

Resource Efficiency and Sustainable Production in the Mining and Metal-producing Industry

Swedish Mining Innovation - 2021

Call for proposals within the Strategic Innovation Program for the Swedish Mining and Metal Producing Industry (Swedish Mining Innovation)

Swedish Mining Innovation is part of Vinnova's, the Swedish Energy Agency's and the Swedish Research Council Formas' joint program for strategic innovation areas. The aim with the programs within strategic innovation areas is to stimulate international competitiveness and sustainable solutions for global societal challenges.

For more information about the program, see www.swedishmininginnovation.se.

In case of any discrepancies between this text and the Swedish version, the Swedish call text applies.

The logo consists of a vertical teal bar on the left side, followed by the text "SWEDISH MINING INNOVATION" in a bold, dark grey, sans-serif font, stacked in three lines.

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1 Summary of the call

You can apply for funding for projects that address any of the challenges defined by the Strategic Research and Innovation Roadmap (2019), see www.swedishmininginnovation.se. The Roadmap covers the branch-wide challenges of the mining and metals producing industry. Special focus for this year's call is innovations addressing resource efficiency and sustainability.

Planned budget for the call is 45 million kronor.

There are three types of projects in the call:

- Pre-studies
- Full-scale Innovation projects
- Pilot and Demonstration projects

Maximum funding for a pre-study is 500 000 kronor with a maximum support level of 75% of eligible costs. Full-scale innovation projects, and Pilot and Demo projects are divided into two funding levels: (1) maximum funding of 5 million kronor; and (2) large projects where funding is 5 – 15 million kronor. Full-scale Innovation projects and Pilot and Demo projects at both funding levels can receive support up to 50 percent of eligible project costs.

Only legal entities can be granted funding. These include e.g. companies, public authorities (e.g. municipalities, counties), non-governmental organizations (NGOs), and research organizations (universities and research institutes).

Pre-studies have a maximum duration of six months. Pre-studies aim to supporting the decision-making process by objectively and scientifically evaluating a potential innovation's strengths and weaknesses, opportunities and risks and to identify the resources required to develop the innovation further. The pre-study should conclude the whether or not the development of the innovation should continue. The project partners can consist of only one organization but the pre-study proposal must demonstrate industrial relevance in the form of a letter of support from at least one relevant organization that is not a research organization (academia or a research institute).

Full-scale Innovation projects and Pilot and Demo projects at both funding levels have a maximum duration of 3 years. The projects aim to develop and implement ideas that contribute to the realization of Swedish Mining Innovation's overall objectives through developing and testing new methods, processes or working procedures. The project consortium must consist of at least one research

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organization (institute or academia) and two other relevant organizations that are not universities or research institutes.

The applications will be evaluated by international reviewers, so it is strongly recommended that proposals are written in English.

Important dates

Please note that the dates and times given are tentative. For the latest information, please visit www.vinnova.se.

Call for proposals opens	May 18, 2021
Call for proposals closes	November 11, 2021 at 14:00
Date of decision	February 22, 2022
Earliest date for project start	March 1, 2022
Latest date for project start	April 1, 2022

Person to contact concerning the call's focus, content and desired effects:

Lawrence Hooley, Technology and Innovation Manager, Swedish Mining Innovation
Tel: 0920-49 36 65
E-mail: Lawrence.hooley@swedishmininginnovation.se

Person to contact concerning the assessment process, administrative, legal and other questions about the call's contents:

Rebecca Hollertz, Program Manager, Vinnova
Tel: 08-473 30 76
E-Mail: rebecca.hollertz@vinnova.se

Contact for questions about the online application service:

Vinnovas IT-support
Tel: 08-473 32 99
helpdesk@vinnova.se

Updated information on the call and link to the eServices submission portal are found at www.vinnova.se.

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2 Swedish Mining Innovation's aims and objectives

Swedish Mining Innovation aims to strengthen the Sweden's mining and metal producing industry's competitiveness and sustainability by contributing to the development of a world leading industry which contributes to an economically, environmentally and socially sustainable society. The Strategic Research and Innovation Roadmap (2019)¹ describes the challenges and themes for development along the value chain for the mining and metals producing industry.

Swedish Mining Innovation seeks a broad range of stakeholders to collaborate to develop their innovation capacity and create new solutions that contribute to the goals of sustainable development in Agenda 2030², within the frame of the Strategic Research and Innovation Roadmap and the call's focus areas.

