Scenario Planning: A Literature Review

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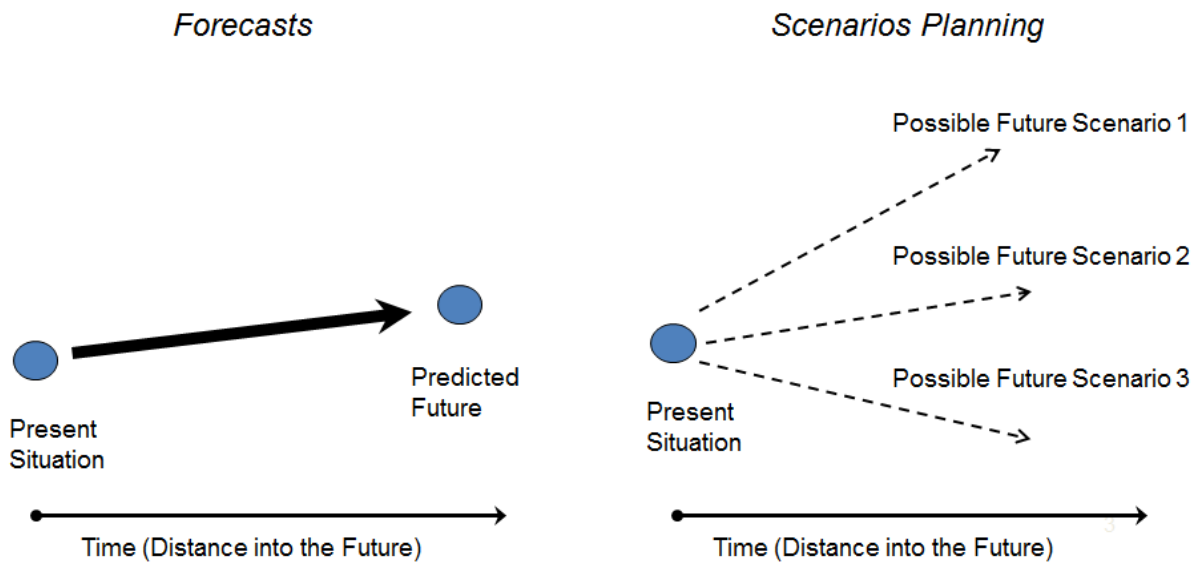
1. Introduction

Scenario planning is a strategic planning method which can be employed to explore possible future situations and development paths, typically over a medium-term horizon (Schoemaker, 1995; Lindgren and Bandhold, 2003; van der Heijden, 2005). Compared with other strategic planning tools and techniques, especially those ones based on the extrapolation of existing trends and patterns and the use of quantitative, single-point forecasts, scenario planning accounts more explicitly for the complexity and uncertainty of the environment (Porter, 1985; Mintzberg, 1994; Gordon, 2013). Its aim is not to accurately predict the future, but rather to devise different possible pictures of the future (Figure 1) so as to make policy-makers and business leaders more aware of the new potential trends, the key factors and players that may produce major shifts in the existing conditions, and the hitherto unknown opportunities and threats entailed by each anticipated future condition (Wack, 1985a; Schwartz, 1991; Grant, 2003). This thus may help executives develop more comprehensive and robust strategies, capable of dealing with different contingencies (Wack, 1985b; Schwenker and Wulf, 2013; Martelli, 2014).

Figure 1 – Comparison between single-point forecasts and scenarios planning.



Source: Author's own elaboration.

The first systematic use of scenario planning dates back to the late 1950s when the US RAND ('Research ANd Development') Corporation started to study different possible states of the world within which alternative weapons systems and military strategies would have to be employed (e.g. Kahn and Weiner, 1967; Kahn et al., 1976). Starting from the late 1960s, scenario planning spread outside the RAND and companies like the Royal Dutch/Shell introduced such techniques in their corporate planning procedures (Wack, 1985a). Scenarios came to the attention of the general public in the 1970s with the publication of the Club of Rome's report, *The Limits to Growth* (Meadows et al., 1972), highlighting the possible future environmental risks entailed by the current growth path. In the course of time, events such as the turmoil that followed both the first and the second oil shocks in 1973 and 1979, the crisis of the traditional rational planning school during the 1980s and the structural turbulence associated with globalization processes have greatly emphasized the theoretical importance of managing uncertainty through scenario thinking

(Lindgren and Bandhold, 2003; Schwenker and Wulf, 2013; Martelli, 2014). Nowadays, scenario planning is used in a wide range of context, by a number of different companies, agencies and governmental bodies (van Notten, 2006; Gordon, 2013). However, this broad variety of applications has spawned a large diversity in the types of scenarios that have been developed. The term 'scenario planning' has thus progressively become a rather comprehensive concept, encompassing the most varied possible assortment of approaches, techniques and tools with different degrees of complexity (Bishop et al., 2007; Börjeson et al., 2006; Kosow and Gaßner, 2008; EEA, 2009).

Against this backdrop, the objective of this paper, drawing on a comprehensive analysis of the relevant literature, is to provide an overview of the different scenario planning methodologies and to offer some practical guidelines for employing scenario planning in its basic form. In this paper, in particular, a fundamental distinction is made between conventional (explorative) scenario planning methods and backcasting analyses (also frequently referred to as 'normative scenario planning methods'), which respond to two different needs. The first, typical of explorative scenario planning approaches, is a desire to know what the future may be like, so that adjustments can be made when there is still time to rationally make them. The second, characterizing backcasting analyses, is the willingness to devise opportune development paths which may lead to a desired future condition.

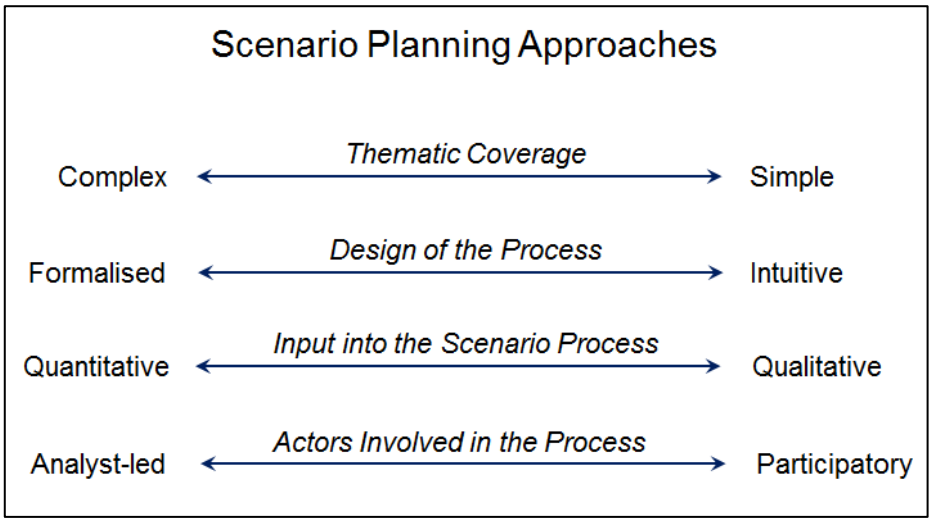
2. Conventional (Explorative) Scenarios Planning Methods

2.1 Types of Scenarios

A scenario can be defined as a consistent and plausible description of a possible future reality, including also information about paths of development leading to that future situation, which can serve as basis for action (Porter, 1985; Schwartz, 1991; van Notten, 2006; Parson et al., 2007; Kosow and Gaßner, 2008; EEA, 2009). The last 50 years have seen the rise of a number of different approaches to scenario planning, spanning from sophisticated methods to very simplistic approaches. On the one hand, this diversity makes scenario planning a rather flexible strategic planning technique, which can be tailored to suit the needs of the problem at hand (van Notten, 2006, Martelli, 2014). On the other hand, this multitude of ways to create scenarios, the lack of standardization in most scenario planning methods (Cairns et al., 2004; Schwenker and Wulf, 2013) and, in many cases, the unwillingness of scenario experts to fully disclose their methodology (Chermack et al., 2001), confer to this discipline a high degree of subjectivity, making the outcomes of many scenario planning processes hard to replicated and incapable of third-party audit (Schwartz, 1991; Desmerais, 2000).

