



North West Europe Gas System Performance Report

July 2018

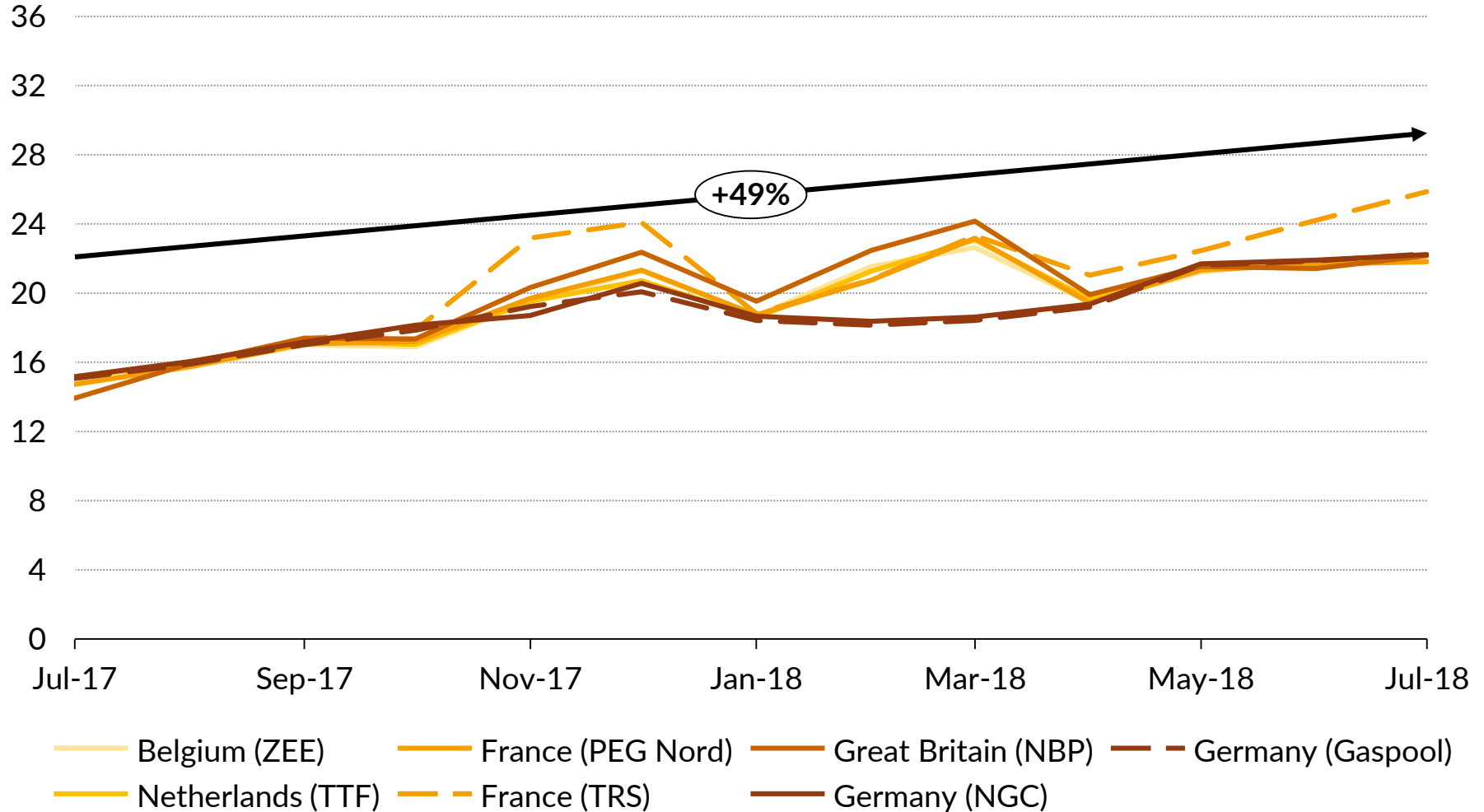
Executive Summary

1. **Gas prices:** Gas prices continued their upward trend, rising almost 50% year-on-year due to high Asian spot LNG demand caused by a heat-wave in parts of China and Japan. **See slides 3 and 4.**
2. **Consumption:** NW Europe consumption dropped by 12% year-on-year, driven by lower German non-power demand. **See slides 5 and 6.**
3. **Supply:** LNG supply declined 3%-points year-on-year, and was substituted by 1%-p and 2%-p respective increases in Russian and Norwegian pipeline imports. **See slides 7 - 11.**
 - **Indigenous production:** Despite an 11% month-on-month increase, Dutch indigenous production in July was 10% lower year-on-year, reflecting continued limitations in Groningen production before hitting the 21.6 bcm cap by the end of the current gas year.
 - **Pipeline imports:** Russian pipeline flows through Nord Stream declined by 0.5 bcm year-on-year due to the annual maintenance cycle occurring between 17th and 31st July. Flows were diverted towards the Czech route (up 0.7 bcm year-on-year).
 - **LNG:** LNG imports were down almost 50% month-on-month in Belgium, as decreased UK pipeline imports were substituted by increased Dutch and German imports.¹
4. **Storage:** Despite high prices, storage injections increased by 45% month-on-month as suppliers continued attempting to raise inventory levels ahead of next winter. **See slides 12-13.**

