

The Future of Luxembourg's Economy by 2050

THE *ECO2050* VISION IN 10 BUILDING BLOCKS



2023



Ministry of the Economy

Luxembourg
Strategy

The ECO2050 Vision

As part of its missions approved by the Government in 2022, Luxembourg Strategy, the strategic foresight entity of the ministry of the Economy, is conducting long-term foresight studies. In particular, it is extending and deepening the strategic study on the Third Industrial Revolution (TIR2050 or "Rifkin Process"). Between April 2022 and July 2023, Luxembourg Strategy coordinated the ECO2050 collaborative initiative to develop plausible scenarios and a strategic vision for Luxembourg's economy in 2050. In particular, the initiative led to the publication of the "ECO2050 Vision" report, which outlines 12 megatrends Luxembourg is facing, 3 economic scenarios with which it could be confronted and 1 Vision that would enable the country to move forward and protect its economy, whatever scenario materializes. The final report was presented to the public during the 3rd annual "Luxembourg Stratégie" public conference in September 2023.

This booklet provides an overview of the Vision, structured into 10 building blocks. The building block's ranking does not matter much; it suffices to notice that the items are individually virtuous and mutually reinforcing. These 10 realistic and desirable building blocks should make it possible to construct a new ECO2050 structure by significantly strengthening the resilient, inclusive and competitive nature of Luxembourg's economy by 2050.

For references, sources, and additional information, please consult the complete ECO2050 report.

The full ECO2050 report is available in print in French and English and copies may be ordered at: luxstrategie@eco.etat.lu

It is also available online, in both languages, on Luxembourg Strategy's website: <https://luxstrategie.gouvernement.lu/fr/publicationsbis/rapport-vision-eco2050.html>

The opinions expressed in this publication are those of the authors and do not necessarily reflect those of the ministry of the Economy or the government.

We thank you for your interest and wish you a stimulating reading.

Team Luxembourg Strategy

Luxembourg, December 2023

The ECO2050 Vision in 10 building blocks

1. Strategic autonomy

since boosting domestic production reduces dependence on imports and decouples the economy from shocks on international markets

2. Circularity and sufficiency

since saving energy and raw materials makes it easier to keep with environmental and financial constraints

3. Focusing on people, knowledge and wellbeing

since societal and organisational innovation creates new businesses, attracts talent and preserves a high quality of life

4. Reconciling the digital, ecological and social transitions

since building a competitive economy that manages the environmental and social footprint of new technologies facilitates social and ecological progress

5. Critical redundancy and strategic storage capacity

since duplicating solutions and building up reserves of essential goods and services ensures greater resilience and adaptability for the economy

6. Administrative simplification

since improving the environment for entrepreneurs, investors and researchers by streamlining procedures boosts the economy by making it more agile

7. Economic diversification

since adapting key sectors to new challenges in the name of the general interest strengthens the preservation of common goods and the capacity of the existing economic system to turn transitions into business opportunities

8. Sustainable economic diplomacy

since forging close diplomatic and commercial ties with partners who share the same ecological and social values creates synergies of strengths and assets, while cementing the global governance of resources

9. Sustainable and solid public finances

since guarding against budget imbalances will help financing transitions and efforts towards greater sustainability

10. Anticipation and speed

since planning for the long term, constantly adapting to increasingly rapid change and keeping an eye on developments gives a comparative economic advantage by defusing threats and reinforcing opportunities



#1


Improving open strategic autonomy to revitalise national production

Greater strategic autonomy in terms of energy, water and materials is essential to control access and prices more effectively. Preserving this biophysical base strengthens production and its ability to contribute to the financing of the State.

To take greater control in supplying the economy, strengthen national production and protect against shocks on international markets, ECO2050 proposes 4 steps for Luxembourg in the Greater Region:

1. Assessing and prioritizing Luxembourg's potential for self-sufficiency in essential physical inputs. Autonomy does not mean autarky. It means assessing on a case-by-case basis what degree of self-sufficiency is possible for what supply, within what perimeter, and resolving conflicts of use. For example, green H₂ for fertilisers or mobility, wood for energy or construction, water for food or electrolysis, etc.
2. Preserving this biophysical base to produce more sustainably, independently and locally. This means fostering efficiency and innovation, resource productivity, avoiding rematerialisation through decarbonisation and digitalisation, reducing rebound and crowding-out effects, being sufficient with materials, concentrating on essential products, etc.
3. Accelerating the transitions in strategic, resource-intensive sectors by gearing research, consultancy and state aid towards more sufficient modes of production.
4. Securing and diversifying essential supplies through diversification of the energy mix, flexibilisation and cross-border connections of the European Union (EU) electricity grid, long-term contracts, strategic storage ([building block 5](#)), trade agreements and international partnerships ([building block 8](#)), geological prospecting, protection of European products from international competition, etc.

