



Luxembourg Strategy Mission Statement

Luxembourg Strategy contributes to the creation of long-term strategies for economic development and transition that integrate social and environmental aspects (...). Luxembourg Strategy is a tool that helps making decisions. For to be able to decide and make trade-offs one has to project oneself into the future. And that is what Luxembourg Strategy does. When being undecided about what to do next, one may wish to say – politicians among others particularly like to say it – ‘I don’t have a crystal ball’. However, the debates of the last few days show that this is not entirely true. We are increasingly capable to foretell, to project, to model and to anticipate possible futures. This is again precisely that which Luxembourg Strategy is going to do. This is a complex yet essential venture and it would be irresponsible not to attempt it. It is that, which Luxembourg Strategy is offering to take on.

Franz Fayot, Minister of the Economy
First Luxembourg Strategy public conference
16 November 2021¹

1. Context

The great challenges of our time call for an unprecedented approach to planning and administration. What worked in the past may not work again in the future.

The great transformations that society faces starting with the health crisis and its social and political consequences but also the accelerating decarbonation of production systems and consumption habits, the scarcity of resources or biodiversity losses have their own timescales. These may seem to be distant, uncertain or abstract. Yet, they demand immediate reflections about their impact on the future functioning and the positioning of our economies.

To better anticipate, take up and address the great long-term challenges, many nations and organisations have developed or are currently developing **strategic foresight** capabilities. Strategic foresight is a way to plan for the future that is systematic, innovative and collaborative and that can yield solutions.

Among the many governmental strategic foresight initiatives existing around the world, some descend from longer traditions and other are more recent. Some fall in a kind of whole-of-government frame or are more centralised while other are sector-specific or local. Some are coming from public administrations and governmental agencies while other originated in parliaments or academic settings.² Nordic countries have foresight systems that are well established. This includes legal obligations to carry regular foresight studies (for instance in Finland) or the existence of parliamentary committees dedicated to the future (e.g. in Finland or in Iceland but also in Estonia). In the Netherlands, the defence ministry and the three national sector-specific *Planbureaus*³ have been among the early adopters of foresight principles. Wales has adopted a law and appointed a commissioner for future generations. One may also invoke the work of Japan’s

¹ For a detailed account of the conference and of the presentations see:

https://gouvernement.lu/fr/publications.gouv_meco%2Bfr%2Bpublications%2Brapport-etude-analyse%2Bminist-economie%2Bfutur-possible-ecolux.html

² <https://www.oecd.org/strategic-foresight/ourwork/Strategic%20Foresight%20for%20Better%20Policies.pdf>

³ See the CPB (Netherlands Bureau for Economic Policy Analysis, <https://www.cpb.nl/>), PBL (Netherlands Environmental Assessment Agency, <https://www.pbl.nl/>) and the Delta programme that seeks to adapt the country to climate change ('by 2050, the Netherlands must be climate-proof and water-resilient', <https://english.deltaprogramma.nl/delta-programme/what-is-the-national-delta-programme>)



National Institute of Science and Technology Policy (NISTEP), of Singapore's Centre for Strategic Futures, of Policy Horizons Canada – a federal government organisation directed by two distinct ministries – or indeed of the General Planning Commission and of France Strategy in France. Other, more recent or partial experiences have taken place. This includes for instance the formal adoption by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection of a horizon scanning approach and the future proofing of the Slovakian National Investment Plan 2030 or that of Lithuania's National Skills Strategy.

Since 2019, the European Commission has in its portfolio a vice president and commissioner for strategic foresight in charge of integrating this exploratory approach into the regular production of European Union (EU) policies. The Commission collaborates with other institutions and research centres and relies on the public foresight capabilities of its member states.⁴ It has also developed its own specific Competence Centre on Foresight.⁵

Last, the OECD set up a Government Foresight Community in order to facilitate the exchange of good practices. Its Strategic Foresight Unit and its Observatory of Public Sector Innovation (OPSI) assist governments in the building up and the reinforcing of foresight capabilities. For that, OPSI currently develops a model for Anticipatory Innovation Governance.⁶

In this context and in the tradition of foresight work running through the study about the *Third Industrial Revolution* (TIR), the ministry of the Economy created Luxembourg Strategy at the end of 2020. It has the mandate to help preparing the economy of the future by drawing on the evolving discipline of strategic foresight. Its purpose is to stimulate the use and development of (new) methods, tools, products, services or processes in a way that is mindful of the context and that is useful for economic decision-making.

