

KNOWLEDGE SHARING ON INDUSTRY TRANSITION ROADMAPS

Reference

Based on the final report from IETS TCP Task XX, *Knowledge Sharing on Industry Transition Roadmaps*.

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Introduction

Growing concerns about climate change and the need for deep reduction in global greenhouse gas (GHG) emissions have prompted the development of public industry roadmaps to explore decarbonisation plans and demonstrate commitments. They have thus gained strong interest among governments and industry leaders to the point where industry roadmaps have become an object of study on their own upon which meta-analyses are conducted.

The aim of the first activity of Task XX “*Knowledge sharing on industry transition roadmaps*” was to capture an overview and to analyse industry roadmaps methodologies employed in different TCP member countries considering the national industry context. To that end, a series of bilateral interviews with national industry experts has been conducted.

The output of these interviews coupled with a review of the existing literature have led to some key findings regarding industry roadmap methodologies. Three findings stand out particularly: (1) there is a wide range of understandings, uses and approaches of industry roadmaps, (2) it is important to translate the roadmap into qualitative narratives to communicate the results to policy makers or civil society and (3) the construction of the roadmap, especially when it is stakeholder-oriented, is an opportunity to embark industry players on action, hence the importance to focus on the roadmapping process.

Some main highlights and analysis

A concept with multiple uses and definitions

Interviews have unveiled a multitude of understandings and meanings of the word “roadmap”. It is often used interchangeably with close terminology such as “scenario”, “vision” or “pathway” and may depend on the person’s background. It is not only a language issue because the terminology also relates to certain process (forecasting, backcasting, commitments, risk analysis ...). In fact, the discussions showed that the concept of roadmapping could refer to different types of exercises depending on the person interviewed.

The word “pathways” or “scenarios” often imply that different futures are possible whereas a “roadmap” often refers to a stronger commitment

taken by a large entity such as a company, an industry association, or a government. Roadmaps are mostly produced by strong, incumbent actors that care to present a single techno-economic pathway. In that sense, “roadmaps” often overlook the plurality of futures and deeper socio-technical changes along the value chain, which is why roadmaps are often solely associated with technology transformation. One of the main advantages of roadmaps though is that they more often take a step further in terms of action implementation. Industrial players prefer to embody actions that they designed and that follow a single trajectory they have agreed upon as opposed to pathways or scenarios, which aim to illustrate possible futures. This does not prevent pathways to formulate public policy recommendations.

There are currently no roadmapping methodologies or guidelines universally accepted and shared. The IEA, being a high-level institution committed to energy, published the “Technology Roadmap – A Guide to Development and Implementation”, which of course is not binding and only used by some institutions. The interviews have shown that roadmapping exercises are strongly tied within a specific industrial context, a culture that affects the way planning is spontaneously approached and they serve different goals and interests.

Interviews have revealed that the type and size of industrial actors also have a strong influence on the roadmapping process. Large actors from international groups, generally responsible for the bulk of emissions in a sector, often produce their own public roadmap while keeping the exact details of their business strategy confidential. These actors can be somewhat reluctant to engage in other collective roadmapping initiatives, as they might feel compelled to disclose confidential information about their business strategy in the presence of competitors.

All in all, roadmaps can be conducted for different scales and sectors. In practice, industry roadmaps are mostly adapted in their format and

methodologies according to the industrial context, the weight of sectoral actors, the administrative culture of the country/region and the type of organisations commissioning and/or conducting the work.

The importance of narratives

It has been clearly identified that industry roadmaps are not only an exercise of internal reflection where the main outcome would be an action plan decided within a restrained circle. Otherwise, none of these would be public. Industry roadmaps are non-neutral in nature and they depict a public dialogue between companies, governments, and other potential actors such as universities or NGOs. Most often, this dialogue is in the form of policy recommendations directed towards governments or investment commitments formulated by an industry. Industry roadmaps are ultimately a tool of mutual influence whereby each party can try to “sell” a narrative or, at least, defend a certain vision of the future and gain support.

A process more than a document

The roadmapping process itself can be more efficient at triggering decarbonisation actions than the final roadmap itself hence the importance shall be to focus the effort on the process. Indeed, the construction phase is usually the moment when different individuals come together to share their vision and their experience. Trust is built and new connections are established at this stage, which, in many cases, can later translate into new opportunities for collaboration and for triggering decarbonization actions.

The main actors to involve in a stakeholder-oriented roadmap process are industrial companies. They are the actors who have to carry out the transformation, make the corresponding investment decisions and also direct their research activities.

The need for more system integration

Unlike diffuse sectors like transport and agriculture, emissions from heavy industry are

located in certain specific areas and the number of actors to engage with is usually limited. The fact that it is a very concentrated sector, both geographically and stakeholder-wise, makes it very suitable for technology roadmapping assuming that only production facilities will have to undergo a transformation. However, that advantage rapidly fades away when considering broader techno-societal changes along the value chain such as demand management, circular economy, material efficiency or the deployment of new infrastructures.

Considering those external factors in the roadmap (e.g. consumer behaviour, access to raw materials, new training needs) as part of a broader systemic transformation is likely to require deeper modelling and additional stakeholder engagement, which will inevitably add layers of complexity to the exercise.

Addressing market and demand evolution

Decarbonisation roadmaps are mostly built around technological solutions, but absolute GHG emissions are about as much a consequence of production volumes and the overall level of activity of an industry. In several countries, the idea of simply reducing the use of energy and material throughput has been gradually penetrating the public debate on ecological transition. This trend is likely to continue. The aspect is still largely unexplored in existing industry roadmaps for two main reasons. The first and unarguably the most obvious one, so-called “industry roadmaps” are generally produced by private companies who are financially motivated in maintaining a high level of production output and activity. This is especially the case for most heavy industry sectors that produce basic materials with low added value in a competitive environment. Secondly, the industry sector only represents a link or series of link in a complex value chain. Companies supply materials to separate entities in downstream sectors (e.g. buildings, transports, agricultures) and they are hardly in the position to get a grip on the final

demand. As a result, most industry roadmaps published by associations or incumbent actors argue that the material they produce plays an important role in the modern economy and they promote a narrative in which they will have a role to play in the broader low-carbon transition, thereby asserting the fact that their industry should receive public support.

Discussion

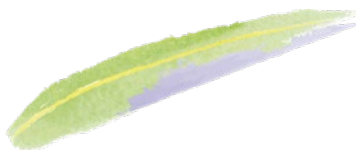
The industry is being pressured to take ambitious climate commitments and present a strategy to meet its targets hence the need to produce roadmaps. For instance, clients and financial institutions increasingly require heavy industry companies to disclose their emissions and their decarbonisation plans. At a policy level, companies are also being asked to produce roadmaps to show compliance with national or supra-national emissions targets. For a company, demonstrating commitment through the elaboration of robust transition plans should become vital to maintain a competitive business. For these different reasons, it is likely that industry roadmaps will become a more and more common exercise which raises the question of sharing a common language. It has thus been suggested to elaborate a standard to provide methodological guidelines for the construction of robust sectoral roadmaps.

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The mission of IETS is to foster international cooperation among OECD and non-OECD countries for accelerated research and technology development of industrial energy-related technologies and systems. In doing so, IETS seeks to enhance knowledge and facilitate deployment of cost-effective new industrial technologies and system layouts that enable increased productivity and better product quality while improving energy efficiency and sustainability.

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