

CET 2022 – John Ahlberg, co-founder Kärnfull Group

Kärnfull Next'

Enabling Next-Gen Nordic Nuclear

SMRs for 360° energy sector decarbonisation

The Kärnfull Journey



Change the Narrative

- B2C brand
- Non-political
- Science Support



Kärnfull Next™

360° Clean Energy

- Re-industrialization
- Deep Decarbonize
- Derivative Delivery

Enable Tech

- Financial Innovation
- Delivery Innovation
- OASIS marketplace

weareNext.at/refineryX
weareNext.at/steelX
weareNext.at/paperX
weareNext.at/X

KIND  ATOM

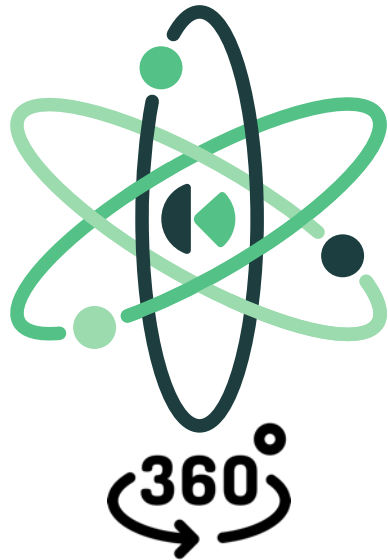
Kärnfull Next™

SYNERZETIC

t.b.a.

Kärnfull Next™

What's Next?



- **Project development** across the Nordics – from ideation to operation
- Partnered with  **HITACHI** for BWRX-300 – leading SMR technology
- Partnered with **SYNERGETIC** for off-shore HTSE – superior performance electrolyzer
- Strong financial and organisational backing by **granitor** (ex )
- Driving innovation within Financing, Delivery and Operation
- A-Z offer – supporting from legislation and licensing to siting and funding
- World-leading delivery and regulation expertise with KIND , **wsp** etc.
- Strong brand synergies between retail and B2B brand (incl. local acceptance)
- **All about 360° Clean Energy** – hydrogen, electricity, heat, synfuels

What's in store?

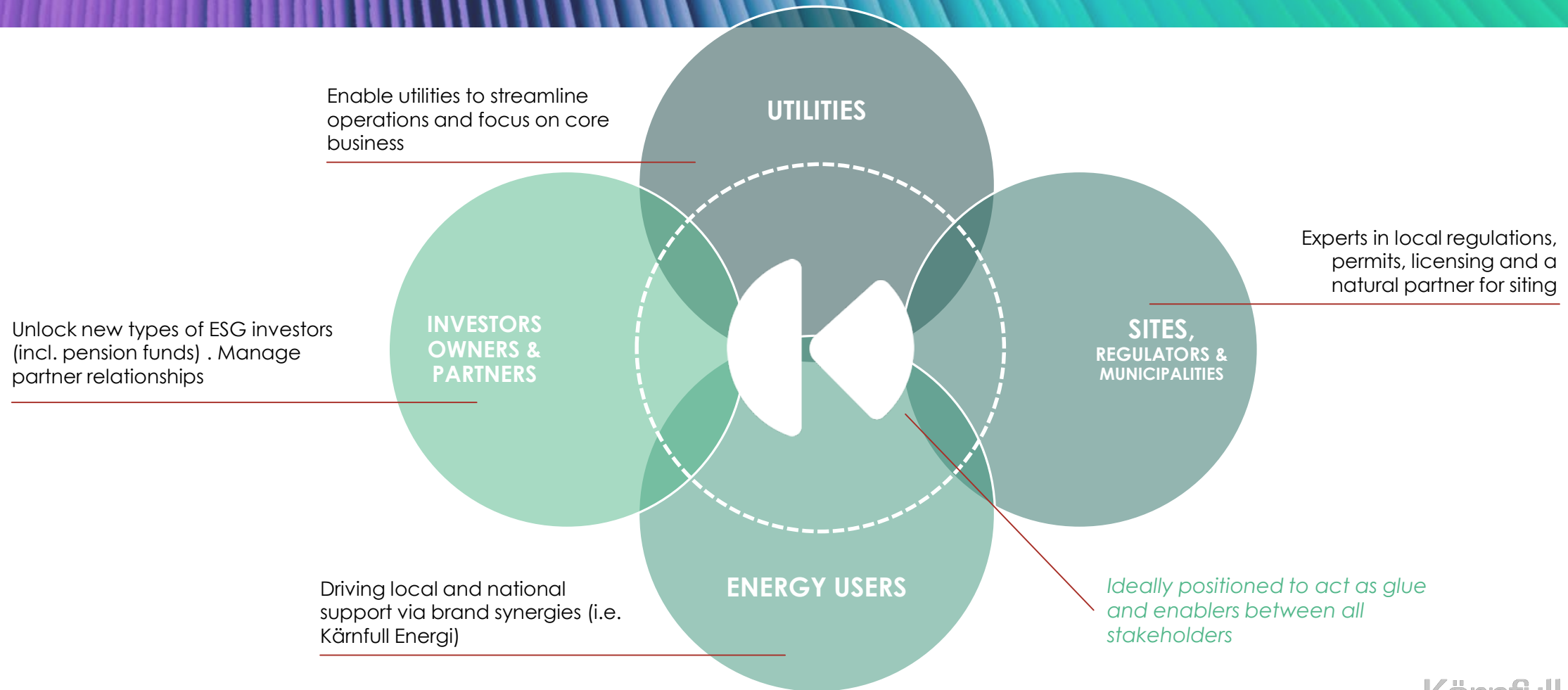
Turn-key ready **Versatile Energy Stations**

