

Self-Introduction

Shravanti Yerawar

- Graduate engineer in Electronics & Telecommunications
- Background: Technical associate engineer in Supply Chain Management company
- Likes to “play” with data and is eager to learn about ML

René Wollny

- Dipl.-Ing. Plastics Technology
- Background: Production Manager in automotive supplier company
- Used data in jobs before to make decisions and is eager to learn about ML, DL and AI

Prediction of gas consumption and price within EU due to current gas crisis

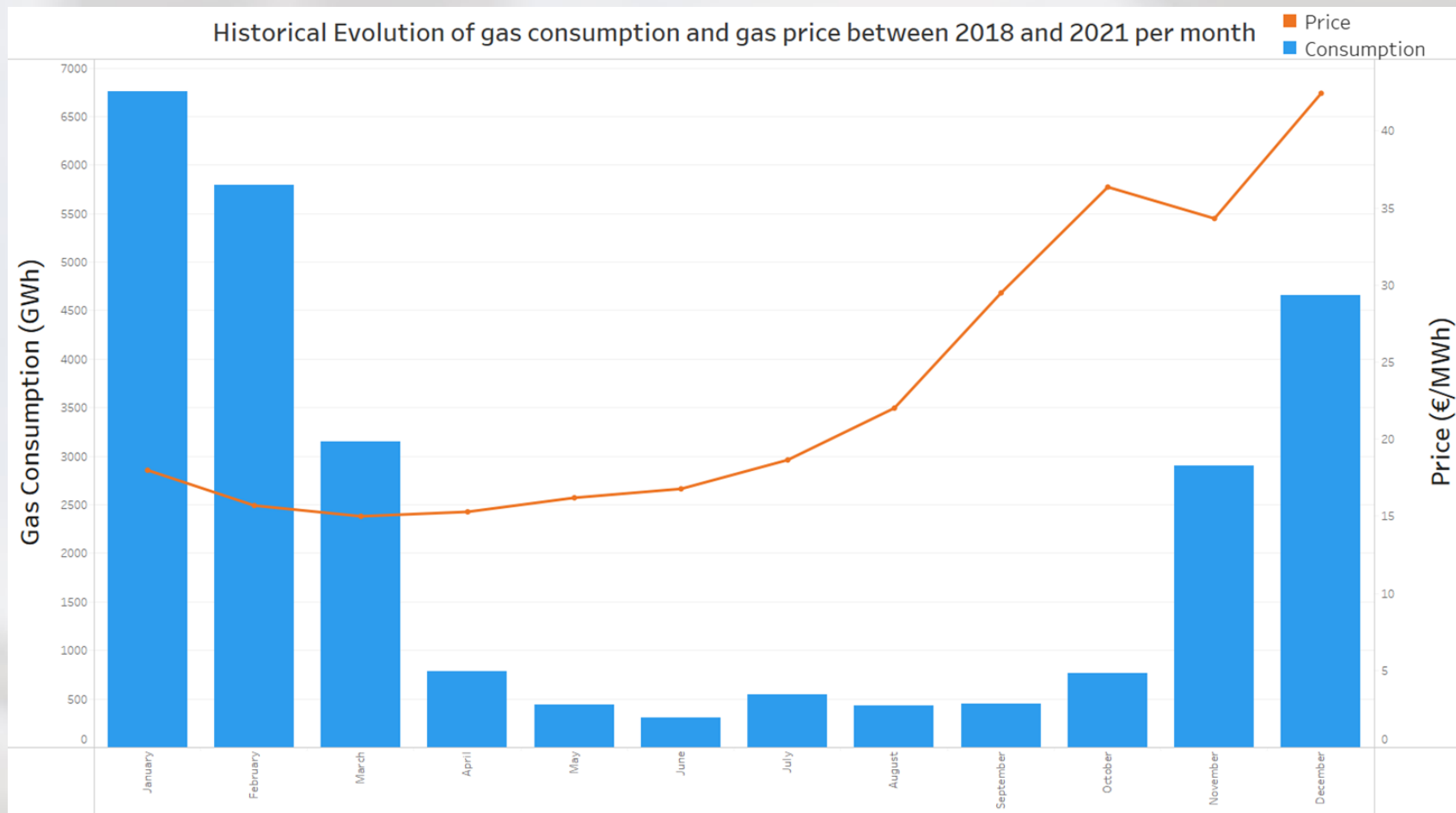


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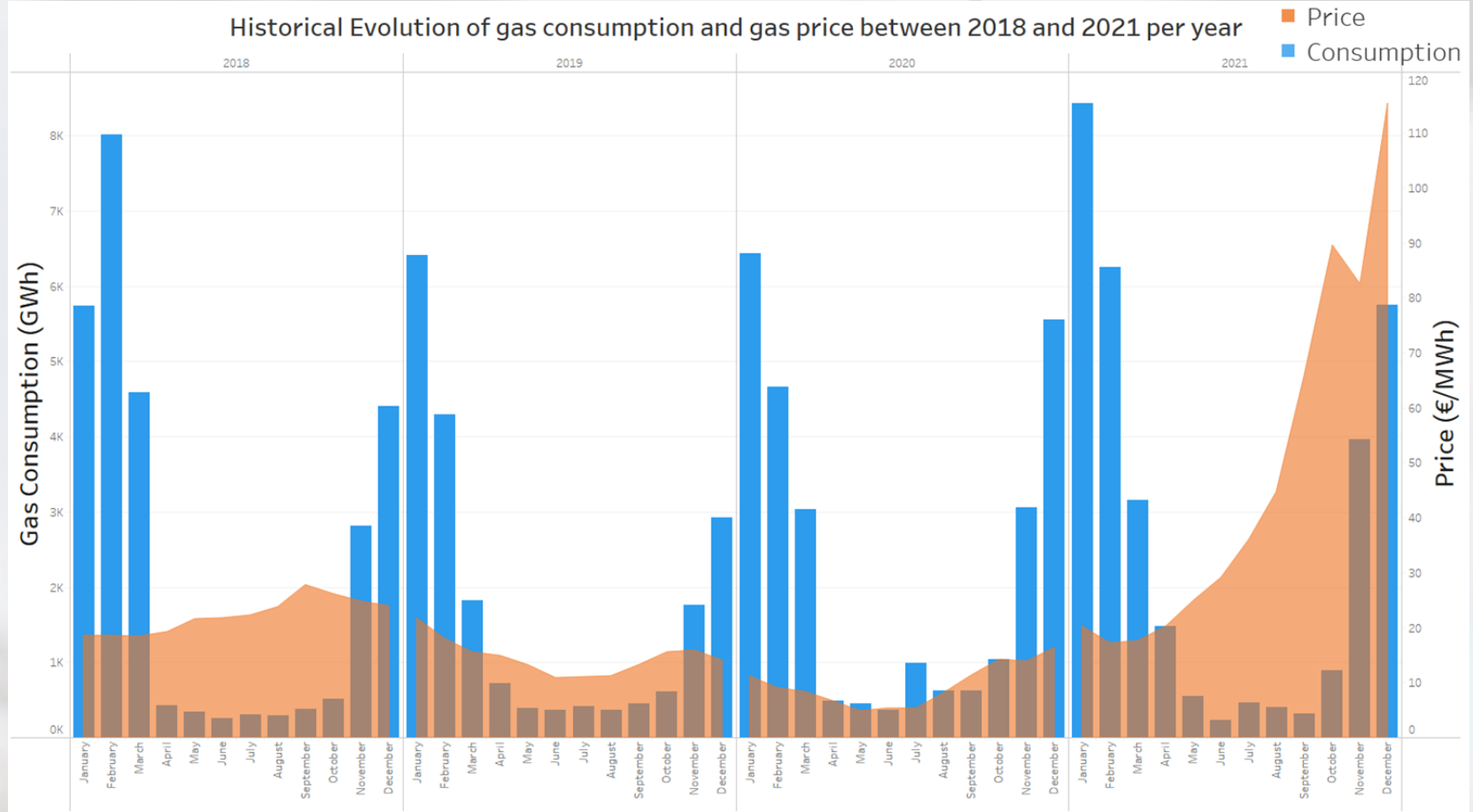
Goal of project

- Predict gas prices and consumption for 2022 based on historical data
- Compare prediction of 2022-data to actual values of 2022 to show effect of current energy crisis
- Predict gas prices and consumption for 2023 based on actual 2022-data using 2 different scenarios of gas supply by Russia to EU