1. Refer to the Belgium supply balance on our EOS-GAS platform at daily level granularity for detail

North West European gas price development

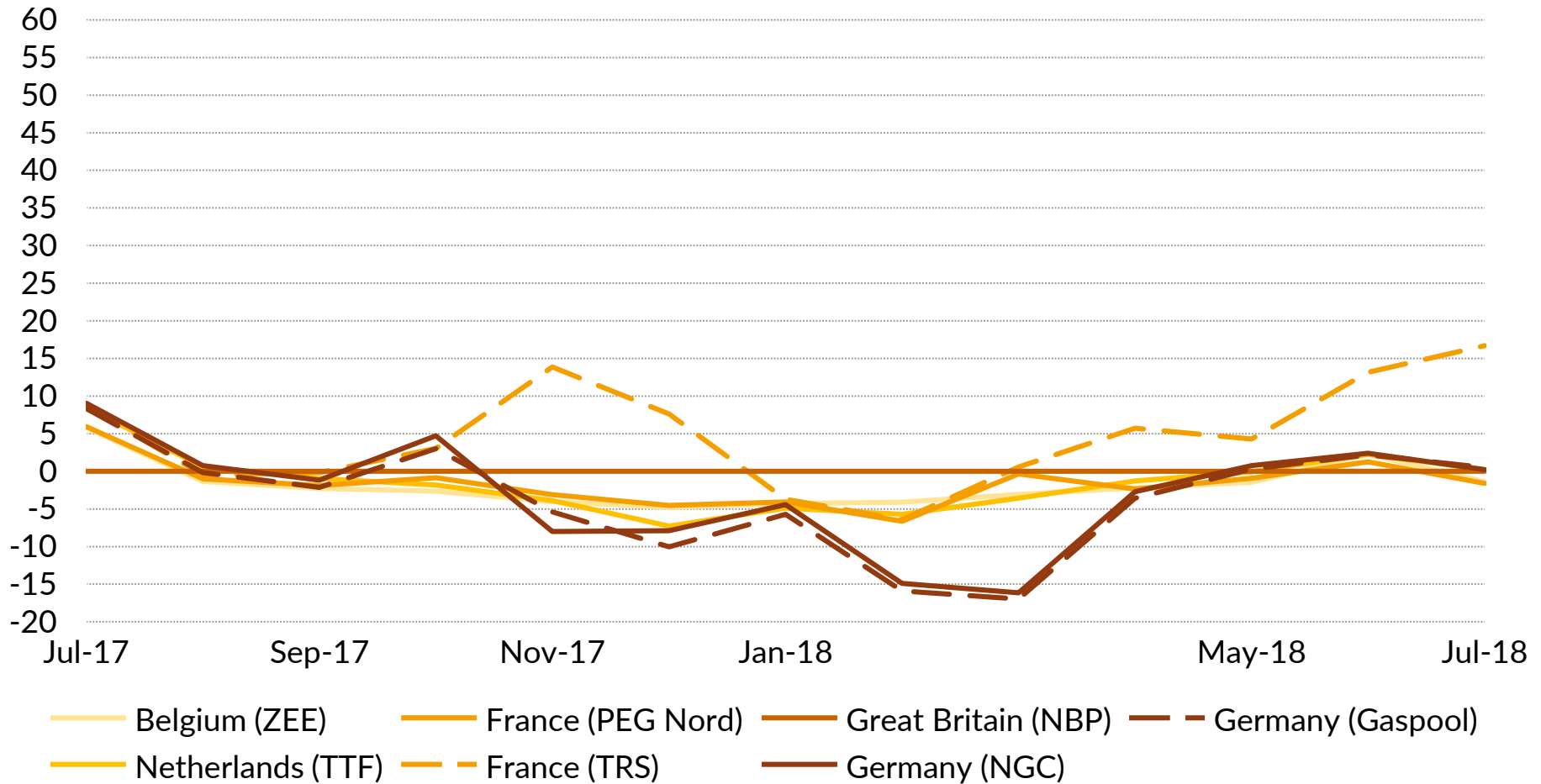
Gas price,
€/MWh



Notes: Monthly prices are the averages prices of each month's daily prices. Prices are converted in € using the monthly averages of the daily exchange rates.

% Price spreads against NBP

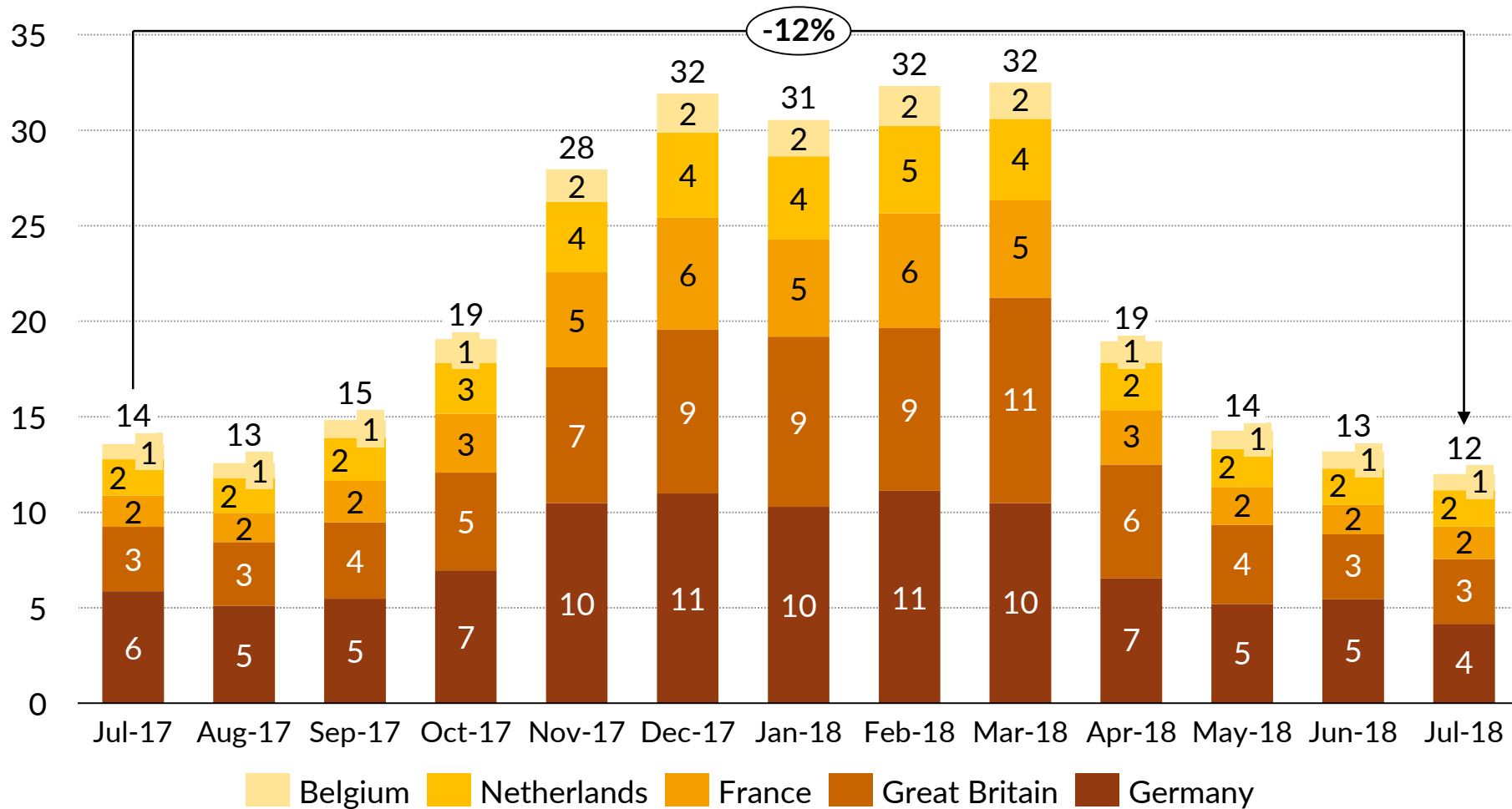
Price spread against NBP,
%



Notes: Using the monthly averages prices of daily prices and the monthly averages of daily exchange rates.

