

4<sup>th</sup> & 5<sup>th</sup> May 2023

Multidisciplinary conference  
Cercle Cité Luxembourg

# Mega trends 2050

Shaping the future  
with scientific foresight

## Keynote address

by Philip Crowther

Reporting the future: news,  
analysis and communication  
in the 2020s and beyond

## Keynote presentations

Panel discussions

Interactive surveys

Exhibition

Communicating Megatrends

Foresight in Politics

Digitalisation

Space

Artificial Intelligence

Social Inequalities

Urbanisation and Mobility

Sustainability

Resilience and Climate Change





“Research, dialogue and exchange of ideas will certainly enable us to identify today what can serve us tomorrow.”

H.E. Fernand Etgen



## Welcome words

**H.E. Fernand Etgen**  
President of the Chamber of Deputies of Luxembourg

Welcome to our multidisciplinary conference, entitled “Megatrends 2050: Shaping the future through scientific foresight”. The Chambre des Députés, through its research unit, is delighted to organize this event with the National Research Fund (FNR).

The title alone of this year’s conference is enticing and immediately gives a boost to the future. However, the term ‘megatrend’ can also raise doubts. It is a concept for which there are many different definitions, that differ from one another. In addition, the organizers have chosen a subtitle that makes clear that the focus, during the two days, will be on the question of how to anticipate the future, our future, as a democratic society.

The concept of “megatrends”, which originated in the insurance and auditing sectors, has progressively spread and reached the sphere of political decision-making, where it is used along with the more standard methods of geostrategic forecasting. Even if this theme is, at first sight, difficult to define, the scientific viewpoint offers precision and clarity. This is precisely the exercise that Luxembourg is currently undertaking with the work carried out by the strategic forecasting department “Luxembourg Stratégie” of the Ministry of the Economy.

The choice of the theme was not random. The Chambre des Députés and the FNR shared the desire to bring together national

and international experts from the most diverse fields to question the concept and reflect on the use of these prospective methods for our country. After an initial session, during which we can familiarize ourselves with the concept of megatrends, Luxembourgish journalist Philip Crowther will give the keynote address. Based in Washington, the multilingual journalist will reveal the challenge of covering the future in his profession: fast information but also credible information.

The conference will continue by exploring potential megatrends that will challenge our societies in the coming decades, such as digitalisation, social inequality and climate change, to name but a few. The various panel discussions bringing together academics, policymakers, practitioners and the general public will certainly provide us with material for our future policy decisions. The closing of this conference is also anchored in the future as it will be carried out by the actors of tomorrow. The Youth Parliament will naturally be given the floor.

My special thanks go to the dynamic team of the steering committee and to the Cercle Cité for the warm welcome. I wish all participants an enjoyable conference, a fruitful exchange whose impact will continue to be felt in our work as legislators. Research, dialogue and exchange of ideas will certainly enable us to identify today what can serve us tomorrow.

## Welcome words



**Dr Marc Schiltz**  
Secretary General of the FNR



**Martine Reicherts**  
Chair of the FNR board

Dear participants,

It is a great pleasure for us to co-organize this conference about megatrends and scientific foresight together with the Luxembourg Parliament. The conference marks the end of the third edition of our joint program "Pairing Scheme - Politics meets Research" - a program developed to bring together Members of Parliament and researchers in order to develop a better mutual understanding of their respective activities and endeavours.

And we are particularly pleased to jointly organize this conference with the Scientific Research Service of the Chamber of Deputies - a newly established initiative whose seeds were planted as an outcome of the first Pairing Scheme.

One of the remits of the Luxembourg National Research Fund is to promote scientific culture. We do this by fostering the exchange between science and society - and since 2016 more

particularly also between political decision-makers and researchers. Recently, the pandemic has forced (or allowed) us to work more closely together on a topic of high urgency and relevance for both society and science. And there are many more future challenges: climate change, energy transition, growing social inequalities, AI, fintech ... to name but a few.

