SUPPLY AND DEMAND-SIDE FLEXIBILITY OPTIONS

€ 11.1 - 29.1 bn

ANNUAL SAVINGS IN DISTRIBUTION GRID INVESTMENTS

DEMAND - SIDE FLEXIBILITY

By Karolis Kiguolis

ABOUT ME

- Mr. Karolis Kiguolis, Founder & CEO, Linea Ignis and Exigere Responsum Lithuania;
- DSR – (demand side response) pioneer in Lithuania;

Linea Ignis is an international company operating in Baltics and France.

Demand-side management (DSM) employs strategies and technologies to curtail electricity usage during **peak times, utilizing financial incentives and load shifting.**

It's pivotal for assimilating substantial amounts of fluctuating renewable energy sources into the grid, ensuring a balance between energy supply and demand.

Flexibility in demand and production enhances system efficiency, mitigates bottlenecks, and reduces reliance on costly power plants, lowering electricity system costs. Here are three application trends:

1) Reducing grid interventions: power apps warn in case of bottlenecks

Apps globally promote or reward energy saving during grid issues.

2) Load flexibility: Industry postpones energy consumption

Industrial consumers can flexibly adjust electricity use to market signals, enhancing grid efficiency without impacting productivity.

3) Bidirectional Charging: Electric cars as gigantic storage devices on wheels

Bidirectional charging allows electric cars to supply energy to buildings or the grid.

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The energy crisis underscored policy's crucial role in advancing demand-side flexibility worldwide to approach Net Zero objectives.

AUSTRALIA

The Wholesale Demand Response Mechanism and Five-Minute Settlement incentivize efficient energy use and battery investment.

BRAZIL

approved a mechanism to allow large consumers to participate in the provision of demand response.

KOREA

is expanding participation in the residential demand response Energy Pause Programme, raising the threshold for consumers to participate from below 70 kW to all households up to 200 kW.

SINGAPORE

launched a new regulatory sandbox to support participation in demand response programmes by streamlining procedures, reducing penalties and providing clearer activation timeframes.

A number of measures were implemented across geographies to expand coverage and scope.

THE EUROPEAN UNION

approved an action plan for the digitalisation of the energy system, which includes establishing requirements to facilitate data access for demand response, as well as to support the adoption of smart appliances. In parallel, the EU electricity market design proposed reform is under discussion with an aim to introduce measures to support low-carbon flexibility solutions in the market, including demand response.

IN THE UNITED STATES

California approved the 2022 Load Management Standards, which aim to support demand side flexibility by requiring the largest utilities and aggregators to offer at least one hourly electricity rate to customers.

Experts at Future Market Insights suggest that consumer awareness and knowledge gaps in technology may hinder demand response market growth.

Demand Response Projected Growth Rate (2032)

CAGR

6,2%

Demand Response Market Value (2022)

1,792.1 Million US$

Demand Response Market Anticipated Value (2032)

3,265.9 Million US$

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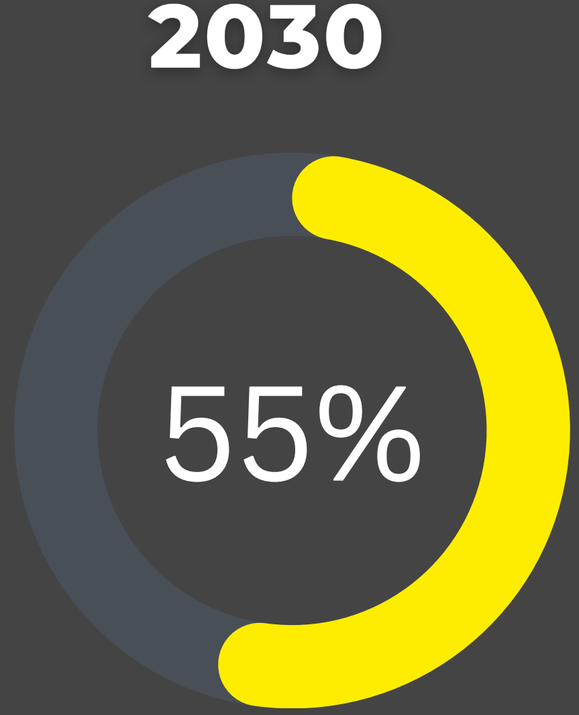
This growth is supported by:

- Recent surge in demand response market.
- Consumer awareness deficit.
- Technological understanding lacking.
- Potential growth retardation in market.