The EU's proposed Net Zero Industry Act (NZIA) aims to achieve strategic autonomy. This regulation strengthens the production of net-zero technologies within the EU. The EU aims to cover at least 40% of its needs for net-zero technologies by 2030 through domestic production, supporting the competitiveness of the European manufacturing industry and the creation of skills and quality jobs throughout the production chain.

EU application 

EU STRATEGIC OPEN AUTONOMY



The 360° strategic autonomy wheel

illustrates policy areas in which the EU aims at more strategic autonomy, as well as the links between them. The wheel can help to understand links, set priorities and view potential conflicts. More autonomy in the digital green economy will, for example, require vast quantities of 'rare earth' materials, making the EU more (instead of less) dependent on imports. Reductions in energy consumption achieved through digitalisation of the economy (for example by reducing transport) will be partly offset by the increase of energy consumption by electronic devices and data centres. The wheel cannot solve such dilemmas, but can help to identify them.

Source: European Parliament (July 2022), [EU Strategic Autonomy Monitor](#)



#2


Extending circularity and sufficiency throughout the economy

As efficiency and recycling have physical and financial limits and are offset by rebound effects, circularity, sufficiency and greater use of local resources complement them and become factors of competitiveness and autonomy. They help to limit the negative impact of extracting, transporting and processing raw materials on workers and the ecosystem. They facilitate the material-intensive process of decarbonisation.

The ECO2050 Vision proposes 3 measures:

1. Accelerating and generalizing the implementation of existing circular strategies: this involves consumer information (labelling), low-tech training, taxation, regulation and standardisation within the EU single market.
2. Reducing the land and material footprint of the economy, by favouring the deconstruction of buildings and the conversion of wasteland to new buildings, relocating certain types of production within the urban fabric, making business parks circular, dense, multi-functional and multistorey, and focusing on teleworking and shared space, particularly around carbon services ([building block 7](#)).
3. Developing and structuring circular supply chains, encouraging innovation and substituting materials. Research will deliver bio- and geosourced materials that are light, repairable and degradable. An increasing use of biomass (biogas) and a decreasing production of waste are anticipated. As the first generations of photovoltaic panels and wind turbines reach the end of their lifecycles, 2 economic opportunities are opening up: stimulating research into extending their lifespan and building up the recycling and reuse chain today.

The aim of creating a “Wertstoffhaff” is to bring together activities linked to the circularity of materials. This central location will enable materials to be prepared, recycled and reused, while pooling the costs associated with floor space, machinery and transport. This initiative promotes the sorting and recovery of materials, potentially combined with the prefabrication of components from recycled materials, as well as the deconstruction and storage of materials ready for reuse.

Luxembourg application 

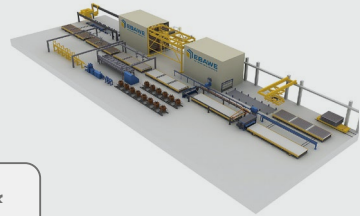
THE “WERTSTOFFHAFF” SUSTAINABLE CONSTRUCTION CLUSTER

Installation of sorting facility and recycling facility for construction



Source: <https://eberhard.ch>

Installation of a prefabrication plant for building components



Source: <https://www.ebawe.de>

Synergies & productivity improvements

Deconstruction platform (reusable materials storage)



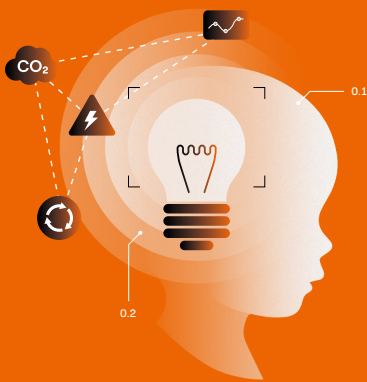
Source: <https://rotordc.com>

Research & skills centre

Installation of a recycled concrete production plant



Source: <https://zirkuliti.ch>



#3

Putting people, knowledge and wellbeing at the heart of the economy

Focusing transitions on people, manual and digital skills and well-being encourages organisational and social innovation and helps to give meaning to work, develop vocations and attract talents and activities.


We all want to be productive and useful. Studies show, however, that there is a great deal of unease at work, with employees feeling understimulated or out of touch with their ethical values, at a time when we need to mobilise everyone to make the vital transitions a success. The ECO2050 Vision proposes 4 measures to support this cultural transformation:

1. Developing, in a coordinated way across the Greater Region, the new generation of workers capable of leading these transitions: from the indispensable computer engineer to managers, from care professions to maintenance, from researchers in biomimetics to neo-farmers of varieties adapted to a new climate, etc.
2. Combining and passing on old and new practical, organisational and technical “know-how” between generations. In 2050, our working lives will be flexible, and we will be able to combine a stable job in a fixed place with a fluctuating self-employed activity - e.g. mentoring young people - coupled with a European teleworking status, a *pro bono* activity in the public interest or a paid passion, etc.
3. Promoting scientific culture, cultivating excellence and multilingualism. Education will address the topics of biophysical limits and the fundamental role of energy, more sufficient behaviour, the nonlinear economy of disruptions, and risk management. We will remain independent in engineers, crucial to building large transitional infrastructures by promoting the Science, Technology, Engineering & Mathematics (STEM) fields ([building block 5](#)), and we will promote multilingualism, a comparative advantage for a small country.
4. Encouraging organisational innovation, by introducing new business and management models.