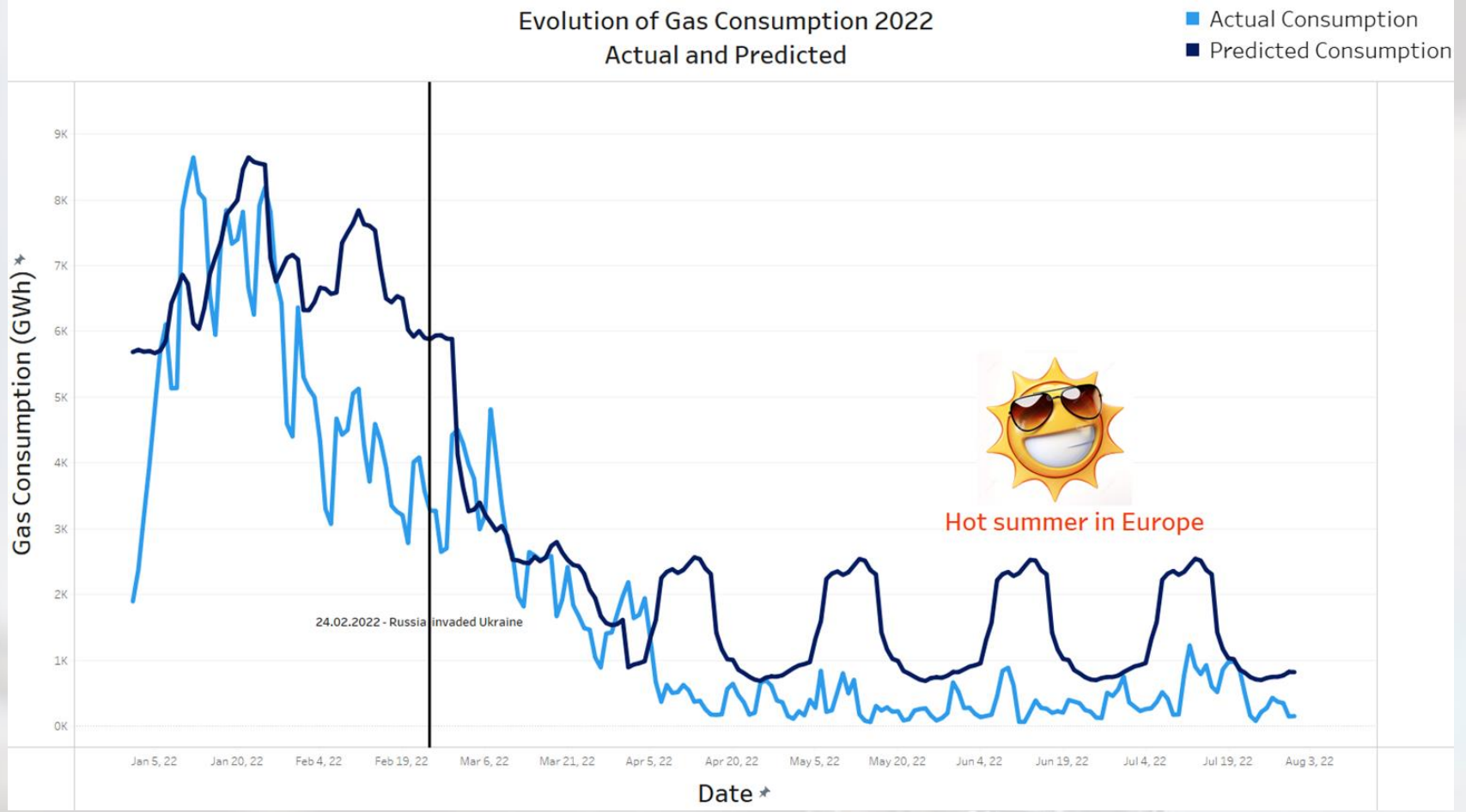
Gas consumption and price are higher during cold months