2. The significance of strategic foresight

By OECD and OPSI standards, strategic foresight is the capability of an entity to perceive, give meaning to and act in the face of diverse emerging futures. It helps to give early warnings and alert about potential disruptions, to consider different possible futures, to become more resilient in the event of disruptions, to future proof plans and strategies and to build a shared language and common understanding of success. By observing megatrends,⁷ critically analysing widely possessed assumptions and ways of thinking, substantiating decisions with scientific knowledge from various disciplines⁸ and getting past short-term expectations, strategic foresight may prompt the coming into being of a new way to conceive of progress and to manage things.

The EU Megatrends Hub & Identified Megatrends

The Megatrends Hub is a public digital platform created by the Competence Centre on Foresight of the European Commission's Joint Research Centre (JRC). The website presents 14 selected megatrends in a structured way, supporting the dynamic collective intelligence system underlying the JRC's foresight initiative. The 14 megatrends identified are:

⁴ https://ec.europa.eu/info/sites/default/files/list_of_ministers_for_the_future_oct_2021_en.pdf

⁵ https://knowledge4policy.ec.europa.eu/foresight_en

⁶ <https://oecd-opsi.org/wp-content/uploads/2020/11/AnticipatoryInnovationGovernance-Note-Nov2020.pdf>

⁷ A megatrend is a driving force that emerged in the past, that is perceivable in the here and now and that will continue to have a lasting impact globally in the years ahead. Megatrends may be characterised by a timescale of 10 to 20 years. However, their analysis may inform strategic planning for the 5 to 50 years to come (<https://www.ops.gov.ie/app/uploads/2021/05/Towards-a-Strategic-Foresight-System-in-Ireland.pdf> and the EU Commission Competence Centre on Foresight)

https://knowledge4policy.ec.europa.eu/foresight/tool/megatrends-hub_en#explore

⁸ EU Commission, Supporting policy with scientific evidence https://knowledge4policy.ec.europa.eu/increasing-influence-new-governing-systems_en



- 1) Accelerating technological change and hyper-connectivity: advancements in genetics, nanotechnology, robotics and artificial intelligence, photonics, quantum and other emerging technologies are causing a deep shift in the speed and nature of scientific discoveries, challenging our very understanding of what is possible.
- 2) Aggravating resource scarcity: with demand for food, water, energy, land and minerals bound to continue to grow and possible supply shortages aggravated by climate change.
- 3) Changing nature of work: automation, digitalisation and hyper-connectivity – coupled with new generations entering the workforce and older ones working longer – will radically reshape employment, career models, and organisational structures.
- 4) Changing security paradigm: characterised by new asymmetrical warfare, growing availability of increasingly powerful weapons, and violent extremism, leading to new, complex geopolitical challenges.
- 5) Climate change and environmental degradation: characterised by increasing greenhouse gas emissions and pollution, and persistent declining trends in biodiversity and ecosystem stability.
- 6) Continuing urbanisation: with rates of urbanisation that have surpassed all predictions and will continue to grow in the decades to come.
- 7) Diversification of education and learning: new generations and hyper-connectivity, coupled with advancements in cognitive sciences and increased availability of information, are bringing about new ways of learning while profoundly reshaping the concept of education.
- 8) Diversifying inequalities: within-country economic inequalities are rising globally and will have to be addressed alongside, gender inequalities and education, healthcare and education access inequalities.
- 9) Expanding influence of east and south: the shift in economic power away from established Western economies and Japan will continue in the coming years, shaping new global geopolitical balances.
- 10) Growing consumption: the growing purchasing power of billions of people around the world in the coming years will have crucial implications for economic development, climate change, and food, water and energy demand.
- 11) Increasing demographic imbalances: world population is set to reach 9.7 billion in 2050 with an increase in average age and urbanisation, and an exacerbation of regional imbalances.
- 12) Increasing influence of new governing systems: traditional decision-making structures are being replaced by new multi-layered systems, which are shaped by ever more important non-state actors, social media, and the emergence of a global conscientiousness.
- 13) Increasing significance of migration: with more complex and mixed migration flows and growing socio-political implications.
- 14) Shifting health challenges: beyond the pandemic, unhealthy lifestyles, pollution, and other anthropogenic causes are turning into significant burdens for national health systems.

