Bundesnetzagentur

Annual Report 2012

Energy, communications, mobility: shaping expansion together.

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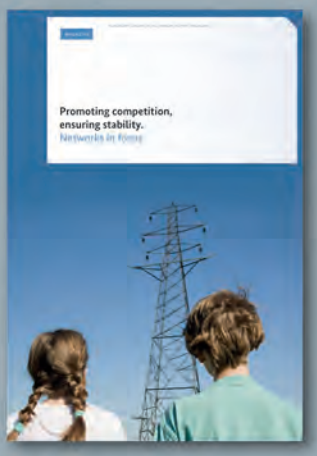

2,700 employees, five regulated sectors and one goal: making the networks more competitive. The magazine provides an insight into how – caught between industry, politics and the public – we can succeed in our work.

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Future-proof, high-performance networks for society – that is our goal. Building and expanding modern infrastructure for telecommunications, electricity and gas, post and rail are key priorities. In 2012 broadband deployment and the *Energiewende* were a particular focus of political and public attention. The demands placed upon us are greater. New tasks – such as our central role in planning and approval procedures for the electricity and gas sector – have been added to our agenda. We will continue our work carefully and conscientiously in the coming year. Aware of the dimension of upcoming decisions, we are committed to our dialogue – with industry and politics and, most importantly, with the general public. Citizens and businesses should benefit from better networks now and in the future.

»One of the Bundesnetzagentur's core duties as part of the Energiewende is the expansion of the electricity grid.«

»To achieve the energy policy goals, we need a comprehensive set of new market rules which deliver reliable investment signals for both renewable and conventional generation.«

Dear Readers,

In its 2012 Annual Report, the Bundesnetzagentur provides comprehensive information on what has been an eventful and very successful year across all regulated sectors. This year, the report has a brand new look and now features an informative magazine section.

Our energy policy challenges received a great deal of public attention last year. Determining the need for new power lines was a central theme for us in 2012. Today's infrastructure expansion will continue into the coming decades, the cost for which will be high. It is therefore essential that companies are able to rely on stable framework conditions for their investments. This is the only way that they are able to make the long-term decisions that are essential for the implementation of the *Energiewende* – those involving the expansion of the renewable energy sources and of the necessary conventional reserve capacities, or on grid expansion generally.

In a system with increasingly fluctuating electricity feed-in, the network operators need to assume complex controlling responsibilities to keep the grid stable. To achieve this, they will be reliant on conventional generation for a foreseeable period for times when the wind is not blowing and the sun not shining. Of great importance in securing the relevant power plants in the short term is thus the "Winter Act", which came into force at the end of 2012. The intervention measures possible under this Act are certainly not what a market economist would advocate. However, given the huge significance of security of supply, the Act provides an enabling framework for a short space of time. To ensure that no system-relevant plants are shut down in 2013, the Act is to be supplemented in the first six months by an ordinance and the necessary decisions.

Our priorities are as follows: wherever possible, the generation infrastructure should be developed and realised via the market and competition. To achieve this, the markets must provide clearer signals than has previously been the case. The rapidly growing share of renewable energy, which is to be fed in and sold as a priority and places demanding requirements on power plant flexibility, lowers the profitability of conventional generation. This profitability gap will tend to increase as the renewable energy share continues to grow. To achieve the energy policy goals, we therefore need a comprehensive set of new market rules which deliver reliable investment signals for both renewable and conventional generation. This can only be achieved by taking a long-term view. We are faced with a fundamental structural decision. This means careful deliberation has priority over hasty decisions, for we must make sure we are on the right track.

One of the Bundesnetzagentur's core duties as part of the *Energiewende* is the expansion of the electricity grid. For this, at the end of 2012 the federal government adopted a draft Federal Requirements Plan Act, containing all the grid expansion measures necessary by 2022 in the very high voltage network from today's perspective. These measures were proposed by the transmission system operators (TSOs) and investigated in depth by the Bundesnetzagentur in terms of their necessity for energy supply.

In doing so, we did not confirm all the expansion measures originally proposed, but only those projects which, according to strict criteria, are already clearly necessary today even under changed energy supply conditions.

»In the telecommunications sector, our principal concern is high-speed broadband coverage.«

Once the Act has been passed in the Bundestag and Bundesrat, we expect that the TSOs responsible for the projects marked as transboundary in the Federal Requirements Plan will apply for the first federal specialist planning processes in 2013. These processes are a planning instrument to set fixed corridors and take the place of the state-level regional impact assessment. The task of federal specialist planning for all transboundary projects was transferred completely to the Bundesnetzagentur under the Grid Expansion Acceleration Act. Building on this, the Bundesnetzagentur will also be responsible for the subsequent planning approval procedures, to allow these to be realised quickly and uniformly. We are pleased that the federal states agreed to this transfer of responsibilities, allowing the necessary legal foundation for this to be established in 2013. It goes without saying that the Bundesnetzagentur will continue to work together closely with the federal states and their planning and approval authorities in all these processes.

The Bundesnetzagentur has also published its consultation results on the Network Development Plan 2012 for the gas sector. The Gas Network Development Plan features 32 measures – primarily lines and compressors, which will be built over the next ten years by the TSOs. In addition, the Plan lists 15 measures with an investment volume of around 1 billion euros which, for the purposes of grid modelling, have already been assumed to be in place and which the operators will be implementing in the next few years. All the measures constitute key projects relating to the north-south link and the connection of new gas power plants and storage facilities and which aim at improving the supply situation in southern Germany. The transmission and distribution system operators and the power plant and storage facility operators now all have a sound basis for planning.

In the telecommunications sector, all the industrial countries face considerable challenges in broadband deployment in particular. Our principal concern is high-speed broadband coverage. Germany has a relatively high broadband access concentration, which leads to considerable price differences between urban and rural areas in rolling out high-speed broadband, for which users are often not willing to pay.

LTE technology therefore makes a valuable contribution to covering rural areas. This mobile technology allows broadband connections to be established in these regions at significantly lower cost. In this respect, it can be considered a key success under the federal government's broadband strategy that just two years after the award of digital dividend frequencies by the Bundesnetzagentur in early 2010, the coverage requirements have been met in every federal state. Assignment of these frequencies involved progressive coverage and rollout obligations. The mobile operators made great efforts to supply priority areas, resulting in wireless broadband access now being available in these regions. In addition to local companies, consumers in particular profited from the rapid network expansion, as they now have access to high-speed Internet. The fast growing demand for mobile broadband has also led to a continuing increase in spectrum requirements. In 2012 we thus presented scenarios for the future provision of mobile spectrum, concerning the GSM frequencies expiring in 2016 in particular. This ensures planning security as early as possible for all involved.

In the fixed line sector too, broadband rollout is not being driven by one single company implementing one technology across the entire country. The variety of business models and market players now also requires the coordination of a larger number of potential providers and customers at the wholesale level. In order to allow the new NGA networks to realise cross-network services, multilateral agreement on technical interfaces and operative processes is necessary. In this instance, the NGA Forum moderated by the Bundesnetzagentur has found concrete solutions, such as the finalisation of a wide number of service specifications. The documents adopted have met with a very positive response from many market players and associations.

For many years, unbundled access to local loops has been at the heart of regulation in the fixed line market. Current technical knowledge suggests that Telekom Deutschland GmbH's planned introduction of vectoring technology could impact on the existing regulatory regime. The Bundesnetzagentur will therefore be tasked in the first half of 2013 with extensively weighing up and taking into account the different demands and interests of the market players in order to find appropriate solutions for the parties affected and further broadband rollout.

Focusing on consumer interests, the Bundesnetzagentur is aiming to achieve more transparency in the quality of Internet connections. In 2012 we therefore initiated a nationwide measuring campaign in order to ascertain how often and to what extent the actual broadband speed diverges from that specified in the contract. The results of the measurements feed into a study on Internet access service quality in Germany. Furthermore, we will examine whether speeds vary according to application, destination or content.

In the postal sector, as part of the price cap proceedings, the Bundesnetzagentur approved Deutsche Post AG's rates for letters up to 1,000g. This led to a slight increase in standard postage for the first time in 15 years. This means extra costs for letter-writers of under ten cents a month, on average. Since the first price cap decision in 2001, Deutsche Post AG was prescribed productivity goals of over 20 percent, allowing postage rates to remain stable despite inflation. These prices, combined with a high level of delivery quality, mean that Germany ranks in the middle in terms of European comparison.

Effective framework conditions are also needed in the rail sector. The Railway Regulation Act introduced by the federal government includes highly viable approaches to using integrated holding structures to get rid of the contradiction between natural monopoly and liberalisation. The planned revision of rail regulation law means that the Bundesnetzagentur's working environment could be fundamentally changed in this respect in 2013. One area of focus will certainly be the design of an incentive regulation.

The successful opening up of the rail market for competitors requires efficient and market-friendly access regulation and efficiency-oriented rates regulation, ie above all an approval requirement for train path and station prices. The aim here is always to focus on those charges that would emerge under effective competition. This principle has already been in place in the telecommunications and energy sectors for some time, and a move towards efficiency orientation in the rail sector too would be a key component of effective regulation.

The Bundesnetzagentur's aim across all regulated sectors is to establish and secure fair and effective competition, along with needs-oriented infrastructure expansion. At the same time, regulatory strategies are to be continually adapted to market outcomes and investment requirements. Regulatory intervention is to be reduced to a minimum. To this end, we will continue to maintain an open, objective and transparent dialogue with all involved, whilst making consistent and technology-neutral decisions. Our main concern remains ensuring that Germany is a country with highly efficient and modern infrastructures – now and in the future.

Jochen Homann
President, Bundesnetzagentur

MAGAZINE

Promoting competition, ensuring stability.

Networks in focus

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2,700 employees, five regulatory areas and one aim: making networks more competitive. Whether it's electricity, gas, telecommunications, post or railway – the Bundesnetzagentur mediates between the different interests of business, politicians and citizens, beyond national borders. If competition or transparency is at risk, the Bundesnetzagentur draws boundaries and intervenes with regulatory measures for the market. In this way it guarantees not only well functioning networks, but also increased variety on the market, benefiting citizens.

ENERGY

Good networking

Grid expansion, an essential component of the *Energiewende*, requires public support. That's why the Bundesnetzagentur has travelled across Germany, discussing the steps to be taken.

It is an October morning. Peter Franke, Vice-President of the Bundesnetzagentur, is hurrying to catch the metro, while dense fog is hanging over the Stuttgart valley basin and the autumn leaves are reluctant to show their splendour. The fun rides of the big Stuttgart fairground are still standing idle, just like the excavators in the lower part of the Schlosspark, right next to Stuttgart Main Railway Station.

Speaking of the excavators ... Months after the demonstrations against the huge Stuttgart 21 project, which were accompanied by protesters' chants throughout Germany, the policymakers decided to screen off the famous construction site from public view with high hoardings. But on his way to the Stuttgart Convention Center, the Liederhalle, Mr Franke does not pay attention to the construction site anyway. It's going to be a big day for him; after all, he will be addressing the next large-scale infrastructure project in Stuttgart today.

The *Energiewende* brings with it the need for new networks

The Bundesnetzagentur is informing the public about the coming grid expansion, which goes hand in hand with the *Energiewende*. Because without nuclear power plants, renewable energy sources will have to be increased on a massive scale. The problem is that green electricity is largely generated in the north where the winds are strong and has to be transported to those areas where it is needed – that is the industrial centres in the south and the west of Germany. To ready the electricity grid for this challenge, we have to reinforce or modernise the extra high voltage lines or even build new ones. Experts estimate almost 4,500 additional kilometres. For many citizens, new lines thus mean new construction sites. That's why Mr Franke has come to Stuttgart today – to explain the background together with 15 other experts from his Agency.

Taking turns with the President of the Bundesnetzagentur, Jochen Homann, Mr Franke has already spoken at events in Bonn, Nuremberg, Hamburg, Erfurt and Hannover. For the moment the Stuttgart event will be the last in a series. Mr Franke is keen to see how the day will go. "So far we've had completely different events", he says, adding, however, that on his way to the Convention Center he was already very much impressed by the Swabian discipline: "There was no pushing and shoving getting on and off the metro. Almost like in London." So a quiet event, then? "Well, you never know."

Explain, mediate and win trust

When Mr Franke takes the floor at 10 o'clock sharp, there is an audience of about 150 in the Schillersaal: business representatives and delegates of the local authorities and regional assemblies, representatives of associations as well as interested citizens.

People like Kai Gerfelder. He made his way from Hesse to specifically attend this event and hopes to get "fundamental information on grid expansion". This is what he needs for his job as a member of the Frankfurt-RheinMain Regional Authority, which is also responsible for regional land use and landscape planning. For Jochen Patt, Head of Section Grid Development at the Bundesnetzagentur, people like Kai Gerfelder are particularly important today: "Representatives of public institutions, especially, can be vital multipliers for us; they can explain to people who will be directly affected by grid expansion why we are doing what we are doing." So far the Network Development Plan only shows the

(1)

Making grid expansion transparent and winning the public's trust – this is what made Peter Franke, Vice-President of the Bundesnetzagentur, come to Stuttgart in person (1). People attending the information event were able to get detailed information about the individual steps, and (2) to address their questions directly to experts from the Bundesnetzagentur during discussions in the Schillersaal (3). Kay Höper from the wind park developer WPD (4) also used the opportunity to talk to colleagues from his field of expertise.

(2)

(3)

(4)

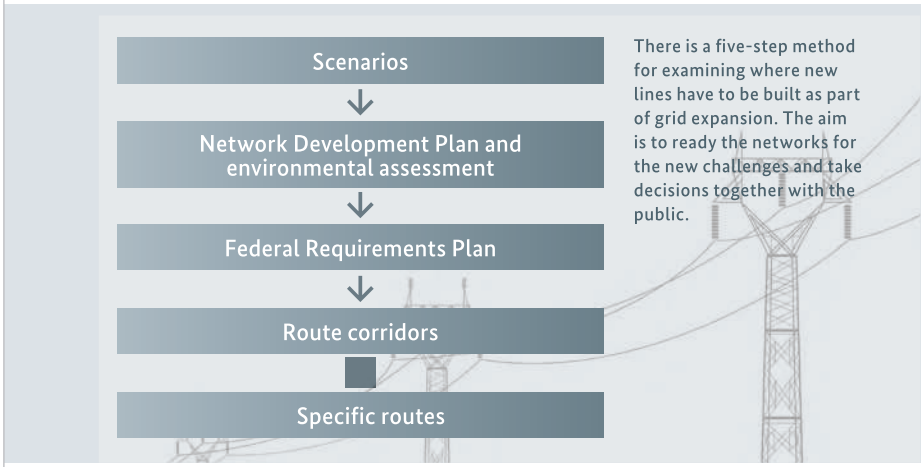
approximate route of the lines; detailed planning will begin in 2014, and lines in southern Germany will be built in 2016 at the earliest.

Explain, mediate and win trust – for Mr Franke, too, this goes without saying. In Stuttgart he urgently makes the case for public participation. "The politicians alone will not be able to manage the *Energiewende*." In this respect he points to the experience of Stuttgart 21. The citizens of Stuttgart can still vividly recall the protests against the excavation on the Schlossplatz. Mr Franke therefore makes it absolutely clear: "We can only achieve our aim if this project is supported by as many as possible." The aim is grid expansion. This requires a long planning period (see chart on page 12): How big is the need for new transmission systems? Where would it be sufficient to reinforce old lines or build new extra high

»We can only achieve our aim if this project is supported by as many as possible.«

Peter Franke, Vice-President of the Bundesnetzagentur

Jochen Patt, Head of Section Grid Development at the Bundesnetzagentur, in discussion with visitors to the information event in Stuttgart during the coffee break.



There is a five-step method for examining where new lines have to be built as part of grid expansion. The aim is to ready the networks for the new challenges and take decisions together with the public.

»...from today on I am convinced that these people are real experts, working and planning with absolutely accurate data.«

Simone Link, student

voltage lines in existing corridors? And where do new lines have to be built to protect man and the environment? To answer all these questions experts from the Bundesnetzagentur are conducting complex analyses, developing scenarios, discussing with environmental associations and coordinating plans with external scientists. The outcome: a federal Network Development Plan (NDP), illustrating which electricity lines and substations will be needed in the next decade.

Time for talking and discussing

Participants in the Schillersaal are given much new information and many new facts. “The technical details are complex and certainly not always easy to understand for a layperson like myself”, says Simone Link, a student from Nürtingen. “But from today I am convinced that these people are real experts, working and planning with absolutely accurate data.”

This is exactly what Head of Section Jochen Patt wants to achieve: “These events give us the opportunity to assure citizens that we are looking into the need for grid expansion very seriously and are certainly not taking examining the plans lightly.”

On this autumn day it is not only the citizens who are using the opportunity to receive information at an early stage; experts like Kay Höper from the wind park developer WPD have come to Stuttgart as well. After the first few presentations they are also impressed by the Agency’s expertise. The bottom line? “This day is particularly important for me to get an idea of what is happening in my professional sphere”, Mr Höper says. During the coffee breaks he uses the opportunity to talk directly to Mr Franke, as do many others.

Late in the afternoon Mr Franke is walking through the lobby of the Schillersaal, pulling his black trolley bag behind him. The press interview, which took place in parallel to the event, has just finished. “It may sound odd, but I am convinced that we can only meet our ambitious time schedule if we take more time for the people”, he says. “So I have basically saved a bit of time today”, he adds, laughing. But then he has to leave, catch the metro back to the train station and take a train to Bonn. After all, a lot remains to be done, to make sure that the construction sites of the *Energiewende* will never see such high hoardings as in Stuttgart. ■

DATA
AND FACTS

Network figures

6.14 ct

... is what private households had to pay for one kilowatt hour of gas in 2011, including taxes and duties. This means Germany comes in ninth when compared with other European countries. Sweden is ranked first with 11.76 ct/kWh.

27 %

... of the market in rail freight traffic goes to competitors of Deutsche Bahn. For long-distance passenger services their share is still below one percent.

118,000

... the number of letterboxes throughout Germany in 2012, of which approximately 6,000 belonged to competitors of Deutsche Post.

887

... network operators were in charge of approximately 1.9m kilometres of electricity lines in 2011.

2½ min.

... was the average length of a mobile phone call in 2012.

59 bn

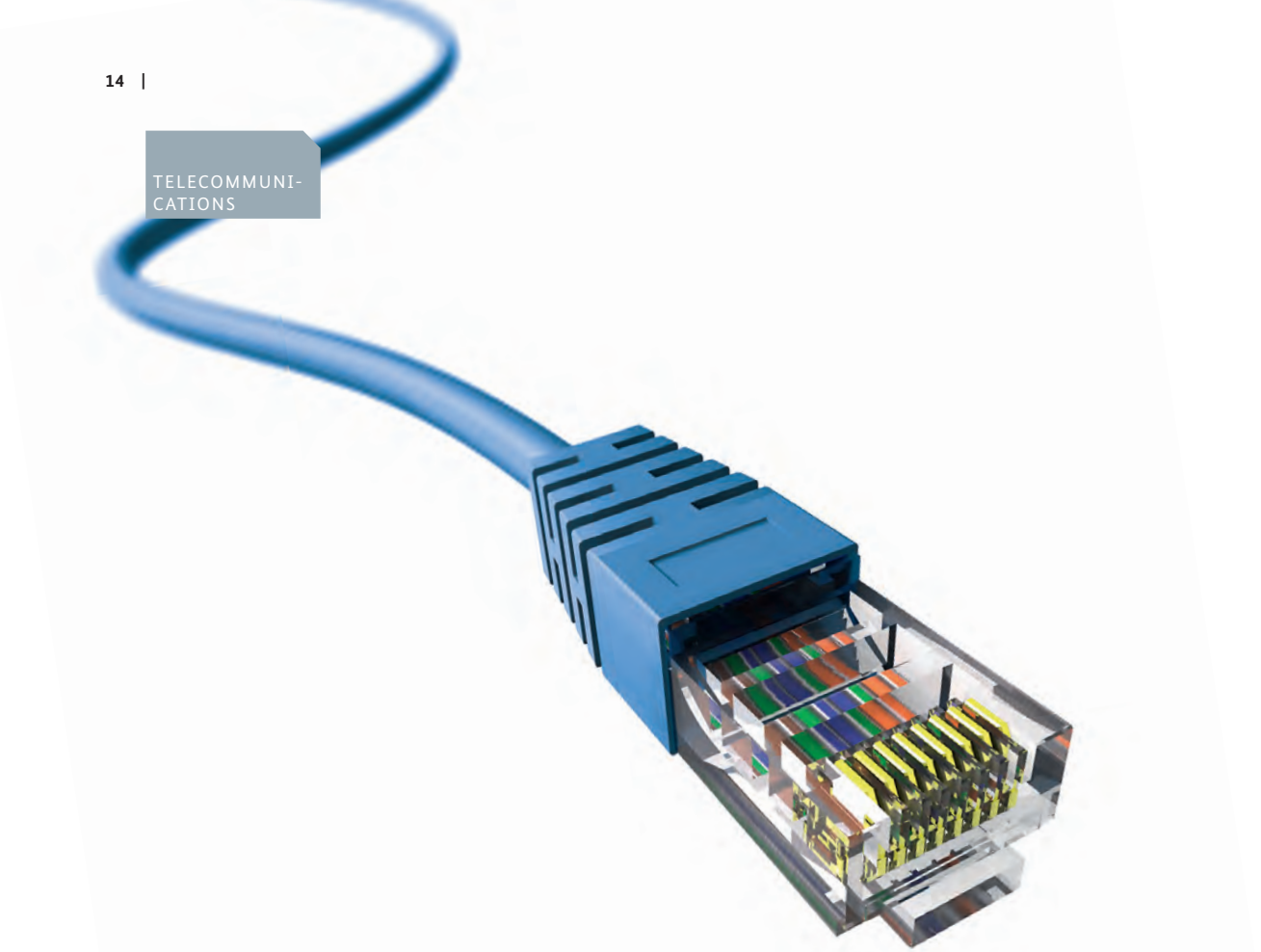
... text messages were sent in 2012. That's an average of two text messages per day from every German.

1997-2012

... saw no increase in standard letter postage. From 1 January 2013, the postage has increased from 55 cent to 58 cent.

38,000 km

... was the total length of the railway network in Germany in 2012.



Online faster

High-speed Internet connections don't just making surfing the Web easier, but are an economic necessity for many businesses. That's why the Bundesnetzagentur is supporting broadband rollout and making sure the infrastructure and speeds are transparent for all.

Network quality initiative

The ink's hardly dry on the contract but it's already clear your film is not downloading as it should. Advertised speeds are not always reached, consumers note. This can be due to several factors. How long is your line? How many people use the line at the same time? And what's the setting for your modem? Hence today many telecoms contracts do not guarantee any fixed speeds but promise only 'up to' speeds.

Customers, however, are often unaware of the extent to which what is possible in practice can differ from the maximum speed promised. Wishing to introduce more transparency, the Bundesnetzagentur therefore carried out a nationwide study on the quality of broadband Internet connections in 2012. You can view the findings of this study in German on the link below www.bundesnetzagentur.de/qualitaetsstudie. ■

Using every channel

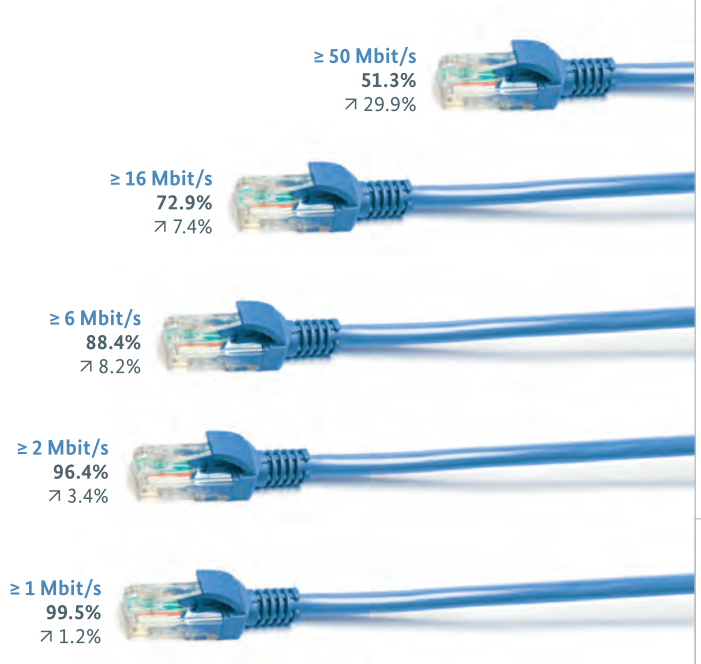
It's a long time now since the high-pitched whine of your modem told you an Internet connection was being set up on your computer. Today, high computer speeds see to faster connection to the Internet, enabling many innovative services from fields such as the media, education and medicine, plus many a modern working model not otherwise possible.

But away from the towns and cities the picture is different. Not all homes and businesses have powerful broadband connections. The reason: modern technologies, over fibre optic cable for instance, are costly; as a rule, investment is only worthwhile where there are many potential customers. Thus investment has to be made more attractive if broadband deployment in rural areas, in particular, is to progress. A solution: to fall back on infrastructures that are already available. This avoids costly civil engineering works and reduces rollout costs.

To make it easier to use these facilities, the Bundesnetzagentur maintains an Infrastructure Atlas. This lists all the existing fibre optic links, ducts and radio masts that are suitable for rolling out broadband networks. Besides the geographic location of the infrastructure, the Atlas also records the contact data of the owner. The Bundesnetzagentur makes this data available online to all participants in broadband deployment projects with the help of a geographic information system. This simplifies negotiations on shared use and enables deployment projects to be completed more quickly and at lower cost. ■

What is the route of the lines that are suitable for installing broadband cable? The Infrastructure Atlas gives detailed information on this and other such questions.

Much has happened on the broadband front since the end of 2010: coverage with connections of ≥ 50 Mbit/s rose almost 30 percent between then and mid-2012. This means that more than 50 percent of homes now have access to a high-speed connection.



More line, more speed

Meanwhile, 99.5 percent of German homes have a broadband connection of at least 1 Mbit/s. And more than 50 percent of households even have access to a high-speed connection (at least 50 Mbit/s). All-fibre-optic connections where the fibre line is run to the customer's home are rare, however – altogether there were approx one million such connections in mid-2012. Deutsche Telekom's VDSL infrastructure covers roughly a quarter of all households. Yet there is still little demand for these superfast connections: only a good one in ten with access to this infrastructure has actually requested such a connection. ■

Jochen Homann, born in Rotenburg (Wümme) in 1953, has been President of the Bundesnetzagentur since 2012. After several positions as Head of Section and Head of Department Mr Homann, who holds a degree in Economics, went on to become State Secretary at the Federal Ministry of Economics and Technology.

High voltage *issues*

Every morning when Jochen Homann, President of the Bundesnetzagentur, goes to work, he cannot avoid being confronted right away with the regulatory areas his Agency deals with. Deutsche Telekom is located only five minutes away from his workplace in Tulpenfeld in Bonn; Deutsche Post's head office tower dominates the view from his office window and the tracks of Deutsche Bahn run parallel to the Rhine just a few streets away from the main entrance of the Bundesnetzagentur's office block. In addition, to ensure he does not lose sight of the expansion of the electricity and the gas networks, Mr Homann has hung a number of maps in his office, showing the routes of these networks in Germany.

Mr Homann, looking at all these maps on the wall, your office almost reminds me of a classroom...

Well, managing the shift in energy policy, or *Energiewende*, is our key task, without, however, neglecting all our other regulatory duties at the same time. The *Energiewende* is a huge issue for the Agency and one of the major undertakings for society of our time.

What are the main challenges?

The *Energiewende* poses huge technical challenges, because we are building a whole new energy system. In addition, there is the financial challenge; after all, it takes a lot of money to establish the new structures. And, moreover, we are facing an important socio-political challenge, since the *Energiewende* and thus also grid expansion require the support of the citizens as well.

What is the role of the Bundesnetzagentur in this regard?

By fulfilling our traditional regulatory duties, that is to say regulating the network operators, we can ensure that the costs of the *Energiewende* do not skyrocket. But at the same time, we have another, completely new responsibility: the planning and approval procedures for the extra high voltage networks of the future. Our new responsibilities are also reflected in the professional backgrounds of our new colleagues; we've never had regional planners or environmental experts on board before, for example. The *Energiewende* is therefore changing not only the quantity, but also the quality of the Bundesnetzagentur's work.

Why does green energy pose such a challenge for our electricity networks?

In future, renewable energy will largely be generated by off-shore installations. It's a simple fact that there is more wind off-shore. In addition, there are many decentralised on-shore and photovoltaic systems. In general, we are witnessing a growing shift of renewable energy generation towards the north. At the same time, however, the centres of energy consumption are still to be found in the southern and western parts of Germany – it's very unlikely that BMW or Bayer Leverkusen would move north just to get closer to electricity generation, for instance. That's why we need new electricity transportation routes from the north to the south and west.

Some federal states are looking into decentralisation. Will this replace the need for grid expansion?

No, we need the big electricity highways for security of supply. It goes without saying that electricity generation will also become more decentralised due to the increasing use of new forms of energy, such as biogas, on-shore and solar power. But our networks are not yet set for the new tasks associated with these, either – that is the collection and transmission of electricity from the various distant generation sites. Grid expansion is therefore an essential component of the *Energiewende*.

So what does the decision-making process for grid expansion look like?

The decisions are made by the industry, government and citizens together. We coordinate this process. First of all the Federal Requirements Plan Act is adopted by the legislator. This specifies the start and end points of the necessary extra high voltage lines. In the specialist federal planning process, also known as regional impact

assessment, we then examine specific applications from the transmission system operators for approval of the construction of individual route corridors for lines that cross federal state or national borders. At this stage we identify potential route corridors for the construction of new electricity lines. The precise course of the routes is then determined in the planning approval procedure.

That sounds complicated. When do the citizens get a chance to participate?

The simple answer is: at any time. Every phase of the process offers possibilities for participation. All the relevant information can be found on a website set up by the Bundesnetzagentur especially for this purpose. In addition, we have started hosting a number of events all over Germany to make grid expansion more transparent and to promote greater involvement.

»That's why we must create a basic understanding of the need for grid expansion today already …«

Why do you attach such great importance to public participation?

We will not manage the *Energiewende* without public support. The political aims are very ambitious, thus expansion must proceed quickly. That's why we must create a basic understanding of the need for grid expansion today already. Later on, too, working on specific projects, corridors and power lines, we will maintain a close dialogue with the authorities and citizens. This is a completely new challenge we are facing, and it won't always be easy, but we are highly motivated.

You yourself have put the Bundesnetzagentur's case at various information events …

This was time well spent: the more transparency we create, the better progress we will make. By the way, I remember one freezing cold Sunday afternoon standing on a tractor trailer in the district of Meerbusch-Osterath to promote grid expansion. As there are plans to build a converter in this region, the citizens have, understandably, voiced concerns. And I was there to explain the complex connections and to clear up misunderstandings.

So you might need to get yourself some rubber boots …

I'm not sure if I will need rubber boots. But I can assure you that I will not be sitting in my office waiting to see what the colleagues are doing out there. After all, it is also a matter of personal interest to make the *Energiewende* a success story. My predecessor in office once said: "The Bundesnetzagentur can do it." At some point in the future I want to be in a position to say: "The Bundesnetzagentur did a good job, within the bounds of its possibilities."

Yet there is criticism not only regarding the construction work. The costs of the Energiewende are also giving cause for concern.

There's no need to beat around the bush here: investment costs money. And these costs, for example, will affect the network tariffs. However, you have to bear in mind that the network tariffs only account for a small part of the total electricity price; eighty percent of the price is independent of the network costs.

It has been said that the nuclear phase-out would threaten reliability of supply. And in winter 2011/12 there were indeed some shortages. Could something like this happen again?

That winter, the electricity grid reached its absolute limit in terms of capacity, which was probably due in particular to restricted gas supplies to crucial power plants. Moreover, it became clear that certain conventional power plants were essential to guarantee reliability of supply. Meanwhile the government has set out the necessary requirements for maintaining reserve power plants and avoiding closures.

Is this the reason why we are now identifying "systemically relevant" power plants?

Yes, until grid expansion is complete we may be required to continue operating uneconomic power plants as well. It is therefore very important that we have appropriate regulatory tools at our disposal. Once the networks have been expanded, we will have to address other key issues: how will we organise the future electricity market? Which conventional gas or coal power plants will still be necessary when the nuclear power plants have been shut down? And how will we make sure that the power plants actually get built? As you see, we still have plenty of work ahead of us. ■

Further information on this topic can be found at **www.netzausbau.de**.

RAIL

Rail diversity

The Hamburg-Cologne-Express (HKX) started operations in summer 2012. That this was possible is also largely due to the Bundesnetzagentur's endeavours over many years. The agency has opened the door to more competition benefitting all customers today.

The Hamburg-Cologne-Express has been on track since July 2012. Admittedly using wagons built in 1965 and – contrary to initial plans – under the aegis of its partner Veolia. Be that as it may: the Hamburg-Cologne-Express, HKX for short, adds to Germany's rail diversity. From Christoph Döbber's point of view this is a success. Mr Döbber, Assistant Head of Section at the Bundesnetzagentur, has monitored the process for the past five years starting with the presentation of the first business model right through to last summer's service launch. "We are happy to see that our work now benefits users. Along the crucial route Cologne – Hamburg users now have a choice between operators".

Rail competition is a subject that electrifies. A great deal of information was disseminated in the run up to the competitor's launch. An article published in a business newspaper in 2011 referred to the project as an "unbelievable plan", a year later another magazine even talked about a "revolutionary railway project". The media hype was justified for although the market had been opened up in 1996 and numerous private competitors are now battling with the Deutsche Bahn for market shares in the short-distance and regional service, the offer in the long-distance service is modest. Prior to HKX only Interconnex managed to compete with the former incumbent in the long-distance service between Leipzig-Berlin and Leipzig-Rostock.

Market access

This can be explained by several factors. The investments which need to be made by private operators in locomotives, wagons and their operation are horrendous. Market entrants not only have to raise the necessary funds but also need to gain access to infrastructure. However, the rail network and with it the allocation of train paths is in the hands of infrastructure manager DB Netz which is part of the DBAG group. Another company also belonging to this group is DB Fernverkehr AG – the heavy weight in the long-distance service – which applies for train paths from DB Netz. DB Netz is obliged to offer market access but it is not surprising that DB is not happy about possible competition, comments Mr Döbber. All the more so reason for him and his team to keep a close eye on developments to ensure that no obstacles are put in the way of potential competitors.

More competition, more legal certainty

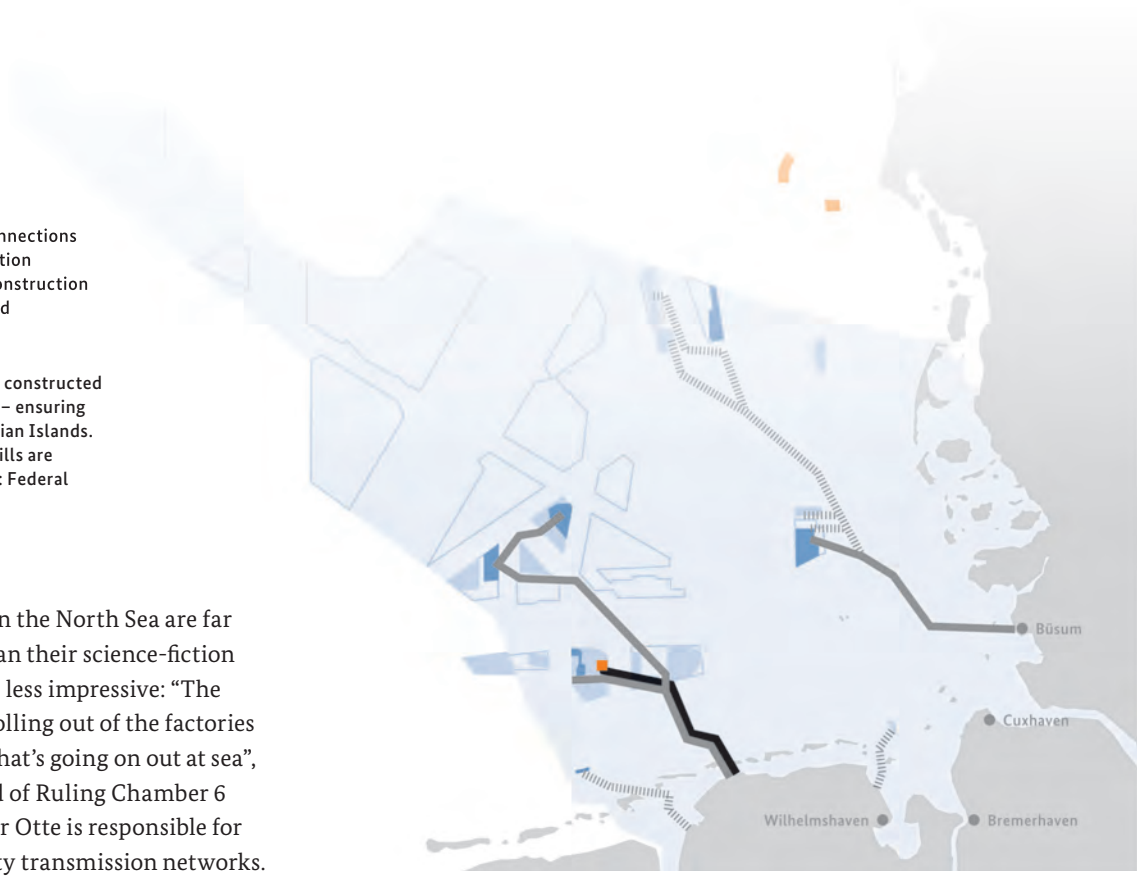
This involved, first and foremost, the clarification of legal issues surrounding framework contracts. When must framework contracts be offered for track access? And on what terms? HKX founders' requirement was obvious: rapid access to medium-term framework contracts. Otherwise, they argued, legally secure planning would not be possible. After all, investors also insist on investment security, and want to know beforehand whether their vehicles will be put to use at all.

It took a long while before the wagons rolled along the tracks. It stands to reason: in many detailed questions DB Netz was of a different opinion. The Bundesnetzagentur hence took on the role auditor, mediator and legal decision-maker. Some controversial issues even landed in court. Although the Bundesnetzagentur has not been able to assert its legal interpretation in all cases, Mr Döbber is still pleased with his work: "The main point is that HKX is operational. And more competition not only serves customers but also sends a positive signal to other potential competitors". Since a great many basic questions have been solved during the process, competitors now have greater legal certainty. "This fact obviously gives us, as regulatory authority, great pleasure", Mr Döbber confirmed. ■

Stormy Seas

From the turbine to the socket – connecting offshore facilities is not just a highly-complicated technical matter. There are also plenty of hurdles to overcome in terms of liability and financing.

They're still behind huge scaffolding. 600 tonnes of steel, welded into three-legged giants. Later, they will be drilled into the sea floor, in order to securely anchor the off-shore facilities. This is important, as the North Sea is stormy 40 kilometres from the coast, with waves several meters high. Out there, thousands of windmills will stand up to 160 metres high with blades larger than the wings of an Airbus A380 Superjumbo. When these foundations leave the factory hall for operation out at sea, they don't just look like a work of science fiction, they sound like it too. The steel giants are known as tripods, just like the three-legged overlords in the 80s sci-fi series of the same name. Generating electricity from off-shore wind farms is, from a technical perspective, a mammoth undertaking. The windmills need to be securely anchored 30 to 40 kilometres off the North Sea coast, in water up to 40 metres deep. That's why foundations like the tripods are drilled into the sea floor like giant steel nails. No wonder, if the farms are later to withstand not only the very salty sea air, but also the waves and high wind speeds.



Large off-shore wind farms are being constructed at least 30 kilometres from the coast – ensuring that they are not visible from the Frisian Islands. By the end of 2020 over 2,000 windmills are to generate electricity there. (Source: Federal Maritime and Hydrographic Agency)

Luckily, the tripods in the North Sea are far more innocuous than their science-fiction namesakes – but no less impressive: "The huge foundations rolling out of the factories give you a hint at what's going on out at sea", explains Matthias Otte, Head of Ruling Chamber 6 at the Bundesnetzagentur. Mr Otte is responsible for regulating access to electricity transmission networks. He hasn't yet been able to witness the behemoths out at sea – it's an expensive trip, and the Bundesnetzagentur is careful with taxpayers' money.

The off-shore topic isn't just making waves out in the North Sea – the planned massive expansion there has also ensured it's not all plain sailing in political or societal terms either. This isn't just due to the complex technology involved, but above all to the financing and liability issues that the topic raises.

By the end of 2020, the federal government wants to have over 2,000 windmills generating around 10,000 megawatts – the equivalent of around six modern nuclear power plants. So far, only the test facility alpha ventus is in operation with a total of 12 windmills. The majority of construction work still lies ahead. Germany is a trailblazer in this respect, as in most other countries off-shore wind farms are still built a short distance from the coast. The major project therefore also has huge export potential for the German off-shore industry. "At the moment, however, it's a real challenge", Mr Otte sums up.

In Germany, the network connections to off-shore wind farms are part of the transmission system. It's therefore the system operators who are responsible for the connection to the wind farms – in other words, for ensuring off-shore electricity is fed into the grid on-shore. They also face technical challenges. In order to broach the great distance from the facilities back to the coast, submarine cables are laid at least 1.5 metres under the North Sea. To ensure any transmission loss is kept to a minimum, despite the distance, most German wind farms in the North Sea are connected via high-voltage direct current technology (HVDC). This means that the alternate current electricity generated is first converted at transformer platforms at sea and ultimately transported to the converter stations on shore through giant DC cables. After its conversion back into AC it is fed from there into the "normal" very high voltage network.

To install the cables, special ships with a vertical injector plough a trench in the sea floor using water pressure, for example, and lay the cable. The problem with this is that when connecting the off-shore facilities in the North Sea, a cable has to be installed through part of the UNESCO-protected Wadden Sea national park – where special environmental protection conditions apply.

Faced with all these challenges it soon becomes clear: this all costs money. It's hardly surprising, then, that the wind farm owners and network operators want to make sure that their investments pay off – and that's where we encounter the next dilemma: wind farms are faster to build than an HVDC network connection can be established. "There are individual cases where the target date for completion of the network connection has been exceeded by up to two years", explains Mr Otte. But who is liable for these delays? Because this issue remained unclear until the end of last year, investments in off-shore facilities stagnated. "No-one is going to invest in a wind farm if the network connection isn't guaranteed." The transmission system operators, on the other hand, are concerned that they alone would be committed to compensating wind farm owners if the connection was delayed. TenneT, the operator respon-

sible for the North Sea even announced in November 2011 that no further network connections would be possible. Corrective measures have been taken to prevent putting network expansion – the cornerstone of the *Energiewende* from a political perspective – at further risk. New arrangements have been in place since the end of 2012 for liability in the event of losses caused by damaged or delayed transmission capacities. This now means that wind farms receive compensation amounting to 90 percent of the lost feed-in tariff for the duration of the delay or interruption to the network connection. The transmission system operators are able to pass these compensation costs on to network users for the most part in the form of an off-shore surcharge.

Just as the giant steel tripods fix the windmills to the bottom of the ocean, the off-shore topic is now firmly anchored in the Bundesnetzagentur's activities. Several departments and ruling chambers examine and confirm the transmission system operators' Off-Shore Network Development Plan, allocate capacities to wind farm connection lines, approve investment measures and monitor the transfer of compensatory payments into the off-shore surcharge.

»With this network development plan, we're ensuring the necessary power points at sea, driving forward construction of further wind farms off-shore«

Matthias Otte, Bundesnetzagentur

The new procedure for planning and implementing off-shore connections ensures that in future, transformer stations connected to the mainland are installed at the exact locations where wind farms can be expected. The Off-Shore Network Development Plan thus determines precisely which connections are established where, and when. "In this way, we're ensuring the necessary power points at sea", says Mr Otte. In turn, wind farm operators are obliged to make use of their construction permits. This aims to ensure that the connection and off-shore wind farm are ready for operation at the same time. "Ultimately, construction in advance and the costs associated with this for network users and surcharge payers are only justifiable if the connections can actually be used by the wind farms quickly", explains Mr Otte, concluding: "The change in system also involves unused capacities being consistently withdrawn and reallocated in a non-discriminatory way."

With the new arrangements, the legislator has made a clear commitment to off-shore wind energy. When implementing these provisions, the Bundesnetzagentur has to answer a wide range of new questions and resolve any transitional problems. Mr Otte and his colleagues therefore have a lot of work ahead of them over the next months in order to push forward construction out at sea. Time is of the essence, with various economic interests coming into conflict. "There's a lot of money at stake for all involved, not least consumers, who we are focussing on in particular", Mr Otte explains. It's far from smooth sailing for off-shore projects – yet Mr Otte takes a relaxed perspective: "These may be new tasks for us, but we benefit greatly from our experience in other regulatory sectors." ■

RAIL

On the right track

Cross-border rules are vital for effective competition on the railways. That's why the Bundesnetzagentur works closely together with its European partners.

Regular talks with the European Commission, the Council and the Parliament, numerous conferences along with preparation and follow-up work, frequent workshops, meetings and panel sessions with the industry, organisations and associations, as well as presiding over the annual plenary assembly. Chairing the Independent Regulators' Group – Rail (IRG-Rail) is certainly a challenge. And nobody knows this better than Dr Iris Henseler-Unger, Vice-President of the Bundesnetzagentur and – until the end of 2012 – Chair of the fledgling group of independent rail regulators in Europe. During her tenure, Dr Henseler-Unger attended a large number of these events in person. "This, for me, was particularly important in view of the increasing significance of international cooperation in the railway sector", declares Dr Henseler-Unger. "IRG-Rail is making a major contribution. And serving as Chair in the early days meant that we could play a decisive role in drawing up the timetable for our journey together."

That journey began in the summer of 2011. European cooperation in the railway sector was still in its infancy, compared to other areas of regulation. IRG-Rail was established by 15 independent regulatory bodies to facilitate cooperation and the exchange of experience between rail regulators in a market still to be fully liberalised. The goal is to ensure consistent rail regulation in the interests of a competitive internal market.

Knowing the market beyond the border

A major undertaking. For if a train travels from the Port of Rotterdam to Milan, for instance, there are not only national borders to overcome. Who has access to the railway network in which country? And at which prices? Non-discriminatory access to the networks is vital for smooth rail transport across Europe's borders. IRG-Rail develops approaches on issues of common interest, thus promoting consistency and competition

»By speaking with one voice we can play a key role in shaping the regulatory framework, too.«

Dr Iris Henseler-Unger,
Vice-President of the Bundesnetzagentur

in the European railway sector and, at the same time, guaranteeing a higher degree of efficiency and quality in the services provided.