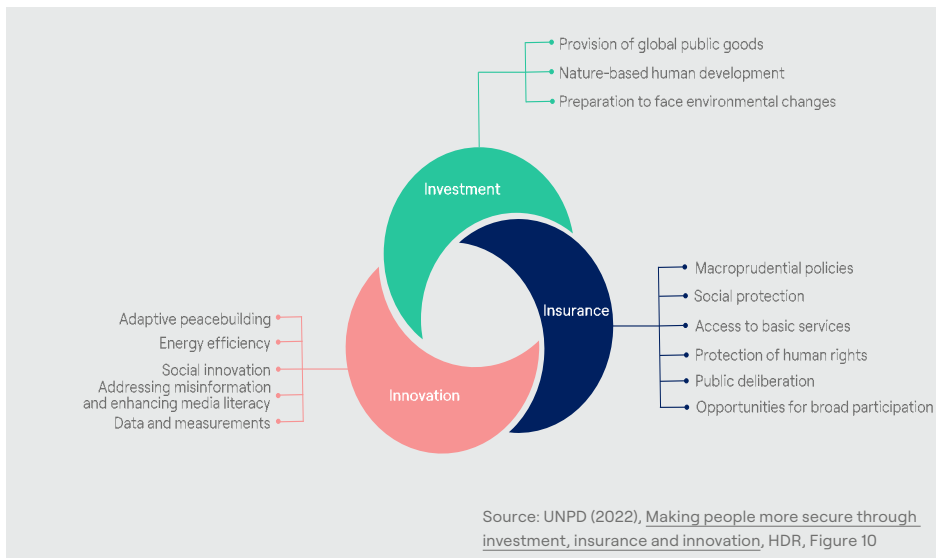
The Social Business Incubator encourages socially innovative entrepreneurial activities in order to develop the social economy.

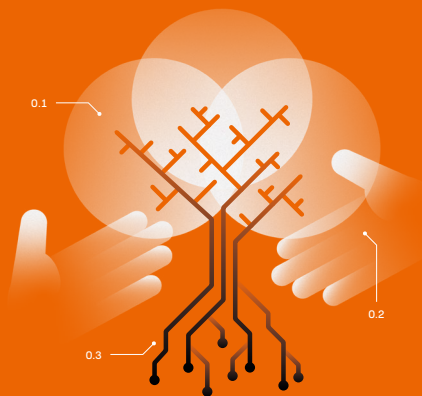
The SOC2050 study, commissioned by Luxembourg Strategy to the Luxembourg Institute of Socio-Economic Research (LISER), is studying the desirability of societal change towards more resilience in Luxembourg.

The United Nations (UN) notes a paradoxical global situation: 6 out of 7 people feel insecure and distressed, despite progress and prosperity. Human development is regressing and 3 transformations can help: investment, insurance and innovation (United Nations Development Programme (UNDP), Human Development Reports (HDR), 2022).

Luxembourg application 

MAKING PEOPLE MORE SECURE THROUGH INVESTMENT, INSURANCE AND INNOVATION





#4

Reconciling the digital, ecological and social transitions


The aim is for digitalisation to reduce - rather than increase - the consumption of energy, materials, water and space, and to strengthen - rather than weaken - democracy, health and community life.

Digital technologies are making rapid advances across all economic models, and already account for 10% of Europe's energy consumption and 4% of its emissions. They can have a destabilising effect on society: overconnection, fake news and polarisation, surveillance, increasing complexity and vulnerability of systems, loss of free time, sociability, motor skills, creativity, productivity, etc. Responsible digitalisation implies:

1. Reducing the ecological footprint and promoting virtuous practices. In addition to efficiency, the principles of circularity and sufficiency also apply to the digital sector, in order to reduce the need for carbon-free electricity.
2. Strengthening social cohesion, reduce costs and consolidate democracy, by applying the EU's fundamental rights and freedoms.
3. Ensuring national digital sovereignty.