North West Europe monthly consumption¹

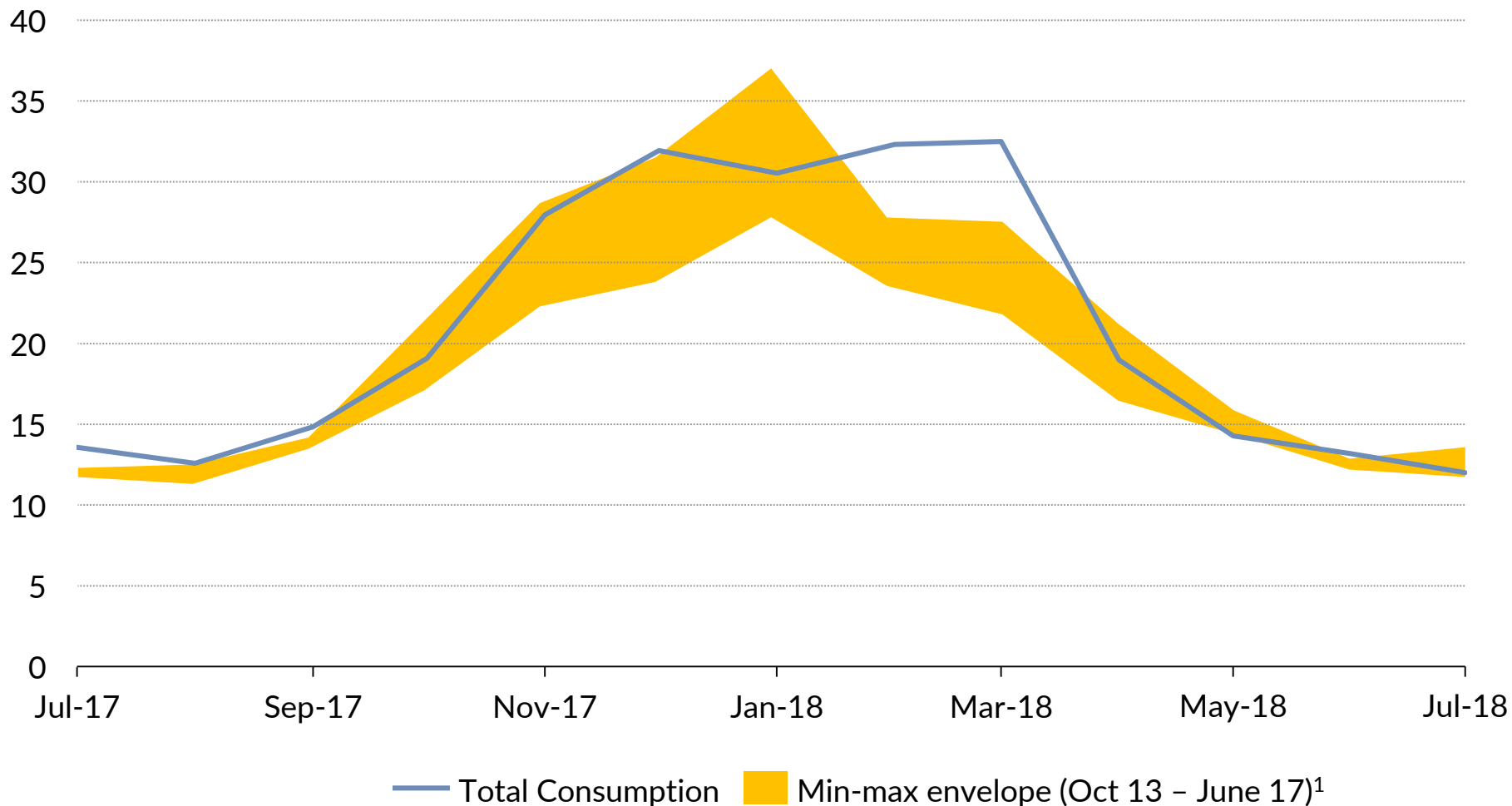
Consumption,
bcm



Notes: 1. Consumption excludes demand from interconnectors.

