



Programmatische Samenwerking – Exploring new mobility policy-making pathways

Contrasting predict-and-provide and decide-
and-provide

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|---------------------|---|
| TNO Auteurs | Maiara Biscaro Uliana, Amber Geurts, Diana Vonk Noordegraaf |
| I&W Auteurs | Alina Prey |
| Co-Auteurs | Daan Pisa |
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Summary

This memo is a result of the partnership between the Dutch Ministry of Infrastructure and Water Management (I&W) and TNO in 2023, and it is written as a reflection document, which explores two different policy making approaches in the mobility domain: predict-and-provide and decide-and-provide. In each step of this memo, we make an attempt to answer the guiding questions of our exploration of the two policy-making approaches.

- What is decide-and-provide and how does it differ from predict-and-provide? By literature review, section 2 defines the two approaches and highlights 4 features to dive into specific differences. Predict-and-provide is characterized as an approach that tends to rely on past experiences to make predictions of the future, placing significant confidence in the link between transport and economic activity, while decide-and-provide is an approach that considers different scenarios and actively seeks to shape the desired future, emphasizing the importance of accessibility and welfare beyond GDP. As a further step, these approaches are explored by type of questions that they can answer (from predictive to explorative and normative questions), how they handle with uncertainty (from assuming manageable uncertainty to adapting to (deep) uncertainty), the usage of data and models (from predicting to deciding), and their scope (from facilitating mobility to improving accessibility and well-being).
- Which international examples show features of the decide-and-provide pathway? From the literature review, section 3 highlights three international examples from decide-and-provide. The first is UK's vision-led approach that connects to determining a policy agenda and objectives. The second is Scotland's opening up and closing down policy options, that describes a tool to help in the process of making decisions in face of the policy options available. The third and last example is the adaptive monitoring adopted by New Zealand, connecting to their vision beyond mobility. In theory they represent a good illustration of the selected characteristics, but more knowledge of their practice is unknown.
- How can we characterize the current way of policy making (at IenW) and how adequately is this summarized by the two distinguished pathways? By expert consultation and reflections over the policy cycle, section 4 identifies the main features of the policy cycle, starting from the policy agenda and objectives, to the policy options and instruments, then to decision making and implementation, and closing the cycle with determining the effects of the policy. The section provides a reflection on the current way of making policies, which identifies that it has features from both approaches in different phases of the policy cycle, which makes it more complex than just classifying in one approach or the other.
- Which parts of the way of policy making (perceptions and points of view, beliefs and praxis/actions) require the largest modifications related to (each part of) the policy cycle? By expert consultation and reflections over the policy cycle section 5 identifies the main challenges posed to different stages of the policy cycle. First, the challenges in determining the policy agenda and objectives, e.g. the difficulty to choose between (possible) future scenarios and the change in course of actions by political changes. Second, the obstacles using the policy instruments, e.g. the usage of MKBA for policy evaluation and the fact that desired futures might be difficult to quantify. Third, the challenges related to decision making, e.g. the multiple stakeholders involved in the process. Finally, the challenges on evaluating the effects of the policies, i.e. the importance of monitoring for long-term goals.

Because of the reflective nature of this document, section 6 highlights the key takeaways provided by the guiding questions, and provides that clarity and transparency, an integrated (and cross domain) policy making, and adapt existing solutions are key elements to make a change in policy making. This work considers that this is just a starting point to understand what is necessary to make this change, and beyond the static definitions that the approaches propose, we see a challenge in aligning policy making to the broadening scope from mobility to accessibility and welfare beyond GDP.

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1 Introduction

Climate change, the housing crisis, the energy transition. These are examples of the various societal challenges we are simultaneously confronted with today. In facing these challenges, there are important interactions and conjunctions with different policy domains. In addition to dealing with the “wickedness”¹ of these challenges, policy makers keep trying to find solutions in an environment surrounded by uncertain economic and political settings and technological disruptions (Bali et al., 2019).

One specific domain where this awareness has risen is the mobility domain, where governments must make choices regarding the future accessibility, liveability, sustainability, safety and affordability of mobility – while accounting for changing travel behaviours and patterns. In the context of these changes, existing mobility policies increasingly meet the boundaries of the established mobility system: there is limited space and financial resources, and environmental emissions are an increasing concern (i.e. air quality norms and nitrogen targets). Despite the need to address these challenges, there is a recognized struggle in governments' capacity to tackle these issues (Bakvis, 2000; Peters, 2015).

Policy making is an important way for governments to tackle issues, including grand societal challenges. Since the 1950s, most literature identifies that many mobility-related policies follow a predict-and-provide approach (ITF, 2021). In this approach, the stakeholders involved in the policymaking process aim to predict future travel demand in order to build (or: provide) the necessary infrastructure to accommodate it (Owens, 1995; Goulden et al., 2014). This perspective implicitly assumes that travel demand is an external factor that should not be altered by proactive actions (ITF, 2021). Rather, travel demand is seen as something in continuous movement forward. That is, travel demand is closely linked to economic growth which causes travel demand to increase. Consequently, transportation authorities must continually expand the supply of infrastructure to match the growing demand. As such, the predict-and-provide approach to policymaking can be seen as a continuous cycle.

However, and, bringing back the “wicked challenges” of today, how can we take into account the changes in behaviours and mobility patterns? Or the new mobility concepts that have been emerging in the last decades (e.g. equity and mobility-related well-being)? Instead of presuming that the factors explaining current demand will remain valid in the future as current transport modelling methods do (Rowe, 1994), there is a growing need to take into account the context in which transport policies have to operate, and the way they align to broader societal goals (ITF, 2021). This is why a new paradigm for policy making has been rising, to accommodate to these emerging demands, which is called decide-and-provide.

TNO and the Ministry of Infrastructure and Water Management (I&W) wish to explore this new paradigm for policy making.