Several classification systems have been proposed in the attempt to analyse and compare scenarios, and thus bring order to this 'methodological chaos' (Millet, 2003; Bradfield et al., 2005). Figure 2, based on the typologies devised by Rotmans and colleagues (2000), van Notten and colleagues (2003) and van Notten (2006), distinguishes scenarios planning techniques according to four main parameters related to goals, content and process design. For each parameter it is generally possible to identify a continuous spectrum of different methods ranging between two extreme poles.

Figure 2 – Types of scenarios planning techniques.



Source: Adapted from van Notten and colleagues (2003) and van Notten (2006).

Thematic Coverage

Firstly, scenarios can be distinguished with regard to their content and thematic coverage in *complex* and *simple*. Simple scenarios, as their name suggests, are rather limited in scope and tend to focus only on one particular theme and sector. Complex scenarios, on the other hand, are much broader and wider in scope, and thus more demanding of resources. They cover different issues and attempt to describe the possible future correlation between multiple events and processes (van Notten, 2006).

Design of the Scenario Process

There are many types of scenario planning approaches in use at the moment, ranging from *formalised* techniques to *intuitive* methods (Martelli, 2014). Formalised scenario planning techniques develop scenarios in a systematic way, according to rigorous principles and analytical procedures, sometimes supported also by computer software (van Notten, 2006). Intuitive methods consider instead scenario development as an art form and are thus characterized less by formalization than by the explicit implementation of creativity, intuition and implicit knowledge (Kosow and Gaßner, 2008).

Inputs into the Scenario Process

Scenario planning techniques can also be classified according to the typology of data used to construct scenarios. In principle, *quantitative* inputs can be more appropriate for more analytical scenario planning procedures, focusing on rather short planning horizon. *Qualitative* inputs can be instead conveniently employed for the analysis of complex and longer-term planning problems, characterised by high levels of uncertainty (van Notten, 2006; Kosow and Gaßner, 2008). In the attempt to produce more robust scenarios, several scenarios planning techniques adopt a hybrid approach, in which both qualitative and quantitative data are gathered, and where quantitative information is translated into qualitative knowledge and vice versa (Kosow and Gaßner, 2008). Sometimes, however, the fusion of quantitative and qualitative data represents a methodological challenge (van Notten, 2006).

Actors Involved in the Process

Scenario planning techniques can also be distinguished in *analyst-led* and *participatory* approaches, according to the manner in which scenarios are developed. In analyst-led (or model-based) scenario planning methods, scenarios are developed autonomously by a team of specialists. By comparison, participatory approaches to scenario planning involve workshops and focus group discussions in the attempt to explore different stakeholders' perspectives. The latter approaches are suitable for generating creative ideas for the scenarios, although, compared with analyst-led methods, they generally require longer times to process and combine all the different stakeholders' points of view in some consistent a coherent descriptions of alternative hypothetical futures (van Notten, 2006). Some methods (e.g. Alcamo, 2008; Kok and van Vliet, 2011) also combine stakeholder-led and model-based scenarios with the view to offering more flexibility and adaptability to different problems and conditions.

2.2 Basic Steps of Explorative Scenario Planning

In a typical scenario planning process, plausible futures are sketched out based on assumptions regarding the possible evolution of present factors and conditions (Kosow and Gaßner, 2008; Martelli, 2014). The scenarios developed as a result of the process are presented as the context within which the system operates and policy making and strategy formulation take place (Becker, 1997; Greeuw et al., 2000). As highlighted in the previous section, a number of scenario planning approaches exist (i.e. complex or simple; formalised or intuitive; quantitative or qualitative; and analyst-led or participatory methods), even though they share some common steps. Below a basic approach to scenario planning is presented. This approach, which has been made popular by RAND and Shell Oil, is based on the identification of two main driving forces from which the overall logic of the scenario storylines is derived. Although presented in a linear fashion, the steps of the process are generally undertaken in an iterative manner, with some feedback loops between them.

a) Scoping

In this step, which creates the foundation for the successive analysis, the scenario planning team specifies key elements such as the scope of the exercise, the thematic coverage, the key stakeholders, the timeframe and the geographical scope of scenarios (Schwartz, 1991; Kosow and Gaßner, 2008; Schwenker and Wulf, 2013).

b) Information Search

The scenario planning team is then required to collect the basic data and information regarding the present condition and all the factors and variables potentially influencing future development paths (van der Heijden, 2005). Various sources of data and information can be used, including key planning and policy documents regarding the problem at hand, relevant books, journal articles and reports, newspapers, and interviews, workshops or surveys with experts and project stakeholders (Schwenker and Wulf, 2013).

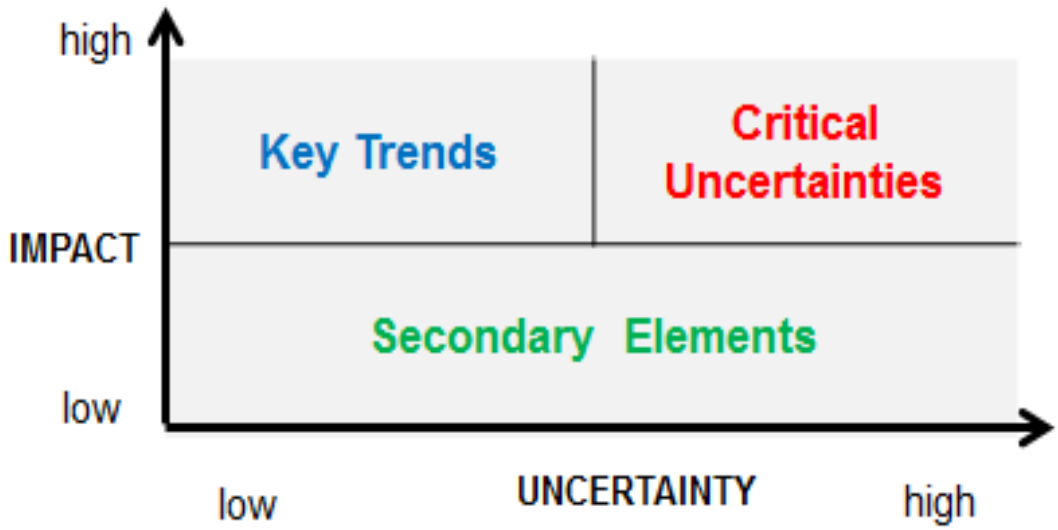
c) Trend and Uncertainty Analysis

Once the basic data and information have been collected, factors potentially affecting future developments have to be analysed with the view to identifying the most relevant ones (Schwartz, 1991; Schoemaker, 1995). One common way to undertake this task is to rank the various factors according to their degree of uncertainty and potential impacts on the system under investigation (Schwenker and Wulf, 2013), by employing an impact/uncertainty grid (van der Heijden, 2005). As illustrated in Figure 3, the impact/uncertainty grid is divided into three sections (van der Heijden, 2005; Schwenker and Wulf, 2013):

- The bottom section of the grid contains factors that are judged to have a relatively minor impact on the future development paths. Hence, these 'secondary elements' are not further considered in the scenario planning process.
- The upper left-hand section of the grid contains factors which are considered to be capable of significantly impacting future developments, but whose future behavior is relatively easy to predict. These 'significant trends' are then used in the development of scenarios.
- Finally, the upper right-hand section of the grid contains the 'critical uncertainties'. These are factors with both a major impact on the future development paths and a high degree of uncertainty, and thus represent the most important elements for scenario development.