North West Europe consumption in min-max envelope

NW Europe consumption,
bcm

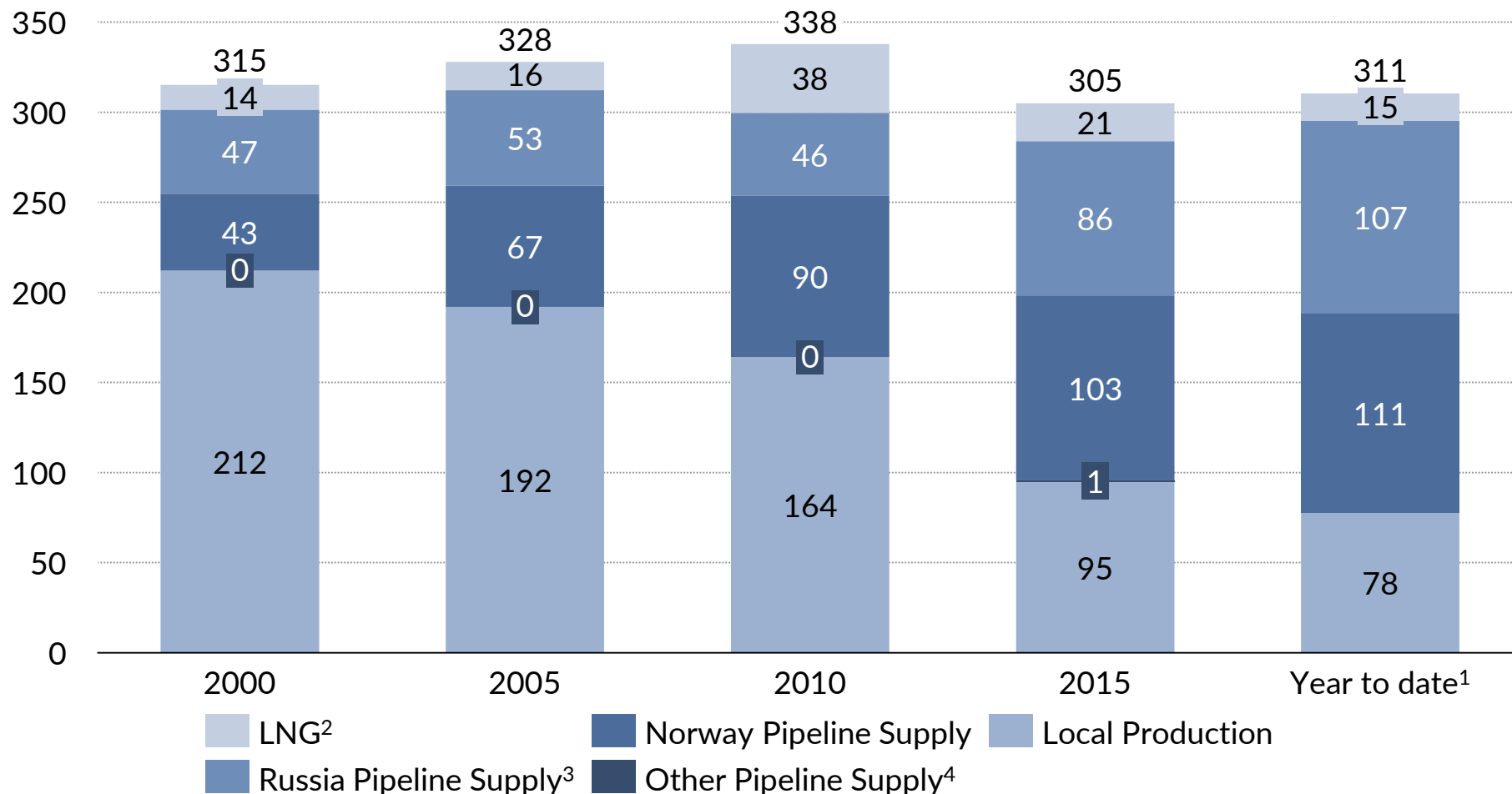


Notes: 1. Envelopes are calculated by taking the maximum and minimum monthly values since October 2013.

North West Europe annual gas supply

NW Europe supply,

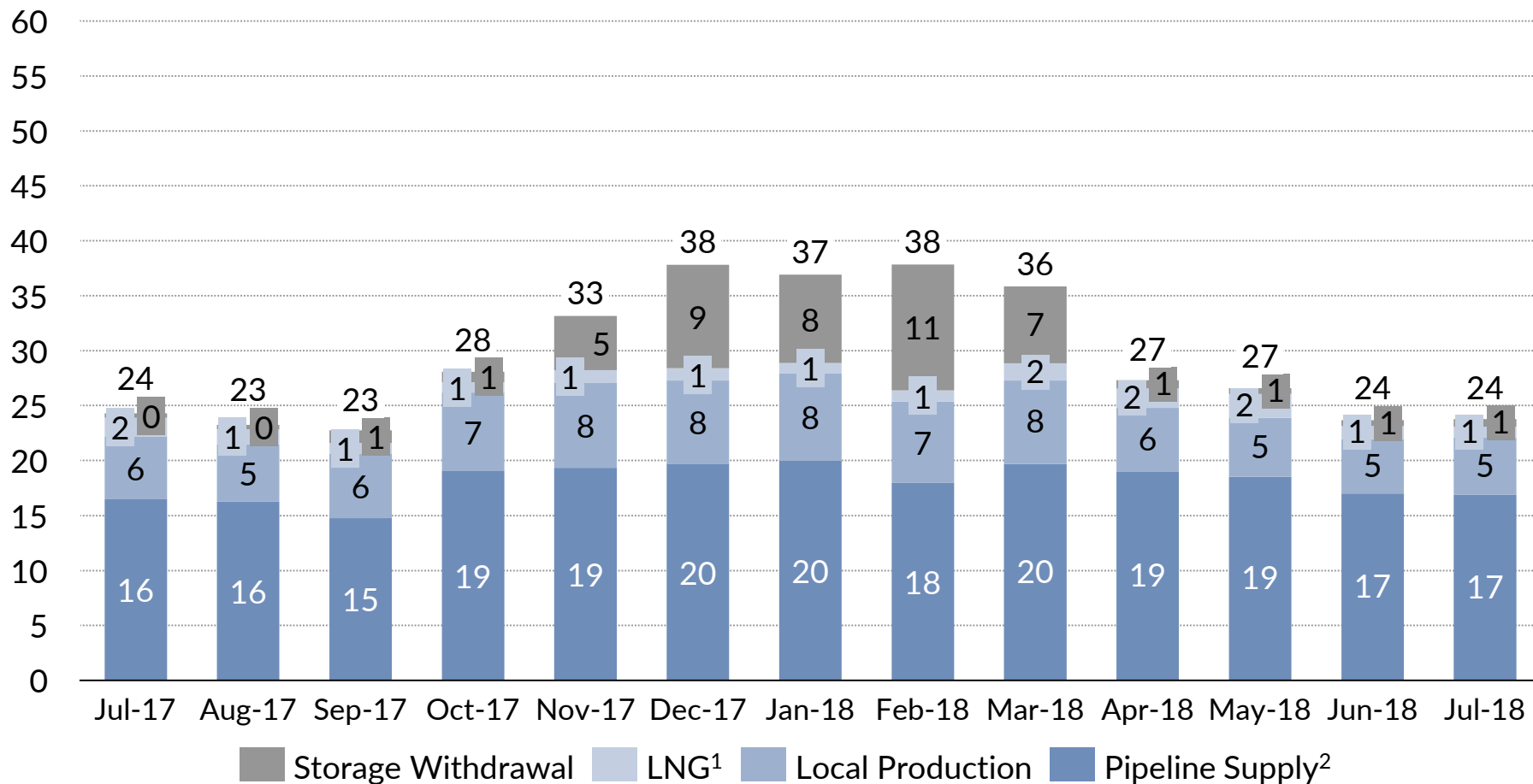
bcm



Notes: 1. Year-to-date corresponds to the last 12 months. Previous years are calendar years. 2. LNG reflects regasification send-out to the high pressure network. 3. Russia pipeline supply includes pipe imports via Poland, Czech Republic, and Austria. 4. Other pipeline supply includes Denmark, Spain and Switzerland.