The aim of this project is to reflect upon what the decide-and-provide approach looks like, how it differs from predict-and-provide and what challenges might arise from applying it to mobility policy-making. This raises to the following research question: **What is the decide-and-provide approach and how could it help I&W to make mobility policies? And what is needed to implement this new approach through the policy cycle?** To answer this main question, we address the following sub questions:

- What is the decide-and-provide approach and how does it differ from predict-and-provide approach?

¹ Wickedness or wicked problems refers to problems that are complex to solve, usually because it involves multiple factors.

- How can we characterize the current way of policy making and how adequately does this follow the two distinguished pathways?
- Which international examples show features of the decide-and-provide pathway?
- Which parts of policy making (perceptions and points of view, beliefs and praxis/actions) are challenging – described following the steps of the policy cycle?

In this memo, an exploration and contrast between existing predict-and-provide and decide-and-provide approaches is made. Next, a set of international examples of mobility policy practices is presented to highlight various aspects of what a decide-and-provide perspective can look like for mobility policies. After that, we identify and discuss potential challenges to adopt the decide-and-provide approach – structured along the steps of the policy cycle. We conclude this memo with the main takeaways from this research and a suggested research agenda for 2024.

2 Policymaking approaches in the mobility domain: predicting, providing and deciding

To understand what the new approach decide-and-provide entails, this section answers the question *what is decide-and-provide and how does it differ from current policy making in mobility?*

Predict-and-provide is a policy-making approach in which there is strong alignment with established trends. It tends to rely on the predictability of the future, based on past experiences, and heavily places confidence on the assumed strong connection between transport activity and economic activity. It leads to a form of planning that is deterministic, underpinned by a single evaluation of costs and benefits. This predict-and-provide approach exposes the policy to risks when unexpected changes occur or new travel patterns or behaviour appear (ITF, 2021).

Decide-and-provide is an approach that embraces a flexible perspective and acknowledges the potential for substantially different future scenarios. Furthermore, this approach is grounded in the idea that accessibility (in various forms) is crucial for welfare beyond GDP and the achievement of objectives, and thus emphasizes the willingness to actively influence a preferred future. This results in transport planning policies that acknowledge the imperative of addressing and adapting to uncertainties and changes. The policymaking process is thus geared towards informing decision-making by looking beyond a one-time assessment of costs and benefits, and recognizing the necessity and capacity for future adjustments (ITF, 2021).

Each approach has their own particularities that set them apart. Most importantly, they are distinguished by the type of questions that they can answer, how they handle uncertainty, data and model usage, and scope. In the next sections, the two approaches will be explored and contrasted on these features.

2.1 Type of questions – from predictive questions to explorative and normative questions

When considering the type of questions being addressed, we see a strong difference between the two approaches. The predict-and-provide approach, as the name suggest, is based on prediction and forecast of future demand, and is thus strongly guided by predictive questions related to what will happen in the future. This forecast-led idea brought by predict-and-provide reasons closely to quantifying future transport demand to provide appropriate infrastructure. Often, such forecasts are based on current trends, such as traffic flows or the amount of public transport users. This leads to predicted, presumed and practical outlooks (ITF, 2021).

In contrast, the decide-and-provide approach is based on vision, by setting a preferred future and determining a course towards that future. As such, this approach is strongly guided by explorative questions that anticipate the range of possible development, and normative questions towards a certain desired future. Because decide-and-provide sets a preferred future, the aim is thus not to

provide what the current and expected future trends show. Instead, it aims at improving the resilience of planning, taking into account deep uncertainty about the future, leading to plausible and preferred outlooks (ITF, 2021). Table 1 summarizes these ideas, based on Börjeson et al. (2006).

Table 1: Type of questions that can be answered and their application.

| Type of question | Description/Application |
|-----------------------|--|
| Predictive questions | What will happen in the future, e.g. travel demand forecast related with infrastructure investments |
| Explorative questions | Anticipating the range of possible developments. E.g. climate change research, when exploring how different mitigation adaptation strategies can impact emissions |
| Normative questions | Begins by setting a desirable future and pathways to achieve it. E.g. sustainable mobility initiatives and the adjustments required to the current situation to achieve the desired future |

2.2 Handling uncertainty – from assuming manageable uncertainty to adapting to (deep) uncertainty

Another noteworthy distinction between these two approaches concerns the handling of uncertainty. The discussion about uncertainty also brings the subject of change to the table. Forecasts of future developments are frequently rooted in our historical encounters with change: reflecting on the past allows us to gain insight into what and how fast it has evolved, aiding our attempts to anticipate the future (Lyons and Davidson, 2016).

The experiences with past changes highlight that the pace and character of change can differ across various factors: it can be sudden and unexpected (e.g. a natural disaster), or so slow (e.g. on a daily or yearly basis), that one may not notice its gradual accumulation. This accumulation of change can either establish and reinforce the current status quo or signify a gradual yet ultimately profound shift toward a new regime (Lyons and Davidson, 2016). Our level of understanding change determines our capacity to anticipate future change (Walker et al., 2010).

Walker et al. (2003, 2010) (see also Marchau et al., 2013) introduce a categorization of four distinct degrees of uncertainty:

- Level 1 – “A clear enough future”;
- Level 2 – “Alternative futures (with probabilities)”;
- Level 3 – “A multiplicity of plausible futures”; and
- Level 4 – “Unknown future,” also known as “deep uncertainty”.

Many uncertainties at Levels 1 and 2 can be effectively managed through existing analytical methods and scientific approaches, since they result from information gaps: enhanced data collection, along with the utilization of stochastic processes and statistical analysis, can diminish this type of uncertainty, (Walker et al., 2010; McDaniel and Driebe, 2005).

However, several pressing policy challenges faced by transportation policymakers, are characterized by higher levels of uncertainty that cannot be mitigated just by getting more information (Walker et al., 2010). Deep uncertainty (level 4) arises when decision stakeholders lack knowledge and/or consensus on the best model for establishing connections between actions and their consequences, as well as the probabilities related to future events (Lempert et al., 2003, 2013; Walker et al., 2003, 2010; Cox, 2012).

