IVL Svenska Miljöinstitutet AB
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# Beslut om stöd

**Stödmottagare:** IVL Svenska Miljöinstitutet AB
**Org. nr:** 556116-2446
**Projektnamn:** Innovation 2035 - Ett innovationssystemperspektiv på cirkularitet för elektromobilitets-batterier och - material i Sverige
**Ärendeid:** 20358070
**Diarienummer:** REGAC – 2022 - 243

## Beslut om stöd

Region Västerbotten beviljar IVL Svenska Miljöinstitutet AB stöd för att genomföra projektet Innovation 2035 - Ett innovationssystemperspektiv på cirkularitet för elektromobilitets-batterier och - material i Sverige enligt ansökan inkommen 2022-09-02. Stödet uppgår till 25,12 % av faktiska kostnader och 18,49 % av total finansiering, dock med högst 350 000.

Beslutet har fattats med stöd av förordningen (2003:596) om bidrag för projektverksamhet inom den regionala tillväxtpolitiken och förordningen (2015:210) om statligt stöd för att regionalt främja små och medelstora företag.

För stödet gäller allmänna villkor enligt Bilaga 1.

Beslutet kan inte överklagas.

### Motivering till beslut

Region Västerbotten beviljar stöd av följande skäl:
Projektet uppfyller kraven fastställda i Region Västerbottens Agenda för hållbar finansiering och bidrar i mycket hög grad till prioritetshöjande aspekten Hållbar regional tillväxt och i hög grad till prioritetshöjande aspekt Sammanhållen region.

### Projektperiod

2022-10-01 - 2023-05-31

### Projektbeskrivning

*Syfte:* Syftet med projektet är att stärka svenska aktörers konkurrenskraft internationellt i riktning mot ökad cirkularitet för elektromobilitetsbatterier och dess material.

*Vad projektets aktiviteter ska leda till för målgruppen på kort sikt:*
Projektet förväntas initiera ett flertal aktiviteter utgående från agendan, i några fall redan under projektets gång.

*Vilka effekter ska projektet uppnå på lång sikt:*
The project in its entirety covers sourcing, extraction and recycling of battery materials and addresses:

Challenges of raw materials supplies
Challenges of extraction, reuse- and recycling lithium-ion batteries
Competence needs
Policy  regulatory frameworks for batteries

Stärka svenska aktörers konkurrenskraft internationellt i riktning mot ökad cirkularitet för elektromobilitetsbatterier och dess material.
Potential and Industrial relevance
Mineral extraction and processing
Assessment on extraction methods for battery metals from primary and secondary sources with a specific focus on recovery of nickel, cobalt, manganese and lithium, but with possibility to add other metals found to have strategic interest.
Improved recycling and circularity
Improved process aimed at extracting more metals from complex ores and reclaimed materials will contribute to improved resource efficiency. Assessment of existing technologies for recycling of spent and discarded lithium- ion batteries.
Improved environmental sustainability - Lower environmental impact
New Circular Business Models - Reuse and Refurbishment.
Achieving the objectives of the Circular Economy Action Plan by enabling second life of batteries and increasing rates for recycling and recovery, in line with upcoming regulatory requirements.
Regional Development
Production and recycling of Li-ion batteries is playing an increasing role in the economy in the parts of the country where they are located and new regional battery clusters are being developed. The municipalities are responsible for working with regional development issues in collaboration with the regions. Increased collaboration between the battery ecosystem in Northern Sweden and in the Business Region of Gothenburg.

*Indikatorer*:

| Namn | Värde | Måttenhet | Kommentar |
|---|---|---|---|

## Tid- och aktivitetsplan

| Aktivitet | Beskrivning | Startdatum - Slutdatum | Kostnad |
|---|---|---|---|
| WORK PACKAGE 1 Management, Co-ordination & Communication (Oct 2022- May 2023) | Strategic Focus- Activites<br>1. Establish and implement procedures and systems for effective management of finance and project activities.<br>2. Co-ordinate a programme of meetings, workshops and conferences that brings together project | 2022-10-01 - 2023-05-31 | 400 |

| Aktivitet | Beskrivning | Startdatum - Slutdatum | Kostnad |
|---|---|---|---|
| | participants from the different participant regions, allows them to meet and exchange learning, facilitates actions against an agreed timeline, and communicates and disseminates information within the project and to relevant external stakeholders.<br>3. Co-ordinate reporting of, and report on, the progress of the project and on project outputs.<br>4. Audit the project<br><br>Expected outcome:<br>To secure that all objectives are met by ensuring project is completed according to time and budget and that activities, findings and implementations are communicated and disseminated. | | |
| WORK PACKAGE 2 Future Recycling Technologies - Raw Materials extraction | Processes developed for the recycling of Li-ion batteries:<br>Flexible and efficient recycling of Li-ion batteries of different chemistry.<br>Pyrometallurgical processing<br>Mechanical pre-treatment<br>Thermal pre-treatment<br>Hydrometallurgical processing<br>Direct recycling<br>Emerging chemistry technologies<br>Future technologies<br><br>Expected outcome:<br>Report on the assessment and comparison of current technologies in respect to achievement of circular economy in the batteries production.<br>The report will include:<br>Detailed description of each recycling technology (pyrometallurgical, mineralogical and mechanical pre-treatment, hydrometallurgical and direct<br>approach).<br>Estimated mass balance for each technological approach.<br>Map of the countries in EU and world, where each approach is applied. | 2022-10-01 - 2023-03-31 | 560 |

