Danish Energy Agency

Technology Catalogues: An Important Long-Term Planning Support Tool in Denmark

The Danish Energy Agency (DEA) has produced Technology Catalogues since 1980s to support informed policy-making and long-term energy planning, promoting a least-cost- approach within the green transition. These catalogues provide consistent, reliable data and projections on energy technologies, helping policymakers evaluate energy system scenarios, security of supply, environmental impacts, and climate strategies, through socio-economic analyses. They serve as a standard reference for government agencies, energy operators, researchers, and industry stakeholders.

Energy planning and policy development must rely on the most accurate data available, particularly because energy sector investments have long lead times. Achieving climate goals and transitioning to new technologies demand up-to-date assumptions and collaboration between public and private sectors.

Beyond input to energy system modeling and economic analyses for energy infrastructure planning, the catalogues are essential for evaluating the impacts of policies and identifying technical potential for emissions reduction.

Well-Established and Comprehensive Publication

A Technology Catalogue (TC) is a comprehensive report describing various energy technologies. Each catalogue includes:

1. Qualitative Information: A non-technical explanation of how a given technology works, its inputs/outputs, benefits, challenges, environmental impacts, maturity, examples of real-world applications and anticipated performance and cost development.

2. Quantitative Data: Standardized data sheets with key technical, environmental, and financial metrics for current technologies and their anticipated future development.

The catalogues follow a uniform structure, ensuring comparability across technologies.

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First introduced in the 1980s for municipal heat planning, which has required up-to-date benchmark cost data for planning purposes, the catalogues now cover nine key energy sectors as of 2024:

- Electricity and district heating generation
- Distributed heating systems
- Renewable fuels
- Energy storage
- Energy transport infrastructure
- Industrial process heat
- Commercial Road freight and passenger transport
- Commercial Maritime freight and passenger transport
- Carbon capture, transport, and storage

The Danish Technology Catalogue is still by law the economic reference data to assess public municipal heat supply planning investment decisions, if project-specific data are not present or documented. Beyond that, the catalogues provide financial data for other energy technologies as part of governmental energy planning, considering among others subsidy assessments, tariff designs, and price ceilings for consumers.

Shared Point of Reference – Tailored to the Local Specifics

Establishing the TC has provided a shared reference point for energy technology data, ensuring consistency in national and regional planning. While private and international data sources (e.g., IEA, IRENA, BNEF) also exist, they may lack key local details or alignment with specific system assumptions, making the TC uniquely relevant for Denmark's energy planning.

Using the TC enhances transparency in energy modeling and planning by standardizing assumptions, allowing discussions to focus on analytical results rather than data discrepancies.

Dedicated Technology Catalogue Development Team in The Danish Energy Agency

The Danish Energy Agency manages the TC with input from external consultants and experts to ensure accuracy and impartiality. A team of seven full-time staff in the Systems Analysis and Innovation department oversees the project in 2025.

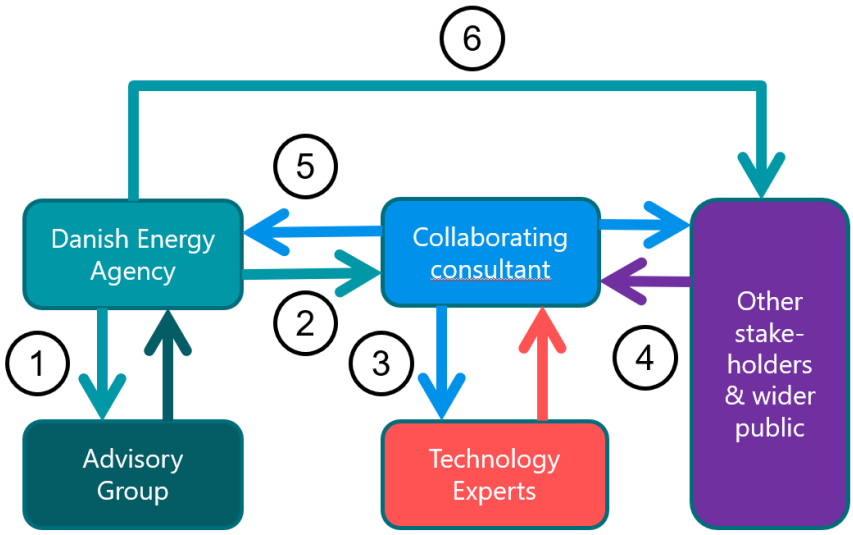
The DEA also promotes the TC internationally as part of its collaborations with 25 partner countries. The country specific TC's are jointly developed and eventually published by the DEA and the partnering governmental institution focusing on building capacity within partner countries for increased engagement in further project iterations and updates.

Inclusive and Rigorous Process Underpinning Technology Catalogue Development

The TC's development in Denmark has evolved into a participatory, step-by-step process involving sector experts to ensure its validity:

1. Advisory Group Consultation: Experts guide the TC's scope and priorities.
2. Consultant Input: External consultants ensure objectivity in data preparation.
3. Technology Experts Contributions: Industry and Research provide relevant data.
4. Public Stakeholder Review: Drafts are shared for feedback to improve quality and gain broader acceptance.
5. Finalization: DEA and consultants finalize the catalogue.
6. Publication: The TC is released as a free public resource.

This collaborative approach ensures the catalogues remain comprehensive, accurate, and widely trusted as a reference for energy planning and policy development, ensuring consistency, and a firm and up-to-date long-term perspective.



The working process on the Technology Catalogues

As the collaboration progresses, with subsequent iterations of TC publications and expansion to cover additional energy sectors, the process becomes increasingly refined. This evolution ensures that the methodology aligns with the needs of each partner country while maintaining the consistency and rigor of the original Danish framework.