2.1 Focus areas of the call

The call is open to any applications which address challenges described in the Strategic Research and Innovation Roadmap. The scope of the call covers the full value chain including exploration, mining and metals production. However, in order to strengthen Swedish Mining Innovation's portfolio, in the event of equal ranking by the independent experts, prioritization will be given to projects in the following areas:

- Developing technologies or working procedures that show substantial improvement in environmental and social sustainability
- Improving circularity and/or turning waste into products and resources, including associated business models, and legal and policy frameworks
- Energy efficiency and reducing GHG emissions
- Waste management including safe tailings dam construction and management
- Lower environmental impact
- Lower emissions to air and water, water treatment and recycle

Projects are expected to contribute to the development of an equal society by providing both women and men equal parts of the funding, influence and activities in the projects and by the projects' results benefiting both women and men. See more on Vinnova.se³ about how you can integrate equality and gender aspects in your project. Another important aspect is about analysing and determining whether there are gender aspects that are relevant within the

¹ <https://www.swedishmininginnovation.se/roadmap/>

² [Agenda 2030 - de globala hållbarhetsmålen som drivkraft för innovation | Vinnova](#)

³ <https://www.vinnova.se/m/jamstalld-innovation/>

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solution's problem area and use. This question is mandatory for all applicants and can be found under the heading "Projektuppgifter" in Vinnova's Portal. In this call, the question is included as an assessment criterion under projects Potential.

3 Who may apply?

This call for proposals is aimed at consortia where companies, universities, research institutes and other relevant stakeholders contributing to Swedish Mining Innovation's objectives can be included.

Pre-studies can be applied for by a single organization as long as the proposal can demonstrate industrial and/or societal relevance in the form of a letter of support from at least one relevant company or other organization that is not a university or research institute. Consortia applying for Full-scale innovation projects or Pilot and Demo projects must consist of at least one research organization (institute or academia) and two other relevant organizations that are not universities or research institutes.

Project consortia covering the entire innovation chain from idea to end-user/market are considered positively as well as consortia with actors traditionally working in industries other than mining and metal extraction, so that more groundbreaking innovations can be created through new approaches. Involvement of SMEs is strongly encouraged.

The project party applying for a grant must be a Swedish legal entity in Sweden. In this respect, a Swedish legal entity includes foreign organizations that have a branch (filial) or registered subsidiary in Sweden⁴. Foreign organizations without a branch or business in Sweden are welcome to participate as a party in projects, but cannot receive funding from Vinnova. It is important in the application to justify the value of the foreign organization's contribution to the Swedish mining sector. Even for a foreign organization, which is a partner in the project but is not eligible for funding from Vinnova, it is possible to include their contribution to projects as co-financing (i.e. in-kind or own funds), with the same rules on eligible costs as for Swedish organizations. Note that the project coordinator must be a Swedish-registered organization.

⁴ To be eligible for a grant, the costs of the project must be attributable to the branch's or registered subsidiary's operations.

4 What do we fund?

4.1 Project types eligible for funding

You can apply for funding for the following types of projects:

- Pre-studies
- Full-scale Innovation projects
- Pilot and Demo projects

For the full-scale innovation projects and Pilot and Demo projects, there are two funding levels (size of the grant from Vinnova):

- Funding level 1: up to 5 million kronor
- Funding level 2: between 5 and 15 million kronor

In the evaluation, rankings will be made separately for the different project types and funding levels. The level of financing for large projects has been introduced to attract larger projects. Swedish Mining Innovation intends to finance projects with a spread between the various funding levels and project types.

4.1.1 Pre-studies

Pre-studies, maximum duration of six months, aim to support the decision-making process by objectively and scientifically evaluating a potential innovation's strengths and weaknesses, opportunities and risks and to identify the resources required to develop the innovation further. The pre-study should conclude whether or not the development of the innovation should continue. The project can start at a TRL of between 3 and 7. The project partners can consist of only one organization, but the pre-study proposal must demonstrate industrial relevance in the form of a letter of support from at least one relevant organization that is not a research organization. The maximum funding for a pre-study is 500 000 kronor

The activities must be included in the funding basis for “**Genomförbarhetsstudie**” studies. A brief description of these funding bases can be found in Vinnova's table of support levels for government funding⁵.

4.1.2 Full-scale Innovation Projects

Full-scale innovation projects have a maximum duration of 3 years. Full-scale Innovation projects (funding level 1) can have up to 5 million kronor in funding. Large full-scale innovation projects (funding level 2) have funding of 5-15 million kronor. The innovation projects must start at a technology readiness level (TRL) of minimum of 3 and go to a maximum TRL of 7 (see appendix for a description

⁵ [Stödnivåer, definitioner m.m. för bidrag enligt Vinnovas stödordning](#)

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of TRL). Activities must be included in the funding basis for “**Industriell forskning**” according to Vinnova project definitions for state aid rules⁶.