| Aktivitet | Beskrivning | Startdatum - Slutdatum | Kostnad |
|---|---|---|---|
| | List of new recycling technologies (from TRL 5 and higher) for metallic and non-metallic components.<br>Expected challenges in the recycling of future batteries chemistries.<br><br>Contribution to the assessment of methodologies for lithium recovery and purification when extracted from recycled batteries in a combined pyro and hydrometallurgical route. | | |
| WORK PACKAGE 3<br>New Circular Business Opportunities and Models | Strategic Focus<br>The work in this work package will address, investigate and highlight important activities and actors for achieving extended EV battery lifetimes, which in turn can lead to a high resource efficiency. An overall goal is to gain a good understanding of how the value chain/network currently addresses these questions and what its actors plan for and expect over the coming years. An ambition is also to present suggestions on how this field can be further developed to e.g. meet the objectives outlined in the EU Circular Economy Action Plan. The work will be performed using a situation analysis approach and focus on the following main areas:<br>Investigate the possibilities and ongoing activities of refurbishment and remanufacturing (if shown applicable) for make used batteries, or their components of used batteries, fit for reuse in cars or other applications<br>Map current key actors (and suggest such actors that might emerge with time), present in the value chain/network, performing activities crucial for an extended EV battery lifetime. A certain focus will be on the activities and which actors do what<br>Elaborate critical stage of diagnosis of batteries as a safety and waste- | 2022-10-01 - 2023-03-31 | 200 |

| Aktivitet | Beskrivning | Startdatum - Slutdatum | Kostnad |
|---|---|---|---|
| | prevention measure in order to define which batteries, or components of batteries, are still considered fit for a second life application either in a car or in a different product for other applications.<br>Investigate the possibilities of how to develop standardized common diagnostics protocols and cut-off criteria between product (2nd life application) and waste (recycling)<br>Research on batteries sorting and dismantling technologies, particularly automated sorting including machine learning applicable to small and EV batteries requirements.<br>Expected Outcome<br>A good understanding and analysis of current, as well as potential future, barriers and opportunities for the extended life of EV batteries and/or their components for reuse in e.g. cars and other applications. This deliverable will highlight and present crucial activities and their corresponding actors, which can be seen as key to achieve extended EV battery lifetimes. | | |
| WORK PACKAGE 4<br>Collection of generated lithium-ion batteries | Strategic Focus:<br>From the four perspectives: Technology, Economy, Regulation and Safety explore incentives, methods and best practice for the following:<br>Use of traceability systems for batteries<br>Evaluation of batteries for reuse or material recycling<br>Dismantling batteries from vehicle<br>Collection and transportation modes<br>Expected Outcome<br>Brief description of challenges, barriers, opportunities and risks and a prioritization that forms the basis for continued research and development efforts<br>to obtain 100% recycling of batteries. | 2022-10-01 - 2023-03-31 | 200 |
| WORK PACKAGE 5 | Strategic Focus<br>Regional development | 2022-10-01 - 2023-03-31 | 240 |

| Aktivitet | Beskrivning | Startdatum - Slutdatum | Kostnad |
|---|---|---|---|
| Societal challenges - Skills Supply | Sustainable structures for a longterm skill supply at a national level based on local and regional needs in the specific industries.<br>Identifiy actors at local and regional level who work with competence supply for<br>the battery industry different educational levels i.e upper secondary education,<br>polytechnic degree and higher education<br>Sustainable structures for a longterm skill supply at a national level based on<br>local and regional needs in the specific industries.<br>Identifying terms of conditions for Cross-sectoral collaborations<br>Expected Outcome<br>Assessment and comparison of current competence needs and skill supply in a local and regional context as key factors for sustainable social regional development. | | |

