SEABORG

Rethinking nuclear

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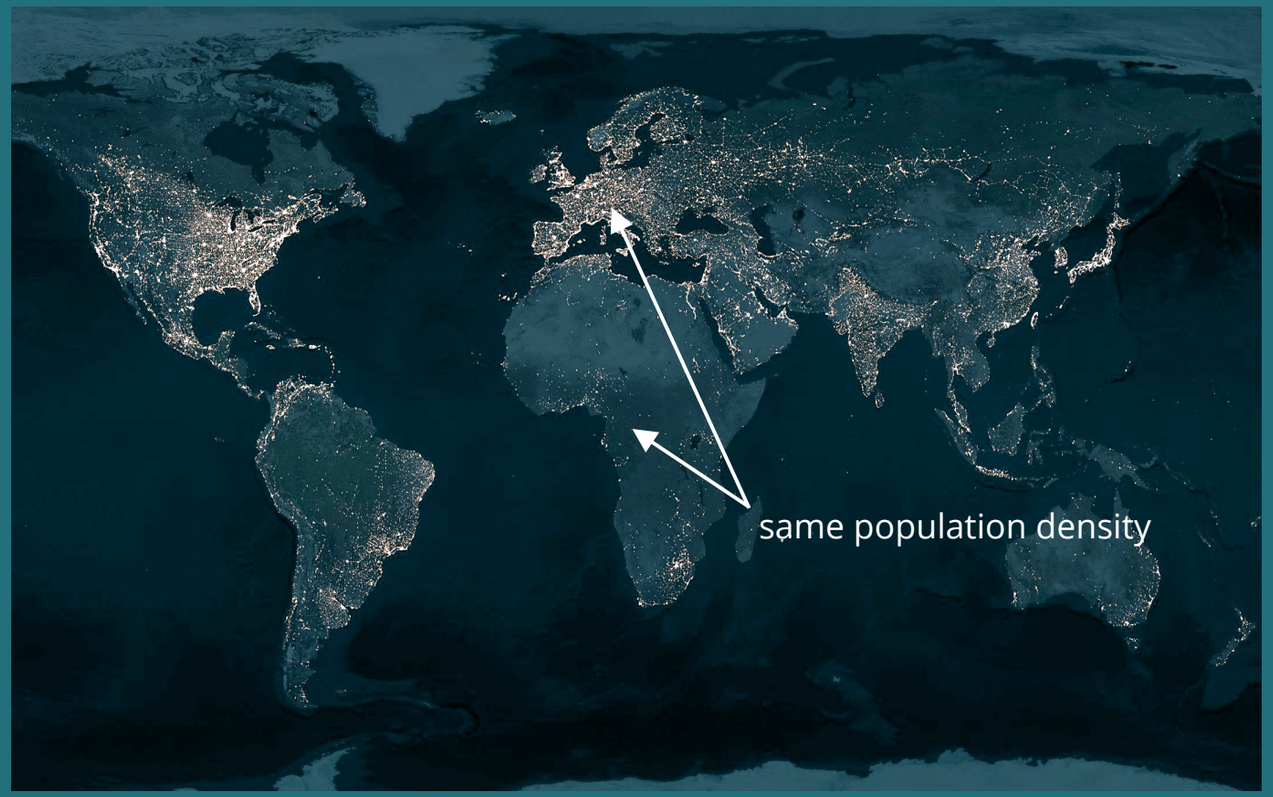
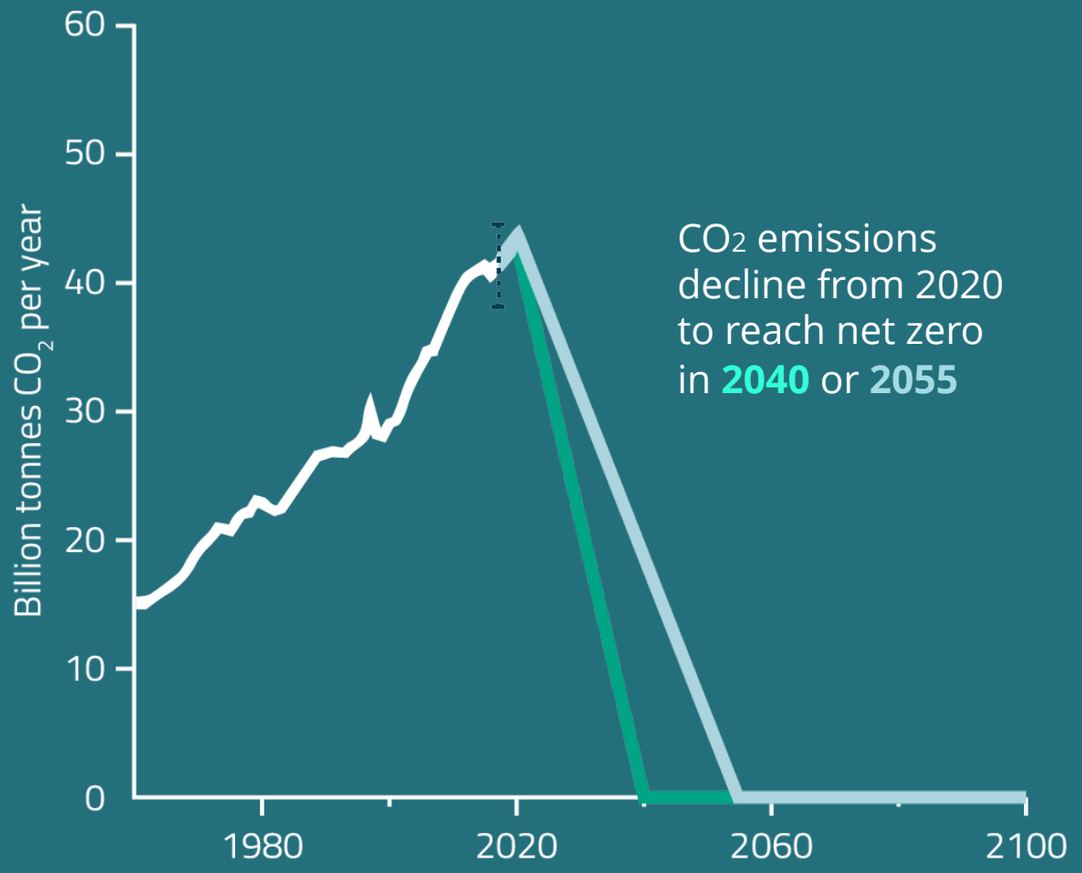
The world is facing aggravating issues