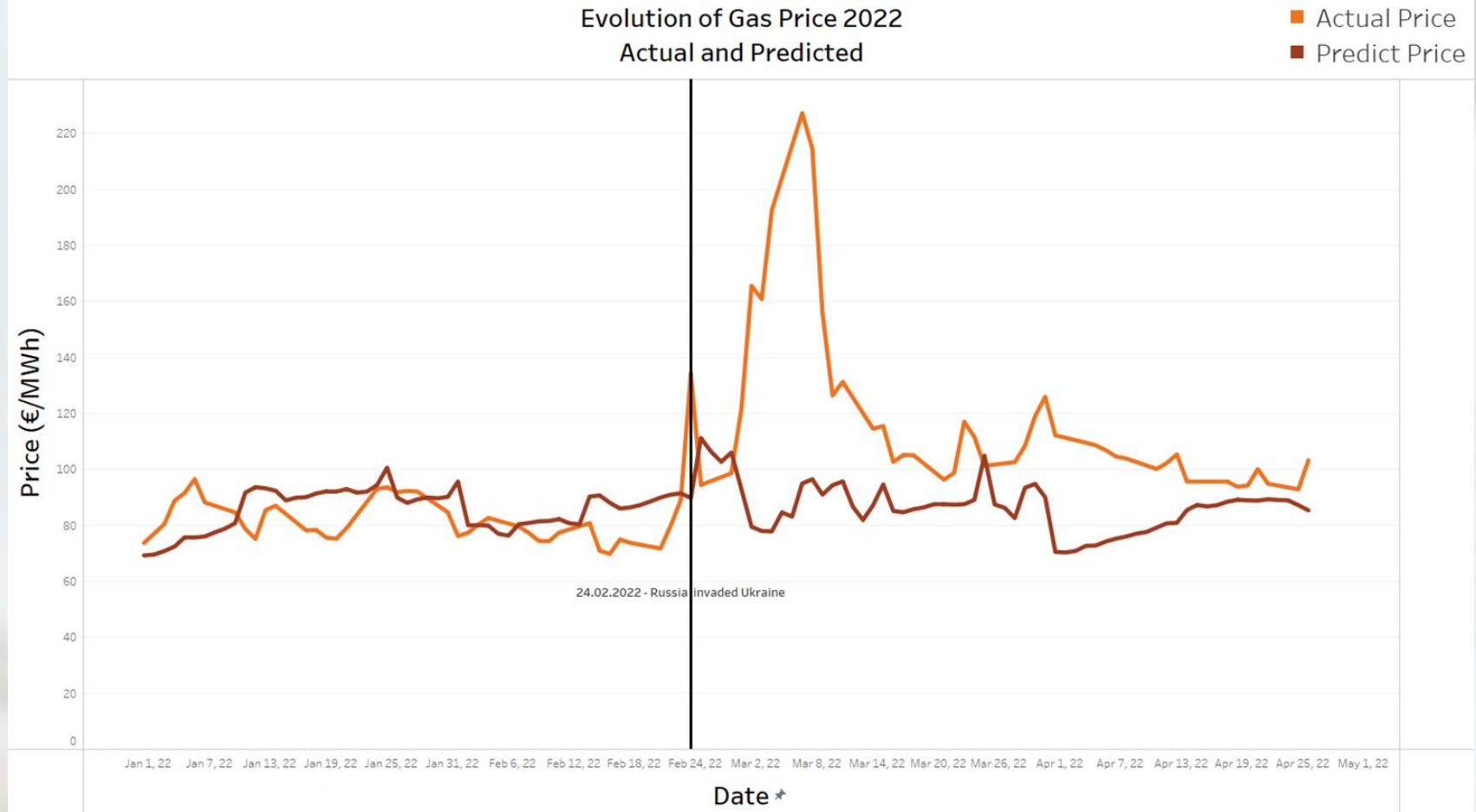
Gas price started to increase in 2021 due to high consumption in Winter 2020/2021