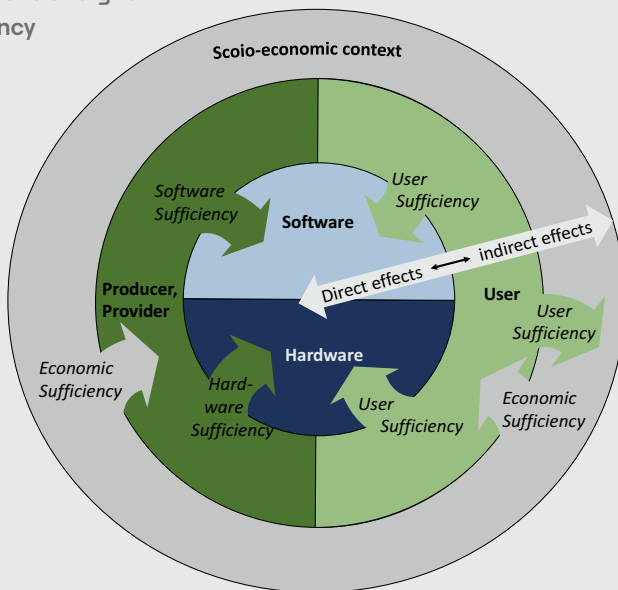
Digital services are deemed "virtuous" when they contribute to public goods such as health, climate, energy, security and food. Examples include satellite observation of the environment and the construction of early warning systems for extreme weather events, the monitoring of fishing boats or methane emissions (data4good), the robotisation of arduous or dangerous jobs, carbon technologies and services ([building block 7](#)), smart grids, the transition from owning to sharing a good or service, the optimisation of agricultural greenhouse inputs or medical treatments, the understanding of biophysical limits and raising awareness of disease prevention, etc. The expansion of renewable energies depends on digitalisation.

Luxembourg would rely on high capacity, secure and low latency digital infrastructures and services that are non-discriminatory for citizens, businesses or the public sector. A sovereign digital system, located on national territory, can provide Luxembourg with control and protection of its data and the freedom to migrate to open source systems, which reduce exposure to risks linked to abusive commercial or political decisions while facilitating collaboration and exchanges.

Luxembourg application 

DIGITAL SUFFICIENCY

Interplay of the 4 dimensions of digital sufficiency

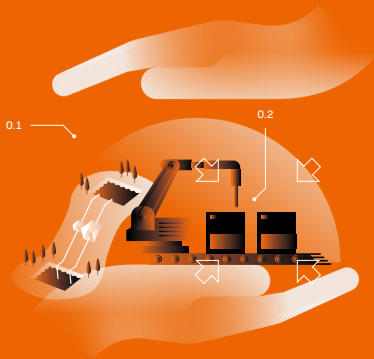


Hardware and software sufficiency measures aim at reducing the total environmental impact throughout the life cycle of Information and Communication Technology (ICT) hardware and at developing software that is not driving increased data traffic and electricity use of networks.

User sufficiency concern the data traffic that users generate by their activities. Reduced traffic by, e.g., not streaming unnecessary amounts of High-definition (HD) videos would reduce the demand for hardware while also reducing operational energy.

Economic sufficiency concern improved labour productivity, reduced working hours, prevention of rebound effects.

Source: Tilman Santarius et al. (2022), [Digital sufficiency: conceptual considerations for ICTs on a finite planet](#), *Annals of Telecommunications*



#5

Investing in critical redundancy, strategic storage and duplicated solutions

Invest in critical redundancy, strategic storage and duplicated solutions to ensure the continued operation of the economy in all circumstances. Having backups and reserves means you can cope with supply disruptions, power cuts, price volatility, fluctuations in demand, border closures, health or geopolitical crises.

The major infrastructures we have today were largely built after the 2nd World War, using fossil fuels and for a mild, predictable climate. The transition to a post-fossil fuel regime and an unpredictable climate are pushing these facilities to their limits: the electricity grid needs to be expanded and modernised, there is a lack of storage capacity for intermittent energy sources, buildings are not designed to withstand extreme weather conditions, etc. To improve infrastructure and functional resilience, ECO2050 proposes to:

1. Identifying and prioritising new critical infrastructure and service needs (health, manufacturing, communications, security, food, energy, water, etc.) on the basis of the best long-term social cost/benefit ratio, using a cross-border, participative and fact-based approach.
2. Choosing the best technical means of ensuring this resilience: redundancy through geographical or technical duplication of an infrastructure (e.g. Esch-sur-Sûre water purification plant), stockpiling of vital spare parts or components (e.g. medication), building overcapacity, distribution of critical functions through physical or digital networks combined with machine learning, increasing infrastructure robustness (climate proof), etc.
3. Designing budgeted plans for economic resilience in the face of unforeseen events. The RISK2050 study, commissioned by Luxembourg Strategy to the University of Luxembourg, paves a first step in this direction. It is studying the vulnerability of businesses to physical risks such as climate change, the increasing scarcity of resources and the decline in biodiversity.

With the Svalbard Global Seed Vault, a global seed bank, the Norwegian government is preserving this genetic material so that food production can be restarted in the event of a cataclysm.