In the case of an analyst-led scenario planning approach, the position of the various factors in the matrix is established directly by the scenario planning team, based on their knowledge and experience. Conversely, in the case of a participatory approach to scenario planning, secondary elements, significant trends and critical uncertainties can be determined, for example, through a Delphi exercise involving an expert panel or by the average evaluation of the problem stakeholders (van't Klooster and van Asselt, 2006; Schwenker and Wulf, 2013).

Figure 3 – Example of impact/uncertainty grid.

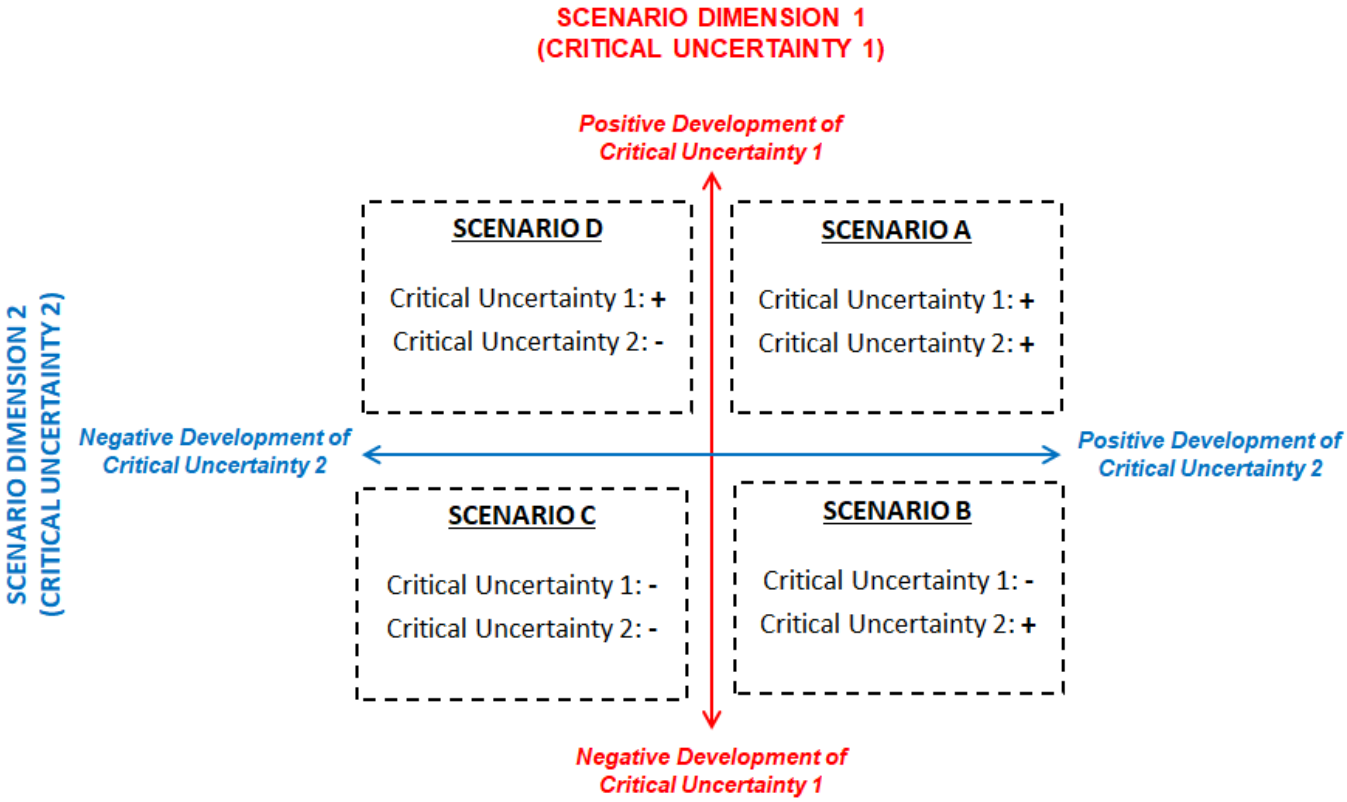


Source: Author's own elaboration.

d) Scenario Building

In this step, the identified trends and critical uncertainties are converted into various plausible scenarios that describe different possible future states of the world (Schwartz, 1991; Schoemaker, 1995). There are numerous ways in which this can be achieved. As highlighted above, one of the most popular scenario planning approaches is the scenario-axes technique (van der Heijden, 2005; van't Klooster and van Asselt, 2006; Schwenker and Wulf, 2013). With this technique, the two most important critical uncertainties included in the upper right-hand section of the impact/uncertainty grid are selected. The potential future developments of these uncertainties, ranging from an extremely positive (favorable) development to an extremely negative outlook, are plotted respectively onto the *x* and *y* axes of a 2x2 matrix. As shown in Figure 4, expressing each uncertainty in terms of its dual possible future outcome will produce four possible scenarios (van der Heijden, 2005).

Figure 4 – Example of a 2x2 scenario matrix.

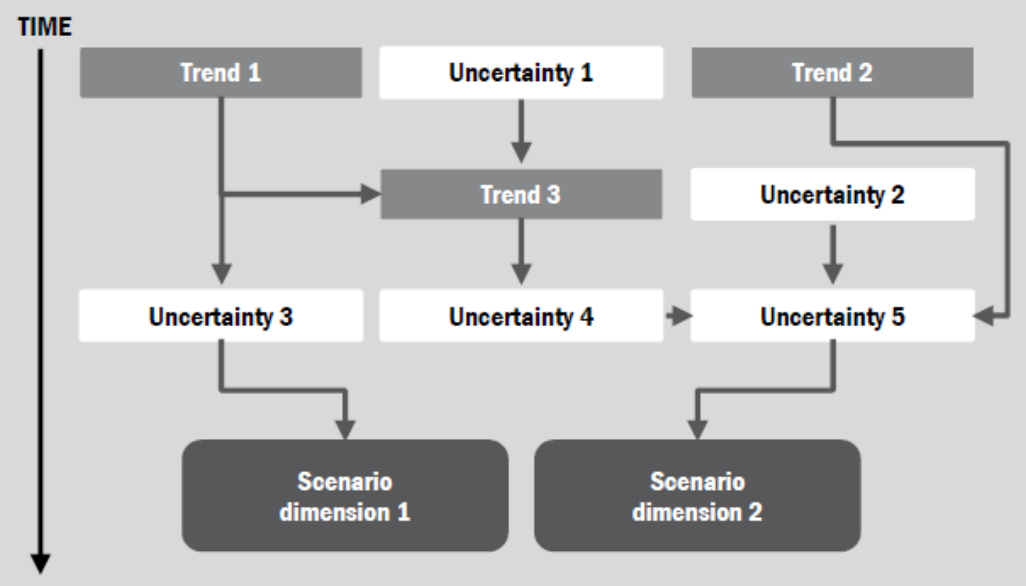


Source: Author's own elaboration.

