



Battery initiatives and Stakeholders in Norway

Webinar 23.10.2020

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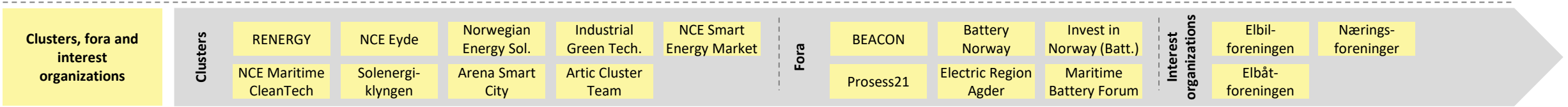
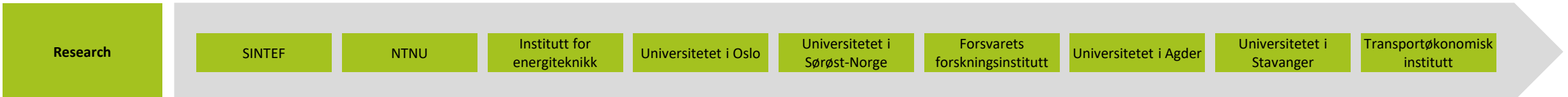
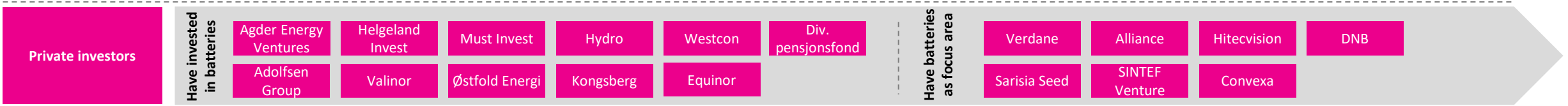
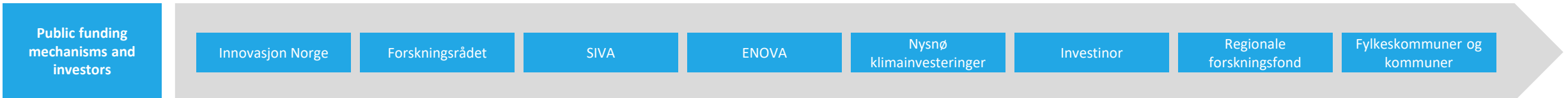
Senior Research Scientist

SINTEF ENERGY

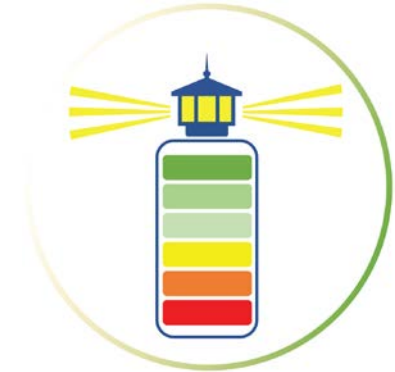




| Industry | Materials production | | Battery production | | Application | | | | Transport | | Integration | | Recycling and 2nd life | |
|----------|----------------------|-------------|--------------------|-------------------|--------------|--------------|--------------------|---------------|--------------|---------------|-------------|-------------------------|------------------------|-----------|
| | | | Cells | Packs and systems | Maritime | | Stationary storage | | Land | Air | | | | |
| | Glencore | Elkem | Freyr | Siemens | Wärtsilä | Norled | Equinor | Trønder E. | ASKO | Avinor | ABB | DNV GL | NorSirk | HydroVolt |
| | Hydro | Skaland G. | Beyonder | ZEG Power | Color Line | Yara | NTE | Statkraft | Unibuss | Widerøe | Lloyds | Forsvaret | Batteriretur | Eco Stor |
| | Du Pont | Cealtech | BEBA | Corvus | Brødrene Aa | Ulstein S. | Statnett | Pixii | Jernbanedir. | Rolls Royce | Kongsberg | ZERO | NOAH | Eaton |
| | Borregaard | Baldur | Morrow | ZEM Marine | Vard Electro | Selfa Artic | Eltek | Hafslund | | Røros Flyser. | AGA | | Marna En. | |
| | Cenate | Dynatech | Graphene | Schive | Fiskerstrand | Evoy | Gylling Tekn | Agder Energi | | | | Charging infrastructure | | |
| | Nanopow | Cerpotech | Vili Ve Group | Eaton | Blueye | EST Floatech | RenRøros | Rissa Kraftl. | | | | Tibber | Fortum | |
| | Tiotech | Alcoa | | Bryte | | | Scatec | Batterisys. | | | | Grønn kon. | EVBox | |
| | ReSiTec | Nordic Min. | | | | | | | | | | | | |



What is BEACON and who is it for?