Flooding: The 2021-2027 national flood risk management plan states that, in terms of the value of assets at risk in Luxembourg, areas used for economic production (industrial estates and commercial establishments) are among the most exposed.

European application

Luxembourg application



DUPLICATED SYSTEMS TO ADOPT

- Mega- and microprojects (e.g. variable energy storage, smaller boats for low-water navigation, etc.)
- Mitigation and adaptation (reducing emissions / adapting to the effects of environmental disturbances)
- Grey and green infrastructure (e.g. pipes and pumps / floodplains to manage water, electric air conditioning / natural ventilation, etc.)
- Centralised and decentralised systems (e.g. interoperability of the European electricity grid / solar power and batteries, water tanks at the domestic level)
- Active and passive systems (e.g. battery storage / geological or gravity storage)
- Modern and high-tech know-how and traditional and low-tech know-how (robustness, reparability)



Energy-assisted cooling

Source: <https://commission.europa.eu>



Bioclimatic cooling, baghirs, Iran

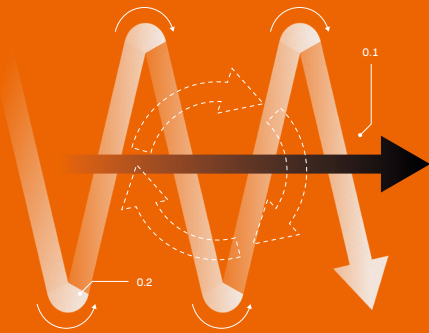
Source: <https://www.flickr.com>



Solar chimneys, Luxembourg Cooperation in Niger

Source: LuxDev (2016), [Constructions bioclimatiques au Niger](#)

- **Mechanical and digital solutions (to protect against digital attacks or power cuts, etc.)**
- **Technological and behavioural solutions (e.g. increased efficiency of cars / reduction in forced mobility; increased supply of more efficient technologies / reduction in demand for goods and services)**




#6

Simplifying procedures, shortening pathways and facilitating transfers

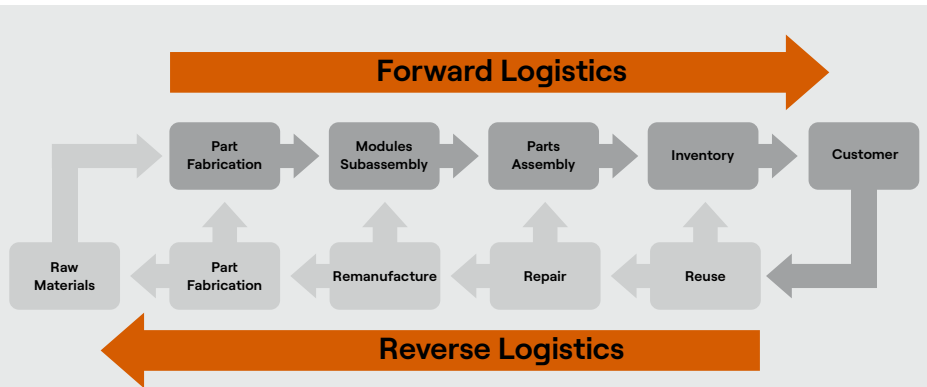
Achieving these transitions on time while remaining competitive means reducing administrative and regulatory complexity, shortening supply chains and facilitating the transfer of knowledge and production tools.

- 1.** Simplifying procedures: one-stop shop for grant applications, eCommodo, electronic single contact point for the European maritime sector, once-only principle - the single transmission of standard user data - these are just some of the electronic tools that can facilitate business processes. Other examples include the abandonment of double signatures, the harmonisation of climate and biodiversity reporting, the integration of circularity into public procurement, and the alignment and linking of the 60 or so national sectoral strategies in the areas of energy and resources. Digitalisation is certainly an enabling tool, but it must not in turn dehumanise and complicate administrative relations.
- 2.** Shortening physical distances, where it makes economic sense, and sourcing and producing closer to home (Greater Region) is a precautionary measure in the face of the likely rise in energy, carbon or materials prices, leading to an increase in the costs of globalisation and imports. This can be achieved through sufficiency in goods (reducing the transport of non-essential goods to make room for essential ones, reducing the transport distances), modal shift (rail and river before air and road) or circularity (deposit system, reverse logistics, etc.).
- 3.** Facilitating transfers: To avoid losing the knowledge and know-how of previous generations and from the time before digitalisation, we need to facilitate transfers and maintain the national entrepreneurial fabric, particularly for Small & Medium-sized Enterprises (SMEs) and family-run craft businesses, which are drivers of innovation, decarbonisation, circularity and job creation.

Reverse logistics refers to the supply chain process of returning products from end users via the supply chain to the retailer or manufacturer for reuse, repair, decomposition and repurposing as raw materials or parts. In the context of material scarcity and supply vulnerability, this approach may hold particular promise for a small country open to trade.