To improve scenario richness and breadth of outcomes, in principle, also three main critical uncertainties, whose combination lead to a 2x2x2 scenario matrix with eight possible scenarios, can be employed (van der Heijden, 2005).

The scenarios included in the corners of the matrix and grounded on two scoping outcomes of the two critical uncertainties need then to be further specified. Other critical uncertainties and trends are added to create some consistent and plausible stories about the future. Some diagrams similar to the one displayed in Figure 5 can be used to illustrate how the different factors interact with each other to produce different outcomes (Schwenker and Wulf, 2013).

Figure 5 – Example of influence diagram.



Source: Schwenker and Wulf (2013).

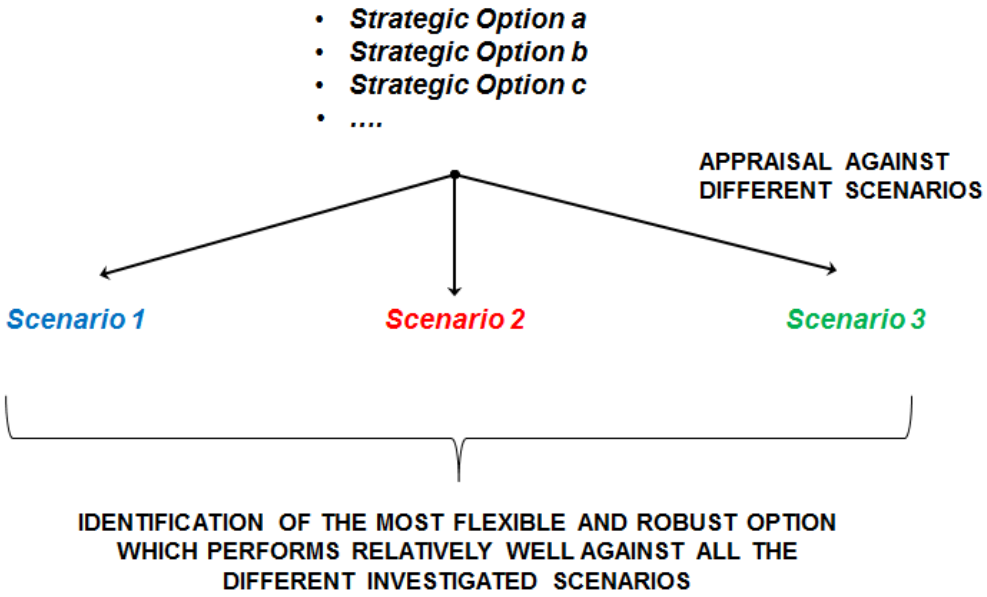
The literature proposes some criteria as central in evaluating the quality of the explorative scenarios produced, regardless of the goal and type of the scenario process. According to several authors (e.g. Godet, 1993; Banister et al., 2000; Lindgren and Bandhold, 2003; van der Heijden, 2005; Kosow and Gaßner, 2008) scenarios should have the following characteristics:

- *Manageability*: the number of scenarios considered in the process should be comprised between two (i.e. at least two scenario are needed to reflect uncertainty) and four. Working with more than four (or five) scenarios has proven to be counterproductive and organizationally impractical.
- *Plausibility*: each future scenario and path of development which may lead to that future situation must be regarded as conceptually feasible.
- *Consistency*: the events described within a scenario must be related through logical cause/effect lines of argument and must be consisted with one another.
- *Comprehensibility*: scenarios must be detailed enough to be traceable. At the same time, in order to avoid unnecessary analytical effort, scenarios should not contain an excessive number of factors and dimensions.
- *Relevance*: scenarios must be relevant to the area of study and quite dissimilar from 'business-as-usual' future, so as to trigger unconventional thinking.
- *Differentiation*: the selected alternative scenarios must clearly differ from one another so that they can be examined and compared with each other as separate and distinct sketches of the future.
- *Transparency*: as a means of increasing the degree of verifiability and legitimacy of scenarios, the scenario planning approach adopted and all the assumptions, hypotheses and choices made during the scenario development process should be made explicit and described clearly.

e) Strategy Definition

Once scenarios have been developed, different decisions and strategic options can be tested against the various possible future conditions (Schwartz, 1991, van der Heijden, 2005). In this step traditional appraisal and evaluation tools and techniques can be employed to identify the most flexible and robust strategy (Figure 6).

Figure 6 – Strategy Definition.



Source: Author's own elaboration.

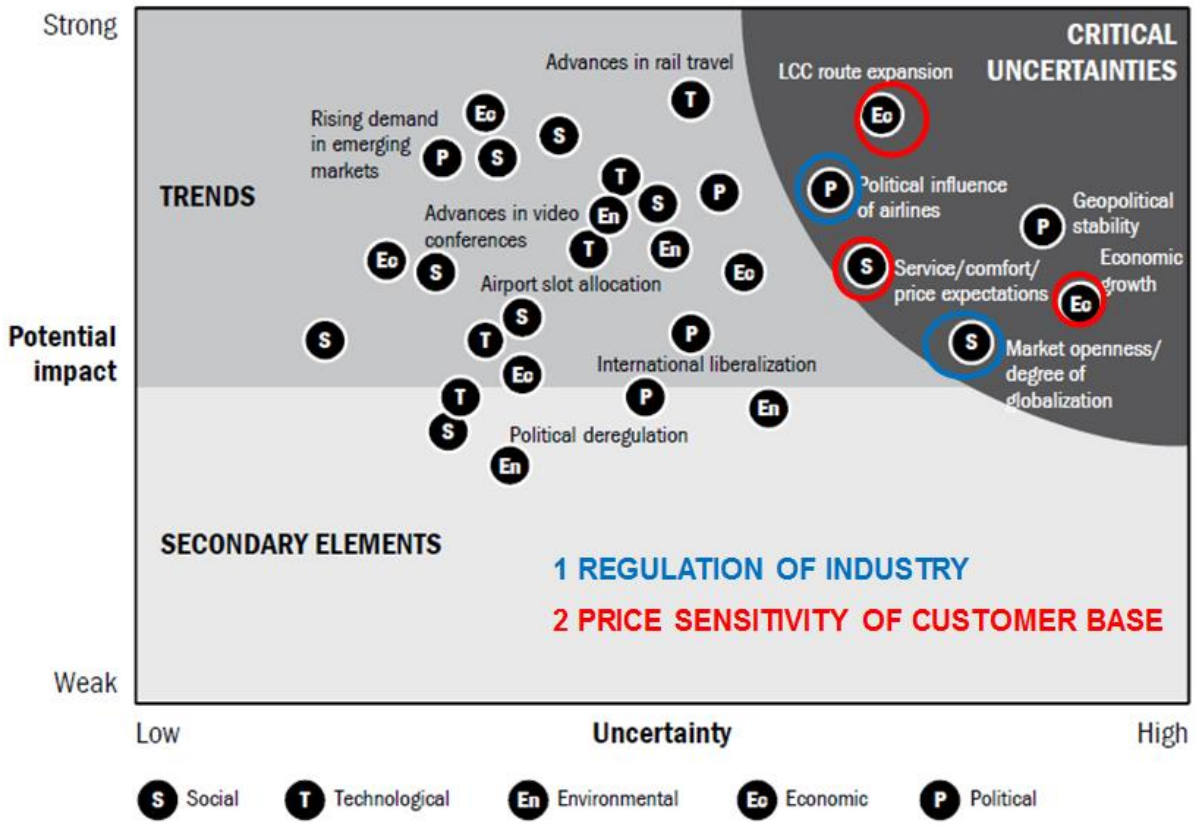
f) Monitoring

As emphasized by several authors (e.g. Schwartz, 1991; Schoemaker, 1995; and van der Heijden, 2005; Schwenker and Wulf, 2013), at the end of the process it is important also to define some indicators (e.g. GDP growth; government spending on some specific areas; population growth and demographic age distribution) to help policy-makers and business leaders to continuously monitor the environment (and particularly the future development of the critical uncertainties and key trends), check if the scenarios devised are still valid and decide whether some changes in the selected strategy are needed.

