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

Federal Office of Transport FOT
Safety Division

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Implementation of the Energy Strategy 2050 in the public transport sector (ESPT 2050)

Research programme for the 2025–28 funding period

Reference: BAV-021.11-11/7

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Contents

Abbreviations

IP-RailO	Implementing provisions on the Railways Ordinance
H-SD	Head of Safety Division
ARE	Federal Office for Spatial Development
FOEN	Federal Office for the Environment
FOT	Federal Office of Transport
FOCA	Federal Office of Civil Aviation
SFOE	Swiss Federal Office of Energy
ERI	Dispatch on the promotion of education, research and innovation (multi-year funding programme of the State Secretariat for Education, Research and Innovation; SERI)
AG	Advisory group
RIFA	Railway Infrastructure Fund Act
PPA	Public Procurement Act
FC	Federal Council
EG	Expert group
EnA	Energy Act
ES 2050	Energy Strategy 2050
ESPT 2050	Energy Strategy for Public Transport 2050
RIC	Research and Innovation Committee of the FOT (PC)
RIPA	Federal Act on the Promotion of Research and Innovation
GCarA	Goods Carriage Act
IM	Infrastructure Manager
COMO	Coordination Office for Sustainable Mobility
NASC	Non-amortisable supplementary costs
PT	Public transport
PC	Programme Committee (RIC)
PAB	The programme’s awarding body (the FOT’s management team)
Pkm	Passenger kilometres
PM	Programme management
PO	Programme office
PT	Programme team
SNSF	Swiss National Science Foundation
SubA	Subsidies Act
GHG	Greenhouse gases
PTC	Public transport companies
DETEC	Federal Department of the Environment, Transport, Energy and Communications
PPO	Public Procurement Ordinance

Summary

Context

In continuation of the research programme Energy Strategy for Public Transport 2050 (ESPT 2050), the new funding period 2025–28 retains the principal goals of the previous period. It thereby focuses upon some specific goals related to the Federal Council's 2023–27 legislative programme.[1] In particular, the ESPT 2050 places great emphasis on the reduction of greenhouse gas (GHG) emissions to net zero by 2050, which was incorporated into the new Climate and Innovation Act.

The ESPT 2050 aims to create significant impetus for public transport through three areas of activity: by improving the level of available knowledge, sharing best practices, and changing patterns of behaviour.

Goals of the ESPT 2050 programme

The ESPT 2050's goals are generally reviewed every four years during the continuation of the multi-year research programme. They are validated by the Federal Department of the Environment, Transport, Energy and Communications (DETEC), which is responsible for government research in this area of activity.

Die ESPT 2050 supports coordinated research on public transport and rail freight transport geared towards the implementation of the Federal Energy Strategy. It also takes account of other activities in this area, especially the Swiss Federal Office of Energy's (SFOE) funding programme.

Definition of scope in relation to other funding programmes

Based on the Railway Infrastructure Fund Act and the dispatch on the first package of measures under the Energy Strategy 2050 (ES 2050), the Federal Office of Transport (FOT) can carry out research on energy-related topics within the scope of its responsibility.

During the 2025–28 funding period, the FOT engages in regular contact, in particular, with the offices within DETEC that deal with energy-related matters in public transport and rail freight transport. It proposes a streamlined structure to facilitate the development and implementation of measures aiming to achieve the goals of the Confederation's ES 2050 in this area. Interdepartmental coordination takes place via existing offices, mainly via the Coordination Office for Sustainable Mobility (COMO). Discussions with other federal offices or DETEC's General Secretariat will also be held if necessary. Other supporting offices outside of DETEC will be consulted if required.

Consultation of relevant actors

The industry's requirements were identified and incorporated into the process of developing the research programme. The tier-one universities, universities of applied sciences, relevant industry organisations, infrastructure managers and other federal offices were consulted. Major developments in energy and railway research in Europe were also evaluated and documented in a report[2] for the ESPT 2050 and rail infrastructure research programmes.

Criteria and requirements

The ESPT 2050's contribution is limited to the following stages of the research and innovation process: applied research, experimental development, pilot and demonstration projects, field trials and analysis, preliminary studies and studies on the potential of technological, political and behaviour-related measures. To increase the impact of activities, the ESPT 2050 may occasionally (co-)fund knowledge transfer within the scope of the programme. To be eligible for funding from the programme, a project must (without impairing the safety and quality of the service or the environment):

[1] Federal Council adopts guidelines and goals for the 2023–27 legislative programme (admin.ch)
[2] 2023 research observation of the ESPT 2050 and RIF programmes

- make a contribution to advance state-of-the-art developments in Switzerland in the areas of energy efficiency, production of renewable energies and/or management of energy resources;
- enable optimal use of all resources related to public transport and/or rail freight transport in terms of energy efficiency and cost-effectiveness;
- contribute directly or indirectly to reducing CO_2 emissions.

Priority topics of the ESPT 2050

The weighting of the various topics is determined by the programme's requirements and its development over the course of the funding period. Announcements aimed at potential project participants will mainly be published in the newsletter, on the website and in an annual report on activities. However, the programme will remain open to new topics that prove relevant over the course of the research period. The following priority topics were defined in advance for the 2025–28 funding programme:

- Energy-related optimisation and reduction of CO_2 emissions,
- Energy production and intelligent control of energy systems,
- Instruments and other key factors for the implementation of the Energy Strategy,
- Data, monitoring and reporting,
- Knowledge transfer and the sharing of best practices.