A key step in the journey towards more competition is monitoring the market. "Only when we really know the European railway market can we begin to solve the problems by setting the right priorities", states Dr Henseler-Unger. Joint monitoring using common indicators hence aims to provide a better basis for assessment and more transparency beyond national borders. To this end, IRG-Rail's members – now more than 20 regulatory bodies – need to agree on harmo-

nised approaches: Which criteria do we want to use to monitor the market? And which standards should apply to quality parameters such as punctuality? "Here again we have been extremely successful in developing our first joint solutions", says Dr Henseler-Unger. "This is mainly down to the open dialogue within our group – and also to the knowledge that all our members are committed to the same objectives."

Shaping European legislation together

IRG-Rail also faced the task in its first year of setting the right course for the establishment of the international freight corridors. The members needed to decide how these corridors should be managed and, above all, how the bodies regulating the corridors should cooperate and who should be responsible in the event of complaints. The group was able to publish a joint position paper on these issues as early as October 2012.

Yet it is not just a matter of implementing existing EU legislation, but also of shaping the future framework conditions. IRG-Rail has therefore provided regulatory input for the recast of the First Railway Package with a total of three position papers. "These papers are by no means just paper tigers", Dr Henseler-Unger stresses. "The proposals enable us to become involved in the legislative process at European level and to play a key role in shaping the legal framework. This is a clear example of how important it is for us to speak with one voice."

Continuing to push for competition

In January 2013 Anna Walker, Chair of ORR, the regulatory body for Britain's railways, and former Vice-Chair of IRG-Rail, took on the role of Chair from Dr Henseler-Unger. She, too, has committed her one-year term to strengthening competition: "Greater competition across Europe's railways will deliver improved services and lower costs for passengers and freight customers", she declares, and adds: "we will work with the European Commission, the Council and the Parliament throughout the negotiations on the forthcoming Fourth Railway Package, continuing to push for competition." And that is only part of IRG-Rail's work programme for 2013. A total of five working groups, two of which are chaired by the Bundesnetzagentur, will develop further papers on key issues such as regulating charges. The Bundesnetzagentur alone has 20 members of staff across all its departments who are involved in this work.

To maintain consistency within the network's leadership, IRG-Rail has also established an advisory group comprising the current Chair and Vice-Chair and the previous Chair, the Bundesnetzagentur. Is there any concern in Britain that the Bundesnetzagentur wants to keep hold of the reins? "Not at all", says Anna Walker, laughing. "We are very grateful to our German colleagues not only for having laid the foundation for our future work but also for continuing to provide their advice and support. It is great credit to their leadership that we have grown so quickly, and that we are recognised as a credible stakeholder on the European stage. I look forward to continuing their hard work." ■

»Greater competition across Europe's railways will deliver improved services and lower costs for passengers and freight customers.«

Anna Walker, Chair of ORR, the regulatory body for railways in Britain, and Chair of IRG-Rail

INTER-
NATIONAL

Best regards from Europe

The Bundesnetzagentur is busy not just in Bonn making sure that the networks operate as consumers wish. No matter whether telecommunications, rail, energy or postal services – staff from a variety of departments travel far and wide to represent consumer interest in many different bodies, exchanging views with other specialists and market participants, providing input and ideas and helping to shape Europe as the people's Europe. Experts from the Bundesnetzagentur describe their work in the jungle of abbreviations.

ETSI

Name: European Telecommunications Standards Institute

HQ: Sophia Antipolis, France

Members: 700 members from more than 60 countries, representing administrations, network operators, R&D organisations, service providers, users and manufacturers

Remit: To provide uniform telecommunications standards across Europe.

What does that involve? "ETSI's activities are essentially twofold. First, the standards it sets allow equipment to work in a consumer-friendly manner. For consumers to use their smartphones while travelling in other countries, for instance. And second, it makes sure that the standardisation process is not determined by a few large corporations. That would hurt the market. Standards open up the markets to competition, which is also in the consumer's interest. Because the Bundesnetzagentur is also represented in the top-level bodies we can act as a driving force, we can represent Germany's interests and also have a certain controlling influence."
Reiner Liebler, *Head of Division, Telecommunications Technical Regulation*

More information: www.etsi.org

CEPT

Name: European Conference of Postal and Telecommunications Administrations

HQ: Office in Copenhagen, Denmark

Members: 48 European countries

Remit: As the European umbrella organisation and a forum for post and telecommunications regulatory issues to provide support for its members and promote cooperation at European level.

What does the Bundesnetzagentur do? It is represented in CEPT committees, in ECC (Electronic Communications Committee) and in CERP (European Committee for Postal Regulation).

More information: www.cept.org

ECC

Name: Electronic Communications Committee

HQ: Office in Copenhagen, Denmark

Members: All 48 CEPT members

Remit: Spectrum harmonisation

What does that involve? "VHF radios, garage door openers, smartphones, air traffic control equipment – they all need frequencies. That there's no crosstalk with a radio moderator when you're using your smartphone, for instance, is only possible if every technical application has a suitable frequency on which to operate. This has to be negotiated across national borders and care taken that manufacturers create the right technical environment."
Thomas Ewers, *Head of Section, International Frequency Coordination*

More information: www.cept.org/ecc

ACER

Name: Agency for the Cooperation of Energy Regulators

HQ: Ljubljana, Slovenia

Members: Representatives of the 27 national regulatory authorities

Remit: As a European Union body, to monitor Europe's energy markets and be responsible for their regulation particularly with a view to transparency and stability.

What does that involve? "As a result of the *Energiewende* in particular we face new challenges that cannot be met by going it alone. Across Europe, the degree of network interconnection is increasing all the time and the networks must be able to handle the steadily growing feed-in volumes from renewables. ACER coordinates cross-border trading in electricity and gas. This coordination at European level makes it possible for electricity to flow from northern to southern Europe without any problems, for blackouts to be prevented and for electricity prices not to go through the roof."
Annegret Groebel, *Head of Department, International Business*

More information: www.acer.europa.eu

BEREC

Name: Body of European Regulators for Electronic Communications

Secretariat: Riga, Latvia

Members: Representatives of the 27 national regulatory authorities

Remit: To provide a forum for cooperation both among the national regulatory authorities themselves and with the EU institutions. It is independent of the Commission.

What does that involve? "As with all regulatory issues, the aim here, too, is to promote competition. BEREC's hot topics are international roaming, broadband rollout and net neutrality. Most helpful in rolling out broadband are exchanges of views with experts from other countries in establishing best practice principles for competition-oriented investment incentives. Roaming activities include, for instance, checks on compliance with price limits. Hence we ensure that holidaymakers don't get a shock when they see their mobile phone bill upon their return."
Annegret Groebel, *Head of Department, International Regulation*

More information: www.berec.europa.eu

ITU

Name: International Telecommunication Union

HQ: Geneva, Switzerland

Members: 191 Member States

Remit: As a United Nations specialized agency, to address the technical aspects of telecommunications worldwide.

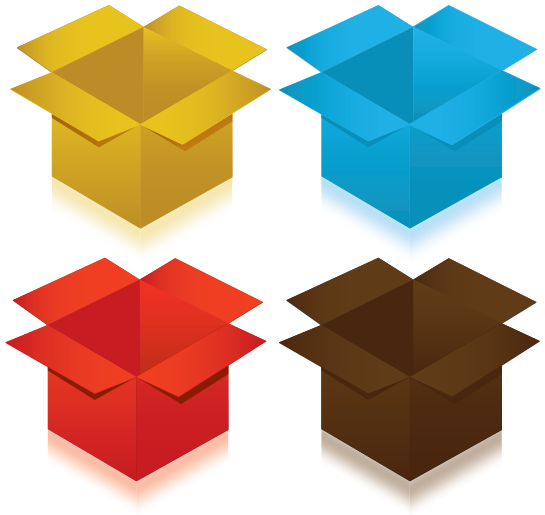
What does the Bundesnetzagentur do? "We represent Germany in the ITU in two areas: standardisation and radiocommunications. Thus we can protect our interests at international level and exchange views with experts from other countries all over the world."
Reiner Liebler, *Head of Division, Telecommunications Technical Regulation*

More information: www.itu.int

POST

From yellow to rainbow

The postal market is in a state of flux. Parcel customers have long had a choice of provider – now there is more movement in the letters market, too. And it is all down to the Bundesnetz-agentur.



All things postal in Germany are yellow? Yes. But not always. In some places you can see green or blue postboxes, too. And for a long time now you haven't had to go to the post office if you've wanted to send a parcel. You can just as easily go to a self-service parcel machine or a kiosk. "Competition in the parcels market is already well advanced", declares Manfred Schäfer, deputy head of the postal regulation department. And there is no end in sight.

The main reason is the boom in online trade and the consequent growth in domestic and international mail. The result: providers competing with the German market leader DHL are opening up more and more of their parcel shops. And there are an increasing number of places such as kiosks, dry cleaners, shoe repair shops and florists where you can take your parcels. At the same time, all the parcel operators are constantly looking for new delivery options. Delivering parcels to the workplace or at flexibly agreed times, for instance, could in future make services even more convenient for customers.

More competition in business mail

This broad spectrum of colours, which has long been a part of daily life in the parcels market, has yet to develop in the – almost entirely yellow – letters market that has been stagnant for years. Up until the end of 2007, Deutsche Post had a monopoly over letters up to 50g. But because this segment makes up around 90 percent of all of the letters market, the market as a whole was unattractive to competitors. The end of what was left of the old monopoly set things in motion: there are now some 600 active licensed operators. "And thanks to our licensing, no less than ten percent or so of the market is in the hands of new providers", Mr Schäfer points out.

It is primarily business customers who benefit, as the residential market is not very lucrative for new entrants. "The investment in the infrastructure needed, such as postboxes or other service points, is usually not in proportion to the insignificant volume of mail from residential users", explains Mr Schäfer, and he sums up: "We therefore do not expect there to be any changes to Deutsche Post's dominant position here in the near future."

The digital alternative is changing the market

The top dog could face competition from other quarters, though. A new form of communication from the telecoms sector – De-Mail – could make many letters obsolete. De-Mail comes with the promise of numerous advantages for its users, for unlike conventional email messages, De-Mails are sent via the Internet in encrypted form. And not only that: De-Mail will provide 100% proof of identity of the users sending and receiving the messages as well as of delivery. Not only does this add to security and data protection, but it will also make legally secure digital communication possible for the first time ever.

The new product has considerable potential: according to a study carried out in 2009 by WIK Consult GmbH on behalf of the Bundesnetzagentur, around 75 percent of all letters can be converted into digital form. One provider even predicts that as early as 2018 De-Mail could be replacing up to 29 percent of the expected volume of letters. "We don't know whether or not the digital alternative to the letter will really take such a hold", admits Mr Schäfer, "But it is certain to change the competitive landscape in the letters market." So the future could be more colourful still. ■

TELECOMMUNI-
CATIONS

Connections from the airwaves

Mobile broadband is giving more and more people in rural areas faster Internet connections. For communities in border areas, the Bundesnetzagentur negotiates with the neighbour countries about the spectrum.

Bayerisch Eisenstein is a rural idyll. Some 1,000 inhabitants live here in the Bavarian Forest, in the shadow of the Arber mountain. For tourists, the great attraction in winter is the ski slopes and in summer the mountains and lakes. This climatic health resort is a magnet for tourists. Hotel rooms and holiday apartments are increasingly booked over the Internet here as elsewhere, and tourists don't really want to do without their smartphone on holiday. But the Internet has tested the patience of people in Bayerisch Eisenstein to the extreme, as fast connections have been non-existent until now.

In the local offices it has been known to take 20 minutes for the fingerprints for a passport to be sent to the central register. And so the mayor, too, has demanded broadband for his borough: "Nothing works today without a fast connection to the Internet, not at the doctor's surgery, at the business consultant's or in our municipal administration", he is quoted as saying in the Bayerwald-Bote newspaper.

In search of frequencies

Opening up rural areas is a matter that concerns just such communities as Bayerisch Eisenstein. They urgently need fast connections to the Internet, but that's not always easy. "Sometimes it's the level of investment that stops the network operators from installing costly fibre optic cable or more transmitter masts, but sometimes it's simply the search for available frequencies that's tricky", Jens Franke, Head of Section for International Mobile Radio Frequency Coordination at the Bundesnetzagentur, says. In Bayerisch Eisenstein rollout of the mobile Internet has also been held up by the geographic location of this Lower Bavarian community directly on the Czech border. The railway station is the only train station in central Europe straddling two national territories. Good for German-Czech relations, but not for broadband rollout, as the spectrum needed is used on the Czech side for digital TV.

Negotiating across the borders

And so last April Vice President Dr. Iris Henseler-Unger promised the Bundesnetzagentur's support in the complex approval procedures. "Where locations on the border are concerned we negotiate directly with the administrations and often with the network operators in the neighbour countries on the spectrum usage rights", Franke says.

Successfully, in the case of Bayerisch Eisenstein. Just three months later, in July 2012, Vice President Henseler-Unger was able to see for herself at the opening ceremony for the LTE base station that fast connections from the airwaves work. And not just that: "In bilateral talks with our Czech colleagues we have found a solution that will deliver considerable improvements, not just for Bayerisch Eisenstein but for communities all along the German-Czech border", Ms Henseler-Unger reported. "Altogether, there will be ten new locations for each of the three German mobile operators in the 800 MHz band – Deutsche Telekom, Vodafone and Telefónica O_2." ■

Consumer protection **piled high**

Whether it's unauthorised promotional text messages, expensive call queues, misleading price indications, cold calling – the Bundesnetzagentur tackles customer grievances and takes action against violations of law.

If you are seeking advice on number misuse or cold calling, you may well end up speaking to Elmar Hehemann. Mr Hehemann works at the Meschede regional office, which receives all calls concerning these kinds of topics. He previously worked for the Bundesnetzagentur's predecessor institutions as a federal civil servant; he knows all the details about Postal Reform I and II – in short, hardly anyone else has such a good understanding of the history of the authority as he does. However, what's more important for people contacting him is that he is familiar with every rip-off and mean trick in the book. Mr Hehemann is an expert here, because despite being the head of the regional office, he still volunteers for the hotline service and picks up the phone personally.

The regional offices in Meschede, Neustadt an der Weinstraße, Nuremberg and Kiel have a total of approximately 60 employees. Providing detailed telephone advice is just one of their responsibilities, and for Mr Hehemann it's only the first step: "In

order to take action on behalf of the customers, we ideally need a written complaint", he says. On the phone, Mr Hehemann immediately points the caller in the direction of the forms that can be downloaded online, so that his office gets all the information required for further processing of the issue. In the event of a written complaint the issue is dealt with by the investigation team, who then examine if the case at hand constitutes a violation of any applicable law. If so, they pass on the results of their investigation to the Bundesnetzagentur's head office in Bonn.

In Bonn, another 20 colleagues work on number misuse and cold calling; depending on the legal background the case will be dealt with further by the relevant section. Thomas Sigulla, Head of Department for Regional Offices and Misuse of Numbers, also verifies such results. "We are constantly faced with new legal situations, which then require new legal assessments", Mr Sigulla says. "This is not an easy job, but a very interesting one."

Staying on top of things

This means keeping in touch with the regional offices is of huge importance for Mr Sigulla and his team. "The colleagues answering the hotline are still the ones who are best informed about the current complaints. This is why we often talk to them on the phone", Mr Sigulla continues, adding: "This intensive exchange with colleagues is yet another factor that makes my job so interesting."

It is definitely not easy to assist callers in the best possible way and to correctly assess the cases they describe, as new technical possibilities arise just as quickly as some very creative business models. From 2003, when the Agency was established, it was mainly the 0190 numbers which people paid dearly for, whereas today completely different issues come into play: there are complaints about faulty pricing indications as well as about cold calls, fax spam, prize notifications or other spam messages via mobile phone, ping calls and much more. The hotline receives roughly 2,000 calls per month – and this number grows even greater when newspapers, radio or television issue warnings against new "business models", referring to the advisory function of the Bundesnetzagentur. "This is when the complaint forms tend to pile up to the ceiling", Mr Hehemann says. And how do they manage to stay on top of all this? "We exchange information on a regular basis and discuss new topics or business models which appear suspicious", Mr Hehemann explains. The Bundesnetzagentur puts all information on number misuse and cold calling online to ensure that consumers are well informed at all times; the forms for voicing a complaint can also be downloaded there.

Quick action against violations of law

If Mr Sigulla and his staff in Bonn conclude in their final examination of the case that it constitutes a violation of the law, they react quickly. "We can have certain phone numbers disconnected, prevent billing and collection and prohibit business models", says Mr Sigulla, adding: "In the case of cold calls we impose high fines on companies using illegal marketing campaigns, stripping them of their economic advantage."

However, often colleagues answering the hotline can only assist callers to a limited extent. "We can only act if there is a violation of the law, which is not always the case. In many situations we can only caution consumers against revealing personal data too easily", Mr Hehemann continues. And what about Mr Sigulla and Mr Hehemann – are they particularly cautious themselves? "I never return a call if I don't know the number displayed on my mobile phone", Mr Sigulla says. And Mr Hehemann adds: "So far I have received one or two unsolicited marketing calls at home. My response? I don't really think I can repeat that here", he says, laughing. ■

Contacting the Bundesnetzagentur

All relevant information on number misuse and cold calling can be found online at:
www.bundesnetzagentur.de/rufnummernmissbrauch and **www.bundesnetzagentur.de/unerlaubtetelefonwerbung**

For additional information you can contact the Bundesnetzagentur:
Phone: **+49 291 9955-206**
Monday to Wednesday from 9:00 to 17:00,
Thursday from 9:00 to 18:00
and Friday from 9:00 to 16:00
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ENERGY

Optimally supplied at all times

Germany's *Energiewende* – the country's shift to green energy – entails new challenges. In 2012 the Bundesnetzagentur took on a range of new tasks designed to secure continuing supplies of electricity and gas in the future. One of its key tasks was to evaluate the Network Development Plans for the required expansion of electricity and gas networks.

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The integration of renewable energies in existing energy networks is a task which will play a critical role in the success of the *Energiewende* over the next few years. Efforts to integrate renewables into the power infrastructure were in fact the dominating factor in the work of the Bundesnetzagentur in 2012. Network operators submitted their initial plans for the expansion of electricity and gas networks for inspection by the Bundesnetzagentur.

The liberalisation of the energy market – an area in which the Bundesnetzagentur continued to be a driver of change – makes it easier for consumers to change suppliers. Consumers are now in an even better position to switch between and choose from a wide range of suppliers. The number of customers who changed to a different supplier or who agreed special contracts with their existing supplier rose again in 2012 in both the electricity and gas sectors.

New statutory regulations also changed the framework in the field of consumer protection and advice and created new tasks for the Bundesnetzagentur. Consumer rights were strengthened, in particular by speeding up the process of changing supplier and by stipulating new and more extensive contractual, information and accounting requirements for suppliers. The Bundesnetzagentur also assumed the role of the central information provider for energy consumers.

Market watch

Electricity and gas prices rose moderately for both households and for business and industrial customers in 2012. Compared with Europe as a whole, however, prices in Germany remained in the middle range.

In 2012, the Bundesnetzagentur carried out its annual monitoring of the electricity and gas markets in cooperation with the Bundeskartellamt for the first time. Detailed findings were published in a separate in-depth report in November 2012.

The 2012 Monitoring Report is available on the Bundesnetzagentur website.

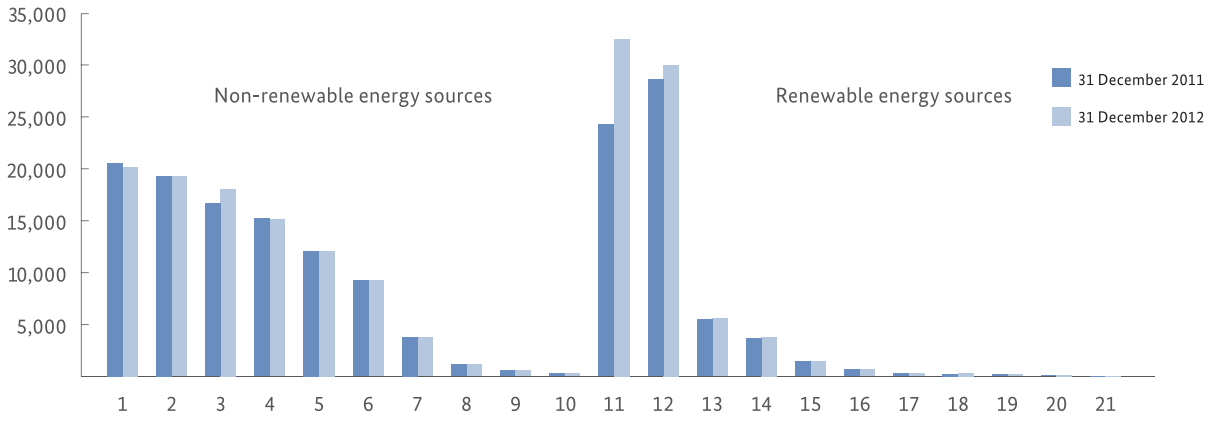
Market watch: electricity

Generation

There was a sharp rise in electricity generation capacity once again in 2012. In particular, Germany's installed solar power generation capacity leapt by 7.6 GW in the course of the year to 32.4 GW in 2012. 1.4 GW more energy was generated from both brown coal and onshore wind power. By the end of 2012 the net nominal capacity of installed generation plants was 174.1 GW. Of this amount, 74.5 GW was sourced from renewables.

To maintain secure system operation, generating capacity needs to be retained in the south of the country in particular – the area most affected by Germany's phasing out of nuclear power – in the short to medium term at least. It will be some time before expanded grids will be able to compensate for shut down power stations. Grids will have to be reinforced or constructed swiftly and the South-West Interconnector in particular will need to be finished in time for the decommissioning of the Grafenrheinfeld nuclear power plant at the end of 2015.

Evaluation of the Bundesnetzagentur's list of power plants (throughout Germany; all network and substation levels)
total electric net nominal capacity in MW (not including permanently decommissioned plants)

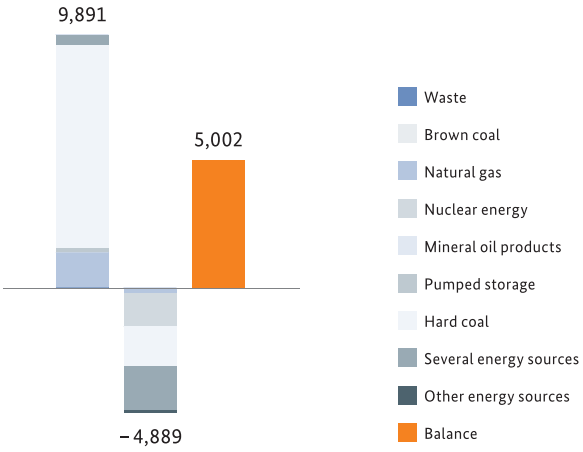


1 = Hard coal
2 = Natural gas
3 = Brown coal
4 = Several energy sources (non-renewable)
5 = Nuclear energy
6 = Pumped storage
7 = Mineral oil products
8 = Other energy sources (non-renewable)
9 = Waste (non-renewable)
10 = Mine gas
11 = Solar radiation energy
12 = Wind power (on-shore)
13 = Biomass
14 = Run-of-river energy
15 = Dammed water
16 = Waste (renewable)
17 = Landfill gas
18 = Wind power (off-shore)
19 = Several energy sources (renewable)
20 = Sewage treatment plant gas
21 = Geothermal energy

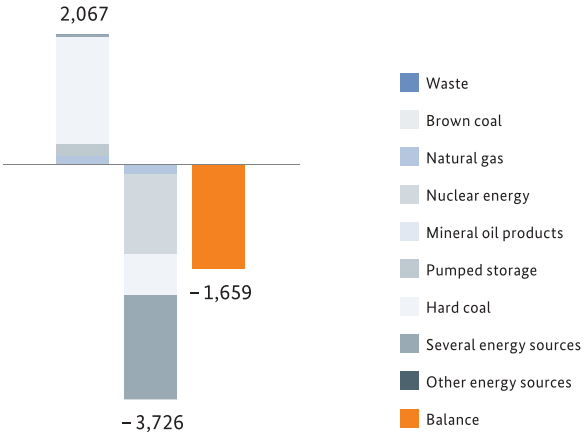
As of 1 February 2013 – back calculation: 31 December 2011

The plans drawn up by power plant operators predict for southern Germany a net reduction in non-volatile generation capacity of around 1.7 GW in the period 2013 to 2015 as a result of new and decommissioned power plants.

Start-up of commercial electricity feed-in / permanent closure of plants based on non-volatile energy sources (national planning data 2013–2015)
MW



Start-up of commercial electricity feed-in / permanent closure of plants based on non-volatile energy sources (planning data south of Frankfurt am Main 2013–2015)
MW



Electricity wholesale market

The German wholesale market for electricity was extremely liquid in 2011. Although the electricity exchange has continued to grow in importance as a trading platform, most commercial power trading continued to take the form of OTC contracts, either via broker platforms or on a purely bilateral basis. Traded volumes on all broker platforms exceeded the amount of power traded on exchanges fivefold. In addition, the amount of power traded bilaterally, that is directly between two business enterprises, was at least three times as great as the volume traded on exchanges. At the same time, trading volumes on the day-ahead market (spot market) rose by ten percent while the scale of futures trading remained much the same. Liquidity in same day trading on exchanges (intraday market) increased in 2011 by 52 percent compared with 2010. Prices on the EPEX SPOT or EEX exchanges are the reference price for the German market, including for OTC trading. Day-ahead prices for energy traded on the EPEX SPOT fell substantially in 2012. While the average price paid for one megawatt of electricity in 2011 was still €51.12, this fell to just €42.60 per MWh in 2012. This is equivalent to a reduction of around 17 percent. In fact, prices fell at all times of the day, although midday prices fell slightly more owing to the higher amount of solar power fed into the system during the middle of the day. Market prices are more strongly influenced now than several years ago by the supply of renewable energies and react significantly to extremely high or low volumes of power being fed into the grid. The substantial fall in prices has impacted electricity exports which, at a net export surplus of 22.5 TWh in 2012, were considerably higher than last year. The net export surplus for 2011 was 2.9 TWh.

Despite this, market volatility remained largely unchanged, not least due to the coupling of Germany's market with those of northern (Denmark Finland and Sweden) and western (Belgium, France and the Netherlands) market areas. Identical prices were observed in all the countries in the western market area during 47 percent of all hours. The drop in prices on the futures market was similar to the fall in prices on the spot market in 2012. At the beginning of the year 2012 the price for deliveries of power was still approximately €52.33 per MWh; by the end of the year the quoted price had fallen to €45.07 per MWh. The market expects prices to remain stable at this level in the future. This is apparent from the prices for annual futures contracts for 2014 and 2015 which, at the end of 2012, were €45.31 per MWh and €45.56 per MWh respectively.

End consumer prices: electricity

Retail prices for electricity rose by different rates between 1 April 2011 and 1 April 2012. At the same time, electricity sales remained all but stable. The average total price for industrial customers rose only slightly compared to the same period last year by 0.04 ct/kWh. For business customers the total price went up on average by 0.51 ct/kWh. There are numer-

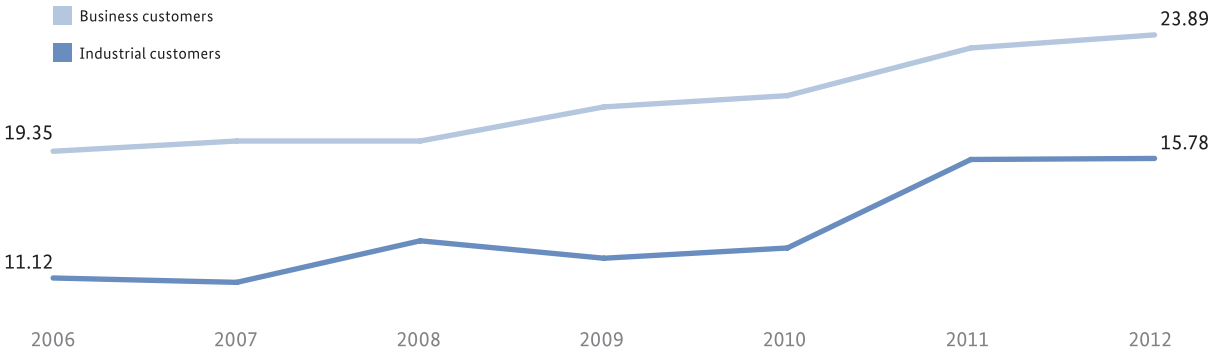
ous different reasons for these price trends. For industrial customers, the surcharges payable under the Combined Heat and Power Act (KWKG) and the Renewable Energy Sources Act (EEG), taxes and net network tariffs all went up. In contrast, the energy procurement and supply components of the price as well as billing charge components all fell. For business customers charges for meter operations went up alongside increases in taxes, surcharges under the EEG and network tariffs. The price components accounted for by energy procurement and supply, KWKG surcharges, concession fees and metering fees for this group of customers fell.

Average tariffs for default supply to household customers went up by 2.8 percent between 1 April 2011 and 1 April 2012. Price increases for all consumer groups (default supply, special contract with a default supplier, special contract with a third supplier) were less pronounced than in the previous year. Default supply continued to be the most expensive form of service. Household customers could obtain lower prices by changing contracts or suppliers. In addition to cheaper tariffs from a change of contract or supplier many energy utilities also offer special contractual conditions which make it more attractive for customers to move away from a default supply price plan.

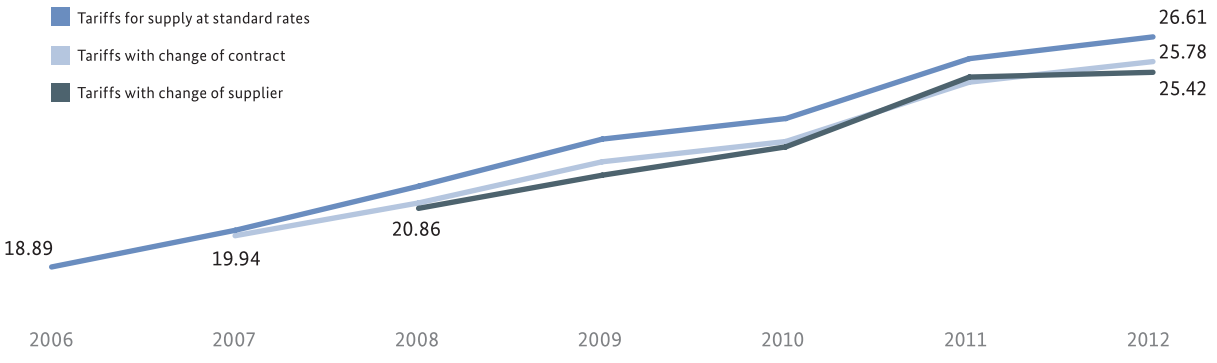
On 1 April the average electricity price for all household customers (calculated as the mean for all price plans) was 26.06 ct/kWh. Despite the price reducing impact of completed changes of supplier and contract, the average price of electricity went up by 2.4 percent compared with last year. At a price of 26.10 ct/kWh on 1 April 2012 green electricity was slightly more expensive than the average price paid by all household customers. The percentage of final customers who were supplied with green electricity rose by 2.1 percentage points to 11.8 percent. The largest cost components which go towards the price of electricity are for energy procurement and supply, taxes and network tariffs (including billing, metering and meter operations).

The principal reasons underlying the trend in average prices for households outlined here between 1 April 2011 and 1 April 2012 were higher network

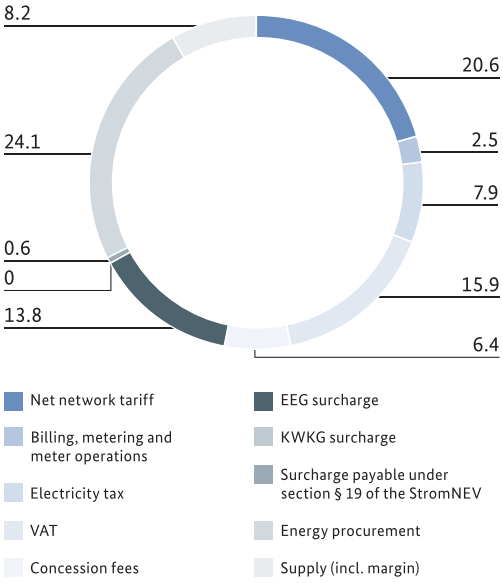
Development of electricity prices for industrial and business customers
ct/kWh



Development of electricity prices for household customers
ct/kWh



Breakdown of the electricity price for household customers 2012
%



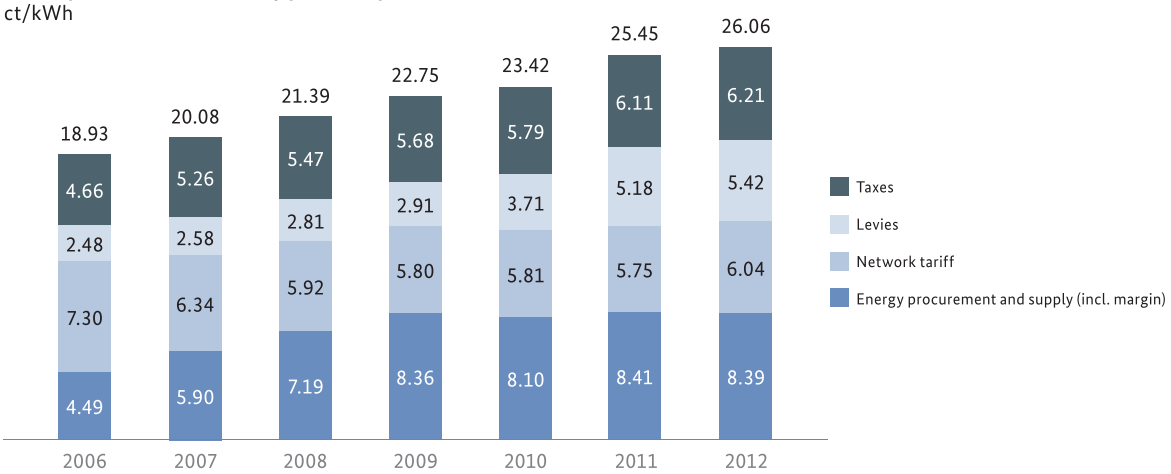
tariffs and higher taxes and levies. Net network tariffs rose by 0.32 ct/kWh and the surcharge payable under section 19 of the Electricity Network Charges Ordinance (StromNEV) by 0.15 ct/kWh compared to last year. Taxes and the EEG surcharge both went up by 0.10 ct/kWh. Reductions in the network tariff components for billing, metering and meter operations as well as the KWKG surcharge and the cost of procurement and supply were more than compensated for by the increases in the remaining price components. In 2012 network tariffs increased for the first time since regulation began after a period during which they consistently fell between 2006 and 2011 (key date in each case 1 April). Tariffs went up by five percent compared with last year. Nonetheless, over a 6-year period network tariffs have in fact fallen on average by 17 percent.

Surcharge payable under the EEG

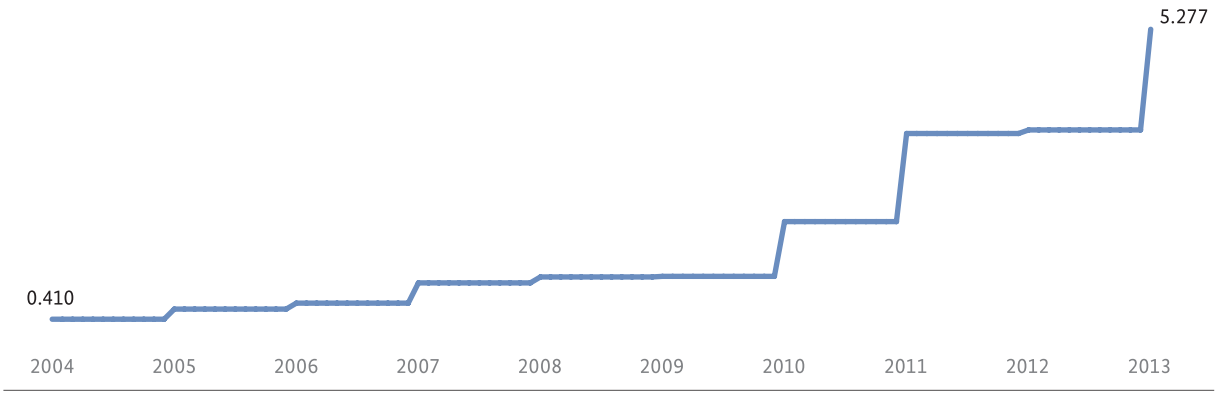
The development of the EEG surcharge and its influence on the price of electricity have been frequent topics of public debate. On 1 April 2012, the EEG surcharge made up 13.8 percent of the average electricity price and amounted to 3.59 ct/kWh.

The surcharge level is announced every year by the TSOs on 15 October for the following calendar year. The Bundesnetzagentur monitors the calculation of the surcharge to ensure that it is correct. The EEG surcharge for 2013 went up to 5.27 ct/kWh. This reflects the widening gap between EEG surcharge payments made by TSOs to operators of EEG installations and the revenue obtained from selling electricity on power exchanges. At almost 42 percent the largest share of the surcharge for the year 2013 is accounted for by photovoltaic systems (surcharge in 2012: 52 percent), followed by 21 percent for biomass (2012: 23 percent), followed by 15 percent for wind power plants (2012: 14 per cent). 13 percent is needed to cover the negative balance from the previous year (2012: five percent) and eight percent is retained as a liquidity reserve (2012: three percent). Significantly more installations eligible for compensation under the EEG can be expected.

Development of the electricity price composition for household customers
ct/kWh



Development of the EEG surcharge
ct/kWh



Breakdown of the EEG surcharge costs 2013

Items	€m	ct/kWh	%
Photovoltaic[1)]	8,528	2.207	41.82
Wind on-shore[1)]	2,708	0.701	13.28
Wind off-shore[1)]	343	0.089	1.68
Biomass[1)]	4,191	1.085	20.55
Gases + geothermal energy[1)]	41	0.011	0.20
Hydropower[1)]	171	0.044	0.84
Operational costs EEG energy sales	50	0.013	0.24
Impact of the green electricity privilege	52	0.013	0.25
Cost of retrofitting 50.2 Hz	105	0.027	0.51
Offsetting the balance (30 September 2012)	2,589	0.670	12.70
Liquidity reserve 10%	1,614	0.418	7.91
Totals	**20,393**	**5.277**	**100.00**

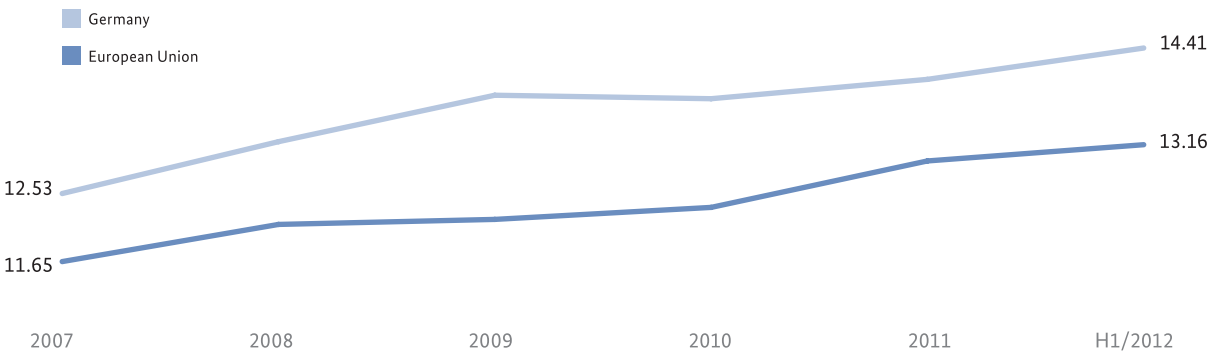
1) Differential cost EEG feed-in tariffs minus proceeds

Price comparison across Europe

A comparison of electricity prices across the EU[1] shows that, when compared with prices paid across Europe as a whole, household customers in Germany pay prices which are just higher than average prices (one ct/kWh) or which are significantly higher (seven ct/kWh), depending on whether or not account is taken of taxes and levies. Clearly price components which are determined by the state have a major influence on the actual price which consumers finally pay. At the same time, however, it is important to bear in mind that consumer prices are in fact regulated in many European countries, such as France, Spain and Italy. The comparison of electricity prices for industrial customers[2] in European countries shows that net prices (excluding taxes and levies) have fallen in recent years and are now lower than the European average. Industrial customers are benefitting from lower prices on wholesale markets. Gross electricity prices (with taxes and levies) for industrial customers in Germany in 2012 were just three ct/kWh above the European average.

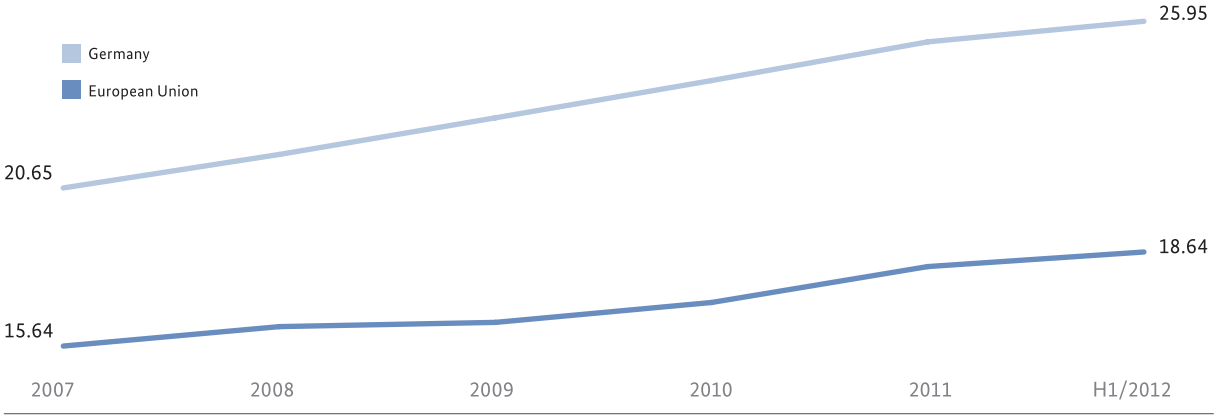
1) Source: Eurostat (http://epp.eurostat.ec.europa.eu). The statistics are for prices for household customers, averaged for the first and second six months of 2011.
2) Source: Eurostat (http://epp.eurostat.ec.europa.eu). The statistics are for prices for industrial customers which consume between 20 and 70 GWh a year, averaged for the first and second six months of 2011.

European electricity prices for household customers (without taxes and levies)
ct/kWh



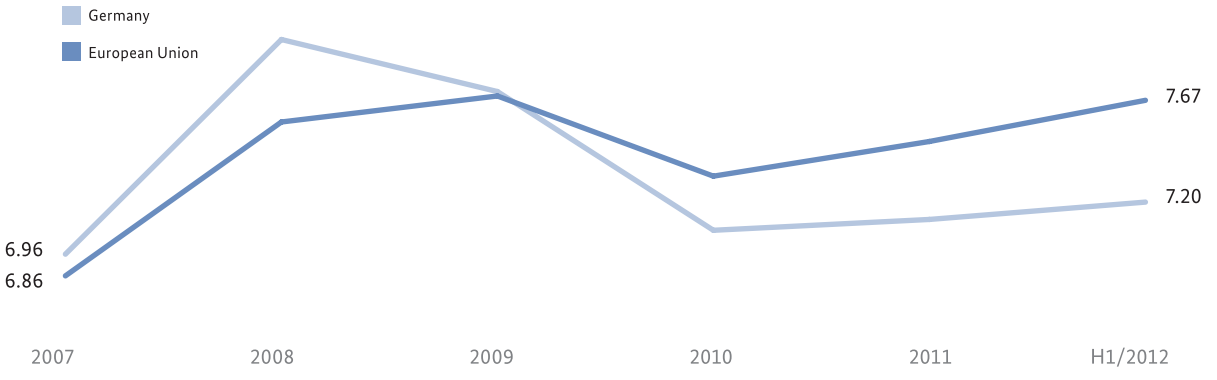
Source: Eurostat

European electricity prices for household customers (incl. taxes and levies)
ct/kWh



Source: Eurostat

European electricity prices for industrial customers (without taxes and levies)
ct/kWh

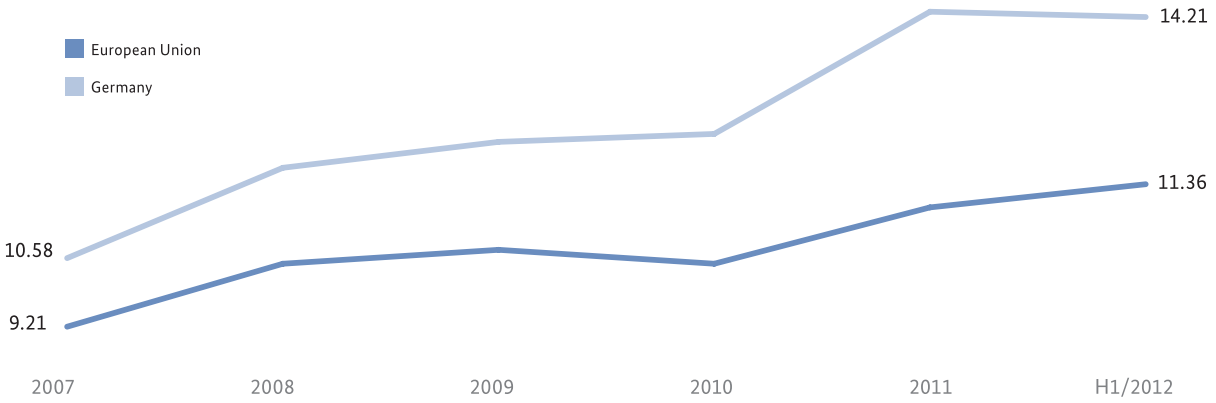


Source: Eurostat

Change of provider: electricity

Electricity customers are now even better able to switch between and choose from a wide range of suppliers. More than 50 suppliers were active in almost three quarters of all network areas in 2012.

European electricity prices for industrial customers (incl. taxes and levies)
ct/kWh



Source: Eurostat

In 2007 this was only the case in just one quarter of all network areas.

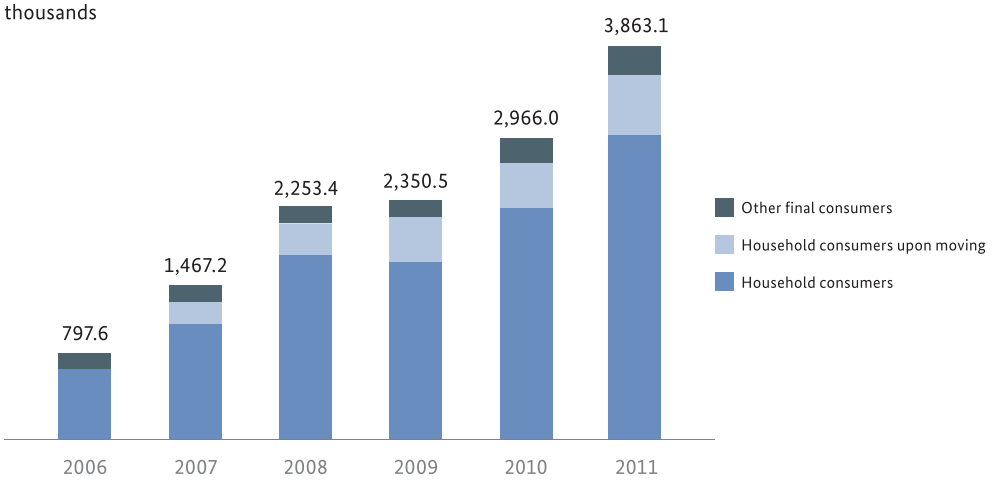
By the end of 2011 around 17 percent of household customers had exercised their right to switch to a supplier other than their default supplier. 43 percent of household customers were supplied by their default supplier under a special contract and 40 percent had not yet changed supplier or contract.