Hot summer couldn't be predicted by model

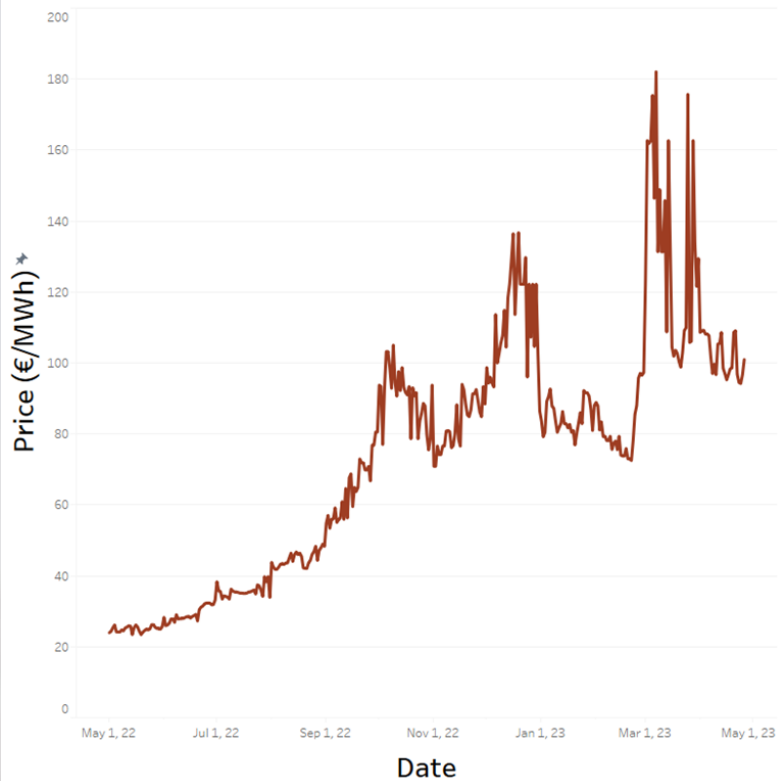


Gas price was immediately affected by invasion & sanctions

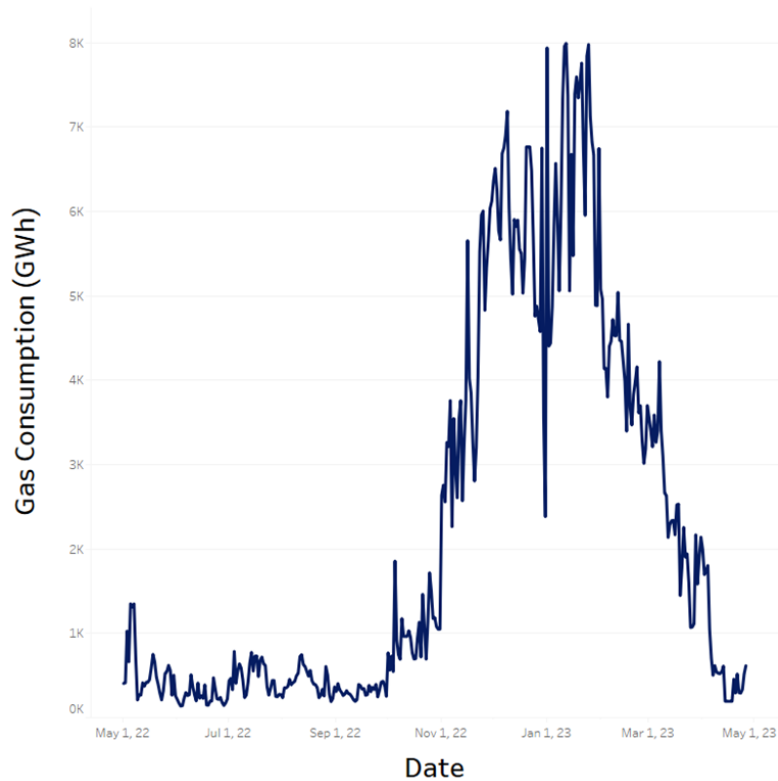


Scenario 1 - Gas supply by Russia stays at level of last 12 months before 05/2022