The projects aim to develop and implement ideas that contribute to the realization of Swedish Mining Innovation’s overall objectives. The focus of the project is to increase the TRL by acquiring new knowledge and skills to develop new or greatly improved product, process or service. This can include, for example, the construction of prototypes in a laboratory environment or in an environment with simulated interfaces to existing systems and to pilot operations, or development of components in complex systems that require validation.

The project consortium must consist of at least one research organization (institute or academia) and two other relevant organizations that are not universities or research institutes.

4.1.3 Pilot and Demonstration projects

Pilot and Demo projects have a maximum duration of 3 years. Pilot and Demo projects (funding level 1) can apply for up to 5 million kronor in funding. Large Pilot and Demo projects (funding level 2) can apply for funding between 5-15 million kronor. The projects aim to develop and implement ideas that contribute to the realization of Swedish Mining Innovation’s overall objectives through demonstrating and testing new methods, processes or working procedures. Activities must be included in the funding basis for “**Experimentell utveckling**”⁷.

The Pilot and Demo project must start at a minimum of TRL 5 and go to maximum TRL of 7. These activities can include prototype design, demonstration, pilot work, testing and validation of new or improved products, processes or services in environments such as corresponds to realistic operating conditions, where the primary purpose is to make additional technical improvements to products, processes or services that are not yet fixed. This may include development of a commercially usable prototype or a pilot project that is necessarily the final commercial product and which is too expensive to produce to be used only for demonstration and evaluation.

The project consortium must consist of at least one research organization (institute or academia) and two other relevant organizations that are not universities or research institutes.

⁶ [Stödnivåer, definitioner m.m. för bidrag enligt Vinnovas stödordning](#)

⁷ [Stödnivåer, definitioner m.m. för bidrag enligt Vinnovas stödordning](#)

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4.2 Eligible costs

Vinnova's financing is through grants. Grants given by Vinnova to businesses and other organizations that conduct commercial activities are regulated by the rules governing state aid⁸. The rules include, for example, which costs are eligible and how much can be covered by grants. There are three types of funding bases in this call, see Table 1.

Table 1. Maximum funding rates per partner type.

Funding basis	Maximum Funding level Total of overall project	Maximum funding rate per partner for for-profit company			Maximum funding per partner for research organizations
		Large	Medium	Small	
Pre-study <u>genomförbarhetsstudie</u>	75%	50%	60%	70%	100%
Full-scale Innovation industriell forskning	50%	50%	60%	70%	100%
Pilot & Demo experimentell utveckling	50%	25%	35%	45%	100%

5 Funding available for the call

5.1 Funding available for the call

The budget of this call for proposals is 45 million kronor.

5.2 Funding level by project type

Pre-studies may apply for up to 500 000 kronor at a maximum funding level of 75% for the overall project.

Full-scale Innovation projects and Pilot and Demo projects can apply for funding:

- Funding level 1 which is up to 5 million kronor funding, or
- Funding level 2 which is 5-15 million kronor funding.

Both full-scale projects and pilot and demo projects have maximum 50% funding level for the overall project.

6 Prerequisites for the application to be assessed

For a proposal to be eligible for assessment the following requirements must be met:

⁸ [Regler för bidrag | Statligt stöd till ekonomisk verksamhet | Vinnova](#), What costs are eligible are summarized in "[Vinnovas allmänna villkor för bidrag](#)" and described in more detail here: "[Anvisningar till stödberättigande kostnader](#)".

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- ✓ The project partners must be legal entities.
- ✓ The project coordinator and project partners apply for funding must be Swedish organizations⁹.
- ✓ For innovation projects and pilot and demo projects the consortium must consist of at least one research organization (institute or academia) and two other relevant organizations that are not research organizations.
- ✓ Pre-studies must demonstrate industrial relevance by including a letter of support from at least one organization that is not a research organization.
- ✓ Innovation projects and pilot and demo projects must include a letter of commitment from all partners that are not universities or research institutes.
- ✓ Full-scale innovation projects and Pilot and Demo projects can apply for a maximum funding level of 50 percent of the project's eligible costs.
- ✓ Pre-study proposals can apply for a maximum funding level of 75 percent of the project's eligible costs.
- ✓ Applications must include everything requested in Section 9.
- ✓ Maximum project duration is 6 months for pre-studies, and 36 months for Full-scale innovation projects, and Pilot and Demo projects.
- ✓ The project proposals should address at least one of the focus areas (see 2.1) or other area in the Strategic Research and Innovation Roadmap¹⁰.

