

“STUDY ON CAPACITY PRODUCTS IN THE GERMAN GAS MARKET STOCK-TAKING AND FURTHER DEVELOPMENT”

ENGLISH SUMMARY COURTESY TRANSLATION OF THE [STUDY](#) BY WAGNER,
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SUMMARY

The study was compiled in three phases, each with dedicated objectives. These phases are reflected in the structure of this document.

Phase 1 comprised a qualitative survey of the design of capacity products in Germany, Austria, France and the United Kingdom, followed by a quantitative analysis of the offer of and demand for capacity products from German transmission system operators (TSOs). Building on that, in phase 2 a comparative assessment of the various capacity products was carried out from the point of view of network users, network operators and the market as a whole, and ideal capacity products were defined. In phase 3, the final phase, possible combinations of these capacity products were investigated and once again examined from these various perspectives.

Figure 1: Preparation of the study was divided into three phases

Survey and analysis of current capacity products	Comparison of capacity products	Various combinations of capacity products
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Phase 1: Survey and analysis of current capacity products

Qualitative survey

The aim of this survey is to obtain a qualitative analysis of the characteristics of capacity products in use on the German, Austrian, French and British gas markets. On the basis of their contractual structure, products with common characteristics are combined to form types, and a comparative description of them is presented. The various types are not evaluated in the context of the survey; this is not done until section 5.

The survey is divided into three stages:

- firstly, an investigation of the fundamental use (based on the capacity offer) of different capacity products or product categories by the transmission system operators (TSOs) in the countries under consideration;
- secondly, an examination of the individual characteristics of the capacity products;
- finally, a cross-product examination that in particular highlights those characteristics of capacity products that can only be identified and described in their entirety when

examined as a whole in conjunction with other capacity products (e.g. the cross-product interruption sequence).

Fundamental use of capacity products

The result of the qualitative survey is that the range of offered products varies greatly from country to country. Whereas Germany has a wide range of different capacity products, this is the case to a significantly lesser extent in Austria. In contrast, however, in France and the United Kingdom there appears to be solely a distinction between a firm capacity product and an interruptible capacity product.

Within Germany, too, the situation differs widely. Whereas some TSOs exploit almost the entire product range, the capacity offer from other TSOs is kept within very narrow limits.

Examination of individual products

Firm and freely allocable capacity (FZK)

This capacity product, which is also referred to as the “basic product” in the context of the study, represents the foundation for the offer of firm capacities. A look at the international picture, in particular, reveals differences in the design of this capacity product. Even if superficially the fundamental product characteristics appear to be identical in terms of free connectability, firm utilisation opportunity and the accessibility of the virtual trading point, the underlying capacity calculations – carried out on the one hand on the basis of statistical (historical) assumptions for defined network usage scenarios that are considered realistic and on the other on the basis of worst-case network usage assumptions – reveal differences that impact on the actual shaping of the capacity product.

Accordingly, with regard to the reasons for curtailment, the range extends from force majeure as the sole permissible reason for curtailment to possibilities for curtailment open to the TSOs in the case of capacity utilisation that deviates from the assumptions of load flow simulation made in line with good gas industry practice, or in the event that the capacity and load flow instruments required to guarantee the basic product cannot be procured in full or only on economically unreasonable terms. In this connection there is also the explicit possibility available in Germany of converting existing capacity contracts; there is no explicit provision for such possibilities in other countries.

As a general principle it must be stated in this connection that this study is restricted to the analysis of capacity products, and mechanisms that go beyond the capacity model as such and exert an influence on actual possibilities for the utilisation of capacity products were not explicitly considered in the context of the study. In this regard it should be pointed out, by way of example, that in Austria the market area manager has the right to curtail firm transportation in the event of imbalances, and in France the use of storage is defined by regulation within the framework of seasonal network usage irrespective of the actual FZK design.

Capacity with conditional firmness and free allocability (bFZK)

The bFZK capacity product essentially formulates an external condition – one that the network user himself cannot influence – for firm and freely allocable capacity use. The possibility of use is guaranteed by the transmission system operator in accordance with the extent to which this external condition applies – any use over and above that is granted on

an interruptible basis. The bFZK capacity product is currently offered only in Germany, where two alternative types of external condition for the extent of the guaranteed usability of the capacity can be identified. The capacity product “bFZK with temperature condition” enables network use on a firm basis provided a certain, predefined temperature condition is met. In contrast with that, the capacity product “bFZK with flow condition” enables network use on a firm basis provided certain flow conditions are met, which are usually not transparent for the network user.

