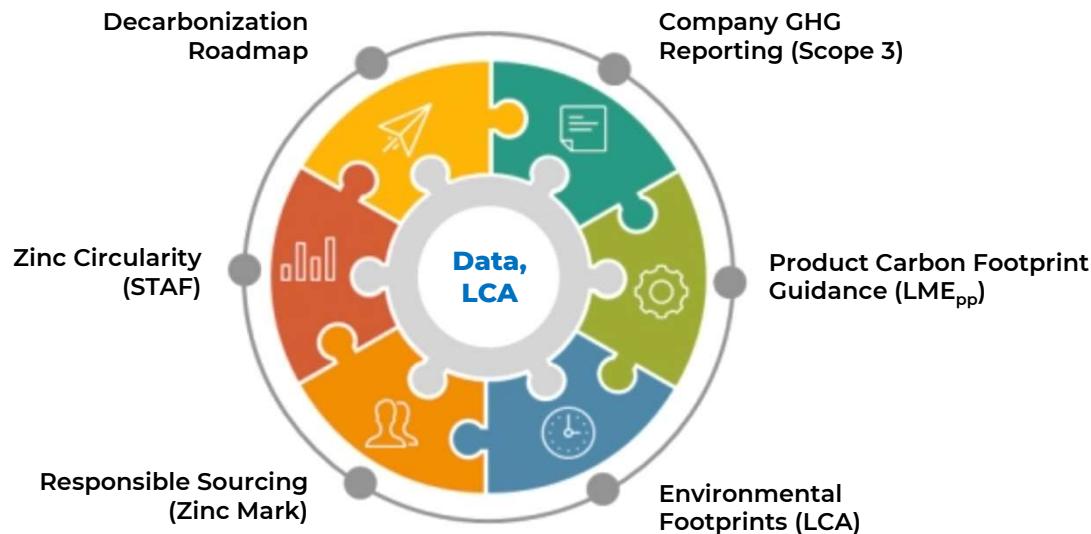
- Zinc is unmatched in the protection of steel from corrosion
- Extends service life & safety of buildings, bridges, cars, railways, electrical grids, etc...
- Zinc is an enabler of “Scope 4”/decarbonization!



At US \$2.2 trillion, the annual cost of corrosion worldwide is over 3% of the world's GDP.



# Zinc Sustainable Development

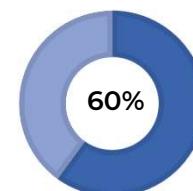


## Zinc in the Circular Economy

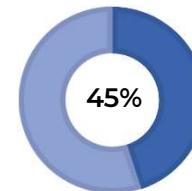
Zinc is part of a circular economy that **Recovers, Restores and Reuses**.



Zinc is 100% Recyclable without loss of properties.



60% of all produced zinc is still in use.



Zinc has a 45% end-of-life recycling rate.

## Zinc Boom 2050:

It is estimated that **28 million tons of zinc**, double current global production, **will be needed annually by 2050**.

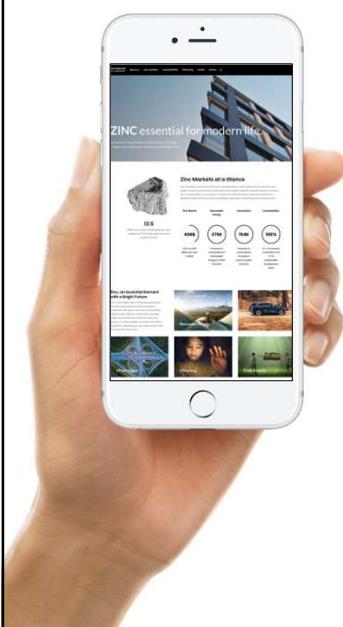


Source: Fraunhofer-Gesellschaft - 2022

## Ensuring a Steady, Resilient and Sustainable Zinc Supply

For its part, the zinc industry is improving the supply chain by doubling down on sustainability, reducing its carbon footprint, and increasing recycling efforts.

- ① The International Zinc Association (IZA) and its members have created and committed to a sustainability charter and guiding principles in line with the United Nations 2030 Agenda for Sustainable Development.
- ② In addition, a recently developed Zinc Carbon Footprint Guidance harmonizes data collection and reporting methods while recognizing best practices for the industry's unique structure, supply chains, raw materials, and downstream uses.
- ③ Finally, the zinc industry has significantly increased its recycling rate.



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zinc association

Learn more at:  
[www.zinc.org/transition](http://www.zinc.org/transition)

## IZA Full Members

**BEFESA**

**BOLIDEN**



**everZINC+**

**GLENCORE**

Global Steel Dust

**GRILLO**

**GRUPO MEXICO**

**GRUPO CY**

**Hecla  
MINING COMPANY**

**vedanta  
Hindustan Zinc Limited**

**HCM SA | ZGM  
BOLESLAW**

**IEQSA**

**CHELYABINSK  
ZINC PLANT**

**KIIM 2000**

**Korea Zinc**

**Brüggemann**

**lundin mining**

**NEWMONT**

**METAENTERPRISES**

**PEÑOLES**

**MITSUI  
KINZOKU**

**MMG**

**NEW CENTURY  
RESOURCES**

**nexa**

**NORZINC**

**nyrstar**

**SUMITOMO METAL  
MINING CO., LTD.**

**Teck**

**Terrafame**

**rezinal**

**RHEINZINK**

**Silox**

**Trafigura**

**Trevali  
MINING CORPORATION**

**VM  
BUILDING  
SOLUTIONS**

**ZINC  
NACIONAL**

**ZinCol Ossidi  
SpA**

**Zochem**