In 2011 more than 3.8 million final customers changed their suppliers, almost three million of whom were household customers who had not moved house. However, this 30 percent plus increase over last year must also be seen in the light of the special effects arising from the insolvency of a major supplier with around 500,000 customers.[3]

Read more on this topic under "Reliably supplied at all times" on page 55.

The average volume of electricity consumed by a migrating customer in 2011 was around 4,500 kWh, while the average volume of electricity consumed by a customer receiving default supply services was 2,600 kWh. This clearly illustrates that customers who use a lot of electricity are among those who are most willing to and do in fact actively change contracts or suppliers. Industrial and business customers changed supplier around 32,000 more times in 2011 than in 2010.

Change of electricity suppliers by final consumers per year
thousands



3) The customers affected initially received back up services. A large number of these customers will probably have switched from the back up service supplier to yet another supplier, so that these changes will have been counted twice.

Market watch: gas

Gas volumes and wholesale market

Gas imports rose somewhat in 2011 compared to the previous year to 1,411 TWh (2010: 1,384 TWh). Exports increased over the same period from 463 TWh to 516 TWh. Production of domestic gas continued to decline, amounting in 2011 to around 11.9bn m^3 (2010: 12.63bn m^3).

The most important sources of gas supplied to Germany are still Russia / CIS countries and Norway. However, the Netherlands, an established and liquid hub in Europe and point of arrival for liquefied gas with connections to natural gas fields in Norway and the United Kingdom, is also an important source of imports for Germany. The improved integration of national markets and more efficient management of cross-border capacities has eased trading and provided further alternatives for gas traders.

The maximum usable volume of working gas in underground storage in Germany is 22,245m m_N^3. Of this, 9,250m m_N^3 is held in cavern storage facilities and 12,996m m_N^3 in pore facilities.

On 1 April 2011 the number of market areas was reduced to one for L-gas and two for H-gas. Market areas were merged again on 1 October 2011 with the integration of the L-gas1 market areas (Nowega, EWE, Gasunie) and Gaspool; Germany therefore still has two market areas.

Germany's natural gas commodity market continued to develop dynamically. A total of 2,139 TWh (GPL: 934 TWh; NCG: 1,205 TWh) was nominated in the two remaining market areas – Gaspool (GPL) and NetConnect Germany (NCG) – in 2011.[4] This represents a rise of about one third compared to 2010. Since October 2011 cross-quality trading of H-gas and L-gas has also been offered in the Gaspool market area. Trading volumes on the EEX were up on the previous year by almost 20 percent in 2011. The largest increase in volumes was in futures trading. However, at around 52 TWh in 2011, volumes traded on energy exchanges again fell within the lower single-digit percentage range of total trades compared with over the counter volumes. There was very little change in the spread of prices for short and long-term gas procurements. The average cross-border price in 2011 was €26.01 per MWh[5]. At an average of €22.80 per MWh[6] traders were able to buy gas they needed considerably cheaper on the energy exchange or on other spot markets. Many traders and importers consequently reopened negotiations with the countries of origin.

The gas retail market contracted again in 2011. Around 15 percent less gas was sold to final consumers than was the case in 2010. The fall in consumption by private households was particularly marked, largely due to relatively warm weather in January/February and November/December 2011. In 2011, gas network operators delivered 934.61 TWh of gas to final consumers.

End customer prices: gas

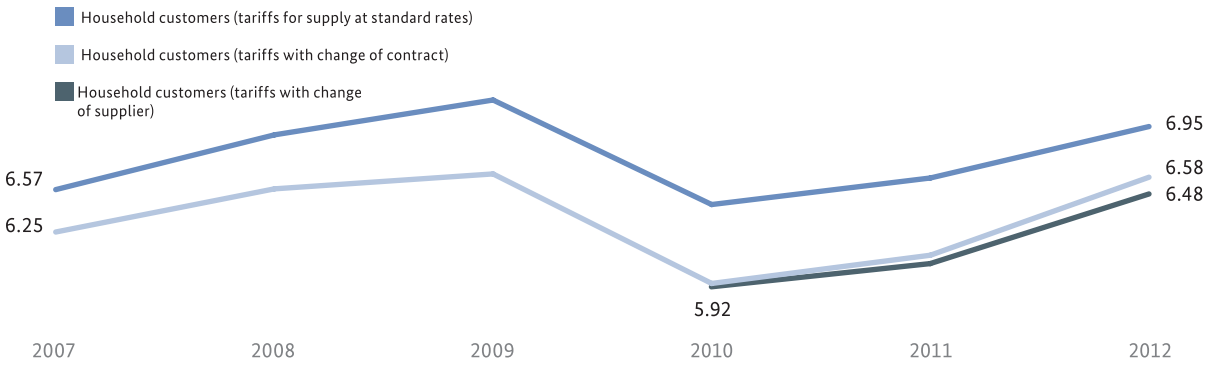
On 1 April 2012 the gas price for household customers with standard, or default, supply was 6.95 ct/kWh. This is equal to an increase in the gas price of almost five percent compared to the previous year. Net network tariffs in this consumer category were 1.16 ct/kWh, equal to a share in the total gas price of approximately 17 percent. Energy procurement and supply costs, which make up 54 percent of the retail price paid by household customers, have risen in the course of a year by around twelve percent to 3.75 ct/kWh.

The volume-weighted gas price paid by household customers who changed their contracts rose in the space of one year from 6.11 ct/kWh to 6.58 ct/kWh. This is equal to an increase in price of gas of almost eight percent. This means that gas prices in this consumer segment went up more than the price payable by consumers receiving default supply services. The cost of energy procurement and supply rose in this segment by almost 18 percent from 3.10 ct/kWh to 3.65 ct/kWh.

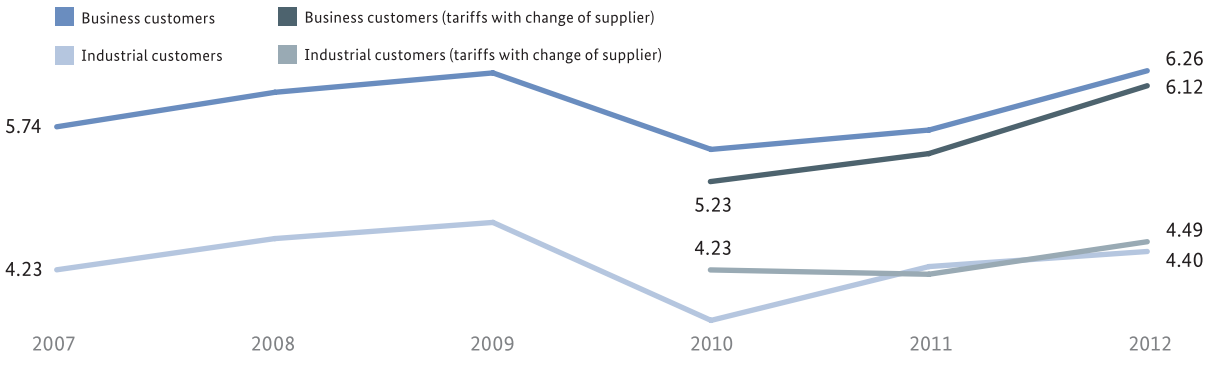
4) Sources: www.gaspool.de, www.eex.com
5) Source: www.bafa.de
6) Source: www.eex.com

The volume-weighted gas price paid by household customers who changed supplier rose in the space of one year from 6.06 ct/kWh to 6.48 ct/kWh. This is equal to an increase in price of gas of almost seven percent. The price of gas in this consumer segment also went up more than the price payable by consumers receiving default supply services. The cost of energy procurement rose in this segment by almost 18 percent, from 3.03 ct/kWh to 3.55 ct/kWh.

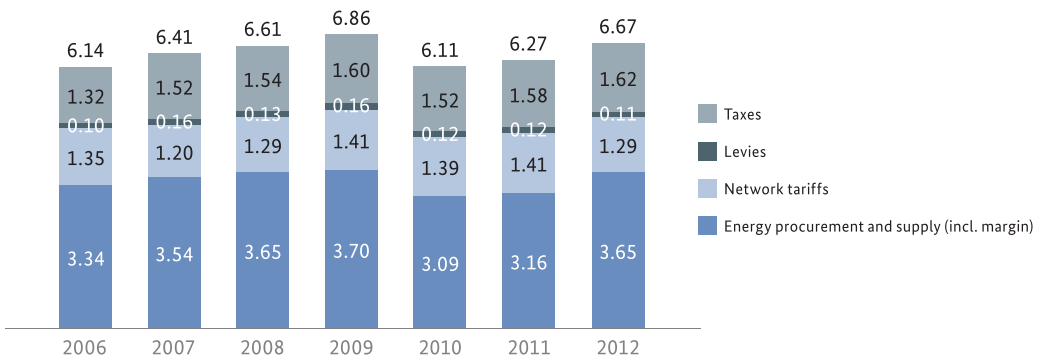
Development of gas prices for household customers
as of 1 April of each year
ct/kWh



Development of gas prices for business and industrial customers
as of 1 April of each year
ct/kWh



Development of gas prices for household customers across all tariffs
(weighted average)



All in all, higher energy procurement costs were passed on by gas suppliers to a much greater extent to customers who were supplied at tariffs arising from a change of contract or supplier than to customers receiving default supply services. Overall the price difference between tariffs for default supply and competing tariffs has closed somewhat.

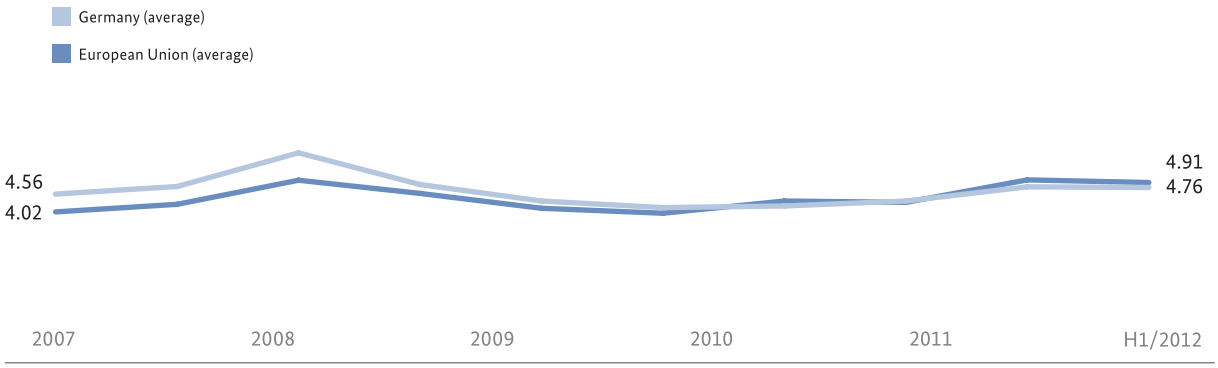
Price comparison across Europe

A comparison of gas prices in the EU shows that prices for household customers in Germany in 2011 were close to the overall European average. Excluding taxes and levies the mean calculated for Germany for 2011 was 4.57 ct/kWh; when taxes and levies are included this rises to 6.14 ct/kWh. Including taxes and levies only has a minor impact on Germany's ranking among the other European countries – without taxes Germany is twelfth, and with taxes ninth.[7]

Change of provider: gas

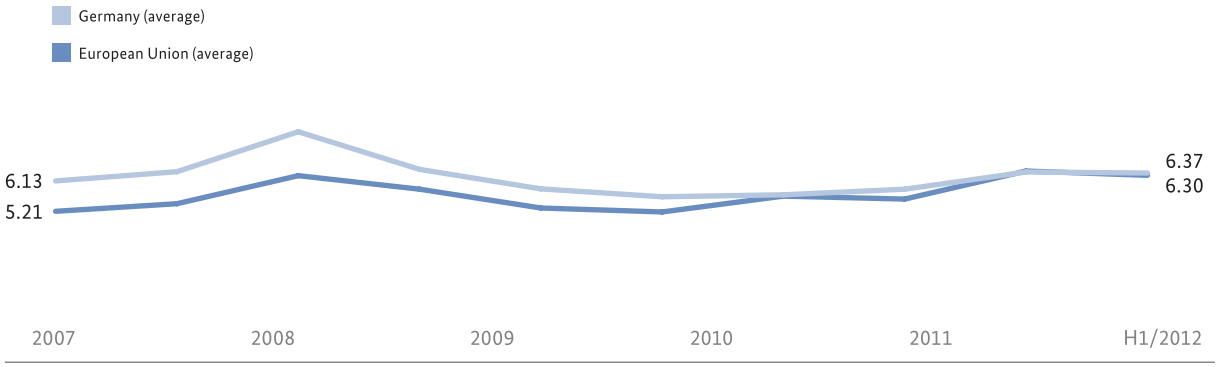
Final customers were able to choose between 31 or more gas suppliers in over 41 percent of network areas. In over 31 percent of network areas final customers even had the choice between more than 50 gas suppliers. The dynamic development of this very healthy diversity of suppliers indicates how attractive regional and supraregional gas markets are in Germany.

Gas prices for household customers without taxes
ct/kWh



Source: Eurostat

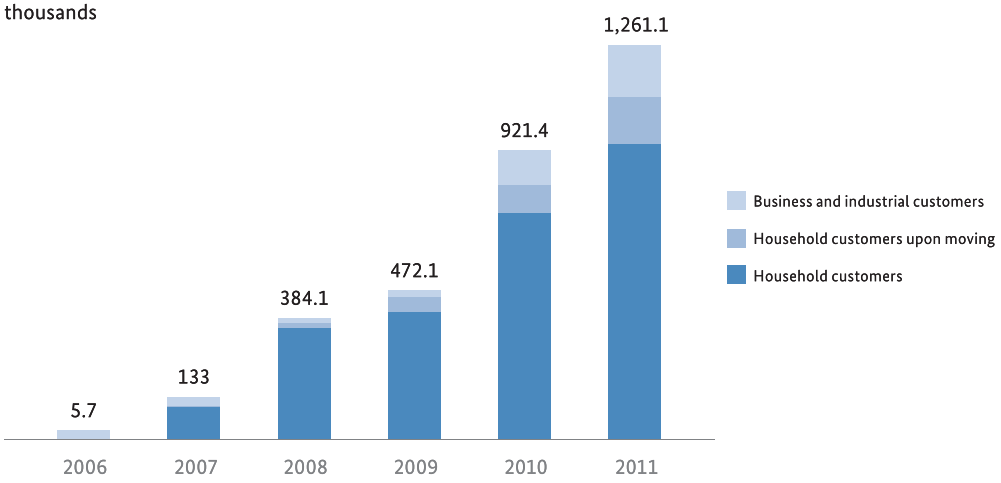
Gas prices for household customers incl. taxes
ct/kWh



Source: Eurostat

7) Source: Eurostat (http://epp.eurostat.ec.europa.eu). These findings are for households in group D2 which consume between 20 and 200 GJ, averaged for the first and second six months of 2011.

Change of gas suppliers by final consumers per year
thousands



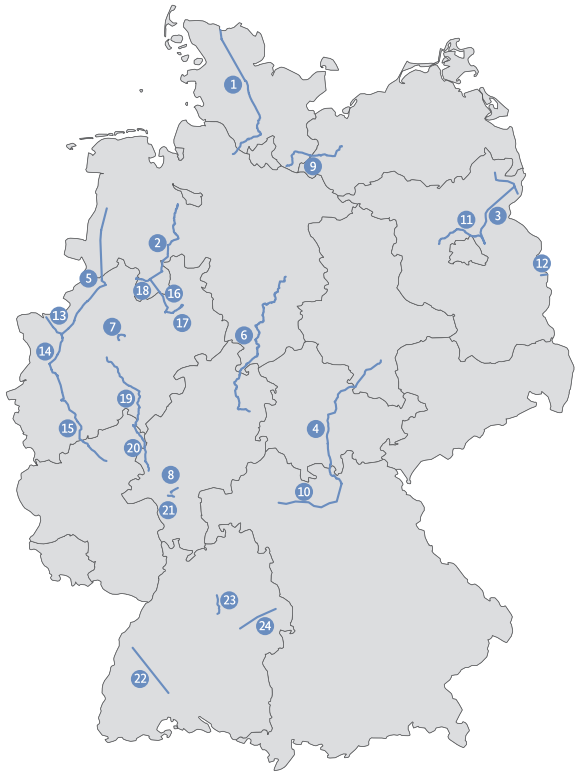
The analysis of the structure of supply to household customers as of 31 December 2011 shows a continuing positive trend. In total, 8.5 percent of households were supplied with gas from a source other than the default supplier. Around 64 percent of household customers were supplied by their default supplier under a special contract. Around 28 percent of the volume of gas delivered to household customers was supplied by the default supplier.

Over 1.2m final customers switched their gas suppliers in 2011. This corresponds to an increase of around 40 percent or 370,000 changes of supplier compared with 2010, or a relative switching rate of 11.54 percent. This ongoing positive trend in 2011 corresponds with the growing diversity of gas suppliers operating in each of the network areas referred to earlier.

Network expansion

The issue of network expansion dominated much of the work of the Bundesnetzagentur in 2012. Dialogue with the public played a crucial role in this context.

Priority lines in accordance with the Power Grid Expansion Act 2009 (EnLAG)



1 Kassø (Dänemark) – Hamburg Nord – Dollern
2 Ganderkesee – Wehrendorf
3 Neuenhagen – Bertikow/Vierraden – Krajnik (Poland)
4 Lauchstädt – Redwitz (as part of the connection Halle/Saale – Schweinfurt)
5 Diele – Niederrhein
6 Wahle – Mecklar
7 Bergkamen – Gersteinwerk
8 Kriftel – Eschborn
9 Hamburg/Krümmel – Schwerin
10 Redwitz – Grafenrheinfeld (as part of the connection Halle/Saale – Schweinfurt)
11 Neuenhagen – Wustermark (as first part of the Berlin Ring)
12 Eisenhüttenstadt – Baczyna (Poland)
13 Niederrhein/Wesel – Dutch border (in the direction of Doetinchem)
14 Niederrhein – Utfort – Osterath
15 Osterath – Weißenthurm
16 Wehrendorf – Gütersloh
17 Gütersloh – Bechterdissen
18 Lüstringen – Westerkappeln
19 Kruckel – Dauersberg
20 Dauersberg – Hünfelden
21 Marxheim – Kelsterbach
22 Weier – Villingen
23 Neckarwestheim – Mühlhausen
24 Bünzwangen – Lindach – Goldshöfe

There is now a broad consensus in society at large as well as in the political world about the objective of rapidly implementing the *Energiewende*. Stepping up the use of renewable energies even further and expanding the grid will both be of crucial importance in achieving this objective. The changed structure of generation and the planned phasing out of all German nuclear power plants by the year 2022 mean that electricity will have to be transported over long distances. Electricity produced by wind farms and new conventional power stations in northern Germany will have to be transported to the centres of energy consumption in the south and west of Germany. The green light for accelerating the rollout of the required grid infrastructure was given in 2011 with the amendment of the Energy Act (EnWG) and the coming into force of the Grid Expansion Acceleration Act (NABEG).

In fact it had already become apparent back in 2009 – well before the decision to implement the *Energiewende* – that transmission networks would have to be expanded much faster. It was this insight which led the German Parliament to pass the Power Grid Expansion Act (EnLAG) which specifies a total of 24 urgent transmission line construction projects. Federal state authorities are responsible for implementing these projects in their own geographical areas. The Bundesnetzagentur regularly documents the status of approval procedures for each project.

More information about the planning, approval and implementation status of these projects is available at www.netzausbau.de/enlag-monitoring.

Expanding the electricity grid

Grid expansion in five major steps

The Bundesnetzagentur is contributing to the accelerated expansion of the grid by identifying needs as well as planning and approving very high voltage transmission lines. The legislative amendments introduced a new five-stage procedure for determining the necessity and priority of very-high voltage lines in order to secure energy supplies and for their planning and approval. One of the key objectives is to significantly speed up planning and approval procedures and at the same time to enhance transparency by ensuring that the general public is involved throughout the entire process. Extensive public participation is consequently envisaged at every stage of the procedure.

The TSOs are required by law to draw up a joint scenario framework for the development of the energy sector once a year. This framework encompasses at least three development paths (scenarios) which outline the range of probable developments on the way to achieving the German government's energy policy objectives in the next ten years. The scenarios contain different assumptions regarding the production and consumption of energy, for example, and lay the groundwork for the joint national Electricity Network Development Plan which TSOs are also required to draw up annually, and the Offshore Network Development Plan.

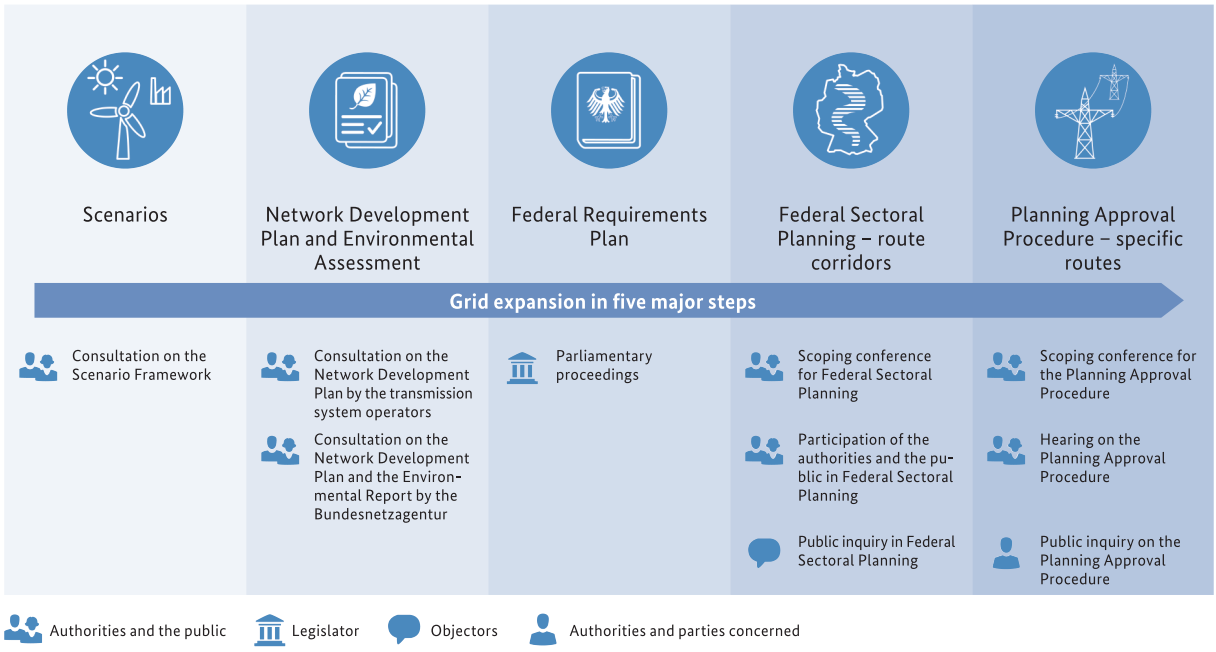
The Bundesnetzagentur approved the first scenario framework as the basis of the Electricity Network Development Plan 2012 in late 2011. The law requires a new plan to be drafted every year and preparatory work on the Electricity NDP for 2013 consequently began in parallel to the work on the first Electricity NDP in 2012. In this context TSOs submitted to the Bundesnetzagentur the draft copy of the second scenario framework which forms the basis of the NDP 2013. The Bundesnetzagentur approved the draft of the second scenario framework at the end of November 2012.

Approval of the scenario framework was preceded by a full comprehensive official and public consultation procedure. The Bundesnetzagentur published the draft of the second scenario framework on its website at www.netzausbau.de in July 2012 and gave the general public, downstream system operators and public agencies until the end of August 2012 to express their views. The substance of many of the comments submitted related to the assumptions concerning installed renewable and conventional generating capacity. Other issues included consumption and loads, capping of generation peaks and the regionalisation of installed generating capacity from renewables.

At the end of the consultation the Bundesnetzagentur invited participants, representatives from the federal states and the TSOs to a public workshop at which the comments were discussed.

The second scenario framework is based on the same basic characteristics as the first. The time horizon was extended by a year up to 2023. B 2023 is the central reference development scenario of realistic, medium-level expansion of renewable energies. This scenario is flanked by scenario A 2023 (moderate expansion of renewable energies) and scenario C 2023 (highly ambitious expansion of renewable energies, and wind power in particular).

Public participation in grid expansion



Scenario Framework for the Electricity Network Development Plan 2013

	Installed generating capacity [GW]				
Energy source	**Reference 2011**	**Scenario A 2023**	**Scenario B 2023**	**Scenario B 2033**	**Scenario C 2023**
Nuclear energy	12.1	0.0	0.0	0.0	0.0
Brown coal	20.2	18.0	17.6	11.8	17.6
Hard coal	26.3	31.9	25.7	20.2	25.7
Natural gas	26.5	23.2	33.0	41.0	33.0
Oil	3.8	2.7	2.7	1.0	2.7
Pumped storage	6.4	11.0	11.0	11.0	11.0
Other forms of conventional electricity generation	4.1	3.3	3.3	2.3	3.3
Total conventional electricity generation	**99.4**	**90.1**	**93.3**	**87.3**	**93.3**
Hydropower	4.4	4.5	4.8	5.0	4.8
Wind on-shore	28.9	45.7	49.3	66.3	86.0
Wind off-shore	0.2	10.3	14.1	25.3	17.8
Photovoltaic	25.3	55.3	61.3	65.3	55.6
Biomass	5.5	8.1	8.5	9.0	7.3
Other forms of renewable electricity generation	0.9	1.0	1.5	2.3	1.4
Total renewable electricity generation	**65.2**	**124.9**	**139.5**	**173.2**	**172.9**
Generation in total	**164.6**	**215.0**	**232.8**	**260.5**	**266.2**
	Net electricity demand [TWh]				
Net electricity demand	536.8	535.4	535.4	535.4	535.4
	Annual peak load [GW]				
Annual peak load	86.4	84.0	84.0	84.0	84.0

The TSOs were also asked to produce three sensitivity analyses by 1 July 2013. These analyses should take account of three things: firstly, a significant reduction in net electricity demand and the annual peak load, secondly, capping of generation peaks from onshore wind power plants and, thirdly, regionalisation of installed generating capacity from renewables independently of the renewables expansion targets of the federal states. These three requirements reflect key concerns of the parties which took part in the consultation.

More information, including on the scenario framework for the Network Development Plan 2013, is available at www.netzausbau.de.

The national Network Development Plan as the basis of the Federal Requirements Plan

The TSOs are now required to submit an annual joint national Electricity NDP for endorsement by the Bundesnetzagentur. After confirmation of the first scenario framework the TSOs began work on the first draft for the Electricity NDP 2012 which was published on their websites in May 2012, giving the general public, downstream system operators, public agencies and the federal states' energy supervisory authorities opportunity to make their views known by July 2012. The draft Electricity NDP 2012 was revised by the TSOs in the light of this public participation and submitted to the Bundesnetzagentur for review and approval in August 2012.

The Bundesnetzagentur used these drafts in its strategic environmental assessment and documented its findings in an environmental report. The framework for the strategic environmental assessment was

defined at a scoping conference held in early 2012 following detailed consultation with the affected network operators, representatives from the appropriate authorities and associations.

The environmental report identified, described and evaluated the projected significant environmental impact of grid expansion. The Bundesnetzagentur considered both negative and positive effects. The environmental report is made up of a general section on the impact of very high voltage lines on protected goods under the Environment Impact Assessment Act (UVPG) and a presentation of the potential impact on the environment in the areas of study. Protected goods under the UVPG are:

- people (including human health);
- animals, plants and biological diversity;
- soil, water, air, climate and landscape;
- cultural and other material assets as well as
- the particular interactions between these protected goods.

In accordance with statutory requirements the Electricity NDP 2012 does not contain any specific transmission routes or route corridors for electricity lines, but simply connection points (where a network starts and ends) which must be linked in order to avoid congestion in the network. This produced pairs of points between which the grid would have to be reinforced or built from scratch, which formed the framework for the strategic environmental assessment. The Bundesnetzagentur evaluated the environmental impact for an elliptical area covering the two defined points. This means that the Bundesnetzagentur has

Overhead or underground?

New electricity transmission lines have to be built. There are two possible ways of going about this: familiar overhead lines or cables which are laid underground. Which of these two solutions is appropriate will need to be decided in each individual case.

The appearance of electricity pylons, interference with the migratory routes of birds, adverse impact on cultural landscapes – these are all reasons for preferring the use of underground cables even for very-high voltage transmission lines. In some cases underground cables are assumed to have less effect on people and the environment simply because they are not visible.

However, there are certain disadvantages with underground technology as well. Laying cables involves more work, their construction is more expensive – in some cases, depending on the method of calculation used, from 3 to 13 times as expensive as erecting overhead lines. It is not the case either that underground cables have no impact at all on the environment: in fact the routes they follow are clearly visible in forested areas and burying and operating cables have a significant impact on the soil, water, flora and fauna.

To date very little practical experience has been accumulated concerning the effects of underground very-high voltage lines. The aim is therefore to begin with pilot projects which will allow the opportunities and risks of burying cables in the ground to be weighed up more effectively. Whether overhead lines or underground cables should be used on a specific route will be examined in detail at later planning and approval stages.

studied an area which all but certainly covers all potential future routes. The precise location of transmission routes will only be determined and examined at the next planning and approval stage. A more detailed and specific assessment of the environmental impact of such work will be undertaken at this stage.

In September 2012 the Bundesnetzagentur published the revised draft of the Electricity NDP 2012 with the accompanying draft environmental report. Both documents were made available for consultation until November 2012. The Bundesnetzagentur received a total of 3,300 responses, mostly from individual citizens. Most of the concerns expressed related to the potential impact of grid expansion on landscape features and to the potential loss in value of property in the vicinity of possible new routes. Electric and magnetic fields were also matters of considerable concern. Other issues included the consideration of alternatives, the scenarios on which the NDP is based, the areas crossed by specific route corridors, economic impact and procedural formalities. The results of this dialogue with the public were taken into account by the Bundesnetzagentur in its review and endorsement of the Electricity NDP 2012 and the subsequent 2012 environmental report.

After evaluating all the responses submitted and completing its final review of the plan, the Bundesnetzagentur endorsed the bulk of the NDP 2012 on 26 November 2012 and submitted the plan to the German government with the revised environmental report as a draft for the Federal Requirements Plan.

The TSOs proposed 74 optimisation, reinforcement and expansion measures for electricity transmission systems in their draft for the 2012 Electricity NDP. The Bundesnetzagentur confirmed 51 of these proposals. Three of the four HVDC corridors proposed by TSOs were also confirmed. As a result, the confirmed Electricity NDP 2012 now details upgrading measures along 2,900 kilometres of existing routes and around 2,800 kilometres of new routes.

In endorsing the Electricity NDP 2012 the Bundesnetzagentur paid particular attention to whether the draft as submitted included all the effective measures necessary for ensuring safe and reliable network operations over the next ten years. In this context the criterion of necessity is of particular importance.

In the years ahead changes in the scenario or legal framework may bring about a situation in which network planning and the need for particular measures must be reconsidered. It is therefore quite possible that measures which have not been confirmed by the Bundesnetzagentur for the Electricity NDP 2012 may become necessary in the future.

Draft Federal Requirements Plan

The federal cabinet passed a draft Federal Requirements Plan Act in December 2012. With the adoption of the Federal Requirements Plan by the legislator the need for, and priority of the projects specified in the Plan to secure energy supplies is confirmed. The draft Federal Requirements Plan also ratifies compliance of the specified projects with the objective of the EnWG, which is to ensure the safest, most low-cost, consumer-friendly, efficient and environmentally compatible grid-based supply of electricity possible, with electricity being increasingly taken from renewable sources.

Outlook on federal sectoral planning and the planning approval procedure

Following the passing of the Federal Requirements Plan by the legislator it is now the task of the TSOs to define specific areas within the framework of subsequent federal sectoral planning and to make applications to the Bundesnetzagentur for around 500 to 1,000 metre wide route corridors for inter-federal state or transboundary projects stipulated in the Federal Requirements Plan.

Guidelines which have been agreed with the federal states have been published on the Bundesnetzagentur's website at www.netzausbau.de to ensure that federal sectoral planning can begin promptly. The guidelines were agreed with representatives from industry, associations and public authorities at an early stage and provide information about the procedures, review focus and methods used during federal sectoral planning.

Dialogue with the public

The expansion of transmission networks lies at the heart of the *Energiewende*. In order to achieve and increase the public acceptance which is necessary for grid expansion the Bundesnetzagentur provides information which is tailored to the interests of particular stakeholders in addition to the numerous consultative procedures which are required by law.

The Bundesnetzagentur organised a series of "technical dialogue" events in March and April 2012 on "storage technologies", "decentralisation and grid expansion" as well as "overhead power lines and underground cables". The purpose of these events was to promote exchanges on specific issues between actors in the worlds of industry and academia, as well as with policymakers and citizens.

The Bundesnetzagentur ran an information campaign to accompany consultations on the Electricity NDP 2012 and the environmental report, both of which were made available on CDs and USB sticks. The campaign further included the distribution of information brochures and an advertising campaign launched in national publications. Six regional information events were also held in Bonn, Nuremberg, Hamburg, Erfurt, Hanover and Stuttgart. Information days attracted a great deal of public interest despite the early planning stage. On average around 120 representatives from associations, businesses and public authorities as well as policymakers and citizens took part. The focus of these events was on providing information and explanations as well as facilitating dialogue and a transparent procedure in the form of discussions with specialists and with interested members of the general public. The events concentrated in particular on issues such as bundling options, underground cabling, decentralisation and regional energy autarchy, progress on implementing the projects specified in the Power Grid Expansion Act and questions relating to the effects of electromagnetic radiation. In this respect the scientific input into the events provided by experienced experts proved particularly valuable. Other specialist symposia were also held in collaboration with national associations of local authorities and the German Chamber of Commerce and Industry.

A new website (www.netzausbau.de) was created alongside the Bundesnetzagentur's general internet presence. This new website focuses on grid expansion and, amongst other things, provides all the relevant documents and further information on procedures and current grid expansion work.

A citizens' service was set up to handle questions relating to grid expansion.

More on this topic can also be found in "Good networking" on page 10 of the magazine section.

National and international co-operation

The Bundesnetzagentur set up a federal sectoral planning advisory council in June 2012 which supports its efforts to reach viable decisions on the approval of transmission line projects in the context of grid expansion. In particular, this advisory council advises the Bundesnetzagentur on fundamental issues relating to sectoral planning at the federal level, the drafting of the federal grid plan and planning approval procedures. The advisory council is an important link between the Bundesnetzagentur and the federal states. This link is necessary because planning and decisions at state level must be involved at every stage – from preliminary routing through to the ultimate designation of route corridors and, if necessary, planning approval for precise plots of land. It will only be possible to achieve the best outcomes if all stakeholders work together. The federal sectoral planning advisory council provides an appropriate forum.

The European Network of Transmission System Operators for Electricity (ENTSO-E) published the first legally binding European network development plan in July 2012. The draft version of the Ten-Year Network Development Plan (TYNDP) 2012 was submitted by the association for consultation in March 2012. The TYNDP 2012 comprises more than one hundred grid expansion projects of European importance for 52,300 km of power lines. This corresponds to an investment volume of around €104bn, of which around €23bn would be invested in the construction of sub-sea cables. Almost one third of the projects covered by the TYNDP 2012 concern Germany.

With reference to the draft 2012 Electricity NDP issued by German TSOs the Bundesnetzagentur informed all its immediate neighbouring states (Belgium, Denmark, France, Luxembourg, Netherlands, Austria, Poland, Switzerland and the Czech Republic) and the UNECE about the overall procedure, the review of and consultation on the NDP and the environmental report as well as on the transboundary contents of the Electricity NDP 2012 in the summer of 2012. The involvement of affected neighbouring states in these transboundary federal sectoral planning procedures was announced in accordance with the SEA Protocol/Espoo Convention.

Expanding the gas network

Gas Network Development Plan 2012
The Bundesnetzagentur endorsed the scenario framework for the Gas NDP 2012 on 6 February 2012 with the assumptions it includes on the development of the extraction, supply and consumption of gas. The scenario framework covers three main scenarios which describe a broad development path for high and low gas requirements by final consumers and electricity and CHP generation. Starting from current gas requirements, all the scenarios up to the year 2022 predict a reduction of between 3 and 16 percent.

Based on the endorsed scenario framework the 14 gas TSOs drew up a draft version of the first national Gas NDP 2012 and submitted this to the Bundesnetzagentur for endorsement in early April.

The draft plan comprises measures for the needs-oriented optimisation and reinforcement as well as expansion of the gas transmission system which will be required in the next ten years in order to guarantee security of supply. Despite the overall downward trend in gas consumption there is still a need to expand the transmission system.

The Bundesnetzagentur launched the consultation on the Gas NDP 2012 on 30 April 2012. In order to facilitate the consultative procedure the Bundesnetzagentur developed a catalogue of questions on the draft submitted by the gas TSOs which, in particular, addressed the conflict in objectives between capacity products and the costs of expanding the network as well as possible ways of resolving this conflict. Market participants were also asked to express their views on the proposed expansion measures, the findings of the power-to-gas analyses and studies of security of supply. Furthermore they were asked whether they considered it would be useful and appropriate to make extensive and costly improvements to the draft as submitted which would also enable account to be taken of the conclusions drawn from the supply shortages encountered in February 2012, or whether the revision should be integrated in the Gas NDP 2013.

In addition to the written consultation, the Bundesnetzagentur also held workshops on core issues arising from the Gas NDP in June 2012 (eg on storage facilities and gas-fired power plants). A public hearing also gave market participants an opportunity to express their views on the draft Gas NDP verbally.

After evaluating the outcomes of the consultation the Bundesnetzagentur sent a change request relating to the Gas NDP 2012 to the gas TSOs on 10 December 2012. Specifically, the Bundesnetzagentur asked gas TSOs to change the way network expansion measures are presented in the plan and to provide more detailed explanations of the methodological approach used to model networks. It also required specific gas TSOs to carry out network expansion measures in three cases.

The measures outlined in the Gas NDP 2012 are binding as soon as the change request has been received. This means that, if this has not happened already, gas TSOs must begin work on planning measures immediately. Pipeline construction projects over a length of almost 1,321 km and additional compressor capacity of approximately 485 MW will be required by the year 2022. The Bundesnetzagentur will review progress on implementation of the expansion measures in the Gas NDP 2012 on an ongoing basis.

Gas Network Development Plan 2013
In parallel to the implementation of the change request the gas TSOs are already in the process of modelling and drafting the Gas NDP 2013 on the basis of the scenario framework endorsed by the Bundesnetzagentur on 18 October 2012.

The key changes in the gas scenario framework 2013 compared with the previous year concern wide-ranging revisions to the modelling approach and variants. In their new modelling approaches the gas TSOs have taken on board the discussions on the Gas NDP 2012 and the suggestions made by the Bundesnetzagentur. The new modelling approaches are intended to help resolve the conflicting objectives of capacity products and overall economically acceptable grid expansion measures. The background here is that – quite differ-

ently from the expansion of electricity grids – the expansion of gas networks is not only driven by the removal of congestion, but also by demand for commercial capacities. The medium requirements scenario will therefore define the capacity requirements and connection of new storage facilities on the basis of temperature independent capacity. The capacity requirements for new power stations will also be determined on the basis of a new capacity product – a firm capacity product with limited allocability in the case of interruption. Subvariants of the modelling which are intended to determine the need for capacity of downstream network operators and the need for the "premium capacity product", ie firm and freely allocable capacity, have also been added. Other variants will take account of the system relevance of particular power stations and current interruptions. The Gas NDP 2013 will also address the changeover from L-gas to H-gas. Specific projects, which are necessary in order to guarantee security of supply despite falling L-gas production, will also be identified as part of a security of supply scenario.

All the documentation on the Gas NDP 2012 and on the gas scenario framework 2013 as well as long lists of all storage facilities, nodes and power stations are available on the gas TSOs' website at www.netzentwicklungsplan-gas.de

More information on the development of the gas network, including decisions on change requests to the Gas NDP 2012, the evaluation of the consultation findings and the scenario framework 2013, are also available at www.bundesnetzagentur.de/gasnetzentwicklung.

Financing expansion of the network

Work on expanding the electricity grid on the very-high voltage level and the gas transmission system is being undertaken by the respective transmission system operators who are also responsible for financing the actual construction work involved. The costs incurred for the necessary grid expansion are taken into account by the Bundesnetzagentur in its regulation of prices and are reflected in network tariffs. This takes place in the form of investment measures. In this context investments – distributed over many years – are financed out of electricity and gas prices.

In the draft electricity NDP 2013, TSOs have assumed that the cost of investments in the transmission system for the lead scenario B 2022 will be around €20bn up to the year 2022. This estimate is based on the assumption that all measures will be carried out using overhead lines. The estimated costs do not take account of potentially higher cabling costs. The Bundesnetzagentur has only endorsed 5,700 km of the approximately 8,000 km proposed by TSOs in the draft NDP 2012. Changed framework conditions in the years ahead could, however, alter the entire basis of network planning and the need for measures to be taken.

Gas TSOs anticipate an investment volume of around €3.2bn in the gas transmission system up to 2022.

Under section 23 of the Incentive Regulation Ordinance (ARegV) network operators are able to apply for the approval of investment measures for expansion and restructuring investments. In particular these concern the investments which are needed in order to connect new power stations to the grid, to guarantee the feeding in of renewable energies such as electricity from offshore wind parks, or to maintain the secure technical operation of energy networks.

An amended ARegV came into effect in March 2012. This amended regulation basically covers the approval of investment measures. In the past the Bundesnetzagentur approved a certain volume of investment for each measure in advance. In addition the amended regulation does away with the time delay of two years between approval of the investment measure and inclusion of the costs in the network operator's revenue cap. This means that network operators are now able to refinance costs incurred by them for grid expansion

measures from network tariffs on the basis of planning data as soon as construction work begins. However, the adjustment of the revenue cap is compared in retrospect with the actual investment costs incurred. Amounts above or below this are absorbed by the regulation account which thereby ensures that network users are not burdened by excessive costs.

The Bundesnetzagentur had received a total of 834 applications for investment measures by 31 December 2012. These, with the associated investment volumes, are distributed as follows among electricity and gas network operators:

Number of investment measure applications and the amount of investment applied for at the end of 2012

	Applications submitted	Amount of investment applied for €bn
Electricity	**646**	**40**
Transmission system operators	304	36.1
Distribution system operators	344	3.9
Gas	**188**	**7.3**
Transmission system operators	163	6.5
Distribution system operators	25	0.8
Total	**834**	**47.3**

At the same time account must also be taken of the fact that the stated investment volumes are not considered in full in determining the network tariffs, but are spread in several annual tranches across the entire depreciation period for the relevant projects.

Around €14bn of a total €47bn will go towards connecting offshore wind parks to the grid. To the extent the Bundesnetzagentur has been able to relate the measures endorsed in the Electricity NDP 2012 to the applications submitted, around €7.1bn in investments will go on 23 identifiable measures from the Electricity NDP 2012. All the measures endorsed in the Electricity NDP 2012 meet the requirements of the ARegV and are therefore fundamentally eligible for approval. As the Electricity NDP 2012 was only endorsed at the end of the year, some of the measures will only be approved in 2013. The approval decision regarding investment measures which have been applied for will be issued immediately once the consultation procedure has ended.

A comparable statement cannot be made for the gas sector owing to the variety of measures in the Gas NDP 2012 and the investment measures for which applications have been made. The Bundesnetzagentur has basically approved most of the measures in the Gas NDP 2012 already. By the end of 2012 the only procedures which were still incomplete were those for which a full set of application documents was still outstanding. As soon as the applications are complete there is no fundamental reason why these applications should not be approved either.

Read more on this topic in the interview with Bundesnetzagentur President Jochen Homann, "High Voltage Issues" on page 16 of the magazine section.

Consumer protection and advice

The rights of energy consumers have been strengthened. The Bundesnetzagentur took on a series of new tasks under the new rules.

The implementation of the third internal market package in German energy law in August 2011 introduced the consumer complaints procedure against companies and the dispute resolution procedure in the Energy Act (EnWG). Consumer rights were strengthened, in particular by speeding up the process of changing a supplier and by stipulating new and more extensive contractual, information and accounting requirements for suppliers which companies were required to implement in full by the spring of 2012. The amendment to the EnWG assigned the role of central information point for energy consumers to the Bundesnetzagentur.

The consumer complaints procedure, the dispute resolution procedure and the Bundesnetzagentur's new role as central information point brought about a realignment of tasks between the Bundesnetzagentur and the dispute resolution panel for energy matters which was set up on 1 November 2011. Energy consumers now have the right to insist that a complaint be handled by their utility company. If their company does not resolve the matter within four weeks, energy consumers are able to appeal to the dispute resolution panel. The energy dispute resolution panel received around 14,000 applications in the first year of its existence up to November 2012. The dispute resolution procedure is usually free for energy consumers. The decision issued by this panel is not binding, however, and both consumers and companies still therefore have the option of calling on the courts.

As a central information point for energy consumers the task of the Bundesnetzagentur is to provide information about the current law, the rights of household customers and about the dispute resolution procedure. The Bundesnetzagentur's energy consumer service received a total of 22,112 inquiries and complaints in 2012, of which 19,771 concerned electricity and 2,341 gas. A significant proportion of consumer inquiries and complaints in both fields concerned primarily – as was the case last year – irregularities in electricity bills and related issues of contractual interpretation. A large number of inquiries and complaints also resulted from long delays in issuing annual and final invoices, irregularities in the reimbursement of credit amounts and the payment of bonuses to customers, as well as the numerous different and complex contract structures.

The Bundesnetzagentur has issued regular warnings over a period of many years about the potential dangers of concluding energy supply contracts involving advance payments. While advance payment tariffs are legally permissible, and in widespread use in the energy market as elsewhere, consumers who agree tariffs of this kind are known to be exposed to the risk of the contracting company becoming insolvent and must in such cases expect to lose money they may have paid in advance.

More information on the insolvency of electricity utilities can be found in "Reliably supplied at all times" on page 55.

In its role as a competition authority the Bundesnetzagentur also undertakes various tasks in the field of consumer protection. The agency exercises its powers to monitor the reliability and efficiency of energy utilities.