Firm, dynamically allocable capacity (DZK)

The DZK capacity product enables firm use of capacity depending on compliance with an allocation restriction, i.e. a corresponding nomination at one or more predetermined complementary physical network points. Network use is guaranteed by the transmission system operator to the extent to which this allocation restriction is satisfied; any use over and above that (and hence the accessibility of the virtual trading point) is granted on an interruptible basis. The DZK capacity product is offered solely in Austria and Germany, and takes a very similar form in those countries in terms of its fundamental characteristics. There are differences in connection with the relationship of the allocation restrictions to one or more complementary network points (ratio of 1:1 or 1:n) and with regard to the question of whether the complementary network points must be on the network of the TSO marketing the product or may also be situated in the networks of third-party TSOs. The differences in this regard between use in Austria and Germany are picked up in the design of the ideal capacity product in this category.

Firm capacity with restricted allocability (BZK)

The BZK capacity product is largely identical to the DZK capacity product, but in contrast with DZK it fundamentally does not allow interruptible accessibility to the virtual trading point and can only be used to the extent to which there are corresponding nominations at physical entry and exit points. The BZK capacity product is currently offered and marketed in Germany only. Differences between the BZK products from various German transmission system operators primarily arise with regard to the operational requirements for allocation to a balancing group applicable to this product. Whereas certain TSOs do not impose any specific requirements in this regard, other TSOs prescribe mandatory allocation to special BZK balancing groups, which do not have access to the virtual trading point (VTP). The consequences of the network user not complying with this obligation range from automatic deletion from the balancing group to conversion into interruptible, freely allocable capacity.

Interruptible, freely allocable capacity (uFZK)

By way of distinction from the basic FZK product, interruptible (freely allocable) capacity (uFZK) represents a service commitment by the TSO that is not guaranteed. Accordingly, use of these capacity products may be interrupted if the need arises. The need is not defined, so this allows interruption without reasons having to be indicated.

At present the majority of the TSOs in the countries under review offer uFZK, but there are differences in the conditions for the interruption and the way it is executed. For example, the minimum advance notice times for an actual interruption vary between 35 and 180 minutes, or curtailments are made in one case according to the time stamp of the booking (Germany) or proportionally (United Kingdom), or proportionally within different quality classes (Austria).

Cross-product examination

Allocation of nominations and curtailment requirements to different products

Especially where there is a differentiated capacity offer – as is the case in Germany and Austria – there is a need for rules for the allocation of nominations and curtailment requirements to different capacity products. A detailed examination of the relevant contractual rules reveals differences in this regard. Whereas, as a general rule, firm products are given preference over interruptible products, the differences lie in the demarcation between inherently interruptible products (uFZK) and firm products that are not used as designated (e.g. interruptible parts of DZK and bFZK).

Nomination and re-nomination stipulations

While the EASEE-gas guidelines on deadlines, message types and procedures in nomination management have largely been implemented in the countries under review with hardly any substantive differences, the countries do differ in terms of specific stipulations for the nomination of day-ahead capacities. Whereas in Germany, for example, these can no longer be adjusted after the initial nomination, network users in the other countries have the right to make intraday adjustments to them within the framework of the re-nomination stipulations.

Allocation of different capacity products

The outcome of the qualitative survey of the procedures for the allocation of capacity products in the countries under review is that the mechanisms take very different forms in each country. This applies both to the allocation of individual capacity products (in particular uFZK) and to capacity allocation at booking points, namely storage facilities, production facilities and network connection points of end users. A distinct variety of different national forms is apparent at these points, from auctions to first-come-first-served (FCFS) and request/assessment procedures.

Qualitative adaptation of existing capacity contracts

As already stated in connection with the capacity determination of FZK products, the contractual conditions of German TSOs fundamentally offer the option of permanently converting (“downgrading”) existing capacities and making further contractual provisions on a case-by-case basis, for example for the upgrading of existing capacity contracts if load flow commitments are available. No such possibilities have been identified for Austria, France or the United Kingdom.