A national network of battery stakeholders aiming to:

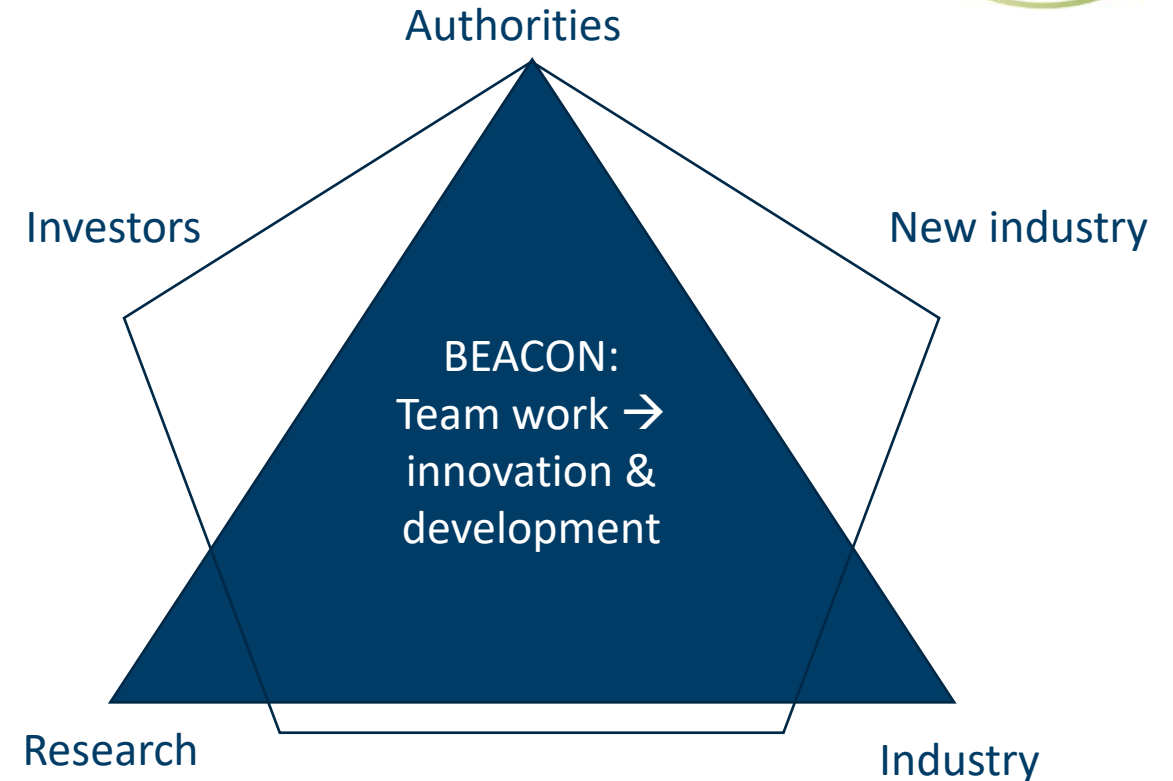
- Create synergies by connecting different parts of the supply chain
- A forum to identify research and development needs of the industry
- Provide stronger links for Norwegian stakeholders to European initiatives
- Provide Norwegian stakeholders with a common voice to ensure this industry is prioritised and its growth facilitated.
- Create a sustainable battery industry with global impact