7 Assessment of proposals

7.1 Assessment criteria

Each application is assessed by the independent evaluators according to the criteria below. Full-scale innovation projects and pilot and demo projects are expected to have detailed work plan, dissemination and implementation plans, and well-defined KPIs (key performance indicators). Pre-studies should describe clearly how the pre-study contributes to the next stage of development and expected impact areas of the innovation. For project applications which are ranked equally and meet the minimum quality criteria for funding, priority will be given to projects in the call's focus areas (see section 2.1).

	Assessment criteria

⁹ A Swedish organization refers to a Swedish-registered organizations including subsidiary of international companies and filials (registered branches) where the costs of the project must be attributable to the Swedish-registered company or filial.

¹⁰ www.swedishmininginnovation.se/roadmap/

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1	<p>Potential</p> <ul style="list-style-type: none"> • <i>The application's scientific quality</i> • <i>Industrial and societal relevance</i> • <i>The projects potential impact with particular attention to the focus of the call</i> • <i>Extent of innovation</i> • <i>TRL of 3-7 (pre-study); 3-7 full-scale innovation projects; and 5-7 pilot & demo projects</i> • <i>How the project contributes to sustainable development</i> • <i>Commercialization potential including global markets Full-scale innovation projects, and Pilot and Demo projects)</i> • <i>How well the project can contribute to a gender equal societal development</i> • <i>The possibility for implementation of results and/or continuation to e.g. EU projects (Full-scale innovation projects and Pilot & Demo projects)</i>
2	<p>Implementation</p> <ul style="list-style-type: none"> • <i>The quality of the organizational structure, methods and implementation of work</i> • <i>Suitability of project deliverables with respect to the project's goals</i> • <i>The soundness of the work plan and budget</i> • <i>Resource allocation (staff, equipment, etc.)</i> • <i>How well gender equality aspects have been integrated in the project plan</i> • <i>Relevance of communication plan or other dissemination activities</i>
3	<p>Stakeholders</p> <ul style="list-style-type: none"> • <i>The expertise and relevant experience of the individual project members</i> • <i>The expertise within the consortium as a whole (incl. complementarity, the balance between industry, academia, research institutes, small and medium-sized enterprises, NGOs etc.)</i> • <i>Supplementary and interdisciplinary expertise within the project</i> • <i>How well the team (key persons) is composed regarding gender distribution, as well as the distribution of power and influence between women and men</i> • <i>How well the partners represent the value chain</i> • <i>Potential to access global markets</i>

7.2 Assessment process

The assessment process is designed to identify the best proposals with reference to the assessment criteria. The assessments of the applications will be performed by a group of evaluators appointed by Vinnova and comprised of both Swedish and international independent experts working under confidentiality. The projects will be divided into the following categories with each category ranked separately by the evaluators:

- 1) Pre-studies

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- 2) Full-scale innovation projects, and Pilot and Demo projects up to 5 MSEK funding (funding level 1)
- 3) Large full-scale innovation projects and Large Pilot and Demo projects 5-15 MSEK funding (funding level 2)

Swedish Mining Innovation anticipates funding a spread of projects of different types and financing levels. To strengthen Swedish Mining Innovation's portfolio should projects be ranked equal in quality, projects that are in the focus areas of the call will be prioritized.

The following is a schematic representation of the evaluation and decision-making process:

1. Proposal and all required forms are to be submitted via Vinnova's eServices portal.
2. Proposals that do not fulfil the formal requirements will be rejected without further motivation.
3. Proposals that meet the formal requirements will be assessed by external national and international independent experts. Their assessment may include a short distance interview with the project leader for Full-scale Innovation projects, and Pilot and Demo projects (both funding levels). The evaluators rank the proposals and give recommendations as to which projects should be funded.
4. Vinnova decides which projects will receive financing based on the independent experts ranking, the recommendation of Swedish Mining Innovation's Steering Board based on contribution to the balance in Swedish Mining Innovation's project portfolio and focus areas, and total budget of the call.
5. Applicants are notified of the decisions.