1 Introduction

In 2013, the Federal Council tasked the FOT with making a contribution to the Energy Strategy 2050 (ES 2050) in the areas of (i) public passenger transport and (ii) rail freight transport. The FOT thus launched the 'Energy Strategy for Public Transport 2050' (ESPT 2050) programme in 2013. Since 2014, this instrument has enabled funding to be awarded to applied research and pilot and demonstration projects to support the Energy Strategy in these areas.

In continuation of the ESPT 2050, the programme's 2025–28 funding period will focus in greater depth on the main goals of the previous period: It aims to clarify the conditions for receiving support from the ESPT 2050 and contribute to coordinating the implementation of the Energy Strategy in Switzerland's public transport and rail freight transport sectors.

The ESPT 2050 aims to create significant impetus for public transport (PT) via three areas of activity

- improving the level of knowledge available,
- sharing best practices, and
- changing behaviour.

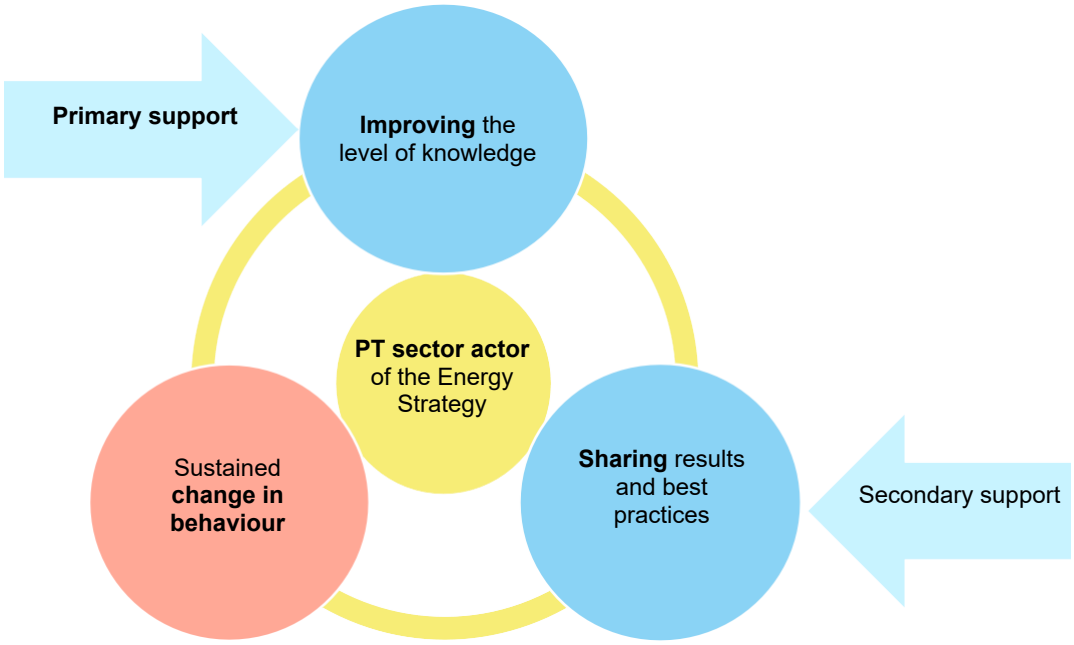

Fig. 1 The programme's three areas of activity

- **Improving the level of knowledge available:** Supporting technical and scientific research projects as well as pilot and demonstration projects.
- **Sharing best practices:** Supporting organisational projects which aim to create platforms for the sharing and communication of best practices (workshops, guidelines, publications, etc.).
- **Sustained changes in behaviour:** Supporting projects which aim to embed energy awareness within the organisations. Supporting monitoring projects, statistics projects, projects on the analysis of human behaviour and regulatory provisions (instruments).

1.1 Context

The ESPT 2050 research programme addresses the Federal Council goals set out in its 2023–27 legislative programme. The ESPT 2050 focuses on climate protection in particular. Reducing GHG emissions to net zero by 2050 – as set out in the new Climate and Innovation Act – is also a key goal for the ESPT 2050. In line with the legislative programme, this reduction is to be achieved, in particular, by improving vehicle energy efficiency and expanding renewable energies.

The ESPT 2050 research programme was defined in cooperation with the Swiss Federal Office of Energy (SFOE). The SFOE takes the lead role on federal government research in the field of energy. This document also aims to facilitate communication with the actors concerned and coordination with other federal offices involved.

The ESPT 2050 research programme is part of the 'Sustainable Transport 2025–28'[3] research concept produced jointly by the Federal Roads Office (FEDRO) and the FOT. 'Sustainable Transport' is one of 11 research concepts defined as a basis for the Federal Council's dispatch on the promotion of education, research and innovation (ERI) for the 2025–28[3,4] period. This research concept helps to coordinate the planned government research of the federal offices interested in the topic of 'sustainable transport' and sets out what the FOT proposes in relation to the implementation of the ES 2050, which it is carrying out on behalf of the Federal Council in the areas of public transport and rail freight transport, during the 2025–28 funding period. The 'Sustainable Transport' research concept also provides a platform for guidance and cooperation with actors in research outside of the Federal Administration.

1.2 Research areas and definition of their scope

The research projects must support the implementation of the Confederation's Energy Strategy 2050 in the field of public transport.