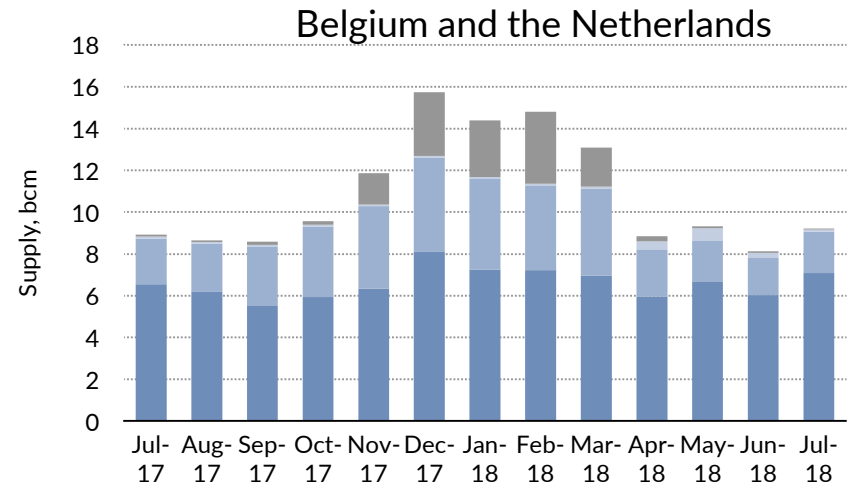
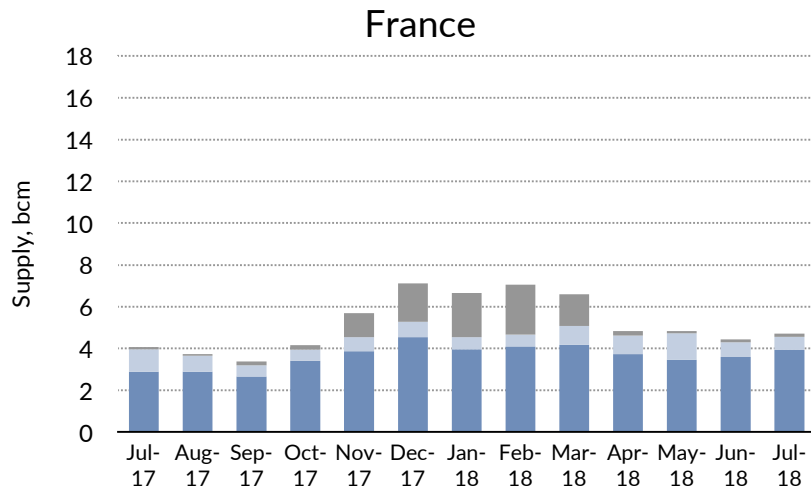
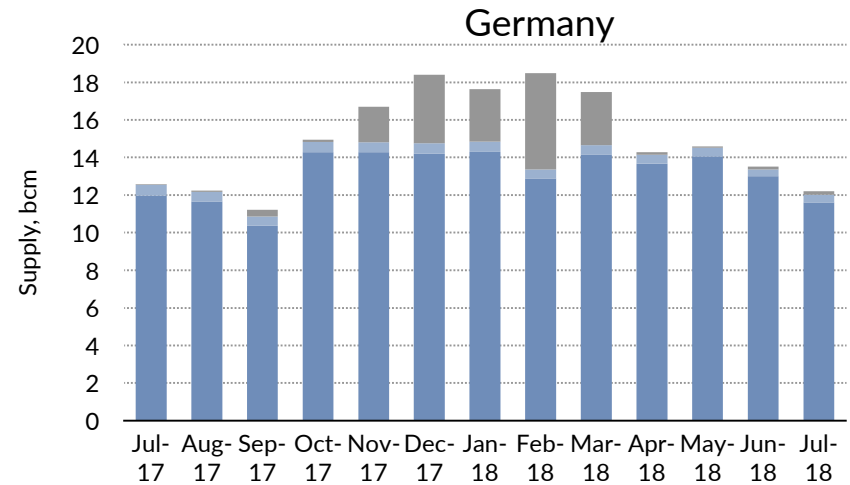
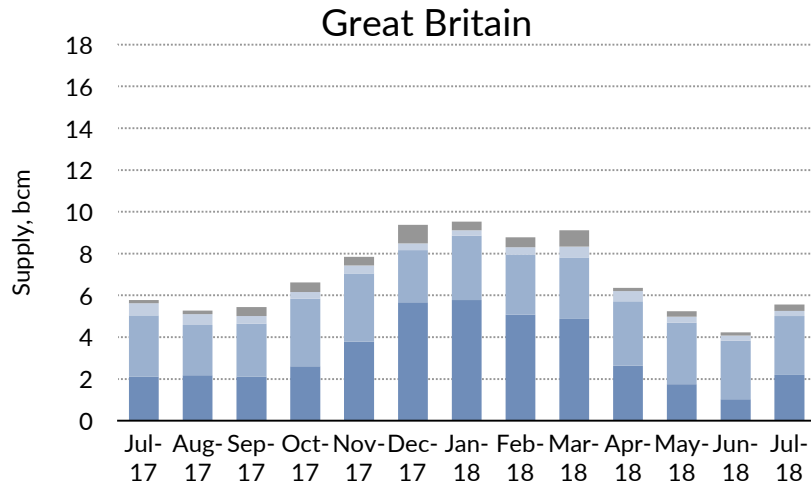
North West Europe monthly gross gas supply

NW Europe supply,
bcm



Notes: 1. LNG reflects regasification send-out to the high pressure network. 2. Pipeline supply is from Russia (including via Poland, Czech Republic, and Austria), Norway, Denmark, Spain and Switzerland