Network operators and suppliers have been given until 1 April 2012 to implement the IT processes required by the amended energy law. By this date companies had to have changed their data exchange processes over to the business processes stipulated by the Bundesnetzagentur. The Bundesnetzagentur responded to numerous complaints about delays when switching supplier which were due to a failure to comply with the electronic market communication rules by issuing a warning to a large regional network operator in June 2012, coupled with the threat of a fine of €1.2 million.

In 2012, the national regulatory authorities working in CEER defined new requirements for Internet-based price comparison calculators. In order to make product markets less complex for consumers and, at the same time, to strengthen consumers' confidence in liberalised markets, the CEER recommends that offers of this kind should comply with the fundamental principles of independence, transparency, comprehensiveness, clarity, accuracy, user friendliness and accessibility as well as strengthen the position of consumers.

The Council also produced a status report on the implementation of selected consumer protection aspects of the third internal market package and presented case studies of measurement data management in nine EU Member States. The growing popularity of smart meters entails new challenges, including the issue of the centralised or decentralised management of meter data as well as regulatory requirements concerning data protection and security which have not yet been fully clarified.

An exchange took place between all the relevant stakeholders at a CEER consumer policy conference which was organised for the first time in June 2012, the aim of which was to develop a joint vision for 2020. The shared vision of the CEER and the European umbrella organisation of consumer organisations, the BEUC, which emerged from this conference and which is also supported by other stakeholders, was presented at the London Forum of the EU Commission in November 2012.

Reliably supplied at all times

Many consumers shy away from changing supplier out of fear that a new and unknown supplier could become insolvent. Important to know: electricity will continue to reach the home even in this extreme case.

The insolvency of the utility TelDaFax in the summer of 2011 was a shock for many consumers. What happens if the company which supplies my electricity finds itself in a crisis? Fortunately, there was one thing customers did not have to worry about: they would not face a situation in which they were no longer supplied with electricity.

Although electricity providers who are no longer able to meet their payment obligations will very quickly be unable to obtain the energy and use the networks needed to supply their customers, this will not lead to interruptions in supply. The default or replacement supplier – the supplier who has the most customers in a network area – will ensure that power continues to be supplied and will invoice customers for the electricity which ensures that their lights never go out. The consumer then has time to find a new energy supplier.

Useful tips on contracts with suppliers are also available at www.bundesnetzagentur.de/energieanbieterwechsel.

The London Forum focused on consumer protection and on future market models in the age of smart grids. The Forum was overall far more interactive than in the past and also involved consumer organisations for the first time. In this framework the reports drawn up by the working parties on vulnerable consumers and on transparent pricing, created by the EU Commission in 2012, were publicly presented for discussion by all stakeholders.

Rulings, activities and proceeedings

Preparation for the second regulatory period for the gas sector was at the heart of the Bundesnetzagentur's work in 2012. Other issues tackled during the year were the certification of transmission system operators and activities relating to renewable energies.

Network tariffs

Determination of the base level for setting the revenue caps for gas applicable during the second regulatory period

The second regulatory period for gas DSOs and TSOs up to 2017 began on 1 January 2013. The Bundesnetzagentur began 2012 by determining the base level for setting the revenue caps for the second regulatory period by performing a cost examination as foreseen by the provisions of the Gas Network Fees Ordinance (GasNEV). A total of 243 gas supply network operators were required to submit documents to the Bundesnetzagentur to enable it to determine the base level. 100 network operators are involved in the normal procedure and 143 network operators in the simplified procedure.

The cost examination looked at the operational costs which gas network operators necessarily incur. The examination not only focused on current outlay costs but also, and in particular, on determining the current assets which are required for operating purposes as well as provisions and services.

The Bundesnetzagentur determined the base level for the revenue caps in respect of the 100 gas network operators who are subject to the normal procedure in early 2012. The cost examinations for the 143 network operators included in the simplified procedure were then performed and for the most part concluded by the end of the summer.

Efficiency benchmarking in the gas sector

Efficiency benchmarking was then undertaken for network operators subject to the normal procedure – both those for which the Bundesnetzagentur is responsible and those controlled by regulatory authorities in the federal states. Separate benchmarking was carried out for DSOs and TSOs.

The efficiency benchmarking considered the wide variety of complex supply tasks which network operators are required to undertake and the resources which these tasks require. The supply tasks of network operators were mapped using various structural parameters, such as the area supplied or the number of exit points in the network area. The findings of previous cost examinations were used to determine the resources which each network operator required. The model analyses determined the relative cost effectiveness of each network operator in relation to

his particular control group (the entirety of DSOs and TSOs). The aim was to clarify which operators fulfilled their supply tasks at the lowest cost.

A consortium of consultants was commissioned with performing the efficiency benchmarking studies. The network operators and associations were consulted on the methodological procedures to be adopted and the selection of parameters at a presentation provided on site by the Bundesnetzagentur. This consultative procedure and both prior and subsequent opportunities to present their comments enabled the industry to take part in all the constituent processes involved in efficiency benchmarking (data plausibility, cost driver analysis, selection of parameters and models as well as benchmarking).

The 186 DSOs covered by the normal procedure were found to have a preliminary unweighted average efficiency value of 92.1 percent. The relative efficiency of DSOs has improved by an average of 4.8 percentage points compared with the first regulatory period. The total of 520 DSOs involved in the simplified procedure (operators with less than 15,000 customers which had not registered for the normal procedure; of which 143 DSOs for which the Bundesnetzagentur is responsible) were found, on the basis of the efficiency values for the first regulatory period, to have an overall efficiency of 89.97 percent.

The group of twelve TSOs which were compared with each other in this constellation for the first time for the current regulatory period were found to have a preliminary unweighted average efficiency value of 94 percent. The relative efficiency of TSOs has deteriorated by an average of six percentage points compared with the first regulatory period.

The next step will be to determine the revenue cap for each network operator for the second regulatory period on the basis of the previously determined base level and the operator's individual efficiency value. The revenue cap stipulates the maximum revenue which network operators may obtain every year. Any relative inefficiency which network operators are found to have should be eliminated during the regulatory period.

Most consultation letters and decisions concerning the revenue caps stipulated for each calendar year in the second regulatory period were sent to network operators involved in the simplified procedure in the second half of 2012. The consultation provided network operators the opportunity to respond. After determining individual efficiency values the consultation letters on the stipulation of revenue caps for each calendar year were also sent to the network operators subject to the normal procedure. The decisions in the normal procedure will be issued when the consultation has been completed. For the first time the decisions in both the normal and simplified procedures are preliminary in nature.

Introduction of quality regulation

In order to prevent a deterioration in the quality of supplies owing to cost cutting by electricity distribution system operators as a result of incentive regulation, the ARegV provides for quality regulation for electricity to be introduced in the second regulatory period at the latest. Provided that a sufficiently reliable stock of data is available, quality regulation is planned to begin at the beginning of or during the first regulatory period. The Bundesnetzagentur developed a concept for the quality of electricity grid reliability in 2010. This concept was implemented as a basic quality regulation variant for electricity grid reliability on 1 January 2012.

Quality levels are determined on the basis of grid reliability parameters which take account of interruptions of supply lasting for longer than three minutes. If a particular network operator's value deviates from the calculated reference value, the relevant network operator's revenue cap will be increased (bonus) or decreased (penalty) accordingly.

Quality regulation was applied to 202 DSOs in the first regulatory period for electricity. 143 network operators were awarded a bonus for the years 2012 and 2013, while 59 network operators received a penalty. The variability between added bonuses and subtracted penalties for each DSO was around minus four million to approximately four million. The data survey undertaken to calculate the quality element also clearly showed that the attribution of monetary values to power cuts has led network operators to make substantial efforts to improve the way they record interruptions of supply. Until 2012 the recording and management of data on interruptions of supply played a relatively subordinate role for most network operators.

The Bundesnetzagentur also published individual quality parameters, reference values and other structural characteristics of the 202 network operators at the end of the year with the aim of further increasing the transparency and clarity of the quality regulation system.

Reduced network tariffs and network tariff exemptions under section 19(2) of the Electricity Network Charges Ordinance (StromNEV)

In 2012, the Bundesnetzagentur had to deal with applications for reduced network tariffs and exemptions under section 19(2) of the StromNEV in its area of responsibility.

Under section 19(2) sentence 1 of the StromNEV final customers who make atypical use of networks are entitled to agree a reduced network tariff with upstream network operators provided that their demand behaviour makes a significant contribution to reducing demand on the grid. A total of 1,286 applications for individual network tariff agreements were submitted to Ruling Chamber 4 in 2011. Of these, 813 applications have been approved to date. In 198 cases the procedure was discontinued after applications were withdrawn by the applicants. The volume of reductions for companies making atypical use of networks was around €166.5m for 2011. A further 2,500 applications for approval of individual network tariffs under section 19(2) sentence 1 of the StromNEV of were made in 2012, of which five have so far been approved. In 18 cases the procedure was discontinued after withdrawal of the applications. The volume of reductions for companies making atypical use of networks in 2012 so far amounts to around €1.2m.

Final customers which make particularly intensive and constant use of grids are able, under section 19(2) sentence 2 of the StromNEV, to apply for total exemption from network tariffs. A total of 279 applications for exemption from network tariffs were submitted to Ruling Chamber 4 in 2011. Of these, 201 applications have so far been approved and nine applications turned down. In 57 cases the procedure was discontinued after withdrawal of the applications. The volume of reductions for companies making particularly intensive use of networks in 2011 currently amounts to around €234.5m. 123 applications for exemption from network tariffs have been made for the period from 1 January 2012 and four applications for the period starting on 1 January 2013.

On 5 December 2012 the Bundesnetzagentur stipulated uniform national rules for the correct determination of individual network tariffs. This decision was based on a key elements paper which was published in early September and the comments to it subsequently submitted. This stipulation regulates the conditions under which final consumers are entitled to apply for a reduced network tariff under section 19(2) sentence 1 of the StromNEV. This stipulation was accompanied by new guidelines issued by the Bundesnetzagentur on the approval of exemptions from network tariffs for final consumers.

Security of supply

The situation in the electricity and gas networks in February 2012

In the period from 1 to 17 February 2012 very low temperatures in Germany and other parts of Europe combined with a substantial reduction in volumes of gas flows from Russia placed considerable strains on some parts of the German gas transmission system as well as some downstream gas networks. In some parts of southern Germany gas transport contracts which provide for an interruption of transport services were suspended. Gas-fired power plants were also affected.

Owing to the extreme cold spell, demand for electricity was especially high in Germany and Europe in the same period. Moreover, the shortage of gas supplies also had a huge impact on the situation in the electricity grid as some gas-fired power plants had all or some of their gas supplies cut off. The situation was particularly strained in the electricity grid in the period from 8 to 15 February 2012. At the same time, the stability of the electricity grid was manageable at all times, thanks to the measures which are available under section 13 of the EnWG, such as redispatch measures and the use of system balancing energy as well as the use of reserve power stations. The situation improved again on 16 February 2012 and the electricity supply system returned to its normal status.

The Bundesnetzagentur remained in close contact with electricity and gas network operators throughout this period and was continuously supplied with current information in the form of daily status reports. The Bundesnetzagentur performed a subsequent detailed analysis of the situation in February in order to determine the causes of the problems encountered and, where possible, to implement improvements for the future. It was apparent that the electricity from renewable energy sources – 10,000 MW of which came from photovoltaic systems alone, particularly during the midday hours – had the effect of supporting the functioning of the grid.

In early February 2012 TSOs observed a general under-supply to balancing groups and were forced to make considerable use of positive system balancing energy. Initially it was unclear whether the supply deficits to balancing groups were due to the failure of balancing group managers to comply with their forecast obligations. For this reason the Bundesnetzagentur performed a more detailed study of the causes of under-supply which was followed by subsequent changes in the price system for portfolio balancing energy.

Against the backdrop of the current generation situation, particularly in southern Germany, the gas-fired power plants in that region have grown in importance for the security of the electricity supply network. Bearing in mind growing shortages of natural gas imports and the increasing importance of gas-fired power plants it became apparent that the existing provisions of the EnWG are tailored exclusively to ensuring the security of the gas supply system and do not adequately guarantee the system for the supply of electricity. If the system comes under particular strain, supplies of electricity can only be maintained in Germany if deliveries of gas are reliably received and the system-relevant gas-fired power plants in southern Germany are supplied with gas.

Changes to the price system for portfolio balancing energy

The Bundesnetzagentur decided on the further development of the pricing mechanism for portfolio balancing energy on 25 October 2012. This was preceded by the Bundesnetzagentur's request to the four TSOs to submit a written report by 9 July 2012, on the basis of balancing group settlement, on the causes of the substantial under-supply of balancing groups in February 2012. Ruling Chamber 6 and the TSOs wrote to ask for responses from almost 200 balancing group managers. In parallel an expert study of the situation in February 2012 was commissioned by the Bundesnetzagentur.

The reports produced by the TSOs and the expert analyses revealed that some of the reasons for the under-supply of balancing groups were the use of standard load profiles, the difficult-to-forecast demand behaviour of certain industrial customers and the lack of availability of quarter hourly products on the EPEX SPOT.

At the heart of the new regulations for the portfolio balancing energy pricing system are the introduction of a balancing energy price threshold equivalent to the intraday exchange price for the relevant hour and a steep increase in the cost of using system balancing energy when the balance for the grid control cooperation exceeds the level of 80 percent of contracted system balancing energy. The aim is to provide better incentives for the management of balancing groups and to prevent under-supply. The regulations came into effect on 1 December 2012.

Contracting for reserve power stations

The ongoing tense network situation in southern Germany meant that TSOs once again had to contract for reserve capacity in the winter of 2012/2013 in order to guarantee security of supply.

The Federal Ministry of Economics and Technology and the Bundesnetzagentur called on TSOs to calculate the reserve capacity they would need for the winter of 2012/13 in order to ensure that in certain situations in which critical network events occur it will be possible to maintain network stability and reliable supplies of electricity. The TSOs submitted their calculations to the Bundesnetzagentur on 22 October 2012.

Calculations were made for two scenarios starting from the underlying assumption of a working day in winter (on which no electricity is fed into the grid from photovoltaic systems) on which the load is high and a large part of the power plant capacity is unavailable owing to planned and unplanned power station outages, and on which there has been a 380 kV power line failure. Both scenarios entail especially critical network situations. An especially high amount of electricity generated from wind power is assumed in the strong wind scenario. The cold scenario is based on the non-availability of gas-fired power plants with

interruptible supplies and no wind power being fed into the grid. The need for reserve capacity is between 1,200 MW in the cold scenario and around 2,500 MW in the strong wind scenario.

Following protracted negotiations between the power plant operators and the TSOs, sufficient capacity from reserve power plants could be secured for the winter 2012/13 in all scenarios. In total, Germany and Austria can draw on around 2,600 MW reserve power plant capacity. During negotiations power plant operators voluntarily declared their willingness to accept remuneration equal to necessary operating costs. The necessary operating costs are calculated into TSOs' revenue caps and are refinanced by network users. The Bundesnetzagentur has granted the TSOs refinancing assurances in this respect.

Redispatch stipulations

With two decisions issued on 30 October 2012, the Bundesnetzagentur laid down regulations on the implementation of electricity-related redispatch measures and voltage-related adjustments to the input of active power as well as criteria for determining appropriate payment for such measures.

Redispatch measures refer to interventions by TSOs in the operation of electricity generation and storage plants to safeguard secure system operation. If congestion occurs in the system, the stress on certain transmission lines is relieved by shifting the input from power plants. This is done by increasing generation on one side of the constraint and decreasing it in the region on the other side of the constraint. These measures reduce the flow of electricity on the congested network element. TSOs also intervene in the input of power from power plants and storage facilities to guarantee voltage stability.

The first stipulation by the Bundesnetzagentur introduces a rule-based element into and harmonises the TSOs' previous non-uniform practice in this area. In this context the Bundesnetzagentur has issued rules on the conditions which must apply for interventions to be made as well as their extent, on the organisational, energy and accounting arrangements for measures designed to adjust the input of active power, on the notification and information duties of the relevant parties as well as the publication duties of TSOs. The participants in mandatory redispatch measures have also been specified. The standardised prerequisites for intervention in the operations of electricity generation and storage facilities by TSOs created by this stipulation guarantee the non-discriminatory implementation of redispatch measures and voltage-related adjustments in active power input subject to transparent and clearly defined criteria.

The second stipulation governs the amount of compensation payable for redispatch and voltage-related adjustments in active power input. This now creates an unambiguous and uniform legal basis from which the compensation payable for electricity-related redispatch measures and voltage-related adjustments in active power input can be determined by TSOs and the operators of power generating and storage facilities. Appropriate compensation is deemed to be reimbursement for the additional costs incurred by the redispatch measures. Profit mark-ups and opportunity costs are not remunerated.

Most of the stipulated rules have been in effect since 17 December 2012. Existing compensation arrangements may be retained for a transitional period until 31 December 2013.

Activities undertaken by the Bundesnetzagentur in the field of renewable energies

Evaluation report on the Equalisation Scheme Ordinance (AusglMechV)
In its March 2012 report under section 9 of the AusglMechV the Bundesnetzagentur submitted an evaluation and proposals on future arrangements for the equalisation mechanism for renewables.

The abolition of the requirement to turn the main intermittent generation from renewable sources into a constant monthly profile and of the physical redistribution to electricity suppliers by the AusglMechV has led to a significant reduction in the costs of selling renewables. At the same time, the sale of renewable electricity solely on the spot market has increased the liquidity of this market. The changeover of the system did not lead to any significant distortions in market prices either. Overall the sale of electricity from renewable sources by the TSOs is now much more transparent as a result.

The Bundesnetzagentur has contributed to the ongoing development of the EEG equalisation mechanism with a study – supported by expert advice and consulting with the market – of the option of sales of renewable electricity by third parties. Third party sales would involve transferring sales activities from TSOs to other market players. After weighing up the potential of third party sales, the Bundesnetzagentur now regards this concept with some caution. Direct sale is clearly preferable to sales by third parties because direct sellers are able to control facilities directly and to respond accordingly to price signals emanating from the market. The new market premium introduced in early 2012 has led to a significant increase in direct sales.

In its report the Bundesnetzagentur also identified other potential avenues for further optimisation in the existing system of exclusive sale of renewable electricity by TSOs.

Determination of degression rates for photovoltaics under the EEG
The Bundesnetzagentur calculates the current feed-in tariffs for photovoltaics on a regular basis; these are then published in the Federal Gazette. Tariffs are determined for the next quarterly period to ensure that subsidies are continually adjusted in line with the target corridor for new build. The values for the next quarter are published at the end of January, April, July and October of each year.

At the end of October the Bundesnetzagentur calculated and published the degression rates and tariffs for photovoltaic systems for the first time under the new EEG provisions for the period 1 November 2012 to 31 January 2013.

The feed-in tariff for photovoltaic systems under the EEG is adjusted automatically every month. Tariffs are due to be reduced at a constant rate of one percent. The feed-in tariff will also be reduced if the new build of photovoltaic systems exceeds the corridor for additional capacity of 2,500 MW to 3,500 MW per annum defined in the EEG. Reductions will be made incrementally depending on the extent to which the corridor is exceeded. If the new build corridor is not met, on the other hand, the tariff will be reduced by a correspondingly smaller amount or retained as it is.

The first time tariffs were stipulated in October 2012 calculations showed the new build corridor having been exceeded by around 3.9 GW, which translates into an additional reduction in the degression rate of 1.5 percentage points. The tariffs were therefore reduced on 1 November 2012, 1 December 2012 and 1 January 2013 by 2.5 percent each time.

Other

Certification procedure
Certification procedures are undertaken to assess whether transmission system operators have fulfilled the unbundling requirements stipulated in the EnWG. Prior to final certification the Bundesnetzagentur draws up a draft decision which it then sends to the EU Commission.

The first draft decisions as part of its certification procedure for electricity and gas TSOs were sent to the EU Commission by the Bundesnetzagentur in July 2012.

One of the draft decisions sent to the Commission envisaged denying certification to TenneT TSO GmbH (TenneT). This operator had failed to provide the necessary evidence of the financial resources required to meet its statutory network operation and expansion duties. Presentation of such evidence is mandatory, however, in German law – in contrast to European law – before certification as an unbundled TSO can be granted.

The EU Commission has since issued a response to the drafts sent to it in July 2012. The EU Commission has largely confirmed the conformity of the draft decisions with European law and has only asked for one or two issues to be assessed in more depth and consideration to be given to the possibility of shortening the time limits for certain conditions.

In certain issues there is a possibility that, owing to German law, dissension may continue to exist between the Commission and the Bundesnetzagentur. This mainly relates to the Bundesnetzagentur's decision in the case of TenneT. The Commission takes the view that provision of evidence of financial resources should not be included in the scope of the certification assessment for ownership unbundled enterprises because this is not provided for in the directive. German law – under which financial resources must be assessed in all certification decisions – is said to exceed the provisions of the directive in an inadmissible way. The Bundesnetzagentur, however, consistently applies German law. The Bundesnetzagentur has given intense consideration to the EU Commission's position in its final certification decision, but nonetheless has ultimately come to the same decision as in its draft, namely that TenneT should not be awarded certification owing to its failure to provide evidence of financial resources. This decision was reached in early November 2012. In contrast, Amprion GmbH and 50Hertz Transmission GmbH were awarded final certification at the same time.

Smart grids, smart markets

The *Energiewende* poses new challenges for grids.
The onus is therefore on markets to produce solutions.

The *Energiewende* has arrived. And with it highly fluctuating levels of input from renewable energy sources. When the sun shines, photovoltaic systems run at full power; when the wind blows, wind turbines begin to rotate – regardless of whether and where the electricity which is generated is needed. But how does the electricity generated arrive at centres of consumption?

Ideas for the smart management of grid capacities must be developed if grid expansion is to be kept to the minimum necessary. Alongside smart grids – intelligently equipped networks, which ensure that better use is made of existing infrastructures – smart markets are also required. These entail intelligent market solutions which improve consumers' ability to participate in future energy markets and make the most effective use of the renewable energy capacities on offer.

Market liberalisation has provided the opportunities which are needed, including for competition for innovative solutions. It is now important to ensure that legislation and regulations are developed in line with the *Energiewende*. Individual market players are also now called on to develop offers and services which will make the *Energiewende* more attractive to consumers. A dishwasher which runs when the sun is shining? An electric car which recharges its batteries when the wind is blowing? The way forward is through innovative tariffs, smart meters and technically advanced consumer equipment.

Denial of certification does not mean that TenneT will no longer be permitted to run its transmission system itself in the future, as certification is not the same as an operating licence. Enterprises which run their networks without being certified initially only commit an offence which must be determined in separate proceedings.

Further draft decisions relating to the gas sector were sent to the EU Commission on 5 October 2012. The Bundesnetzagentur sent its draft decision on the TSO Transnet BW GmbH to the EU Commission in mid December. A few draft decisions are still pending as a further request for documentation had to be sent to network operators.

Smart grid/smart market key elements paper

The Bundesnetzagentur issued a key elements paper on smart grids and smart markets on 2 January 2012. The aim of this paper is to contribute to the structuring and fostering of the debate centring around the *Energiewende*.

In addition to over 50 arguments relating to the changing energy system, the key elements paper also defines and clearly distinguishes the meaning of the terms smart grid and smart market. The idea is to introduce greater clarity into the somewhat confusing and as yet unstructured debate.

The Bundesnetzagentur defines the term smart grid as referring to measures designed to reinforce networks and increase capacity by means of communication, metering, control and automation technology as well as IT components. The smart grid is the responsibility of network operators and is subject to rules on regulated monopolies. The reinforcement of grids and the means chosen to achieve this, however, fall within the business decision-making competence of individual network operators and cannot be stipulated centrally. Under Germany's incentive regulation, however, it is always in the business interests of network operators to find the most intelligent and economically successful mix.

The Bundesnetzagentur considers smart grids to be already largely established in the field of transmission networks. On this level of the network, work still needs to be done in making use of technical progress and in building new (high voltage) lines for the *Energiewende*. In the distribution networks, which bring electric power to household customers, new build and upgrading are both required.

The term smart market, by contrast, refers to the market aspects of measures taken to implement the *Energiewende*, from the integration of renewable energies through to measures to influence consumption, eg by using new and innovative tariff systems or services. Responsibility in this area is not incumbent on the grid but on competitively organised, liberalised market roles, eg sellers and service providers.

The key elements paper differentiates between the various possibilities and tasks of the grid and the competitive activities, which is also reflected in the distinction between the terms smart grid and smart market. Huge challenges for the success of the *Energiewende* lie in developing the interfaces between these fields, on which the Bundesnetzagentur must also do its work quickly, clearly and in a non-discriminatory fashion.

Read more on this topic under "Smart grids, smart markets" on page 62.

International cooperation

Cooperation with our European neighbours in the energy field is more essential than ever. The Bundesnetzagentur again participated in a number of international bodies in 2012.

The Bundesnetzagentur made contributions at the European level in the framework of the Agency for the Cooperation of Energy Regulators (ACER) which was set up in 2009. It has also been a member of the non-profit Council of European Energy Regulators (CEER) since 2004.

In February 2011 the European Council set the European Union the task of completing the internal energy market by 2014 to ensure that gas and electricity are able to move across borders without hindrance. In order to implement this ambitious objective, the Commission, ACER and the associations of European electricity and gas network operators, ENTSO-E and ENTSOG, have drawn up a joint schedule for the development of a series of network codes. These network codes form a core element of the 2009 third internal market package. In this context framework guidelines will first be developed by ACER. These include requirements for the network codes which will be drawn up by the respective associations.

With a view to the given deadline, the regulatory authorities intensified their cooperation with ACER in 2012. In this context representatives of the regulatory authorities cooperate with the Agency in working groups (Electricity Working Group and Gas Working Group) to prepare the way for decisions to be taken in the bodies of ACER and in its Board of Regulators in particular. These working groups are building on the basic principles worked out by the regulatory authorities in the period between the setting up of ACER in 2009 and the time at which it actually began work in March 2011. The Bundesnetzagentur is making an active contribution by providing expert input. The Bundesnetzagentur also chaired the Gas Working Group and various sub-working groups in 2012.

The CEER has 29 members; these are the national energy regulators of the 27 EU Member States plus Iceland and Norway. The organisation also granted observer status to the national regulatory authorities of Switzerland and the former Yugoslav Republic of Macedonia in 2012. One of the CEER's Vice Presidents is the Bundesnetzagentur.

The CEER has voiced the interests of the voluntarily participating independent regulators since 2009. The Bundesnetzagentur supports the CEER's goal of stepping up activities in fields of work which are not covered by the statutory responsibilities of ACER. This concerns, in particular, aspects of consumer protection and regulation of the consumer market, fostering renewable energies and international cooperation.

The association takes part in the energy policy debate on impending statutory initiatives at the European level and undertakes groundwork on important topics which can subsequently be tackled in greater depth by ACER. CEER therefore regards its activities as complementing the mission performed by ACER and makes substantial resources available to the Agency.

Loop flows

The *Energiewende* and the phasing out of nuclear energy in Germany have resulted in large imbalances between generation and consumption, due to constant levels of consumption in southern Germany and a higher generating capacity in the north of the country. The grids needed to handle this massive transport task have not yet been built, ie grid expansion is trailing behind the development of renewable energies. This leads to a huge increase in the interventions which network operators have to make in the dispatching of power plants.

Part of the electricity generated also flows as unplanned or loop flows through Poland and the Czech Republic or the Netherlands and Belgium. Electricity which is traded between Germany and Austria does not necessarily take the direct way across the two countries' shared border either, but can also flow through the grids of the countries referred to above (transit flows).

Phase–shifting transformers can simulate an energy surplus or deficit and subsequently influence load flows. By limiting the load flow a physical phase-shifter can reduce loop flows. The "virtual phase-shifter" is used to achieve the same results but requires intervention in the dispatching of national and, if necessary, foreign power plants.

The German TSO 50Hertz Transmission GmbH and the Polish TSO PSE-O signed a contract on virtual phase-shifting transformers on 18 December 2012. With this measure Germany will assist Poland to control loop flows by coordinating interventions in the dispatching of power plants to simulate the way in which a phase-shifting transformer takes the strain off a network. An initial pilot phase was run from 8 January to 31 March 2013. A declaration of intent was also submitted by both TSOs to construct two physical phase-shifting transformers by the year 2016. These will be run and coordinated jointly. Physical phase-shifting transformers allow the flow of electricity to be restricted in a valve-like fashion. The installation of physical phase-shifters has already produced good results in the Central West Europe region for the physical limitation of transit flows through Belgium. Similar negotiations are also underway with the Czech TSO.

Capacity allocation and electric power congestion management

The network code on capacity allocation and congestion management was passed on from ENTSO-E to ACER on 27 September 2012. The network code encompasses the following topic areas:

- Governance
- Capacity calculation
- Bidding zones
- Day ahead trading
- Intraday trading
- Firmness of allocated capacities
- Distribution of congestion income
- Cost sharing for cross-border redispatching and
- Transitional provisions.

On 19 December 2012 ACER sent a statement to ENTSO-E in which it confirmed that the network code largely conforms with the framework guidelines. Some important areas were identified, however, in which subsequent improvements need to be made.

Framework Guidelines on Electricity Balancing

Work on the Framework Guidelines on Electricity Balancing was started by ACER under the coordination of the Bundesnetzagentur in June 2011 and continued through to completion of the Guidelines in September 2012. The objectives pursued, such as security of supply and improved competition by facilitating cross-border exchanges of balancing energy, were achieved. The Framework Guidelines were adopted by ACER on 18 September 2012. The Bundesnetzagentur is also taking part in the extended process by the ENTSO-E to develop a corresponding network code by working in the newly founded Electricity Balancing Stakeholder Advisory Group (EBSAG).

Network codes on grid connection

Based on the ACER framework guidelines "Requirements for grid connection", from which three network codes will emerge, work has already begun on the codes described in the following.

ENTSO-E sent the Network Code on Requirements for Grid Connection applicable to all Generators to ACER on 13 July 2012. ACER made its view public on 13 October that the network code complies with the framework guidelines; ACER called for the revision of several items before its approval of the network code could be sent to the EU Commission.

The network code is one of the key drivers in the creation of harmonised solutions and products for generation technology. The contents of the network code cover a series of requirements designed to fulfil future grid connection conditions from the point of view of generators.

ENTSO-E sent the second network code under these framework guidelines, the "Demand Connection Code", to ACER on 4 January 2013. The network code contains rules which are intended to help to meet the requirements arising from the increased feed in of energy from renewable sources, to ensure system security and implement the internal electricity market. The network code defines common functional requirements and deals mainly with the connection of industrial consumers and electricity distribution networks.

A third network code which has not yet been initiated will deal with the connection of HVDC systems. ACER is currently evaluating conformity of the network code with the framework guidelines.

Transparency guideline

Since 2005 the Bundesnetzagentur has advanced the subject of transparency in wholesale electricity markets, ie the publication of fundamental data for wholesale electricity trading. In particular, this concerns information about available transmission capacities, on generation, on electricity consumption and information about the market for system balancing energy. This process was completed in 2012. In this context the EU Commission submitted a draft Regulation on submission and publication of data in electricity markets to a comitology procedure. The responsible committee adopted this draft on 17 December 2012. Subject to the approval of the EU Parliament, binding transparency rules which apply throughout the whole EU will probably be in force by mid 2013.

The regulation is linked with the REMIT Regulation since market participants meet the standardised requirement for timely and effective public disclosure of inside information if they comply with the specified transparency rules.

More information on this topic can be found in the section on "REMIT" on page 67.

Capacity allocation

In the gas sector ENTSOG drafted the first network code on capacity allocation ("Capacity Allocation Mechanisms", CAM) in 2012 and drew in the process on the framework guidelines produced by ACER in August 2011. The fundamental aim of CAM is to achieve the non-discriminatory allocation of Europe-wide standardised transport capacity products by auctioning and the introduction of bundled capacity products. ENTSOG sent the network code to ACER on 6 March 2012. ACER found that the network code did not fully comply with the requirements of the framework guidelines and asked ENTSOG to revise the code. The revised network code was sent by ACER to the EU Commission on 9 November 2012. The Agency recommended accepting the network code provided that the necessary changes were made. The Bundesnetzagentur chaired these proceedings of the corresponding ACER Task Force and, in its role as deputy vice-chair of the Gas Working Group, played a significant role in the decisions reached by the Agency.

Consultation of CEER on investments in the gas infrastructure

In 2012 CEER assumed a task from the Madrid Forum's gas target model and, in this context, carried out a market-based analysis of needs for transport capacity in gas transmission systems ("incremental capacity"). The idea here is to develop a European framework within which decisions on investment in infrastructure for transports across borders and market areas can be coordinated and facilitated.

CEER engaged in intensive discussions with associations of network operators and network users and held a public consultation. In these proceedings the Bundesnetzagentur also co-chaired the relevant working group and played a key role in shaping its contents. An evaluation of the outcomes of the public consultation was published in December 2012. CEER concluded that it would be desirable to support investment decisions with binding bookings by network users and to sell new capacity jointly. The market-based approach is complementary to the network development plans at European and national levels. The CEER will now flesh out the details of these results and present them at the Madrid Forum in April 2013.

Agreement on guidelines for the trans-European energy infrastructure

In addition to efficient and non-discriminatory management of existing electricity and gas networks, the EU also continues to pursue the objective of modernising national energy infrastructures, accelerating their expansion and creating cross-border interconnection of networks.

The EU Commission submitted an infrastructure package in October 2011 which was followed in late November 2012 by agreement between the EU Parliament, the EU Commission and the Council on "Guidelines for trans-European energy infrastructure". After its final adoption by the Parliament and Council, the regulation is due to come into force in the spring of 2013.

The EU Commission began work on the practical implementation of the draft regulation in February 2012 to ensure that the required infrastructure for the transport of electricity and gas is put in place as soon as possible. With this aim in mind it established "priority corridors". In 2012 regional groups, in which Member States, regulatory authorities and project partners work together, began identifying projects of common

interest (PCIs) in these corridors. The priority given to PCIs in the regulation has certain legal consequences:

- the treatment of such projects in fast-track planning approval procedures;
- special procedures for the sharing of costs for cross-border lines between TSOs;
- setting of specific investment incentives for projects which are subject to particular risks by regulatory authorities and Member States; and
- where applicable, (part) financing of projects from EU funds ("Connecting Europe" facility).

The lists of priority projects identified and evaluated in the regional groups will ultimately be brought together in a Europe-wide list of PCIs which is to be given a legal basis in 2013 in the form of a specific legal instrument issued by the Commission. The Bundesnetzagentur is a member of all regional groups.

REMIT

Liberalisation has enormously increased the importance of electricity and gas trading. Trading enables smaller enterprises and municipal undertakings, in particular, to secure competitive advantages in the supply of their customers by adopting more flexible trading strategies. Exchange trading, in particular, also plays an increasingly important role in the integration of renewable energies.

With the growing economic significance and increasing Europeanisation of electricity and gas trading the need for fundamental improvements in the supervision of European energy trading has moved to centre stage. The REMIT Regulation came into force in December 2011. This Regulation prohibits market manipulation and insider trading in wholesale energy markets. The REMIT Regulation will make a substantial contribution at the European and national levels in improving market surveillance and transparency in wholesale energy trading.

Energy trading supervision is set to become a new task for the Bundesnetzagentur. It is envisaged that companies will be required to meet extensive data reporting duties, probably by mid 2014, which will enable ACER and national energy regulatory authorities to identify and take action against possible infringements.

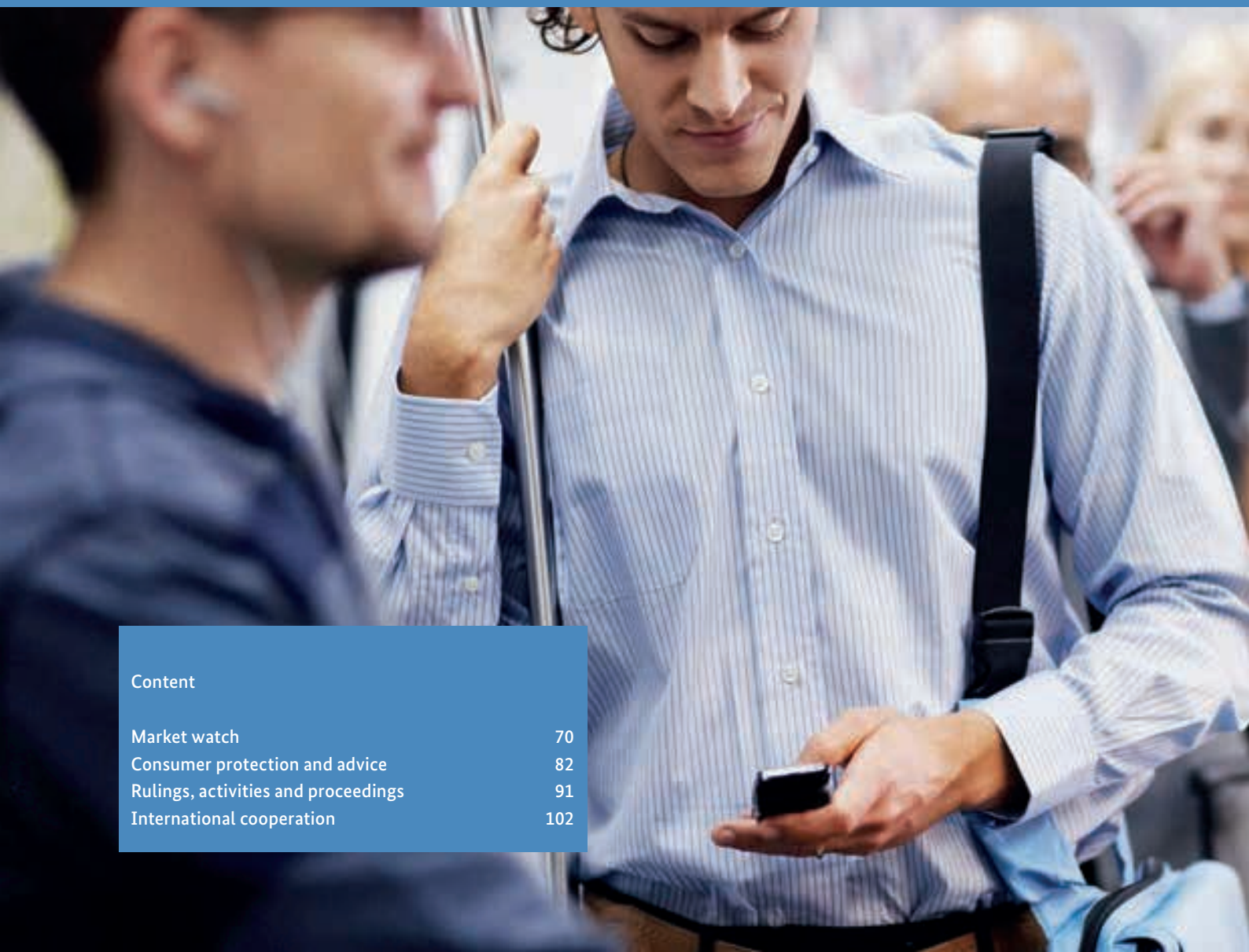
In 2012 the Bundesnetzagentur was intensively involved under the aegis of ACER in projects to implement the REMIT Regulation and, in this context, chaired the "Wholesale Market Surveillance Task Force". One of the tasks of this working group was to draw up guidelines for the application of the definitions given in the REMIT Regulation to assist market participants. A second version was completed in September 2012 and published on the ACER website. The Bundesnetzagentur is also represented in three other working groups and three expert bodies.

ACER also drew up comprehensive recommendations in 2012 with input from national regulatory authorities on the implementing legislation which is to be developed by the EU Commission in the first half of 2013. These recommendations include key elements relating to the structure of data transfers from market participants to ACER and the modalities for the exchange of data between ACER and the national regulatory authorities. After a consultation with the market, the recommendations were published in October 2012. The contents of a European register of all the enterprises engaged in energy trading were also defined.

TELECOMMUNICATIONS

Good networking

The Internet is playing an increasingly important role in everyday life, which is why many people attach so much importance to having access to a high-speed, high-quality Internet connection. For this reason, the Bundesnetzagentur focused on pushing ahead with broadband rollout and promoting net neutrality in 2012.



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Broadband was the defining issue for the telecommunications market last year. The increase in the number of customers acquired by cable network operators led to further growth in sales of broadband connections, and the upward trend in mobile broadband business also continued.

Consequently, the Bundesnetzagentur's work in 2012 was also characterised by a number of measures for promoting broadband rollout, which included further improvements to the infrastructure atlas and progress in the NGA Forum. Net neutrality also played a key role. Last year saw the Bundesnetzagentur begin to introduce improvements at a number of levels with a view to providing consumers with unrestricted and equal access to applications and services of their choice. A large number of Ruling Chamber proceedings, including in the area of mobile termination, increased the range of tasks for the Bundesnetzagentur.

The Bundesnetzagentur also offers a wide range of services for assisting consumers with their problems and helping them to assert their rights. A large number of consumers have taken advantage of these services in recent years, and last year was no exception. Furthermore, the Bundesnetzagentur ensured that Germany's interests were also recognised on the international stage in 2012 with its constructive work within the regulatory bodies IRG and BEREC.

Market watch

Broadband continued to be the defining issue for the telecommunications market in 2012, with further growth in sales of broadband connections as a result of new customers being acquired by cable network operators. Consumer figures also continued to grow for the mobile Internet.

Telecommunications services as a whole

External revenue

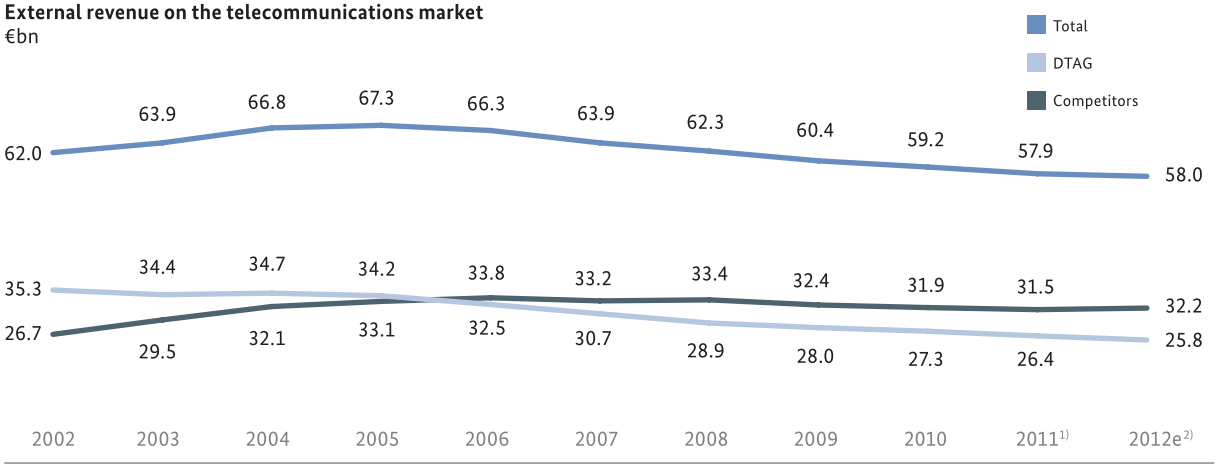
Preliminary calculations put external revenue on the telecommunications market at around €58bn for 2012, a year-on-year increase of approximately 0.2 percent. This marks an end to the negative trend of the past few years.

Alternative providers saw their external revenue increase in 2012, with cable network operators making a particularly significant contribution to this positive trend. These operators saw a year-on-year revenue increase of approximately 10 percent to around €4.38bn in 2012. By contrast, there has been a continuation in the negative trend of the past few years at Deutsche Telekom AG (DTAG), with the group's revenue falling to €25.8bn in 2012.

Retail accounted for 76 percent of external fixed network revenue in 2012. This includes external revenue generated from services for private, commercial and public-sector subscribers. Wholesale services for fixed-network, cable and mobile operators outside of the group accounted for over 20 percent of external revenue. These services included wholesale products for voice traffic/telephony, broadband/Internet and infrastructure services.

A total of 73 percent of external mobile revenue was generated from retail business in 2012. This figure does not include external revenue from terminal equipment, which is reported separately and has made a consistent nine-percent contribution to total revenue over the last three years. Wholesale business accounted for 14 percent of external revenue (see "External revenue by sector" table).

External revenue on the telecommunications market
€bn



1) Updated figures
2) Expected

External revenue by sector

	2010		2011		2012e[1]	
	€bn	%	€bn	%	€bn	%
External revenue on the telecommunications market	**59.2**		**57.9**		**58.0**	
External revenue in fixed networks	**26.30**	**100**	**25.13**	**100**	**24.58**	**100**
Via retail	19.83	75	19.21	76	18.71	76
Via wholesale	5.75	22	5.21	21	5.17	21
Other external revenue	0.72	3	0.71	3	0.70	3
External revenue based on cable TV infrastructure	**3.79**	**100**	**3.99**	**100**	**4.38**	**100**
Via retail	3.58	94	3.75	94	4.14	94
Via wholesale	0.21	6	0.24	6	0.24	6
Other external revenue	~ 0.00	0	~ 0.00	0	~ 0.00	0
External revenue from mobile services	**25.84**	**100**	**25.55**	**100**	**26.07**	**100** [2]
Via retail (excluding terminal equipment)	17.85	69	18.56	73	19.06	73
Via wholesale	4.39	17	3.49	14	3.67	14
Via terminal equipment	2.39	9	2.41	9	2.45	9
Other external revenue	1.21	5	1.09	4	0.89	3
Other external revenue	**3.22**		**3.25**		**2.95**	

1) Expected
2) Totals may deviate from rounded cumulative figures

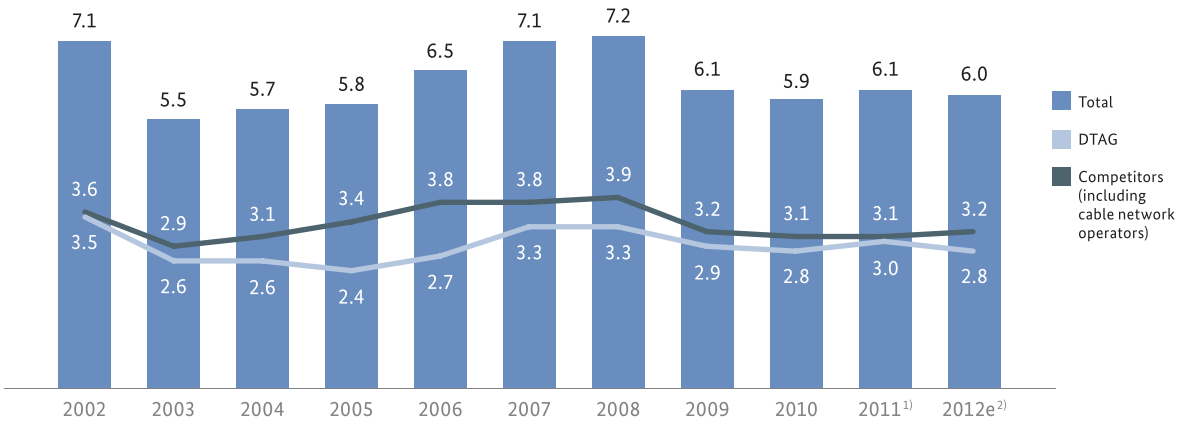
Investments in fixed assets

Investments in fixed assets on the telecommunications market came to around €6bn in 2012 (approximately €6.1bn in 2011), of which €3.2bn were invested by alternative providers and €2.8bn by DTAG. Investment in cable TV infrastructure increased to around €0.8bn (€0.7bn in 2011).