2.3 Example: Explorative Scenarios Developed for the European Airline Industry

In their book, Schwenker and Wulf (2013) illustrate a practical application of the scenario-axes technique to explore possible futures for the European airline industry. Several factors and variable which are likely to impact the airline industry in the future (identified through a media scanning process) are identified and ranked through the impact/uncertainty grid so as to determine 'secondary elements', 'significant trends' and 'critical uncertainties' (Figure 7).

Figure 7 – Impact/uncertainty grid for the European airline industry.



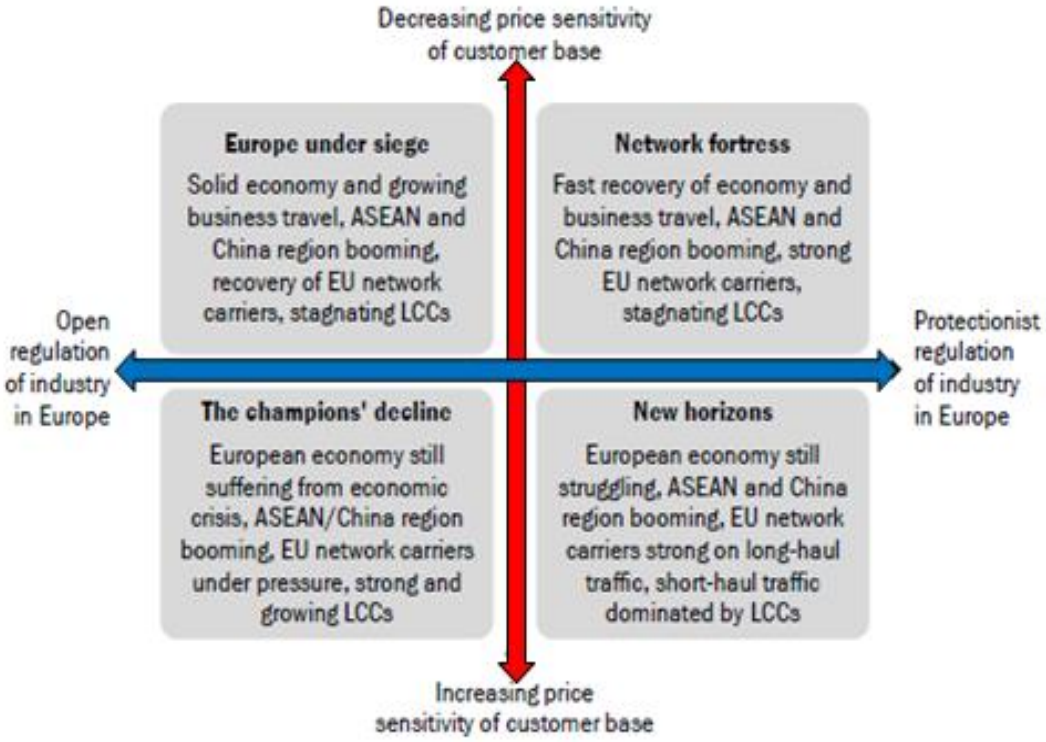
Source: Adapted from Schwenker and Wulf (2013).

Eventually, two main critical uncertainties are selected, namely:

- '*Price Sensitivity of Customer Base*' (defined as the combination of three distinct critical uncertainties: 'low-cost carrier expansion in terms of routes and services'; 'economic growth' and 'service/comfort/price expectation').
- '*Regulation of industry in Europe'* (defined as the aggregation of two critical uncertainties: 'Political influence of airlines' and 'market openness/degree of globalization').

The potential future developments of these two critical uncertainties are plotted respectively onto the *x* and *y* axes of a 2x2 matrix, thus generating four possible scenarios (Figure 8). In each scenario the outcomes of the two critical uncertainties represent the overall framework within which consistent and plausible stories about the future are created.

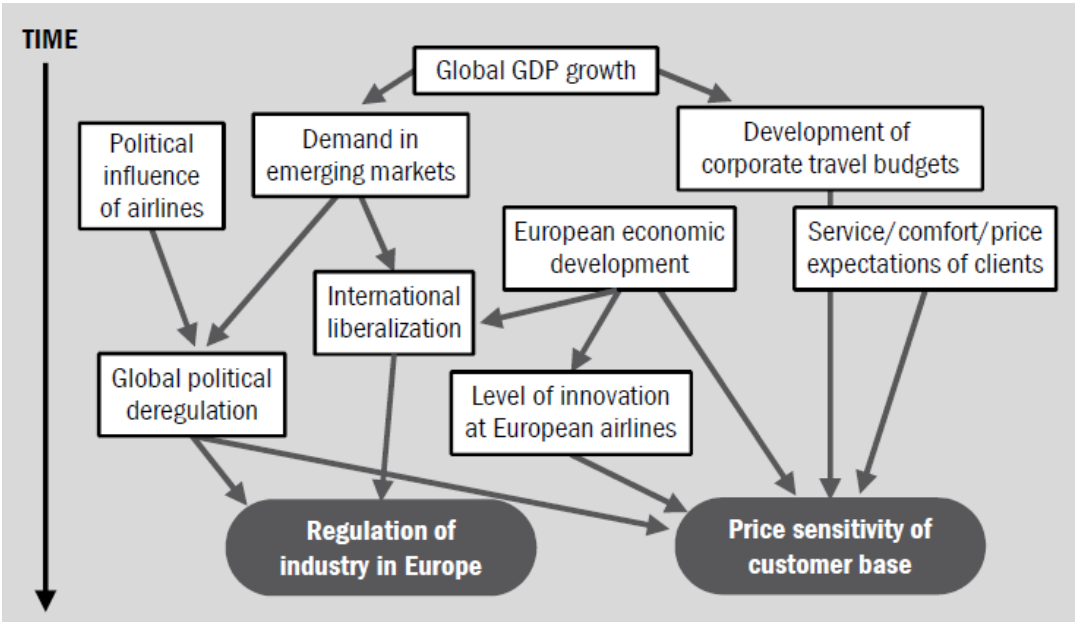
Figure 8 – Scenario matrix developed for the European airline industry.



Source: Adapted from Schwenker and Wulf (2013).