300 MW LWR units and High-Temp Steam Electrolyzers (HTSE) for minimal footprint, maximum output and flexible use-cases:

- **Hydrogen** via on site high-temp electrolysis – flex use to support the grid or export
- **Electricity** production for national grid and/or robust hyperlocal grids – ready for island operation (SMR)
- **Heat** for the process industry or for district heating needs
- **Synfuels/Ammonia** for aviation and maritime



Our role in the ecosystem



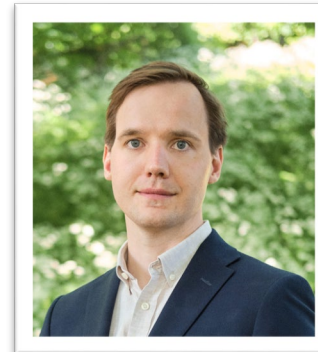
Orchestration & Delivery



A leading team of nuclear experts, incl. Timo Okkonen, Michael Knochenhauer, Simon Wakter et al ensure excellence.

- Stakeholders – realizing the variety of expectations
- Phases – defining the targets over investment life cycle
- Plant – setting up the criteria for technology and delivery
- Organization – leading the people on the driving seat
- Projects – specifying the requirements for deliveries
- Production – optimizing the output per costs
- Risks – managing downsides and upsides

KIND  ATOM



wsp

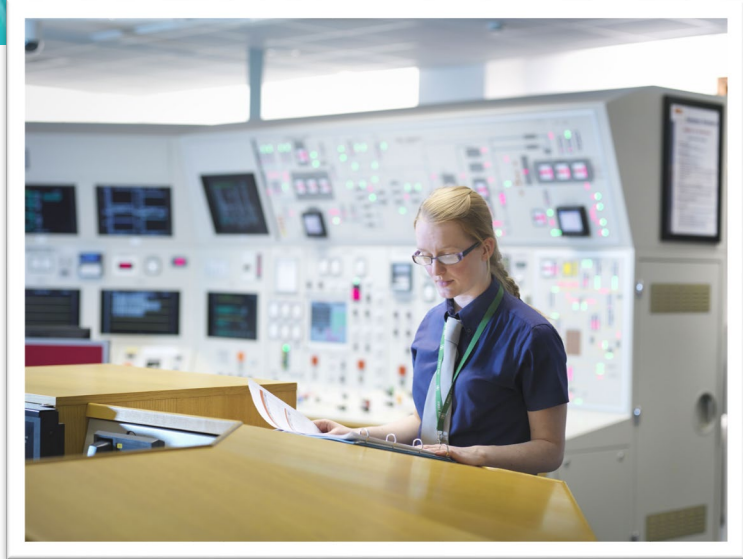
Kärnfull Next™

Operator-as-a-Service



The rise of modular reactors initiate a new marketplace for operators to fleet-manage multiple units. We're enrolling the best partners.