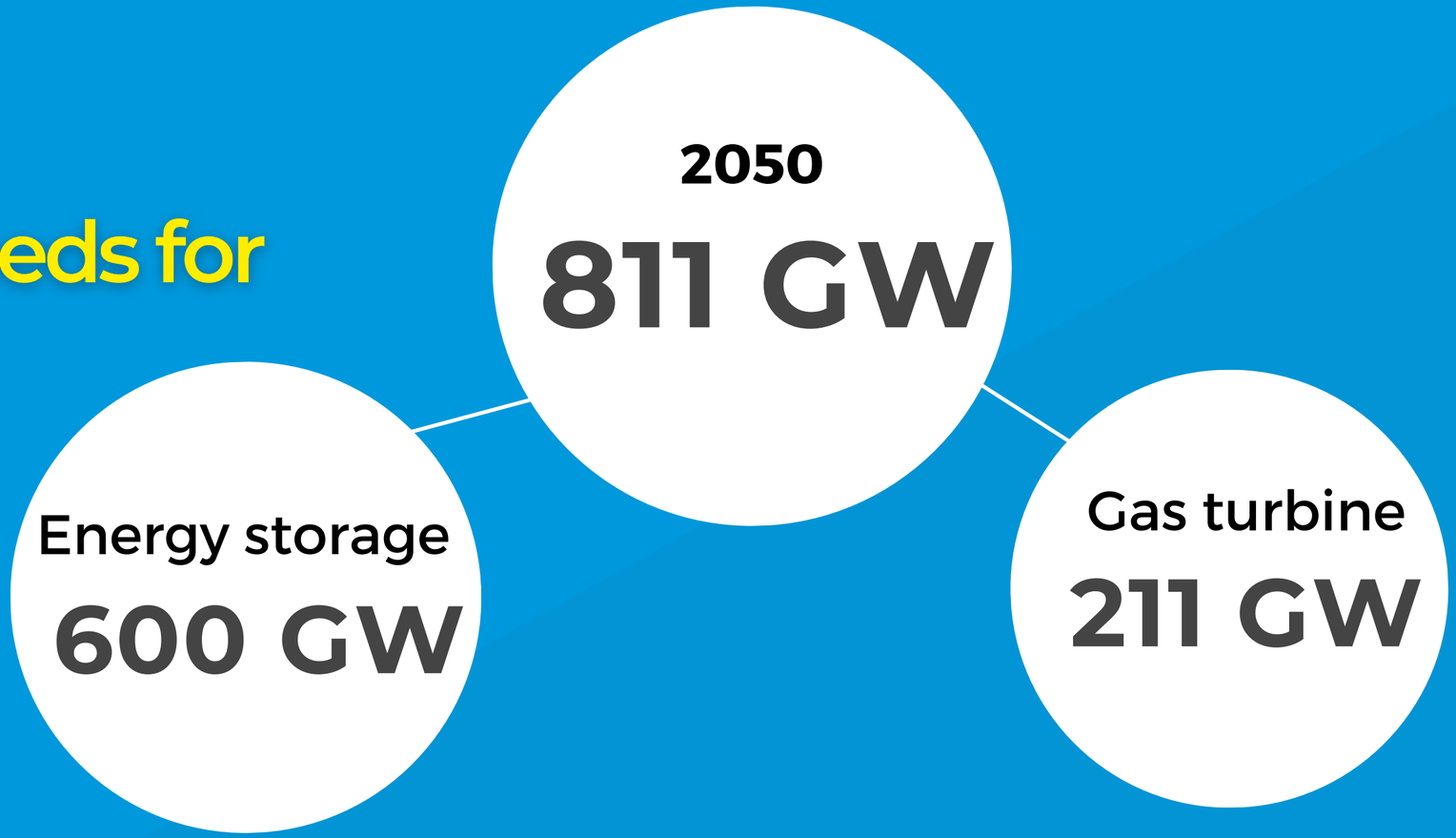
Reducing the EU’s Reliance on Natural Gas by 2030

Energy storage technologies, as highlighted in REPowerEU, offer a clean backup solution, replacing gas turbines and contributing to the EU's goal of a 55% GHG reduction by 2030, with studies showing potential gas replacement up to 50TWh by the 2030s.