Source: https://knowledge4policy.ec.europa.eu/foresight/tool/megatrends-hub_en

Contrary to predictions and projections, foresight does not rely on a linear or deterministic conception of the future. It seeks to acknowledge a seemingly increasing complexity and uncertainty by drawing several **possible or plausible scenarios** and by taking a great variety of standpoints and variables. Some questions evolve rapidly, sometimes exponentially, even to reach a tipping point beyond which it would be too late to act. From the perspective of OPSIS, strategic foresight helps to prepare and respond to futures that call for radically different approaches to public service.⁹

Foresight also has its own limitations. It does not predict the future, it does not solve problems, it does not prevent the next crisis to happen, it does not produce strategies and it does not guarantee their success neither. It is an instructive complement rather than the ultimate foundation for decision-making. It takes time and repeated efforts to establish it

⁹ OPSI's project of [Anticipatory Innovation Governance](#) develops and tests such new approaches and conducts action research with governments and partners in the emerging field of activities that is anticipatory innovation. OPSI relies on the assumptions that:

- There is no universal and immutable understanding of the types of activities and governance required for uncertain futures,
- Strategic foresight studies ought to be translated into concrete courses of conducts,
- Technologies profoundly make up society and possible solutions together and should not be analysed in isolation,
- The traditional approaches and techniques that support the making of policies are insufficient in a complex environment that is rapidly changing and influenced by a variety of often non-public stakeholders



in daily habits and regular conducts. One should be cautious not to form excessive expectations around it. One should also be wary of not exploiting the consequences of its results.¹⁰ The main benefits of foresight do not lie in immediate operational applications. These are indirect and often difficult to attribute to foresight efforts themselves. Its work may generate insight that one may be reluctant to face, that are counterintuitive, critical of or opposed to one's expectations or agendas and that challenge conventional ways of seeing and working.

3. The state of foresight in Luxembourg

There are many national foresight or long-term planning experiments. The initiatives of Luxembourg's government include, but are not limited to, the first Master Plan for Territorial Planning (or PDAT in the original) drawn up in 1978 and for a period of 12 years by the ministry of Finance – the ministry that was then, immediately after the steel crisis, in charge of land planning. A second PDAT came out in 2003 (that ran until 2020) and the third has been in the making since 2018. The *Luxembourg in Transition* initiative appeared in that context. It is an architectural, urban-planning and landscape consultation that aims to produce scenarios and strategies for the ecological transition of Luxembourg and its border areas for 2050.

In 2015, the ministry of the Economy with the support of Jeremy Rifkin started the TIR strategic study. The aim was to draw an inclusive and unifying vision of economy development by 2050. Now the ministry works on a vision of 'the factory of the future' for 2040.

Other long-term foresight initiatives in the public sector have come into existence through the national translation of international or European commitments. One may note here a series of sustainable development plans (PNDD in the French), whose third and most recent edition sets objectives for 2030, or the national adaptation plans to climate change, whose third edition also recently became public. One may also add the National Plan for Energy & Climate (or PNEC 2020-2030) and the long-term national strategy *towards climate neutrality by 2050*.

Besides foresight studies, one may also consider long-term projections. Noticeably, there are those from the General Inspectorate for Social Security (IGSS) about the evolution of pension schemes by 2070 or those from STATEC about the evolution of the macroeconomic measures of GDP, productivity, salary attractiveness and the number of cross-border workers or of the population by 2060.

Organisations from the business and financial worlds, from academia and the civil society also engage in long-term projections and strategic monitoring. Among the private initiatives, one may highlight those by the Chamber of Commerce with its *2030.lu – An ambition for the future*, by CREOS and the *Scenario Report 2040* concerning the development of the national power grid or by FEDIL with its *Industry Strategy for 2040*.

These initiatives and all the other sector-specific strategies or programmes for the more or less long term, contribute to the knowledge production about the future (future literacy).