BEACONS role

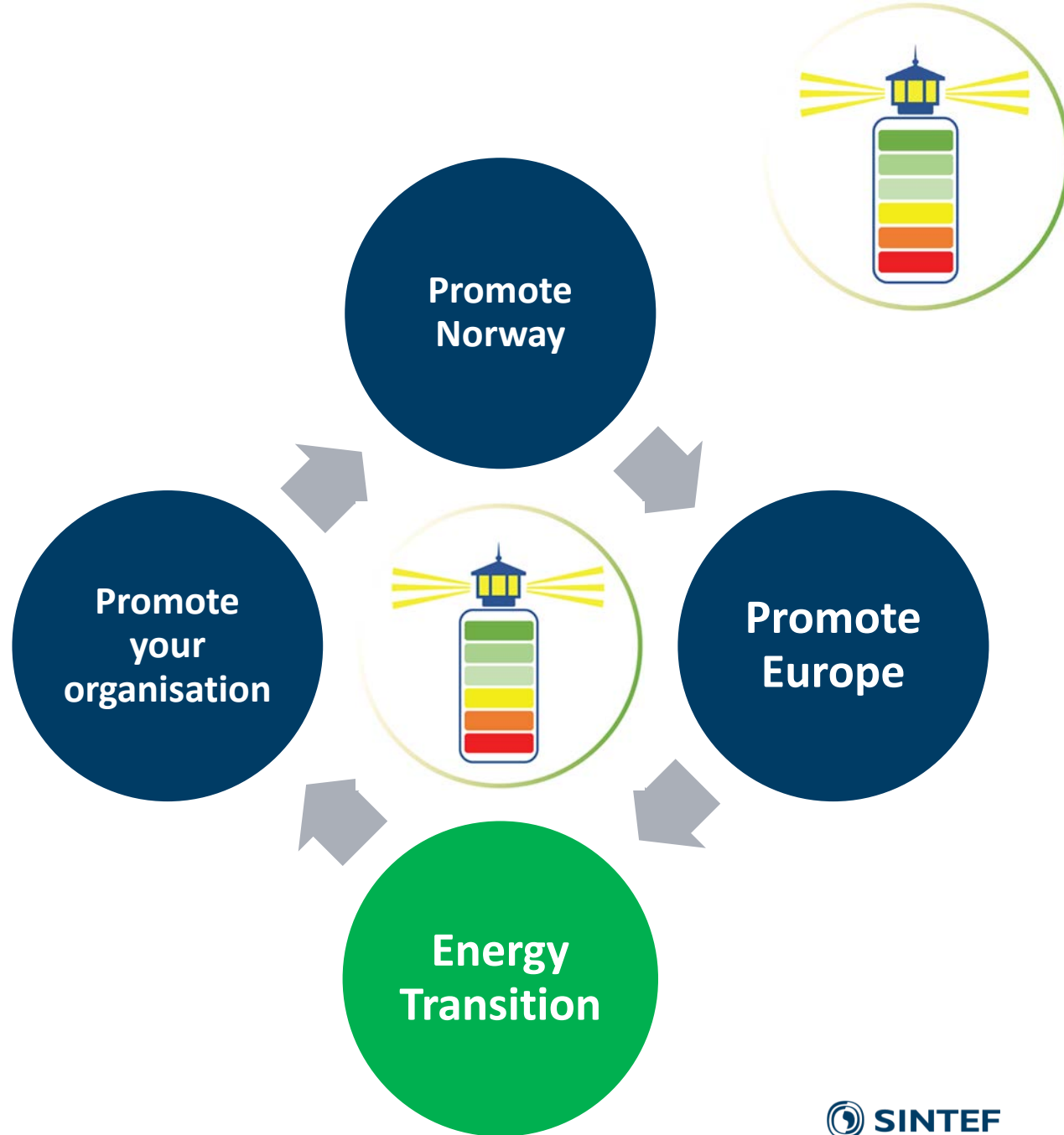


- Bring together Norwegian players (authorities, industry, research and interest organizations) to seize the opportunities
 - On EU and global arena
 - Based on Norwegian strengths
- Form thematic groups for taking part in and generating new opportunities
 - Sharing and interpreting information and its relevance
 - Contribute to set the agenda and create new opportunities
 - Formulate a Norwegian battery strategy
- Bring important topics to the authorities' attention



How BEACON operates

- Open organisation
- Core group: SINTEF, NTNU, IFE, NORSK HYDRO, ELKEM, SIEMENS, HAFSLUND NETT, RCN
- Affordable and accessible to small start-ups
- Focus on cross-sectoral and interdisciplinary collaboration to build strong consortia, accelerate innovation and develop our home market.