The world is changing rapidly with ever increasing complexity! What will our future look like and how can we prepare ourselves here and now? While politicians often must react to current events in the short term, researchers are very much concerned with the long-term perspective. This conference is an opportunity for policymakers, academics and society to reflect together on the major global trends that are likely to affect us all. Is digitalisation uniting or dividing our societies? What are the challenges and opportunities of demographic change?

# “Because our future cannot be shaped by politics and science alone, it is society as a whole that eventually needs to be on board.”

Dr Marc Schiltz and Martine Reicherts

What are the global and regional consequences of climate change, for Luxembourg, for Europe, for the world?

Scientists and politicians have complementary roles to play in society. Ultimately, it is up to politicians to take decisions. But among the various sources of information that politicians have at their disposal, they can benefit immensely from the knowledge base that researchers are constantly expanding. We believe that the best decisions are those based on data and state-of-the-art knowledge, and this is where researchers can provide important advice in their areas of expertise. And the benefit for researchers is that such engagement helps them to direct their work towards issues of societal relevance.

Evidence-based decision-making is in the interest of everyone: policymakers, researchers and society. As a nation,

Luxembourg has invested heavily in building up a state-of-the-art research system over the past decade, guided by the expectation that science will produce outputs that are useful for society, as is evidenced by many representative surveys carried out by the FNR in recent years. It is therefore of particular importance that this conference is open to the public. And we want to give the audience as many opportunities as possible to provide feedback and input throughout the conference. Because our future cannot be shaped by politics and science alone, it is society as a whole that eventually needs to be on board.

So, let's take the opportunity of this conference to bring together science, policy and society to discuss the major megatrends and how scientific foresight can help shape our future.



## General program

### Thursday, May 4<sup>th</sup>

#### Thursday morning

09.00 - 09.30

#### Reception

09.30 - 10.00

**Welcome words by Fernand Etgen**, President of the Chamber of Deputies and **by Dr Marc Schiltz**, Secretary General, Luxembourg National Research Fund

10.00 - 10.40

**Session 1 followed by a panel discussion**  
Communicating megatrends

10.40 - 11.10

#### Break

11.10 - 12.30

**Session 1**  
(follow-up)

#### Thursday afternoon

12.30 - 14.00

#### Lunch

14.00 - 15.00

**Keynote presentation by Philip Crowther**  
Reporting the future: news, analysis and communication in the 2020s and beyond

15.00 - 15.30

#### Break

15.30 - 17.05

**Panel discussion**  
Foresight in politics

17.05

**Visit of the Chamber of Deputies and Wine of honour**

### Friday, May 5<sup>th</sup>

#### Friday morning

08.45 - 09.15

#### Reception

09.15 - 09.45

**Welcome words by Dr Laurent Scheeck**, Secretary General of the Chamber of Deputies and **by Martine Reicherts**, Chair of the Board of the Luxembourg National Research Fund

09.45 - 11.05

**Session 2 followed by a panel discussion**  
Digitalisation, space and artificial intelligence

11.05 - 11.35

#### Break

11.35 - 12.55

**Session 3 followed by a panel discussion**  
Social inequalities, urbanisation and mobility

#### Friday afternoon

12.55 - 14.00

#### Lunch

14.00 - 15.20

**Session 4 followed by a panel discussion**  
Sustainability, resilience and climate change

15.20 - 16.00

**Vision of the Youth Parliament**

16.00

**Review and Wine of honour**



# Session 1: Communicating Megatrends

Megatrends strongly influence the lives of people worldwide and cover political, economic, environmental, social, and cultural dimensions. In this session, we seek to provide a first insight into the concept of megatrends and foresight methodologies presenting the national and international context.



**Ms Catarina Zuzarte Tully**  
Managing Director, School  
of International Futures (SOIF)

- The megatrends ahead - navigating a complex world
- The pandemic and emerging technological and environmental disruption/transformation have led us to realise that we need to anticipate and prepare for future change. We will explore the megatrends - from demographics and value shifts, to economic and political changes - that shape our international and national context. They can sometimes be easy to spot but it is often harder to understand their impacts, so how do we use megatrends and associated foresight methodologies to work together to develop more effective and resilient policy and strategy?