Greater Region application 

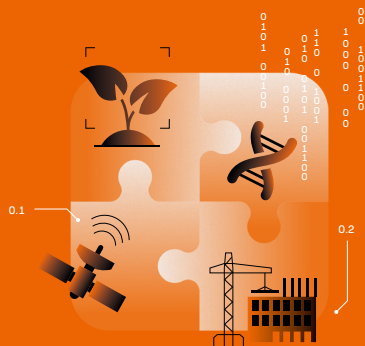
REVERSE LOGISTICS



Source: Ihar Baranau et Andrej Lisec (2020), [Reverse Logistics in Agriculture](#)



Source: Tavant (2018), [Reverse Logistics Function – A Strategic Review](#)



#7

Diversifying the economy by adapting to the challenges of the future

Diversifying the economy towards **Carbon and Nature Tech & Services**: The diversification of the economy would develop around companies' contributions to achieving the energy-climate and ecological transitions: supplying low-carbon, robust, repairable equipment and technologies, specialising in "green" services and financial products, investing in the regeneration of natural resources. The provision of basic public services and the creation of business opportunities would go hand in hand, whilst respecting biophysical limits.


Two movements are operating simultaneously: Industrial, manufacturing and craft production processes become low-carbon and resource efficient. At the same time, production is being redirected towards the supply of components and equipment needed for decarbonisation: climate proof construction, heat pumps, agricultural tools, low-carbon energy, storage, networks, etc.

Luxembourg's industry could seize on this ecologisation, the Green Deal and the European Net Zero Industry Act (NZIA) as opportunities for reindustrialisation. A 3rd path is opening up: the economy would become a provider not only of technologies for climate mitigation, but also for adaptation (social and natural protection, agronomic research, bioclimatic construction, disease prevention, natural carbon sinks, forest conservation, etc.).

The investment market for the transition and greening of the economy between now and 2050 is estimated at:

- 1 bn EUR / year Luxembourg
- 1,000 bn EUR / year EU
- 10,000 bn EUR / year worldwide i.e. ~ 10% of world Gross Domestic Product (GDP) (2022)

Finally, with its strong service and financial sectors, Luxembourg is well positioned to develop **Carbon and Nature** compliance services: accounting, digital monitoring of emissions and scarce resources, energy audits, lifecycle analysis, scope 3, climate, biodiversity and sustainability reporting, national and international carbon projects to supply the green funds industry, physical damage insurance, climate litigation, risk management and carbon tax expertise, etc.

Luxembourg application 

THE DUTCH WATER DEFENCES INDUSTRY, A PUBLIC GOOD AND A BUSINESS CASE

In the Netherlands, the Delta Plan has turned the public good of «adaptation to climate change» into a business case. This major national programme to defend against rising sea levels has become an industry for the domestic market and for exporting expertise and technologies.



NL Delta plan for achieving flood protection, freshwater availability and spatial adaptation goals by 2050. Delta Fund 2021-2034, EUR 19 billion



“The time for freedom of action is over: we need to speed up to keep our delta safe and liveable.”

“The urgency is increasing, due to the changing climate. Such investments are especially crucial now to sustainably foster our economy and to enhance the resilience of our society. With Covid, we have experienced, more than ever before, how important it is for our vital sectors such as health care, IT, and the power, gas, and drinking water supply, to continue to operate during a crisis. Measures to climate-proof vital and vulnerable functions must be intensified.”

Peter Glas, Delta Commissioner

Source: Gundula Winter and Marjolijn Haasnoot (2022), [Putting Dynamic Adaptive Policy Pathways into Practice](#), Deltares




#8

Integrating new challenges into economic diplomacy

Luxembourg advocates extending an international regulatory and institutional framework to essential public goods that still lack one. Doing it on your own is a recipe for failure. At a time when planetary limits are being exceeded and global interdependence is on the rise, economic diplomacy would be better placed to serve the peaceful management of global public goods which, by definition, transcend electoral deadlines, current generations or national borders. The ECO2050 Vision covers the following global public goods of particular economic interest to Luxembourg:

1. Critical raw materials and rare earths - They are essential for decarbonisation and the energy transition.
2. Geoengineering - Without guidelines, human manipulation of the climate using technical means is part of what the Organisation for Economic Co-operation and Development (OECD) describes as an existential risk, with potentially global, unpredictable and irreversible effects.
3. Artificial Intelligence (AI) and the Metaverse - Looking beyond the opportunities, the risks of AI concern interference with democracies, elections, human and labour rights, markets, the functioning of States and public services, security and defence, etc. Faced with this new form of sovereignty, the EU and the OECD are legislating to avoid an existential risk for civilisation and humanity.
4. Space resources - Securing their universality and the sharing of benefits and defending the EU's independence in terms of access to space and its economic opportunities.
5. Green shipping and deep sea mining - Reducing emissions from the maritime sector and preventing the environmental damage associated with deep sea mining by reducing the need for minerals (innovation, efficiency, sufficiency) and favouring more transparent land-based mining.
6. Beyond growth - Developing an alternative measure of economic performance to GDP, which takes better account of the well-being of populations and the state of the environment.