Monthly gross gas supply by country

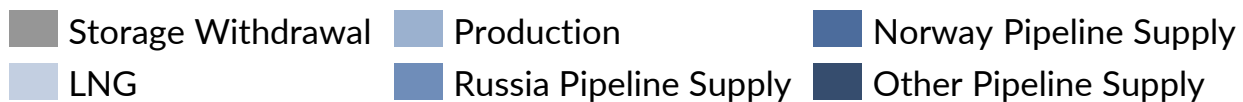
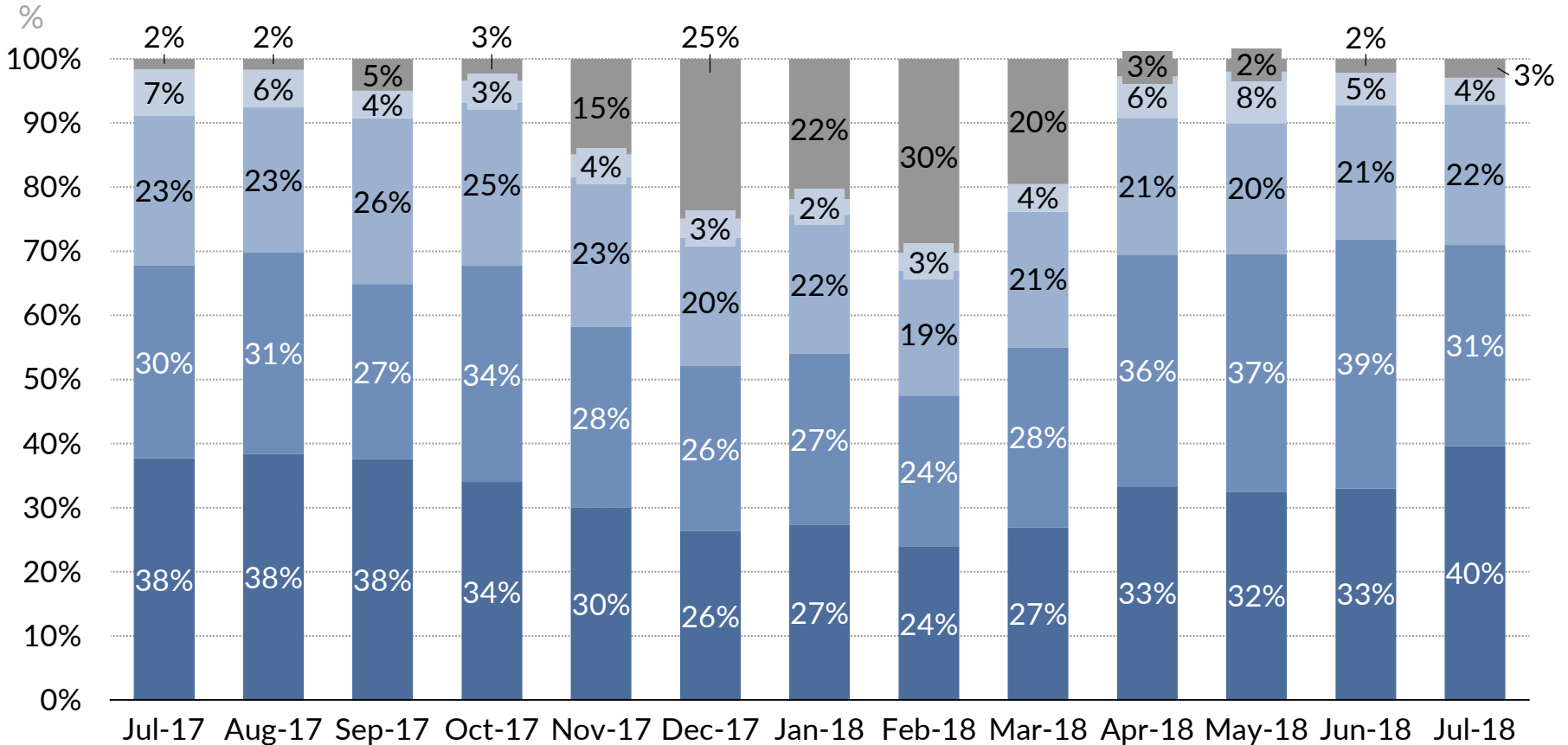


Storage Withdrawal LNG¹ Local Production Pipeline Supply²

Notes: 1. LNG reflects regasification send-out to the high pressure network. 2. Pipeline supply is from Russia (including via Poland, Czech Republic, and Austria), Norway, Denmark, Spain and Switzerland