In the introduction of this memorandum, we highlighted that policy-making is dealing with “wicked” problems. These complex challenges carry a deep level of uncertainty, which means that even with the usage of data and calibrated models, there might be outcomes that were not taken into consideration, bringing attention to acknowledge that futures are not always known.

Because the decide-and-provide approach takes into account a vision or future oriented idea, it also takes a more explicit route by acknowledging and embracing the (deep) uncertainty of the future. Conversely, the predict-and-provide approach takes a different path, one that tends to build upon past experiences and seems to assume the pace and character of change remains unchanged.

2.3 Data and models – from predicting to deciding

Another aspect to consider is how these two approaches address data and models in the context of transportation policy. Data is essential for starting an analysis and exploration of mobility patterns, which can be used for predicting or extrapolating trends (predict-and-provide), and for developing desirable futures by adapting the present state (decide-and-provide) (ITF, 2021).

The data used for the models is one of the sources of uncertainty, since it is a challenge to collect specific data related to a subject and thus it can come with possible error and biases from collection (ITF, 2021). Literature on car traffic in peak hours, for instance, reveals that it allows policymakers to look at overall travel demand. However, it conceals a variety of travel patterns among different population groups (Le Vine and Jones, 2012). In addition, scenario-building frequently needs the projection of forthcoming data related to economic and demographic variables, which are essential for replicating future travel demand (ITF, 2021). However it's important to note that exogenous variables affecting mobility patterns are integral components of complex systems with their own inherent uncertainties (Manzo, Nielsen, and Prata, 2014). These variables also undergo different monitoring methods and frequencies (ITF, 2021).

Literature affirms that the travel demand forecasts commonly used within the predict-and-provide paradigm were originally not meant to shape or restrict the future of travel demand. Nevertheless, their utilization has resulted in a recurring reinforcement of trends, which may not always be favourable (ITF, 2021). Transport policies that were initially designed to accommodate travel behaviour have, in turn, exerted a lasting influence on this very behaviour (ITF, 2021). Predict-and-provide, in this sense, tends to align with existing transportation trends and momentum toward decoupling economic growth and increased transport demand (for car travel).

From a decide-and-provide perspective, however, models and predictions are being used in a more explanatory way and more attention is paid to recognize and highlight their limitations and uncertainty. In addition, the alignment of model output measures with future priorities, e.g. motorized road traffic measured in terms of vehicle distance travelled, has tended to predominate, however, is questioned as this may not hold true in the future (ITF, 2021).

Depending on the goal (predicting vs. exploring possible futures) for which models are used, they must be aligned with the time horizon considered. Usually applications of predictive questions are related to long-term time horizons, where anticipating travel demand is useful to create supply levels and adjust the plans and strategies accordingly. However, very long-term plans such as a vision of a zero emission future usually take more time and more adaptation. Predicting answers to questions that have a high level of complexity and providing infrastructure as a result might not be suitable in this case, while explorative and normative questions have a better fit. Table 2 summarizes the relations of time horizons and their application in transportation.

Table 2: Different time horizons and their application, based on (Ben-Akiva et al., 2001; Zhang, Du and J. Yang, 2020; Cheng et al., 2016, ITF, 2021).

| Time horizons | Description/Application |
|------------------------------------|---|
| Near real time (e.g. next hour) | Traffic management |
| Short-term (e.g. next day) | Optimization of supply based on transport demand, increasing the efficiency of transport systems |
| Long-term (e.g. next year) | Anticipating travel demand in the upcoming period (e.g. months) to create a baseline for supply levels and adjust the transport strategy plans |
| Very long-term (e.g. next decades) | Transport-related infrastructure usually is intended to have long lifespans. However, the predictive nature of certain questions makes them difficult to answer (since the uncertainty level behind it and the adaptations that might be required). Exploratory and normative questions become useful in this case (e.g. the examples from table 1) |

2.4 Scoping – from facilitating mobility to improving accessibility and well-being

In the mobility-related field, it is acknowledged that, the predict-and-provide approach is built upon the belief that transportation serves as a principal driver of economic growth and is closely tied to mobility considerations, such as forecasting mobility patterns and accommodating demand for various projects (ITF, 2021).

Decide-and-provide, in contrast, is grounded in the notion that accessibility can be a catalyst for economic, social, and environmental well-being, aligning with the broader concept of well-being (ITF, 2021). It seeks to (re)shape transportation policies in a manner that fosters prosperity across multiple dimensions. On that line, decide-and-provide leans more into the system-view as it provides the chance to bring up the discussion of multilevel and multisector coordination and the adaptabilities that might need to take place in governance and policy making, and sparks the discussion on adaptiveness, tentativeness, experimentation and transformation.

Planning for accessibility is not an easy task. It takes into account factors like the spatial distribution of activities, temporal considerations, and the specific needs and opportunities of the individuals or organizations involved (Geurs and van Wee, 2004). However, the complexity of this concept should not be interpreted as a reason to revert to a more limited exploration of an excessive dependence on quantitative tools that are ill-suited to handle complexity and uncertainty (Lyons and Davidson, 2016).

These ideas of adaptiveness, tentativeness, experimentation and transformation are closely related to the iterative process of adaptation of policies and strategies of the decide-and-provide approach. This contrast with the sequential process of the predict-and-provide approach, that can be illustrated when examining the monitoring process. In predict-and-provide the sequential nature of monitoring as a means for accountability relates to a broader goal that has been set, and even when a feedback loop takes place, the adaptive nature is ineffective for changing the direction of the policy and strategy. For the decide-and-provide approach, however, its iterative process closely links to an adaptive monitoring, in order to make adjustments if necessary to achieve the desired outcomes.