- Trust in science: How should we communicate scientific uncertainty?
- How does the communication of scientific uncertainties affect trust and mistrust in scientists, science organizations and science communication? The talk provides a systematic overview of the current state of research from the international and interdisciplinary field of science communication research. The aim is to identify different types of scientific uncertainties and to discuss their respective impact on trust in science. On this ground, the talk provides recommendations for stakeholders from the fields of science, communication and politics.



**PD Dr habil. Andreas Scheu**  
Berlin-Brandenburg Academy  
of Sciences and Humanities



- Foresight at EU-level - Structure and tools to improve crisis management and anticipatory policy-making
- In his presentation, Wolfgang Hiller, Director for Impact Assessment and Foresight within the European Parliamentary Research Service, will outline how the European Union uses foresight as a discipline to explore, anticipate and shape the future we want. He will also talk about how to make these activities visible and - even more importantly - on how to embed them into actual policy-making, to better develop possible transition pathways and to prepare the EU to withstand and adapt to shocks in an increasingly rapidly changing world.

**Mr Wolfgang Hiller**  
Director for Impact Assessment and European Added Value, European Parliament Research Service (EPRS)



- What are the megatrends shaping the innovation agenda in Europe and Luxembourg? How can we raise awareness and support businesses and our economy to address these challenges and opportunities?
- Megatrends are structural forces of change, which will have strong social, economic and political impacts. Some megatrends, e.g. technological acceleration, climate change, shifting health challenges are shaping the innovation agenda in Luxembourg and Europe. Acknowledging and anticipating the challenges and opportunities of these megatrends is key for companies and the economy. Luxinnovation, as the National Innovation Agency, has the mission to raise awareness and support Luxembourg companies and the economy in the implementation of innovative projects to build a digital, competitive and sustainable economy of tomorrow.

**Ms Sasha Baillie**  
CEO of Luxinnovation

- Anticipatory science and diplomacy for a renewed multilateralism
- The world is experiencing breakthroughs in science and technology at an unprecedented pace. Those advances are reshaping who we are as human beings, how we relate to each other, our relation to the planet and ultimately how we will evolve as a species in the future. This observation has led to the creation of the Geneva Science and Diplomacy Anticipator (GESDA) as an independent to anticipate cutting-edge science advances, bring them to the attention of world leaders and catalyze concrete initiatives by leveraging the strengths of the International Geneva ecosystem, in the spirit of a renewed multilateralism. To achieve this, GESDA has consulted over 1200 scientists globally about which scientific advances in the coming 5, 10 and 25 years could have strong implications on the individual, our societies and the planetary ecosystem. This anticipatory mapping is described in the GESDA Science Breakthrough Radar and provides an overview of some of the scientific emerging topics which require significant anticipation and attention from world leaders.



**Dr Martin Müller**  
Executive Director Science Anticipator, Geneva Science and Diplomacy Anticipator (GESDA)

- History as “retrospective prediction”? On the limits of predicting the future by learning from the past.
- “If you don’t know about your past, you don’t know about your future” is probably one of the most repeated phrases in Sunday-speeches of politicians at official commemorations or historical anniversaries. Alas, the reality looks different. While history has a lot of lessons to offer, people don’t learn from it. This intervention will reflect on the reasons of this ignorance or oblivious of history and ask the question, whether the abundance of historical sources in the age of “big data of the past” will help to cure this phenomenon with the help of machine learning and AI or rather accelerate the digital forgetting.



**Prof. Dr Andreas Fickers**  
Director of the Luxembourg Centre for Contemporary and Digital History, University of Luxembourg



**Fred Keup**  
Sensibilité politique ADR



**Dr Laurent Scheeck**  
Secretary General of the Chamber of Deputies

The session will be followed by a short panel discussion bringing together the session’s speakers, policy makers and the Secretary General of the Chamber of Deputies. The aim is to answer the questions of the public and to exchange visions about communicating megatrends.





**Keynote address  
by Philip Crowther  
Reporting the future:  
news, analysis and  
communication in the  
2020s and beyond.**

In English, simultaneous interpretation from English to French

Communicators like to get as close to the action as possible. Very few people, though, are required to report live from a country at war. Philip Crowther is, and does. He will be explaining what it's like, how the nature of reporting is changing, and how conflicts and other major events are likely to be reported in the future.