The EC's METIS-1.5C 2050 scenario predicts a need for 811 GW of system flexibility by 2050, with 600 GW from energy storage and 211 GW from gas turbines. To meet REPowerEU's renewable goals, energy storage must ramp up to 14 GW/year over the next nine years, a significant increase from 2020's 0.8 GW/year, to provide essential flexibility and reduce fossil fuel reliance.

Flexibility needs for 2050



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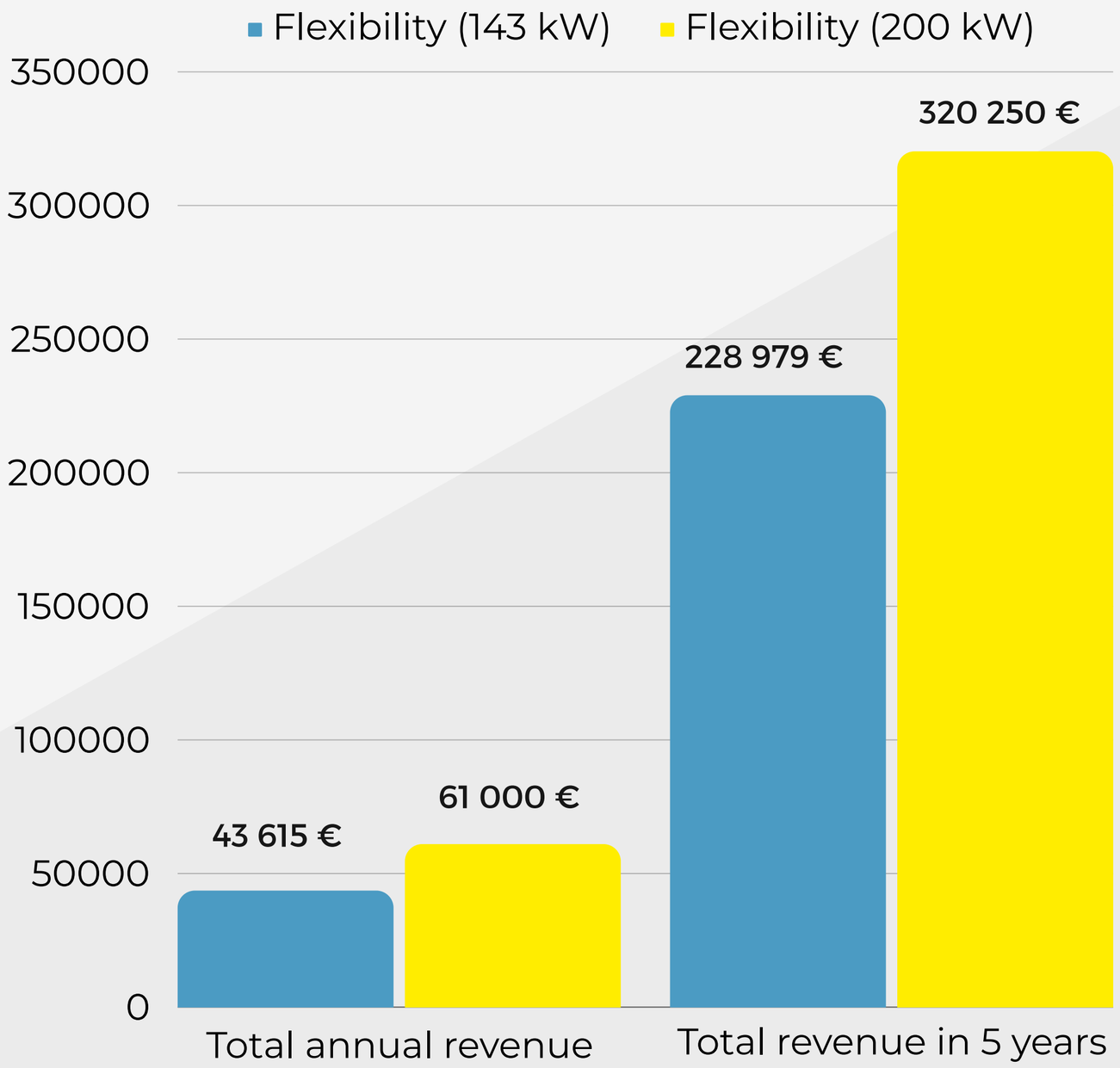
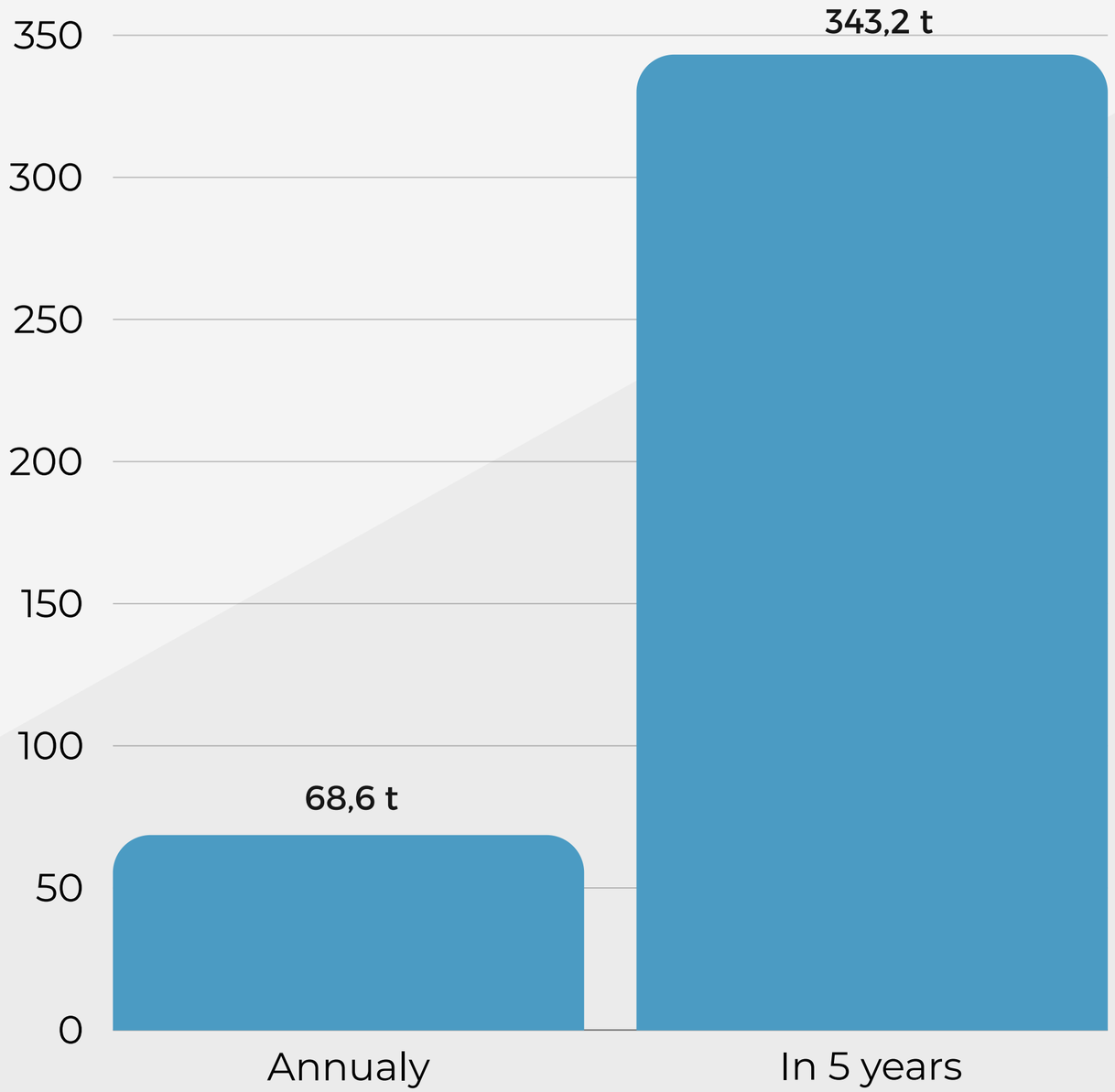
Demand response markets are expanding, but greater effort is needed to align with the Net Zero Scenario.