This programme covers the awarding of subsidies for research activities directly related to the Energy Strategy in the areas of (i) public transport and (ii) rail freight transport. To be eligible for funding from the ESPT 2050 programme, a project must (without impairing the safety, quality of service or the environment):

- contribute to the advancement of state-of-the-art developments in Switzerland in the areas of energy efficiency, the production of renewable energies and/or the management of energy resources, particularly that of distributed energy generation;
- enable improved use – in terms of energy efficiency and cost-effectiveness – of all resources (in particular rolling stock, infrastructure, buildings and additional equipment) related to public transport and/or rail freight transport;
- make a direct or indirect contribution to cutting CO_2 emissions, either in overall terms or in relation to the transport service (CO_2 emissions per passenger kilometre or per tonne kilometre).

The ESPT 2050's contribution is limited to the following stages of the research and innovation process:

- **Applied research:** Applied research covers activities that aim to obtain new findings whose main goal is to help resolve industry-relevant problems.
- **Experimental development:** Experimental development is systematic activities using existing research or empirical knowledge to create new products or processes or achieve significant advancements in existing products and processes.

[3] https://www.astra.admin.ch/dam/astra/de/dokumente/forschung_im_strassenwesen/forschungskonzept_nachhaltiver-verkehr_2021- 2024.pdf.download.pdf
[4] On 8 March 2024, the Federal Council adopted the dispatch on the promotion of education, research and innovation for the attention of Parliament, https://www.sbfi.admin.ch/sbfi/de/home/bfi-politik/2025-2028.html

- **Piloting and demonstration:** Pilot and demonstration projects are carried out at the interface between the laboratory and market. They involve the testing and assessment in a real environment (laboratory tests or field tests and analysis) of new solutions (technical systems, prototypes) and approaches (including socio-economic concepts and business models).
- **Field tests and analysis:** Field tests and analysis enable the testing and evaluation of new technologies, the assessment of government measures or data collection required for the performance of these tasks.
- **Preliminary studies and studies on potential:** Preliminary studies and studies on potential enable the identification and early assessment of the potential of innovative solutions and technological, political or behaviour-related experimental measures.

To increase the impact of activities, the ESPT 2050 research programme can also (co-)fund knowledge transfer within its scope.

The ESPT 2050 research programme is not intended to support basic research or other forms of implementing innovations.

1.3 Legal basis

In its dispatch of 4 September 2013[5] on the Energy Strategy's first package of measures, the Federal Council tasked the FOT with defining the funding and implementation of energy-related projects concerning public transport and rail freight transport.

The ES 2050, which has been adopted since then, resulted in the complete revision of the Energy Act (EnA) of 30 September 2016.[6] The goals of the first package of measures are mainly based on Arts 49, 50 and 53 EnA.

Other legislation relevant to the FOT's research activities relating to the implementation of the ESPT 2050:

- Art. 16 para. 2 of the Federal Act of 14 December 2012 on the Promotion of Research and Innovation[7] (RIPA), which establishes the basis for the provision of the instruments required to perform the activities of the ESPT 2050 (policy research),
- Federal Act of 5 October 1990 on Financial Assistance and Subsidies[8] (Subsidies Act, SubA),

The following provisions also apply:

- the quality assurance guidelines on federal government research[9] (as at: 26 March 2014) of the interdepartmental coordination committee for federal government research and
- General terms and conditions (GTC) of the Confederation for research contracts[10] (GTC for research contracts) (as at: January 2024).

Art. 10 of the Goods Carriage Act[11] (GCarA) also provides for the provision of investment grants for technical innovations in rail freight transport. This means projects concerning the implementation of the ES 2050 in rail freight transport can also be supported.

The ESPT 2050 programme is designed to provide support for projects through funding contributions in accordance with SubA as well as for the awarding of research contracts (contract research) in accordance with Art. 16 para. 2 RIPA.

[5] BBl **2013** 7565
[6] SR **730.0**
[7] SR **420.1**
[8] SR **616.1**
[9] https://www.ressortforschung.admin.ch/dam/rsf/de/dokumente/dokumentation/publikationen/qualitaetsrichtlinien/richtlinien-qs-dt-Revi- sion-v.6.pdf.download.pdf/RichtlinienQS_dt_Revision_V.6_DE.pdf
[10] General terms and conditions (GTC) of the Confederation for research contracts (as at August 2024)
[11] SR **742.41**

Additional contracts, such as for the production of supplementary studies, are awarded in accordance with the Federal Act of 16 December 1994 on Public Procurement[12] (PPA).

Within the scope of the responsibilities assigned to it by the Confederation, the FOT also aims to develop its legal instruments in the aim of firmly embedding the programme's results in the public transport and rail freight transport sectors on a long-term basis.

[12] SR **172.056.19**

2 Goals of the ESPT 2050 programme

Through the ESPT 2050, the FOT has established an operational structure for implementation of the ES 2050 goals. The ESPT 2050 designs, implements and shares measures aimed at licensed transport companies, rail freight transport companies or federal government funding recipients as well as other actors that influence these companies, particularly universities through their scientific contributions.

The findings obtained in the previous funding periods clearly highlight the need to support the widespread introduction of theoretical results and pilot projects as well as to strengthen the legal basis for the management of energy production by licensed companies.

