Presentation of Available Industrial Roadmaps in Austria

28th IETS ExCo in Paris, France, 14./15. May 2019
Strategies together with the BMVIT

Implementation Plan Mission Innovation Austria
ongoing, Publisher: Federal Ministry of Transport, Innovation and Technology (BMVIT) in cooperation with the Climate and Energy Fund

Innovative Energy Storage Systems in and from Austria: Recommendations for Innovation, Implementation Steps, Value Chain
August 2018, Publisher: BMVIT and Climate and Energy Fund

ENERGY Research and Innovation Strategy
March 2017, Publisher: BMVIT and Climate and Energy Fund
https://nachhaltigwirtschaften.at/de/e2050/publikationen/energie-forschungs-innovationsstrategie.php

National Roadmap Presentation [Austria], 28th ExCo, May 2019
R&D Roadmaps - Overview

Technology Roadmap - Energy Storage Systems in and from Austria
August 2019, AIT Austrian Institute of Technology

Technology roadmap: Orientation of energy-intensive industrial processes towards fluctuating energy supply
December 2017, Energy Institute at the JKU Linz et al.
Relevant sectors: chemical and petrochemical industry, mechanical and plant engineering, minerals, automotive, food and beverage, non-ferrous, iron and steel, paper and pulp and cement industries
http://www.energieinstitut-linz.at/v2/portfolio-item/fe-fahrplan-renewables4industry/

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R&D Roadmaps-Overview

EnPro - Renewable process heat integration of solar thermal energy and heat pumps in industrial processes
August 2017, AIT Austrian Institute of Technology et al.
Relevant sectors: food industry, paper and pulp, metal production and processing, laundries and insulation industry.

R&D Roadmap Energy efficiency in the textile and food industries
September 2016, Energy Institute at the JKU Linz et al

R&D roadmap Energy efficiency in energy-intensive industry
November 2014, Energy Institute at the JKU Linz et al
Relevant sectors: Minerals, Cement, Chemicals and petrochemicals, Pulp and paper, Iron and steel, Non-ferrous metals

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Conclusions / Challenges

Conclusion on roadmap scenarios:
• Not all industry roadmaps reach 80%.
• Maximum targets - achievable
• with timely roll-out of Break-Through Technologies (BTT)
• Availability of CCS / CCU

The focus of action is on the implementation of technological innovations
• Process emissions and systemic energy and material efficiency
• Use of renewable resources and conversion to electricity
• Greenhouse Gas Neutral Products

Challenges
• Blind spots in many European industry roadmaps stronger links between industry and the energy sector
• Need for flexibility through integration of renewable energy sources
• More ambitious global goals: +1.5 °C - 2°C Global warming
• High demands on showcase regions in Austria - #mission2030 and NEKP 2021-2030
Energy research initiative within the framework of the Austrian Climate and Energy Strategy

Vision: Austria as Innovation Leader of the Energy Future

- **Flagship #9: Elements of the future energy system**
  - Plus energy quarters
  - Integrated regional energy systems
  - Breakthrough technologies for industry

- **Flagship #10: Program “mission innovation Austria”**
  - Large-scale model regions for Austrian energy technologies
  - Regulatory sandboxes

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Innovative Energy Storage Systems in and from Austria: Recommendations for Innovation, Implementation Steps, Value Chain

- June 2018 Austrian Climate and Energy Strategy(#mission2030) central goal complete decarbonization of energy supply by 2050.
- Energy storage plays important role in future, renewable energy and mobility system.
- Present recommendations define the essential next steps towards the successful implementation of a storage initiative in Austria.
- Entire value chain – production, operation, recycling of the storage systems including individual components, preliminary products as well as entire storage systems.