As a lever for economic diversification, Luxembourg's Space Strategy also aims to contribute to the sustainability of activities on Earth, by favouring a responsible approach to activities in space. Luxembourg can help to develop space applications that benefit humanity.

Luxembourg application 

SPACE PROJECTS WHICH BENEFIT HUMANITY

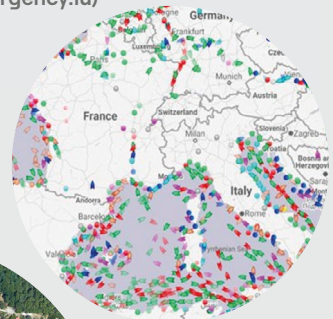
- Developing life and materials sciences based on space experiments
- Encouraging the collection of environmental data to:
 - Develop climate models
 - Plan climate adaptation measures
 - Monitor sea, ice and permafrost levels
 - Anticipate disasters and extreme weather events
 - Monitor biodiversity, ecological restoration and migration
 - Detect CH₄ emissions
 - Improve maritime and river navigability forecasts: low water on the Moselle / Rhine
- Fostering terrestrial observation and satellite communications:
 - During conflicts (e.g. as part of the North Atlantic Treaty Organization (NATO))
 - To manage crisis/emergency situations (e.g. emergency.lu)
- Solving the problem of space debris



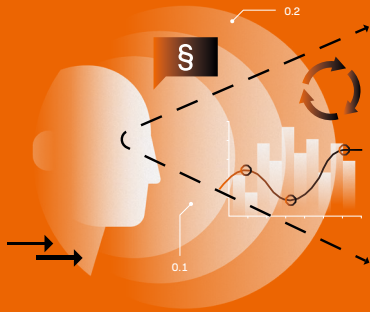
Source: <https://www.ses.com/>



Source: <https://www.nature.com/>



Source: <https://flightradars24.fr/marine-traffic/>



#9


Ensuring sustainable and solid public finances

Ensuring sustainable and solid public finances aims to better control the costs of energy, ecological, digital and societal transitions, against the backdrop of a scissors effect between dwindling financial resources and rising transitional costs, at a time when the damage and losses caused by environmental crises have yet to be accounted for. What are the potential ways of optimising and controlling costs?

- Investing in public goods such as health, food and the environment to reduce the cost of care and ecological regeneration.
- Reallocating capital towards achieving multiple transitions and adapting populations and assets to unforeseen events and climate proof crises.
- Extending planning horizons (anticipation) and acting early to avoid spiralling costs (environmental damage, stranded assets, loss of attractiveness to investors).
- Extending the lifespan of infrastructure and equipment, planning heavy infrastructure in the Greater Region or the EU.
- Making anticipatory investments (network, connection, storage prior to the expansion of intermittent sources) before the prices of rare materials skyrocket.
- Mobilising potential for savings, avoiding overconsumption and waste, reviewing nonproductive expenditure.
- Redirecting the tax burden towards carbon- and resource-intensive goods and services.
- Launching a Luxembourg-based wealth fund and developing physical projects for international green funds.
- Incorporating biophysical scenarios (climate, energy, resources) into planning and related investments.
- Ensuring that the various policies and strategies tie up physically, budgetarily and timewise.

While everyone agrees that the cost of inaction exceeds the cost of climate action, the Stern Review (2006) argues that estimates of the costs of inaction vary widely and have increased significantly over time. In 2022, Oxford Economics estimated that a warming of 2.2°C by 2050 would cost up to 20% of GDP. Needless to say, beyond a certain level of warming, the cost is total, since there is no economy to be saved.

The Rifkin study estimated the cost of Luxembourg's transition to 2050 at around 2% of GDP. STATEC notes that, in the EU as a whole, the energy transition would require investment amounting to +2% of GDP per year between now and 2050.

Luxembourg application 

POSSIBLE SCOPE OF INTERVENTION IN ECOLOGICAL SOCIAL SECURITY





#10


Turning **anticipation** into a competitive advantage

Given that traditional approaches to developing public policy are no longer sufficient in a context of great complexity and acceleration, uncertainty and disruption, planetary limits and tipping points, there is no substitute for long-term strategic planning. Preparing for the “false” future, the one that never materialises, can be very expensive.