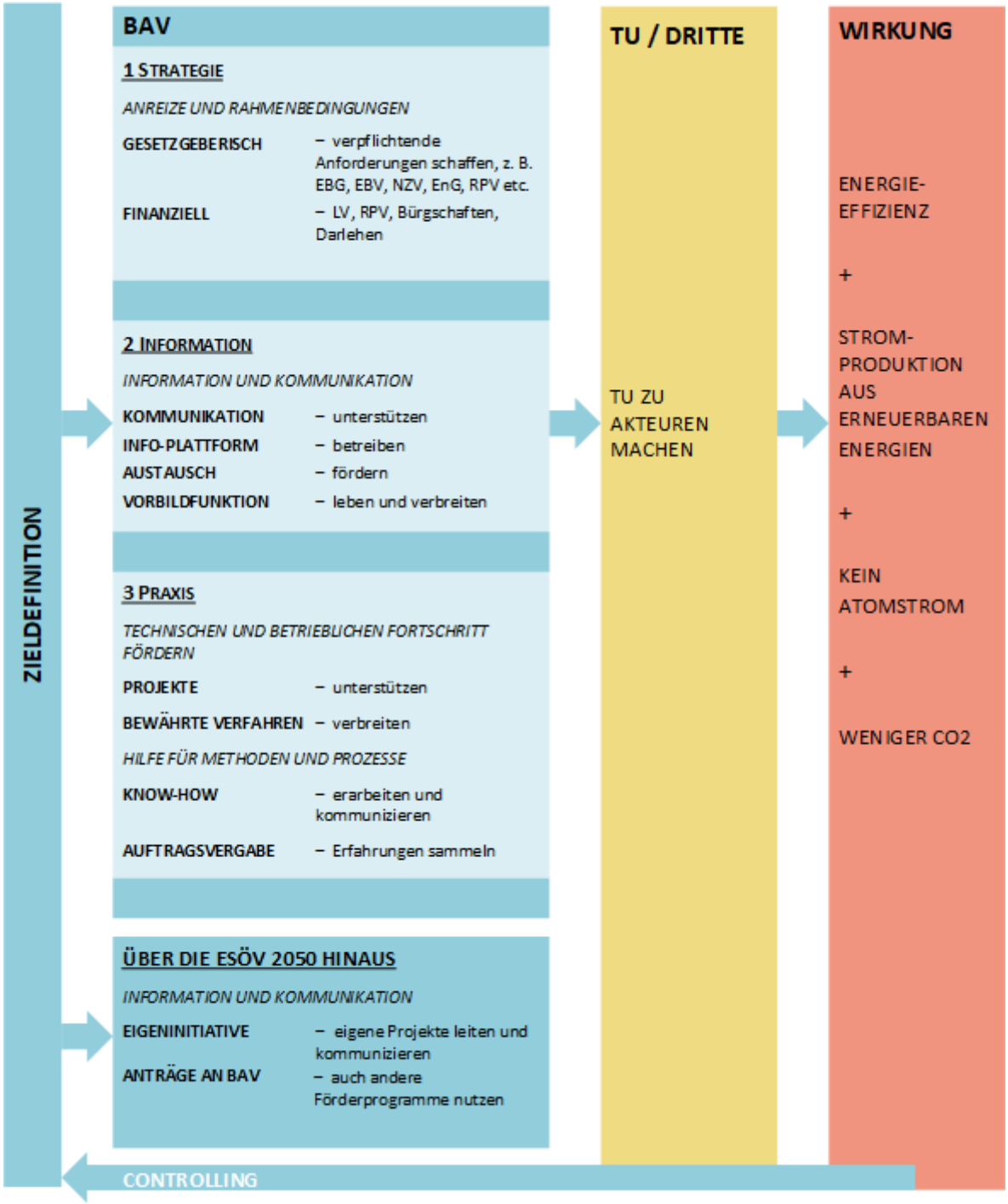

Figure 2: Interaction between the ESPT 2050's goals and main tasks

The ESPT research programme supports coordinated research geared towards implementation of the Energy Strategy in the areas of public transport and rail freight traffic. It also covers other activities in the transport sector, in particular the SFOE's new funding programme.

2.1 Strategic goals

By adopting the Climate and Innovation Act on 18 June 2023, Switzerland committed to striving towards net-zero emissions by 2050. The goal is to prevent more GHG emissions being released into the atmosphere than can be captured by natural and technical carbon storage solutions (net-zero goal). The measures to achieve this goal are set out in the CO_2 Act[13].

The first package of measures on the Energy Strategy 2050 aims to improve energy efficiency and promote the expansion of renewable energies.

The ESPT 2050 supports these goals by providing impetus for the actors concerned to enable the public transport sector to take suitable measures independently.

2.2 Impact goals

Over the long term, this programme's goals represent a response to energy-specific aspects of recurring requirements of actors in the energy and transport sectors. These actors should aim to continually improve the level of their knowledge, to apply relevant best practices and to change their behaviour patterns.

To achieve progress on the path defined by the ESPT 2050, the activities will aim to achieve an impact in the following five areas:

1. **Improving the actors' own energy efficiency:** Public transport's energy efficiency will be improved by 30% by 2050 (compared with 2022).
2. Withdrawing **from nuclear energy:** The public transport sector's energy requirements will be fully met by renewable energies.
3. **Cutting CO_2 emissions:** The goal is for public transport to be carbon neutral by 2050. Only eco-friendly drive system technology will be used on the road and railways from 2040.
4. **Contributing to power production from renewable energies:** To replace nuclear power and to meet electric mobility's growing demand for power, more electricity must be produced from renewable energies. The transport companies must increase their potential for generating solar and wind energy on rooftops and building façades as well as for combined heat and power in systems where this is feasible at a faster pace.
5. **Participating in intelligent grid management:** The transport companies will take advantage of their expertise in intelligent power grid management or the development of capacity in this area to enable more widespread distributed generation, use and storage of new renewable energies and to make this an attractive option.