Satellite image of poverty.
7 billion people today - 9 billion in 2050.



Despite serious efforts,
global CO_2 emissions continue to rise.

Our mission

We will:

Enable the free market to fight the runaway greenhouse gas emissions and eliminate energy poverty.

By:

Commercializing a scalable, cheaper-than-coal, dispatchable energy source (by the mid-2020s).

Setting the scene

Conventional nuclear = Safety by engineering

Severity of accidents and inherent system instability
→ **Safety by engineering.**

Mainly innovation in safety → Complexity
→ **Costs, risk and delays.**

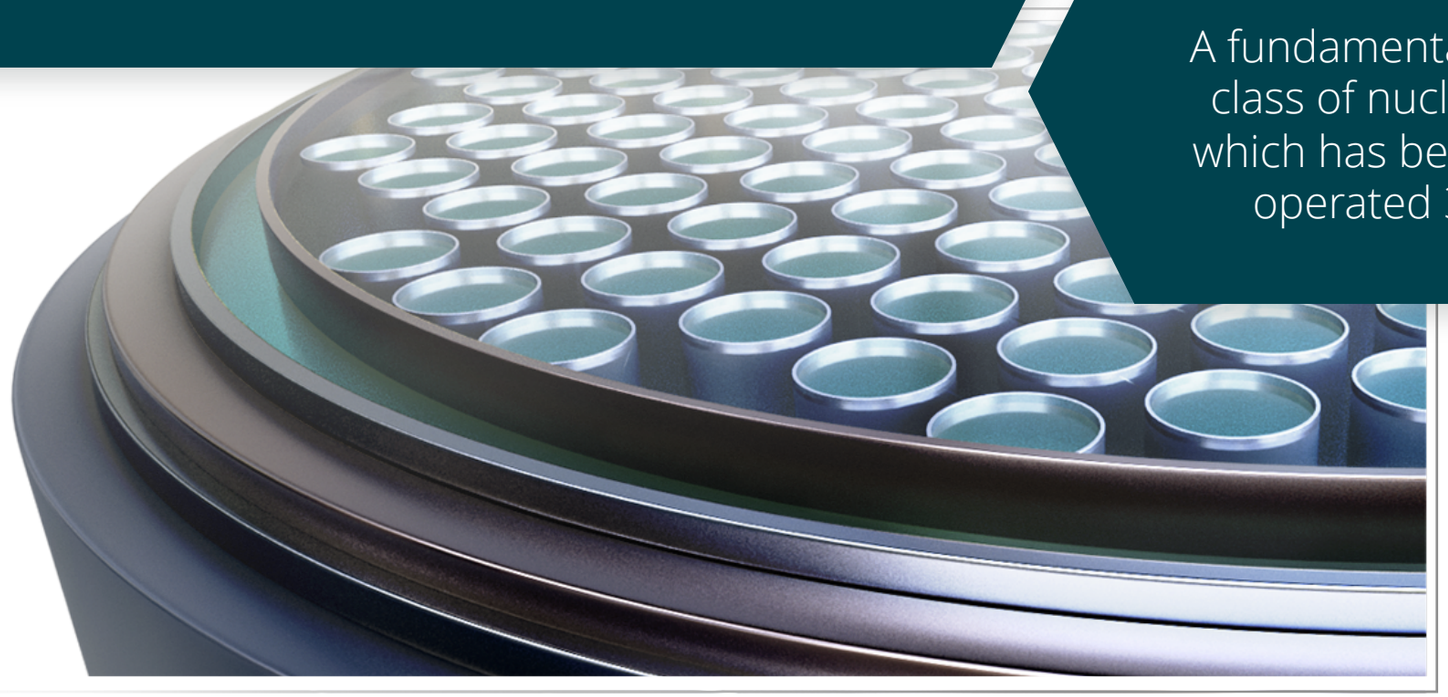
Size becomes the economy of scale
→ **Poor market fit and massive upfront investments.**