Philip Crowther is a Luxembourgish journalist. He is based in Washington, D.C., and travelled to many regions of the world to cover breaking news. He fascinated the world when he reported from the Russo-Ukrainian war in 6 languages.

**Panel Discussion**

In French, simultaneous interpretation from French to English



In the panel discussion "Foresight in politics", we will address Megatrends and strategic foresight from different angles. While a Megatrend expert will provide a more general view about the impact of megatrends, other panel members will shed light on ethical and regulatory aspects and how strategic foresight is used to explore, anticipate and shape the future in Luxembourg and beyond. Most megatrends can likely not be contained. Consequently, it is critical to get prepared to the relentless technological innovation, accelerated disruption and rising social tensions. How can strategic foresight (mis-)guide the development of possible transition pathways, of policy agendas and strategies?

Panel members :

- Ms Catarina Zuzarte Tully, Managing Director, School of International Futures (SOIF)
- Prof. Dr. Andreas Fickers, Director of the Luxembourg Centre for Contemporary and Digital History, University of Luxembourg
- Ms Pascale Junker, Head of Luxembourg Strategy, Ministry of the Economy <sup>(1)</sup>
- Mr Philip Crowther, journalist
- Ms Isabel Wiseler-Lima, Member of the European Parliament <sup>(2)</sup>
- Dr Martin Müller, Executive Director Science Anticipator, Geneva Science and Diplomacy Anticipator (GESDA)

# Session 2: Digitalisation, Space and Artificial Intelligence

The apparition of the artificial-intelligence chatbot ChatGPT disrupted many sectors including academia and journalism. The place of such innovative technological tools is frequently debated as they raise ethical and juridical concerns. While an acceleration of the digital transformation is often sought to stay competitive and efficient, the impact on society of such emerging technological trends should be carefully assessed. In the current digital transition phase, we should embrace the new opportunities digitalisation offers, but also cautiously consider the resulting fundamental societal changes such as cybersecurity, discrimination and balance of power.





- A Launchpad for Digital health in Europe
- At the Luxembourg Institute of Health we perform patient-centric translational research with a focus on cancer and immune-related disorders. Our particular interest lies in the immune system as a shared functional module between health and disease. Our dedicated teams of multidisciplinary researchers embrace collaboration and disruptive technology to advance the understanding of disease mechanisms. Using technology like Artificial Intelligence on real-world patient-derived data, we create disease relevant knowledge, which can be tangibly translated into clinical applications through a bed to bench to bed approach. As a public biomedical research organisation focused on precision health, the LIH is invested in becoming a leading reference in Europe for the transformation of scientific excellence into meaningful benefits for patients

**Prof. Dr Ulf Nehrbass**  
CEO of the Luxembourg Institute of Health (LIH)

- Luxembourg Space Strategy - little on earth and big in space.
- How does the national space strategy take into account the rapidly evolving context and contributes to the sustainability of economic activities in Luxembourg?



**Dr Marc Serres**  
CEO at Luxembourg Space Agency (LSA)



**Prof. Dr Djamila Aouada**  
Interdisciplinary Center for Security, Reliability and Trust (SnT), University of Luxembourg

- Artificial Intelligence: A Revolution with Opportunities and Responsibilities
- AI has been on the map for decades, but today, we are living in a pivotal moment where the latest progress in chatbots has dubbed AI as one of the greatest technological revolutions. Beyond the hype, where exactly are we with AI? How close are we to achieving Artificial General Intelligence - machines that can match or exceed human intelligence? The rapid progress in AI has led to unprecedented capabilities and opportunities, but it also raises important questions about its limitations, challenges, and ethical responsibilities. As a society, we must address these questions together to ensure that AI benefits humanity.