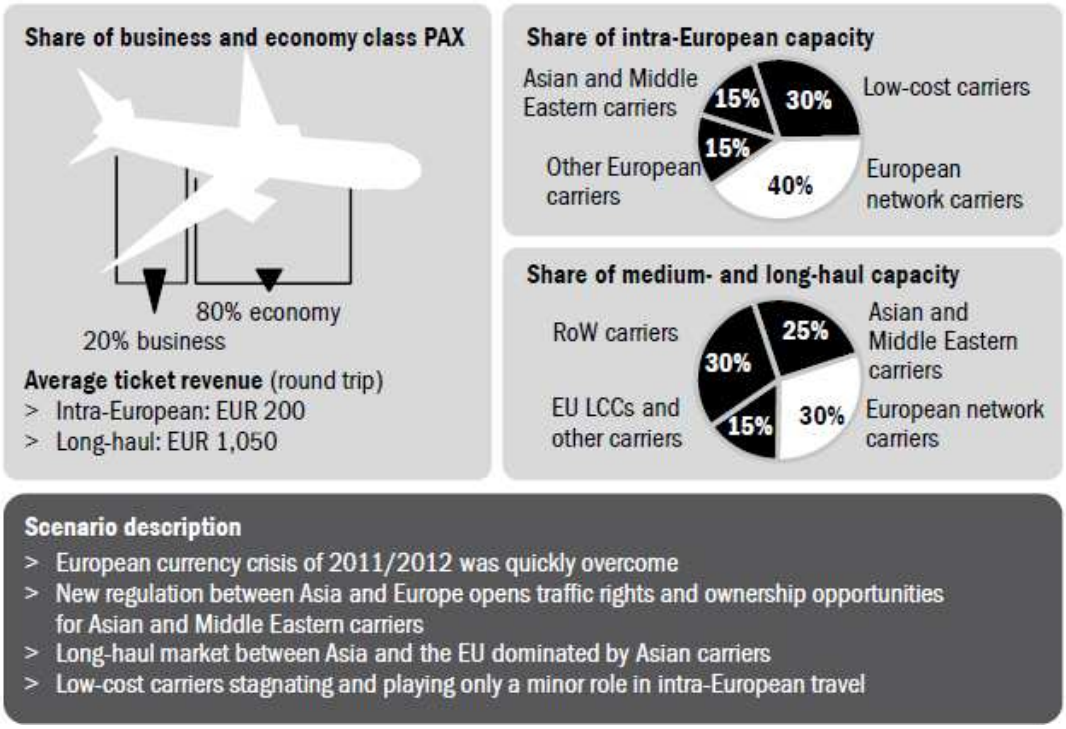
The scenarios are further developed, by including in this framework also considerations about the possible future evolution of other uncertainties and trends, and ultimately used as basis for informing strategic actions (Figures 9 and 10).

Figure 9 – Influence diagram for the European airline Industry.



Source: Schwenker and Wulf (2013).

Figure 10 – Fact sheet for one of the devised scenarios (the 'Europe under Siege' scenario).



Source: Schwenker and Wulf (2013).

3. Other Approaches to Scenario Planning

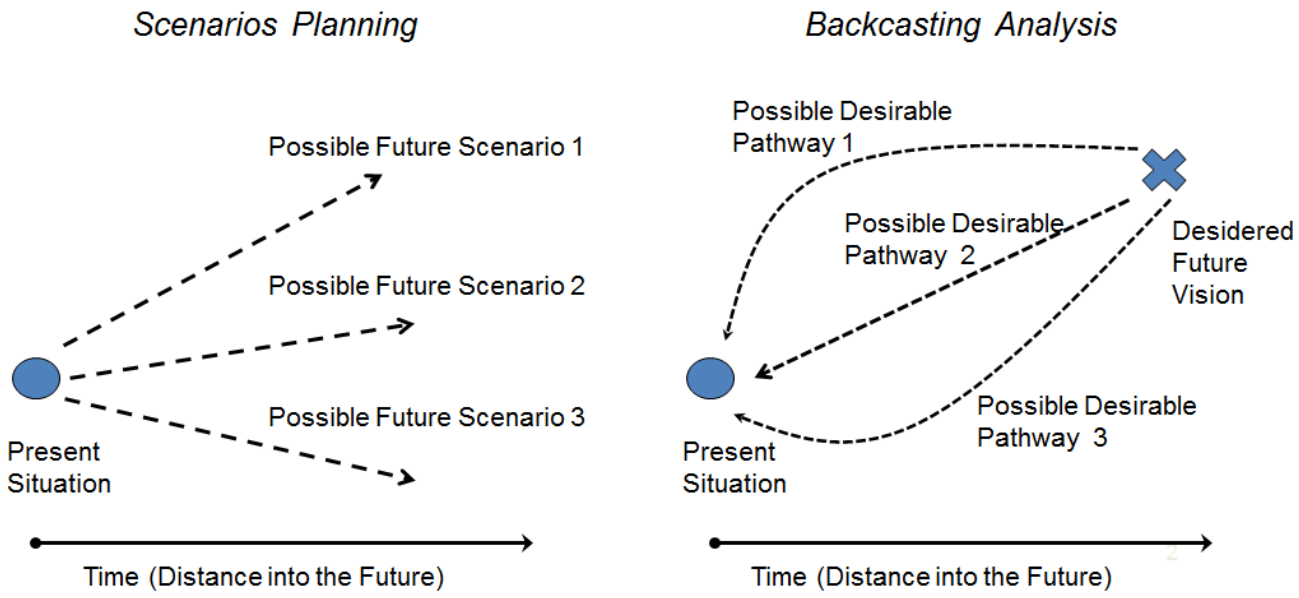
3.1 Backcasting Analysis

Scenarios, in the conventional form presented in the previous sections, can be described as objective or neutral future studies as they illustrate possible future events regardless of their desirability (Greeuw et al., 2000; Martelli, 2014). Indeed, such scenarios take the current situation as starting point and, based on considerations regarding significant trends, major uncertainties and driving forces, describe the possible future effects of the evolutions of present factors and conditions (Becker, 1997; Kosow and Gaßner, 2008).

Another approach to the exploration of possible future situations and development paths, which in the literature is also commonly referred to as 'normative scenario planning' (see e.g. Dreborg, 1996; Becker, 1997; Greeuw et al., 2000; Lindgren and Bandhold, 2003; van Notten et al., 2003; Börjeson et al., 2006; van Notten, 2006; Kosow and Gaßner, 2008; Balula and Bina, 2013; Martelli, 2014), but which in this document is indicated as 'backcasting analysis', as originally termed by one of its proponents (see Robinson, 1982 and 2003), takes an opposite stance. This approach, which has an ideological and political character, looks back from an intended future state of affair (i.e. a desired future development vision) to the present with the view to devising opportune strategies which may lead from the present situation to the desired future conditions (Greeuw et al., 2000; Martelli, 2014). The major distinguishing characteristic of backcasting analysis is thus its attempt to explore the future in terms of what it should be, rather than what is likely to be, and a concern with how desirable futures can be obtained (and undesirable futures can be avoided) (Becker, 1997; Greeuw et al., 2000; Kosow and Gaßner, 2008). Hence, whilst a typical scenario planning approach respond to the 'what can happen?' question, a backcasting analysis

deals with questions such as 'what do we want the future to be like?' and 'what must happen in order for it to become reality?' (Börjeson et al., 2006; Kosow and Gaßner, 2008). Figure 11 and Table 1 below summarise the key features of scenarios planning and backcasting analysis.

Figure 11 – Comparison between scenarios planning and backcasting analysis.



Source: Author's own elaboration.