Employment

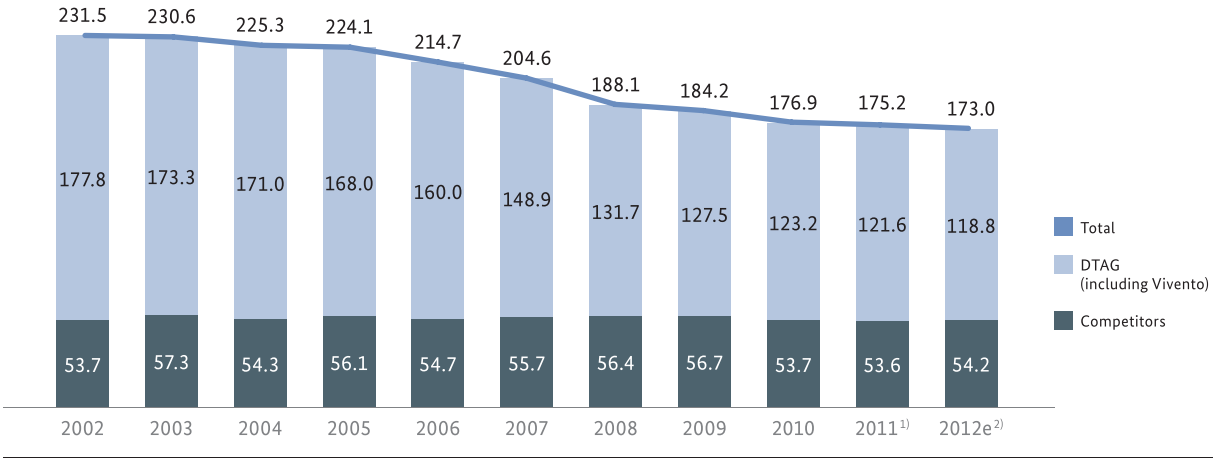
A total of 173,000 people were employed at companies on the telecommunications market at the end of 2012, somewhat fewer than in 2011 (175,200 employees). The number of employees at alternative providers increased by one percent, while staff reductions continued at DTAG (see "Employees on the telecommunications market" graph).

Investments in fixed assets on the telecommunications market
€bn



1) Updated figures
2) Expected

Employees on the telecommunications market
thousands



1) Updated figures
2) Expected

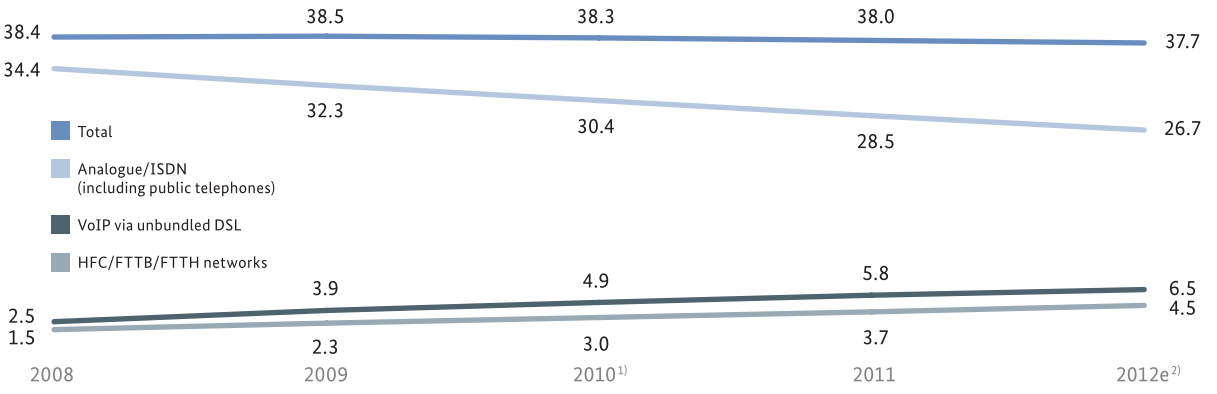
Telecommunications services using fixed-network lines

Voice communication connections

The last few years have seen contrasting trends in communication using conventional telephone lines (analogue/ISDN) on the one hand and unbundled DSL connections[1] and HFC networks of cable network operators on the other hand; DSL and HFC telephony have increased, while demand for conventional telephone lines has fallen. Optical fibre telephony (FTTB/FTTH) still has relatively little statistical significance. There was a slight overall decrease in demand for voice communication connections in fixed networks.

Analogue remained the most popular connection type in the fixed network in 2012, though the number of these analogue lines fell by almost seven percent to an estimated 16.2m. At the same time, the number of ISDN basic rate lines fell to around 10.3m last year, accompanied by a decrease in the total number of ISDN primary rate lines[2]. By contrast, there was an increase in the number of voice access points using unbundled and VoIP DSL connections (full connections) and in telephony using HFC, FTTB and FTTH networks. The total number of VoIP connections via unbundled DSL lines increased to an estimated 6.5m in 2012, representing a 12-percent year-on-year increase.

Voice communication connections
telephone connections (m)



1) Updated figures
2) Expected

1) Provision and operation of the DSL for unbundled DSL connections is not tied to a conventional analogue or ISDN telephone connection.
2) Figures for ISDN primary rate lines are based on estimates.

Telephone connections and competitors' shares in fixed networks

	2010[1]			2011			2012e[2]		
	Total stock	Competitors' share		Total stock	Competitors' share		Total stock	Competitors' share	
	m	m	%	m	m	%	m	m	%
Analogue lines	18.67	1.72	9.2	17.40	1.74	10.0	16.23	1.58	9.7
ISDN basic rate lines	11.63	3.94	33.9	10.93	3.63	33.2	10.29	3.27	31.8
ISDN primary rate lines	0.103	0.03	29.1	0.099	0.03	30.3	0.093	0.03	32.3
Public telephones	0.070	0.002	2.9	0.060	0.001	1.7	0.052	0.001	1.9
Voice access via HFC networks	2.86	2.86	100.0	3.55	3.55	100.0	4.32	4.32	100.0
Voice access via FTTB/ FTTH networks	0.117	0.117	100.0	0.160	0.160	100.0	0.192	0.192	100.0
Voice access via unbundled DSL connections used for VoIP	4.86	4.80	98.8	5.81	5.37	92.4	6.49	5.80	89.4
Total connections	**38.31**	**13.47**	**35.2**	**38.01**	**14.48**	**38.1**	**37.67**	**15.19**	**40.3**

1) Updated figures
2) Expected

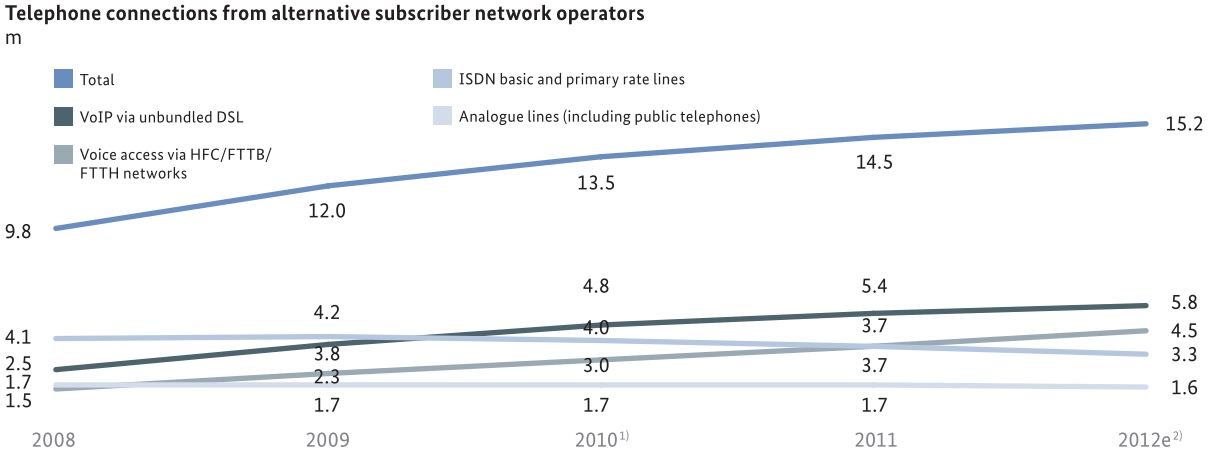
Data including self-supply

The number of HFC access points used for telephone calls increased by 22 percent to over 4.3m, and the number of voice access points via optical fibre networks grew last year by 20 percent to around 0.19m. Conventional fixed-network connections have been replaced by alternative technologies. The total number of public payphones (coin- and card-operated) stood at around 52,000 at the end of 2012.

DTAG's competitors had an estimated 15.2m telephone connections at the end of 2012. This represents an increase of 0.7m connections, smaller than in previous years.

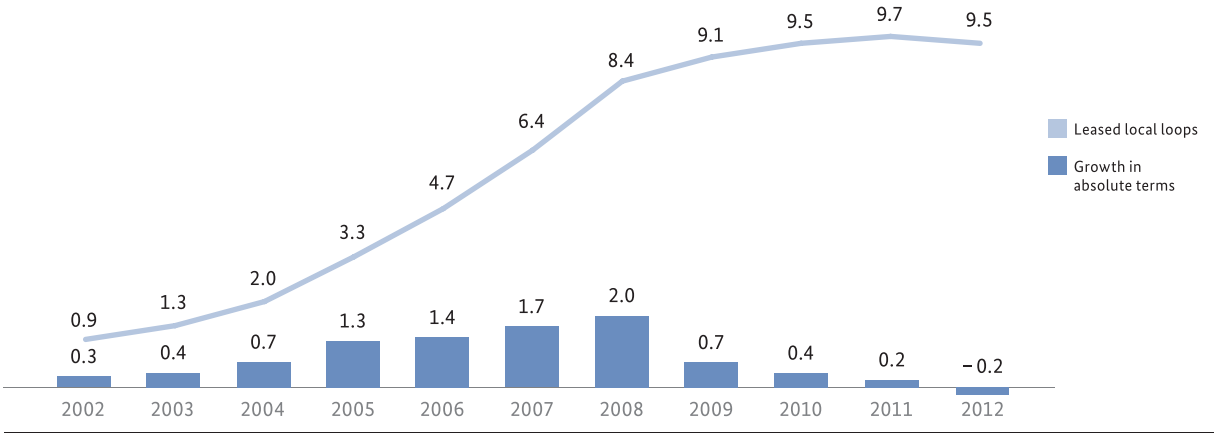
While the number of analogue and ISDN basic rate lines of alternative subscriber network operators decreased again, the proportion of their VoIP connections via unbundled DSL lines and telephone connections via HFC and optical fibre networks continued to increase. However, at approximately twelve and eight percent respectively, the growth rates for VoIP via unbundled DSL lines in 2011 and 2012 were significantly lower than those for voice access via HFC, FTTB and FTTH networks, which were around 25 percent and an estimated 22 percent in 2011 and 2012 respectively. Following the general trend, the importance of conventional analogue/ISDN telephony for the alternative subscriber networks has decreased in the space of just a few years.

Telephone connections from alternative subscriber network operators



1) Updated figures
2) Expected

Volume of leased subscriber lines
m



There were around 180 alternative subscriber network operators providing telephone connections at the end of 2012, offering consumers a choice of analogue lines, ISDN lines, voice access points via unbundled lines and DSL lines used for VoIP, and voice access points via HFC and optical fibre networks. The connections offered by alternative providers were operated on the basis of contracts concerning access to the DTAG local loop, on the basis of DTAG's ATM/IP bistream and resale wholesale products, the alternative providers' own local loop, or the wholesale products of alternative carriers (bitstream or resale).

Competitors were leasing approximately 9.5m local loops from DTAG at the end of 2012, which marks the first decrease in the number of these lines since they became a wholesale product (a year-on-year decrease of around 0.2m lines).

The main reasons for this decrease are likely to be the significant customer gains made by cable network operators on the broadband market and DSL customer winback by DTAG. In addition, rollout of optical fibre networks in individual cities by alternative carriers is seeing leased copper pairs replaced by these carriers' own optical fibre cables.

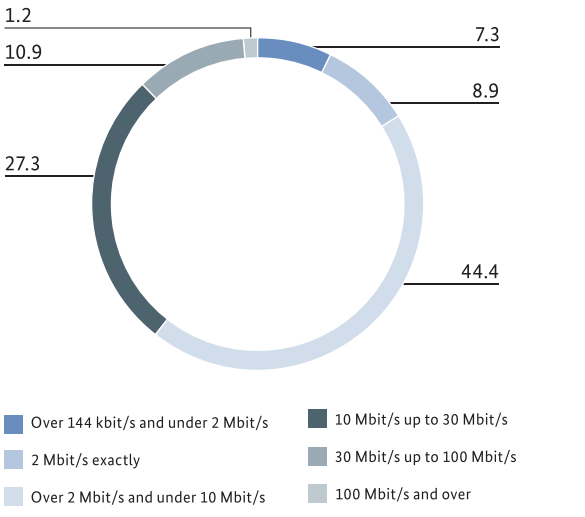
Broadband connections

Most broadband connections within fixed networks are based on copper lines (DSL) and HFC cable networks, while the rest use optical fibre cables, satellite connections, wireless infrastructures (BWA) and powerlines.

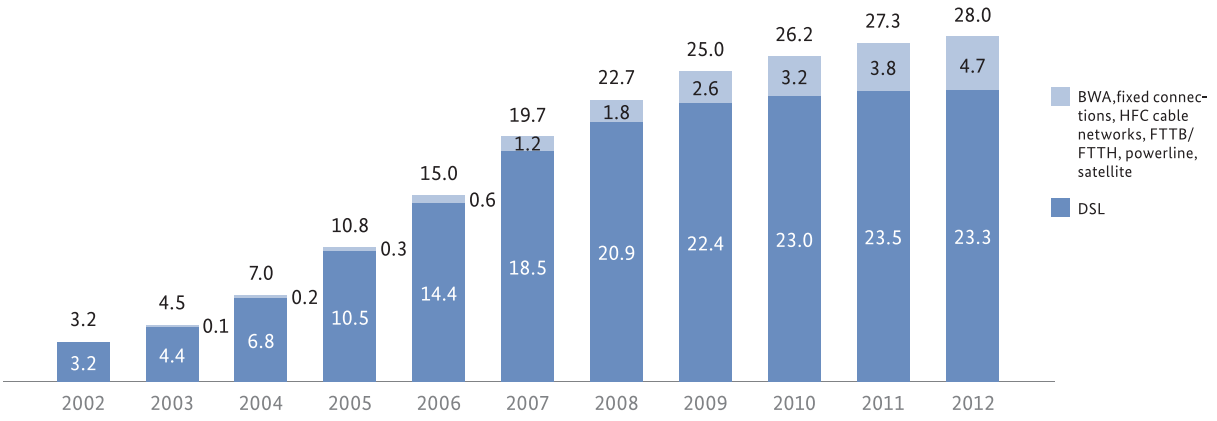
There were around 28m operational broadband connections in total at the end of 2012, with DSL continuing its dominance as the connection technology of choice (23.3m lines and an 83 percent share), followed by broadband connections from cable network operators (approximately 4.4m). The other technologies accounted for some 0.3m lines. So far, pure optical fibre connections have barely gained currency.

Although providers are increasingly offering speeds of at least 16 Mbit/s, and even over 100 Mbit/s, there is a significant discrepancy at national level between the high bitrates on offer and the bandwidths actually demanded by customers. For example, around 60 percent of broadband customers still use bandwidths (downstream) of less than 10 Mbit/s, even though higher bandwidths are available. Interestingly, this behaviour can be observed in many other European countries.

Distribution of broadband connections by speed in 2012
%



Broadband connections in fixed networks
m



DTAG's competitors achieved a market share of approximately 55 percent of the total number of broadband connections at the end of 2012. Both DTAG and its competitors have largely defended their shares of the fiercely competitive broadband market over the last few years.

DSL connections

There were some 23.3m live DSL connections at the end of 2012, with 12.4m of them provided directly by DTAG and around 10.9m by competitors (see "DSL connections" graph). VDSL (DTAG and competitors) accounted for just under five percent of the total number of DSL connections in 2012.

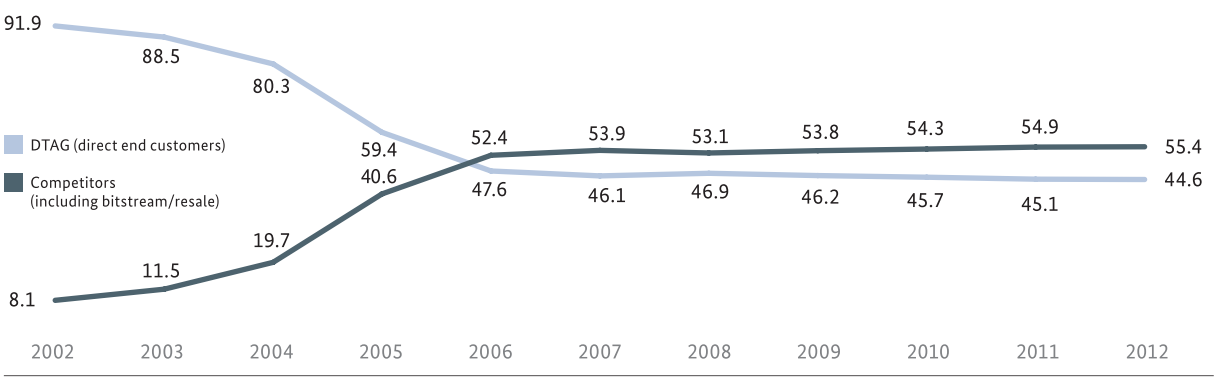
With the DSL market in decline for the first time since the introduction of DSL technology, DTAG's competitors achieved a share of approximately 47 percent of DSL connections sold to end customers.

The last few years have seen a marked increase in the importance of full DSL-based connections, which provide both Internet and telephony exclusively via VoIP. As a result, conventional analogue and ISDN connections are no longer required and do not form part of these lines. DTAG and its competitors were already providing around 6.5m full DSL-based connections at the end of 2012.

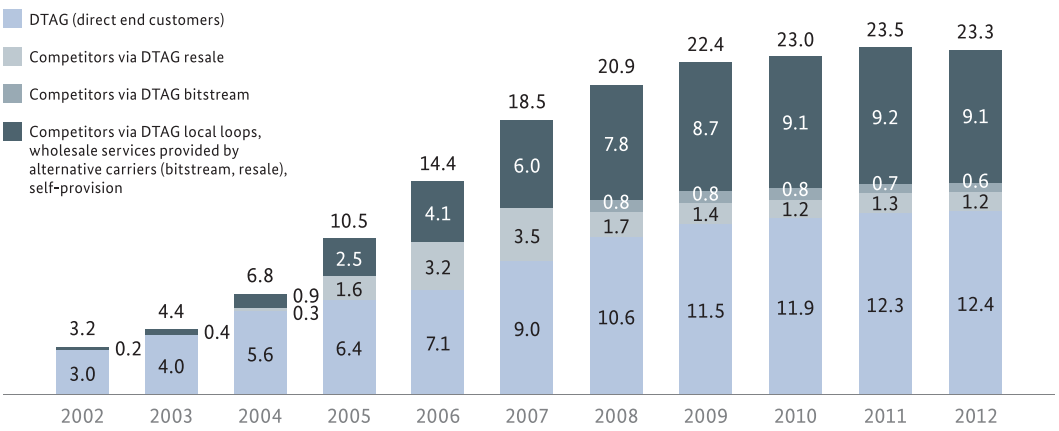
Broadband connections provided by cable TV network operators

Cable network operators gained new Internet customers in 2012, continuing the trend of the past few years. Around 4.4m customers were using broadband connections provided by cable network operators at the end of 2012, a year-on-year increase of 800,000 customers.

Share of broadband connections in fixed networks
%



DSL connections
m



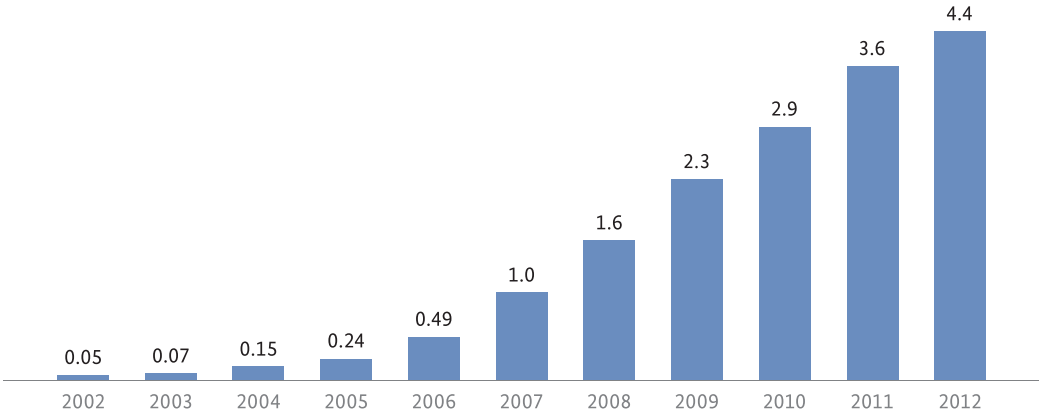
These networks, originally consisting solely of coaxial lines, have been upgraded to HFC cable networks, consisting of coaxial and optical fibre lines. By gradually increasing the proportion of optical fibres in the line to the customer, cable network operators can respond flexibly to future customer demand for higher transmission speeds. A number of these operators are going a step further and already offering FTTH to their customers. Consequently, Internet connections using the cable TV network often offer higher maximum bandwidths than those of DSL providers. With the network upgrade to the DOCSIS 3.0 transmission standard almost complete, cable network operators can offer competitively-priced packages with download speeds of up to 150 Mbit/s. Over 88 percent of customers at one cable network operator were using Internet connections with speeds of 10 Mbit/s or more, and 59 percent were using connections with speeds of 30 Mbit/s and over. As such, the bandwidths demanded by customers are significantly higher than the average bandwidths provided by the different connection technologies.

Internet access via optical fibre cables (FTTB/FTTH)
Optical fibres enable the highest bandwidth of any available transmission medium. Optical fibre cables can be used over long distances and are unaffected by external influences, making them ideal for transporting data.

Optical fibre Internet connections come in two forms: FTTB and FTTH. Due to the limited geographical availability of these connections, user figures are still relatively low, with some 166,000 customers accessing the Internet via FTTB and around 46,000 doing so via FTTH at the end of 2012.

Satellite-based Internet connections
It is possible to access the Internet from virtually any location using satellite systems. Multibeam satellite technology, launched in 2011, currently enables download speeds of up to 36 Mbit/s. More widespread use of this hi-tech connection option is hindered by the high costs involved. Added together, the costs of

Internet access via cable network operators
m



purchasing and maintaining the reception technology and the monthly charges for the relevant services make satellite-based Internet connections more expensive than connections provided via DSL or cable TV networks. The regional rollout of other Internet connection options led to a further decrease in customer numbers, with only around 28,000 customers using bidirectional satellite services at the end of 2012.

Broadband traffic volumes

Despite increasing saturation of the broadband market, the volume of traffic handled by broadband connections continues to rise steadily. According to initial estimates by the Bundesnetzagentur, the total traffic volume had increased to 4.3bn GB by the end of 2012, driven primarily by the use of data-intensive applications, such as video.

Call minutes

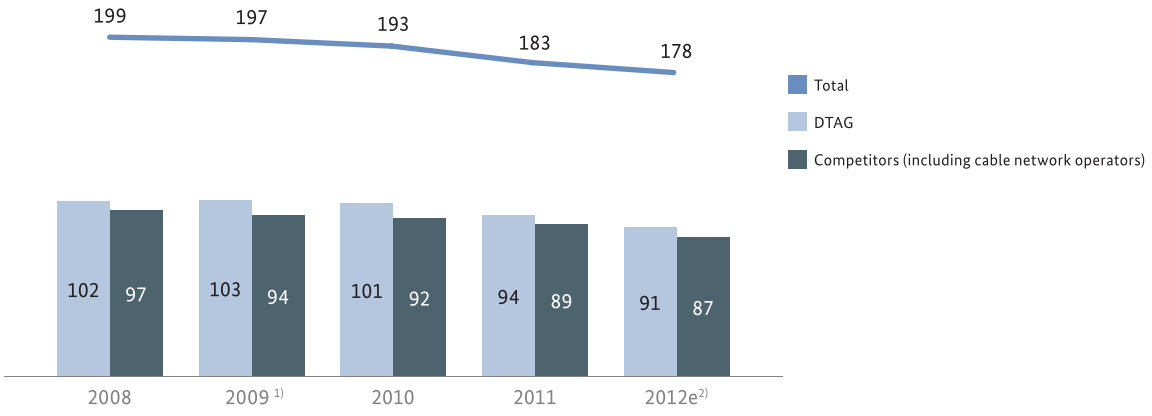
The total volume of outgoing call minutes[3] via conventional telephone networks and IP-based networks continued to decrease, owing primarily to traffic volumes shifting to mobile networks.

Around 87bn of the 178bn or so total call minutes in 2012 were registered in the networks of DTAG's competitors, meaning almost half of all call minutes were handled by alternative providers. These providers are increasingly handling calls via DSL and cable TV networks. Call volumes are shifting from the conventional telephone network to networks based on VoIP, a technology that enables a telephone service to be provided via an IP-based infrastructure, thereby replacing conventional telephone technology (analogue/ISDN). To use this technology, customers require a broadband connection. Connections via the IP infrastructure need to meet certain quality requirements (such as real time).

The offerings of alternative DSL providers and cable network operators in particular are geared towards full connections and do not include a conventional telephone connection, meaning that both Internet access and telephone calls are handled using VoIP only. DTAG is also selling more of these connections to new customers. An estimated 10.8m or so customers were using full connections via cable TV or DSL at the end of 2012. DSL customers whose connection is still coupled with a conventional telephone line have the option of using VoIP in some cases, although they usually require a special price plan with a VoIP provider to do so. The combined call volume of all VoIP users in 2012[4] totalled around 45bn minutes.

Use of call-by-call and preselection options continued to decrease, while IP-based traffic volumes are expected to increase over the next few years. The volume of indirect calls was estimated to be around eight billion minutes at the end of 2012. With a share of almost 60 percent, traffic volumes via preselection significantly exceeded voice volumes via call-by-call. The number of accesses with preselection in the DTAG network decreased from 1.7m at the end of 2011 to just 1.3m at the end of 2012.

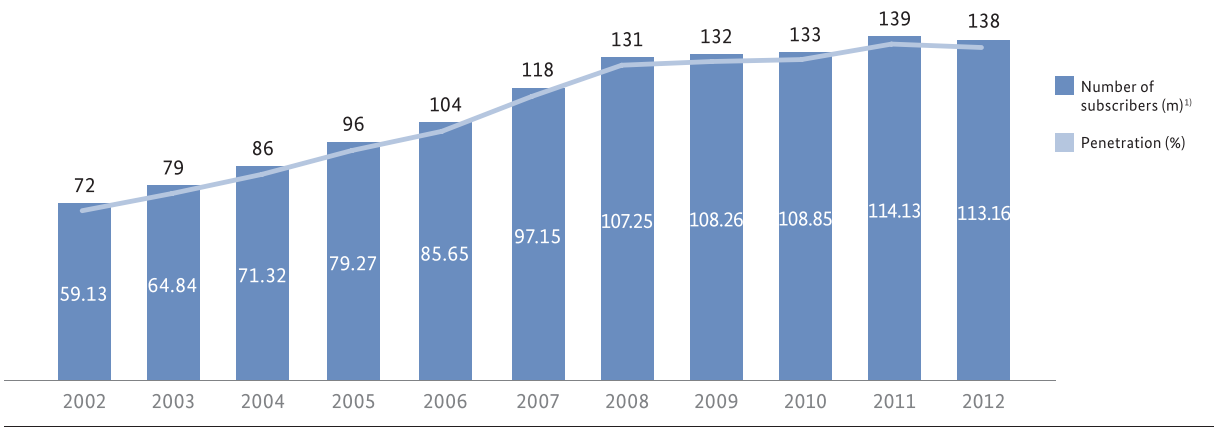
Outgoing call minutes in fixed networks
bn



1) Updated figures
2) Expected

3) Calls within Germany, international calls, and calls to German mobile networks
4) This figure does not include minutes from calls made using primarily free VoIP software (such as Skype).

Subscribers and penetration in mobile communication networks



1) Number of SIM cards

Mobile communications

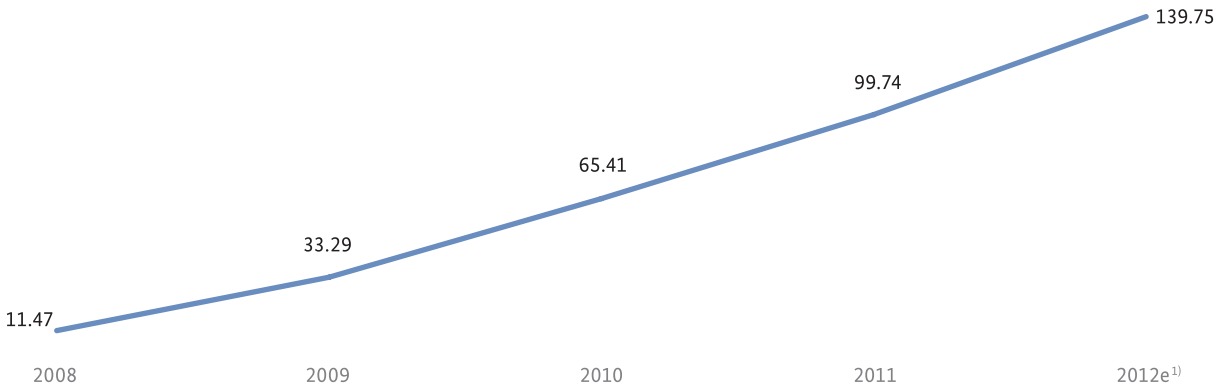
Subscribers

At just over 113m, the number of mobile subscribers, that is, the number of SIM cards activated by the network operators, at the end of 2012 failed to match the high level of the previous year, while the penetration rate for the population stood at around 138 percent. The widespread use of secondary and tertiary devices leads to these devices not being in constant use. Statistically speaking, only around 89 percent of SIM cards were in active use at the end of 2012[5].

The providers strive to exclude cards that have been inactive for long periods from their statistics, with the decreased number of cards in 2012 a consequence of this policy.

SIM cards are also used in automated data communication between devices (M2M), with 2.3m of these cards in use at the end of 2012. The share of prepaid cards was approximately 53 percent at the end of 2012, compared with 56 percent the previous year. At 62.3 percent, D network operators had the largest share of SIM cards at the end of 2012, while E network operators increased their share by 1.7 percentage points to 37.7 percent between 2010 and 2012. Mobile service providers whose customers largely use D networks saw their percentage share of subscribers decrease slightly from just under 18 percent at the end of 2011 to around 16 percent at the end of 2012.

Mobile data volume
m GB



1) Expected

5) Use during the three months preceding the day of data collection.

Mobile network operators also offer a service whereby their mobile subscribers can be contacted on a fixed-network number, although demand for this service is decreasing as the cost of calls to mobile networks falls. The number of mobile subscribers using a fixed-network number decreased from approximately 7.5m at the end of 2009 to 5.7m at the end of 2011 and to just 5.2m by mid-2012.

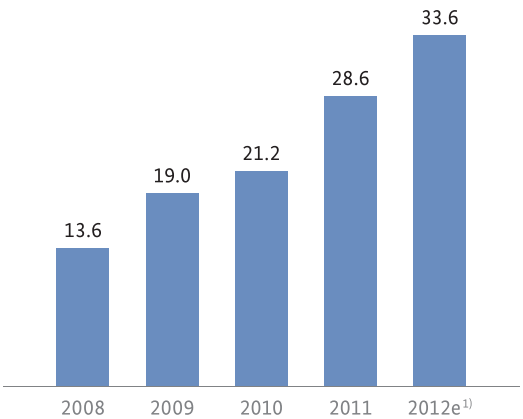
Mobile broadband

The increase in mobile data traffic presents a challenge to the performance of the networks. Some 140m GB were transmitted in 2012. If it were not for the curbing effect of fair flat-rate tariffs[6] on data traffic, the volume would be far higher.

An increasing number of SIM cards are being employed in devices in order to use mobile data transmission services. The number of SIM cards used for this purpose increased markedly from 37.7m at the end of 2011 to 40m at the end of 2012, with around 34m of these cards being used in UMTS- and LTE-enabled devices at the end of 2012. There were 1.12m LTE subscribers registered with network operators at the end of 2012.

A small proportion of mobile broadband connections are being used in fixed locations, with LTE and HSPA connections accounting for less than 300,000 of them in mid-2012. Just under a third of these connections were used both for accessing the Internet and for making phone calls[7]. The number of stationary LTE and HSPA connections rose to 623,000 by the end of 2012.

Number of regular UMTS and LTE users
m



1) Expected

6) Flat rates generally comprise an unlimited usage volume for a fixed price. While fair flat rates do not limit data volumes, they do significantly reduce transmission speeds for the rest of the month once a specified monthly volume has been used.

Mobile networks are striving to improve their infrastructure to keep pace with the increase in subscriber numbers, the demand for greater traffic volumes, and new technology, with expansion of wireless base stations (the interfaces between wireless and wire-based networks) a key part of their efforts. The number of these stations increased from just under 106,000 at the end of 2009 to over 121,000 by mid-2012[8]. The wireless base stations for the different technologies are often situated in the same locations[9], and network operators also make shared use of antenna sites, which is why there are fewer antenna sites than wireless base stations. There were a total of 70,513 mobile sites at the beginning of December 2012.

There were 53,000 base stations operating with UMTS technology in mid-2012. Operators increased overall UMTS coverage in relation to population and geographical spread, improving UMTS population coverage from between 62 and 82 percent in 2009 (depending on network) to between 73 and 87 percent in mid-2012. Accordingly, geographical UMTS network coverage increased from between 19 and 49 percent in 2009 to between 34 and 58 percent in mid-2012.

Progress was also made in the rollout of LTE technology, with a threefold increase in the number of LTE base stations from 3,100 at the beginning of 2012 to 9,600 by the end of the year. LTE network coverage by the two largest network operators in relation to population stood at 46 and 53 percent respectively at the end of 2012, while geographical coverage reached 44 and 59 percent respectively. Geographical coverage by these two network operators was greater than population coverage in mid-2012, as priority was given to providing coverage to rural areas in line with the Bundesnetzagentur's requirements. According to the German government's broadband atlas, LTE was available to 51.69 percent of German households at the end of 2012.

Read more in "Connections from the airwaves" on page 29 of the Magazine.

7) LTE voice communication had not yet been introduced in 2012.
8) The figures for the end of 2009 and for the first quarter of 2011 in the 2011 Annual Report were amended following correction by a network operator.
9) An increasing number of multi-standard radio stations are also being set up, bringing GSM, UMTS and LTE technology together under one roof. Because base stations continue to be recorded separately according to the technology used in them, base stations that combine several technologies are counted several times.

Text messaging

The Short Messaging Service (SMS) celebrated its 20th birthday in December 2012. Use of text messages has more than tripled over the last decade. While text messages are expected to be replaced in some cases by emails or other services as smartphone use continues to grow, they are increasingly used in business transactions, for example, to provide notifications as part of goods tracking services or to send transaction numbers in online banking. Text messaging is also being driven by flat-rate billing, with around 58 percent of messages billed on the basis of flat rates in 2012.

The figures for text messages continue to increase rapidly overall. A total of around 59.1bn text messages were sent in 2012, while the proportion of text messages sent within the same network decreased slightly to 68 percent (around 70 percent in 2010 and 2011).

Premium text messages, MMS messages and premium MMS messages were also sent, but on a small scale (around 0.8bn in Germany in 2012).

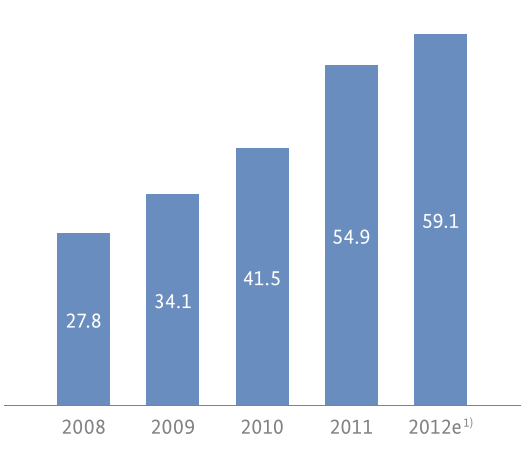
Call minutes

According to initial figures, the volume of outgoing calls in Germany totalled around 110bn minutes, a year-on-year increase of 2.5 percent. While fixed-line telephony is declining, mobile telephony continues to grow, with mobile voice communication increasingly replacing fixed-network voice communication[10].

The traffic structure of mobile calls has remained virtually unchanged over the last few years, with almost half of calls made within customers' own mobile networks (on-net) and nearly one third to the German fixed network. An estimated 70 percent of all mobile calls made within Germany were billed as part of inclusive packages (with free allowances and flat rates, for example) in 2011 and 2012.

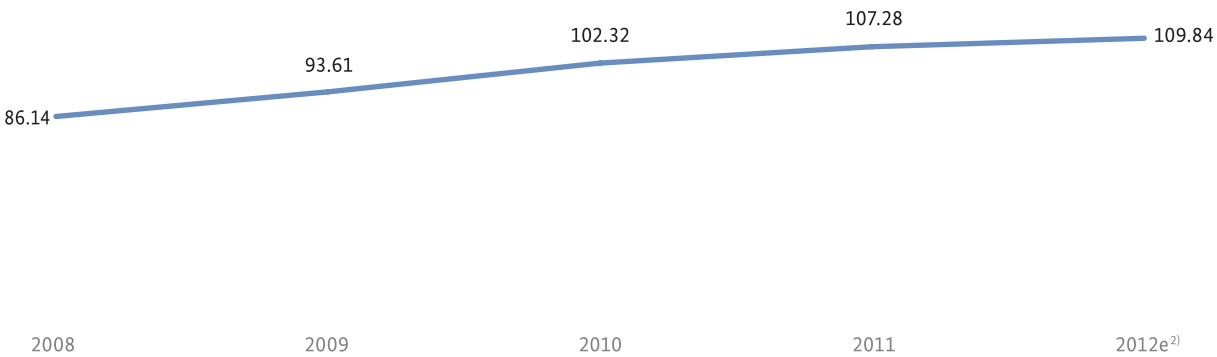
The annual volume of outgoing calls made from German SIM cards abroad using international roaming has remained at around one billion minutes for the past three years. A similar volume was recorded for foreign visitors using international roaming services in Germany.

SMS sent
bn



1) Expected

Volume of mobile voice services (outgoing traffic)[1]
minutes (bn)



1) Traffic outgoing from Germany. The voice traffic volume from foreign SIM cards using international roaming in Germany is not included.
2) Expected

10) Eleven percent of German households only have a mobile connection, while 14 percent only have a fixed-network connection (Special Eurobarometer 381/E-Communications Household Survey, June 2012).

Key figures and competitors' shares in the German telecommunications market

Key figures	2010	2011	2012e[1)]
Revenues (€bn)	59.2	57.9[2)]	58.0
Investments (€bn)	5.9	6.1[2)]	6.0
Employees	176,900	175,200[2)]	173,000
Telephone lines/access points (m)	38.3[2)]	38.0	37.7
Analogue/ISDN (including public telephones)	30.4	28.5	26.7
Voice access points via HFC/FTTB/FTTH networks	3.0[2)]	3.7	4.5
VoIP via unbundled DSL	4.9	5.8	6.5
Total broadband connections (m)	26.2	27.3	28.0
Broadband penetration rate (% of households [3)])	66.0[2)]	68.8	70.1
DSL	23.0	23.5	23.3
DTAG	11.9	12.3	12.4
Competitors	11.1	11.2	10.9
Local loops, wholesale services provided by alternative carriers, self-provision	9.1	9.2	9.1
Bitstream (DTAG)	0.8	0.7	0.6
Resale (DTAG)	1.2	1.3	1.2
Cable network operators (competitors)	2.9	3.6	4.4
DTAG leased subscriber lines (m)	9.5	9.7	9.5
Mobile subscribers (contracts in m)	108.9	114.1	113.2
Mobile penetration rate (% of inhabitants)	133.1	139.6	138.3

Competitors' shares (%)	2010	2011	2012e[1)]
Revenues	54	54[2)]	56
Investments	53	51[2)]	53
Telephone lines/access points	35	38	40
Broadband connections	54	55	55
DSL (including bitstream/resale)	48	48	47

1) Expected
2) Updated figures
3) Number of households according to Eurostat

Consumer protection and advice

Consumer protection is a key concern of the Bundesnetzagentur, which offers consumers a wide range of services to assist them with their problems and help them assert their rights.

General consumer enquiries and complaints

The Bundesnetzagentur's Consumer Advice service offers information and support to consumers in connection with telecommunications, energy, postal and rail services. The Consumer Advice service received a total of 73,382 enquiries and complaints in 2012 (68,384 in 2011). The two-fold increase in the annual enquiry volume over the last ten years is testament to the popularity of this Bundesnetzagentur service. Around half of all enquiries (over 37,000) concerned telecommunications issues, while the remaining ones related to energy, the postal service and railways, or were of a general nature.

The vast majority of telecommunications enquiries pertained to general contractual matters, with inconsistencies in contract conclusion, contract termination processes and service provision the most frequently cited problems. Minimum service quality for broadband connections was a recurring issue. In many cases, DSL contracts only specify the maximum speed, which is rarely achieved in practice. Consumers also complained about the business conduct and customer service of the telecommunications companies, especially when it came to the availability and professionalism of customer service, the processing of customer complaints, and fault clearance.

For more information, please see "Transparency of consumer contracts" on page 85 and "Quality study" on page 84.

The new Telecommunications Act (TKG) has significantly improved matters for consumers when switching providers. Implementation of the amended TKG resulted in a shift in the focus of enquiries from around mid-2012. For the first time, consumers enquired about escalation options when they had been unsuccessful in switching providers, particularly when this had resulted in service disruption. Consumers also showed increased interest in their new rights when relocating, wishing to know more about continuation of services at their new place of residence and about their special right of termination if a service cannot be offered at their new place of residence, for instance (see also "Switching providers" on page 83).

The number of complaints about number misuse and telephone spam remained high in 2012. Many consumers used the Consumer Advice service as their first port of call for alerting the Bundesnetzagentur to cases of misuse.

More information on efforts to combat number misuse and telephone spam can be found on pages 86-90.

There were also many complaints about phone bills issued by the telecommunications companies containing call charges from third-party providers. Consumers also expressed their dissatisfaction with subscriptions taken out via speed-dial numbers and with invoice items pertaining to call-by-call services, primarily citing sudden changes in price and the similar appearance of very low-cost and very high-cost numbers. However, the number of enquiries and complaints about these issues is expected to decrease in future thanks to the transparency regulations for phone bills, the obligation to state the price before call-by-call connections are put through, and the option of blocking third-party providers.

Many consumers also sought information about the new EU Roaming Regulation that came into force on 1 July 2012, amending the two previous regulations and expanding customer protection. This new regulation introduces further gradual decreases in consumer charges for roaming calls and text messages from other EU countries to Germany, and, for the first time, regulates customer prices for data roaming in order to avoid bill shocks. The cut-off mechanism is also being extended to this end to worldwide roaming under specific conditions.

Switching providers

The amendment of the TKG in May 2012 was intended to prevent or at least minimise any service disruption to consumers switching telecommunications providers, thereby boosting consumer confidence in the reliability of the process for switching providers and, by extension, in competitors.

The amendment to the regulations on switching providers stipulates that telecommunications providers and network operators must ensure that there is no disruption to the service provided to subscribers by the company they are leaving before the contractual and technical requirements for switching to the new provider have been met. A subscriber's service must not be interrupted for more than one calendar day when switching providers. Since December 2012, the donor provider is also obligated to resume service provision in the event of the switch to a new provider being unsuccessful.

It was already clear from the discussions held by the Bundesnetzagentur with all major providers and associations in May 2012 that it would not be possible to immediately and drastically cut the number of faults as soon as the amended TKG entered into force. It takes a certain amount of time to set up automated IT processes for bulk business and to secure industry-wide approval for these processes. Some of the companies on the telecommunications market had already begun preparations before the amended TKG came into force, although implementation of the automated processes is not expected until mid-2013.

Nonetheless, in order to efficiently implement the legislative intent and therefore uphold the rights of consumers, the Bundesnetzagentur acted immediately after the amended TKG came into force, issuing a stipulation on the escalation of subscriber complaints concerning provider switching. This stipulation places a binding obligation on all companies (143 providers at present) to successfully deal with individual cases of service disruption resulting from a switch of provider submitted to the Bundesnetzagentur and forwarded to these companies, and to do so within short periods of time. In order to create a sound basis for cooperation between all companies concerned, each company was obligated for the first time to set up a dedicated office for dealing with enquires about switching providers. This office must be equipped with the necessary resources and staffed with the relevant professionals in order to solve problems as quickly as possible. All companies involved, whether the donor provider, the recipient provider or the respective network operators, were obligated to begin immediate, non-discriminatory cooperation.

From the time the stipulation about the escalation process came into force in June 2012 to the end of 2012, the Bundesnetzagentur received some 5,585 customer complaints about switching providers. The Bundesnetzagentur examines these complaints to check whether the conditions of the TKG have been fulfilled and whether all the relevant documents have been submitted, and forwards the complaints to the dedicated contacts at the relevant companies for prompt resolution as part of the escalation process. A total of 1,962 individual complaints had been escalated in this way by the end of the review period.

The escalation process initially increases the workload for all companies involved, as they have to make the relevant staff available to process complaints swiftly. However, against the backdrop of the legislative mandate and the negative impact an unreliable provider-switching process has on competitiveness, this workload is unavoidable. Nonetheless, all companies on the telecommunications market have the ability to reduce the number of faults in switching providers in the medium term by establishing comprehensive, automated processes without delay. This should reduce the number of problems to be solved and therefore cut the workload for the companies in question.

By introducing the escalation process, designed to ensure implementation of the new regulations on switching providers, the Bundesnetzagentur has for the first time created a single port of call for processing complaints. The monthly volume of complaints is increasing as the profile of the new process increases. The aim is to quickly process individual complaints and also to identify systematic errors in the process for switching providers in order to clear them in the long term in cooperation with the companies concerned.

