Schweizerische Eidgenossenschaft
Confédération suisse
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Swiss Confederation

Federal Department of the Environment,
Transport, Energy and Communications DETEC

Swiss Federal Office of Energy SFOE
Energy Research and Cleantech

Research Programme Bioenergy
Call 2024 for Research Proposals

The overarching aim of the Research Programme Bioenergy is to support projects addressing novel concepts and technologies for the energetic use of biomass by substantially contributing to the Swiss energy system while achieving a high level of efficiency. The Research Programme Bioenergy elaborates calls to fund innovative technical research projects. In line with the Federal Energy Research Masterplan for the period from 2021 to 2024 and with the Energy research concept of the Swiss Federal Office of Energy, the Research Programme Bioenergy defines research priorities through this call.

For this call, the Directive on the submission and evaluation of applications for financial support of energy research, pilot and demonstration projects applies.

Scope

Switzerland is particularly affected by climate change, with warming today of over 2 °C compared to pre-industrial levels. Switzerland aims to halve its emissions by 2030, and the Federal Council wants to reach net zero greenhouse gas emissions by 2050. Reducing emissions in line with these goals will require the exploitation of all technical potentials, the decarbonisation of the economy and the creation of framework conditions that enable sustainable everyday life[1].

Of Switzerland's total greenhouse gas emissions: 33% are caused by transport (excluding air transport); 23% by buildings; 23% by industry; 21% by agriculture, waste management and emissions of synthetic gases[1].

Reducing greenhouse gas emissions means the substitution of fossil energy carriers with renewable ones. Thus, the topics of climate and energy are inevitably interlinked. In the scenario calculations for the Energy Perspectives 2050+, biomass plays a key role in the decarbonisation of the energy system. Biomass is used as an energy source in all sectors and comes in the form of solid biomass (logs, wood chips, wood pellets), biogas (raw biogas from fermentation plants or processed into bio-methane), liquid biogenic fuels (e.g. second-generation biodiesel) and biogenic waste from settlements, industry and commerce. Due to the increased use of biogenic energy sources in all sectors, the biogenic share of gross final consumption in the target scenarios increases to 16-18 % in 2050 and beyond, depending on the variant, while it remains at 10 % in the “Business as usual” scenario[2].

The scope of this call is focussed on the energetic use of biomass within anaerobic digestion combined with its multiple benefits in order to generate an added value economically as well as environmentally.

Researchers are invited to submit research proposals in one of the following topics. The focus is primarily on technical and techno-economical aspects. The projects must be strongly related to Switzerland.

Projects can concentrate on one or several aspects within one of the two main topics proposed and do not have to treat all sub-points and research questions listed.

[1] https://www.bafu.admin.ch/bafu/en/home/topics/climate/in-brief.html
[2] https://www.bfe.admin.ch/bfe/de/home/politik/energieperspektiven-2050-plus.html

Research Topics

Topic 1: Capture and utilisation of CO_2 from biogas plants (agricultural and industrial biogas plants, wastewater treatment plants)

The following research questions (not exhaustive) are of interest:

- What is the potential throughout Switzerland and where can utilisation already take place today or where is utilisation already established?
- Is there room for improvement with regard to capture technologies, downstream processes and system integration in general?
- Which utilisation options make sense in the Swiss context?
- How can the process chain best be established in the Swiss context, e.g. with regard to centralised vs. decentralised plants for both the utilisation of organic material and the capture and utilisation of CO_2?
- How can the profitability of biogas plants be increased through the utilisation of CO_2 (CCU)? What does this mean in terms of energy, the environment and the economy? What are the technical and economic hurdles that make utilisation difficult?
- What could be relevant utilisation paths for CO_2 for use as fine and platform chemicals in Switzerland? What does the economic viability look like? What framework conditions are necessary?

Topic 2: Flexibility of biogas plants

The following research questions (not exhaustive) are of interest:

- What process engineering measures are necessary to increase the flexibility of biogas plants?
- What influence do substrate mixtures with different substrates and mixing ratios have on biogas production, the methane content and the reaction kinetics, especially with regard to increasing the flexibility of a biogas plant?
- What do operating concepts look like in this context?
- How can biogas plants contribute to fulfil the flexibility needs of the energy system and the electricity grid caused by an increasing share of fluctuating renewable energies? How can biogas plants compensate for short-term fluctuations in the daily and weekly range, as well as the operation of seasonal profiles in electricity and heat demand?
- What business models are conceivable under the current legislation?
- What effects can be expected from an economic and ecological perspective at plant and energy system level?

Call Specifications

The call is addressed to universities (including ETH-domain), universities of applied science, further research organizations and the private sector in Switzerland. The participation of young scientists in the research teams is encouraged. Researchers in the public and private sector can apply for remuneration of the personnel costs according to the maximum rates provided in the Directive on the submission and evaluation of applications for financial support of energy research, pilot and demonstration projects. The Research Programme Bioenergy does not pay any contribution to overhead costs.

Wherever possible and reasonable, the participation of commercial and industrial partners is strongly recommended to ensure the relevance of the research to technological development and to the needs of society. Furthermore, cooperation and exchange with already ongoing projects or consortia (e.g. SWEET programme) in this topical field funded by SFOE or other funding bodies is highly appreciated.

An adequate share (usually at least 30%) of own and third-party contributions (in-kind and/or cash) is expected and has to be formally confirmed at the proposal submission.

Supported projects typically receive public funding between 100–300 kCHF and have a duration between 24 and 36 months. However, there are no formal limits. The indicative call budget is in the range of 1.5–1.8 MCHF and finally depends on the requested distribution of the payments over the fiscal years.

Applicants must comply with the conditions set out in the Directive on the submission and evaluation of applications for financial support of energy research, pilot and demonstration projects.

Application procedure

The call follows a one-stage submission and evaluation procedure which means that full proposals have to be submitted (approximately 20 pages, see full proposal template).

The main project partner (= coordinator) prepares a full proposal using the template available on the SFOE Research Programme website either in English, German or French. Please be aware that the required enclosures (e.g. financial spreadsheet) are listed in the forms. Only research & development proposals (no pilot & demonstration or sandbox projects) are eligible.

The following points should be noted for project proposals:

- The detailed topics and guiding questions proposed in the topic outlines are indications that do not have to be fully reflected in the project proposals
- The list of detailed topics and guiding questions is not exhaustive. Further research ideas can be submitted that fit the focus
- The projects will be assessed on the basis of the evaluation criteria for research projects (see Directive on the submission and evaluation of applications for financial support of energy research, pilot and demonstration projects)

The full-proposals have to be submitted as one single PDF file (including all enclosures) by e-mail (subject: "Bioenergy Call 2024") to energieforschung@bfe.admin.ch

by 09 September 2024.

The receipt of the full proposal will be confirmed in due time. If you do not receive confirmation of your full proposal submission by 13 September 2024, please contact Dr Sandra Hermle (see below).

Approval

The SFOE strictly approves the full proposals according to the ranking and the available budget. Per main project partner (responsible person) a maximum of two full proposals are approved.

Tentative timeline

10 June 2024	Launch of the call
19 July 2024	**Deadline for questions regarding the call**
09 September 2024	**Deadline for submission of full-proposals**
October 2024	Notification of approved proposals
November 2024 - January 2025	Launch of approved projects

Contact information

If you have any questions regarding the call, please do not hesitate to contact:

Dr Sandra Hermle
Tel. 058 465 89 22; sandra.hermle@bfe.admin.ch

The deadline for questions is 19 July 2024. Answers to questions of general interest and relevance will be published on the Research Programme Bioenergys' website.

No extension of the deadline will be granted.