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Energy Research and Innovation Strategy

Vision: Austria as innovation leader of the energy future

- Energy research and innovation as an employment driver
- Contribution to the decarbonisation of the energy system
- Gradual increase in energy research funds
- Austria as technology leader in selected energy-relevant areas
- Increased access to international markets
- Higher Austrian representation on a global level

Source: ENERGIE Forschungs- und Innovationsstrategie, March 2017, Hrsg.: bmvit, Klima- und Energiefonds

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Renewables4Industry - Implications of an extensive conversion of the industry to renewable energies

Climate and Energy Fund
• Report 12/2017
• Contractor Energy Institute at JKU Linz and AIT Austrian Institute of Technology, MUL, TU Wien

Objectives
• Utilization of low temperature potentials
• Provision of renewable electricity and storage or use by Power-to-X
• Provision of further renewable energy sources
• Storage of renewable energy sources (excl. hydrogen)
• Industrial processes in hybrid networks
• Adaptation of production for renewable energy sources and flexibility

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Roadmaps

EnPro - Renewable process heat

Climate and Energy Fund

- Report Jun 2017
- AIT Austrian Institute of Technology GmbH, AEE – Institut für Nachhaltige Technologien, TU Wien, Institut für Energietechnik und Thermodynamik

Objectives Initiative

- This planning guide provides guidance on how solar thermal energy and heat pumps can be integrated into industrial processes and shows which criteria and parameters are important for the identification and evaluation of integration concepts.

Source: https://www.klimafonds.gv.at/assets/Uploads/Broschren/EnPro---Erneuerbare-Prozesswärme/2017EnPro-ErneuerbareProzesswaerme.pdf

National Roadmap Presentation [Austria], 28th ExCo, May 2019
Roadmaps

R&D Roadmap Energy Efficiency in the Textile and Food Industry

Climate and Energy Fund

• Report Aug 2016
• Contractor Energy Institute at JKU Linz and AIT Austrian Institute of Technology, Business Upper Austria, AEE Intec

Objectives

• Identify possible fields of R&D in order to secure the competitiveness of Austria as an industrial location and to meet the energy and climate policy requirements of the Austrian Federal Government.
• The status quo - trends and developments were compiled in discussion papers, workshop with the relevant stakeholders (visioning).


National Roadmap Presentation [Austria], 28th ExCo, May 2019
Roadmaps

R&D Roadmap Energy efficiency in energy-intensive industries

Climate and Energy Fund

- Report Nov 2014
- Contractor Energy Institute at JKU Linz and AIT Austrian Institute of Technology

Objectives

- Identify fields of action of RTI policy
- Specify the thematic orientation of the Energy Research Program of the Climate and Energy Fund
- Address the specific need for action in the various segments
- Focus on the integration of the plant construction sector


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Austrian Technology Roadmap for Heat Pumps

bmvit

- Report Aug 2016
- Contractor AIT Austrian Institute of Technology and Zentrum für Energiewirtschaft und Umwelt (e-think)

Objectives

- Industrial heat pumps are seen as one of four main areas of heat pump application in Austria until 2030. Presentation of research priorities and market development scenarios in a national roadmap.

Source:
https://nachhaltigwirtschaften.at/resources/nw_pdf/1608_endbericht_oesterreichische_technologieroadmap_fuer_waermepumpen.pdf?m=1469661515

National Roadmap Presentation [Austria], 28th ExCo, May 2019
Roadmaps

Technology Roadmap - Energy Storage Systems in and from Austria

Climate and Energy Fund

- Report Aug 2018
- Contractor AIT Austrian Institute of Technology

Objectives

to prepare steps for the implementation of this strategy, where the focal points are

- a future energy supply with 100 % renewable energies and
- the positioning and strengthening of Austrian industry and its
- technology development expertise can be set.

Source:

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Roadmaps

Initiative Storages

Climate and Energy Fund

• Report Jun 2016

Objectives Initiative

• Working groups to electrical energy storages, thermal energy storages, electrical energy storages in the system, thermal energy storages in the system, business models, policy.

• Recommendations for actions

Source: https://speicherinitiative.at/assets/Uploads/Abschlussbericht-Startphase/Speicherinitiative-Abschlussbericht-Startphase-lowres.pdf

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