Tariff setting for capacity products

In Germany, Austria and France tariff setting for capacity products depends exclusively on the booked capacity, whereas in the United Kingdom a combination of capacity-based and usage-based charges is used. In addition, the tariff relations of various capacity products were examined for the relevant countries and the respective TSOs. It is apparent that the tariff relations of conditional and interruptible capacity products with respect to the basic FZK product currently vary very widely.

Quantitative analysis

The quantitative analysis relates solely to capacity marketing by German TSOs. The assessment of the trend of the capacity offer and booking situation according to input lists from the German network development plans produces the following results, taking 1 January of the baseline years 2012–2014 as the key date:¹

Examination of the capacity offer:

- Across Germany, and in relation to all entry/exit points shown in the NDP, FZK accounts for the largest proportion of the capacity offer, namely around 70%. The conditional capacity products DZK, BZK and bFZK each account for about 10% of the capacity offer. An examination of individual network point types (e.g. cross-border or market area interconnection points, storage connection points etc.) reveals that in some cases there are clearly divergent circumstances, because the capacity offered at network interconnection points to downstream distribution systems is shown as 100% FZK.
- For Germany as a whole the total capacity offered rose slightly between 2012 and 2014. In absolute figures the FZK capacity quality rose most strongly over that period of time, the DZK and bFZK capacity products exhibited a significantly stronger relative rise, while the offer of BZK recorded a slight decline.
- In both German market areas the provision of conditional capacity products (DZK, BZK, bFZK) at entry points is significantly higher than at exit points (partly as a result of the 100% FZK offer to downstream distribution systems); the bFZK capacity quality is currently offered for entry capacities only.
- On the entry side of the cross-border or market area interconnection points the offer of FZK capacity quality is relatively constant, with the increase in capacity in the period 2012–2014 largely being reflected in the DZK and bFZK capacity qualities.
- It is notable that the ratio of firm entry and exit capacities differs greatly in the German market areas: whereas in the NetConnect Germany market area the firm exit capacities are slightly higher than the entry capacities, in the GASPOOL market area the firm entry capacities predominate.

Examination of the booking situation²:

- The increase in capacity supply is contrasted on the exit side with a constant demand for capacity and on the entry side with a clearly declining demand for capacity, represented by the booking situation on the key dates of 1 January in the years under review.
- A look at the marketed capacities in absolute terms makes this trend clear, and among other things reveals the following at different types of points:
 - a declining (entry) or constant (exit) booking situation at cross-border interconnection points;
 - a widely fluctuating (entry and exit) booking situation at market area connection points;

¹ The significance of the results of the quantitative analysis should be seen against the background of these three survey dates.

² Owing to the lack of underlying data, the examination of the booking situation and the booking level does not take account of the network interconnection points of downstream network operators (NKP-ngNB) or NAP-IN network connection points.

- a declining booking situation at network connection points for underground gas storage facilities (NAP-UGS) and network connection points for production (NAP-PROD).

Examination of the booking level on the key date (ratio between offered and marketed capacities on 1 January of the respective baseline years):

- The booking level in the NetConnect Germany (NCG) and GASPOOL market areas is essentially comparable and declining.
- The BZK and DZK capacity qualities exhibit the highest booking level over the time period.
- The simultaneous offer of free FZK (in some cases with a considerable volume) indicates that the demand for conditional capacity products cannot be explained by a shortage of FZK.
- Examination of the booking level on the key date (relative to the capacity offer) at various types of points reveals among other things that there are very high booking levels for the DZK and BZK capacity qualities at cross-border interconnection points, and a declining booking level for the FZK capacity quality, especially for 1 January 2014.

In the context of examining the marketing results for all auctions conducted in the period from 25 August 2011 to 26 February 2014, an assessment of the development of capacity supply and capacity demand in primary capacity platform (PCP) auctions at German booking points revealed the following results:

Examination of the auction offer:

- Because of the high proportion of FZK within the capacity offer of the points marketed via PRISMA and the below-average booking levels, the capacity supply in the various product runtimes is dominated by the FZK capacity quality.
- Whereas all capacity qualities have been offered for annual products in the NCG market area, the BZK and bFZK capacity qualities were not offered in the GASPOOL market area.
- The capacity offer of quarterly products and monthly products was likewise clearly dominated by the FZK capacity quality. The bFZK capacity quality was offered to a lesser but still significant extent. The offer of DZK and BZK is regular, but negligible in terms of quantity.
- The capacity offer of daily products is dominated by a clearly rising proportion of FZK over the period. The offer of other capacity qualities is essentially comparable with the runtimes mentioned above.