Larger reactors means increased severity
→ **Even more focus on safety.**

The Compact Molten Salt Reactor (CMSR)

Our design:

1. **Cannot** be used for nuclear weapons
2. **Burns waste** from conventional reactors
3. **Cannot** melt down or explode



Molten salt reactor:

A fundamentally different class of nuclear reactor which has been built and operated 3+ times.

A tectonic shift in risk profile

If released, **the fuel behaves like rock** in nature.

Therefore, MSRs are **not a risk to public health**.

→ This shifts the risk from government to the industry, fundamentally **changing the business model** of the nuclear industry.

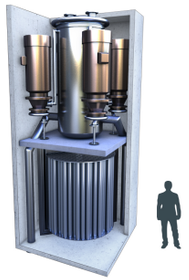
This is a game changer and it **simplifies everything**.

MSRs will be **economically superior** to any other energy source.

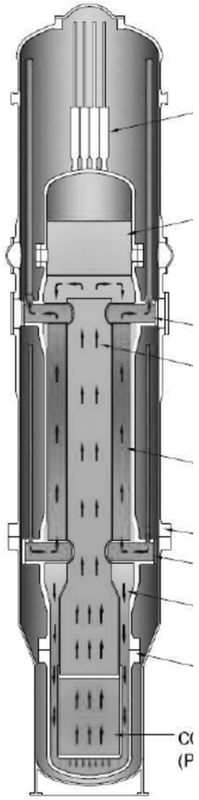
Proprietary ultra compact design

Most importantly our proprietary **moderator** avoids the use of graphite. Additionally it gives us three unique advantages:

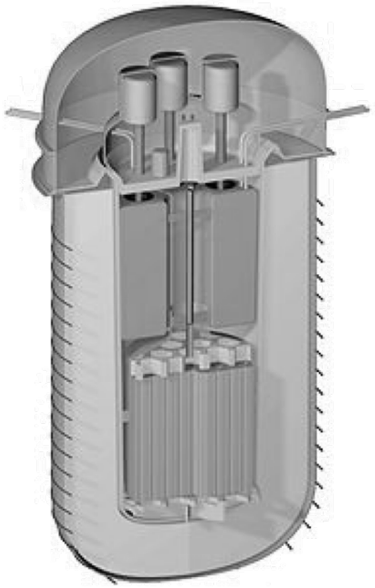
1. Unprecedented compactness (container-sized reactor module).
2. Economical at low power (100MW).
3. 12 years of operation without refueling.