More information about switching providers is available at: www.bundesnetzagentur.de/tk-anbieterwechsel.

Quality study

The transparency provisions of the TKG are designed to make it easy for consumers to compare the scope and quality of the telecommunications services on the market, allowing them to make an informed decision. The Bundesnetzagentur offers a range of services, including taking measurements and developing resources to enable consumers to measure the capacity of their own broadband connection.

In this context, the Bundesnetzagentur conducted a comprehensive study on the quality of broadband Internet services from June to December 2012. The study initially looked at whether and to what extent "actual" and "advertised" data transmission rates ("up to" rates) differed from each other, the impact of using more than one package service at the same time (such as VoIP and IPTV) on Internet access quality, and the options available to customers for reliably measuring the performance of their own broadband connection. The study also examined whether certain applications or protocols are systematically transmitted faster, an issue that will be explored in more depth in 2013.

For more information, please see "Net neutrality", beginning on page 93.

The study focused both on stationary technology (particularly xDSL, cable broadband connections and LTE lines used on a stationary basis) and on wireless mobile Internet access technology, and examined the data transmission rates of different product classes, providers and regions. While mobile connections were measured at sites where the mobile Internet was accessed frequently (such as railway stations and shopping arcades) using speed tests, stationary connections were initially measured using a nationwide measuring platform. The test connections were measured in a fully controlled environment. The measuring platform provided suitable conditions for examining parameters that do not affect Internet access quality close to the customer connection, but rather are more deeply integrated into the network structure (such as traffic load and delay).

Data on parameters affecting data transmission rates around the access network was collected as part of customer measurements, whereby the Bundesnetzagentur asked customers to measure the data transmission rate of their Internet connection using measuring software available at www.initiative-netzqualität.de. By the end of the year, around 500,000 consumers had measured their data transmission rates in this way, enabling the Bundesnetzagentur to determine the difference between advertised and actual data transmission rates for different technologies, product classes and regions.

Lastly, there is the question of the options that can be made available to consumers for taking reliable measurements of their own broadband connection. Customers are often unaware of whether and to what extent the actual data transmission rate of their broadband connection differs from the advertised transmission rate. It is the conditions for such a consumer measurement concept that form the final focus of the study.

Read more in "Online faster", beginning on page 14 of the Magazine. The results of the study are available at: www.bundesnetzagentur.de/qualitaetsstudie.

Building on the results of the study and the findings of the request for information (see also "Transparency of consumer contracts"), the Bundesnetzagentur will start a discussion in 2013 of ways to make services more transparent to consumers and to give consumers more control over these services. Developing sustainable procedures is a particularly effective way of ensuring compliance with transparency requirements in the long term.

Transparency of consumer contracts

Alongside the quality study (see also "Quality study"), the Bundesnetzagentur began work in 2012 to examine the consumer contracts of all major providers to determine how transparent they are in the information they provide. This will make it possible to determine what information consumers receive from their providers before a contract is concluded, while it is being concluded and after it has been concluded. The Bundesnetzagentur is focusing on the information provided about the bandwidth of Internet connections, both mobile and fixed. Following evaluation of the findings of the request for information and the results of the quality study, the Bundesnetzagentur will decide which additional measures to introduce in order to improve transparency for consumers.

Dispute resolution

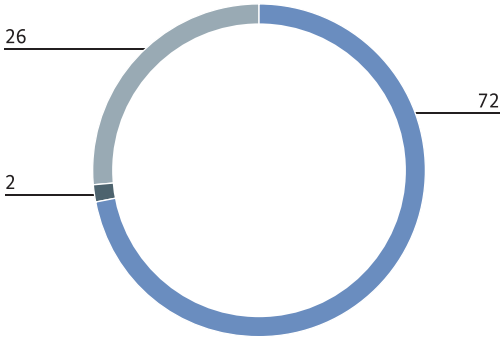
The Bundesnetzagentur's dispute resolution panel is the point of contact for consumers who are experiencing problems with telecommunications providers, and mediates in disputes between the two parties in accordance with the TKG. The efficient and cost-effective resolution process is designed to allow a solution to be found that is acceptable to both parties, thereby avoiding a legal dispute.

A total of 674 requests for dispute resolution were received in 2012, meaning the panel continued to be called upon frequently. There were also 222 other enquiries and requests for assistance.

A total of 671 proceedings were concluded during the review period, ten percent of them due to the petition being withdrawn, and around 43 percent of them due to a failure to meet the criteria for dispute resolution (no infringement of rights within the meaning of the TKG). With the expansion of the panel's responsibilities as a result of the amended TKG coming into force in May 2012, proceedings may now be initiated for certain civil law disputes over the conditions or execution of contracts in connection with the customer protection provisions of telecommunications law. As a result, the rate of permissible proceedings relating to contractual disputes increased by almost 10 percent.

In the end, the panel initiated 311 proceedings. However, in 81 proceedings, the respondents refused to take part. Building on the strong results from the previous years, the panel secured an agreement between the parties in 97 percent of the remaining 230 proceedings. There were only five cases in which the complainant abandoned proceedings after their commencement and one case in which a respondent did so, leading to the proceedings being called off.

Dispute resolution proceedings 2012
%



Amicable agreement
Complainant withdrew from proceedings
Respondent withdrew from proceedings/refused to participate

The requested dispute resolution proceedings largely centred on complaints about billing, the vast majority of which related to payment demands for mobile data services. These were followed by contractual disputes, primarily concerning tariffs, provision of technical performance data, extension/termination of contracts and provision periods.

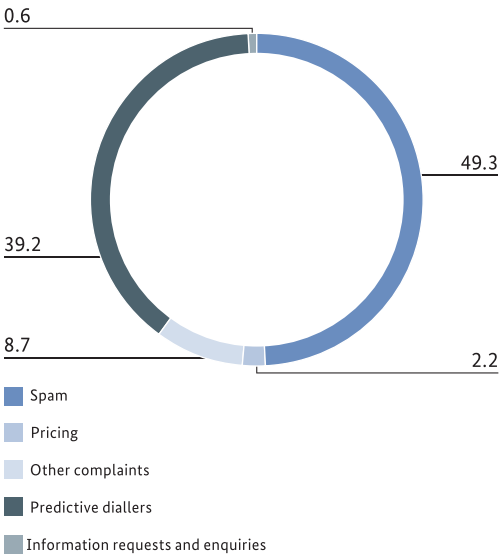
When it came to provider switching and number portability, there was a decrease in the number of requests for dispute resolution connected with failed porting (11 percent), due primarily to the establishment of a dedicated point of contact for problems with switching providers.

More information about dispute resolution is available at: www.bundesnetzagentur.de/tk-schlichtung.

Combating phone number misuse

The Bundesnetzagentur received a total of 48,855 written complaints and queries last year relating to phone number misuse[11]. The number of queries and complaints continued to decrease, as in 2011. The reduced volume of complaints is due in no small part to the Bundesnetzagentur systematically tracking incidences of misuse. The number of complaints about fax spam alone fell by over 45 percent as a result of numerous numbers being deactivated.

Main subjects of written complaints and enquiries 2012
%



The Bundesnetzagentur initiated 2,222 administrative procedures last year in order to track phone number misuse, ordering the deactivation of a total of 1,799 numbers in 421 cases. Bans were also placed on invoicing and payment collection for 46 numbers and one product ID or article/service number. Invoicing bans prevent certain amounts being billed to the affected consumers, while a payment collection ban protects consumers who have already received bills, preventing the billed amounts from being collected. The Bundesnetzagentur also banned illegal business models in ten instances. In addition, warnings were issued in less serious cases, where the individuals or companies acting unlawfully stopped their illegal activities with immediate effect. The Bundesnetzagentur issued two notices of fines (now legally binding), one amounting to 1,000 euros and the other to 8,000 euros, for violation of obligations to indicate and state call prices.

Once again, the administrative courts ruled in the Bundesnetzagentur's favour in all proceedings against measures of the Bundesnetzagentur.

Pricing message requirement for call-by-call
Since 1 August 2012, providers of call-by-call services are also obligated to state the gross price of these services before charging customers to use them. They are not permitted to charge for this price information or for the three seconds following it. At the same time, they are required to indicate the point from which charges will be made for the call.

Following an initial fall in the number of complaints about price-related infringements since 2011, extending the pricing message requirement to call-by-call services from August 2012 led to a significant increase in such complaints. The number of complaints increased to 890 between August and December 2012, more than five times as high as in the same period of the previous year. These complaints concerned matters such as differences between the stated charges and the billed charges for call-by-call connections, and the quality of price announcements, which were said to be unclear, unintelligible or too fast in many cases.

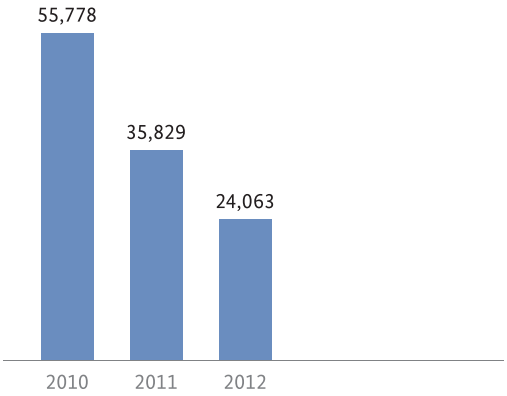
In one instance, the Bundesnetzagentur banned a call-by-call provider from billing and collecting payment for call charges until this provider had introduced a price announcement in line with applicable legislation. A particularly high number of consumers complained about the call-by-call service using the operator code 010040. The service operator had dramatically increased its tariffs during the year and failed to provide transparent information about these increases in its price announcement activated from 1 August 2012. The Bundesnetzagentur issued this service operator with a warning for breaching its obligation to state prices. Other providers also received warnings for violating legal regulations.

11) The Bundesnetzagentur also received 21,647 telephone enquiries and complaints about number misuse and telephone spam last year. A breakdown of this figure is not available.

Spam

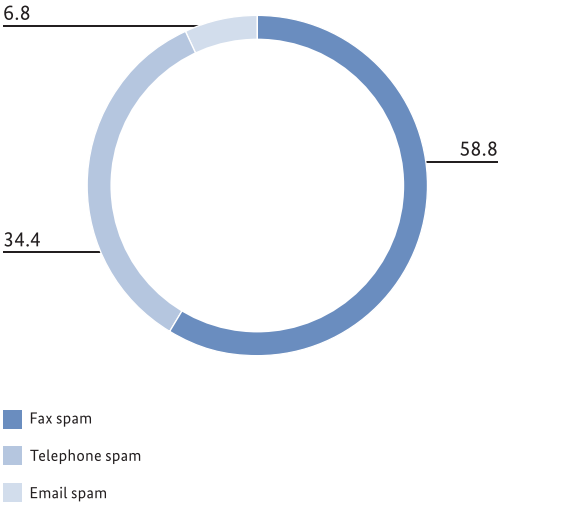
The majority of complaints in the area of phone number misuse continue to relate to telephone, email and fax spam. However, the number of complaints received decreased once more, from 35,829 in 2011 to 24,063 in 2012.

Written complaints about spam



The sharpest decrease was seen in the number of complaints about fax spam, which, following some significant increases in 2010 and 2011, fell from 26,229 in 2011 to 14,151 in the review period. This welcome development is a result, among other things, of the Bundesnetzagentur for the first time instructing all German network operators at the end of 2011 to prevent – wherever technically possible – both incoming connections and the accessibility of the foreign contact numbers stated on the unsolicited spam faxes. Up until this point, measures had only targeted national numbers. Last year, the Bundesnetzagentur also instructed all phone numbers of those suspected of sending fax spam on multiple occasions to be deactivated as a preventative measure.

Breakdown of complaints about spam 2012
%



Predictive diallers
Pleasingly, there has been a slight year-on-year decrease in the number of complaints about predictive diallers to 19,148 in 2012. Predictive diallers are usually computer-based programmes that call several numbers at once. As soon as the first subscriber takes the call, the other calls being attempted at the same time are interrupted and these numbers are dialled again later. These kinds of programmes are frequently used by call centres to make the most effective use of staff.

The use of predictive diallers is not forbidden by law, nor are there any statutory provisions governing it. However, "aggressively" configured predictive diallers, which involve a significant number of repeated call attempts at certain times and intervals, can cause an unreasonable degree of nuisance to subscribers, constituting a violation of section 7(1) of the Unfair Competition Act (UWG). Warnings and also one deactivation order were issued in such cases during the review period.

Banning of chargeable call queues
Since the nine-month transitional arrangement for free call queues entered into force on 1 September 2012, chargeable call queues may only be used for special numbers (such as 0180 and 0900 numbers) if there is a fixed charge for the call or if at least the first two minutes of the call are free of charge for the caller. Call queues can continue to be used with no restrictions for geographic numbers, conventional mobile numbers and freephone numbers.

A call queue is considered to exist when a call is taken or held, but the caller's enquiry is not attended to, covering the period from call set-up to the time the caller's enquiry begins to be dealt with. As such, the two-minute charge-free period provided for in the transitional arrangement begins at the moment the caller presses the last button. The charge-free period ends at the latest two minutes after the call is set up or if the call queue is ended earlier when the caller's enquiry begins to be dealt with. Under the transitional arrangement, downstream call queues, such as waiting times while a call is transferred after an agent has begun to deal with the enquiry, may still be chargeable. The definitive arrangement for non-chargeable call queues will enter into force on 1 June 2013. From this date, call queues can only be used for special numbers if a fixed charge is made for the call or if the call is free of charge for the duration of the call queue.

The Bundesnetzagentur has received a large number of complaints about call queues since the transitional arrangement entered into force and has already introduced and implemented specific procedures as a result. All violations were remedied as soon as they were identified, with the Bundesnetzagentur issuing warnings to the responsible parties.

Ban on billing alleged reverse-charge calls
The Bundesnetzagentur banned the billing of alleged reverse-charge calls from abroad, along with the collection of payment for such calls in June 2012.
A large number of consumers had received calls from a non-existent local number in Frankfurt informing them that there was a reverse-charge call for them from abroad. They were told to press 1 on their phone keypad in order to accept the charges, but when they did so, there was no call waiting for them. A number of callers described how, upon pressing 1, they heard advertisements or information about competitions, or they were unable to understand the content of the call. The calls then appeared on their bills as "reverse-charge call" or "0900 premium service 58".

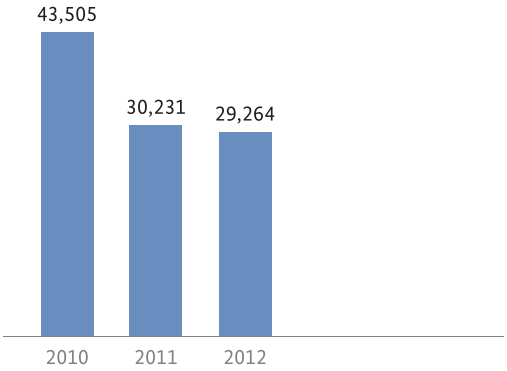
Bundesnetzagentur stops unsolicited text-message spam
In August 2012, the Bundesnetzagentur banned the operator of the "Autokette.de" portal from sending and commissioning third parties to send unsolicited text-message spam to consumers or other market participants. It also ordered the deactivation of 481 mobile numbers used to send the spam texts.

Since May 2012, the Bundesnetzagentur had received around 1,500 complaints in total about text messages advertising the website www.autokette.de. The affected consumers received the spam texts against their will and the messages appeared to have been sent primarily to randomly-generated numbers. However, in some cases, the spam texts were sent to consumers who had previously advertised their vehicle for sale in similar portals.

Combating unlawful telephone spam

The Bundesnetzagentur received 29,264 written complaints in 2012 about unlawful telephone spam and unlawful line identification restriction[12]. The volume of complaints continued to decrease, but still remains high overall.

Written complaints about telephone spam



The Bundesnetzagentur imposed fines in a total of 94 cases last year, with 73 companies and responsible individuals ruled against in fining verdicts. These primarily included call centres, as well as companies from the telecommunications, media, insurance and finance industries. There was a significant increase in the number of fine notices issued compared to previous years. The Bundesnetzagentur also issued warnings in 46 other cases involving less serious violations.

A total of 930,000 euros were issued in fines, with 39 of the 94 fines imposed now legally binding. It has not yet been possible to deliver the fine notice in one case, while objections have been filed against 54 of the notices. Objections that are not accepted by the Bundesnetzagentur are passed on to Bonn Local Court, which is then responsible for dealing with them, via the state prosecutor's office.

A legal ruling by Bonn Local Court means that, since the beginning of 2012, the Bundesnetzagentur no longer counts every spam call as an individual act by the company in question. Rather, the fine is calculated in relation to the action taken by the manager of the relevant company, who only takes one action, for example awarding a contract. With the maximum fine currently set at 50,000 euros, this has led to the court significantly reducing fines in some cases where fine notices had already been issued, and has resulted in the total amount of fines being lower than the previous year, despite a significant increase in the number of fine notices issued. As such, the Bundesnetzagentur is supporting the German Federal Ministry of Justice's plans to increase the fine ceiling to 300,000 euros, which would allow unlawful advertising campaigns by large companies, in particular, to be combated more effectively.

During the cases themselves, it was found that the companies had often failed to obtain legally-valid consent to the spam calls from the consumers. In many instances, the companies had acted unlawfully in obtaining the consumers' general consent to a wide range of products and services. Such consent did not meet legal requirements, nor did it conform to the principles developed as a result of the ruling.

Since 10 May 2012, those violating the ban on line identification restriction for spam calls can face fines of up to 100,000 euros, rather than the 10,000-euro fines previously imposed. The legislator also made clear that it is also an offence to display a number not assigned to the caller. Previously, case law had only viewed it as an offence to fail to display a number on the display, not to display a false number.

The Bundesnetzagentur continued to receive a large number of complaints in 2012 about phishing calls where callers attempt to gain access to subscribers' personal data under a pretext. Some of these callers purported to work for the Bundesnetzagentur, the courts or other public institutions, claiming during calls, among other things, that the consumers had already concluded chargeable contracts for prize games or that there was an attachment case against them. The callers claimed that by paying a particular amount of money, supposedly less than the amount due, or by taking out a newspaper subscription, callers would no longer be required to pay the amount due to the prize-game company and all the personal data held on them would be deleted. The Bundesnetzagentur considers these calls to be fraudulent in nature and advises consumers against sharing their personal data too easily.

12) The Bundesnetzagentur also received 21,647 telephone enquiries and complaints about number misuse and telephone spam last year. A breakdown of this figure is not available.

The Bundesnetzagentur passes on the findings of its investigations to state prosecutors where it has reason to suspect that a criminal offence has been committed. State prosecutors carry primary responsibility for dealing with such cases. A total of 43 investigations were forwarded to the responsible state prosecutors last year, based on 4,276 complaints submitted to the Bundesnetzagentur.

Read more in "Consumer protection piled high", beginning on page 30 of the Magazine.

Text and video relay service

The aim of the text and video relay service is to provide the deaf and hard-of-hearing with the same standard of access to voice telephony enjoyed by other users, guaranteeing them unimpeded telephone contact with family members, friends, doctors and public authorities, for example. For this purpose, the deaf or hearing-impaired person uses a PC to establish a video or text connection with the sign- or written-language interpreter provided by the text and video relay service. The interpreter converts the message into spoken language for the person called, and then translates the reply into sign or written language for the benefit of the caller.

Under section 45(3) of the TKG, every provider of publicly available telephone services is obligated to set up its own relay service for deaf and hearing-impaired persons. Given the renewed failure of the market during the current review period to find an industry-wide solution for providing its own relay service beyond 2012, the Bundesnetzagentur put the relay service out to tender for 2013 and 2014. The contract was awarded to Tess – Sign & Script – Relay Dienste für hörgeschädigte Menschen GmbH (Tess GmbH), which has provided the text and video relay service for some time now. Tess GmbH has been commissioned with providing the relay service until the end of 2014.

The Bundesnetzagentur also took the necessary steps at the end of 2012 for securing the financing of the relay service by the telecommunications companies in 2013.

Universal service

The universal service, as defined in the TKG, constitutes basic telecommunications services, and is provided by Telekom Deutschland GmbH (Telekom). Once again, the Bundesnetzagentur received a large number of enquiries and complaints about the universal service in 2012. As in previous years, most of the complaints (1,285 in total) concerned connections to the public telecommunications network and access to public telephone services.

After some initial improvements, these complaints have made it apparent that it still takes an unsatisfactory amount of time to provide a new connection or to modify existing connections. The Bundesnetzagentur is consulting closely with Telekom in order to achieve lasting improvements in this area for consumers.

So far, Telekom has connected consumers to the public telecommunications network using a fixed-network connection (usually a copper wire), but is considering using a wireless solution to connect consumers to the network in exceptional cases (such as in new builds and to close gaps) in future. The concept has been presented to the Bundesnetzagentur and is now being examined with the involvement of the Federation of German Local Authority Associations, the Federation of German Consumer Organisations (vzbv) and the German Federal States Working Group (LAK). Consideration is also being given to initially testing such a wireless solution over a longer period as part of a limited pilot project in order to better evaluate its suitability for everyday use.

The universal service also includes nationwide provision of public payphones (coin- and card-operated). In 2012, Telekom continued to remove payphones from locations where their use was not cost-effective (for information on the total number of public payphones, see "Market development", beginning on page 70). Removing public payphones requires the consent of local decision-makers. If consent has not been given or if it is revoked at a later date, Telekom is entitled to install a basic payphone in order to fulfil its universal service obligations. The Bundesnetzagentur monitors the removal of public payphones and consults with the Federation of German Local Authority Associations and Telekom on the process every six months.

Rulings, activities and proceedings

The Bundesnetzagentur's work in 2012 was characterised by a number of measures for promoting broadband rollout, with net neutrality and data protection also playing a key role. A large number of Ruling Chamber proceedings increased the range of tasks for the Bundesnetzagentur.

Infrastructure atlas

The entry into force of the amended TKG on 10 May 2012 provided the Bundesnetzagentur with more options for acquiring data for its infrastructure atlas, which had previously been operated on a voluntary basis. The Bundesnetzagentur can now require telecommunications network operators and companies that have telecommunications terminal equipment to provide it with specific information, including site data, leading to a significant improvement in the quality and quantity of data.

The infrastructure atlas contains geodata on the infrastructure in Germany that can be used for developing broadband networks, including optical fibre lines, empty ducts, radio towers and masts. The data is provided by infrastructure owners from a range of different sectors and areas, including telecommunications and energy network operators, as well as public institutions. The infrastructure atlas forms part of the German government's broadband strategy and has been operated by the Bundesnetzagentur since 2009 and developed in close consultation with market players.

The infrastructure atlas has been available online since mid-December 2012 for use by all parties involved in specific broadband rollout projects, including network operators, planning offices, regional and local authorities, and business development corporations. These stakeholders can request secure access to the infrastructure atlas, making it simple and convenient for them to obtain information about available infrastructures. The infrastructure atlas provides contact details for each of the installations listed in it, allowing synergies to be leveraged quickly and easily for broadband rollout.

Just a few weeks after the infrastructure atlas went online, the Bundesnetzagentur had received the same number of requests to use it as it had for the whole of 2012. This shows that the infrastructure atlas has continued to add value to the broadband rollout process and that it is a very popular planning tool among market players.

NGA Forum

The German government published its broadband strategy in February 2009, stating its particular intention to accelerate broadband deployment in rural areas and the rollout of high-speed networks. These two topics were also the focus of the work done by the NGA Forum, founded by the Bundesnetzagentur in May 2010 to promote dialogue between the Bundesnetzagentur, network operators, manufacturers, federal states and local authorities.

There was continued progress in 2012 towards achieving the objectives of the broadband strategy. It is clear that NGA rollout in Germany is not being driven solely by one company using one single technology throughout the country. Rather, a large number of business models have now been established. The range of these business models and stakeholders also requires coordination at the wholesale level, given the large number of potential providers and users. There must be coordination between the technical interfaces and operational processes in order to provide cross-network services via the next-generation networks. Consequently, interoperability is a key component in the successful rollout of future broadband network infrastructure.

Against this backdrop, the NGA Forum also focused a significant proportion of its work on drawing up standardised wholesale-product specifications for use throughout Germany, including service specifications for passive products such as empty ducts and dark fibre. The service specification for a level 2 bitstream access product (L2BSA) was also amended to include business customer products. This specification is intended to help interested parties to gain an overview of key aspects of a project before beginning to plan the specifics of providing an L2 wholesale product or access network. A document with design principles for an L2 bitstream access product for cable networks was also created.

In terms of business processes, priority was given on the one hand to implementing the processes defined the previous year in an order interface suitable for general use on the market, and on the other hand to creating the organisational conditions for implementing this uniform order interface in practice and achieving the necessary interoperability between the different IT systems of the companies involved. The first certification processes can now take place at the end of the year. Providers and users in IP-based communication networks can use this S/PRI interface to map the business processes for provision, changing services, termination, fault clearance and switching providers, and link these processes with their customer information systems, enabling them to implement cooperation processes automatically and quickly, for example in the case of customers switching provider. This is crucial from a technical and economic perspective, as NGA networks cover not just one, but many network operators. Developing a standardised S/PRI interface for the market removes the need for every user to synchronise his/her interface with the interfaces of all the other providers, which is a time-consuming process. As such, the ability to implement an interface across all providers is a great step forward in terms of creating an NGA-multicarrier landscape.

Many market players and associations have responded very positively to the documents adopted by the NGA Forum. Most companies on the market are basing their network models on the L2 BSA specification adopted by the NGA Forum and are working to implement this specification. This is also evident from the fact that many network operators are requiring compatibility with the specifications of the NGA Forum when purchasing network technology from manufacturers. The NGA Forum is leading the way in Europe with its specifications.

For more information, please see "Market development", beginning on page 70.

Net neutrality

Business and society have benefited tremendously from the expansion of Internet networks over the last decade. The Internet provides a cluster of independent networks without centralised administration, its success being down to the simplicity of its network infrastructure, which makes it robust and flexible at the same time. A key characteristic of the Internet is the separation of networks from applications and services. This helps keep barriers to market entry low, thereby providing a great incentive for innovation. Innovative services and applications can be created on the periphery of the network, both by consumers and by providers without their own network. Services and applications can be used without any further coordination with the network.

As a platform for sharing data, the Internet transmits all data on an equal and neutral basis, regardless of its origin, destination, content and application/service, or of the device used for transmission. This principle is generally referred to as net neutrality. The Internet transports every single data packet, provided the system has sufficient capacity available (best-effort principle).

However, given the marked increase in data traffic (see also "Market development", beginning on page 70) caused, among other things, by streaming services, high-definition television and the rise in smartphone use, network operators fear that bottlenecks could develop in network capacity. Consequently, they are considering discarding the current best-effort principle for the Internet in favour of prioritising data according to transport category. Technological advances have

Promoting non-regulation of the Internet

The independent development of the Internet has created structures that make regulation unnecessary. Proposals about billing systems and quality categories put forward by European telecommunications companies are jeopardising this freedom from regulation.

Whether sending or receiving an email, uploading a song or downloading a video, Internet users and content providers pay charges to cover the cost of their Internet connection and data transmission in both directions. Against a backdrop of increasing online data traffic volumes, a number of European telecommunications companies now intend to introduce new charges for content providers. Consequently, they are calling for the introduction of charges across the board at wholesale level.

The proposals involve transferring the billing mechanism from the "old telephone world" to the Internet. As a result, the regulatory authorities would need to step in to prevent network operators using their monopoly to make excessive charges. This is why the proposals, put forward ahead of the ITU conference in Dubai at the end of 2012, were heavily criticised by the Body of European Regulators for Electronic Communications (BEREC), which also consults with the Bundesnetzagentur.

According to BEREC, the proposals for the introduction of quality categories also run counter to the simple structure of the Internet and are neither commercially realistic nor technically beneficial in the core network. Technological advances have permanently pushed down unit costs for online data transport, meaning that increasing network capacity is currently the most efficient way of dealing with the increase in online traffic volumes.

Read more in "In defence of a free net" on page 103.

also provoked discussion about net neutrality. Modern IP components allow precise management of network capacities and traffic. This could be used to manage the increase in traffic on the one hand, or it could lead to discrimination on the other.

The current debate about net neutrality centres on whether and to what extent it is acceptable to abandon current principles of online data sharing from the perspective of users and content providers. This discussion is being conducted both at European level and in Germany.

Europe

Last year, BEREC produced a number of documents, with significant input from the Bundesnetzagentur, concerning issues of net neutrality, in particular quality of service, IP interconnection, and differentiation strategies for data transport, with the associated competition issues. BEREC also conducted a Europe-wide survey on the use of traffic management measures.

The BEREC guidelines for quality of service analyse Article 22(3) of the Universal Service Directive, which grants national regulatory authorities the option of specifying requirements for the minimum quality of network access. Initially, different traffic-management technologies and strategies of network operators were discussed, along with their impact on quality and usage options. In particular, a distinction was made between Internet access, which is based on the best-effort principle, involving provision of all applications regardless of network, and specialised services. Broadband connection providers offer these services separately from Internet connections, for example, for VoIP or IPTV as part of double- and triple-play products. In order to guarantee quality as far as possible, specific network capacity is assigned to the services. Specialised services compete with Internet access for network capacity, as they are usually provided within the same (IP) access network structure. This means that they can impair the quality of the Internet connection as a whole.

BEREC does not consider it expedient to produce a list or categories of "reasonable", unproblematic traffic-management measures in advance. At the same time, BEREC has created a series of criteria to help regulators in determining whether a particular measure is reasonable. For example, it is essential to identify whether or not a distinction is made between individual content providers or applications, and whether or not all applications are equally affected. It is also important to ascertain whether or not traffic management is carried out at the explicit request of the consumer and whether or not the consumer can control traffic management activities. There is also the question of whether or not the traffic management measure is proportionate and whether or not the same goal could be achieved with a lesser degree of intervention.

BEREC recommends that national regulatory authorities monitor the quality of Internet connections, in order to identify systematic deterioration relative to specialised services. Regulatory authorities should also monitor whether traffic management measures decrease the quality of individual applications within Internet connections.

The report on the implications of differentiated handling of data traffic for competition examines whether and under what conditions the introduction by Internet service providers of certain differentiation and traffic-management measures that might lead to the abandonment of net neutrality could negatively impact users, and whether this is likely to have a detrimental effect on competition and innovation. Differentiated handling of data traffic is not a problem per se, provided that it affects all traffic equally, regardless of content or provider. However, objective justification must always be provided for such differentiation (for example, to overcome shortages), as differentiation practices can also be used for questionable purposes or disproportionately. The risk of consumers, competition and net neutrality being negatively affected increases with the market power of the Internet service provider and the degree of vertical integration.

In its report on IP interconnection, BEREC found that interconnection agreements adapted flexibly to rapid online developments (such as changes in demand patterns, technical advances, new business models and the relative market position of network operators) with no need for regulatory intervention.

Interconnection of online networks on the market takes place on the basis of peering and transit agreements. Peering involves contractual parties exchanging traffic volumes under specific conditions, with no payments involved. Alternatively, network operators can purchase interconnection services on transit markets. Despite increasing traffic volumes, transit prices have fallen significantly in recent years due to reductions in the cost of network components and strong competition.

Online traffic flows are divided up into packets, which can reach their destination via a number of different channels in different networks that are managed locally in accordance with the best-effort principle. While the technical mechanisms for introducing quality categories have existed for many years now, they have not been implemented across online network boundaries. This may be due to the fact that the Internet typically enables a sufficiently high level of quality, with customers apparently not prepared to pay for a better connection. In addition, the introduction of end-to-end service level agreements would be costly and difficult to implement, as a specific level of quality would have to be ensured in every network along the transport route and checks made for compliance with this quality level. This kind of additional control infrastructure would run contrary to the simple and local structure of the Internet. As a result, introducing guaranteed end-to-end quality would seem neither commercially viable nor technically efficient.

By contrast, other mechanisms have developed on the Internet for increasing end-to-end quality for consumers. These include content delivery networks, which store data closer to the consumer, and (regional) Internet exchanges. Both of these mechanisms increase efficiency (network load) in the distribution and management of Internet traffic. While quality differentiation can be a useful instrument for tackling bandwidth shortages in access networks, for example by prioritising voice services, marked price decreases in core networks have made it most cost effective to develop additional network capacity to cope with increasing traffic volumes.

2012 also saw BEREC present the findings of a comprehensive survey, involving 414 network operators from 32 European countries, on possible forms of intervention in free Internet traffic flows. According to the survey, most Internet access providers offer services without limiting other services. Where intervention does take place, it primarily involves blocking or deceleration of peer-to-peer traffic or VoIP. This practice is more common in mobile networks than in the fixed network. Both of these observations also apply to Germany.

The following conclusions can be drawn from BEREC's findings:

- Competition plays a key role in safeguarding net neutrality.
- Transparency, particularly when it comes to traffic management measures used by network operators, and the option for consumers to switch providers quickly and easily are necessary in order for competition to have a disciplinary effect.
- Enabling regulatory authorities and consumers to actively monitor the quality of Internet connection services, as anchored in European legislation, increases transparency and helps to detect possible issues or decreases in service quality.

All in all, BEREC considers the legislative instruments, aimed in particular at improving transparency and enabling the introduction of minimum quality levels, to be suitable for effectively resolving issues of net neutrality.

The survey results and the aforementioned documents are available at www.berec.europa.eu.

Germany
The entry into force of the amended TKG in 2012 enshrined in law the right of consumers to use services and applications of their choice, something which is now a general aim of regulation. As a result, the debate about net neutrality has now been taken into account in the legal basis of the Bundesnetzagentur. The Bundesnetzagentur now has a set of instruments at its disposal, in the form of the transparency requirements and the possible introduction of minimum quality levels, for ensuring open access to all Internet-based applications. This fundamental approach is based on the assumption that competition and transparency are key guarantees of net neutrality.

The new legal framework sees the Bundesnetzagentur beginning to change the status quo at several levels, moving towards unlimited and equal consumer access to applications and services of their choice. As part of a quality study that commenced in summer 2012, the Bundesnetzagentur is working until mid-2013 to determine whether certain applications and protocols are systematically transferred more quickly. The Bundesnetzagentur has also conducted a survey of network operators in order to obtain information about any limitations on access to or use of services and applications, and about control mechanisms used by companies to prevent overloading.

For more information, please see "Consumer protection and advice", beginning on page 82.

Mobile broadband

Growth in demand for mobile broadband applications continues apace and can only be met by intensifying spectrum use (utilisation of previously unused mobile spectrum and microcellular networks), further developing technology (more efficient standards), and providing additional frequencies.

Having awarded frequencies in the 800 MHz, 1.8 GHz, 2 GHz and 2.6 GHz ranges in 2010, the Bundesnetzagentur has created the basis for rapid network rollout to provide the German population with mobile Internet connections, particularly in rural areas. By awarding the digital dividends, Germany is leading the way in Europe.

Read more in "Connections from the airwaves" on page 29 of the Magazine.

Coverage requirements for the 800 MHz range were met for the whole of Germany last year, and the wireless parameters were specified for over 12,000 sites by the end of 2012. Despite this high number of transmitter sites for broadband mobile use in the 800 MHz range, there were only a few cases of interference in the neighbouring frequency range used for television reception thanks to the Bundesnetzagentur's careful computer-based approach to determining the location of each site. Filters were developed in advance to be used in restoring normal television reception where interference occurs. As such, many concerns of other spectrum users, which resulted in a large number of legal proceedings, proved to be unfounded in practice. In all cases in 2012, the courts ruled in the Bundesnetzagentur's favour. In addition, preferential agreements were concluded with several of Germany's neighbours in 2012 with a view to improving the situation at the borders of the Federal Republic of Germany with regard to mobile broadband usage rights in the 800 MHz frequency range.

Mobile communication could also play a key role in subsequent development of future-proof, high-performance networks. It is therefore important to provide additional radio frequencies according to demand, given the exponential growth in mobile data volumes as a result of broadband services. The Bundesnetzagentur presented scenarios for the future provision of radio frequencies on 9 November 2012 as part of a public information event, taking into account the frequencies in the 900 MHz and 1,800 MHz ranges (GSM frequencies) that will become available again from 2017, other frequencies, such as UMTS and BWA frequencies, due to become available in the foreseeable future, and new frequency ranges, in particular the 700 MHz and 1.4 GHz (L band) ranges, that could be used for broadband mobile services in the foreseeable future. The scenarios include options ranging from extension of the frequency usage rights in the 900 MHz and 1,800 MHz ranges from 2017 to auctioning (to include other frequencies such as the 700 MHz band). Interested groups were invited to comment on the scenarios by 31 January 2013.

The President's Chamber of the Bundesnetzagentur will now produce a draft ruling on the further procedure and present it for public consultation, ensuring an open, transparent and non-discriminatory process. Preparing for the process at an early stage provides the mobile sector and interested companies with the planning and investment security they need, and also

paves the way for further wireless broadband rollout in Germany.

The Bundesnetzagentur is also supporting this development in mobile broadband at international level, working within many official bodies. Its work during the past year has been particularly characterised by the following frequency regulation activities:

The 3.4 to 3.8 GHz frequency range is harmonised at international level for fixed broadband services. However, demand for this type of use has been low. The growth in Internet use on mobile devices (such as tablet PCs and smartphones) increased pressure to provide greater bandwidths for faster mobile broadband applications. As a result of Decision (11)06 of the Electronic Communications Committee (ECC), which was chaired and its secretariat provided by the Bundesnetzagentur in 2012, frequencies can now also be used with higher data rates and larger channel bandwidths in this frequency range.

In addition, in February 2012 the World Radiocommunication Conference (WRC-12) of the International Telecommunication Union (ITU) saw two new items added to the agenda for the next conference (WRC-15), planned for the end of 2015, concerning future spectrum demand for mobile broadband. Both agenda items deal with the need for more spectrum for International Mobile Telecommunications (IMT) and other mobile broadband applications, including determination of medium- and long-term spectrum needs and corresponding allocations to identify these needs. The second agenda item specifically deals with the frequency range below 790 MHz. A further option for widespread harmonisation on an international level was identified here and with it a need in some cases for mobile use immediately following WRC-15.

The European Conference of Postal and Telecommunications Administrations (CEPT) is currently examining the largely unused frequency band from 1,452 to 1,492 MHz (L band), which is harmonised for (terrestrial and satellite) broadcasting services throughout Europe, with a view to its potential reallocation to, among other things, mobile broadband services. The issue of mobile broadband is also an important aspect of frequency policy within the European Union. For example, the first European Radio Spectrum Policy Programme (RSPP) stipulates that Member States should make particular efforts to assign sufficient and suitable frequency spectrum in a timely manner.

There is consensus about the fact that the data volume for mobile broadband applications currently being forecast for the next few years cannot be provided solely using new spectrum. Consequently, in addition to optimising the spectrum already used and identifying new spectrum, it must be ensured that the mobile standards can be made even more spectrum-efficient and that they enable the use of optimised network structures in particular. This includes the use of mixed cell structures (HetNet), mass deployment of micro-cells, carrier aggregation, and multi-standard base stations. These additional features will also place new requirements on coexistence conditions with adjacent radiocommunication services, as they must already be taken into account during standardisation and may require changes to the existing regulatory framework over the next few years. For the Bundesnetzagentur, it is particularly important in this phase to work towards incorporating the regulatory objectives into the standardisation process. In order to secure these objectives, the Bundesnetzagentur is working in several standardisation bodies (ETSI and 3GPP) and their working groups.

The Bundesnetzagentur is also focusing its activities in this area on standardising reconfigurable radio systems (RRSs), which form the basis for flexible and dynamic frequency management. The Bundesnetzagentur is working within the relevant technical committee of ETSI to this end. RRSs enable optimised use of radio spectrum using dynamic frequency allocation, in the most flexible and cost-effective network architecture possible, giving them the potential to become a key driving force in the further development of wireless communication and to make a significant contribution to solving the problem of frequency spectrum shortage. RRSs include software defined radio (SDR) and cognitive radio (CR). Important aspects in this context include reliable identification of frequency ranges that have become available locally (sensing), the use of geolocation databases (GLDBs) to identify white spaces, analysis of interference and interdependency for various technologies and networks, and the optimisation of radio-resource pooling to make it as efficient as possible.

Ruling Chamber proceedings

VDSL contingent model

Regulatory proceedings concerning Telekom's new pricing model for the sale of fast VDSL broadband connections for competitors featured prominently during the past year. Telekom had indicated to the Bundesnetzagentur in mid-January 2012 that it intended to introduce another charging model, the VDSL contingent model, in addition to the existing pricing model for VDSL IP bitstream connections. The VDSL contingent model that was presented allows users of VDSL IP bitstream connections to order a specific contingent of switchable connections from Telekom at national or regional level, for which they must pay upfront. By placing an order, users would then be entitled to lease VDSL IP bitstream connections over the next eleven years for a specific monthly charge within the framework of the agreed contingent.

In ex post rates regulation proceedings, the responsible Ruling Chamber ruled initially that the model, in the form indicated, would considerably limit the competitiveness of other companies, with no objective justification for this. The mechanism of the contingent model would have resulted in volume-based discounts for using existing infrastructure and, together with the term of the lease, would have removed the incentive for competitors to develop new infrastructure, such as optical fibre connections to customer homes. However, infrastructure competition is a key condition for the development of sustainable and self-sustaining competition on consumer markets with regard to pricing, quality, service and range of offerings. Consequently, the Bundesnetzagentur temporarily prohibited Telekom from selling VDSL IP bitstream connections using the new charging model in a ruling published on 2 April 2012.

Telekom subsequently submitted a revised contractual offer on 25 May 2012. A key item now included in this offer was a special right of termination in the event that use was made of the company's own or other competitors' connections that form part of an NGA network (within the meaning of the NGA Recommendation of the European Commission) whose optical fibre components were created for the first time or extended to the end customer after 30 June 2012 and that also run parallel to the Telekom connections contractually incorporated into the contingent. The modified contractual offer also saw Telekom propose a decrease in the minimum contingent, a slight increase in charges, and other clarifications.

As Telekom had addressed the concerns of the Ruling Chamber expressed in the provisional prohibition ruling at the beginning of April 2012, the Bundesnetzagentur revoked the provisional ruling on 7 August 2012 and halted the related rates regulation proceedings. Before the final ruling was announced, the draft ruling had also been sent to the European Commission and the regulatory authorities of the other EU Member States to give them an opportunity to comment on the draft.

New charges set for local loop access

The Bundesnetzagentur approved new provision and termination charges for local loop access at the end of June 2012, initially on a provisional basis. These one-off charges are paid to Telekom by competitors leasing local loops, and are for switching and return of the local loops. Since 1 July 2012, Telekom has been entitled to charge €31.01 for taking over a local loop without any work at the end customer's location. A one-off provision charge of €54.17 was made for the most frequent type of work, that is activating the two wire copper pair for the first time (on a high-speed basis) with no work at the cable distributor, but with work at the end customer's location.

Telekom has been granted permission to make a monthly leasing charge of €1.68 for providing access to the high-speed section of the local loop for line sharing. A charge of €44.80 is made for the most frequent type of provision, that is activation without work at the cable distributor or at the end customer's location. The charges apply until 30 June 2014.

The final rulings on charges were announced on 17 October 2012, with retrospective effect to 1 July 2012. They did not enter into force immediately, as a national consultation process had been carried out beforehand and it was necessary to inform the European Commission subsequently of these rulings.

Mobile termination and fixed-network interconnection
The mobile termination and fixed-network interconnection rates had to be re-approved on 1 December 2012. The responsible Ruling Chamber conducted the required periodic review of the regulatory orders to determine whether the regulatory obligations imposed on the mobile network operators to date should be maintained, amended or revoked, or whether additional obligations should be imposed. The second step involved setting the specific rates to apply from 1 December 2012 following the policy decision reached in the regulatory orders on the future rates regulation benchmark.

A key question for the review process was whether the mobile and fixed-network termination rates should be subjected to rates regulation in future, based on the European Commission's Termination Recommendation, which, as well as advocating the introduction of charging symmetry between networks and the use of a cost model, particularly advises national regulatory authorities to base their cost accounting on the long run incremental cost (LRIC) method in terms of avoidable costs. Put simply, this method determines termination rates based on the difference between the total long-term costs of an operator that offers a full range of services for other network operators, including termination in its network, and the total long-term costs of this operator without offering these termination services. In the context of the regulatory rulings to be issued (regulatory orders and, based on them, rate approval decisions), it was therefore necessary to make a basic decision on whether the European Commission's Termination Recommendation should be fully implemented in Germany and the termination rates determined using the pure LRIC approach, or whether the previous practice should be maintained.

In the regulatory orders that entered into force in August 2012, initially on a provisional basis, the Bundesnetzagentur concluded after conducting comprehensive investigations and thoroughly weighing up all relevant factors, that the cost approach of the European Commission's Recommendation is not better suited to achieving the regulatory objectives of the TKG. Consequently, the Bundesnetzagentur held fast to the proven method of calculating rates based on the costs of efficient service provision in the preliminary regulatory orders for determining rates.

The Bundesnetzagentur subsequently published its proposal for a new mobile termination rate on 16 November 2012. The four German mobile network operators Telekom Deutschland GmbH, Vodafone D2 GmbH, EPlus Mobilfunk GmbH & Co KG and Telefónica Germany GmbH & Co OHG are now permitted to charge the mobile termination rate, which since 1 December 2012 has been set at the uniform amount of 1.85 cents per minute, for terminating calls in their respective mobile networks. As part of a second step, the rate is to be slightly reduced again to 1.79 cents per minute from 1 December 2013. Each of the four mobile network operators charged slightly different mobile termination rates of between 3.36 cents per minute and 3.39 cents per minute up until 30 November 2012.

The rates proposal was the result of some very intensive reviews, which showed that the long-standing trend within mobile networks of a significant increase in data volumes is set to continue in future. This trend is continuing to shift the balance between data and voice communication. Because fewer and fewer costs are being incurred by voice traffic, this traffic accounts for a smaller proportion of the overall costs for mobile networks. This is the main reason for the continued decrease in the minute price for termination services. This trend had already resulted in significantly lower rates during the last few approval rounds.

New interconnection rates were also announced for the fixed network from 1 December 2012, following a ruling issued on 30 November 2012. These new interconnection rates are 20 percent less than the current level on average and will apply for two years.

The interconnection rates have been calculated based on the costs of a modern and efficient next-generation network (NGN). The costs of providing an efficient NGN service were taken into account, along with Telekom's current expenses for its network, previously used for voice telephony only. The majority of voice traffic is currently still being carried via this PSTN network. As such, account is being taken of the fact that Telekom cannot deactivate its current PSTN network overnight and instantly switch to a more efficient NGN. From a rates point of view, the ruling therefore makes the transition from the current PSTN technology to the higher performing and more cost-effective future network more manageable for all market players.

Unlike the circuit-switched PSTN network technology, NGNs can handle virtually all services, such as Internet, email, voice, etc. Compared to other services, voice telephony only takes up a small amount of bandwidth, significantly reducing the cost of voice calls and, consequently, call charges. The technical equipment used in NGNs is also far more cost-effective.