[13] BBl **2020** 7847

3 Priorities for 2025–28

The **priorities** to be developed during this funding period have been defined based on the summary findings of the activities undertaken since 2014 as part of the ESPT 2050 and from the information obtained during a consultation of key industry actors and from various programmes related to the Confederation's ES 2050.

The weighting of the topics (regardless of their position on the list below) depends on the requirements and development of the programme over the course of the funding period. Announcements aimed at potential project participants are generally published in the newsletter and on the website. The programme also remains open to new topics which prove relevant over the course of the research period.

3.1 Topic 1: Energy optimisation and reducing CO_2 emissions

Innovative projects that aim to improve the energy efficiency of the public transport system and rail freight transport, especially of the vehicles of all modes of transport relevant to the ESPT 2050 (thermal, structural, electrical optimisation, drive system optimisation, use of renewable energies and on-board energy storage), auxiliary systems (construction machinery, etc.), infrastructure (points systems, etc.), buildings, the energy system (energy storage, transport and conversion, network design, etc.) and vehicle design adapted to the operating conditions. This set of measures contributes to reducing CO_2 emissions in the public transport sector.

3.2 Topic 2: Energy production

Projects that aim to increase the production of renewable energies or improve their efficiency by innovatively harnessing the potential of public transport and rail freight transport, in particular by utilising the latest developments in photovoltaics, wind power, recuperation (recovery of electrical and thermal energy), the optimisation of internal consumption, biomass, biogas and the production of synthetic fuels, etc.

3.3 Topic 3: Intelligent management of the energy system

Innovative projects that contribute to the intelligent management of the energy system, from the producer to the consumer, by incorporating storage solutions. The goal is to optimise energy usage in public transport (reliability and supply costs) and ensure compatibility with public energy grids. For example, through dynamic power control in energy production systems managed by the public transport system and the search for contributions to the energy market.

3.4 Topic 4: Instruments and other key factors for implementation of the Energy Strategy

Innovative projects that aim to develop incentives and other technological, legal and sociocultural levers to provide and/or adapt instruments for the successful implementation of the Energy Strategy in public transport and rail freight transport. For example, by creating financial incentives for the transmission of electricity from the railways' DC grid to the transmission grid.

3.5 Topic 5: Data, monitoring and reporting

Projects to develop sets of key figures and benchmarks to promote the understanding of energy efficiency in public transport and rail freight transport. Statistics, in particular, are part of the assessment of progress achieved in energy efficiency by the industry and its actors. Projects that encourage industry actors to carry out benchmarking to identify and implement measures enabling them to actively participate in the energy transition.

3.6 Topic 6: Knowledge transfer and sharing of best practices

Projects that promote the extensive sharing of knowledge and best practices between industry actors and activities supporting the communication, use of and addition of value to the results achieved as part of the programme.

3.7 Topic 7: Other non-priority topics in the creation of this document

Where justified by the situation, the programme may also be opened up to other topics which were not priorities when this document was created, but which are in line with the legal framework and the goals set out in sections 1 and 2.

4 Coordination

The ESPT 2050's activities during the 2025–28 funding period are defined based on the ES 2050's institutional framework and the Confederation's Climate Strategy 2050. The ESPT 2050 is part of the FOT's contributions to the ES 2050 as a whole, involving constant dialogue with the various offices involved.

The ESPT 2050's role is primarily to supplement the research and innovation activities supported by other public offices, in particular Innosuisse, the SNSF and the cantonal funding programmes. The ESPT 2050 undertakes to forward potential project applications to these offices where applicable.

At DETEC level, each individual office represents a body that can itself influence the energy efficiency of Switzerland's overall transport system in terms of various mobility-related aspects, or even demand for mobility. For example, the development of buildings and airports (Federal Office for Spatial Development [ARE], Federal Office of Civil Aviation [FOCA]) influences the demand for transport services (in terms of passenger kilometres [Pkm] covered), development planning (FEDRO, ARE, FOT) has an impact on traffic volumes and the modal split (Pkm/modes of transport => kWh), while environmental standards and their implementation (Federal Office for the Environment [FOEN], FEDRO) govern the choice of technology (drive system, energy sources: diesel/petrol/electricity). This means every DETEC office can develop or implement instruments to improve the energy efficiency of transport.[14] The level of impact depends directly on the coordination of the measures undertaken.

An officially established mechanism for synchronising measures only currently exists with the SFOE, which was assigned the lead role for the Confederation's ES 2050. The FOT calls on the SFOE for a position statement on every project submitted as part of the ESPT 2050 and on funding contributions if the proposal is accepted. The SFOE's implementing directive provided a model for the ESPT 2050's implementing provisions, providing project participants with a guarantee that the SFOE and the FOT use similar procedures. The programme is implemented in close cooperation with the SFOE. That also applies to the awarding of financial assistance and project support.

During the 2025–28 funding period, the FOT undertakes to establish links through a streamlined structure with the DETEC offices dealing with energy-related matters in public transport and rail freight transport to facilitate the development and implementation of measures to achieve the Confederation's ES 2050 goals in this area. Interdepartmental coordination takes place via existing offices, mainly via the Coordination Office for Sustainable Mobility[15] (COMO). Discussions with other federal offices or DETEC's General Secretariat will also be held if necessary. Other supporting offices outside of DETEC will be consulted if required.