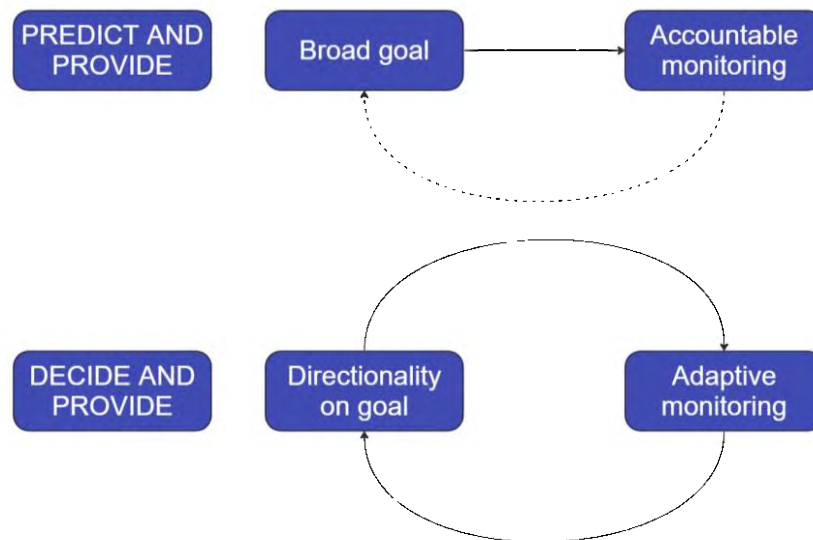


Figure 1: Sequential and iterative process for monitoring, related to each approach.

2.5 Contrasting predict-and-provide from decide-and-provide

There is no consensus on what a “good” way of policy-making is and what fundamental goals it must serve (Peters et al., 2018). However, the significance of predicting the future diminishes since it may not dictate our decisions (ITF, 2021) considering the current transitions and complexities. What is essential to grasp is the context in which transport policies have to operate to align to broader societal goals (ITF, 2021), instead of presuming that the factors explaining current demand will remain valid in the future, as current transport modelling methods do (Rowe, 1994).

In the previous sections, we have contrasted the decide-and-provide and the predict-and-provide approaches on the following features: type of questions, dealing with uncertainty, use of models and scoping of the policies. However, in practice these features should rather be viewed as scales with the decide-and-provide pathway leaning towards one side of the scales and the predict-and-provide pathway more towards the other side of these scales. For each policy process choices can be made on each element. In fact, some features might change throughout the policy process and differ (slightly) for each step in the policy process. Overall, we think the typification of the approaches as stereotypes for ways of working are recognisable for practitioners and can support a debate on which approach is best in which setting.

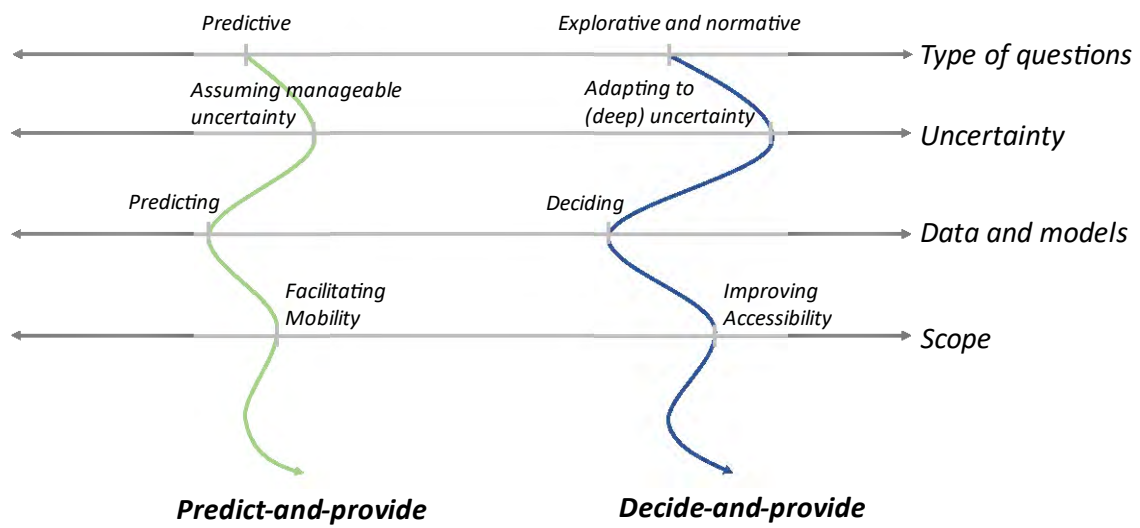


Figure 2: Representation of the approaches of predict-and-provide and decide-and-provide through different scales of the features explored.

3 Exploring the decide-and-provide policy cycle: illustrative international case studies

Implementing or bringing on a new approach to mobility policy making may seem challenging in practice. In this section, international examples are used to illustrate how some features related to the pathway of decide-and-provide are brought into practice. The three selected examples highlight:

- A vision-led approach which connects to determining a policy agenda and objectives (UK's vision for decarbonising transport);
- Opening up and closing down policy options in Scotland, that shows the process of policy decision making in face of the policy options available;
- Adaptive monitoring of a well-being perspective in policy making – New Zealand transportation beyond mobility.

The examples were selected to illustrate different stages of the policy-cycle as shown in Figure 3.



Figure 3: International examples of practice and their connection to the policy cycle.

3.1 UK – Vision for decarbonising transport

Department for Transport (DfT) has provided a vision statement on decarbonizing the transport system (DfT, 2021). To achieve the preferred future of decarbonizing the Britain transport system, DfT sets a list of 6 priorities, which includes: accelerating modal shift to public and active transport; decarbonisation of road vehicles; decarbonising how to get goods; place-based solutions; putting UK as a hub for green transport, technology, and innovation; and reducing carbon in a global economy (DfT, 2021).