In addition to basic charges for termination and origination services, the ruling also includes the charges derived therefrom for optional and additional services, which include call origination to value-added services (0800, 0180, 0900 numbers, etc), transit between different networks, and, though decreasing significantly, origination of narrowband Internet traffic.

The mobile termination and fixed-network interconnection rates were all approved on a provisional basis initially on 1 December 2012. They did not enter into force immediately, as a national consultation process on the published draft ruling was carried out in each case. The rates proposals together with the explanatory statements were subsequently forwarded for comment to the European Commission and the national regulatory authorities of the other EU Member States. Only once this process has been concluded can the final rulings be issued.

Telekom requests permission to introduce vectoring
On 19 December 2012, Telekom submitted a request for the regulatory conditions for access to the local loop, known as the last mile, to be changed. In it, Telekom calls for competitors' options for accessing local loops at cable distributors (the grey boxes at the side of the road) to be restricted. This follows an announcement by the company of its intention to introduce vectoring into its network.

The vectoring process enables higher transmission rates in the current copper-based local access network, reducing mutual interference between adjacent copper pairs in a cable. According to Telekom, it is only possible for one company to access all the copper pairs at the cable distributor, with unbundled access not possible when using VDSL technology.

In its proposal, Telekom has provided specific suggestions as to how it envisages the regulatory framework conditions for the introduction of vectoring. All interested market players have been asked to present their positions in detail. Although there is no deadline for the process, the intention is to reach a swift decision. It remains within the power of the market players to look for constructive, mutually acceptable solutions in order to prevent disputes wherever possible, keeping the regulatory ruling to a minimum. A public hearing took place on 24 January 2013.

Leased lines
According to the determination by the President's Chamber on 3 January 2012 (Az. BK109/006), there is a need for regulation of the national market for terminating segments of leased lines with a bandwidth of 2 Mbit/s to 10 Mbit/s at the wholesale level and of the nationwide market for terminating segments of leased lines with a bandwidth of over 10 Mbit/s to 155 Mbit/s at the wholesale level. The terminating segments include all connections that are not assigned to the trunk segment. The wholesale markets in question comprise terminating segments with conventional interfaces and ethernet-based interfaces, as well as terminating segments that are provided as part of system solutions. Telekom and its affiliated companies have significant market power on these markets within the meaning of the TKG.

Consequently, Telekom was obligated on 9 August to allow non-discriminatory access for other companies to the terminating segments of leased lines in need of regulation and to enable co-location (Az. BK2a-12/001 R). The charges for providing access to terminating segments of leased lines have been made subject to ex ante approval. On this basis, Telekom submitted a rates proposal for terminating segments of leased lines with ethernet interfaces. Approval was initially granted on a provisional basis from 18 October 2012 and applies until such time as a ruling made following conclusion of the consultation and consolidation procedure takes effect, as formal notification must first be provided at national level and then at EU level for this type of rates approval. The intention is to subsequently approve the charges in a final ruling by 31 October 2013.

In connection with the regulatory order of 9 August 2012 (BK2a12/001 R), Telekom was required to create a standard reference offer for the access services that it is obligated to provide by the regulatory order and for which there is general demand. The reference offer was published on 9 November 2012. The Bundesnetzagentur is currently examining this offer for terminating segments of leased lines for wholesale customers, regardless of the technology used for the leased or dedicated line capacity.

Data protection in telecommunications

In 2012, the Bundesnetzagentur continued to monitor compliance with the data protection provisions of the TKG, which are designed to protect telecommunications privacy in the context of service providers and their customers and users. With the new provision in section 109a of the TKG, the legislator has introduced an obligation for providers of publicly available telecommunications services to report data protection infringements. Infringements must be reported both to the Federal Commissioner for Data Protection and Freedom of Information (BfDI) and to the Bundesnetzagentur within a short space of time. Both institutions work closely together in this context and have produced a joint reporting form, ensuring standardised reporting and provision of key information about data protection infringements.

Examples of data protection infringements reported include instances where subscribers' (customers') personal data, such as name, email address and other data, is accessed intentionally by unauthorised parties, or where this data has been unwittingly disclosed to a third party. In such cases, the institutions will check to see which measures telecommunications providers have taken to prevent a repeat of these infringements and whether or not these measures are sufficient. 17 cases of infringement have already been reported for 2012. The Bundesnetzagentur expects there to be a considerable increase in the number of reported cases of infringement in the subsequent period.

The Bundesnetzagentur ensures that data protection violations are resolved and, in particular, that duties to inform the affected parties are fulfilled, either by the Bundesnetzagentur itself or, where relevant, by the companies themselves under the Bundesnetzagentur's instruction. Reported cases of infringement are also evaluated in close cooperation with the BfDI.

There were repeated cases of the legal regulations on storing traffic data being interpreted differently when it came to the volume of information stored and the duration of storage. The telecommunications companies' questions in this regard have been noted by the Bundesnetzagentur and the BfDI, who last year produced a guide designed to provide recommendations and to enable companies to interpret the TKG in a uniform manner, in line with data protection law. Following the principle of data minimisation, the guide will need to be revised should technical or business developments make it possible to collect or store less data.

Deficiencies in the collection and verification of data for number allocation, particularly for prepaid mobile cards and for VoIP numbers allocated online, also remained a significant issue in 2012. Customer data is only useful to the security authorities as part of the automated information procedure under section 112 of the TKG if it is complete and truthful. False or incomplete information, or even information belonging to third parties, is unusable in the best case scenario, but in the worst case scenario can have extremely serious consequences for third parties, who might potentially fall under suspicion through no fault of their own or become victims of unauthorised withdrawals from their bank account by direct debit.

The checks introduced in the previous year were continued in 2012. Some administrative and fines proceedings are still ongoing. One penalty notice has now been confirmed in a ruling by Bonn Local Court. In addition, the Bundesnetzagentur initiated discussions with around a dozen representatives of companies and associations from the telecommunications industry in order to reach a consensus on how to solve the problem. These discussions are still ongoing.

Public safety in telecommunications

When it comes to safety in telecommunications, those operating telecommunications installations used to provide services to the public are required to implement technical safety measures in accordance with section 109 of the TKG. These companies are required to produce a safety concept describing the dangers present and the measures they are taking to combat them. A total of 72 safety concepts were submitted last year, 50 of them new and 22 of them revised or amended. These concepts have been and continue to be examined for compliance with the legal requirements. In addition, 37 checks were made on business premises to randomly see whether security concepts and data protection legislation had been implemented.

The TKG legally obligates operators of public telecommunications networks and providers of publicly available telecommunications services to notify the relevant authorities immediately of any safety violations, including faults in telecommunications networks and services, if these violations or faults have a significant impact on the operation of the networks or the provision of services. The Bundesnetzagentur recorded a total of five relevant safety incidents for 2012.

International cooperation

In 2012 the Bundesnetzagentur again played a constructive role in BEREC and the IRG to voice national interests in an international context.

An extensive and detailed legal framework has been established for the purpose of creating a single European internal market for electronic communications. This is the framework within which the EU Member States and their national regulatory authorities (NRAs) must operate. The legal framework is being continually developed and has an ever growing influence on the work of the Bundesnetzagentur. This means that cooperation between NRAs in groups or bodies of regulators is also becoming increasingly important. National ideas and visions can only be taken into account in joint position papers and influence discussion at Community level if they are presented to international bodies as early as possible.

Cooperation in the telecommunications field takes place in particular within the Independent Regulators Group (IRG) and – since 2010 – the Body of European Regulators for Electronic Communications (BEREC). BEREC is composed of the Board of Regulators, comprising representatives of the NRAs and of the BEREC Office in Riga, which provides administrative support services and is subject to the control of the Management Committee. This Management Committee consists of representatives of the regulatory authorities and a representative from the European Commission. The body develops regulatory best practices, such as common approaches or guidelines on consistent implementation of the EU regulatory framework by the NRAs. BEREC also issues Opinions on actions planned by the European Commission and produces reports on issues relevant to the sector. The Bundesnetzagentur is not only a regular participant in BEREC's plenary meetings, but also contributes to the preparation of such meetings as part of the Contact Network and works on specific topics in numerous BEREC expert working groups. Members of the Bundesnetzagentur have, for example, co-chaired working groups, drawn up key documents in working groups and represented the position of the Bundesnetzagentur in voting procedures.

International roaming

The new Roaming Regulation III came into force on 1 July 2012. This Regulation governs Union-wide roaming services, that is when a consumer uses a SIM card from the consumer's own mobile network operator in a foreign host network. The Regulation will apply until 30 June 2022. As well as continuing a glide path of regulated maximum prices for voice and SMS services, a retail price cap has also been introduced for data services. The protection provided to customers has also been extended by further transparency measures; these now also apply outside the EU. The Roaming Regulation also introduces certain structural changes, such as the introduction on 1 July 2012 of a general wholesale access obligation relating to mobile virtual network operators (MVNOs) and resellers, and the separation of sales of roaming services from other domestic mobile packages (decoupling) from 1 July 2014. This change and the renewed reduction in maximum charges will bring about further improvements for consumers.

BEREC took part in the discussions leading up to the drafting of the reform by participating in EU-wide consultations and by contributing diverse position papers during the consultative procedure. The new

Roaming Regulation III now explicitly assigns BEREC the task of issuing additional guidelines. BEREC has consequently drawn up initial guidelines on the general obligation for mobile network operators to provide access to wholesale roaming services for all MVNOs and resellers. These guidelines contain detailed rules on access, the contents of contracts and the standard reference offer which mobile network operators have been required to provide since 1 January 2013. The Bundesnetzagentur again acted in 2012 to ensure compliance with the provisions of the Roaming Regulation at national level and will continue to support the practical implementation of the new rules.

The other structural change brought about by Roaming Regulation III requires domestic providers to offer the separate sale of regulated roaming services to end customers. This should enable retail customers to opt for roaming services offered by a provider other than the customer's own domestic network operator. The Regulation does not go into detail on the technical implementation of decoupling; the European Commission has issued further rules after consulting with BEREC. BEREC is currently working with representatives from industry and professional associations on further detailed rules on the technical aspects of decoupling which will eventually be laid down in guidelines due for publication in the summer of 2013.

In defence of a free net

193 countries negotiated on the future of the Internet in December 2012. The Bundesnetzagentur also contributed its views as part of the German delegation.

It was thanks to Facebook that images of the demonstrations at Tahrir Square were seen all around the world in a matter of seconds. From then on, the Arab Spring was all but unstoppable. A triumph of Internet freedom, which not only produces innovations, but also makes social participation possible.

Nothing less than Internet freedom itself was on the agenda in Dubai last December. The International Telecommunication Union (ITU), a specialised agency of the United Nations, invited its 193 Member States to the World Conference on International Telecommunications (WCIT). The Conference hosted negotiations on the updating of the International Telecommunication Regulations (ITRs) dating from the year 1988. Some countries advocated extending these rules to cover the Internet.

The high-level network conference split into two camps along distinct lines. While countries such as Russia and China pleaded the case for government regulation, the western States defended the Internet's open, decentralised and non-state structure.

The German delegation, which included the Bundesnetzagentur, adopted a very clear position. Ultimately, it proved possible to remove any issues relating to the Internet from the drafts. The ITRs which were submitted for adoption were not, however, signed by Germany, the other EU Member States or the USA, amongst others. The lack of precision – as regards state intervention, for example – was too great for these countries to agree.

Read more in "Promoting non-regulation of the Internet" on page 93.

Next-generation networks

BEREC's activities relating to access to next-generation networks (NGNs) focused in 2012 on the revision of the Common Positions adopted in 2006/2007 by the NRAs concerning wholesale physical network infrastructure access at a fixed location (market 4) and wholesale broadband access (market 5) as well as leased lines (market 6). The revisions were undertaken against the background of the amended EU legal framework and technical developments, especially issues relating to access to NGNs. The latest Common Positions define regulatory best practices in the areas of access, transparency, migration, price regulation and non-discrimination, and are intended to support the work of the NRAs.

Net neutrality

BEREC completed extensive work on the issue of net neutrality last year. Some of its key results were the acceptance of an analysis of IP interconnections in the context of net neutrality, agreement on common guidelines on service quality, and the publication of a report on differentiation practices and relevant competition issues.

More information on this topic can be found in "Net neutrality" on page 93.

Performance worthy of a medal

Experts from the Bundesnetzagentur's radio monitoring and inspection service supported their British colleagues in 2012 to ensure that the Summer Olympic and Paralympic Games could be broadcast from London throughout the whole world without any interference.

9.63 seconds for an eternity: Usain Bolt's Olympic victory in the 100 metres in London was witnessed by billions of people. Over 40 TV broadcasters ensured that the event could be watched live almost everywhere in the world. It was unthinkable that any of the broadcasts should be interrupted in the middle of the race.

90 engineers and technicians made sure that the radio equipment used by security personnel and the mobile phones of countless fans did not interfere with the outside broadcast vehicles or wireless cameras and microphones used by the over 20,000 accredited journalists covering the event. It was a huge task involving the assignment of over 14,000 frequencies and checks on over 10,000 items of transmitting and receiving equipment. The transmission frequency, power and required bandwidth for the equipment were also documented in order to coordinate the use of the frequency spectrum at the total of 31 venues.

The British regulatory and competition authority, Ofcom, was therefore supported by colleagues from other countries, including eight staff from the Bundesnetzagentur's radio monitoring and inspection service. They were able to contribute not only their outstanding expert knowledge, but also a great deal of experience from other major events.

Thomas Scherer, Bundesnetzagentur radio monitoring officer, during the opening ceremony – equipped with a radio device for the direction-finding network set up especially for the Games.

The Bundesnetzagentur's radio monitoring and inspection service is not only active at major events. Anyone can report radio interference. A contact form is available on the Bundesnetzagentur's website. The radio interference telephone reporting service is also available 24 hours a day. The telephone number can be found on page 164 and on the website at www.bundesnetzagentur.de/funkstoerungen.

Draft Recommendations on fostering competition and strengthening investments in broadband

At the end of 2011, BEREC issued detailed Opinions on the relevant EU-wide consultations undertaken by the European Commission on non-discriminatory access for alternative operators to infrastructure and the services of dominant telecommunications operators, as well as on the costing methodologies used by NRAs to calculate the prices for access products, such as access to the local loop or wholesale bitstream access. Both Opinions were reflected in the updated versions of the three broadband Common Positions.

The BEREC Opinion arising from the consultations on non-discriminatory aspects explicitly emphasises that vertically integrated operators with significant market power must provide other undertakings offering equivalent services with services and information under the same conditions and of the same quality as they provide for their own products or those of their subsidiaries or partner undertakings. This is only the case, however, where no objective grounds exist which would legitimate an exception to this principle. In its Opinions, BEREC focused on issues which are potentially relevant to the realisation of this principle, including in particular the availability of a wholesale product ahead of the launch of a retail product based on it, the specification of wholesale switching processes, access to equivalent information systems, and service agreements, service guarantees and key performance indicators (KPIs) for monitoring purposes.

The BEREC Opinion on consultations on costing methodologies provides an overview of the most important principles which should be applied to select the appropriate costing methodology as well as a decision-making matrix which can be used as an analytic framework when selecting a costing method. The response emphasises, in particular, the flexibility of the NRAs with regard to their ability to select the most suitable method for the applicable market stage or market situation from all the instruments available.

Contrary to its original plans, the European Commission published, on 7 December 2012, not two draft Recommendations on separate issues, but one draft for a Recommendation on consistent non-discrimination obligations as well as costing methodologies designed to promote competition and strengthen broadband investments. The Commission has asked BEREC for its position. BEREC will issue an Opinion on the basis of the consultation responses which have already been provided as well as the revised Common Position in the spring of 2013.

Article 7/7a cases

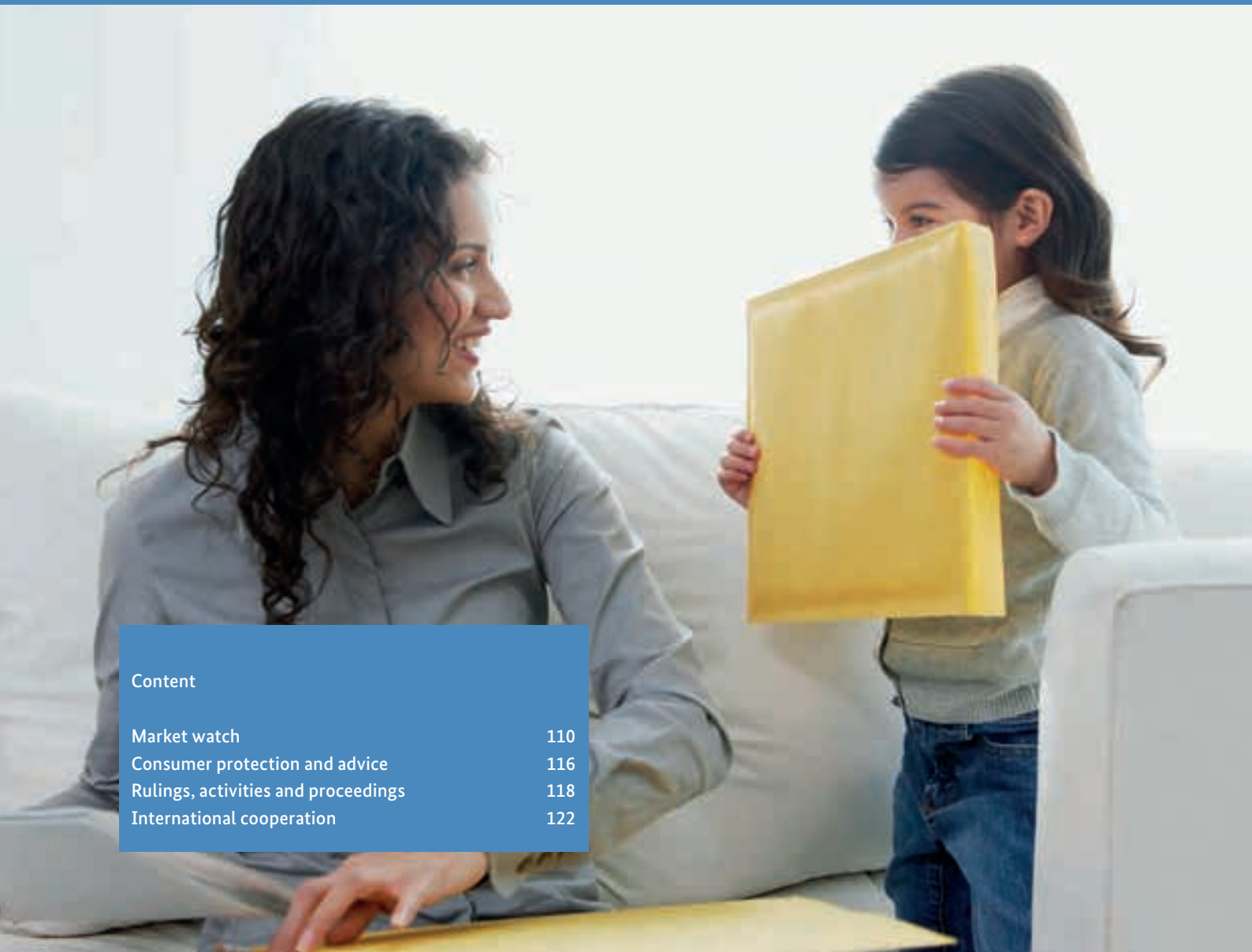
Under the provisions of the EU regulatory framework in the field of telecommunications, BEREC must be involved in cases under Articles 7 and 7a of the Framework Directive, in which the NRAs notify draft regulatory measures to the European Commission; in these cases BEREC's opinion must also be sought in cases in which the Commission has serious doubts about the compatibility of the draft measures with Community law. The objective of this mechanism is to promote the single market for electronic communications and, in particular, to achieve the application of consistent regulatory rules of telecommunications within the framework of EU law.

BEREC set up special teams of national experts in a total of ten cases in 2012; these teams produced opinions within a matter of weeks on whether and to what extent BEREC shared the Commission's serious doubts and submitted its views to the BEREC Board of Regulators for decision. The Bundesnetzagentur took part in the expert teams. Owing to the large number of cases and the short time periods for Article 7/7a cases, BEREC also modified its own internal procedures to safeguard its ability to deal with these important tasks.

POST

Change in progress

The letter and parcel markets continue to develop at very different paces. In the year under review the Bundesnetzagentur maintained a very close watch over these markets to ensure fair competition. Prices remained stable thanks to rates reviews and approvals. The Bundesnetzagentur again contributed input to various international bodies.



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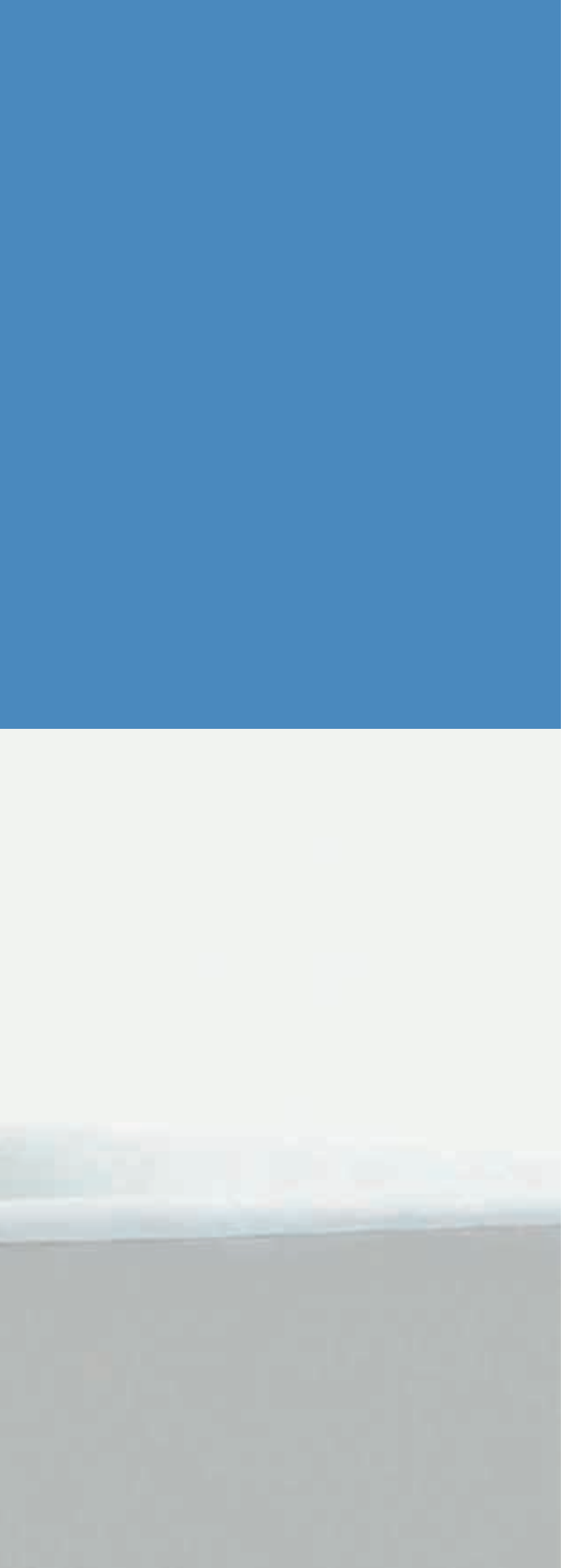


Postal services are an important part of the logistics industry, which itself plays an important cross-cutting role in today's fragmented economy. Both the private sector and consumers depend on the availability of high-quality postal services at reasonable prices. Accordingly, these services are a vital element of the infrastructure of a functioning community. In turn, developments in the postal market heavily depend on the economic situation of many industries and on consumer confidence.

The online mail order business has grown extremely fast in recent years, demonstrating the importance of the parcel market for business and private customers. All parcel operators have benefited in equal measure from this growth. To compete for business and private customers they are consistently improving their services, for instance by offering alternative and flexible delivery options to private customers, such as evening delivery.

The traditional letter market, too, remains significant despite continuing electronic substitution. That said, it remains to be seen how the new legally binding electronic letter service (De-Mail), for instance, will impact on letter volumes and how the market will respond to the advent of new providers.

Market watch

The recovery of the general economy in 2011 had a positive impact on postal markets, which continued to develop encouragingly between 2010 and 2011.

In 2011 the German postal markets generated total revenue of approximately €26.4bn, including approximately €8.9bn in the licensed letter sector alone (conveyance of letter items up to 1,000g).

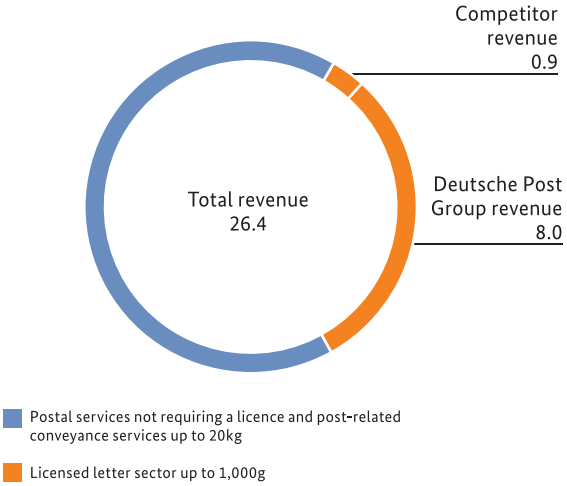
Letter market

A total of 16.6 billion letters up to 1,000g were sent in Germany in 2011, 1.2% more than in the prior year. By contrast, in 2011 revenue declined slightly down to €8.9bn, 1.1% less than in 2010. 2011 was hence the fourth consecutive year during which revenue dropped. However, unlike in other countries, in Germany the decline in volumes in 2008 and 2009 did not continue in 2010 and 2011.

Key figures for the letter market 2011	
Volume	16.6 bn items
Revenue	€8.9bn
Number of providers	~ 600
Employees (equivalent to full-time employees)	171,048

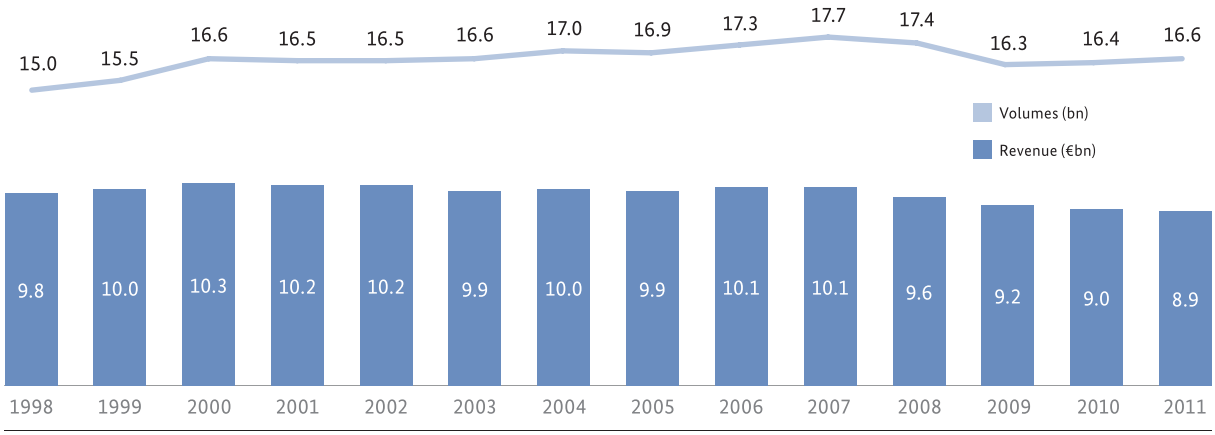
The revenue generated by competitors of Deutsche Post Group (Deutsche Post AG, hereafter DPAG, plus its subsidiaries and affiliates) stood at approximately €0.89bn in 2011, 5.3% less than in 2010 (€0.94bn). Revenue is generated with two different types of service: end-to-end services and "incidental" services, e.g., where items are pre-sorted by the sender. In 2011 the competitors of Deutsche Post Group handled

Revenue on the postal markets 2011
€bn



Source: WIK, Bundesnetzagentur, December 2012

Revenue and volumes in licensed sector for letter items up to 1,000g



over 1.7 billion items end to end, generating revenue of approximately €0.8bn. This represents a continuing increase compared to 2008 (approximately 1.4 billion items), 2009 (approximately 1.5 billion items) and 2010 (just under 1.7 billion items). Deutsche Post Group competitors injected another approximately 1.7 billion incidental service items into Deutsche Post Group's network, an increase of approximately 0.1 billion items compared to 2010. With these services the competitors generated revenue of €0.1bn in 2011, a figure that has remained stable over the past years.

Deutsche Post Group's revenue in 2011 stood at €7.97bn, some €0.1bn less than in 2010. €3.2bn of this was accounted for by end-to-end services, under which Deutsche Post Group handled 3.6 billion items in 2011. This figure was 0.2 billion under that for 2010. The revenue generated with incidental services in 2011 stood at €4.7bn. This figure has dropped continually compared to 2008 (approximately €5.8bn), 2009 (approximately €5.4bn) and 2010 (approximately €4.8bn). By contrast, the number of incidental service items handled by Deutsche Post Group in 2011 rose by approximately 0.4 billion to 11.3 billion (after 10.9 billion in 2010).

In the first quarter of 2012, end-to-end items handled by Deutsche Post Group accounted for approximately 23% of all end-to-end items conveyed in 2011. Among its competitors, this share stood at 27%. Compared to the figure in the same quarter of the prior year, the first-quarter 2012 numbers suggest stable, possibly even slightly higher volumes for the full year.

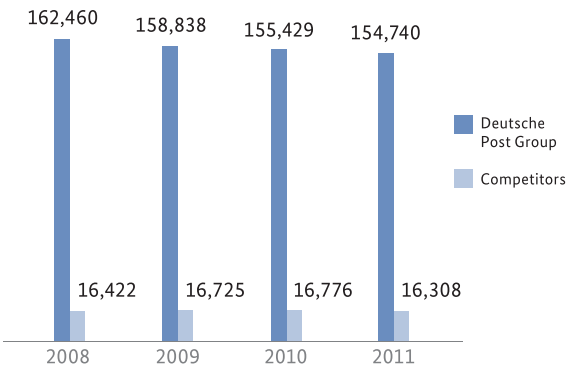
Volumes and revenue split by provider and product groups

Year	Competitors		Deutsche Post Group			
	Total volume		End-to-end items		Incidental service items	
	Volume (bn)	**€bn**	Volume (bn)	**€bn**	Volume (bn)	**€bn**
2008	1.4	0.8	3.7	2.9	12.2	5.8
2009	1.5	0.8	3.5	2.9	11.4	5.4
2010	1.7	0.9	3.8	3.2	10.9	4.8
2011	1.7	0.9	3.6	3.2	11.3	4.7

Workforce development

Generally, the players on the letter market (excluding subcontractors) have declining workforces. Between 2008 and 2011 the number of employees (converted to full-time equivalents) dropped continually from almost 179,000 to just over 171,000, a decrease of over 4%.

Employees in licensed letter sector



Competitors' workforces increased slightly in size between 2008 and 2011, however declined in 2011 to a little over 16,000, just under the figure for 2008 (16,422 full-time employees). By contrast, the number of Deutsche Post Group's employees (converted to full-time equivalents) decreased continually from just over 162,000 in 2008 to just under 155,000 in 2011.

Licensing

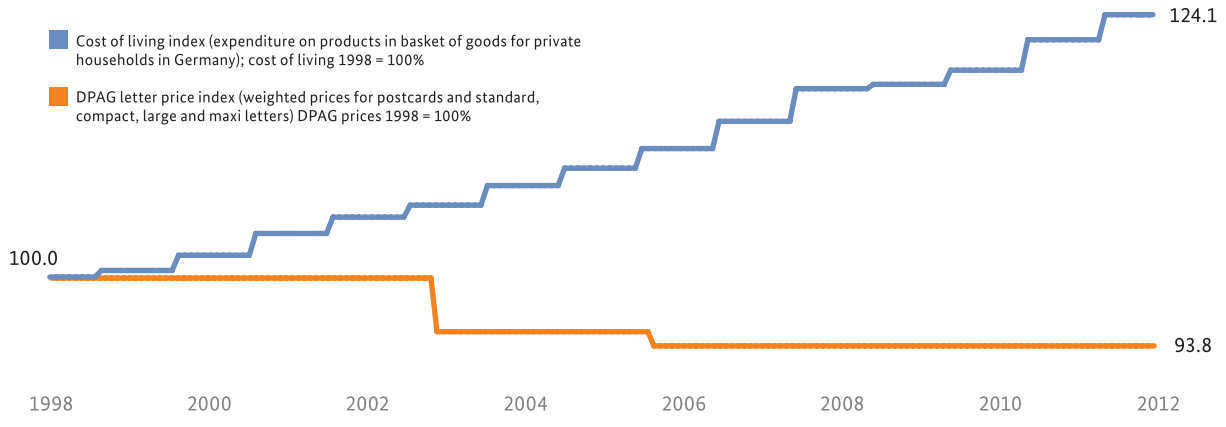
Between 1998 and 2012 the Bundesnetzagentur granted 2,837 companies and individuals a licence for the conveyance of letter items up to 1,000g. After a decline in 2011 the number of licence applications and licences issued rose again in 2012.

The total number of licensees had risen to around 1,300 by the end of 2012. In 2012 more licensees exited the market than new licence-holders joined, bringing down the number by almost 40 compared to 2011. The reason for these exits is that a number of licensees discontinued their activities and subsequently returned their licences.

Letter prices

Since 1998 prices for single letter items (e.g., postcards, standard and compact letters) have either declined or remained stable. Adjusted for inflation, real prices for letter services dropped more than 25% between 1998 and 2012, thanks largely to intervention from the Bundesnetzagentur, whose rates regulation is based on the costs of efficient service provision and also prescribes productivity gains under the price cap rates approval procedure.

General price development and DPAG letter prices



Source: Consumer price index 2012, December 2012

Germany's letter prices are in the upper third of the range of letter prices across Europe. Adjusted for the cost of living index, only eight of the 27 EU Member States have lower letter prices. In all other Member States letter prices are, relatively speaking, higher.

Parcel market

The flourishing online mail order industry has given a positive boost to parcel revenue and volumes. A total of 2.4 billion parcels were handled in 2011, generating revenue of €11.2bn.[1] Both revenue and volumes are expected to have risen again in 2012.

Key figures for the parcel market 2011	
Total volume	2.4bn items
Standard parcels	96.90%
Total revenue	€11.2bn
Revenue from standard parcels	89.50%

Source: WIK, December 2012

Volumes in 2011 largely consisted of standard parcels without a guaranteed delivery time. They accounted for 89.5% of revenue and 96.9% of volumes. Parcels with a guaranteed delivery time (express) represented 9.8% of revenue and 3.1% of volumes. 0.04% of parcel volumes and 0.07% of revenue were accounted for by courier shipments.

Generally speaking, standard parcels were promptly delivered, with 93.7% of all items delivered within one working day and another 5.5% within two working days. 96.1% of parcels with a guaranteed delivery time, which usually carry a higher price tag, were delivered within one working day. The more expensive guaranteed delivery service hence offers no major additional benefits compared to the standard option, suggesting a high quality of service for standard parcel conveyance. This explains the continuous recent decline in express parcel volumes.

Market structure and competition

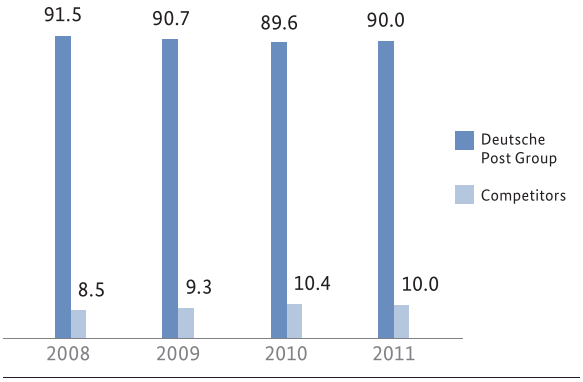
The main objective of postal market regulation is to maintain fair and well-functioning competition. In this context competition is seen as the main precondition for the provision of high-quality services at stable prices on what used to be a largely monopolistic market. In the letter market, the current situation regarding competition is very different from that on the parcel market. The parcel market consists of a number of large players that maintain nationwide delivery networks. By contrast, the letter market (for items up to 1,000g) is still dominated by one single provider.

Letter market

In 2011, as in 2010, Germany's letter market had around 600 players handling letter items up to 1,000g on their own account, indicating a certain degree of stability. The total number of letter items was 16.6 billion, with revenues reaching €8.9bn. However, 89.4% of volumes and 90.0% of revenue were accounted for by just one provider, namely Deutsche Post Group. Competitors' market share expressed in volumes and revenue reached 10.6% and 10.0%, respectively. In other words, structurally speaking the postal market has remained virtually the same since it was fully liberalised in 2008.

There was one interesting development between 2010 and 2011 in that the competitors' share of revenue declined slightly although volumes actually increased, possibly indicating that competitors were more vulnerable to price declines than the incumbent.

Shares in the letter market in terms of revenue
%



1) The 2011 figures stated here are not entirely comparable to those of the previous years owing to a difference in the methodology used and a change in statistics provider. However, other studies provide conclusive evidence that the courier, express and parcel (CEP) services market has grown compared to previous years.

Number of operators in the licensed sector split by revenue[1] (without Deutsche Post Group)

	Up to €10,000	€10,001 to €100,000	€100,001 to €500,000	€500,001 to €1,000,000	> €1m to €10m	> €10m
2008	~ 250	129	82	38	101	18
2009	~ 200	185	102	44	97	18
2010	~ 150	178	108	44	93	20
2011	~ 150	181	117	42	90	22

1) The number of operators is lower than the total number of operators active on the market, as in many cases the parent company or group provided data for all affiliated licence holders.

Most of Deutsche Post Group's competitors are small to mid-sized businesses, only some of which operate nationwide. Over 80% of them generated annual revenue of up to €1m in 2011, just under 15% had revenues of between €1m and €10m, and only around 4% earned over €10m per annum.

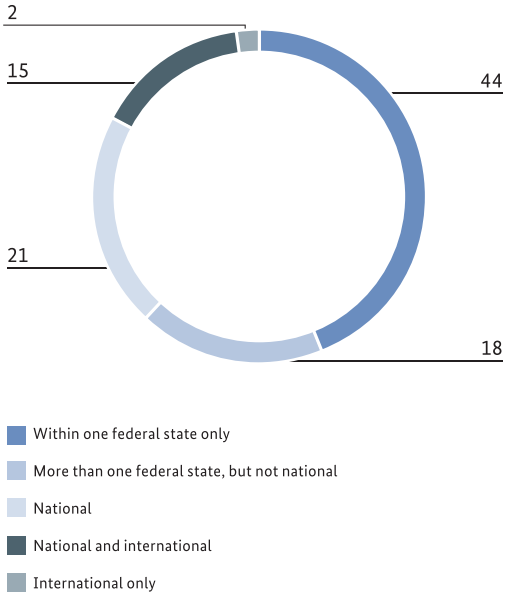
Considering the competitive situation in this market, little is expected to change in the near future. The majority of Deutsche Post Group competitors are small or very small businesses with very little capital and equipment and mostly regional operations. New technologies and ever more capital-intensive production methods increasingly work in the favour of the incumbent, which already benefits from economies of scale.

One way for smaller regional players to address these structural disadvantages is to form alliances. However, although some partnerships already exist, none of them currently extend to the whole of the country.

The advent of legally binding digital mail services in accordance with the De-Mail Act could produce more competition in the traditional letter market. De-Mail services are also offered by large telecommunications operators such as Deutsche Telekom and United Internet. However, it remains to be seen whether or not physical letters will be substituted by De-Mail and what this could mean for the structure of the market.

There are indications that letter volumes in Germany are developing very differently from those in Europe and beyond. There, volumes are undergoing a significant decline, whereas in Germany letter volumes are stable to slightly higher.

Operators on the letter market split by geographical area of activity in 2011
%

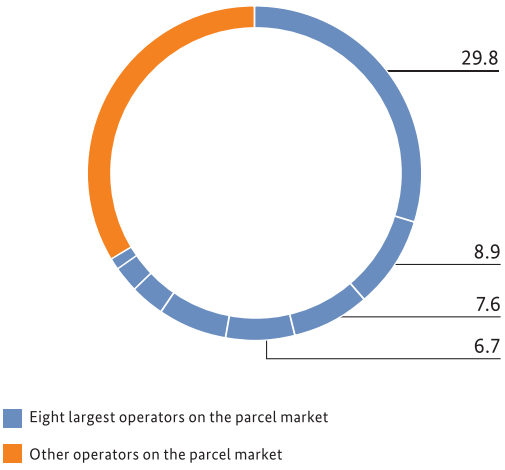


Parcel market

The structure of the parcel market is incomparable to that of the letter market. The former is characterised by a number of players that maintain a countrywide network of acceptance and collection points serving also private customers across Germany. Competition between the providers has boosted service levels and stabilised prices.

That said, a closer look at the parcel market reveals that it is dominated by a small number of large providers. The eight largest operators in the industry account for around two thirds of total revenue; the largest three earn approximately 46%. In 2011, the operators with the greatest revenue were (in alphabetical order): Deutsche Post DHL, Dynamic Parcel Distribution (DPD), Federal Express Europe, GLS Germany, GO! General Overnight Service (Deutschland), Hermes Logistik Gruppe, TNT Express and United Parcel Service Deutschland (UPS). However, not all of them earned the same amount of revenue.

Parcel market up to 20kg – market shares by revenue in 2011
%



Source: WIK, December 2012

As this is a growing market, it is possible that its structure will continue to change. The Bundesnetzagentur is hence monitoring developments closely so it can intervene should there be any signs of anti-competitive behaviour.

Consumer protection and advice

Postal service operators provide sufficient services to consumers across the whole of the country. The Bundesnetzagentur continued to monitor compliance with this universal service obligation in 2012, too. It was also called upon to intervene as a professional arbitrator.

Universal service

Postal services form part of the infrastructure that is vital to life in a functioning community. The provision of postal services is mostly, though not entirely, left to free competition. In accordance with Article 87f (1) of Germany's Basic Law, the Federal Government ensures the availability of adequate and appropriate postal and telecommunications services throughout the country (the provision of which is referred to as universal service). Universal service is provided by DPAG and other private-sector operators.

The services that come under universal service are listed in the Postal Universal Service Ordinance (PUDLV), namely the conveyance of letter items up to 2,000g, addressed parcels up to 20kg, and newspapers and magazines. The Ordinance also stipulates the quality of universal service. Quality criteria include acceptance and collection network density (there have to be at least 12,000 fixed-location posting points across Germany where letters and parcels are accepted and collected) and delivery frequency (universal service items have to be delivered at least once per working day (that is, six days a week). Finally, the Ordinance stipulates certain transit times for letters and parcels, posting point opening hours, and post box locations.

The Bundesnetzagentur monitors compliance with these requirements. All available information indicates that the universal service is being duly provided across the entire country.

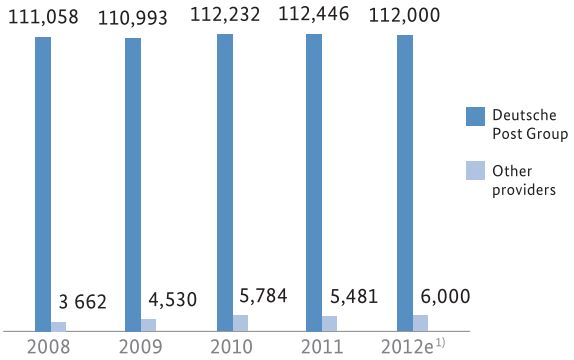
There is one company that currently provides letter services for the whole of Germany, namely DPAG. Many other providers operate in regional markets or occupy certain market segments, such as the conveyance of items for bulk senders. This situation is reflected, inter alia, in the number of post boxes on the street. Between 2008 and 2012 DPAG's competitors owned and operated between 3 and 5% of all post boxes.

As for parcels, there are several operators that provide parcel services nationwide, again reflecting the considerable differences between the letter market and the parcel market.

Under section 5 of the Ordinance, all universal service users are entitled to petition the Bundesnetzagentur to request the enforcement of quality standards pertaining to universal service. When processing such requests the Bundesnetzagentur draws a line between those that

concern a violation of universal service rules (such as delivery every working day) and others. In 2012 the Bundesnetzagentur received a total of 1,298 written requests (not including those made by telephone). They related to a number of different issues, ranging from lost parcels to the removal of a post box. Most of them were complaints concerning delivery quality.

Post boxes



1) Expected

If information received suggests non-compliance with the universal service requirements, for instance increasing reports of no letter or parcel deliveries on working days in a certain delivery area, we investigate with a view to remedying the shortcoming.

Matters not related to securing the universal service (around 70 percent of cases), such as delivery of a damaged parcel, are to be resolved by the postal operator and the customer themselves and are not initially our responsibility.

Dispute resolution

With dispute resolution under Article 10 of the Postal Services Ordinance (PDLV) the Bundesnetzagentur offers a simple, low-cost procedure to settle disputes between end customers (not business customers) and postal service providers.

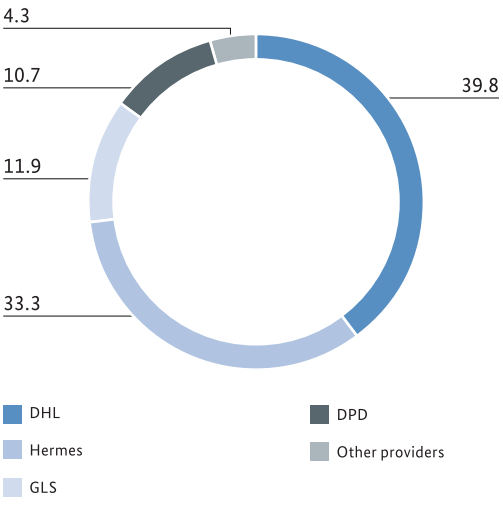
Customers who consider their rights under the Ordinance violated and who have already unsuccessfully attempted to seek redress may petition the Bundesnetzagentur to intervene. Dispute resolution is a voluntary process that requires the cooperation of all involved parties and aims to achieve an amicable settlement between both sides.

The Bundesnetzagentur functions as an intermediary and has no power to decide the matter. It hears both parties' arguments, produces an opinion on the matter and communicates it to the parties. That said, the dispute resolution procedure need not necessarily end with a settlement.

In the prior year the Bundesnetzagentur received 33 requests for dispute resolution, of which ten cases were handled. The remaining applications did not meet the requirements.

Posting points for parcels 2011[1)]

%



Rulings, activities and proceedings

In 2012 the Bundesnetzagentur reviewed and approved various rates for which Deutsche Post AG had sought approval. The price of a standard letter was raised for the first time in 15 years.

Infopost

In review proceedings under the Postal Act, the Bundesnetzagentur established past violations of non-discrimination requirements on the part of DPAG. Under a decision dated 30 April 2012, DPAG was requested, by 31 December 2012, to adjust the eligibility requirements for its addressed advertising product (Infopost and Infobrief national), which is used for sending invoices with identical content, and to discontinue its practice of discriminating against certain customers.