In particular, collaboration with tier-one universities, universities of applied sciences and other research facilities or centres is also envisioned. Thematic workshops are held if necessary. The ESPT 2050 research programme can also support national or international (scientific) conferences organised by Swiss research institutes. Where necessary, the programme also aims to coordinate its activities with those of energy producers and suppliers, cantons and relevant industry associations.

The results and reports produced by the funded projects are regularly published on the Confederation's ARAMIS[16] information platform. Depending on knowledge-sharing potential, they may also be presented directly to relevant parties at workshops or conferences.

[14] SFOE: COMO, P+D programme, SwissEnergy, energy research programmes, SWEET; ARE: conurbation programmes; FEDRO: P+D programme; Innosuisse: innovation projects; Flagship programme; FOEN: The promotion of environmental technology FOEN: Special funding for air transport
[15] https://www.energieschweiz.ch/projektfoerderung/komo/ (only available in German, French and Italian)
[16] www.aramis.admin.ch

5 Definition of the main areas for the implementation of results

The strategic goals are generally defined every four years and validated by DETEC, the federal department responsible for government research in this area (Art. 16 para. 5 RIPA).

Based on the programme's results, discussions with the advisory group and the other federal offices involved, particularly the SFOE, which plays a lead role in the coordination of the ES 2050, the FOT's management team updates the priorities and supplementary topics – to ensure correct alignment of the research programme – on an annual basis.

The FOT developed this programme taking account of the 'Sustainable Transport 2025–28' research concept in coordination with the two programmes – rail infrastructure research and innovations – in the field of regional passenger transport (RPT). The priorities are based on the FOT's research requirements which were defined in consultation with the groups involved. Methodological support is provided for the State Secretariat for Education, Research and Innovation's (SERI) programmes led by the FOT if required.

6 Organisation

6.1 Available instruments

Every project participant can submit applications for support from this programme. The FOT can decide on whether an application merits support from the ESPT 2050 provided the requirements are met. No legal entitlement to financial assistance applies. The FOT may reject applications.

The evaluation criteria are defined in the implementing provisions on the ESPT 2050.

To be eligible for funding, a project must also explore research questions concerning the research priorities set out in this document. Its scientific quality and measures should be suitable for achieving results that exceed the current level of knowledge available in Switzerland and close gaps in knowledge not under patent protection. The ESPT 2050's funding focuses on the research and development stages set out in section 1.2.

The selection of projects, their support, funding and distribution between the offices involved all play a key role in ensuring effective use of the resources provided by the FOT. However, these project-related measures must not overshadow the importance of supplementary instruments which do not come into play until a later stage in the implementation process and are much greater in terms of their duration and financial scale. To achieve the ESPT 2050's goals, the FOT also plans to use additional specific instruments available to it, such as performance agreements or the implementing provisions of 15 December 1983[17] on the Railways Ordinance (IP-RailO). These instruments at the other end of the chain of measures are very effective levers for influencing the transport companies' behaviour. However, they only achieve their full impact if their requirements are based on an outstanding level of knowledge and they are accepted by the participating actors.

Based on this approach, the FOT's efforts aim to achieve a level of knowledge on the basis of which changes can be proposed and the coordination between the offices involved can be supported and they can be incorporated into, if appropriate, a legal framework binding on all transport companies.

The FOT also awards support and research contracts externally, while the implementation and funding of energy-related pilot and demonstration projects, which extend beyond the public transport sector, are entrusted to the SFOE to ensure the provision of appropriate technological and legal support. The FOT may also carry out such projects itself where deemed appropriate after consultation with the SFOE. Other projects are also conceivable that extend beyond public transport, but do not necessarily focus on energy, but are instead more relevant to, for example, the FOEN (environment), ARE (spatial planning) or FEDRO (road transport). Such projects will be forwarded.

[17] SR **742.141.11** The text is not published in the Official Compilation; it can be viewed on the FOT's website at www.bav.ch > Rechtliches > Weitere Rechtsgrundlagen und Vorschriften > Ausführungsbestimmungen zur EBV (AB-EBV).