Seaborg CMSR
250/100 MW



NuScale LWR
160/70 MW



Small IMSR
300/125 MW

Westinghouse LWR SMR
600/225 MW

Manufacturing

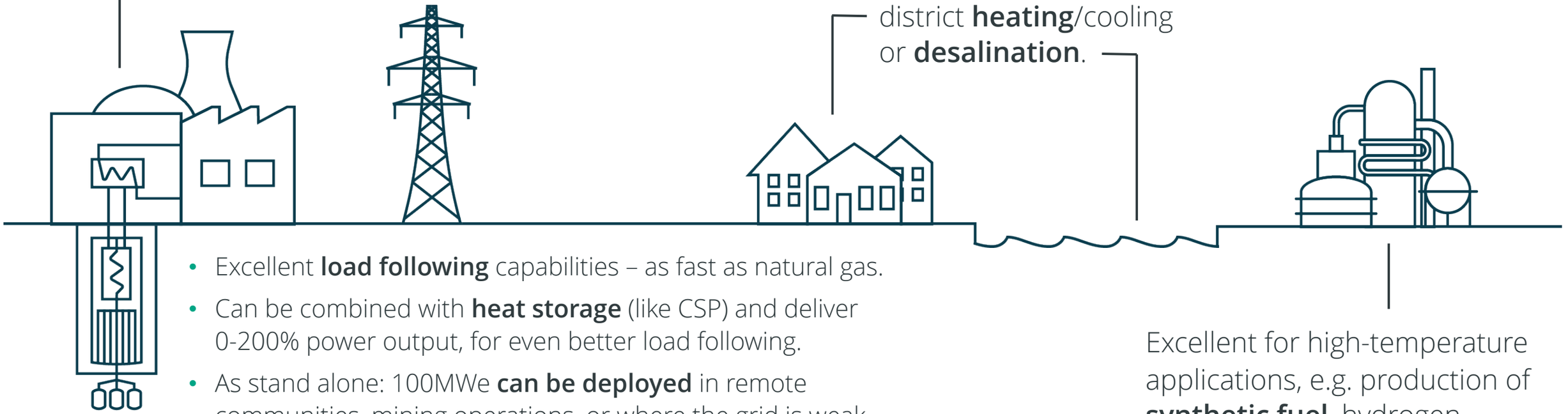
Small and modular means factory production.

Nuclear modules are assembled in a factory, like wind turbines or planes are, and shipped to the site of the power plant – anywhere.

Applications

The Seaborg CMSR power plant can produce 250MWt/100MWe (**power for 200,000 homes**).

Can be coupled with 125MW district **heating**/cooling or **desalination**.

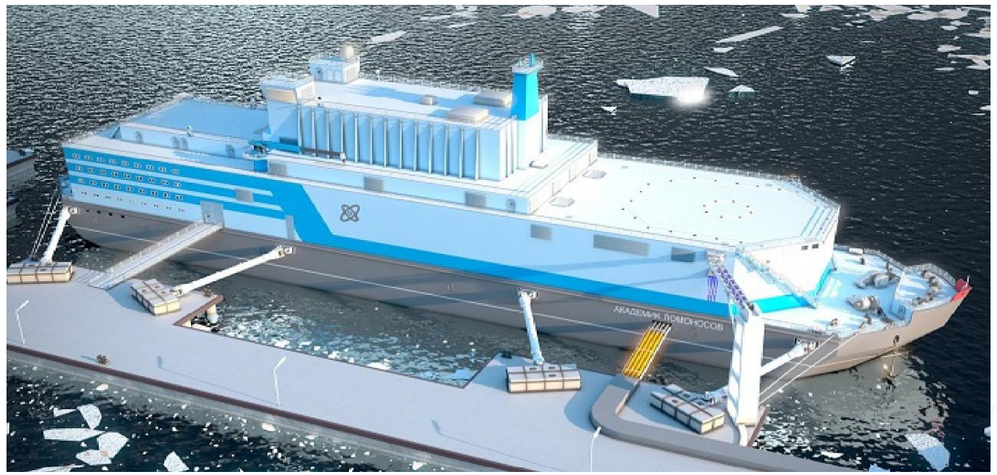


- Excellent **load following** capabilities – as fast as natural gas.
- Can be combined with **heat storage** (like CSP) and deliver 0-200% power output, for even better load following.
- As stand alone: 100MWe **can be deployed** in remote communities, mining operations, or where the grid is weak (most low-income countries).
- Several power units can be linked in a chain, e.g. **six units can replace a coal plant.**

Excellent for high-temperature applications, e.g. production of **synthetic fuel**, hydrogen, ammonia, **fertilizer**, medical, etc.

Floating Nuclear Power Plants

- Utilize the ship yards effectiveness of manufacturing
- Pre-commission in port
- Turn key delivery
- Moveable asset



- Russia has build one 70 MWe (and have gotten 70 orders within 3 months)
- China plans 20 FNPPs

- For remote communities and mining operations in the beginning

Long-term plan: Make all fossil fuels obsolete

1. Develop and verify, qualify, license and manufacture the first reactor.

2. Reduce conservative margins used in initial design, optimize from experience and initiate serial production.

3. Add reprocessing of fuel and recycling of reactor units. Add capability to burn nuclear waste and prepare for use of thorium fuel.