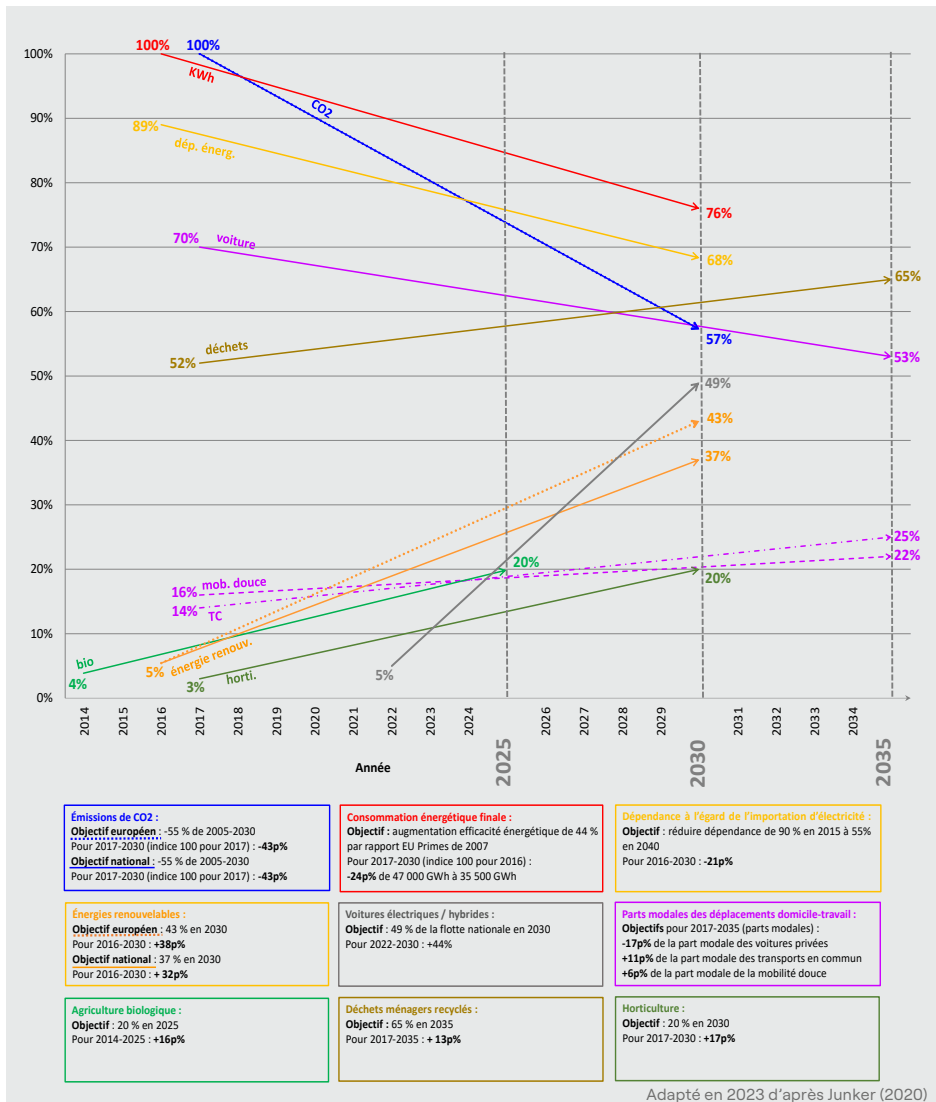
Let's take 3 examples:

- 1.** Energy: The International Energy Agency (IEA) announces the end of traditional planning of the electrical grid: the transition to a mix of intermittent energies requires decisions, infrastructures, regulations, institutions and skills that break with those of the past. The risks to security of supply are multiplying (climate change, cyber security, disruption of supplies of critical materials, geopolitics, social acceptance, pandemics, disinformation, etc.). Long-term, supranational planning based on risk assessment and operating on a scenario basis is needed to be able to decide between energy and infrastructure options.
- 2.** Corporate foresight: Research shows that “vigilant” companies that practice foresight and prepare simultaneously for different futures have better financial results and manage to decarbonise more quickly and at lower cost.
- 3.** Companies: The new EU Corporate Sustainability Reporting Directive (CSRD) directive on sustainability reporting enshrines the principle of double materiality, which provides information on the impact of a company on people and the environment on the one hand, and on the impact of the environment on profits (stranded assets) on the other. The *Association des Banques et Banquiers du Luxembourg* (ABBL) is calling for the creation of a national register of companies' non-financial data to enable risk assessment of banks, insurers and funds.

Luxembourg Strategy, the strategic foresight entity of the ministry of the Economy, can be an ally in transforming the economy towards greater competitiveness, inclusiveness and resilience for the decades to come. Ensuring the stability of long-term planning, which not only physically links sectoral strategies, but also reduces costs and delays and increases political credibility, social acceptance and financial and technical resilience.

Luxembourg application 

QUANTIFIED TARGETS FOR THE SECTORAL STRATEGIES ADOPTED BY LUXEMBOURG





2050



THE GOVERNMENT
OF THE GRAND DUCHY OF LUXEMBOURG
Ministry of the Economy