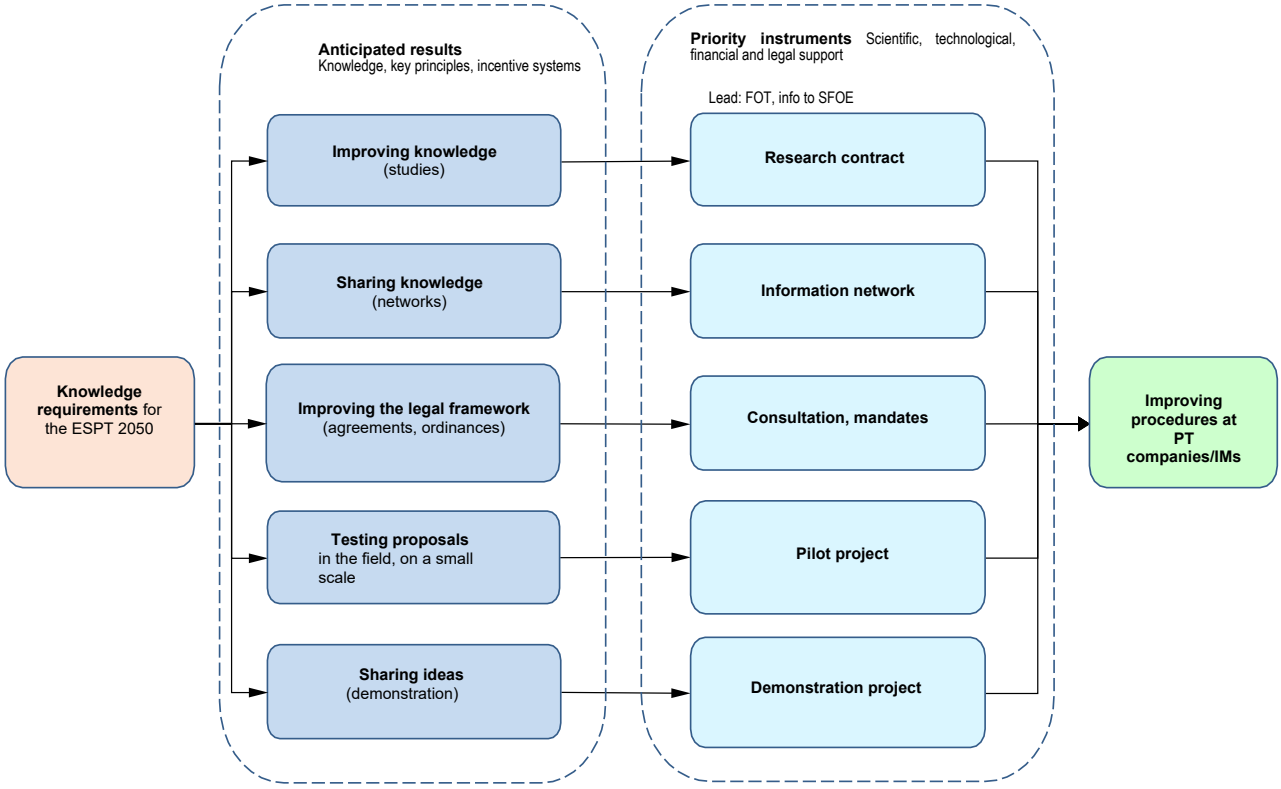

Figure 3: Selection of the key instruments based on the anticipated results

This combination of FOT-specific instruments with those of partner offices significantly improvesthe coherence and effectiveness of implementation.

6.2 Bodies and roles

To ensure research on rail infrastructure is managed and coordinated efficiently, the FOT has adopted the following organisational structure:

- **The programme's awarding body:** The FOT's management team is the awarding body for the programme and responsible for all aspects of it. It defines the principles and key elements of implementation. The awarding body is kept regularly informed of activities being implemented and takes any management measures or corrective action required. Even though it has delegated its decision-making powers to the Programme Committee (PC), the awarding body continues to play a key role in the approval of contracts with the programme participants and contracting party.
- **Programme Committee (PC):** The Federal Office of Transport's (FOT) Research and Innovation Committee is the PC responsible for the ESPT 2050. It represents the awarding body in the programme management and provides a strategic vision. The PC coordinates the FOT's various research programmes. It oversees the ESPT 2050 programme and prepares the management's decisions.

- **Programme Management (PM):** The PM manages the programme and bears operational responsibility for the programme's structure and use of resources. With support from the Programme Office (**PO**), the PM coordinates the assessment of projects, the definition of funding agreements, the expert knowledge required for the deliverables and the activities with other federal offices, in particular the SFOE. In consultation with the PC and the EG, the PM updates the ESPT 2050's goals and coordinates the research activities and addition of value to the results. The PM ensures successful cooperation with the other offices involved, especially the SFOE, the FEDRO and the ARE, as well as with other research facilities.
- **Programme team (PT):** The PT is made up of members with additional qualifications whom the PM can consult if required. It is a streamlined body that is rarely called upon. The PT can be seen as a 'working group' which contributes its expertise on specific areas of the programme and can provide support for specific projects.
- **Expert Group (EG):** The EG's task is to critically and constructively assess the project funding applications presented to it by the PM and to evaluate them independently and impartially. The experts agree on an approval or refusal recommendation (consensus/approval), which is then presented to the H-SD for decision-making. The EG also performs the task of identifying research topics at an early stage and proposing ways of creating added value, especially in relation to politics and science (articles, events).
- **External Staff Office/Programme Office (PO):** The PO supports the PM with implementation of the Energy Strategy. It performs administrative tasks concerning the preparation of tender procedures, formal assessment, project support and the overview of all activities. It manages the information network and helps to create added value for the activities. The PO provides specialist support with the projects, if required, and for the communication of its results (ESPT newsletter, report on activities).

6.3 Funding procedure

The ESPT 2050 programme generally deploys two types of instrument to achieve its goals: firstly, it supports measures proposed by the transport companies (with subsidies under the SubA), and, secondly, it initiates specific studies directly by giving contracts (in accordance with the provisions of the RIPA, the PPA and its ordinance[18] [OPPO]).

Contracts and mandates are awarded based on an open procedure, a selective procedure, an invitation procedure or directly. While an open procedure ensures the widest market coverage, it is not suitable for all tender procedures: The selective and invitation procedures can be more appropriate, especially in the case of the ESPT 2050, which aims to ensure the close involvement of the transport companies.

The evaluation criteria for funding proposals are set out in the implementing provisions on the ESPT 2050. The criteria are defined in specifications for tender procedures.

The documents for submission of projects (application forms) can be downloaded from the FOT's website: Submit projects (admin.ch)

6.4 Evaluation procedure for proposals

The EG evaluates each individual proposal. Its role is to assess all proposals presented to it by the PM critically and constructively and to evaluate them independently and impartially. If similarities are identified or if a suitable framework between projects could be achieved for creating synergies, it invites the participating actors to mutually coordinate their resources to collaborate on a single joint project. In addition to the EG, the SFOE and certain specialist sections in the FOT also provide a proposal evaluation. All evaluations are collated by the PM and presented to the H-SD for decision-making.