2027: First commercial MSR online - cheapest in the off-shore niche

2035: Cheaper than coal/gas
Dispatchable steam and power for everyone everywhere.

2040-50: Cheaper than oil
Biomass combined with cheap steam replace crude-oil (diesel, plastic, etc.)

We can **replace all fossil fuels**, while delivering abundant and cheap power, water, fertilizer (food) and heating/cooling for everyone on the planet.

Seaborg Technologies

Currently **25 employees** and hiring.

- Incl. 10 PhDs and people from 4 continents.
- Plus BSc, MSc and PhD students.

We are a **talent magnet** and the leading tech contester (outside the Great Wall):

- World leading in MSR physics.
- Chemical **experiments started**.
- Technical design phase and licensing process initiated.

Based in Copenhagen, Denmark.

Safety by physics

Reduce sources of failure

Passively safe (**cannot melt down**).

Walk-away safe: misuse or failure to act results in shutdown.

Remove release mechanisms

Atmospheric operating pressure
- no risk of pressure explosions.

No explosive gas production
- no risk of gas explosions.

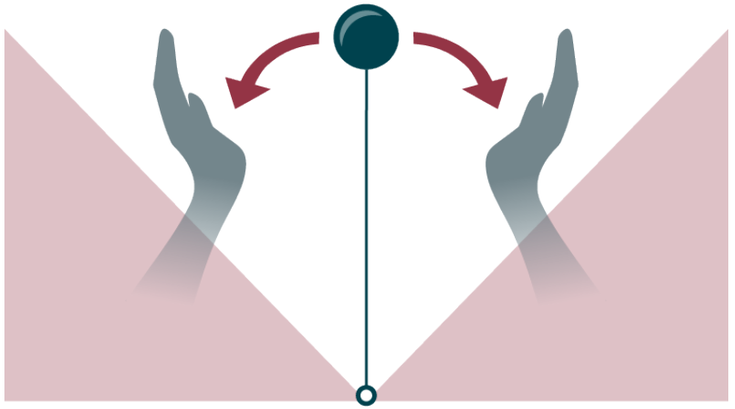
Eliminate dispersion mechanisms

The radioactive elements are fluoride salts, which:

- do not react with air or water,
- are **insoluble in water** and do not release gasses,
- **solidify** outside the reactor.

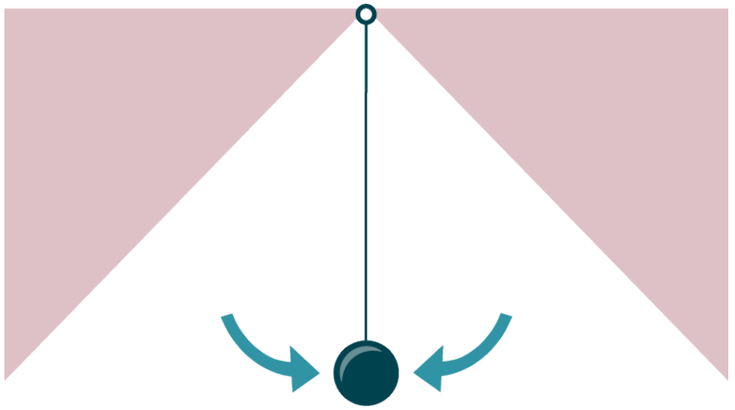
Conventional nuclear

Safety systems – safety by engineering



Molten salt reactors

Inherent safety – safety by physics



Enable an industrially driven industry

1. **New fundamental tech choice MSR:**
   - Reduce sources of failure
   - Remove release mechanisms
   - Eliminate dispersion mechanisms

Challenges: Regulatory mismatch; issues with corrosion and materials; novel features (degassing, online waste handling, etc.)

2. **Make it small (our proprietary innovation):**
   - New applications
   - Enables mass production - scale in numbers, not in size
   - Viable financial model

Challenges: New moderator required – more funding-intensive development; safeguards regulations misaligned and security requirements disproportionate.

3. **Reform and use the existing supply chain:**
   - Accelerates scaling, at scale
   - Leveraging existing knowledge and gaining traction through early stage partnerships
   - New (scaling) business opportunities for (almost) everyone

Challenges: Maintain IP; risk to the existing industry; incumbents counter-lobbying.