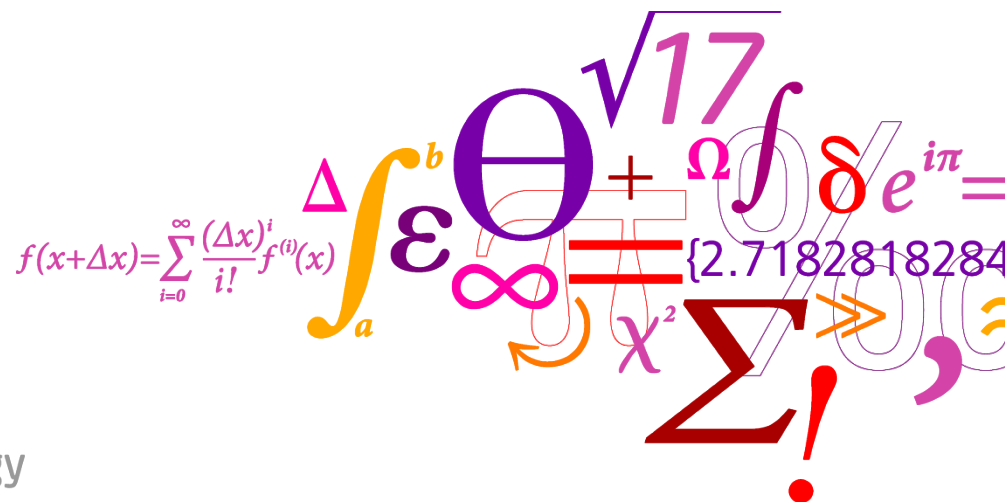


Evaluating energy R&D

Timing and mechanisms of evaluation

Session leader

Birte Holst Jørgensen



Risø DTU

National Laboratory for Sustainable Energy

Defining evaluation

- **Evaluation** is systematic determination of merit, worth, and significance of something or someone using criteria against a set of standards
- **Evaluation** is the systematic acquisition and assessment of information to provide useful feedback about some object
 - data collection
 - judgement about the validity of data and of the inferences we make about it
 - useful feedback to various audiences

Motivation

• Acceleration

- Technology development needed to address the three Es, more than ever!

• Accountability

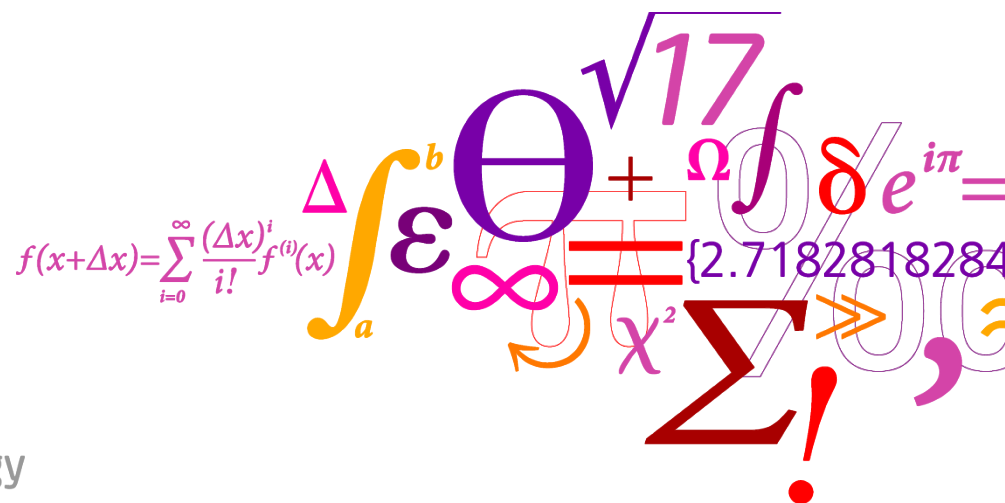
- Who can call for an account and who owes a duty of an explanation:
 - Political
 - Administrative
 - Professional

Some lessons learned from science - Tetlock

How to cope with accountability predicaments:

1. Pre-emptive Self-criticism (pre-exposure)
 - motivates people to become more open-minded and flexible
 - but may also lead to undue attention to worst case scenarios, setting weak standards, confusion, vacillation and weakness
2. The Acceptability Heuristic
 - motivates people to build a sort of consensus and unanimity and checks a range of judgemental fallacies otherwise not considered
 - but may also lead to group thinking and opportunistic behaviour
3. The Rationalisation Heuristic
 - motivates people to keep the course of action once taken, rationalising past conduct through defensive bolstering
 - but may also blinds people not to acknowledge the facts

Looking forward to learn from governments and experts with hands on experiences





Wrap up

- **Ex-ante (Swedish case; IEA acceleration project)**
 - Transformation of the energy system and the strategic role of ERD&D in bringing down Cost of Energy for new technologies
 - Trade off between
 - Risk taking vs demonstrating success in RD&D, especially having the uncertainty in RD&D in mind
 - Intended and unintended behavioural consequences (Ph.D's, innovations etc.)
 - National focus vs. opportunities for international cooperation
 - RD&D (push) vs. other market support mechanisms (pull), also in terms of expenditure.
 - Strategic holistic approach needed to transform energy systems
 - Diverse roles, perspectives and stakeholders when building consensus on new priorities and design programmes
 - Input and inspiration from other sectors (health, agriculture etc.)
 - RD&D is long term, relevant for energy systems and global markets; it may have huge impact, but it takes time and requires patience.

Wrap up

- **In progress: keeping pace in the race (EU and US cases)**
- Development and implementation of monitoring systems and tools
 - Step-wise roll-out (pilot, learning or cautious process?)
 - Tailor made data and tools - transparency
 - Methodological challenges when measuring impact of public strategic plans on overall policy goals, impact on policies, R&D investments, action progress/performance
 - Requirements for both qualitative and quantitative data and analysis
 - Standardising performance measurements, data collection and use of performance information (feedback)
 - The powerful tool of scoreboards for decision-makers whereas practitioners more interested in using performance information
 - Information sharing is about stable monitoring architecture
 - Systematic linkages in the process from mission to performance
- Technology development and tracking that progress not restricted to one country (or company) – good case for international cooperation!

Wrap up

- **Ex-post: Back to the future (Nordic scoreboard, US case and international case)**
- The methodological challenges in developing cross-country indicators covering the value chain in its context
- Need for improvements on individual indicators as well as composed indicators, incl. better data on industrial activities, investments, tech transfer, policy framework conditions etc.
- Retrospective and prospective evaluations
 - R&D takes time and requires long term impact assessment
 - Defining and measuring benefits and costs (3 Es) analytically demanding
 - Adapting retrospective methodologies to prospective construct
 - Always uncertainties to take into consideration – complex technologies, dynamic markets, changing society
- Systemic evaluations and impact assessment frameworks
 - narrative, indicator, self evaluation and context sensitive approaches

Decalogue I - Kieslowski



- Systematic acquisition and assessment of information to provide useful feedback about some object
 - 3 As – acceleration, accountability and advocacy
 - Data collection - Validity and reliability
 - Analysis of data – equations, models, constructs
 - Use of data, feedback to practitioners (learning and adaptation) and [cautious] implications
 - Simple, accurate and consistent
- Need for improved methodologies, tools and information sharing on what works and what not (and some common sense)