- De-risking the classic Owner/Operator business model
- Creating a Operator-as-a-Service (Oasis) space
- Catering to the needs and economics of each client
- Opening up global opportunities for operators



Small Modular Reactors

- 10th Gen Boiling Water Reactor (BWR)
- Leverages licensed ESBWR tech
- World class safety
- Design-to-cost approach
- Significant capital cost reduction per MW
- Capable of load following
- Ideal for electricity generation and industrial applications, including hydrogen production
- Constructability integrated into design
- Licensed in the U.S. and Canada by 2023
- Operational by 2028



HITACHI



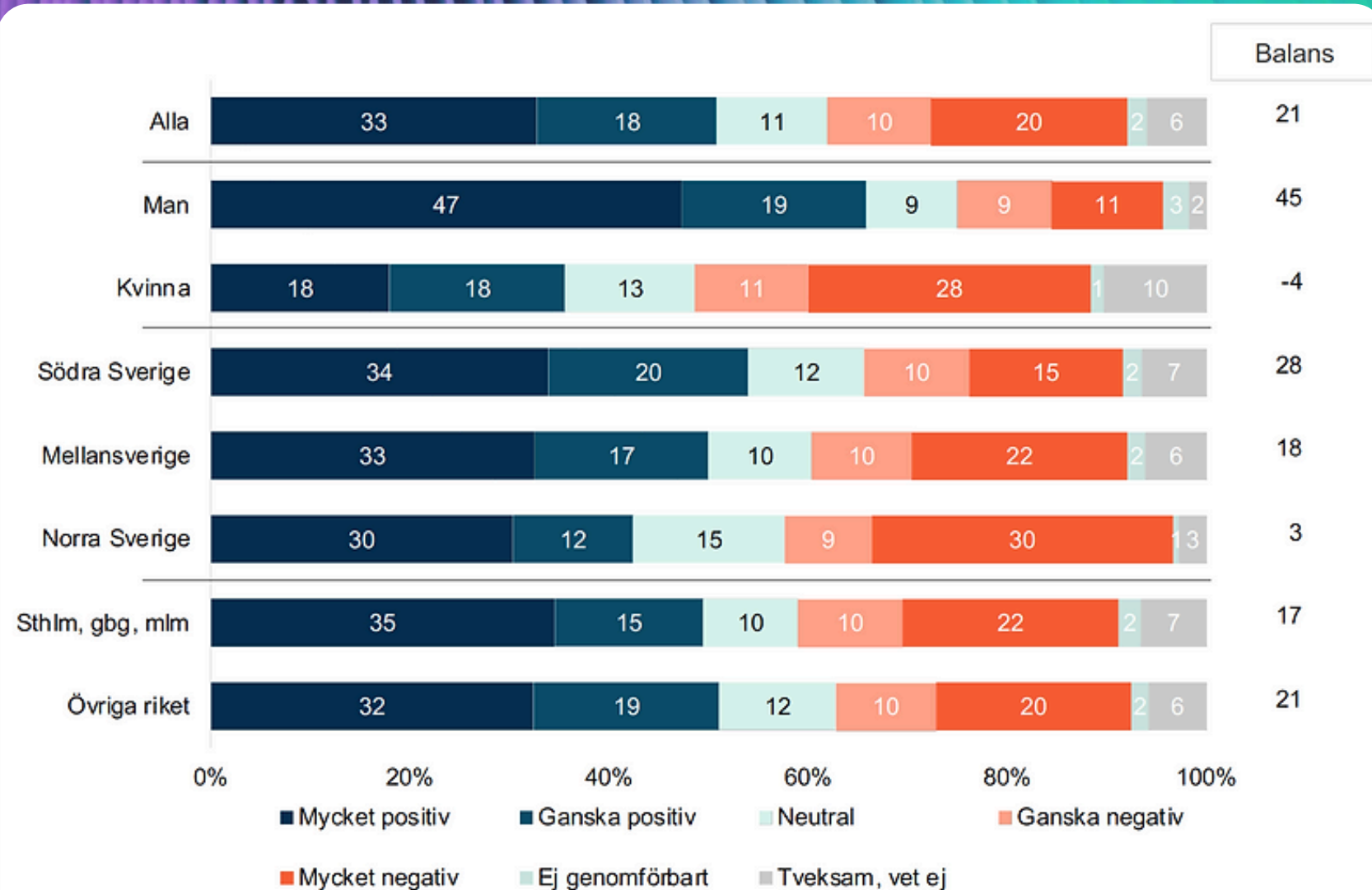
**300 MW
Water Cooled
SMR**


Designed to
Mitigate LOCA


Reduced
Staff


Competitive
LCOE

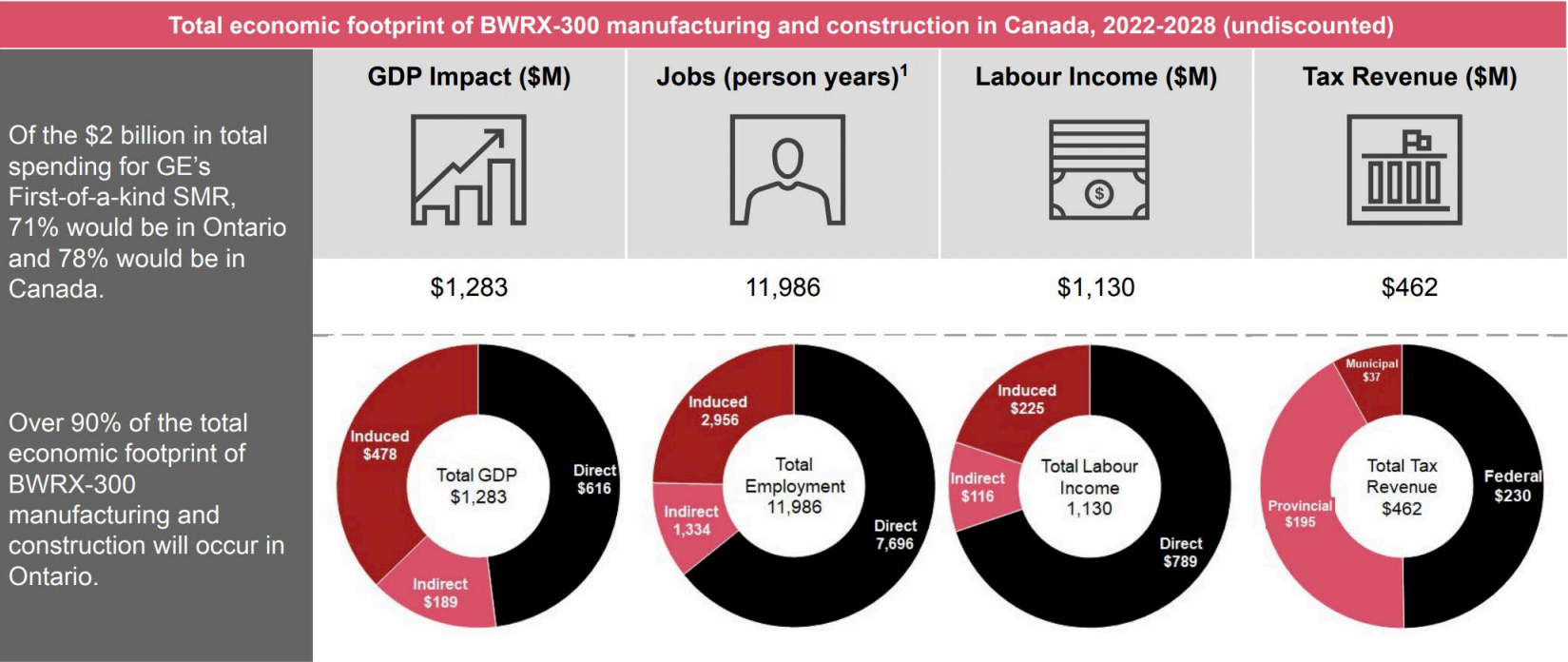
A popular choice already today...