1 EXAMPLE

Revenue forecast: Shopping mall

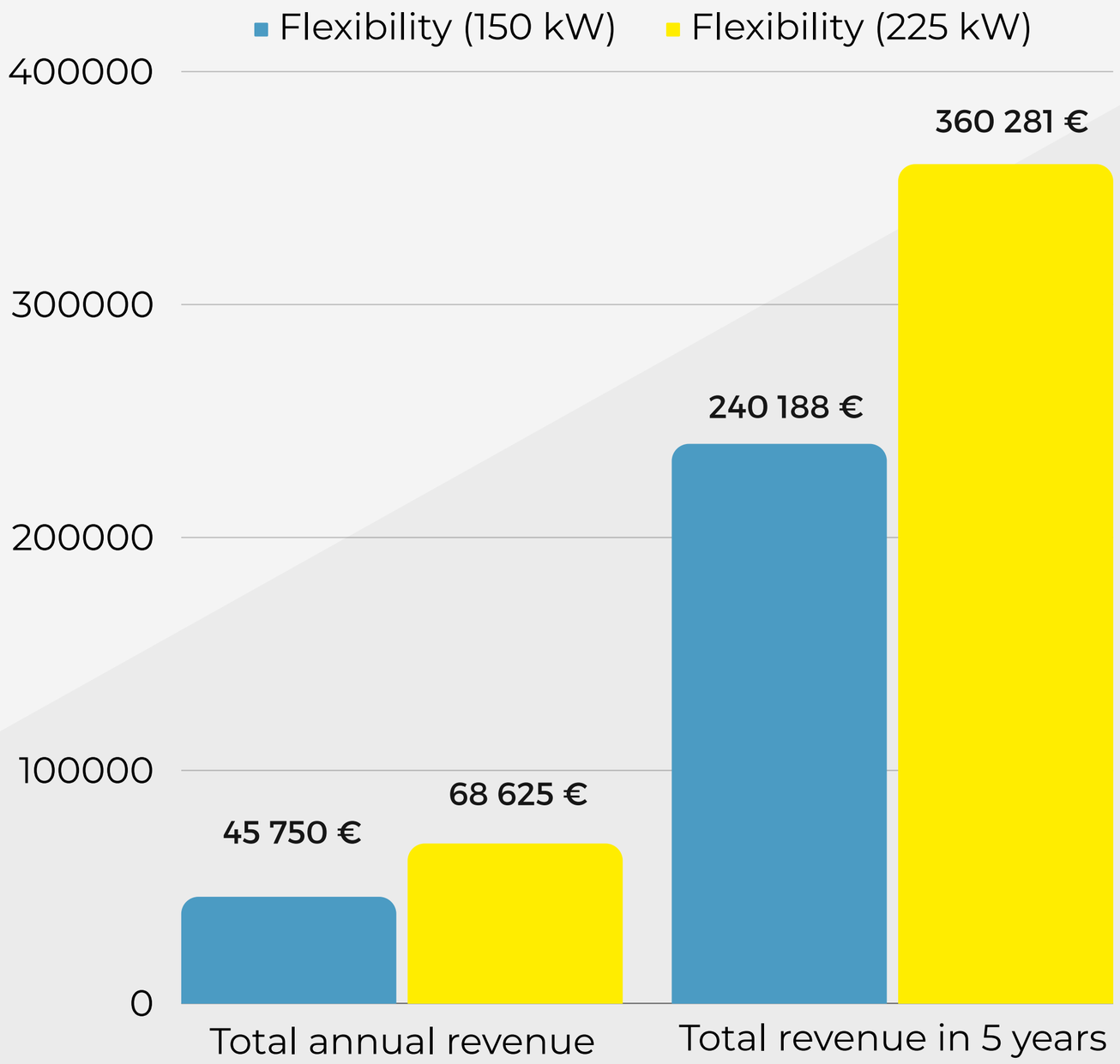


Forecast of CO2 emissions reduced: Shopping mall

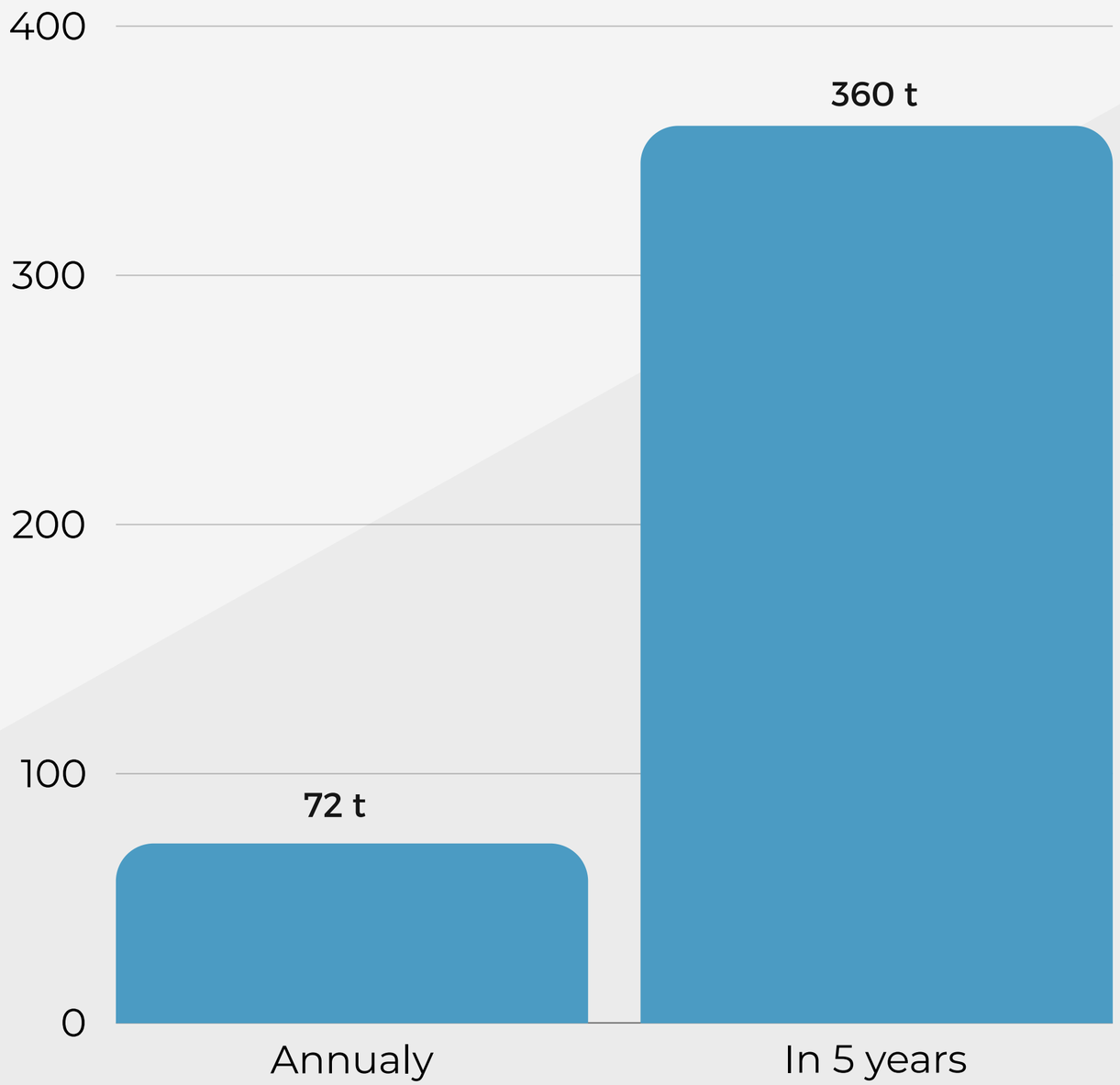


2 EXAMPLE

Revenue forecast: Industrial company



Forecast of CO2 emissions reduced: Industrial company



THE PROBLEM IS THE LARGE IMBALANCES THAT LEAD TO BLACKOUTS.

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MORE EFFORTS NEEDED!!!

THANK YOU

CONTACTS

Karolis Kiguolis

+33 777 031947

karolis-kiguolis

karolis@lineaignis.lt

www.lineaignis.com

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