

## DEBATE

# Can ‘converging infrastructure’ secure jobs in TA institutions?

A polemic reply

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This is a polemic reply to TATuP’s special issue in vol. 29 no. 2 (2020) “Converging infrastructures. Amplified socio-technical problems”. The authors suggest via multiple attempts, that converging infrastructures amplify socio-technical problems and therefore could be a case for technology assessment (TA). At first glance, the authors’ statements make a sound impression. The authors do a good job in addressing the increasing convergence of infrastructure and picturing out the related severe socio-technical challenges. Nevertheless, the authors are not addressing the fundamental question: Do we really need TA research because we are dealing with a new category of problems or are converging infrastructures rather a “business as usual” TA topic?

It is worthwhile remembering, that infrastructure development and operations are a well-established industry, that is also very well understood in terms of TA. Through the TA efforts done over the past decades, the industry might well be the industry that is best understood when it comes to its impact on society.

One should not forget that most TA institutions started with energy infrastructure technology assessments and then transferred their methods and toolsets to the topic of converging infrastructures. TA institutions developed methods, theory and toolsets around infrastructure related questions. TA institutions are part of the decision-making process, including tackling with long-term problems such as nuclear waste and climate impact, to mention a few. Furthermore, TA was very successful in getting into the process of technology design and implementation in the daily business of the energy related community. As a result, there is a lot of TA already going on, when small or large

infrastructure projects are undertaken. As an example, you cannot get a simple wind power installation going without environmental clearing and public participation.

Taking an analogy, TA methods have gone from a lab status in science into regular operations of infrastructure developers, operators and regulators. The positive and long-standing influence of TA institutions on shaping processes for infrastructure cannot be overestimated.

While I would agree that converging infrastructures must be a subject of political discussions and decision making, I would contest that there is an increasing need for TA research due to the convergence of technology. Infrastructure projects need TA as well as public participation and intensive engineering efforts to tackle the problems at hand. But I would contest that a new form of TA is needed. First and foremost, the convergence of infrastructure is nothing new. Often times the so-called new convergence, was a design principle mostly aiming at efficiency gains, e. g. cogeneration of heat and electricity using natural gas. Infrastructures by their nature have had convergent aspects and be it simply because most of infrastructure need civil work, heavily interfere with the daily life of citizens and thus are most efficiently implemented together (water, gas, sewage, electricity, communications etc.).

In my view, there is no new category of TA problems that are due to the convergence of infrastructure, rather there are new questions that can be handled with the methods readily available. Citing an old saying of engineering ethics, the types of problems described in the contribution are “business as usual” problems that do not need a reflection on new ethical or philosophical categories and therefore do not need new TA research.

Some of the statements in the papers are far-fetched. The decision making under uncertainty for long-term developments in large scale projects has been well understood and is not new (I am not saying, it is not complicated or cumbersome). Over the past decades processes have been put in place that take a broad perspective on TA related questions. Most projects have a focus on public participation and take transparency on methods and decision making very seriously. Clearing processes, environmental assessments, public participation to cite a few, are day-to-day operations in infrastructure projects.

Society and political decision making have a large say in shaping the infrastructure business by law and regulations. Regulators are all over the place and a myriad of different infrastructure regulation schemes can be found across the globe. This leads to the conclusion that there is a very effective societal way in shaping the infrastructure industry. Understanding transitions of infrastructure systems is in the focus of governments, utility industry and research institutions.

I have spent more than two decades in the infrastructure industry, consulting utilities as well as government entities on infrastructure development. We always had a strong focus on intelligent infrastructure, energy transition and policy making, and we did look into the topic in the context of the greater nexus. With these experiences, I would state that it is safe to say, that

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converging infrastructures are not a case for new technology assessment research.

I back the statement with long-term experiences in piloting, trialing and implementing intelligent infrastructures from strategy planning to operations. Most of it was done in ecosystem partnerships where policy makers, research institutions, the public and industry worked together. I have not seen a single project that did not take into account TA aspects. Some spin-offs of TA institutions even went so far to make a business out of it.

I suggest that the following facts show that converging infrastructures already have a solid TA framework:

- The initial development of utilities was largely driven by public utilities and government entities and hence has undergone in-depth scrutiny for their contribution of value to society from the start. The balance of rights and duties of infrastructure developers and operators has been the centerpiece of energy market regulators since decades (if not for centu-

adding new findings. It would be interesting to make a compilation of the intelligent infrastructure showcases to derive similarities and differences between the projects. I would be very surprised if there was a large variety of topics. In the trials, the concepts and the societal effects of converging technologies have been discussed very intensively and the set of “infrastructure and intelligent grids and their effects” conferences are galore. What happened is, that money was spent multiple times at multiple places to get to the same results. It would be a good idea to investigate the inefficiency of research and TA institutions in this specific case.

- Ironically, some TA and research institutions even started large scale investigations on topics such as “virtual power plants or intelligent prosumers” in basic research mode, at a point in time, when the technology was already available and implemented on an industrial scale. A multitude of jobs in scientific institutions was created without necessarily creating benefits for society.

### *Could new questions not be answered with the categories, methods, processes and tools already at hand?*

ries). It is a very mature techno-societal mechanism. Over and over again the impact of projects and the relation to the public, the benefits and secondary effects, the risk and societal cost have been subjects of intensive research, political discussions and regulations.

- The industry has gone through various cycles of regulations resulting in hundreds of different regulation and deregulation models around the world. Focus themes have been how to deal with monopolization, access for individuals to infrastructure services, rights and duties of operators, cost and profitability, threats to data privacy etc. It is one of the sectors that is most regulated and hence best understood.
- That being said, it implies, that there is a large variety of models and mechanisms for dealing with the sociotechnical context. The industry is one of the most transparent to the public, anyone interested in the details, how regulations are setup and how interactive systems work, can get information from regulating authorities and operators.
- Large scale implementations and field trials with public participation and the concept of interactive energy markets and customers as “prosumers” i. e. producers and consumers participating in the market have been implemented. In these projects, market rules, participation, chances, benefits, mechanisms etc. have been openly discussed, trialed and operated. Projects have been going on throughout the world, very much in similar setups. While most projects claim, they would have unique findings, there was a large tendency of just “showing what works somewhere by transferring it elsewhere”. This happened throughout the last 15 years without necessarily

My personal impression is, that TA would largely focus on elaborating problems that from a perspective of problem-solving have been solved since a long time. There clearly is a tendency for creating a self-propelling research with the main goal of securing publicly funded jobs. From a societal perspective, I suggest to spend the effort in topics that are more relevant and need TA research.

In terms of a clear epistemological interest, the question is: Are there new questions arising that cannot be answered with the categories, methods, processes and tools already at hand? Even more importantly, are there categorically new problems and do they really need to be solved?

So my question to the authors is: Do you really believe “Converging Infrastructure are a case for Technology Assessment?” or is the question at stake rather “Can converging infrastructure secure jobs in TA institutions”.

Given the arguments cited above and taking a more ironic turn, I would state that “converging infrastructures” are as good a research theme for technology assessment as it would be to investigate the effects of gravity on society. As I wrote in the beginning: This piece is an ironic and polemic statement. In fact, I am a captive enthusiast. I would like to see where research needs to be driven.

Read the reply to Yannick Julliard in this issue pp.76–77.  
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