Predicted Gas Price
Scenario 1

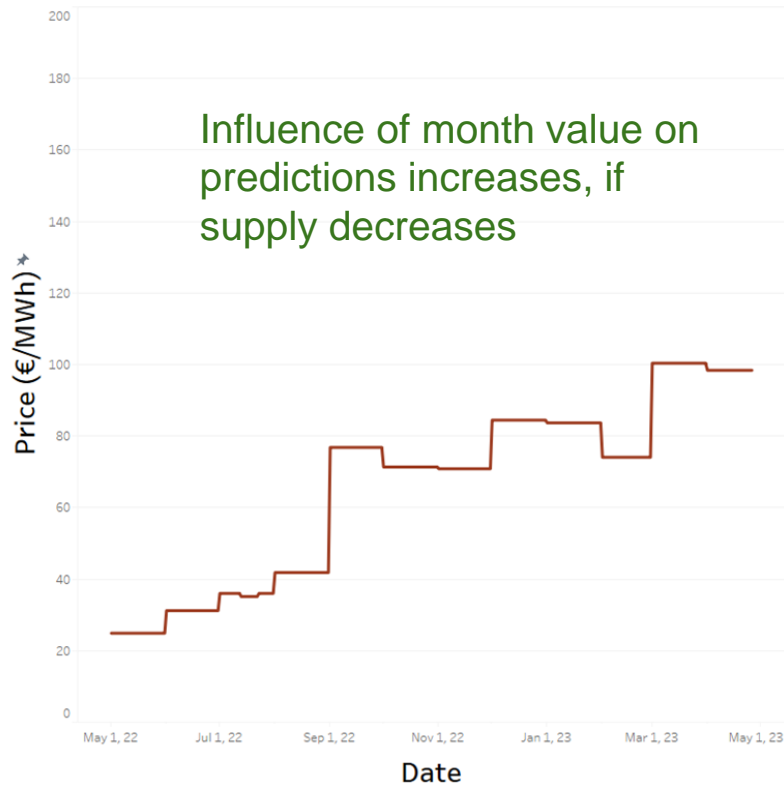


Predicted Gas Consumption
Scenario 1

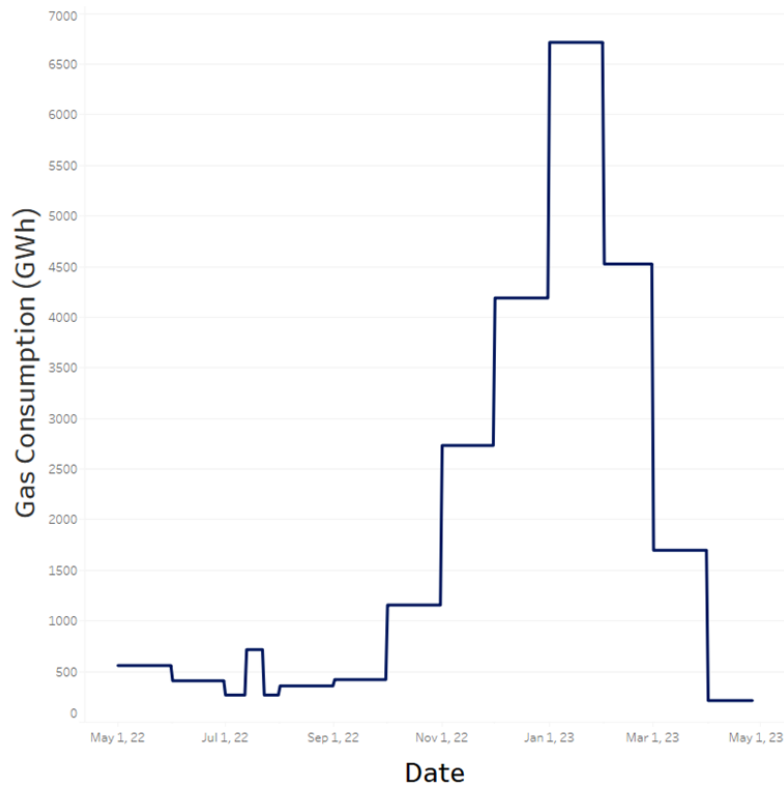


Scenario 2 - Gas supply by Russia is decreased by 50% of last 12 months before 05/2022

Predicted Gas Price
Scenario 2



Predicted Gas Consumption
Scenario 2



Conclusions

- Gas consumption is seasonal → higher consumption in cold months
- Gas price is slightly seasonal → higher price to the end of a year
- Gas prices were already at high level at beginning of 2022
- Effect of war and resulting sanctions on gas price are visible in data
- Gas consumption prediction for 2022 couldn't show hot summer in Europe
- Predicted gas prices for 2022/2023 will stay at high level

Used model and features are limited → further data-collection, use of other models to improve prediction is needed

Thank you for your attention.



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Limitations

- Predictions for 2022 are based on historical data of year 2018 - 2021
 - No war effect in predictions
- All predictions are based on 5-7 features due to time constraints
- All predictions for gas consumption don't include weather data
- Prediction for May 2022 - April 2023 based on prior 12 months (05/21 - 04/22)
- Gas price = "Dutch TTF Natural Gas Futures"-Index (€/MWh)
- Gas supply by Russia to EU was only available until April 2022
- Some data had to be interpolated due to missing data