North West Europe share of monthly gas supply

Share of gas supply,

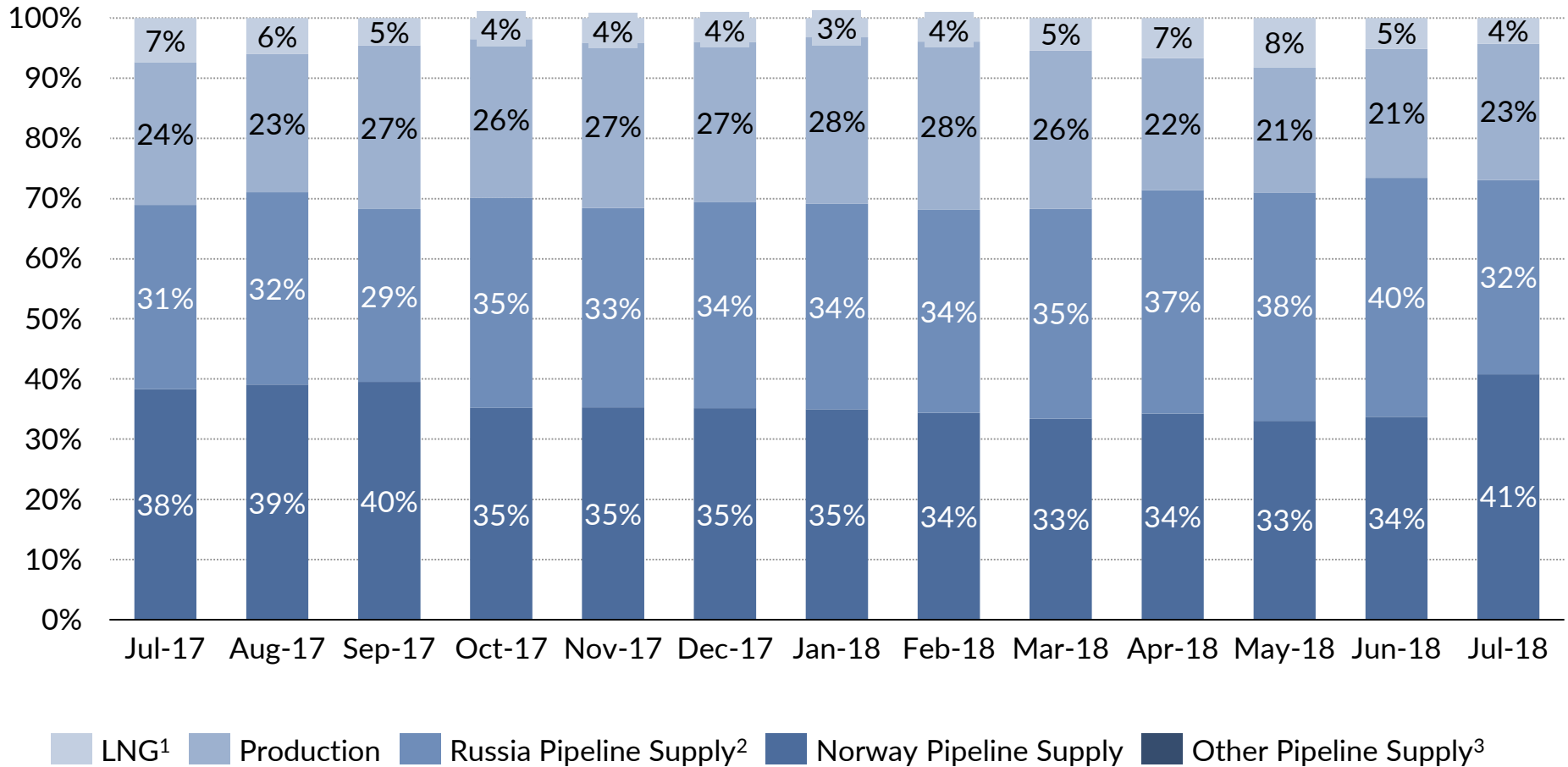


Notes: 1. LNG reflects regasification send-out to the high pressure network. 2. Russia pipeline supply includes pipe imports via Poland, Czech Republic, and Austria. 3. Other pipeline supply includes supply from Denmark, Spain and Switzerland.

3. Supply

North West Europe share of monthly gas supply - excluding storage withdrawal

Share of gas supply
- exc. Storage withdrawal,
%

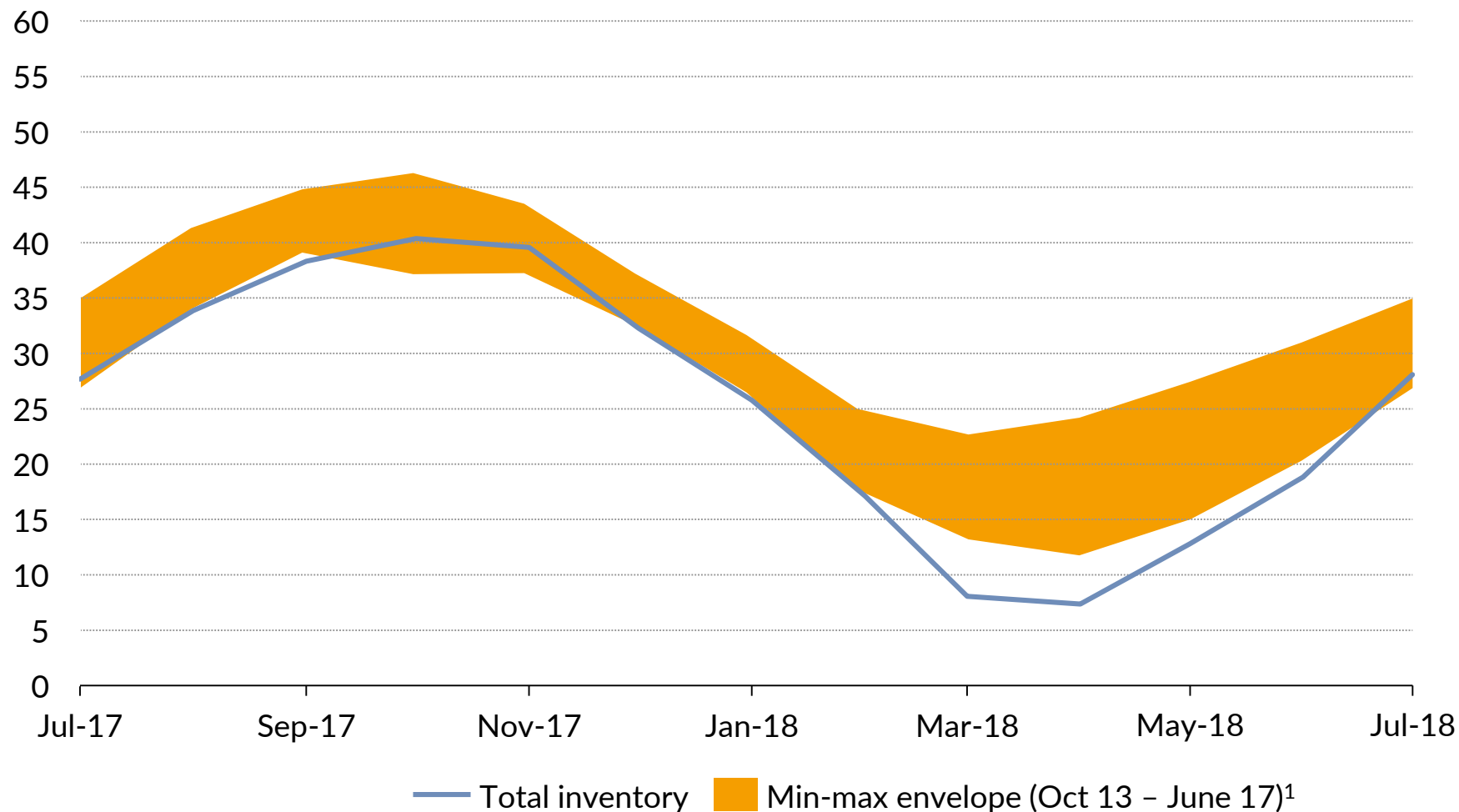


Notes: 1. LNG reflects regasification send-out to the high pressure network. 2. Russia pipeline supply includes pipe imports via Poland, Czech Republic, and Austria. 3. Other pipeline supply includes supply from Denmark, Spain and Switzerland.

