



This article on **Critical and Key Technology Studies** is a **stub**. You can help the Foresight Wiki by expanding it with new sections on the usage of this method in foresight exercises.

Critical and Key Technology Studies are usually based on interviews with experts on the technology for which a forecast is being developed. Although usually applied to technologies, the underlying principles can also be used to define key actions or set priorities.

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The FOR-LEARN Guide to Critical and Key Technology Studies

This is a summary of the article on the Critical and Key Technology Studies from the FOR-LEARN guide. To read the full article go [here](#).

Overall description

This method originated in strategic planning but can also be seen as is one of the methods, or outputs, of technology forecasting. It aims to highlight short-term (usually 3-10 years) research and development policy priorities for policy makers. It consists of applying sets of criteria against which the importance or criticality of particular technologies can be measured. It is usually based on interviews with experts in the forecast technology. Sometimes, a benchmarking analysis provides comparisons with other countries or regions. (Benchmarking refers to the identification of the state-of-the-art for a given technology relative to the level of the country, industry or region in question. The idea is that identification of such gaps will help people develop strategies to close them ? and allow them to learn from best practice elsewhere. Similarly, areas of strength that need to be consolidated may be found.) The general principles behind this approach can be applied to things other than technologies, such as key actions or priorities.

When is this method appropriate?

Critical technology studies permit informed assessments on technological developments. They can be used as a springboard for recommendations. However, as an isolated output they are insufficient to justify decisions or actions relating to technological policy or the economy. The recommendations need to be discussed at the political level and evaluated with reference to social, economic and practical factors.

Who is typically involved?

The method is based on interviews of industrial experts. The first step is to generate an initial list of technologies that can be produced starting from an existing list (e.g. also from previous Foresight studies), or the list can be produced by a combination of brainstorming and bibliography searches. In other cases panels of experts are used in combination with patent analysis, bibliometrics and other studies.

Pros and cons

The outputs of this systematic method tend to be taken seriously by policy-makers. In general, critical technologies reports are not produced to review or analyse policy. Rather it should be considered as an exploratory step that draws upon a wide range of informed expertise and normative opinions. The outcomes of a critical technology process can be used as inputs to define and debate policy.

On the downside, the criticisms often made are that critical technology studies are often not participatory, and that they usually endorse a strictly predictive approach (they do not consider alternative futures). This method tends to consider only technological and economic issues at the expense of broader social concerns. In particular it usually adopts a technologically deterministic view of what will shape future products, with no consideration of demand aspects. In principle similar methods could be used to identify critical social innovations, but we know of no examples. Moreover, it is difficult to achieve a true representation or unbiased sampling despite the attempt to place the process in a well-defined structure.

See also

[Environmental Scanning & Monitoring](#)

[System Dynamics](#)

[Structural Analysis](#)

[Agent Modelling](#)

[SWOT Analysis](#)

[Trend Intra & Extrapolation](#)

[Modelling & Simulation](#)

[Gaming](#)

[Creativity Methods](#)

[Expert Panels](#)

[Delphi survey](#)

[Backcasting](#)

[S&T Roadmapping](#)

[Scenario Building](#)

[Morphological Analysis & Relevance Trees](#)

[Cross-Impact Analysis](#)

[Multi-Criteria Analysis](#)