Examination of demand:

- Annual products were primarily marketed in two capacity qualities: FZK (NCG and GASPOOL market areas) and DZK (GASPOOL market area).
- As far as quarterly products are concerned, the marketing of DZK is becoming more important in addition to the marketing of FZK. Seasonally there is also significant marketing of bFZK. The marketing of BZK via quarterly products is negligible.
- Monthly and daily products were mainly marketed in the FZK capacity quality, and particularly in the winter quarters also in the bFZK capacity quality. Demand for

monthly and daily products exhibits a discernible seasonal trend (greater demand in the winter half-year).

- Demand for daily products clearly fell, despite rising supply with the abolition of the starting price of EUR 0.00 on 1 January 2013.

Examination of marketing success (relationship between offered and actually marketed capacities):

- The overall marketing success³ is highest for entry capacities of the bFZK capacity quality and exit capacities of the DZK capacity quality; the FZK capacity quality determines the average marketing success and the BZK capacity quality experiences the weakest demand.
- The overall marketing success of the bFZK capacity quality varies widely within the framework of the examination of the overall marketing success in the market areas. Whereas in the GASPOOL market area in the case of entry capacity the overall marketing success of the FZK capacity quality exceeds that of bFZK, the situation in the NCG market area is precisely the opposite. In the case of exit capacities, DZK achieves a higher overall marketing success in both areas. The overall marketing success of the BZK capacity quality is the lowest in both market areas.
- For periods of use further in the future, the marketing success of FZK annual products is the highest in both market areas. It is also striking that in the GASPOOL market area the DZK capacity quality, if it is offered, achieves an above-average long-term marketing success.
- In the context of quarterly auctions the DZK capacity quality exhibits very high marketing success, with the GASPOOL market area making the main contribution in this regard. The seasonal marketing success described above is apparent for the bFZK capacity quality.
- The above-average marketing success of bFZK in winter months is even clearer for monthly products than for quarterly products. For DZK and BZK products there are digital marketing successes that are above-average in isolated instances but in by far the most cases tend towards zero.
- In the context of daily products, too, there are very high seasonal marketing successes for bFZK. With few exceptions the marketing success of DZK and BZK in the case of daily products is below average, or since the abolition of the starting price of EUR 0.00 on 1 January 2013 non-existent.

Phase 2: Comparative assessment of the capacity products

In order to obtain a comprehensive picture of the advantages and disadvantages of various capacity products, the comparative assessment is performed from different points of view.

Assessment from the standpoint of network users

The assessment was basically set up to differentiate between shippers and downstream network operators, and arrives at the following results:

Shippers

³ To determine the overall marketing success, the quality-specific capacity offer for entry/exit capacities is set against the corresponding marketing quantity. The assessment period used for each capacity product (year, quarter, month, day) is always only the service period for which all marketing procedures have already been completed.

For shippers the comparative assessment is based on a definition (as non-overlapping as possible) of idealised network user roles, each with specific requirements regarding the transportation of gas and thus also regarding capacity products.

From the standpoint of these ideal network user roles, the first step was to examine the various product categories purely on the basis of their primary, guaranteed product characteristics.

For the idealised roles of producer and importer, the foremost concern is assured access for inputs to the VTP in order to satisfy firm delivery obligations. This is made possible on the one hand by FZK, and on the other, at least seasonally (for example for the supply of additional quantities in cold weather), by the bFZK product in conjunction with a transparent temperature condition.

The arbitrage trader – because of her trades, which are usually made at the VTP – requires guaranteed VTP access for both inputs and off-takes. This requirement is fundamentally met by FZK and, in the case of day-ahead booking with high proportions of firm capacity (as a result of the external temperature condition being satisfied), also by bFZK.

DZK (only interruptible VTP access), BZK (no VTP access) and bFZK with load condition (non-transparent conditions of use) are not suited to meeting the firm delivery obligations of any of the previously stated roles.

The central requirement of the idealised network user role of transit supplier regarding guaranteed transportation through a market area can also be met by BZK und DZK, in addition to FZK. For seasonal transits it is also possible to use the bFZK product with temperature condition. For the reasons stated above, bFZK with load condition is not suitable.