4. Strategic foresight for the ministry of the Economy

Considering the widespread consciousness of the need to transform the economy to maintain its competitiveness, to its reduce greenhouse gas emissions and to reinforce its long-term resilience, the ministry of the Economy has set out to develop an **action-oriented and participative strategic foresight** coupled with a **quantification of the physical flows characterising the economy**. Luxembourg Strategy is responsible for foresight in the ministry of the Economy. It depends from the minister's cabinet and these are its main activities:

¹⁰ That was for instance the case with the numerous foresight publications that came out before 2008 and that had warned about an imminent or unfolding financial crisis or with those released before 2016 announcing the rise of populisms or again with those prior to 2019 that had fleshed out possibilities for pandemics starting in animals and bringing the world to a standstill <https://www.ops.gov.ie/app/uploads/2021/05/Towards-a-Strategic-Foresight-System-in-Ireland.pdf>



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- a) It supports the ministry's mission by bringing existing economic strategies together
- b) It provides a methodological support for the conduct of economic strategic foresight
- c) It designs scenarios for future economic development in a collaborative manner
- d) It quantifies the physical flows of the economic production's inputs and outputs
- e) It contributes to the integrated modelling of the economy
- f) It adds to the public debate and stimulates the emergence of a common language and shared assumptions about economic activities

a. Luxembourg Strategy supports economic decision-making

Luxembourg Strategy contributes to the coherence of the ministry's sector-specific strategies, together and with the strategies from other ministries that interact with the economy. That is chiefly to inform ever more precisely national political decisions and to accompany the transformation of the economy by 2050. Through mutual learning, the purpose is to create a collective information base supporting these strategies and to combine the effects they should have in an effective way. The ministry of the Economy relies on strategic foresight to make **economic policies** more robust by both enlarging and focusing the scope of what is deemed to be relevant for economic plans and strategies, by accounting for the biophysical limits to development and by drawing on scientific knowledge, on the **stress-testing** and on the **future-proofing** of these plans and strategies.

b. Luxembourg Strategy, an open apparatus providing methodological support

There is a great diversity of **methods and techniques** up for grabs: the analysis of megatrends, the identification of weak or missed signals about potential disruptions, initial diagnosis, horizontal scanning, Delphi expert surveys, the creation of scenarios and narratives and interdisciplinary scientific research conducted by role-play, observation, interview or documentary research... Technological roadmaps, risk analyses or behavioural studies can also usefully serve and inform strategic foresight. There are further methods that are equally valid and can be complementary. Luxembourg Strategy, on its own or together with partners and in keeping with allocated budgets, initiates projects and studies that effectively serve the achievement of its goals. Given that means are by definition limited, priorities have to be set, existing resources capitalised and synergies developed. Hence, Luxembourg Strategy collaborates with all the bodies and entities that are internal to the ministry of the Economy and in charge of strategic monitoring, business intelligence or long-term planning. In particular, this includes STATEC, the Observatory of competitiveness and the High Council for the Industry or Luxinnovation.

c. Luxembourg Strategy, a creator of possible future scenarios

Luxembourg Strategy creates **development scenarios for Luxembourg's economy** by considering the strengths and weaknesses of its main players as much as the opportunities and threats of the megatrends they face. Expert opinion forms the scenarios' basis. They rely on a set of hypotheses about the potential or desirable evolution of energy resources, materials, land, water, population, biodiversity, economic diversity, social wellbeing or the potential sustainable growth. The scenarios also integrate considerations about the funding of the welfare state (taxation, education, healthcare, pensions, dependency...), about social cohesion (and social inequalities of opportunities, revenues or inheritances) and about the cultural life of the resident population of the Grand Duchy and the Greater Region. The scenarios flash light on the demographic (ageing and migratory imbalances), green and digital transitions and on their implications for employment. They rely on the existing 'plans, visions and strategies' of the ministries, administrations, research institutes, associations or foundations. The scenarios put these various documents in perspective and in relation together.