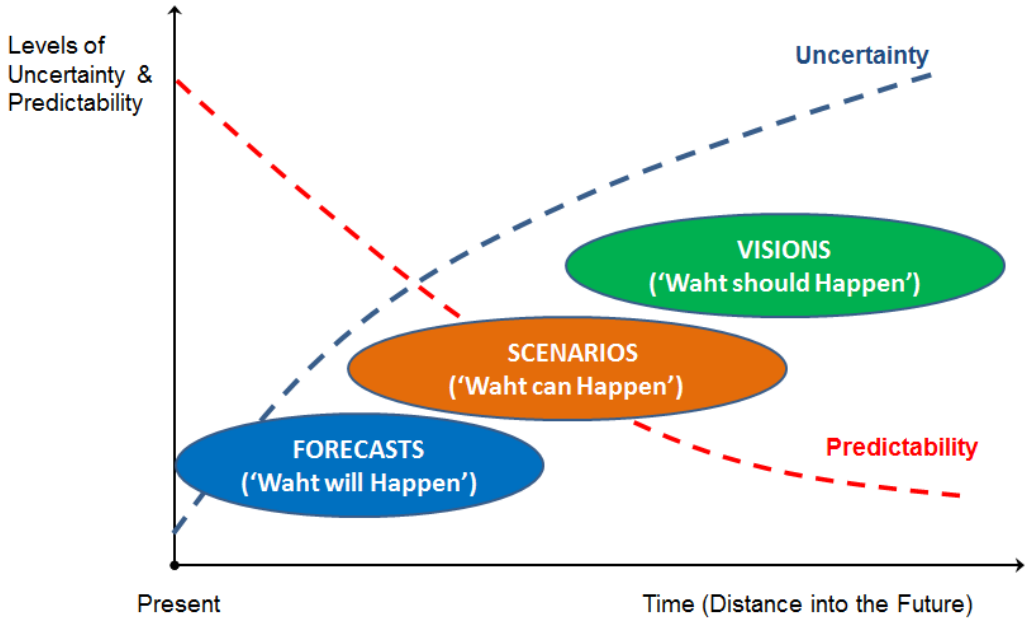
Table 1 – Key features of scenarios planning and backcasting analysis.

	Conventional (Explorative) Scenarios Planning	**Backcasting Analysis (Normative Scenario Planning)**
Central questions	'What can happen?'	'What should happen and how can we get there?'
Philosophical Views	Limited possibility to influence current trends and future development	Planning can change future development
Perspectives	Uncertainty based	Value based
Types of Future	Possible, plausible futures	Desired futures
Time Horizons	Particularly strong in the medium-term perspective	Particularly useful in the long-term perspective
Purposes	To help develop flexible and robust strategies capable of coping with different possible future situations	To help devise desired and sustainable visions of development and identify strategies to achieve those visions
Approaches	Description of future conditions, starting from the present situation, based on consideration regarding significant trends, major uncertainties and driving forces	Definition of a desired future and analysis of the conditions for this future to materialise

Source: Lindgren and Bandhold (2003), Kosow and Gaßner (2008) and Dreborg (1996).

According to Dreborg (1996), backcasting analysis is particularly useful for major and complex societal problem, when dominant trends are part of the problem and there is thus a desire to drastically change the current development path. It offers a method for exploring the implications of alternative development scenarios, stimulating a debate in society and widening the perception of what is possible to attain in the long run (Robinson, 1990 and 2003; Banister et al., 2000; Hickman et al., 2009). As illustrate in Figure 12, compared to the traditional scenario planning approach, backcasting analysis focuses on a much longer time horizon, typically 25 to 50 years (Robinson, 1990; Balula and Bina, 2013). This temporal scale is far enough away to allow major societal changes to happen (Vergragt and Quist, 2011). Indeed, in the long term, the potential for society to influence development in a desired direction is relatively large (Dreborg, 1996).

Figure 12 – Levels of uncertainty and predictability over time, and zones of effectiveness of single-point forecasts, scenario planning and backcasting analysis.



Source: Adapted from van der Heijden (2005).

The origin of backcasting analysis dates back to the 1970s (Lovins, 1976, 1977) and since then this methodology has been applied in a wide range of studies regarding sustainable development, especially in Europe (Quist, 2007). Similar to scenario planning, whereas a number of different approaches to backcasting analysis exist, it is possible to identify some basic steps, generally undertaken in an iterative manner, which are common to all methods.

a) Problem Analysis

The process starts with an analysis of the present situation and the current development path since, as highlighted above, the desired future vision must be firmly anchored to a description of the current system being studied (Robinson, 1990). In this step problems which needs to be solved are also identified (Quist, 2007). Indeed, the necessity to explore alternative futures is explained in terms of present or anticipated problems which seem to be unlikely to be addressed in a business-as-usual future (Robinson, 1990).

b) Scoping

This step consists in the definition of the temporal, spatial and substantive scope of the analysis, so as to allow a distinction to be made between what is included in the backcasting analysis itself and the exogenous variables (Robinson, 1990). In addition, important aspects such as the approach and methods to be used (i.e. formalised or intuitive; quantitative or qualitative; and analyst-led or participatory methods), and the key assumptions, future goals and policy objectives, specific targets and constraints, which will guide the construction of the desired future vision, are also determined (Robinson, 1990; Quist, 2007).

c) Scenario Development

The central step of the process consists in the development of the desired future development vision. Being a more mind-stretching process than explorative scenario planning, backcasting methods tend to rely on less formal and more creative processes and activities (Dreborg, 1996). Possible tools and techniques that can be conveniently employed in this phase include stakeholder interviews, creativity workshops and Delphi methods (Quist, 2007).

d) Strategy Development

Once the desired future has been defined and agreed upon, different alternative strategies, representing potential development paths capable of connecting the present situation with the desired future, and milestones, which need to be achieved to realise the end-point, are devised (Greeuw et al., 2000; Martelli, 2014).

e) Strategy selection, follow-up and implementation

Finally, the economic, financial, political, social and environmental implications of each alternative strategy are assessed and compared to the goals, objectives, targets and constraints defined at the beginning of the process (Robinson, 1990). Appraisal and evaluation techniques can be used to test more comprehensively the desirability and feasibility of the devised strategies and development paths. This step thus leads to the identification of a preferred strategy which may be subject to further elaboration before being implemented (Quist, 2007).

3.2 Example: A Backcasting Analysis for the London Transport Sector

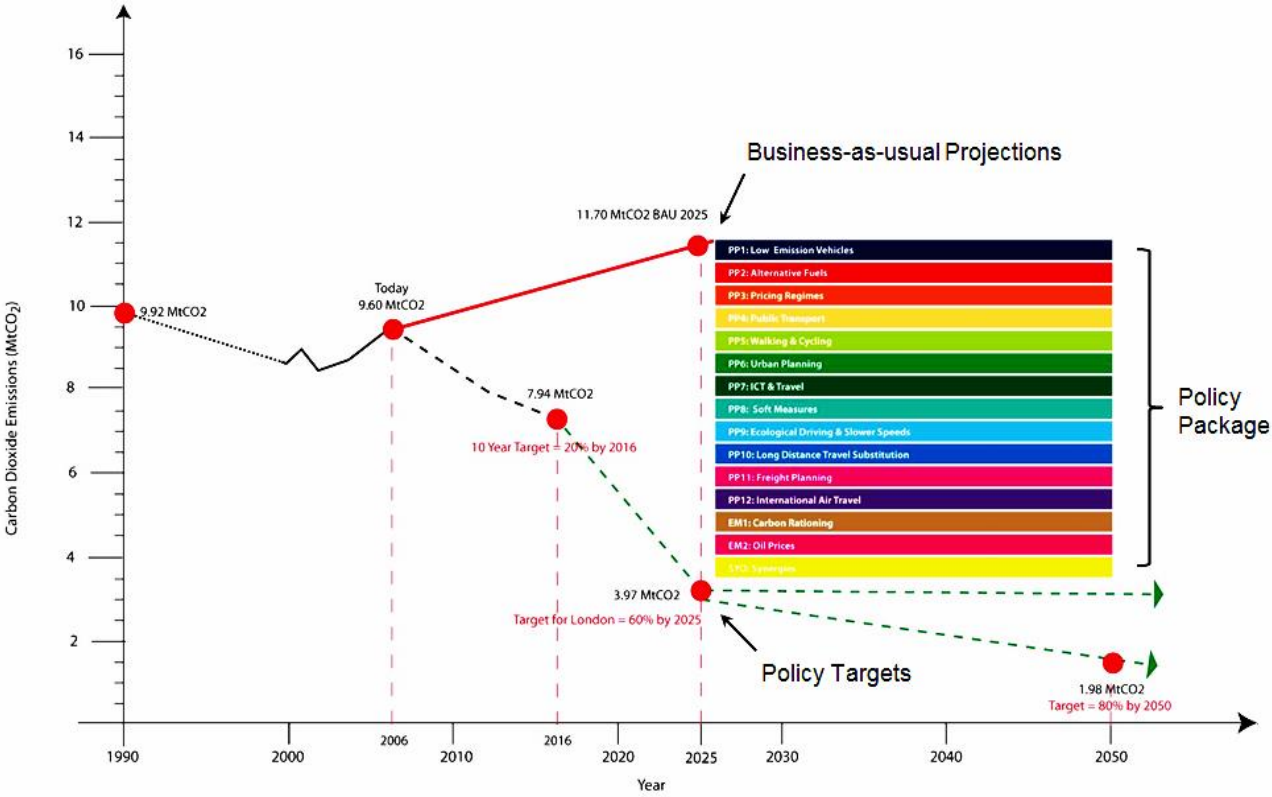
Hickman and colleagues (2009) describe a participatory backcasting analysis which considers the role of the transportation sector in reducing CO2 emissions in London. The analysis consists of five steps as presented below.