The suitability of the various capacity products for the role of storage customer must be assessed against the background of the intended use of the storage facility. While FZK is suitable in all cases and bFZK allows guaranteed seasonal storage use, the suitability of DZK and BZK largely depends on which markets are to be served by the storage facility and on the nature of the allocation restriction. Depending on the allocation restriction, DZK and BZK allow the guaranteed accessibility of a neighbouring market's virtual trading point.

For the role of supplier (in the TSO network), FZK allows guaranteed delivery from the VTP at the connection point for its allocated end users. In contrast with that, and depending on the nature of the allocation restriction, DZK and BZK allow delivery from the VTP of an upstream market, for example (corresponding to the power station product discussed in the context of the NDP). bFZK is suitable only in those cases in which there is a 1:1 correlation between the off-take behaviour of the supplied end user and the condition for the guaranteed use of bFZK.

A purely economic perspective was assumed for all network users for the evaluation of interruptible capacity products (uFZK and all capacity shares of conditional capacity products that are not used as designated, for example DZKu, bFZKu). In this connection it is assumed that in order to meet their off-take and delivery obligations when using interruptible capacities, network users are subject to additional contingency costs (for redundant capacities or flexibility services) as a provision against risk and/or additional variable costs in the event of interruption (spreads for buying and selling, transaction costs etc.).

Accordingly, these interruptible capacities are only suitable for satisfying transportation requirements if the tariff saving in comparison with the cheapest firm capacity product is higher than the costs of provision against risk plus the variable costs in the event of interruption.

This leads to the conclusion that interruptible capacities are primarily suitable for connection between liquid markets, as in such cases it can be assumed that there will be only variable costs in the event of interruption (essentially the price spread between the target market and source market of the transport operation) and that overall costs will be lowest.

In all other cases which do not serve to connect two liquid markets, in order to compensate for interruptions it is necessary to hold in reserve certain flexibility instruments or bear non-objectifiable variable costs in the event of an interruption. The suitability of interruptible capacity products at these points must therefore always be rated lower and is not objectifiable.

Downstream network operators

The starting point for the capacity requirements of downstream distribution system operators is the network access right of end users in the distribution system. Depending on the volume of the network capacities guaranteed to be marketed in the distribution system, there are thus requirements in terms of freely connectable access to the VTP, guaranteed satisfiability and a mostly seasonal (temperature-dependent) capacity requirement.

Within the framework of this study, two alternative possible options for the internal ordering (DSO-TSO booking) procedure currently used are described and compared with each other. The aim here in particular is to show the breadth of alternative approaches against the backdrop of minimising capacity booking as much as possible.

Assessment from the standpoint of network operators

Capacity products are basically an expression of and the result of the capacity maximisation aimed for by the TSOs against the background of existing network restrictions.

In the event that technically available capacities at entry or exit points cannot be offered as guaranteed and freely allocable (FZK) on account of restrictions within the transmission network, these restrictions can be reflected by other capacity products (e.g. DZK, bFZK). These other capacity products are an expression of the transmission system operators' efforts to make as much firm capacity as possible available to the market and to make optimum use of the possibilities offered by transmission system.

The assessment from the standpoint of network operators is therefore based on a description of various network restrictions and focusses on the suitability of the various product categories for reflecting these restrictions.

DZK and BZK exhibit the same suitability in this connection, and allow the dependence between nominated inputs and off-takes to be reflected. By comparison, bFZK is particularly suited to reflecting the dependence of the input and off-take possibilities of (temperature-dependent) load situations. In principle uFZK is suitable for reflecting all network restrictions, but against the background of the requirement to maximise quantitative and qualitative capacity it must be rated as a lower-ranking means of representing congestion.

Assessment from the standpoint of the market as a whole

The examination from the standpoint of the market as a whole is an overall assessment of the product categories for different dimensions, across the roles.

Impacts on national and international security of supply

Because of guaranteed fulfilment and free connectability, FZK makes a positive contribution to both national and international security of supply in all cases. On account of the fact that they are usually used on transit routes, DZK and BZK make an important contribution to international security of supply in particular. In addition, these capacity products enable transit off-takes to be reduced at exit points if the complementary inputs are not provided, thus preventing transit off-takes from over-burdening the national security of supply.