Yet socioeconomic benefits remain...

GE's SMR with OPG is expected to spend \$2 billion over seven years and create nearly \$1.3 billion in GDP and over 1,700 jobs in Canada during the manufacturing and construction phase



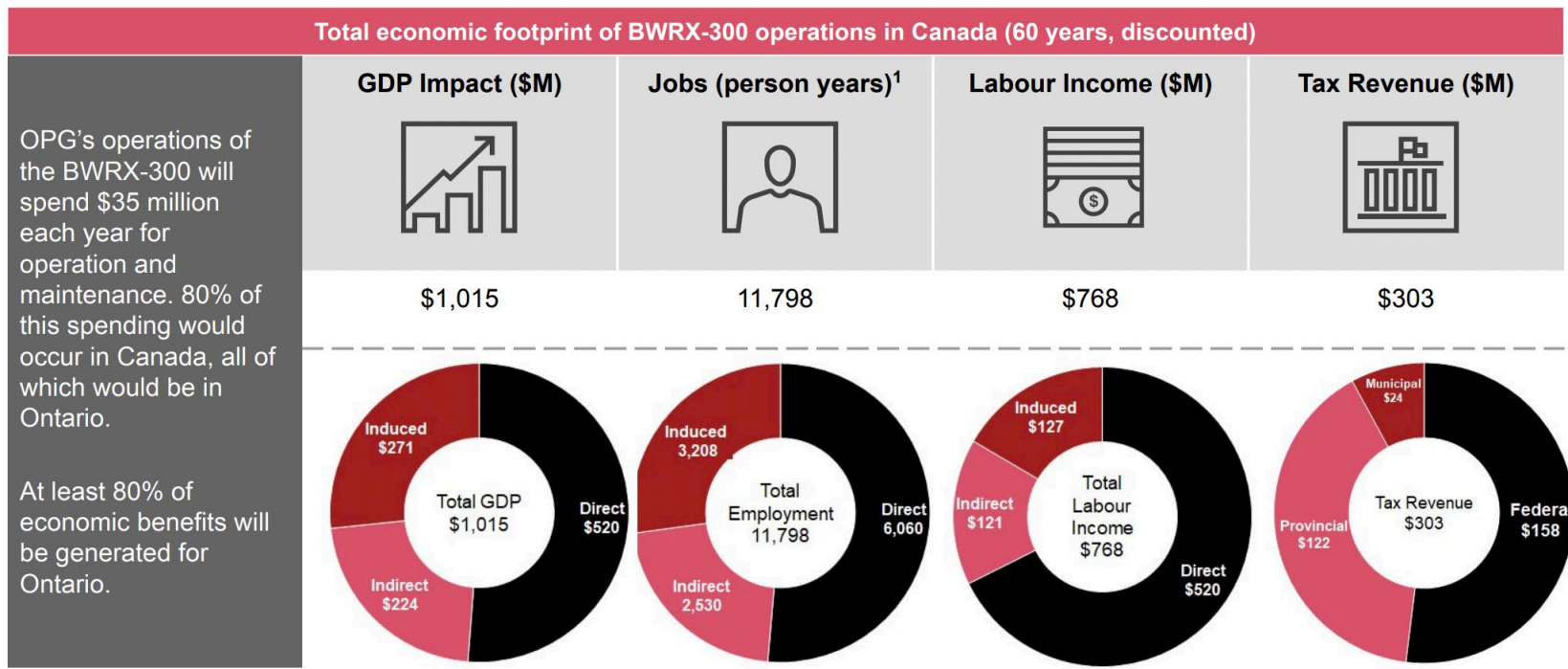
Source: PwC analysis

¹ 11 986 person years is equivalent to 1,712 jobs sustained over seven years. Jobs are expressed as full-time equivalents.



...to be fully understood by citizens.