The main decide-and-provide feature that we take from this example is the vision statement made by the Department for Transport. The vision statement shows clearly a pathway that starts from a vision: clean transport is better transport. By 2050 Transport for UK would like to decarbonize all forms of transport, as well as related sectors that are involved in transport. The vision statement is translated into connected themes and the impacts that they are aiming to achieve for each of these themes. While reducing emissions and increasing air quality are main goals of the mobility vision, health improvements, more jobs and economic growth are considered important co-benefits for the approach taken. The vision statement also provides a detailed plan with actions and feasible timings.

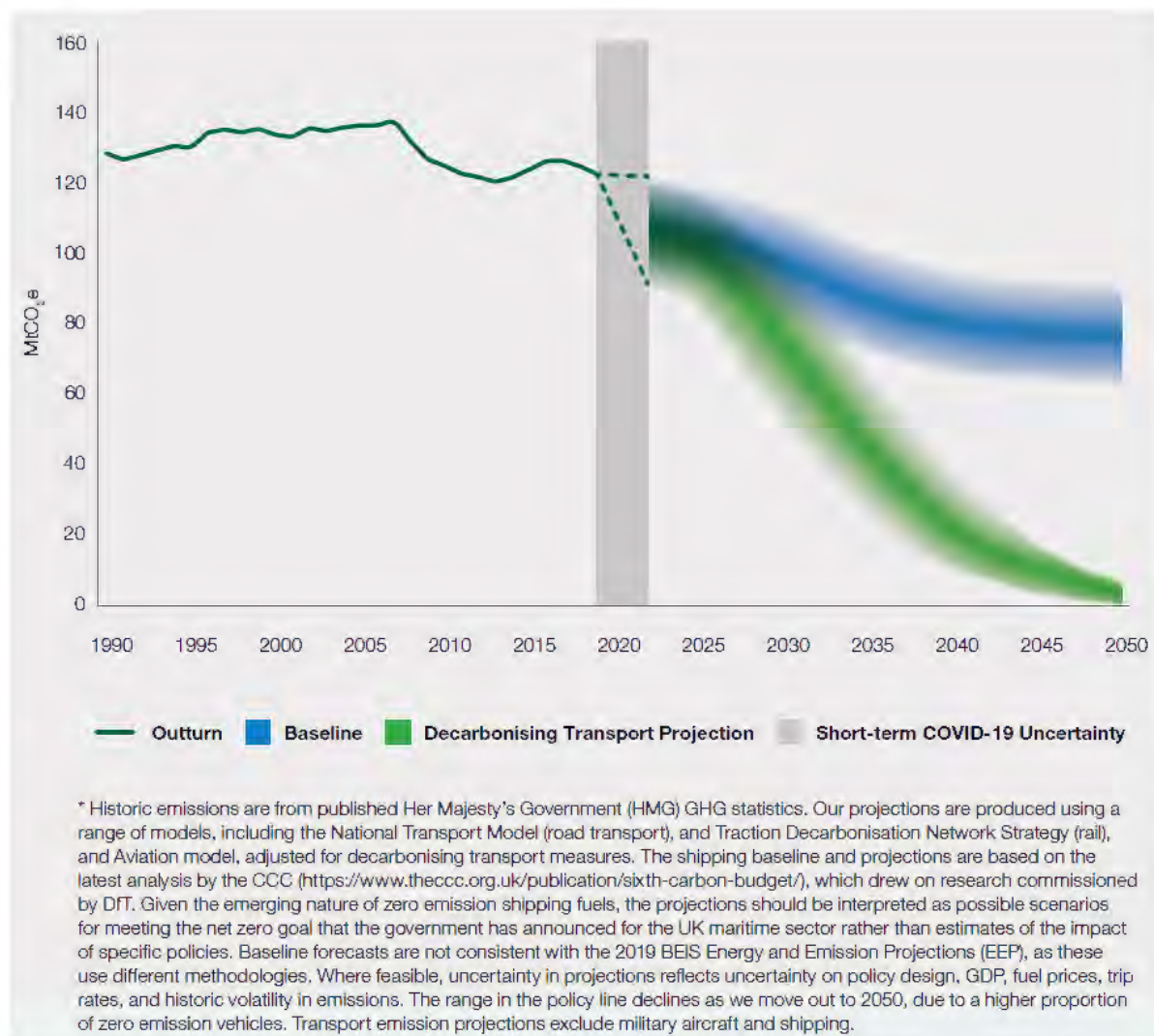


Figure 4: Example of decarbonizing domestic transport in terms of GHG emissions (DfT, 2021).

The plan not only brings a vision-led statement; the vision statement is translated into projections and scenarios of how key aspects of the plan will look like in the upcoming decades. Figure 4 illustrates such a projection. Illustrative of the decide-and-provide approach, this vision-led statement includes a more explicit uncertainty consideration, that highlights that “uncertainty in projections reflects uncertainty on policy design, GDP, fuel prices, trip rates, and historic volatility in emissions” (DfT, 2021). Rather than providing a historical-base projection (i.e. predict-and-provide approach), the statement thus brings the very-long term time horizon into the policy cycle, and shows the impacts based on data projections according to a vision setting – which is illustrative for the decide-and-provide approach.

3.2 Scotland – Opening up and closing down policy options with decide-and-provide

A case which illustrates the application of the decide-and-provide approach during the next stage of the policy-cycle – designing the policy instruments – is the Scottish National Transport Strategy. Following the decide-and-provide approach, the National Transport Strategy has first expressed the vision to ‘have a sustainable, inclusive, safe and accessible transporting system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors’ (TS, 2020).

Guided by this vision and embracing the uncertainty of the future, a scenario planning tool and process has been developed for the National Transport Strategy to support the designing of policy instruments. The tool relates various drivers of change to specific output measures, which have been selected in engagement with multiple stakeholders (Marsden and Lyons, 2021). Taken together, these drivers and output measures form future scenarios, either reflecting (i) plausible futures without changes in the policy instruments, or (ii) plausible futures with changes in policy instruments.