Battery Norway



Industrial collaboration platform

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www.batterynorway.no




NICE EYDE - Norway's Center of Expertise
in the Process Industry

Battery Norway is a national industrial collaboration platform

Battery Norway will contribute to

- development of a national Norwegian battery strategy that facilitates sustainable growth - Framework conditions, a “Voice of industry” .
- efficient and streamlined reception of international expertise for the construction and operation of industrial plants.
- building of relevant longer-term industrial competence (operator, engineer) and infrastructure.
- fast tracking of permitting processes via exchange of experience and guidance.



BATMAN
Battery Norway

Battery Norway (Norwegian Battery Platform) is a national industrial collaboration platform focused on innovation and sustainable value creation opportunities, encompassing the entire battery supply chain. Through the BATMAN project and our collaboration with Invest in Norway we have seen a need for such a national battery platform (“hub”).

Battery Norway will contribute to the:

- development of a national Norwegian battery strategy that facilitates sustainable growth.
- expansion of the Norwegian battery supply chain and ecosystem.
- building of relevant industrial competence and infrastructure.
- explore synergies within the Norwegian and Nordic battery ecosystems.
- connect Norwegian companies to international initiatives and activities.
- promote Norway as a battery nation.


Strategy
Battery Norway will closely follow the EU's battery strategy and be the Norwegian “mirror” advising the authorities on i) how Norway can strengthen its competitiveness as a host nation for battery investments ii) how can Norway and Norwegian companies deliver on the battery component of the EU's «New Green Deal» including EU Circular Economy Action Plan and iii) how to further strengthen Norwegian industrial participation in battery research and innovation arenas in Europe.

Cooperation
The battery value chain is complex. The expected increase in electro mobility will lead to an exponential growth of the Lithium-ion Battery (LIB) market and, as a result, the use of relevant raw materials. Partnerships (upstream, downstream and circular) can play a key role in creating long-term robust and competitive value chains. **Battery Norway** is an industrial meeting arena that enables collaboration across the value chain, nationally and internationally. In addition, **Battery Norway** will contribute to the sharing of expertise and transfer of experience where it strengthens its stakeholders.

Competence and infrastructure
It is important that Norwegian companies have access to expertise and competence to create value. **Battery Norway** will contribute to defining and developing relevant industrially oriented educational programs that covers the entire value chain for batteries. Importantly, this includes the development of technician and operator tailored programs. In addition, it is important that companies have open access to relevant research and upscaling infrastructure. **Battery Norway** assist in defining knowledge, infrastructure and innovation gaps along the entire value chain.

Internationally
In close cooperation with national policy instruments, **Battery Norway** will assist export oriented new companies that look for international partnerships, as well as facilitating foreign investments in the battery supply chain in Norway. For example, upon request i) facilitating foreign visits ii) matchmaking with potential innovation partners iii) strategic positioning of the Norwegian battery sector internationally.

Battery Norway will be launched on the 30th of June as part of the «The Nordic Battery Scene»
<https://www.innovasjon Norge.no/no/tilenester/arrangementer/the-nordic-battery-scene/>



Battery Norway is open for the whole Norwegian ecosystem

Other Relevant Fora

Maritime +
Battery Forum

<https://www.maritimebatteryforum.com/>



electricregionagder.com



<https://www.prosess21.no/>



<https://invinor.no/industry-opportunities/battery/>

How do we succeed?

- Norway must take a leading role in sustainable battery production and **time is of essence**
- Need a clear and ambitious **national strategy and goals**
- Measures must be taken by public authorities in collaboration with industry, research and educational institutions, addressing the following areas:
 - **Regulations** supporting fast track establishment of new industry
 - **Competitive funding and support schemes** for both industry and R&D&I, including high risk capital for start-ups
 - **Research, development and education**
 - Significant strengthening of R&D, including infrastructure
 - New education and training programs to meet the needs of the growing industry
 - **Networks**
 - Strong national networks covering the whole value chain are required
 - A Nordic battery alliance will secure knowledge and competence along the value chain
 - Long-term cooperation with European and global battery community
 - Strong involvement in European initiatives





— 70 år —
1950-2020

Teknologi for et bedre samfunn