## Budget (Kostnads- och finansieringsplan)

### Kostnad

| Kostnadsslag | 2022 | 2023 | | | | | | | | Totalt |
|---|---|---|---|---|---|---|---|---|---|---|
| Personal | 553 807 | 553 808 | | | | | | | | **1 107 615** |
| Externa tjänster | 48 000 | 48 000 | | | | | | | | **96 000** |
| Resor och logi | 3 000 | 3 000 | | | | | | | | **6 000** |
| Schablonkostnader | 91 296 | 92 296 | | | | | | | | **183 592** |
| **Summa kostnader** | **696 103** | **697 104** | | | | | | | | **1 393 207** |
| **Projektintäkter** | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| **Summa faktiska kostnader** | **696 103** | **697 104** | | | | | | | | **1 393 207** |

| Kostnadsslag | 2022 | 2023 | | | | | | | | Totalt |
|---|---|---|---|---|---|---|---|---|---|---|
| **Bidrag annat än pengar** | | | | | | | | | | |
| Offentligt bidrag i annat än pengar | 18 750 | 31 250 | | | | | | | | **50 000** |
| Privat bidrag i annat än pengar | 175 000 | 275 000 | | | | | | | | **450 000** |
| **Summa bidrag i annat än pengar** | **193 750** | **306 250** | | | | | | | | **500 000** |
| **Summa totala kostnader** | **889 853** | **1 003 354** | | | | | | | | **1 893 207** |

## Finansiering

| Finansiär | 2022 | 2023 | | | | | | | | Totalt |
|---|---|---|---|---|---|---|---|---|---|---|
| **Offentligt bidrag annat än pengar** | | | | | | | | | | |
| Region Västerbotten 2321000222 | 18 750 | 31 250 | | | | | | | | **50 000** |
| **Total offentligt bidrag annat än pengar** | **18 750** | **31 250** | | | | | | | | **50 000** |
| **Offentlig kontantfinansiering** | | | | | | | | | | |
| Skellefteå kommun | 131 250 | 218 750 | | | | | | | | **350 000** |
| Västra Götalandsregionen | 112 500 | 187 500 | | | | | | | | **300 000** |
| IVL Svenska miljöinstitutet AB | 34 953 | 58 254 | | | | | | | | **93 207** |
| | | | | | | | | | | |
| **Total offentlig kontantfinansiering** | **278 703** | **464 504** | | | | | | | | **743 207** |
| **Total offentlig finansiering** | **297 453** | **495 754** | | | | | | | | **793 207** |
| **Privata bidrag annat än pengar** | | | | | | | | | | |
| Stena Recycling AB | 18 750 | 31 250 | | | | | | | | **50 000** |
| El-kretsen i Sverige AB | 18 750 | 31 250 | | | | | | | | **50 000** |
| Nothvolt Revolt AB | 18 750 | 31 250 | | | | | | | | **50 000** |
| Epiroc Rock Drills Aktiebolag | 18 750 | 31 250 | | | | | | | | **50 000** |
| Toyota Material Handling Manu. Sweden AB | 18 750 | 31 250 | | | | | | | | **50 000** |
| Fortum Waste Solutions AB | 18 750 | 31 250 | | | | | | | | **50 000** |
| Kuusakoski AB | 18 750 | 31 250 | | | | | | | | **50 000** |
| Talga Battery Metals AB | 18 750 | 31 250 | | | | | | | | **50 000** |
| Ragn-Sells Recycling AB | 20 000 | 20 000 | | | | | | | | **40 000** |
| Renova Aktiebolag | 5 000 | 5 000 | | | | | | | | **10 000** |
| **Total privat bidrag annat än pengar** | **175 000** | **275 000** | | | | | | | | **450 000** |
| **Privat kontantfinansiering** | | | | | | | | | | |
| Boliden AB | 56 250 | 93 750 | | | | | | | | **150 000** |
| Stena Recycling AB | 28 125 | 46 875 | | | | | | | | **75 000** |
| Nouyron AB | 12 500 | 12 500 | | | | | | | | **25 000** |
| Odette Sverige AB | 12 500 | 12 500 | | | | | | | | **25 000** |
| Befusa Swedust AB | 12 500 | 12 500 | | | | | | | | **25 000** |

| Finansiär | 2022 | 2023 | | | | | | | | Totalt |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total privat kontantfinansiering** | **121 875** | **178 125** | | | | | | | | **300 000** |
| **Total privat finansiering** | **296 875** | **453 125** | | | | | | | | **750 000** |

## Stöd

| Finansiering | 2022 | 2023 | | | | | | | | Totalt |
|---|---|---|---|---|---|---|---|---|---|---|
| 19.1.1 Regionala tillväxtåtgärder Regionalt projekt | 295 525 | 54 475 | | | | | | | | **350 000** |

## Sammanställning (Stödprocent)

Stödandel av faktiska kostnader: 25,12 %

Stödandel av stödgrundande finansiering: 18,49 %

Stödandel av total finansiering: 18,49 %

Andel annan offentlig finansiering: 41,90 %

Andel privat finansiering: 39,62 %

## Rapportering och begäran om utbetalning

Stödet utbetalas i efterhand efter redovisning av faktiska utgifter

## Sista datum för slutrapport

2023-08-18

## Allmänna villkor för stöd

Se bilaga

Beslut i detta ärende har fattats av  efter föredragning av Emma Möller.

Vid frågor kontakta:

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