

## Event

Uncertainties associated with the research, development and regulation of new crop genomics, bioproducts and related services creates significant governance challenges. Foresight methods, especially scenarios, are being developed by the public sector to validate normative underpinnings of governance options in strategic planning exercises.

## Significance

Scenario methods have been used for nearly three decades in private sector energy strategies, but their adoption by the public sector and in large-scale research projects like VALGEN is new.

## Analysis

Foresight methodology is in general based on the idea that the future is not yet determined and that a myriad of factors will interact to shape it. With this accommodating starting point, foresight applies to nearly any problem or context important enough to seek ways to bring about desirable outcomes and lessen undesirable futures. Shaping the future is an activity based partly on facts as they are known now or reasonably predicted, but it is also a creative act of envisioning alternative pathways. Used strategically, foresight prepares one for different possible futures, enabling one to anticipate and react in the present. The foresight method best suited to this undertaking is the development of scenarios.

Developed as a formal system in response to Shell's market position jeopardized by the environmental movement and the emergence of OPEC in the 1970s, scenario building methodology has since been used extensively as an aid to decision-making in the private and public sectors. In recent years, governments have also begun to use scenarios and there has been a surge in the literature of practice guidelines to conduct scenario exercises. In the past two years, Health Canada, Agriculture and Agri-Food Canada and the Canadian Food Inspection Agency have used foresight and scenario methods.

Many different scenarios methods exist, but the most common one that has emerged is the use of the matrix model in scenarios workshops. In workshops, carefully selected participants are led through a brainstorming situation to identify all possible drivers of change. These are factors, trends or situations that would drive future possible states. Once a list of potential drivers has been brainstormed, they are discussed and analyzed to determine which two carry the highest degree of impact and uncertainty. These are then used as two axes to form a four-quadrant matrix from which potential scenarios are derived. The candidate scenarios can then be tested, analysed and compared via thought-experiments. When scenarios are developed, they represent future states and the potential for action. The 'time signature' can be reversed through a back-casting exercise in which the steps necessary to reach the targets in the scenario are reverse-engineered. By creating scenarios based on drivers and trends that are uncertain, the process does not need to make an explicit value judgment about which scenarios are preferable to others.

## Conclusion

The scenarios method is particularly useful for addressing challenges in the governance of agro-industrial biotechnology because it shapes possible futures from present uncertainties and captures these in an action-oriented matrix which enable one to 'back cast' to initial steps. The public sector, facing governance challenges associated with research, development and regulation, is finding scenarios effective in strategic planning. VALGEN researchers have participated in recent public sector planning exercises and will be conducting a series of scenarios workshops along the lines of the three research themes in VALGEN.