8 Decisions and Conditions

8.1 Vinnova's decision

How much each party in the project is granted is stated in the decision. Grants may be awarded under Article 25 of Commission Regulation No 651/2014, feasibility study (genomförbarhetsstudie), industrial research (industriell forskning) and experimental development (experimentell utveckling). Grants can also be given in accordance with ordinance (2009: 1101) with instructions for the Swedish Agency for Innovation Systems. The basis for support is stated in the decision and also governs which costs are eligible.

Vinnova's decision to accept or reject an application cannot be appealed.

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8.2 Conditions for granted funding

Vinnova's general terms and conditions for funding apply to this call for proposals¹¹. The terms and conditions include rules for project agreements, conditions for payment, follow-up, reporting and use of results. Scientific publications must be published with open access according to Vinnova's instructions¹².

As the call for proposals is made within the framework of strategic innovation program the following special terms and conditions apply:

- The project should be represented by at least one project partner at conferences and other activities arranged within the Swedish Mining Innovation program, circa 2 times per year for Full-scale, and Pilot and Demo projects; 1 per year for pre-studies.
- For information about the project and for each publication of project results, it must be stated that the work has been carried out within the Strategic Innovation Program Swedish Mining Innovation, a joint program from Vinnova, the Swedish Energy Agency and the Swedish Research Council Formas.
- The project coordinator and other key personnel such as work package leaders, or the most actively engaged from each partner are required to attend a 1-hour gender diversity workshop in the start-up phase of the project organized by Swedish Mining Innovation.
- Annually and when the project submits its final report to Vinnova a summary of the project progress or final results shall be sent to Swedish Mining Innovation program office via e-mail. The summary may be shared and published freely and should not contain any confidential or otherwise sensitive information. See <https://www.swedishmininginnovation.se/projectleaderroutine/> for the template and other information for project leaders.

Additional special terms and conditions may be added for specific projects.

If you do not comply with Vinnova's terms and conditions, you may be liable for repayment. This also applies if you have been granted funding incorrectly or with an excessive amount.

¹¹ Terms and conditions are found on Vinnova's website, together with help to understand and meet the conditions: <https://www.vinnova.se/en/apply-for-funding/rules-for-our-funding/terms-and-conditions-for-our-funding/>

¹² [Anvisning för öppen tillgång till vetenskapliga publikationer](#)

9 How to apply

Applications are to be submitted electronically via the web-based application submission system (eServices portal) which can be accessed at Vinnova's website. The following documents are also to be uploaded¹³:

- Project summary (Projektreferat) using the template, maximum two A4 pages
- Project description (Projektbeskrivning) using the template
- CV for key persons in the project team (at least one person per project partner). Maximum of three A4 sized pages per CV.
- Signed letters of commitment, using the template, from all partners except universities and research institutes (required for full-scale innovation projects, and Pilot and Demo projects only)
- Letter of support from at least one company or other relevant organization that is not a university or research institute (required for pre-studies only). No template is provided. The letter should describe why the project is important to carry out, especially related to the Swedish mining and metals industry.
- If the proposal is a continuation of a project previously granted funding within Swedish Mining Innovation a summary of the content and results should be attached to the proposal (max. 2 pages). It should be clear in the proposal what was done in the previous project and how the proposed project will continue this work. No template is available.

If you do not receive a confirmation by email within 24 hours of submitting the proposal please contact Vinnova.

When submitting the proposal, the project summary should be submitted in Vinnova portal and also be emailed to the Swedish Mining Innovation Program office Lawrence.Hooey@swedishmininginnovation.se. The project summary can be shared and published freely and should therefore not contain any confidential or otherwise sensitive information.

The applications will be evaluated by international reviewers, so it is strongly recommended that proposals are written in English.

After the submission deadline, no changes can be made to the proposal unless requested by Vinnova.

¹³ Templates are available on the call's webpage

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10 Who can read the proposal

Applications received by Vinnova become public documents but Vinnova does not release data of individual business or operating conditions, inventions and research results in cases where it can be assumed that the individual could suffer damage if the information were to be made public.

Documents sent to the organization responsible for the strategic innovation program (Swedish Mining Innovation Program Office) are not covered by Vinnova privacy policy. Documents sent to the Swedish Mining Innovation Program office should not contain confidential or sensitive information.

Appendix 1 – TRL

STRIM uses the following TRL

TRL 1 – basic principles observed

TRL 2 – technology *concept formulated*

TRL 3 – experimental *proof of concept*

TRL 4 – technology *validated in lab*

TRL 5 – technology *validated* in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL 6 – technology *demonstrated* in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL 7 – system *prototype demonstration in operational environment*

TRL 8 – system *complete and qualified*

TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

Open Call Project TRL Levels