As bFZK is particularly useful when temperatures are low and loads are high, it is especially important for the security of supply in less connected network areas.

Impact on network expansion or avoidance of network expansion

The requirement for guaranteed satisfiability and free connectability, of all capacities identified as FZK, fundamentally maximises the need for network expansion. As there are distinguishable transport purposes (transit, supply of temperature-dependent end users, etc.) it appears to be neither efficient nor necessary in macroeconomic terms for all capacities to be guaranteed and freely connectable at all times.

By comparison, DZK, BZK and bFZK are designed to realise specific transport purposes and (apart from the BZK product) offer an interruptible means of expanding capacity use (e.g. access to the VTP) over and above the primary transport purpose. These capacity products significantly reduce the costs of network expansion compared with an expansion on the basis of FZK. Capacity products that are subject to usage restrictions offer the possibility – within the framework of the survey of needs – of categorising the demand for additional capacities and form the basis for a network expansion that is geared to needs.

Impacts on competition in the wholesale market

The assessment of the impacts of capacity products on competition in the wholesale market is based on the premise that only those capacity products have a positive effect that allow inputs and off-takes to be connected with the virtual trading point on a guaranteed basis.

Accordingly, FZK is particularly well suited and makes a positive contribution, whereas DZK, BZK and uFZK are not suitable owing to a lack of guaranteed VTP access.

bFZK occupies an intermediate position in this regard. bFZK with a flow condition is not suitable on account of its usage conditions, which are not determinable ex ante. In contrast, the volume of bFZK that is guaranteed to be usable and can be connected to the virtual trading point on a firm basis under transparent temperature conditions is identifiable ex ante, making it suitable for wholesale business and the creation of competition in the wholesale market.

Impacts on competition in the storage market

In much the same way that competition was examined in the wholesale market, the study analysed the extent to which the product categories can make a positive contribution to the creation of competition in the storage market.

For the purposes of this assessment, two dimensions were considered: which markets can be reached with the aid of the various product categories (direct market in which the storage facility is situated or indirect, neighbouring markets that can be reached on the basis of allocation restrictions) and which storage products can be marketed on the basis of the interruptibility of the capacity.

In both dimensions the offer of FZK at network connection points for underground gas storage facilities (NAP-UGS) allows maximum usability, i.e. storage use for the direct market and the associated indirect markets without restriction and with all storage products. Depending on the nature of the allocation restriction, DZK and BZK allow the use and marketing of storage for adjacent markets with no limitation on the marketable storage products.

bFZK with temperature condition (basically comparable to the capacity product TAK discussed in the context of network development planning) allows seasonal storage use, whatever the case, and is comparable to FZK with regard to the accessibility of the markets.

Definition of ideal capacity products

On the basis of the findings obtained from the comparison of products and product categories, conclusions are drawn for the retention of product categories and characteristics of ideal capacity products.

Ideal FZK

The qualitative survey shows that the actual differences between the FZK products offered by transmission system operators in the investigated markets can essentially be attributed to different methods of determining capacity.

An assessment of the different methods of determining capacity does not form part of this study. In particular, it is not possible to estimate the impacts of changes to the capacity determination procedure on the quantitative offer of FZK without detailed knowledge of the capacity determination procedures currently used by specific transmission system operators. The conclusions regarding the ideal design of FZK are therefore restricted to increasing the transparency of the assumptions underlying the FZK offer.

Ideal DZK

The outcome of the qualitative survey is that the DZK products of German TSOs are to a very large extent identical in terms of the basic way in which they work. Over and above the current design, the actual allocation possibilities for the ideal DZK within a market area should basically only be limited by the technical network topology and should also be possible and made available across network operators. Limiting the allocation restriction to the respective TSO's entry and exit points is not in line with the requirement for qualitative maximisation of the capacity offer and limits the utilisation possibilities open to the network users.

For reasons of transparency it is desirable in the case of DZK in particular to publish the allocation restrictions ex ante on a point-specific basis. At present, allocation restrictions for DZK products are often only specified during individual capacity marketing.

Ideal BZK

The assessment of the various product categories from the standpoint of network users makes it clear that all transport requirements that can be met with BZK can basically also be met with DZK. At the same time the analysis from the standpoint of transmission system operators also shows that DZK and BZK are equally suited to realising the corresponding network restrictions.