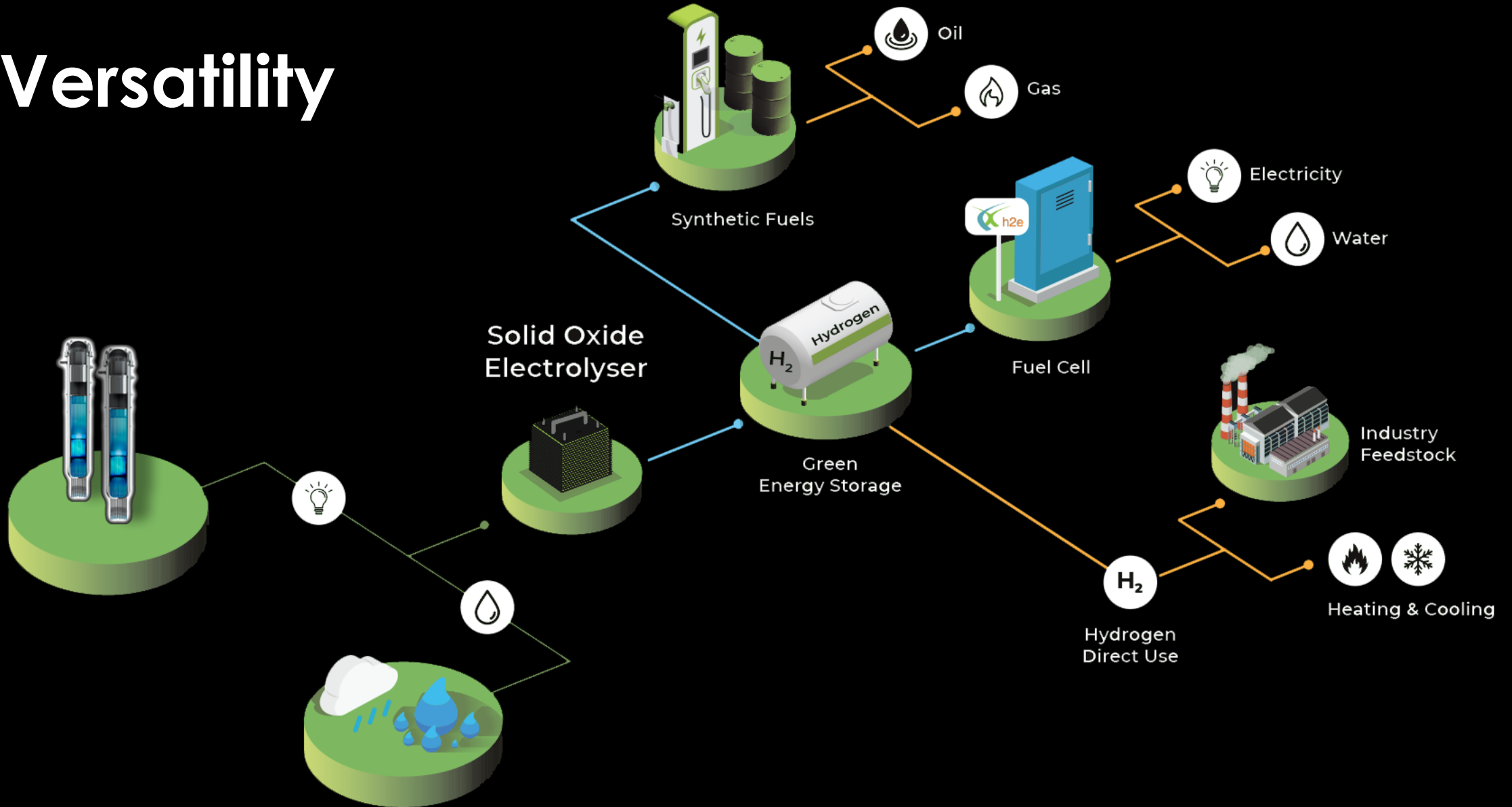
... and over \$1 billion in GDP and sustaining 197 jobs over 60 years of operations in Canada



Source: PwC analysis

¹ 11 798 person years is equivalent to 197 jobs sustained over sixty years. Jobs are expressed as full-time equivalents.