- Impact of digitalisation on employees
- Digitalisation is one of the megatrends bearing both challenges and opportunities for the labour market. Our recent evidence-based results from the H2020 UNTANGLED and FNR DIGITUP projects highlight the need for employees to further develop digital skills. The expansion of non-routine cognitive tasks induced by digitalisation is indeed related to the fact that employees feel under-skilled. We also found that the increased use of digital tools during the 2020 lockdown in Luxembourg certainly benefited teleworkers, but was also factor for enhanced infobesity. The digital skills among gender and age groups was narrowed, but not between education level groups.



**Ms Ludivine Martin**  
Research Scientist, Luxembourg Institute of Socio-Economic Research (LISER)



**Sven Clement**  
Sensibilité politique Piraten



**Pim Knaff**  
Groupe politique DP

The session will be followed by a short panel discussion bringing together the session's speakers and policy makers. The aim is to answer the questions of the public and to exchange visions about digitalisation, space and artificial intelligence.



# Session 3: Social Inequalities, Urbanisation and Mobility

The global population growth poses multidimensional challenges in terms of sustainable urban development, social inequality and fragmentation, road congestion, etc. Many future challenges will be shaped by people's values, as well as the structure of the future society. Both the youth and the rapidly ageing population will impact the social, economic and environmental urban development. Understanding and anticipating the consequences of urbanisation is crucial to ensure a proper response to this dynamic and to reach the ambitious objective of more inclusive cities. In this perspective, a common reflection must be carried out on social polarisation, to promote social integration and to reduce pressure on urban areas.



**Dr Matthew Dennis**  
Assistant Professor in Ethics of  
Technology, TU Eindhoven

## — Post-Pandemic Value Change

— Value-sensitive designers (VSD) across the world have responded to the Covid-19 pandemic by proposing that online technologies connected to remote working should be designed in ways that nudge us towards a better online behaviour. Repurposing persuasive technologies for digital well-being appears promising, but it is fraught with ethical challenges. Those wishing to enlist persuasive technologies to promote better digital well-being must design in ways that do not violate key values (e.g., autonomy, responsibility, self-determination) or weaken paradigmatic human faculties (e.g., focus, deliberation, choice). This presentation explores the ethical challenges for tech companies of using VSD to reimagine digital well-being.

## — The Many Faces of Housing Mobility

— Housing mobility has at least three faces: mobility as physically navigating from your home outward to other important locations like the workplace, mobility as the ability to leverage housing to build wealth and become upwardly mobile, and mobility to secure the different kinds of housing you need over the life course. Each of these faces - physical, economic, and residential mobility - are shaped by the megatrend of increasing income and wealth inequality. What do these trends look like in Luxembourg, and what challenges and opportunities will they bring in the decades ahead?



**Prof. Dr Lindsay Flynn**  
Associate professor in  
Political Science, University  
of Luxembourg





**Prof. Dr Louis Chauvel**  
Faculty of Humanities,  
Education and Social Sciences,  
University of Luxembourg

- Aging Society, fragmentation, wealthisation: Three megatrend scenarios for the next generation
- An unavoidable ageing, a de-standardised society, in which each individual builds his or her own life course, whether chosen or not, in a context where the holding of assets has regained the primordial importance it had in the 19th century, are three fundamental megatrends to which our societies will have to respond. For Luxembourg, these are specific challenges, and it is appropriate to examine in three contrasting scenarios the logical consequences of the trends already at work in recent decades. This is an opportunity to measure the gaps and tensions that are likely to intensify within the populations.



**Mars Di Bartolomeo**  
Groupe politique  
LSAP



**Myriam Cecchetti**  
Sensibilité politique  
Déi Lénk

The session will be followed by a short panel discussion bringing together the session's speakers and policy makers. The aim being to answer the questions of the public and to exchange visions about social inequalities, urbanisation and mobility.



# Session 4: Sustainability, Resilience and Climate Change

Climate change is a pressing policy issue that triggers deep societal concerns. While the rising temperatures are already tangible, other consequences may in future constitute a disruptive force threatening environmental, economic and social balance. Energy consumption and global population will rise in parallel. In this perspective, the energy transition and the transition to a low-carbon, sustainable, social and inclusive economy is also becoming urgent.