North West European storage inventory

NW Europe storage inventory,

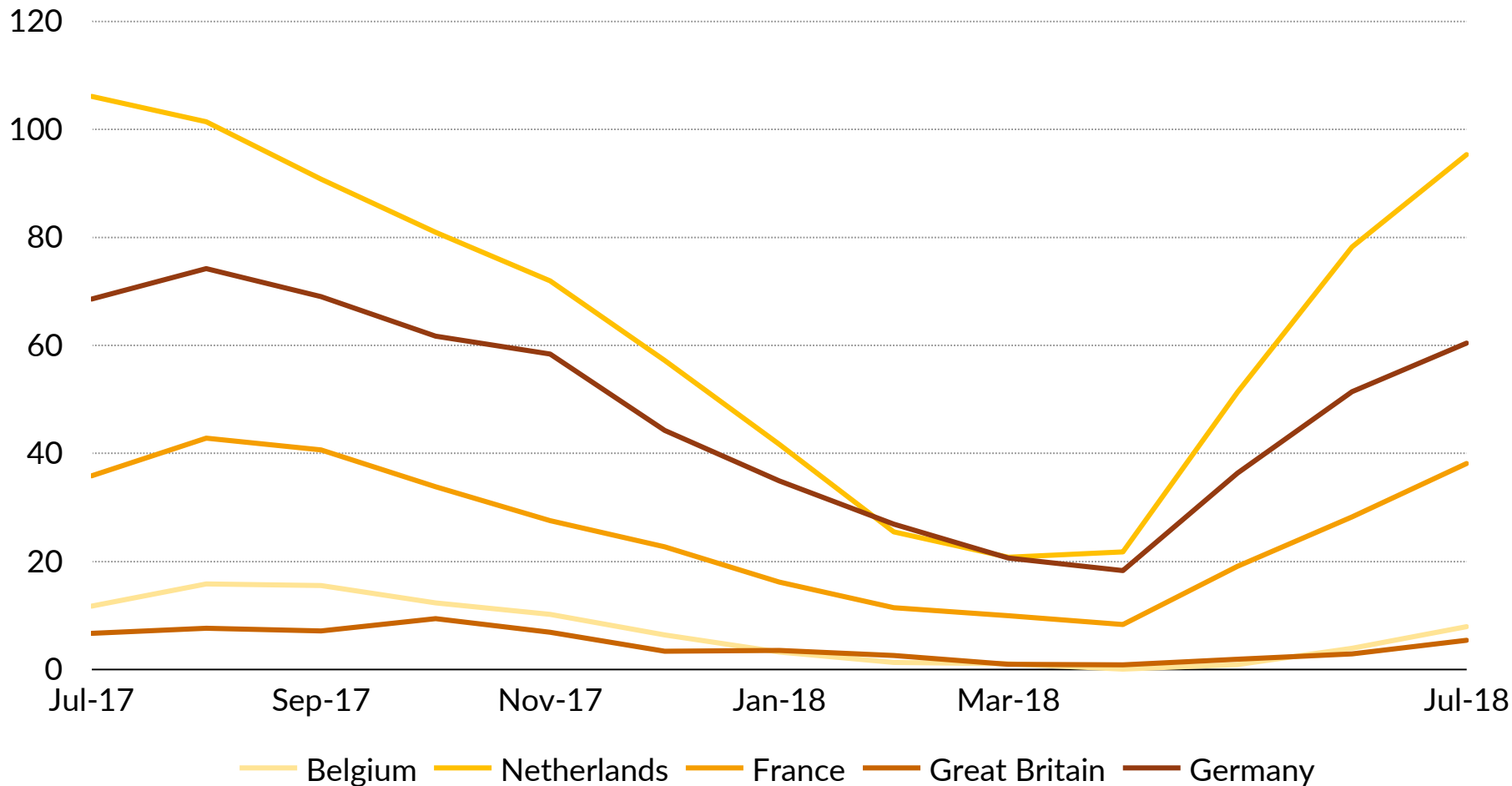
bcm



Notes: Storage data is based on net daily flows. 1. Envelopes are calculated by taking the maximum and minimum monthly values since October 2013.

Storage margin (days of demand in store)¹

Storage margin,
days



Notes: 1. Days of Demand in store is defined as the number of days that the storage inventory could potentially solely satisfy, all contractual constraints left aside. Future demand is defined as today's demand adjusted with last year's profile. The analysis shown is our most up-to-date estimate but may be subject to revision as historical data gets confirmed. The values shown indicate the storage margin at the end of each month.

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European Gas Market Service

Market analysis and forecasts for all participants in the European gas market

1 European Gas Market Forecasts



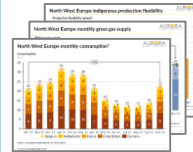
- European gas market development until 2040 including hub prices, seasonal and regional spreads, demand evolution, supply development within Europe and in key supplying regions, LNG and pipeline import flows
- Key modelling assumptions result from in-depth market research drawing on our unparalleled expertise across the energy, policy, environmental and financial sectors, and are further refined through a detailed consultation process across private and public sector players
- Forecasts are produced with our in-house European gas flow dispatch model that includes 430+ pipelines, all storages and LNG import facilities as well as detailed modelling of demand zones
- Comprehensive annual report (~120 pages) with full review and outlook of the market; quarterly updates (~20 pages) focusing on changes in forward prices, geopolitical and technology developments
- Additionally, a presentation with all exhibits plus underlying data in xls is provided

2 Global Energy Market Forecasts



- Aurora's long-term forecasts for oil, gas and coal markets presents a fully consistent view on fuel prices, production, and consumption by major countries and regions
- Identifies key areas of long-term uncertainty in global energy markets
- Provides central, high, low, and P10/P90 price sensitivity analyses, based on historical variation in key sources of uncertainty
- Produced with our in-house global energy market model, which provides full substitution among the commodities and regions (e.g. impact on European gas price if China's growth slumps or India builds more coal power stations)
- Our global energy market model is used to underpin BP's Energy Outlook and the scenarios they present
- The annual main report (~160 pages) provides a full outlook on the expected supply and demand balance going forward, published once a year with quarterly updates

3 Monthly market summaries



- Monthly summary on key performance parameters of the European gas market that set the market results into perspective for management to stay on top of the developments
- North West European Gas System Performance Summary: monthly snapshot of key operating characteristics of the gas market. Key statistics include hub prices, volumes, trade, suppliers market share, indigenous production flexibility and storage provision for security of supply

4 Analytics and data platform EOS



- Access to detailed historical and real-time European gas market data
- Data with daily granularity includes
 - Demand, supply and production
 - Pipeline flows and imports/exports
 - Storage utilisation and LNG sent-outs
 - Regional gas prices and commodity price data
- Data can be viewed, charted and downloaded

5 Bilateral meetings & analyst support



- Bilateral workshops with senior members and subject experts of Aurora' team to discuss Aurora's analyses and views on the market
- Short-notice support by our analysts on questions arising from our research

6 Invitation to Aurora's annual Spring Forum



- In our by-invitation-only annual Spring Forum industry leaders discuss the challenges of the energy industry of tomorrow
- Being held at distinguished venues at the University of Oxford
- Key note speakers of our 2018 Forum included Clair Perry MP (Minister State, BEIS), Magnus Hall (CEO, Vattenfall), Spencer Dale (Chief Economist, BP) and Steven Fries (Chief Economist, Shell)

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