d. Luxembourg Strategy, a quantifier of the physical flows of value creation

The other primary methodological foundation upon which Luxembourg Strategy stands is that of a quantification of physical flows. By relying on existing databases as far as possible, the objective is to represent quantitatively what characterised particular sectors in 2020 (distinguishing energy, land and water consumptions, polluting emissions or



levels of employment) and hence the ways by which these could be transformed by 2050. Ultimately, the aim is to identify the more effective ways, comparing deployed resources with obtained results, to **accompany business enterprises in their low-carbon transition**. This includes the necessity to flesh out how to get results that are clearly perceivable by all and achievable in not too distant intervals. Indeed, mathematical representations allow to clearly showing the relations between the production and uses of goods and services. These also enable to lay bare where strategic trade-offs may be required: between deindustrialisation and reindustrialisation, offshoring and business relocation, vital and nonessential activities, technological innovations and behavioural changes, exponential growth and post-growth...

e. Luxembourg Strategy, a contributor to the integrated modelling of the economy

This work enables Luxembourg Strategy to support an integrated modelling of the various future evolutions of the economy. STATEC is among those who conduct such a modelling. It combines economic, energy and climate aspects together by expressing them with physical and monetary units and comparing them at a macroeconomic level of activity branches and at the level of individual firms.

f. The Luxembourg Strategy forum, a platform for open exchanges of information

From its descent from the TIR study, Luxembourg Strategy mainly takes its inclusive character and its collaborative ambition. As Franz Fayot, minister of the Economy, reminded during Luxembourg Strategy's [public conference](#) in November 2021, Luxembourg Strategy seeks to set up an **exchange platform** to stimulate debates, share knowledge and foster deliberations:

No one should be excluded from the discussion (...). This is not a closed club – far from it. On the contrary, this is an **open forum** because everyone should participate in the discussion that we can have in Luxembourg. In fact, Luxembourg can even be a laboratory for the Greater Region and for Europe. Someone said it before; we are a small country where we can try things and where one can project oneself in the future perhaps more easily than in larger countries. Obviously, the purpose here is not to dictate anything to anyone. It is an reflection exercise that is suggested here, an effort to project oneself in the future by taking into account all the strategies and everything that is currently being produced in the various ministries and circles that reflect about the country's future.

Strategic foresight is a type of collective intelligence that one can only generate and access through dialogue and participation. The deployment of a coordinated approach to foresight for an extended period is imaginable via the lenses of the harmonisation of starting hypotheses and reference variables, the alignment of conceptual definitions, the sharing of information, experience and knowledge about long-term planning. Therefore, Luxembourg Strategy collaborates with other national or greater regional entities engaged in strategic planning, business intelligence, anticipatory scenario-making, physical quantification or econometric modelling. It also relies on regular exchanges with larger publics and draws on internationally recognised expertise.

The ministry of the Economy invites all the other ministries to shape and inform the strategic foresight process and that of economic transformation through their participation in an **interdepartmental committee**. The committee gives its expert opinion on the main political guidelines for long-term economic development and on the results of the technical working group. The committee meets twice a year, in theory at the beginning and at the end of the year.

Ministries have middle- to long-term strategies. Observatories are monitoring specific megatrends.¹¹ Businesses have their own long-term strategies. As indicated in a letter from October 2021 to all the ministers, the minister of the Economy calls all the ministries and these organisations to appoint a representative to sit in a **technical working group** of public and private practitioners of strategic monitoring and foresight. The group is contributing to the foresight activities of scenario planning and trajectory analysis for the long-term transformation of the economy. Its contribution come from

¹¹ This includes observatories on a range of topics: competitiveness, spatial development, equality, childhood, youth and schooling quality, natural environment, employment (RETEL), civil service, price formation, housing, transportation, SME, climate policy, social policies, healthcare, labour and social cohesion.



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bringing together and sharing the various approaches, methods, practices or data of its members. The group gathers quarterly and can mandate experts to conduct complementary studies.

In order to nurture the emergence of a common language, shared scenarios and a collective conscience about the future and its risks, the Luxembourg Strategy forum associates the public in particular through a **digital platform** for communication and awareness. The platform may host an online questionnaire to collect individual opinions and to conduct surveys on the perception of megatrends and main directions for future economic development.

Beyond this, Luxembourg Strategy organises at least one **public conference** per year to gather all the participants to the Luxembourg Strategy forum and publishes an **annual report** of its activities.