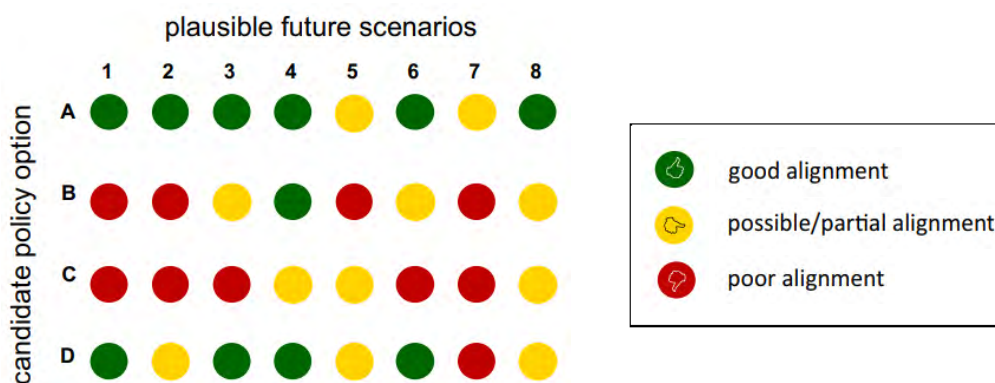


Figure 5: Opening up and closing down policy options (Lyons and Marsden, 2021).

As illustrated in Figure 5, eight plausible futures without policies are linked to four distinct policy options, thus creating new plausible futures (Marsden and Lyons, 2021). Lyons et al. (2018) call this process ‘opening out’ uncertainty. Subsequently, these plausible futures and their underlying policy options can be evaluated and compared, based on the extent to which they are aligned with the future envisioned by the National Transport Strategy. This process can be referred to as ‘closing down’ uncertainty (Lyons et al., 2018).

The scenario tool and process developed for the National Transport Strategy show that the decide-and-provide approach can be integrated in the designing of policy instruments. Rather than designing and comparing policy instruments through forecasting on historical data (i.e. predict-and-provide approach), the National Transport Strategy tool proves to be a practical, alternative method which uses the vision of a preferred future as reference point during the policy process.

3.3 New Zealand – transportation beyond mobility indicators for monitoring and evaluation

New Zealand's Transport Outcomes Framework serves as the final example of the decide-and-provide approach, focusing on the policy monitoring and evaluation stage of the policy cycle. To realize New Zealand's vision of achieving '[a] transport system that improves wellbeing and liveability, its transport system needs to encourage five core outcomes: inclusive access, healthy and safe people, environmental sustainability, resilience and security, and economic prosperity (MoT, 2020). Based on research and discussions with stakeholders, 37 underlying transport indicators have been formulated and arranged among these core outcomes (MoT, 2022).

New Zealand's Ministry of Transport applies a transport neutral approach, meaning that all modes of transport are considered and evaluated equally during decision making processes (MoT, 2020). As a result, the formulated indicators apply to all (relevant) modes of transport: walking, cycling, road, rail, maritime and aviation. By actively collecting data and monitoring the indicators, it can be assessed to which extent these transport modes as well as transport policies are contributing to the core outcomes.

Besides assuring accountability, New Zealand's evidence-based evaluation framework shows that learning is inherently connected to policy cycle. By learning how various transport modes and policies contribute to the core outcomes – and thus the envisioned future – more effective and efficient policy instruments can subsequently be designed, adapted and implemented during new iterations of policy cycles. All in all, New Zealand's case illustrates that the decide-and-provide approach is a suitable and fruitful approach in the ex-post evaluation of policies with an envisioned future again as reference point.

4 How the approaches relate to practice – reflections on the policy cycle

The approaches described in sections 1 and 2 are theoretical frameworks that, in practice, can be applied differently in the policy cycle (see Figure 6 for a representation of it). By exploring the policy cycle from the perspective of these two approaches to policymaking, we answer the question *how can we characterize the current way of policy making and how adequately is this summarized by the two distinguished pathways?*

In general, policy-making follows the steps illustrated in Figure 6. In determining the policy agenda and objectives, we form an idea of what policies are needed to achieve some type of change. In the Netherlands, the IMA (Integrale Mobiliteits-Analyse) and Mobiliteitsvisie provide relevant input to set the policy goals. Next, the policy cycle gives an overview of the main steps in a policy process. As this model is a simplification of reality, note that there is a lot of variety in the way these steps are followed and applied in practice.