Against the background of the greater use of DZK for the market as a whole (possibilities of interruptible access to the VTP), BZK products should therefore be represented by DZK in future.

However, it appears to make sense to continue using BZK for the realisation of short-distance transportation that requires separate tariff treatment on transport routes where allocation to other network points of a market area is ruled out.

Ideal bFZK

The fundamental result of the survey of current capacity products is that it is necessary to differentiate between bFZK with temperature condition and bFZK with flow condition. Given the results of the comparison of these two types, the current bFZK products with load condition are largely to be considered equivalent to uFZK from the standpoint of network users.

As a consequence, bFZK – provided this is possible in terms of the network restrictions – should only be offered with a temperature condition that is transparent ex ante and comprehensibly defined, in light of the qualitative maximisation requirement under the Gas Network Access Ordinance (GasNZV).

Ideal uFZK

With regard to the design of the ideal uFZK product, the qualitative survey in the respective countries reveals very different product characteristics, indicating that different objectives are pursued with uFZK in connection with network access management and congestion management.

Derivation of the ideal uFZK therefore requires definition of the role of this capacity product in the context of network access and congestion management as a whole.

Phase 3: Various combinations of capacity products

The final phase of the study comprised an investigation and qualitative assessment of the extent to which combinations of ideal capacity products in their entirety meet the transport requirements of the various network user roles, are suitable for the TSOs for the realisation of network restrictions and have positive impacts on the dimensions of the market as a whole.

The starting point for the formation and assessment of combinations is the status quo of the capacity products being used. On that basis, the following combinations⁴ were investigated, by agreement with the Bundesnetzagentur:

- FZK / uFZK
- FZK / DZK / uFZK + bFZK at storage facilities
- uFZK at entry / FZK at exit

FZK / uFZK

Within the framework of this combination, all firm capacities with usage restrictions that are not represented as FZK would be marketed as uFZK.

As far as network users are concerned, therefore, the current users of conditional capacity products, in other words transit suppliers, (seasonal) importers, producers and storage customers, would be affected by implementation of this combination.

The simplification of the network usage conditions resulting from a significant reduction in the current variety of products would be offset by a considerable reduction in the availability of firm capacity (about 30% on average, and for individual network operators even > 50% of the firm capacity offer). In individual cases it could even lead to TSOs on the entry side no longer being in a position to enable the long-term booking of firm capacities.

FZK / DZK / uFZK + bFZK at storage facilities

As a result of this combination, with the exception of bFZK at network connection points of storage facilities (which would be solely retained as bFZK with temperature condition) there would be a reduction in product variety at all other network points in the same way as with the previous combination. A capacity product that is particularly suited to realising transit flows would basically be retained, but all BZK products would in future be represented as DZK. Implementation of this combination would therefore give rise to particular impacts on network users with a seasonal usage pattern (seasonal importers, producers and transit suppliers). In this case, too, implementation of this combination on the basis of the current capacity offer for individual transmission system operators would result in the long-term assignment of firm capacities only being possible to a small extent on the entry side.

uFZK at entry / FZK at exit

With this combination, at all exit points the priority offer would be FZK at the maximum level, and DZK, BZK, bFZK and uFZK would be replaced. Only any subsequently remaining FZK potentials in the transmission network would also be offered at entry points. Apart from these remaining FZK potentials, only uFZK is offered at entry points. It is not possible to deduce the impacts on the existing capacity offer for this variant in numerical terms because it is to be assumed that as a result of prioritising the offer of FZK at exit points the overall quantity of FZK that can be offered will be significantly reduced and thus on the entry side it must be expected that the capacity offer will be dominated by uFZK. In extreme cases it is to be assumed that all network users and transport requirements are to be realised via uFZK on the entry side. In line with the previous analysis of the suitability of uFZK from the standpoint

⁴ With regard to the formation and especially the assessment of the combinations there was an explicit decision not to examine what impacts the actual implementation of a combination would have on existing capacity contracts.

of network users, the costs of risk coverage for all users as described in that section would become crucial and overall significantly higher coverage costs would arise than in the status quo. Implementation of this combination would represent a fundamental intervention in the product landscape and network usage behaviour, and would give rise to considerable acceptance problems.