- *Step1*: the first step involves an analysis of the current levels of CO2 emissions in London and the contribution of the transport sector to total emission. Business-as-usual projections regarding CO2 emissions are determined based on factors such as future population and economic growth.
- *Step 2*: a desired future state of affair is developed based on specific policy targets as identified by key planning and policy documents and insights form practitioners and experts.

Figure 13 highlights the huge gap between the business-as-usual scenario and the desired end-point.

- *Step 3*: strategies, describing pathways towards substantial improvements in carbon efficiency in the transport sector and comprising a package of different policy measures, are devised.
- *Step 4:* the impacts and implications of these policy packages are assessed and an optimal strategic policy package capable of meeting the desired CO2 emission targets is assembled (Figure 13).
- *Step 5:* follow up activities and recommendations are discussed.

Figure 13 – Business-as-usual and alternative, desired future scenario.



Source: Adapted from Hickman *et al.* (2009).

3.3 Combination of Conventional Scenario Planning Methods and Backcasting Analyses

As highlighted in the previous sections, conventional scenario planning methods and backcasting analyses stem from contrasting planning paradigms and, in principle, are indicated for different types of problems (Dreborg, 1996; Becker, 1997). They both present their own advantages and disadvantages. Explorative scenarios illustrate how the future might unfold, depending of the evolution of several external drivers. However, the possible strategies developed as a result of the conventional scenario planning process seek mainly to cope with these dominant trends and driving forces so as to minimise losses, rather than encouraging innovations and radical transformations (Dreborg, 1996; Becker, 1997). The desired future development visions conceived through backcasting analyses, by comparison, aim at challenging the dominant, conventional

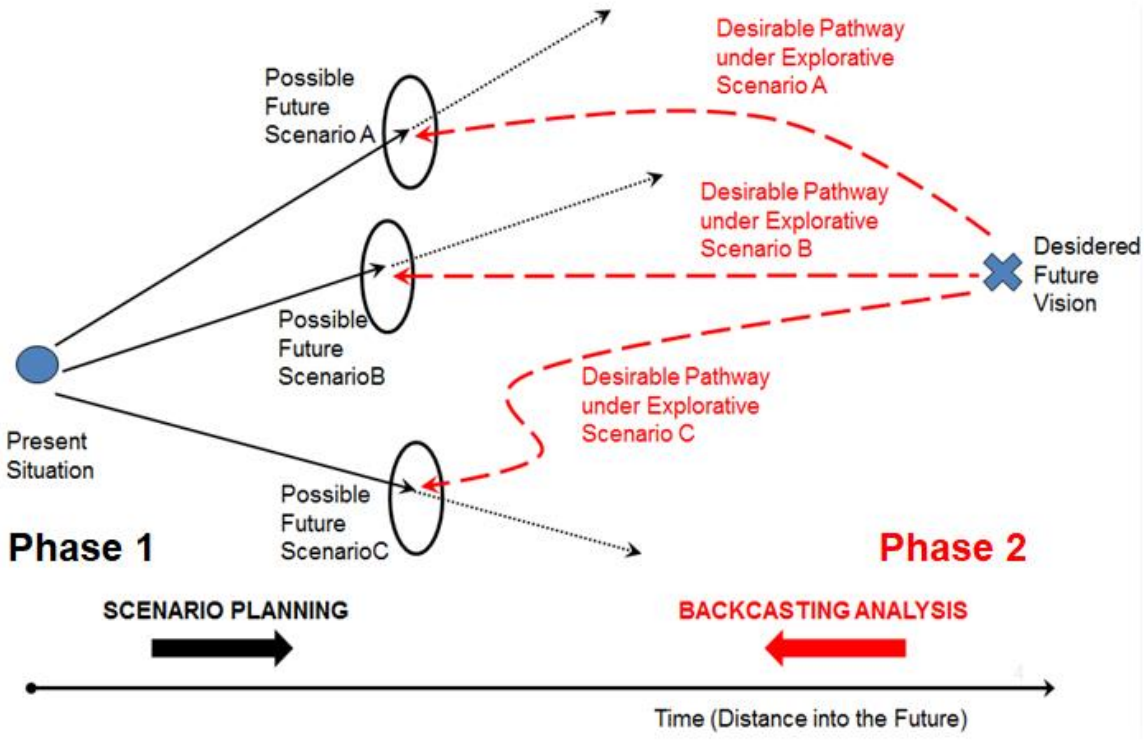
perspectives and broadening the scope of solutions to be considered. However, without a proper consideration of how current and emerging trends may evolve over time starting from the present situation, backcasting analyses risk to become a purely utopian exercise.

In recent years, some authors have tried to combine these two techniques in the attempt to shed light on different aspects of the problem being examined and compensate for the limits of each method. In the methodology proposed by Kok and colleagues (2011), van Berkel and Verburg (2012), Milestad and colleagues (2014) and van Vliet and Kok (2015), conventional explorative scenarios, taking the present situation as starting point, are developed first, based on the possible evolution of significant trends and the analysis of major uncertainties. Such scenarios, illustrating the framing conditions beyond the control of the scenario planning team and all the relevant actors involved in the exercise, represent the context for the successive backcasting analysis. The latter analysis starts with the identification of a long-term, desired future vision of development. Various possible pathways, focusing on desired goals, targets and strategies to achieve this desired future are, then, developed within the context of different plausible exploratory scenarios.

Compared with a typical and pure form of backcasting analysis, the strategies thus developed with this hybrid approach allow to better capture the uncertain dynamics of the contextual environment. Strategies which are deemed to work effectively in different contexts can be considered sufficiently robust (van Vliet and Kok, 2015).

This combined explorative and normative scenario planning process, summarised in Figure 14, is not, however, immune from issues and methodological challenges. In particular, the connection points between the conventional explorative scenarios and the desirable pathways leading to the desired future vision may give rise to inconsistencies and contradictions (Kok et al., 2011).

Figure 14 – Combination of conventional Scenario Planning and Backcasting Analysis.



Source: Adapted from Kok et al. (2011) and van Vliet and Kok (2015).

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