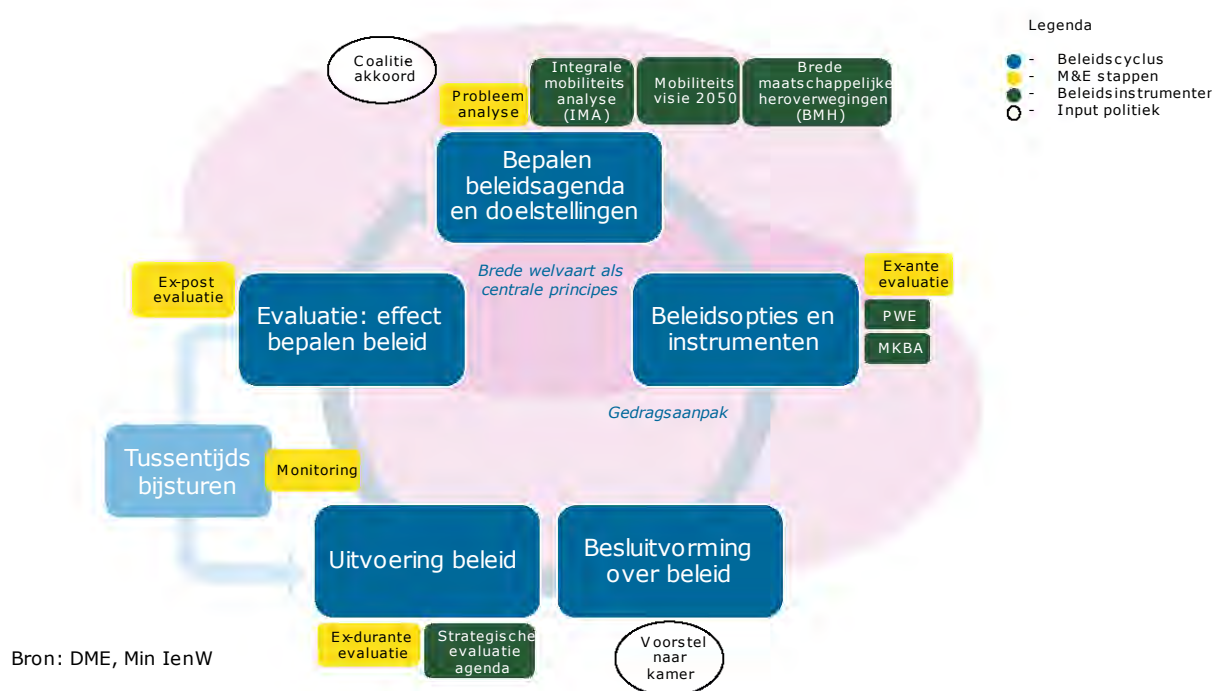


Figure 6: Policy cycle simplification (provided by I&W, 2023).

Figure 6 represents the policy cycle, consisting of various steps that include setting the agenda, designing policy, implementing policy and monitoring and evaluating the policy (see blue boxes in Figure 6, see also: OECD, 2015). In addition, the ministry of I&W uses monitoring and evaluation across the various steps of the policy cycle, as indicated by the yellow blocks in Figure 6. Finally, Figure 6 also

includes a number of policy instruments that the ministry of I&W typically uses in each step of the policy cycle (see green boxes in Figure 6).

The policy cycle is supported by a number of principles that feed the policy making across. One such principle that is used by the Ministry of I&W is broad welfare (indicated in pink in Figure 6. As de Boer et al. (2022) discuss in their work, the Ministry of I&W has been already working on moving into the direction of a change from mobility goals to accessibility goals. The IMA 2050 brings the core idea of integrating different silos (e.g. modes of transportation) to form a system view over transportation, which proposes an integrated view for accessibility, safety, living environment and health (I&W, 2023). Another principle integrated in the policy cycle is the behavioural approach. Within the ministry there is a growing attention in how taking behaviour into account can improve policy making (also indicated in pink in Figure 6).

5 Discussion: potential challenges in applying the decide-and-provide approach in the policy cycle

In a number of joint workshops, TNO and the Ministry of I&W discussed potential challenges when applying the decide-and-provide approach. The policy cycle was used to structure these discussions. The decide-and-provide approach will not change the policy cycle itself, yet it is expected to change how the steps in the policy cycle are applied. The goal of this section is to explore and highlight the potential challenges if a different approach is applied in the steps of the policy cycle.

5.1 Challenges related to determining policy agenda and objectives

As discussed previously, the IMA and the Mobiliteitsvisie are relevant policy documents to set goals. When relying on the predict-and-provide approach, the direction of goals is largely set by the extrapolation of current trends towards the future. However, in the decide-and-provide approach, the assumption is that one cannot solely rely on this extrapolation, and one could also consider different possible futures based on a vision-led approach.

However, if decide-and-provide provides the opportunity to choose between different possible futures by its vision-led approach, the question raised is: what is that desired future? What determines the legitimacy of such desired future? And how do we choose between various (possible) future scenarios? An extra complicating factor here is the political dimension: every four years the course of action can be altered due to political changes. This relatively short period is not aligned with the (very) long-term vision proposed by the decide-and-provide, and is often considered the reason for a lack of attention by politicians for more long-term developments. For creating consensus over decisions, there is also an additional challenge: sometimes majority consensus in parliament is lacking (for example: betalen naar gebruik).

Policy coherence, or the alignment of goals between layers of government (EU, national, local), presents an additional layer of complexity. On various topics there is a misalignment of goals between the European and national level. At the EU level, there is an enforcement of often divergent and hard goals (e.g. on net land use, fit for 55 and water quality) and presents a challenge in having congruent objectives (for all aspects at same level of concreteness). At the local level, so far, municipalities seem to have made most progress with implementing the concept of welfare beyond GDP. At this scale, problems and interactions become more tangible for the population and the decision makers. As a result, the decision makers of different domains (aldermans) are in one team and have regular interactions. At the national level, however, a shift from a silo to a system view to work across domains remains an intricate challenge.

This challenge is also connected to the scope of the ministries itself: they are organised around a selection of topics and consequently, an integrative perspective such as we see at the regional level requires a change in the way ministries are structured or the people within ministries' ways of working

to allow more cross-ministries' collaborations and interactions. As such, changing the way in which policy goals or agendas are set – towards a more integrative, systemic decide-and-provide approach – means that uncertainties in the ministries current way of working are introduced: the way budgets are allocated, choices are made, or cooperation is established could be subject to change. These changes also affect all other stages of the policy cycle.

5.2 Challenges related to the policy options and instruments

When considering the next step in the policy cycle, designing policy options and choosing policy instruments, we see that in the predict-and-provide approach the reliance on MKBA (Maatschappelijke kosten-batenanalyse) analyses is high (and mandatory for large infrastructure investments), and has a major influence on the selection of policy options. For the predict-and-provide approach, this mandatory reliance on MKBA analyses presents a challenge, as desired futures have potential effects that are more difficult to quantify for, such as impacts on welfare beyond GDP.