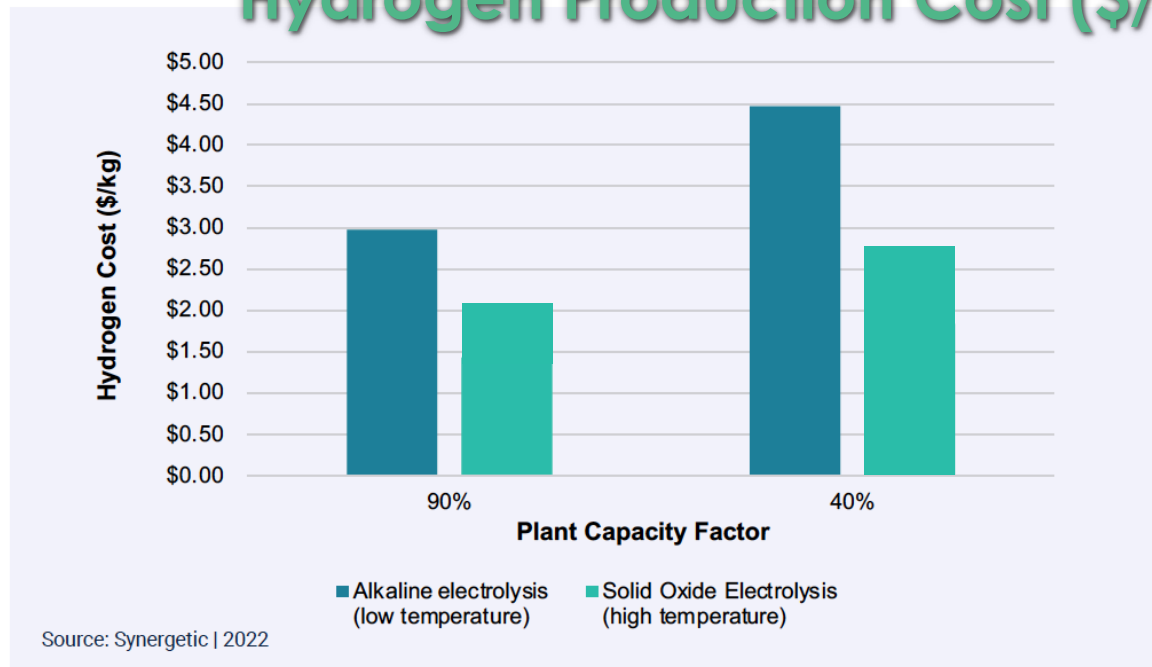
Versatility



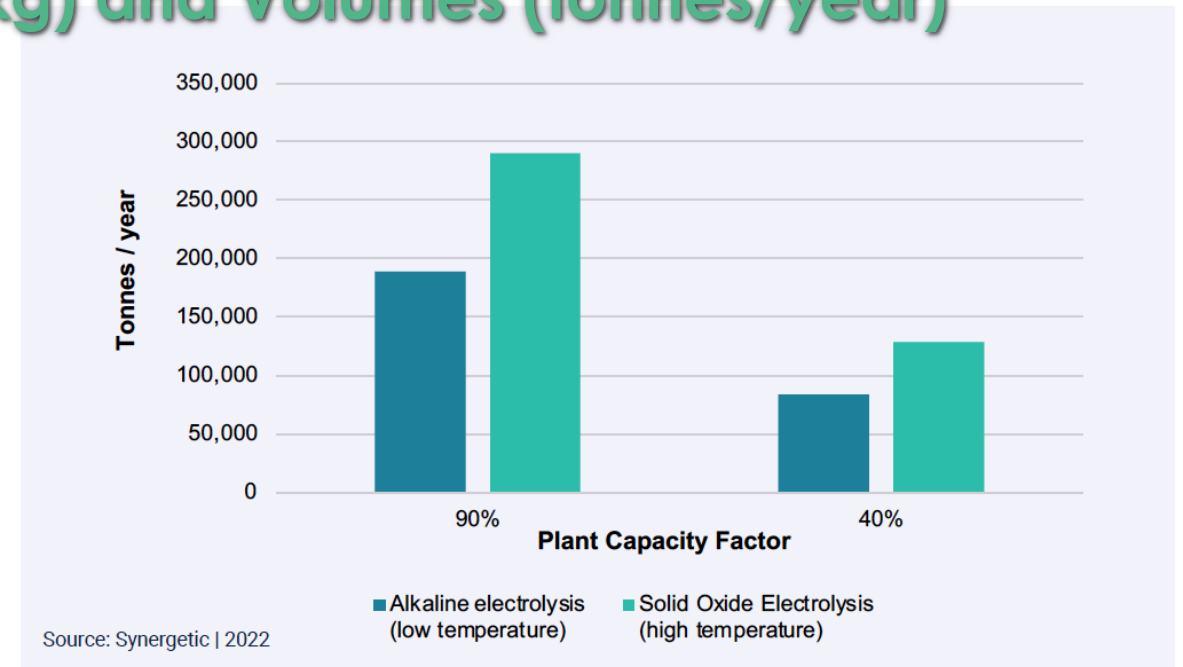


Super-competitive carbon-free H₂

Hydrogen Production Cost (\$/kg) and Volumes (tonnes/year)



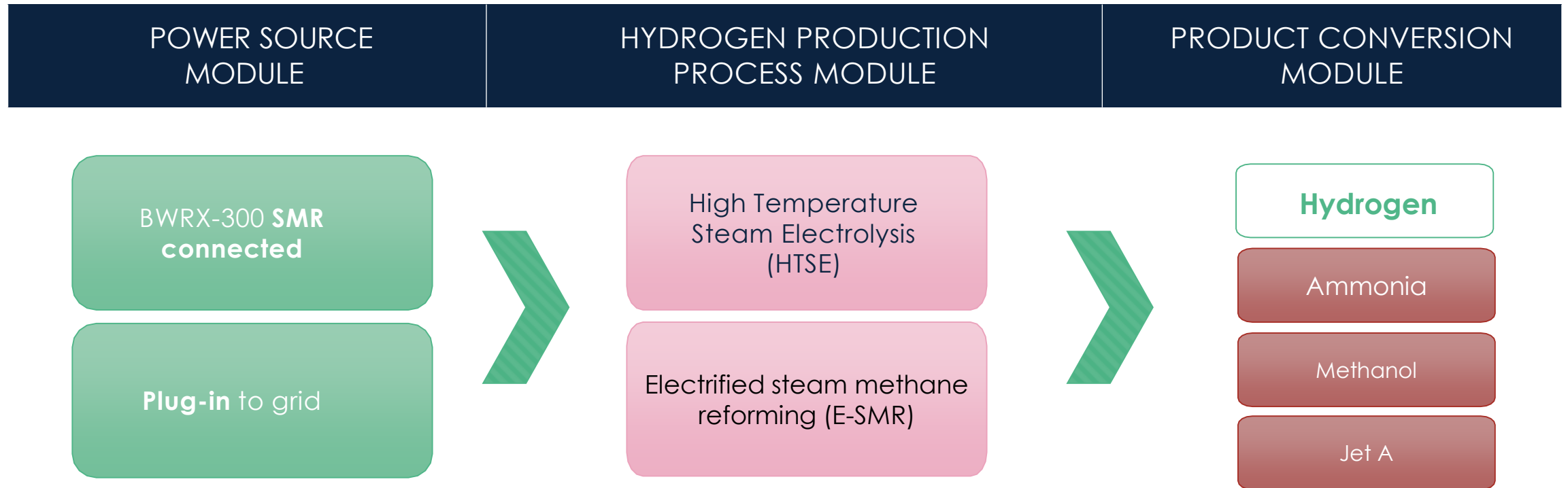
Hydrogen production cost using low-temperature or high-temperature electrolysis



Hydrogen production volumes using low-temperature electrolysis versus high temperature electrolysis



Clean Hydrogen and Synfuels Options



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Thank You! Visit knxt.se for more.

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