[18] SR **172.056.11**

Detailed information on the award procedure can be found in the implementing provisions on the ESPT 2050.

6.5 Target audience and funding contribution

The ESPT 2050 is aimed at transport companies that hold a licence from the Confederation or which have received subsidies from the Confederation as well as all actors that can directly influence such companies, such as the industry or vehicle/equipment manufacturers, research units in this field at the Swiss Federal Institutes of Technology, tier-one universities, universities of applied sciences and (private and public) research institutes.

Financial assistance for individual projects is governed by the SubA (also see section 1.3). In accordance with Art. 7 let. c and d SubA, financial assistance recipients are obliged to make their own reasonable contributions based on their financial capacity and they must undertake their own reasonable initiatives and exhaust other funding sources. If a project is submitted, the competent authority must assess whether its findings may result in economically viable products (in this case the requirements in accordance with Art. 44 para. 4 EnA[18] must be met). The competent authority also assesses whether the recipient is performing the task lawfully in accordance with Art. 25 para. 1 SubA and the relevant applicable conditions. This means the assessment of the level of financial assistance to be provided by the FOT is not just based on non-amortisable supplementary costs.

The conditions and procedure governing a request to withdraw from approved or implemented funding must be governed on a case-by-case basis between the funding recipient and the FOT as part of a special, balanced agreement.

6.6 Monitoring, reporting and quality assurance

Monitoring takes place at two levels – at programme and project level (operational monitoring).

- **Programme monitoring:** The criteria for evaluating the effectiveness of the ESPT 2050 programme are defined in an impact analysis of all activities concerning the Energy Strategy together with the SFOE. In particular, an evaluation must be carried out on the extent to which the measures in public transport and rail freight transport have contributed towards improved energy efficiency and a transition to renewable, reliable and economically viable energies, while continuing to ensure the future viability of public service.

The aim is to provide the Confederation with relevant data to enable an impact analysis of the programme to be carried out. A key element of monitoring is the measurement and transfer of fundamental data provided directly by the public transport companies which has been collected annually since 2020. In general terms, the success of the programme as part of progress by public transport towards energy efficiency and carbon neutrality (see goals) is measured.

- **Operational monitoring:** Project progress is regularly monitored by the PM, which may set up specific advisory groups if required. This coaching aims to foster progress on the project and the implementation of results.

The PM's tasks also include the controlling of results as well as financial aspects. It receives support from FOT representatives (from the Financing division) on financial aspects of project implementation as well as from the Business Administration and Organisation division in relation to budgets and billing.

The project participants contractually undertake to present one or more reports over the project period. The payment of funding contributions is subject to submission of these documents.

The quality of the deliverables is assessed by a member of the Expert Group, where applicable, who defines improvement proposals which the FOT, in turn, requests the project participant to apply.

- **Reporting:** The ESPT 2050 provides the management team with an annual report on activities, which is publicly accessible.

- **Quality assurance:** The programme's quality assurance is carried out by means of internal and external audits and evaluations.

7 Financial resources

7.1 Financial resources

The funding provided for the programme is included in other operating expenses of the FOT's overall budget and entered under budgeted costs and subsidy expenses. Until 2024, the estimated budget for the funding of innovative procedures and pilot projects amounted to CHF 2.5 to 3 million a year. The budget set out below will be provided subject to approval by the Swiss parliament and re-evaluation of the Confederation's activities in general:

Year	2025	2026	2027	2028
Budget	CHF 2.5 million	CHF 2.5 million	CHF 2.5 million	CHF 2.5 million

7.2 Subsidiarity/co-funding

In accordance with Art. 53 para. 2bis EnA, financial assistance for pilot and demonstration facilities, pilot and demonstration projects, field tests and analysis cannot exceed 50% of the non-amortisable supplementary costs. Support of up to 70% may be provided in exceptional cases for pilot facilities and projects with a low level of technological maturity and a high degree of financial risk.

Any participants applying for contributions under different legislation for the same project must notify the participating authorities in accordance with Art. 12 para. 3 SubA.

7.3 Prioritisation

If the amount requested for applications exceeds the funding available, priority will be given to the projects as set out below:

- Projects on current priority topics will be given precedence.
- If several projects address the same priority topic, efforts will be made to coordinate these activities where appropriate. The scientific and technological quality of the project and the FOT's actual requirements are key factors in achieving the programme goals effectively and efficiently.

8 References

The research programme for the 2025–28 funding period is based on (i) the input from the consultation of stakeholders carried out in August 2023 and the results of the summary on the 2021–24 funding period, and (ii) the input from the coordination meetings with the federal offices and other FOT funding programmes and after consultation with the members of the EG, PC and PO. The results of the 2023 research monitoring of the ESPT 2050 and RIF programmes were also used.

- Federal Council, Federal Council's goals for the current legislative period, Legislative programme – documentation (admin.ch)
- Federal Office of Transport, the FOT's 2019 Strategy, Strategie BAV
- Federal Roads Office and Federal Office of Transport, 'Sustainable Transport 2025–28' research concept, [federal government research homepage – 2025 – 2028 not yet available]
- Federal Office of Transport, 2023 research observation of the ESPT 2050 and RIF programmes