An instrument that could, perhaps, suit the decide-and-provide approach better is the non-mandatory Participatory Value Evaluation (PVE) analysis. The PVE evaluates choices from the citizens' perspective. According to Boer et al. (2022) by using this instrument, people can choose how to divide the budget into several different projects. PVE suggest some potential to be used with projects that reason closely to accessibility and well-being, since literature reveals that this instrument can capture altruistic behaviour, and individuals place a higher significance on safety and environmental impacts than on travel time savings, compared to the assessment methods employed for the SCBA (Social Cost-Benefit Analysis) (Mouter et al., 2021).

5.3 Challenges related to decision making

The first identified challenge related to decision making is that currently, mobility-related policies are largely built upon the predict-and-provide approach, whereby the options that are analysed have a direct link to the MIRT (Meerjarenprogramma Infrastructuur, Ruimte en Transport) cycle that is tied to large infrastructural projects. This decision-making steps is rather inflexible and has high effort and monetary costs associated to it.

In addition, decision-making is a delicate process with interactions between politics, bureaucracy, science, and laws. Changing how decisions are made is therefore not easy, and certainly not straightforward, as several nuances and different factors have to find balance. Citizens, with all their different needs, also play a crucial role in guiding decisions. When problems and solutions match up at the right time while these dynamics are happening, a window of opportunity for changing decision-making processes arises. This moment can represent a phase for transformative decision-making, where the mix of governance can align with needs from the people, bringing together the problems and solutions at the right timing.

However, change means renewed requirements regarding the role, actions and capacities of policymakers in order to be able to leverage such change processes (Tjokrodikromo et al., 2023a; 2023b). Changing these aspects is, however, difficult as influential and established public administration and policy models (i.e. the institutionalised traditions, ways of working, and mindsets) largely inhibit the capability to change (Braams et al., 2023), and as a result, it is possible that no actual progress is made.

5.4 Challenges related to policy implementation and the effects of policies

Considering the final two steps in the policy cycle, we find that perhaps the change needed in the monitoring and evaluation of policy is most challenging.

It is important to consider that monitoring and evaluation can be an important way to close the loop from evaluation to policy goals: it can be the stepping stone towards agenda setting. However, closing the loop from evaluation to setting policy goals (again), is one of the most challenging steps in the policy process. While ex-ante evaluations are more commonly used to determine the policy options and topics for the policy agenda setting, using ex-post evaluation is far less common.

However, as the decide-and-provide approach has a more long term focus on uncertain desired futures, these kinds of evaluations are even more important. An ex-post evaluation is used to monitor the effects of the implemented policy. In the predict-and-provide approach this is primarily done for accountability (i.e. did we do it right?). However, if we take a more decide-and-provide approach, ex ante monitoring and ex-post evaluation become important in order to enable an adaptation of the measures if the anticipated effects stay behind (i.e. are we still doing the right things?).

6 Next steps

This memo is written as a reflection document, which contrasts two different policy making pathways in the mobility domain: predict-and-provide and decide-and-provide. While existing policies within the mobility domain largely built upon the predict-and-provide approach, the decide-and-provide approach brings a new perspective to policy making. Given the current times of complex and impactful societal challenges, this new approach could add new perspectives to make a better fit of policies to the current complexities. This section closes with the research agenda of 2024.

The key take aways from this research are:

- The analysis of the literature of predict-and-provide & decide-and-provide helped to unravel the various features. The four main features are: type of questions, dealing with uncertainty, data and modelling and scoping. These features are scales. And for each project, a decision on which side of the spectrum of the scales to be, should be context-dependent. This understanding of the approaches can enable more effective responses to the challenges at hand.
- The current way of working in policy making at I&W has more features than the 4 mentioned above, and is more complex than the description of literature on predict-and-provide and decide-and-provide.
- Based on developments in society and public administration, we see several trends emerging that point towards adding alternative pathways (navigating the scales based on the topic/challenges).
- To change the policy-making praxis is challenging. Potential barriers are: leadership; changes laws/regulations, new instruments, mindset.
- There are international and national examples of changing the praxis on various features.

As proposed by the outcomes of the literature review, decide-and-provide is an approach that embraces uncertainty, conducted by a vision-led approach, with focus on accessibility and leaning more towards a system view, which supports complex decision problems like climate change, housing crisis, energy transition, and other wicked problems. However, in practice, the implementation can be far more complex. We consider that the following key points are relevant to create a window of opportunity to implement features from decide-and-provide pathway:

- *Clarity and transparency:* it is essential to make explicit and transparent choices, assumptions, limitations, and what will be the resulting effects. Being precise in specifying which aspects of the mobility system and policy-making process are under discussion is indispensable. As explained, each for element of the approach, one can choose how to implement this in practice. So being explicit on how to deal with each element is key to create the transparency among all stakeholders involved.
- *Integrated (and cross domain) Policy-Making:* a comprehensive transformation of policy-making practice is essential. This includes reevaluating the depth of our understanding of the issues at hand, cultivating a proactive approach to uncertainties, and redefining how we utilize procedures, models, and data throughout the process.
- *Adapting existing solutions:* implementing well-established strategies, such as vision development, continuous monitoring, and drawing from past experiences and knowledge, can be highly effective.

Certainly the noted points are only a starting point to understand what is necessary, and more emphasis on the results for practice is required. As a recommendation for future research agenda, we see that, beyond static frameworks of choosing between predicting or deciding, is the challenge of

broadening the scope from mobility to accessibility and its co-benefits related to well-being. The main research question for 2024 is:

What are the main challenges for implementing welfare beyond GDP (which requires a different policy-making praxis) into praxis? Which steps of the policy cycle need to change in what way? How to do that? What are good examples?

- Changing the policy-making practice requires time and capacity, therefore an implementation question is – how to create manoeuvring space e.g. how to do less projects and create more value in the selected projects?
- The design-and-provide pathway requires a vision on the desired future, the attitudes and perception of citizens become more important to include in policy-making, the question is – how can we identify citizens' needs and priorities in the early in the policy making process (setting up the policy agenda, formulating the goals)?

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Anna van Buerenplein 1
2595 DA Den Haag
www.tno.nl