

A Joint TDSO vision on Solar Growth and Incompressibility in Belgium

This joint vision presents a unified position of Belgium's network operators. It outlines the proposed way forward, in managing incompressibility risks in the Belgian system, aimed at policymakers, regulators and market participants.

Key takeaway

For solar power to remain a success story in Belgium, the power system must become more flexible to maintain the balance between consumption and generation at all times. To make this possible, market-based solutions must be further developed and remain the primary means of unlocking flexibility in both electricity consumption and solar generation.

However, only a small share of the solar installations currently reacts to price signals, largely because most of them are highly decentralized and therefore harder to make flexible, while additional flexibility from consumption has yet to emerge. This leads to so called incompressibility periods in which electricity generation meets or exceeds demand. As renewable energy capacity continues to grow, such situations are expected to occur more frequently in the future.

It is therefore crucial to complement market-based solutions with last-resort technical measures for exceptional system security situations, should the market fail to develop as fast as needed. The objective is not to systematically curtail solar PV generation. Rather, it is to ensure that a safety net exists for exceptional situations in which all other available measures have been exhausted and are insufficient to manage the surplus of electricity generation.

Today, as a last-resort safeguard, it is already possible to temporarily reduce the output of large-scale solar and wind installations in exceptional circumstances. As periods of incompressibility become more severe, this safety net, known as a "backstop" measure, should evolve accordingly and be supported by a clear regulatory framework.

These are necessary conditions to integrate successfully more decentralized renewables while preserving system security and affordability for everyone.

Solar should remain a success story

Renewable energy becomes a key pillar of the Belgium's electricity system. It supports decarbonization, energy sovereignty and affordability, while enabling households and companies to participate directly and benefit from the energy transition.

At the same time, the fast growth of decentralized renewables, especially solar energy, is creating new operational challenges for the electricity system. One of these is incompressibility: situations where solar production exceeds what the system can absorb, particularly during sunny, low-demand periods.

Incompressibility is a system integration challenge that must be addressed now in a balanced and forward-looking way, as it is becoming progressively structural due to:

- strong growth of decentralized renewable generation, especially solar production, with ~80% of the capacity made of units smaller than 1 MW;
- Limited ability of the power system to reduce generation or increase consumption (downward flexibility) during periods of incompressibility, due to low industrial demand and the still limited deployment of consumer flexibility and insufficient responsiveness of decentralized renewable production assets to system and market needs.

Recent record negative electricity prices on spot markets are strong indicators that the system is reaching its limits in ensuring equilibrium between production and consumption. Looking ahead, this challenge is expected to intensify with the continued growth of decentralized generation. By 2030, we anticipate a need for an additional 2,5 GW of flexibility during incompressibility events (AdeqFlex 2025 Elia).

Waiting is not anymore an option. The longer action is delayed, the more complex and costly the challenge becomes.

Market-based solutions must remain central within a balanced set of measures

The Belgian electricity system shall first rely on market-based flexibility to manage oversupply situations, leading in practice to the need for:

- Stimulating solar auto-consumption during peak production moments;
- Steering consumption towards moments of high renewable production through price signals (for instance through the new grid tariff periods applicable in Wallonia since 1/1/2026);
- Accelerating storage, smart charging and new flexible demand
- And progressively enabling solar installations to respond to market signals

This should remain the preferred pathway and system operators are working every day to facilitate additional market flexibility to come online. However, such market-based measures take time to scale, and multiples barriers still prevent it from doing so. Relying only on current market reaction will not be sufficient to manage all the foreseen situations of structural oversupply.

Balancing services contracted by Elia should also be reviewed, if necessary, while preserving cost efficiency, and effectiveness, by avoiding over-procurement and by unlocking new flexibility rather than relying on existing flexibility resources.

In parallel to the continuous work on these market-based measures, Elia has identified the need to assess additional safety measures for the Belgian power system to manage extreme incompressibility events and reduce the risk of service interruption. This may lead to a substantial increase of the assets capable of being modulated by the system operators (2 to 3 times more volume for the backstop) during rare but severe situations. Distributions System Operators acknowledge this challenge and are ready to support the assessment and implementation of proportionate solutions within their area of responsibility.

A credible response to incompressibility must then combine three complementary levers developed in parallel:

1. **Stronger market integration:** further development of flexible consumption, storage, aggregation and market responsiveness of decentralized assets such as solar systems;
2. **More operational flexibility:** unlock sufficient and cost-effective balancing services to preserve the balance of the Belgian power system in most conditions;
3. **A technical backstop as a last resort:** provide for proportionate and exceptional backstop measures to temporarily steer decentralized renewable assets when market-based measures are insufficient.

Regulation Must Evolve to Safeguard System Security

To address incompressibility in a coherent and future-proof way, Belgium needs a clear and stable regulatory framework that:

- confirms the conditions under which technical measures can be activated
- provides clarity on governance, proportionality and legal certainty
- enables the practical implementation of technical solutions for decentralized assets
- and remains consistent with broader market incentives and flexibility policy

Besides the required regulatory evolution, Elia and DSOs will work together on an implementation pathway through:

- Analysis of the market development needs through the relevant Synergrid working groups and the joint implementation of the Incompressibility Global Action Plan
- Adaptation, via Synergrid, of technical and operational requirements, where needed
- Continued testing of technical solutions for steerability of assets below 1 MW, without prejudice to future decisions regarding the scope, proportionality and effective need for any broader deployment of such solutions, to ensure operational readiness once the framework is in place.

These are necessary actions to take, together between system operators, regulators, policy makers and market parties to keep renewables and in particular Solar a success story in Belgium.