**Dr Thomas Kallstenius**  
CEO of the Luxembourg Institute of Science and Technology (LIST)

- Technologies for a successful energy transition
- To cut Luxembourg's greenhouse gas emissions by at least 55% by 2030 with the final goal of reaching climate neutrality by 2050, a variety of changes in energy production and distribution will be required in addition to changes in consumer behaviour. Several technologies will play a key role, including renewable energies, energy storage technologies, smart grid technologies, and carbon capture and storage technologies. Yet, for each of these technologies to reach their full potential, a series of technical (and techno-economic) hurdles remain to be addressed by research.

- What are the global options for achieving more climate resilient development?
- The Intergovernmental Panel on Climate Change (IPCC) concludes that the world is on a dangerous path of global warming and that each increment of global warming will intensify multiple and simultaneous risks. The report states that «the window of opportunity to limit global warming to 1.5°C to ensure a livable and sustainable future for all is rapidly closing». At the same time, it finds that there is a wide range of feasible and viable options for increasing climate ambition. The decisions and actions we take today will have significant impacts on the climate for thousands of years.



**Dr Andrew Ferrone**  
Head of the meteorological service at Administration des services techniques de l'agriculture (ASTA)



**Ms Jane Wilkinson**  
Independent Director, Ripple Effect s.à.r.l.

- Can finance be sustainable and contribute to tackling climate change?
- The UN estimates that we need to be making annual investments of around USD5-7 trillion to achieve the Sustainable Development Goals (SDGs). Global financial assets are estimated at over USD200 trillion, so finance is available, however it is not being channelled at the scale and speed needed to meet objectives set in the Paris Agreement on climate change and the SDGs. The financial sector, in Europe in particular, has embraced sustainable finance, partly because of recent legislative developments, but despite the heightened focus and business opportunity that sustainable finance presents it still feels like we are not doing enough, and greenwashing across the financial sector is a real risk. What is the current state of play and what needs to happen next?



**Paul Galles**  
Groupe politique CSV



**Jessie Thill**  
Groupe politique Déi Gréng

The session will be followed by a short panel discussion bringing together the session's speakers and policy makers. The aim being to answer the questions of the public and to exchange visions about sustainability, resilience, climate change.

## Youthparliament

moderated by the Zentrum fir politesch Bildung



The conference covers the megatrends of tomorrow's world. In the last session of the conference we will give the young people that will live in that world a platform to present the youth's vision for the future of Luxembourg that is strongly influenced by megatrends. This panel intends to strengthen and encourage the political voice of the youngest, by giving them the opportunity to be a force of proposal to consider the steps to follow and the pillars of a constructive discussion on topics such as social inequality, climate change and digitalisation.

The Youth Parliament (YP) is a platform where every young person aged between 14 and 24 and living in Luxembourg or attending a school in Luxembourg has the opportunity to discuss and debate with other young people about subjects of interest to them affecting their everyday life. Its main objective is to encourage youth civic engagement and to bring young people and the political world together, through the drafting of opinions and resolutions that will be imparted to the relevant political actors.



# Megatrends 2050

Shaping the future with scientific foresight

## Key information

<b>Location</b>	Cercle Cité, <a href="https://cerlecite.lu/fr/rooms">https://cerlecite.lu/fr/rooms</a>
<b>Date</b>	4 <sup>th</sup> and 5 <sup>th</sup> May
<b>Concept</b>	Multidisciplinary conference comprising topical sessions, interactive surveys, panel discussions and an exhibition.
<b>Objectives of the conference</b>	<ul style="list-style-type: none"><li>— Provide an inspiring platform for constructive exchanges and critical reflections about trends that will shape the future of humanity;</li><li>— Identify challenges and opportunities that Luxembourg will likely face in the next decades;</li><li>— Assess to what extent scientific data on Megatrends can be instrumental in resolving challenges and influencing the policy agenda.</li></ul>
<b>Conference languages</b>	<ul style="list-style-type: none"><li>— French &amp; English</li><li>— Simultaneous interpretation from French to English and from English to French</li></ul>
<b>Steering Committee</b>	Members of the Research Service of the Chambre des Députés (Chamber of Deputies) and the National Research Fund
<b>Exhibition</b>	The MuD, musée du déchet