The Bundesnetzagentur had reviewed DPAG's eligibility requirements for items containing identical invoices and notifications to customers of loyalty points they had gathered. DPAG argued that both types of item met the criteria for Infopost that had been set during the time DPAG still held the monopoly. Accordingly, the rates charged by DPAG for items with either type of content were considerably lower than its rates for comparable bulk items.

The Bundesnetzagentur does not question the Infopost product as such, and expressly confirmed that items of a promotional or advertising nature were indeed eligible for discounted rates. It stated that letters notifying customers of the number of loyalty points they had gathered, even if they contained customer-specific information, were primarily promotional in nature or served to increase customer loyalty, so they should be considered advertising items. The Bundesnetzagentur generally considers discounts for addressed advertising items to be justified since in this industry DPAG is subject to immense competitive pressure, especially from electronic media.

However, items containing invoices are a different matter. Regardless of whether invoices state identical amounts or not, because they are addressed to different customers the cost of conveyance to DPAG is the same. Also, both types of invoice are considered as belonging to the same market and are hence exposed to the same competitive pressure. In a fully liberalised postal market, the line of reasoning used by DPAG, the legal successor to the former government-owned agency Deutsche Post – namely that certain senders of invoices were entitled to continued preferential treatment for historical reasons – is no longer justifiable.

The preferential rates had been established decades before because senders used to deliver pre-sorted items on pallets to Deutsche Post, which brought down its costs. The criterion of identical content, which at the time was typical of advertising items that were injected in bulk, became a feature in its own right, so that senders of invoices with identical content were offered preferential rates in the name of equal treatment. However, today these preparatory services are provided in connection with the posting of bulk items under incidental service agreements, which invalidates the historical justification for offering preferential rates to customers.

DPAG complied with the decision on time and made the requested changes effective 1 January 2013. However, the company has appealed to the courts to review the decision. In the course of making said changes, for business considerations DPAG also decided to discontinue the Infobrief product altogether, which had been available at a discounted rate for items with identical content posted in lots of 50 or more, independently of the nature of the documents contained therein.

Price cap proceedings (approval of rates for 2013)

In price cap proceedings, in a decision dated 1 October 2012 the Bundesnetzagentur approved DPAG's rates for letter items up to 1,000g for 2013. DPAG had applied for a slight increase in its standard rates. The approval resulted in an increase from €0.55 to €0.58 for items posted in lots of less than 50 items. The price of a maxi letter rose from €2.20 to €2.40. The Bundesnetzagentur also approved an increase in some international letter rates.

These constitute the first increases in standard letter rates in 15 years. Since the first price cap decision in 2001 DPAG has been subject to productivity targets of over 20%, so rates have remained stable despite inflation. This means that Germany does not have the lowest postal services rates in Europe; instead they are somewhere in the medium range. In recent years DPAG has succeeded in exploiting most of the efficiency potential available to it, so the Bundesnetzagentur decided to acknowledge the higher costs demonstrated by DPAG. On average, these moderate increases will cost private customers less than €0.10 a month and hence seem justifiable vis-à-vis consumers.

The rates approval was based on what is known as the Bundesnetzagentur's benchmark decision of November 2011, which was the basis for determining DPAG's postage rates in 2012 and 2013. The new prices were fixed based on the difference between the rate of inflation and the productivity increase. In the benchmark proceedings the latter was set at 0.6% per annum. The productivity increase is calculated based on the cost of efficient service provision on the one hand and what are known as neutral expenses on the other. Under the Postal Act, these neutral expenses represent a special financial burden on DPAG that results from the cost of having to maintain a nationwide infrastructure, pay social insurance contributions, and form provisions for retirement benefits. In increasing its rates DPAG exercised the scope it had been given for 2012 and 2013.

Increase in discounts for incidental services

The rates charged by DPAG in return for incidental services are closely connected to the price cap decision. Incidental services are service elements included in a full conveyance service (from collection to delivery) minus those parts that are rendered by the requesting provider. These include the pre-sorting (e.g., by region) of customer-franked, machine-readable items and their transportation to DPAG's mail sorting centres. The incidental service scheme is typically used by DPAG's key account customers or competitors, mainly consolidators. Depending on the preparatory services they provide and the volumes they send, they are offered lower rates in the form of a discount on standard letter rates. The discount granted on the price of a standard item (from 1 January 2013, €0.58 for items up to 20g) is referred to as an incidental service discount.

In the course of raising its postage rates for standard items DPAG also increased its incidental service discounts for certain types of item. Despite a nominal increase in these discounts, on balance the measure resulted in a 2.2% increase in incidental service rates. The higher discounts are granted on the higher standard rates, which went up to a greater extent. For customers entitled to reclaim input tax, the highest possible discount for a standard letter (37%) produces not a lower but rather a higher price of €0.74. The new price for customers not entitled to reclaim input tax is €0.94.

The price of a maxi letter also went up effective 1 January 2013 from €2.20 to €2.40, so although incidental service discounts for maxi letters remained unchanged, the applicable rates went up by 9.1%.

As incidental service rates are the benchmark for those competitors of DPAG that operate their own delivery infrastructure, last year these providers voiced their concern that too low incidental service rates were obstructing competition. The Bundesnetzagentur requested DPAG to disclose information on its costs so it could verify whether the measure was in line with the Postal Act. The subsequent investigations revealed that the costs of efficient service provision were not being undercut and that accordingly, the rates did not contain any discounts as prohibited by Article 20(2) sentence 1 para 2 of the Postal Act.

When the discounts were raised after the introduction of VAT on business customer items in 2010, the Bundesnetzagentur had already established that the

requirement of cost coverage stipulated in the Postal Act was met. This result has been confirmed by a recent investigation based on up-to-date cost information submitted by DPAG. This second investigation showed that incidental services cover the majority of the costs referred to in Article 20(2) sentence 2 of the Postal Act, in line with the requirements of the latest price cap benchmark proceedings.

Similarly, the plaintiffs' concerns that consumers and small business owners would ultimately have to pay for the discounts enjoyed by bulk senders turned out to be unjustified. The increase in standard postage rates was due to the fact that for one, in recent years costs had risen disproportionately faster than the achievable efficiency potentials; for another, network capacity utilisation especially in the private customer segment had declined owing to increasing electronic substitution, which had driven up unit costs. The connection with the incidental services segment is indirect since, under the relevant contractual arrangements, the incidental service discounts are granted on the higher standard rates. However, the standard rates had not been raised and approved with the intention of bringing about another increase in discounts in the (profitable) incidental services segment.

Accordingly, the increase in costs in the private customer segment was not fully transferred to the business customer segment in line with the contractual arrangements. This, however, was a business decision on the part of DPAG that did not contravene the provisions of the Postal Act and hence did not trigger any regulatory intervention, since the costs of efficient service provision are not being undercut and incidental services help to cover the special costs. There is no obligation to give equal treatment to private and business customers; neither do the non-discrimination rules require this.

The outcome of the preliminary investigations did therefore not warrant the commencement of formal abuse proceedings.

Approval of rates for access to P.O. boxes

In a decision dated 21 November 2012 the Bundesnetzagentur approved the 2013 rates payable by competitors for access to DPAG's P.O. boxes. The sorting charge was cut significantly from 5 cents to 3 cents per item. Owing to a change in cost allocation and a rise in collectively agreed wages for DPAG acceptance staff, acceptance rates rose from 80 cents to €1.14. The approved rate is hence considerably lower than the acceptance charge of €3.28 that DPAG had applied for. The approved rates are valid until 31 December 2013.

DPAG is obliged to enable alternative delivery service providers to deliver items that are addressed to a P.O. box, effectively giving DPAG's competitors the possibility to deliver all of their customers' items. If this were not possible, their customers or even they themselves would have to separate all items with a P.O. box address and inject them, fully franked, into DPAG's system. Access is granted by having DPAG employees deliver competitors' items that are dropped off at the relevant P.O. box facility to the right P.O. box. In other words, P.O. box access is an important element of promoting competition in the postal market.

In return for the work this produces, DPAG receives a fee that requires ex ante approval from the Bundesnetzagentur. This fee consists of an acceptance charge that is payable per item and covers the work associated with accepting the item, and a per-item sorting charge payable for the act of placing each individual item into the right P.O. box.

Approval of rates for the E-Postbrief product

In 2012 the Bundesnetzagentur had to approve the rates for DPAG's product "E-Postbrief mit klassischer Zustellung" (E-Postbrief with physical delivery) twice because of a change in cost structures as well as in DPAG's internal wholesale prices.

E-Postbrief items are posted electronically by senders who have to register with DPAG in advance of using the service. The items are subsequently delivered either electronically to addressees who also have to be signed up to the service, or physically. In the latter case, the content of the item is transmitted electronically by the sender before DP Com GmbH (hereafter DP Com), the company that applied for rates approval in this case, or a provider subcontracted by DP Com prints out the item, folds it, inserts it into an envelope

and franks it with the postage applicable to a comparable DPAG standard product, i.e., €0.55 (€0.58 from 1 January 2013) for a standard letter. These letter items are subsequently handed over to Deutsche Post InHaus Services GmbH, the consolidator that injects these items into DPAG's system, for delivery to the addressees.

The rates to be approved only related to that portion of the service provided by DP Com which is necessary for the physical conveyance of licensed letter items. In other words, they do not correspond to the full charge payable by the customer. Senders also have to pay for electronic posting, letter production and VAT, so the rate payable by them is not €0.38, the approved rate for the "Standard-E-Postbrief", but rather €0.58.

DPAG and DP Com introduced their E-Postbrief in July 2010 with two variants, one purely electronic, the other with physical delivery. In 2012 various providers launched a rival service known as De-Mail. Digitisation has hence arrived on the postal market, too, and is expected to change the world of written communication. The arrival of E-Postbrief and De-Mail products and the potential substitutive effect this will have on traditional letter services are hence of major importance to postal regulation.

In considering rates applications, the Bundesnetzagentur's competent Ruling Chamber ensured that the applicant is not given preferential treatment over external customers when they make use of services provided by other subsidiaries within the same group. Such preferential treatment would violate the non-discrimination rules under the Postal Act and would be rejected since it constitutes anti-competitive behaviour. However, the investigations revealed that DP Com is subject to the same terms and conditions as other competitors and key account customers.

Another point confirmed by the Ruling Chamber was that DP Com's services are based on the costs of efficient service provision and contain no anti-competitive surcharges or discounts.

To the extent that DP Com uses the services of other DPAG subsidiaries, its own postal services can only be approved if these wholesale services do not contain anti-competitive charges. Should it emerge that the wholesale charges are not in line with the rates approval benchmarks, the rates approval for the E-Postbrief with physical delivery would also have to be reviewed as to whether it can still be upheld. To account for this case the Ruling Chamber has reserved the right to withdraw its approval so that any information that emerges at a later point can be considered. The approved rates are valid until 31 December 2013.

Postal secrecy and data protection in the postal system

Last year the Bundesnetzagentur monitored compliance with the data protection regulations of the Postal Act and of the Postal Data Protection Ordinance (Postdatenschutzverordnung, or PDSV). In the period under review it carried out a variety of routine and incident-related postal secrecy and PDSV compliance checks on postal services. In 2012 this produced 713 compliance reports, 266 of which related to specific incidents. 26 checks were purely concerned with data protection issues.

During the checks the Bundesnetzagentur frequently had to respond to licensees' questions on data protection and postal secrecy, some of which related to specific incidents in the company in question.

As in previous years, in 2012 the Bundesnetzagentur cooperated in a constructive manner with the Federal Commissioner for Data Protection and Freedom of Information. This cooperation arrangement enables both parties to communicate regularly and effectively on fundamental data protection issues.

International cooperation

The Bundesnetzagentur is a member of various organisations around the world to which it contributed its regulatory expertise again in 2012. It produced valuable input at the European and international level in its capacity as chair of a number of central working groups.

Universal Postal Union

Between 24 September and 15 October 2012 the Universal Postal Union (UPU) held its 25th Universal Postal Congress in Doha/Qatar, which was attended by over 2,000 delegates from 192 member countries. The Congress, which is the supreme authority of the UPU, a UN Specialized Agency, takes place every four years and in 2012 took some important decisions for the period 2013 through 2016. These include rules relating to the mutual termination rates applicable to the exchange of post between the member countries, as well as decisions concerning the introduction of electronic postal services under the "post" project.

The Congress also elected new executive members to the International Bureau, the UPU's executive organ. These elections were required since the UPU statutes do not allow executive members to serve more than two terms. Among the persons elected were the Kenyan candidate Bishar Hussein, who was elected Director General, and the Swiss candidate Pascal-Thierry Clivaz, who was elected Deputy Director General of the International Bureau. Both will serve from 2013 to 2016.

Candidates from 40 member countries each were elected to the two councils of the UPU, the Council of Administration and the Postal Operations Council, to which Germany succeeded in taking a seat. The 26th Universal Postal Congress will take place in 2016 in Istanbul/Turkey.

ERGP

The third plenary meeting of the European Regulators Group for Postal Services (ERGP) took place on 22 November 2012 in Stockholm. Elections were held for a number of executive positions for 2013. Luc Hindryckx, chairman of Belgium's regulatory authority BIPT, was elected as ERGP Chair. The two Vice-chairs for 2013 are Catalin Marinescu (ANCOM, Romania), the designated Chair for 2014, and Göran Marby from Sweden's PTS, who was ERGP Chair in 2012. Within the ERGP the Bundesnetzagentur chairs the sub-group on Access Regulation.

In 2012 the five sub-groups, which were established two years prior, presented various reports on their activities: “Quality of service and end-user satisfaction”, “Complaints handling procedures”, “Indicators for postal market” and “Access to the postal network and elements of postal infrastructure”. Two further documents were submitted for consultation during the period 29 November 2012 to 23 January 2013: “VAT exemption” (draft report) and “ERGP Common Position on cost allocation rules”.

The ERGP’s Work Programme for 2013 was also put forward for public consultation from 29 November 2012 to 9 January 2013. One of its priority themes is an improvement in end-user satisfaction and monitoring of market outcomes. Another issue that was included in the 2013 Work Programme on the initiative of the European Commission is cross-border parcel delivery.

For more information and to access these documents, go to http://ec.europa.eu/internal_market/ergp.

CERP

The European Committee for Postal Regulation (CERP) is a body that was founded as part of the European Conference of Postal and Telecommunications Administrations (CEPT) to manage postal regulation issues. CEPT has 48 member countries that are hence also members of CERP. Germany is represented within CERP by the Federal Ministry of Economics and Technology. The Bundesnetzagentur executes a number of functions by consultation with the Ministry, some of them on its own responsibility. Since May 2008 the Chair of CERP has been a representative of the Bundesnetzagentur, meaning the Bundesnetzagentur also lead-manages the Secretariat.

CERP's main functions are to assist new EU Member States in meeting all of the requirements of the EU Single Market, and to cooperate with the European Commission and the Universal Postal Union. To this end, the CERP Working Group on Policy conducted surveys on the continued development of European postal regulation and the various ways in which ex post and ex ante regulatory mechanisms are applied.

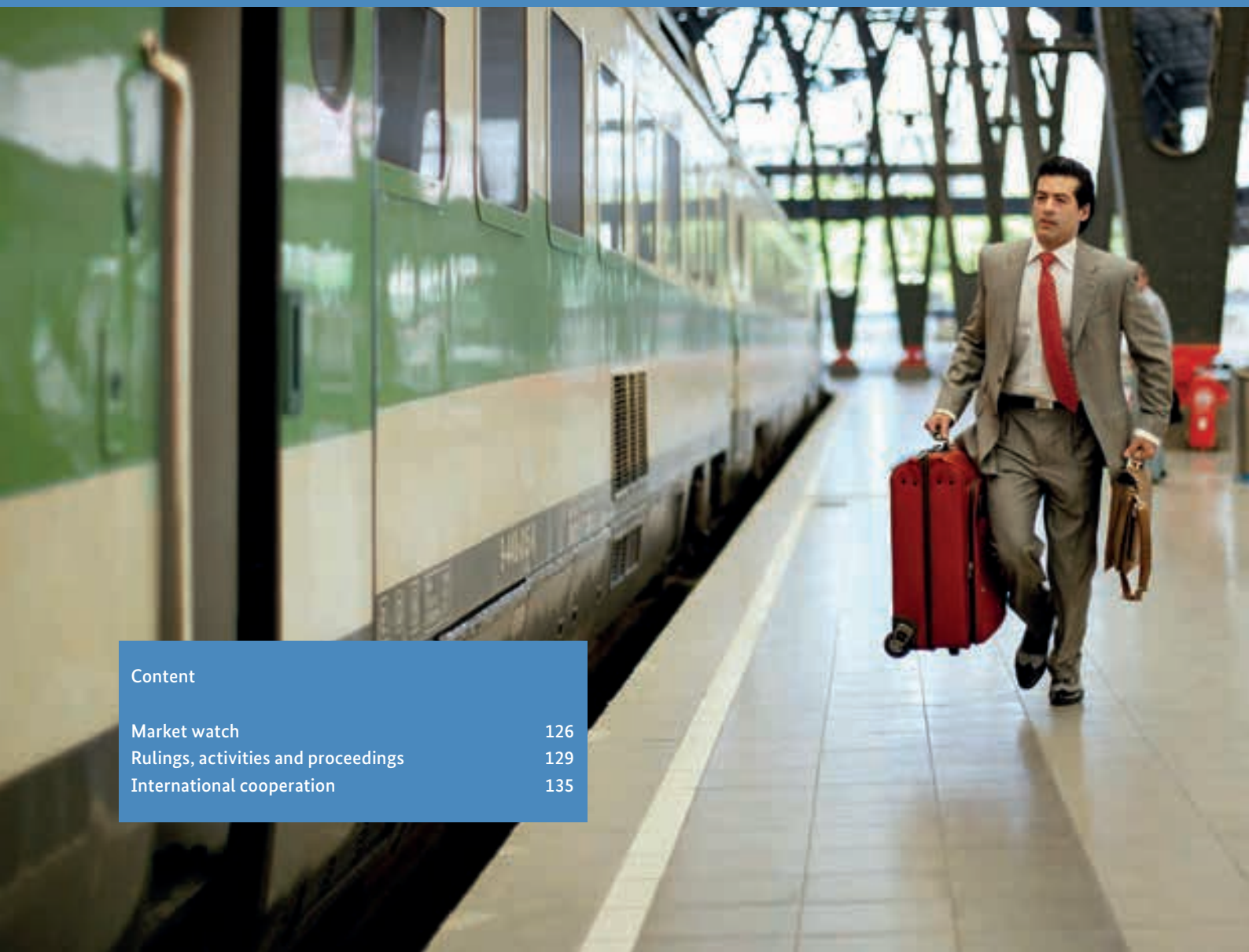
In the run-up to the Universal Postal Congress, another working group joined the competent section “On-line and postal services” of the European Commission to coordinate European positions on regulation-related proposals. The aim was to harmonise the assessment of these proposals by the Members as much as possible so as to give Europe a stronger voice.

To strengthen CERP’s role within the Universal Postal Union, CEPT and the UPU have drawn up a Memorandum of Understanding that is to be signed in 2013. The MoU serves to explain to the UPU’s member countries the function of postal regulation as well as the tasks associated with it.

RAIL

Setting the stage for more competition

Last year's work of the Bundesnetzagentur was largely dominated by proceedings. DB Station & Service AG's new station pricing system was examined. Court rulings paved the way for greater legal certainty in the market. In 2012 the Bundesnetzagentur continued to chair the international network IRG-Rail.



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From a competitive viewpoint, last year was a success. Deutsche Bahn AG's competitors were able to expand their market share in all segments. Despite the overall decline in transport performance in rail freight traffic, there were clear signs of robust competition. The launch of the Hamburg-Köln-Express (HKX) shows that long-distance passenger traffic also offers potential for new providers.

The Bundesnetzagentur's activities in 2012 covered a wide scope, from DB Netz AG's operational and technical regulations, proceedings concerning the operating hours of railway lines to capacity allocation in service facilities. The Bundesnetzagentur also oversaw the structure of noise-differentiated track access charges and reviewed DB Station & Service AG's new station pricing system. That the work done by the companies bears fruit is confirmed by the Bundesnetzagentur's annual market survey which revealed that access to service facilities and tracks is now rated more highly than in previous years.

The Bundesnetzagentur continued to chair the IRG-Rail network in 2012. Another six European countries joined the Group last year, raising the number of participating regulatory bodies to 21. International cooperation is playing an increasingly important role.

Market watch

In an overall positive market environment, revenue and competitive structure in rail transport developed along varying lines, depending on segment. Charges for rail infrastructure use rose again.

Key trends

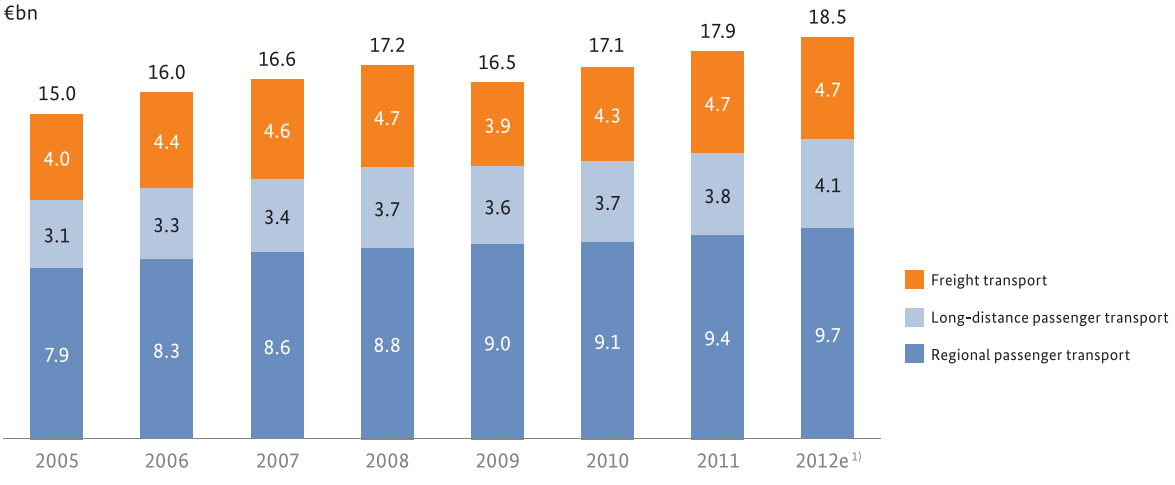
As in the previous year, the trends in the market segments regional passenger rail services, long-distance passenger rail services and the rail freight service diverged considerably in an overall positive market environment. Following the trend of recent years, revenue in the regional passenger segment again reached another record high. With increasing passenger demand, revenue reached an unprecedented €9.7bn. The long-distance passenger segment likewise profited from a rise in demand – compared with the previous year, revenues increased by 7% to €4.1bn.

The rail freight segment failed to sustain its positive growth trend of 2011 but its revenue of €4.7bn still surpassed that of 2010. The weakening economy in the euro area and the catch-up effects in the inland waterways segment were the prime factors slowing down growth. Despite stagnating revenues in the rail freight segment, the rail market last year was marked by a new record high of €18.5bn.

Regional passenger transport performance in 2012 is estimated at 51bn pkm. Competitors were able to increase their market share to 15%. Despite the market entry of a new competitor, the long-distance passenger rail segment's market share continued to stagnate below 1%. Transport performance nevertheless rose to more than 37bn pkm.

In the freight rail segment, initial calculations by the Statistisches Bundesamt revealed a transport performance of 110bn tkm, down 3% from the previous year. The decline mainly affected the rail freight operators in the DB group. The competitors' share rose to 27%.

Revenue in the rail transport market
€bn



1) Expected

Market assessment

As part of the Bundesnetzagentur's annual market survey, railway undertakings (RUs) are requested to rate certain market aspects. The scores for many components have improved in recent years. Nevertheless, there are still many critical issues, most of which however, are not in areas subject to regulation.

As in previous years, most of the criticism was levelled at "tariff and sales". RUs felt that significant improvement was needed in the sharing of ticketing revenues, the structure and level of distribution fees and the access to distribution infrastructure (eg travel centres, self-service ticket machines). Access to international rail infrastructure, quality and scope of the German network, and infrastructure managers' price-performance ratios were also deemed below par.

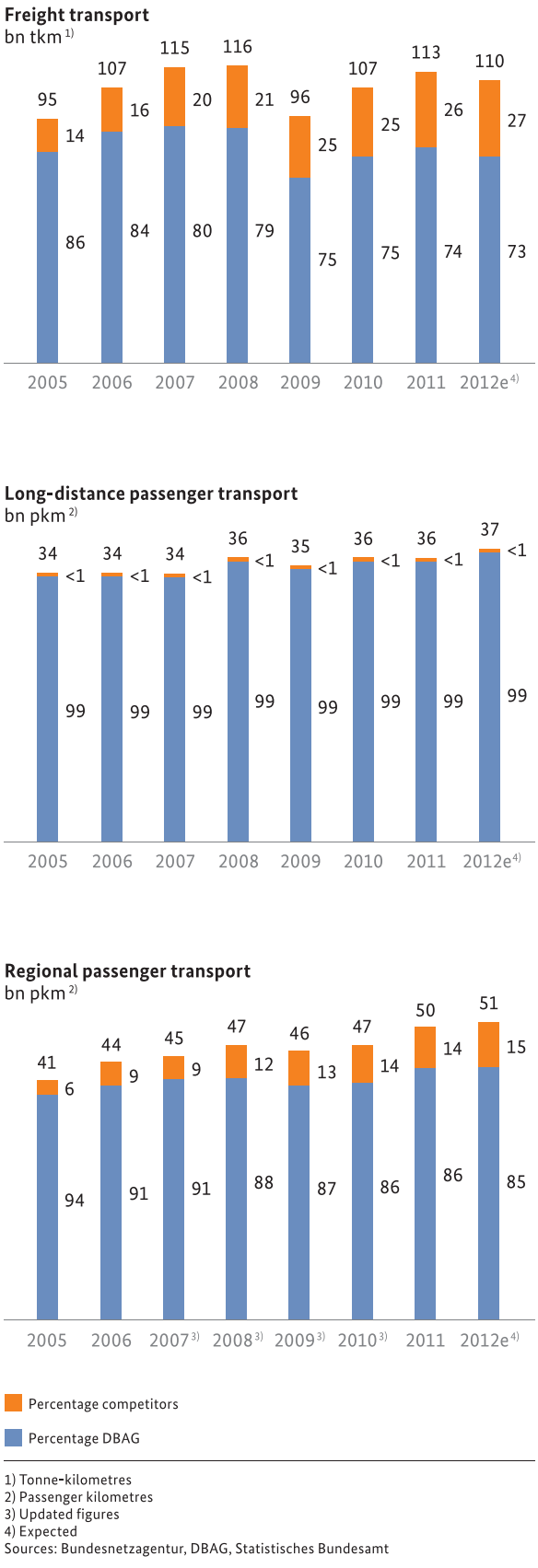
Perception of infrastructure managers' non-discriminatory pricing systems has also improved and achieved an average score. The results clearly show that the Bundesnetzagentur's untiring efforts in this area are beginning to pay off. RUs' satisfaction with access to service facilities and tracks improved slightly compared with just a few years ago and some components were even rated good.

Infrastructure access charges

The charges for the use of track rose as in previous years. Average access charges in rail freight transport rose by about 13% compared with those in 2007. The average access charges in long-distance and regional rail passenger transport exceeded those in 2007 by 15% and 11% respectively. The producer price index rose by 11% during the same period whereas inflation climbed by just 8%.

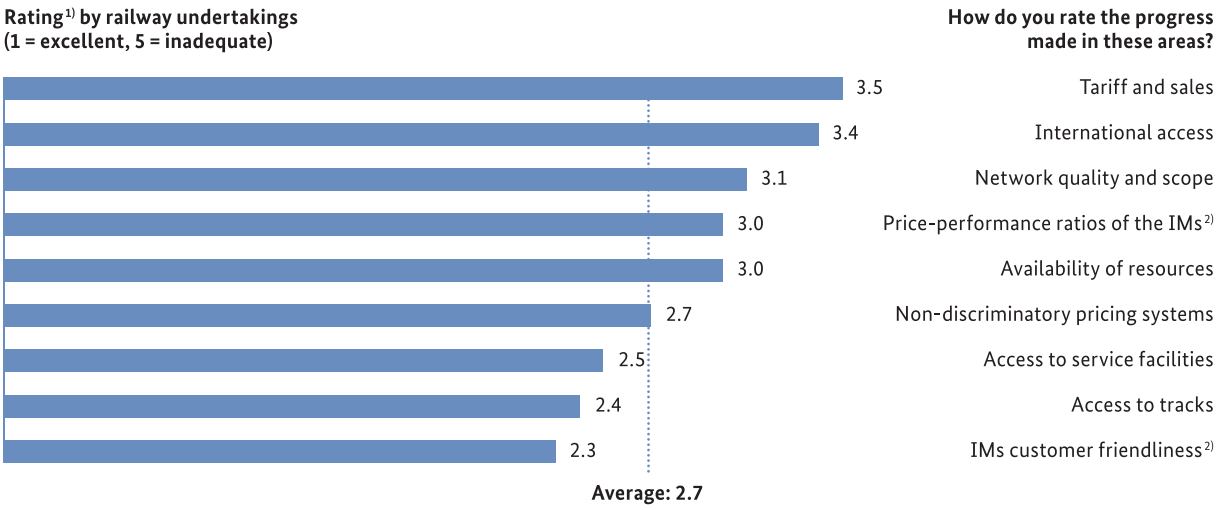
The trend in rising track access charges was mirrored by that in station charges where the mean charges were on average 15% higher than in 2007. This rise exceeded the general inflation level and the rate at which the producer price index increased.

Transport performance and competition in the rail market



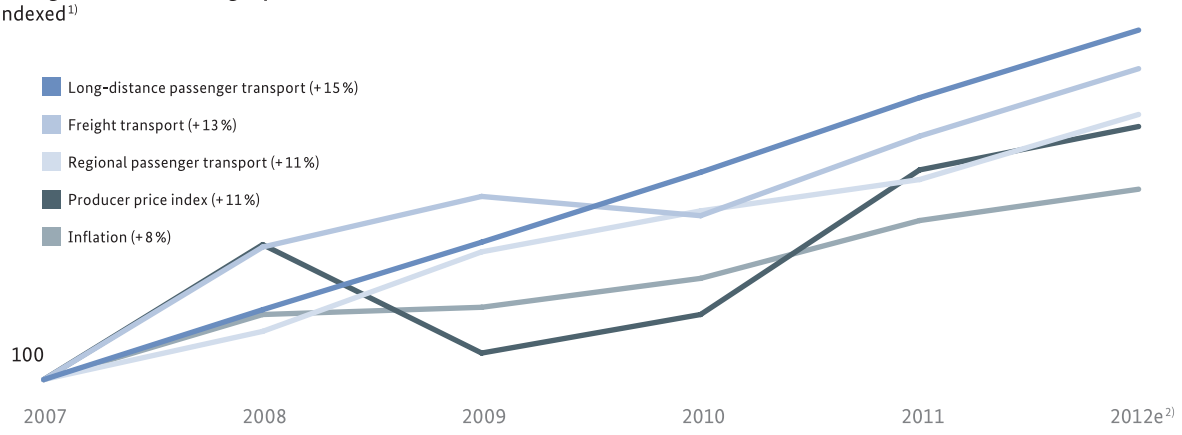
1) Tonne-kilometres
2) Passenger kilometres
3) Updated figures
4) Expected
Sources: Bundesnetzagentur, DBAG, Statistisches Bundesamt

Factors influencing the railway market



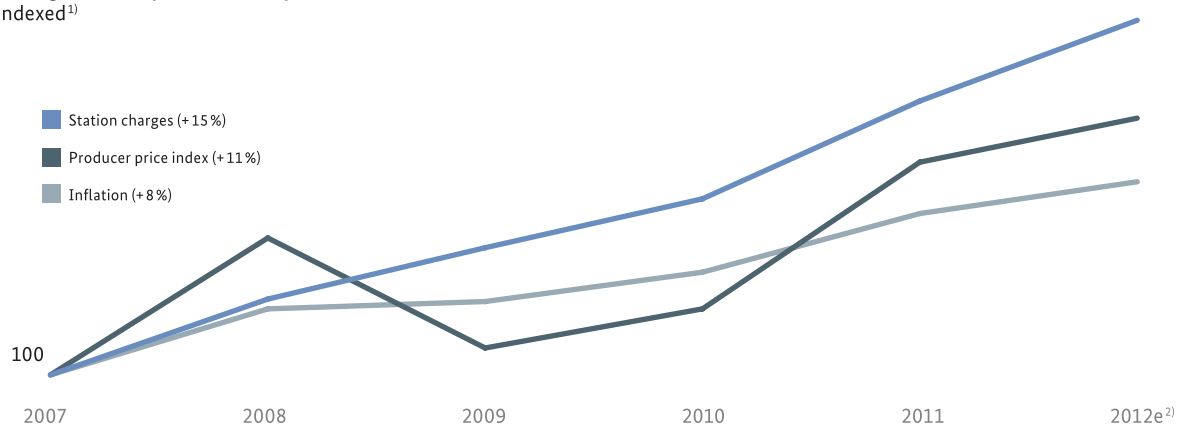
1) Mean values of the critical aspects (individual values) in the listed areas
2) Infrastructure Managers

Average track access charges per train kilometre
indexed[1]



1) Calculated as quotient of track access charges and operating performace
2) Expected
Sources: Bundesnetzagentur, Statistisches Bundesamt

Average revenue per station stop
indexed[1]



1) Calculated as quotient of station charges and station stops
2) Expected
Sources: Bundesnetzagentur, Statistisches Bundesamt

Rulings, activities and proceedings

Numerous proceedings and rulings contributed to eliminating barriers to competition last year as well. This primarily implies greater legal certainty for all providers in the rail transport sector.

Infrastructure access

Operational and technical regulations

On 18 May 2012 the Administrative Court in Cologne delivered its judgement on the 2011 network statement (SNB) and service facilities statement (NBS) of DB Netz AG. The background to the proceedings (18 K 2771/10) was the planned removal of numerous directives in the (track access relevant) operational and technical regulations from the aforementioned statements in 2009. The network statement sets forth the legal, operational and technical specifications for the use of tracks and service facilities, and form a planning basis for the RUs for long-term investments in staff, vehicles and equipment.

The Bundesnetzagentur objected to this removal on the grounds that the regulations in question were mandatory content of the service facilities statement and network statement. Being part of the statements, the directives and any changes to them must be published at least four months prior to expiry of the period for allocation requests to give RUs the opportunity to submit their comments. Furthermore, any planned changes need to be approved by the Bundesnetzagentur.

The Administrative Court confirmed, referring to the ruling of the Federal Administrative Court of 29 September 2011, Ref.: 6 C 17.10 (DB Netz AG – SNB 2008), that the operational and technical regulations were to be considered mandatory content of the SNB to the extent to which the Bundesnetzagentur objected to their removal. Removal of the regulations was considered an infringement of section 4(2) sentence 1 of the Rail Infrastructure Usage Regulations (EIBV).

Contrary to the arrangements concerning the SNB, it is the wish of the legislator that only essential minimum content is to be provided in the NBS under section 10(1) sentence 1 of the EIBV. The Bundesnetzagentur's decision against the removal of substantial parts of the operational and technical regulations in the NBS was not confirmed by the court of first instance, due consideration being given to the Bundesnetzagentur's role of exercising discretion. At the hearing the Administrative Court of Cologne indicated that it viewed the difference in treatment between the SNB and NBS as "unfortunate" but that in view of the legislation there was no scope for any other ruling.

In the meantime, both DB Netz AG (regarding the SNB) and the Bundesnetzagentur (regarding the NBS) have appealed this ruling. The decision of the Higher Administrative Court of North-Rhine Westphalia is still pending.

SNB 2014

DB Netz AG planned further amendments to its SNB in 2012. The Bundesnetzagentur objected to certain planned changes as they were not consistent with railway legislation.

Amongst other items, the Bundesnetzagentur objected to an arrangement under which all access beneficiaries would be obliged to sign a new basic agreement on infrastructure use for a period of twelve months, even when still in the possession of a valid basic agreement not terminated by DB Netz AG. Conclusion of such a new basic agreement would be deemed a prerequisite for access, implying that DB Netz AG could have refused access should an access beneficiary not have been prepared to sign the new agreement. In addition, the parties concerned would have been at risk of losing their right to have the lawfulness of unilateral price increases during the relevant period of validity verified by the civil courts.

The Bundesnetzagentur also objected to the deletion of the clause in the SNB which specified that no charges were to be levied in addition to those payable for a train path originally allocated in cases where a new train path had to be allocated due to a train delay of more than 20 hours. The removal of this clause would have meant that certain services would have had to pay double the charge if delays exceeded 20 hours although there was no justifiable reason for having to do so or at least DB Netz AG did not give any such reason.

Operating hours of railway lines

In 2012 the Bundesnetzagentur initiated a procedure for reviewing the arrangements in DB Netz AG's SNB pertaining to the operating hours of railway lines. Basically, railway lines are to be used 24 hours per day but daily operating hours may be adapted to requirements. Since access beneficiaries wishing to use infrastructure outside regular operating hours pay higher charges if this causes extra work for the operator of the railway line infrastructure, a reliable planning basis regarding operating hours of railway lines is of considerable importance. The specifications in the SNB must also clearly indicate when the access beneficiaries have to register the services which they wish to run outside normal operating hours without running the risk of being denied access by DB Netz AG due to "late" registration.

Agreement was basically achieved with DB Netz AG in initial discussions on an improved and reliable indication of the operating hours. The issue as to how far in advance access beneficiaries need to apply for paths in the constellation described above without the risk of being left empty-handed turned out to be more complicated. The positions of DB Netz AG and the Bundesnetzagentur are still very far apart.

Winter service

The basic proceeding launched early 2011 on DB Netz AG's winter service, along with certain changes within the company, resulted in substantial improvements in the winter season 2011/2012, culminating in much more stable operations. The proceeding which took the form of an intensive dialogue with DB Netz AG continued until spring 2012. The electronic instruction manual for the winter service ("Wintermappe") was implemented in three phases in 2012 and will enable nationwide quality management. Progress can now be monitored throughout the country. The Bundesnetzagentur will continue to observe implementation of the measures.

In the winter of 2012/2013 serious problems occurred only in the Vogtland region. These are now the subject of an internal investigation.

Congestion proceedings Berlin/Spandau and Uelzen–Stelle

Congestion proceedings are now launched on a fairly regular basis. A year after Berlin/Spandau railway station and the Uelzen–Stelle path issued declarations of congestion, two plans for increasing capacity were tabled at the beginning of December last year. They were based on a capacity analysis that had been carried out six months earlier. Numerous proposals for improvement presented not only by the Federal Railway Authority and the Bundesnetzagentur but also by users and regional transport authorities were discussed. However, due to some unresolved financing issues, the congestion proceedings have not yet resulted in infrastructural improvements and network expansion but merely in proposals for operational terms of use. The proposals will be reviewed by the Bundesnetzagentur in 2013 and as in previous years, the revised proposals will be incorporated in the updated version of the SNB.

Access to service facilities

Service facilities are used by the RUs to carry out major services, or to have such services carried out, at the beginning or end of, or during transport. Service facilities include passenger stations, marshalling yards, freight terminals, ports and other facilities. Non-discriminatory access to these transport hubs (eg in the vicinity of major industrial companies) is vital for the (future) development of competition in rail transport.

The Bundesnetzagentur monitors non-discriminatory access primarily by examining the service facilities statements drawn up by the infrastructure operators and intervenes in use conflicts. In their service facilities statement the operators of service facilities must set forth the terms and conditions to be adhered to by the RUs.

In 2012 the Bundesnetzagentur again called upon several service facilities operators to comply with the obligation to draw up a service facilities statement.

Operators of new service facilities such as the railway service at the JadeWeserport port and the terminals within the harbour area have submitted their service facilities statements. Numerous changes to DB Netz AG's service facilities statement ("NBS 2014") were also examined and in part needed modification. As in the case of infrastructure access ("SNB 2014"), the Bundesnetzagentur objected to the planned changes concerning the basic agreement for access to service facilities.

Further information may be found in the section "Infrastructure access" on p. 129f.

The Bundesnetzagentur also had to deal with disputes concerning specific access obstacles. The Bundesnetzagentur ensured that RUs were not only assigned space for their ticket machines at DB Station&Service AG's 5,400 platforms throughout the country but that the devices for electronic ticketing distribution (eg ticket validators or Touch&Travel) are now deemed on a par with conventional ticket vending machines. This eased

Movement on the causeway

To date, Deutsche Bahn has a monopoly on the Motorail train to Sylt. This could change soon due to the Bundesnetzagentur's efforts.

Those travelling to Sylt by car use the Sylt Shuttle. The sole provider of Motorail across the Hindenburgdamm to date is DB AutoZug GmbH, a subsidiary of Deutsche Bahn AG. The connections via the Sylt Shuttles are said to be very profitable – this is not surprising since there is no competition.

To prepare the basis for competition, thereby breaking the car train monopoly, the Bundesnetzagentur had instructed DB AutoZug GmbH at the end of 2010 to draw up terms of use for its terminals in Niebüll and Westerland. These terminals are currently the starting and end points for the Sylt Shuttle connections.

DB AutoZug GmbH refused to comply with this request and lodged an appeal against the Bundesnetzagentur's decision. However, the judges of the Higher Administrative Court of North-Rhine Westphalia accepted the Bundesnetzagentur's arguments: the terminals operated by Sylt Shuttles were deemed public rail infrastructure, to be used by competitors as well. DB AutoZug GmbH's major claim was that the space available in Niebüll and Westerland was too small to accommodate several operators did not concern the regulatory "whether" issue. This would have to be dealt with at a later stage should conflicts of use arrise in connection with the emergence of a new competitor. A decision in the principal proceeding is pending.

the way for all RUs to set up this modern technology for ticket distribution. The operating hours of service facilities also often cause friction.

Further information may be found in the section "Infrastructure access" on p. 129ff.

First highest court decision on DB Netz AG's service facilities statement

On 13 June 2012 the first ever highest court decision on the service facilities statement was rendered by the Federal Administrative Court. The subject-matter of the dispute was DB Netz AG's service facilities statement for the 2008 working timetable ("NBS 2008"). As in the earlier ruling of 29 September 2011 on DB Netz AG's "SNB 2008", all of the Bundesnetzagentur's objections were sustained during the appeal. The court's decision ensures legal clarity and will have a positive effect on practical issues.

In 2006 the Bundesnetzagentur had objected to a number of clauses in the 2008 service facilities statement. The appeal was restricted to issues of fundamental importance to rail infrastructure access. The clauses concerned more or less corresponded to those which had already been the subject of an appeal concerning the SNB 2008. They mainly related to the security arrangements and the exclusion of access beneficiaries' rights in the case of DB Netz AG service limitations. In these cases the Federal Administrative Court continued the gist of previous decisions. The security arrangements and rights to refuse service which a railway line infrastructure operator wishes to impose on access beneficiaries as security against default of payments must in particular be sufficiently precise and be proportionate to the service used or to be used by the beneficiary.

With a view to the minimum content of service facilities statements the Court explicitly emphasized its information function. The specifications in the Rail Infrastructure Usage Regulations (EIBV) set out that the service facilities statement must state all major requirements for access to the service facilities and receipt of the services offered at the service facilities in a plannable and binding manner so that access beneficiaries obtain a complete and accurate view of the matter to be able to make a sound decision on the economic viability of using the facilities. This entails not only the provision of a full description of the infrastructure in place and optional services but also, for example, an indication of regular operating hours.

Capacity allocation in DB Netz AG service facilities

With its "NBS 2013" DB Netz AG had brought about a paradigm shift in capacity allocation at its service facilities and ruled out long-term track allocation. Under its new allocation policy, all requests for track use in service facilities received by a certain date will be processed together and allocated for the forthcoming working timetable period. This approach is similar to that applied in the allocation of tracks in the working timetable.

The first allocation based on the new policy in autumn 2012 revealed that further finetuning is required. The Bundesnetzagentur will promote further enhancements which by and large will have a positive effect on competition.

Further information may also be found in the Strategic Plan on p. 136ff.

In the course of its review the Bundesnetzagentur forbade DB Netz AG in one instance to reject the allocation request submitted by a RU in favour of an affiliated RU. The reason for the conflict is a long-term bottleneck at a service facility upstream from a well-known car manufacturer. RUs not only compete for orders from the manufacturer. In fact, the transport services are largely dependent on the possibility of using the upstream infrastructure. This case clearly shows that competition in rail transport is directly dependent on the possibility of non-discriminatory use of rail infrastructure. DB Netz AG has lodged an appeal against the Bundesnetzagentur's decision. The legal dispute is continuing this year.

Some planned arrangements envisaged in the NBS 2014 with regard to further development of the allocation procedure submitted to the Bundesnetzagentur in autumn 2012 are deemed critical. For example, access beneficiaries registering transport services for the working timetable ahead of a certain deadline would have been treated much more unfavourably than others. The Bundesnetzagentur objected to this arrangement in view of the fact that access beneficiaries have the right to apply for access at any time.

Infrastructure access charges

Noise-differentiated track access charges
The Bundesnetzagentur had criticised certain points in the structure of DB Netz AG's plan to introduce noise-differentiated track access charges. It was therefore agreed that DB Netz AG would change, flesh out and republish at short notice the SNB for the working timetable period 2012/2013 which has already been available since the end of 2011. However, the project ran into problems when the EU Commission failed to approve the directive on financial support because it deemed the model architecture under which the bonus for the retrofitting wagon keepers would be financed in equal parts by federal funds and increased track access charges to be unlawful.

The EU Commission favours a model based on two separate circuits. The wagon keeper is to be paid a state-funded bonus for every kilometre travelled by freight wagons fitted with low-noise brake blocks. At the same time DB Netz AG is expected to introduce an incentive arrangement under which noisy trains would have to pay a higher charge. The additional income is to be paid direct to the RUs using freight wagons fitted with low-noise brake blocks. The EU Commission's concept results in a more complex system with much higher transaction costs. Raised costs in conjunction with an unchanged bonus increases the overall costs, reducing the incentive to retrofit freight wagons.

Following modification, the EU Commission approved the revised model on 19 Dezember 2012 after which the Bundesnetzagentur instructed DB Netz AG to publish revised regulations.

Further development of DB Station&Service AG's station pricing system
On 1 January 2013 DB Station&Service AG's modified prices came into effect (List of Station Prices 2013). The Bundesnetzagentur had not raised any objections. A change in the pricing system came into force at the same time. As agreed in the public-law contract signed by DB Station&Service AG and the Bundesnetzagentur on 24 August 2012 the controversial train length factor was replaced by a transport performance factor as calculation parameter. With the elimination of the train length factor, the tiered, multiplicative surcharges based on train length have been abolished. In its place a direct distinction is made between regional and long-distance transport (transport performance factor). Since 1 January 2013 long-distance transport has to pay a surcharge based on a factor of 2.4 on top of the base price paid for regional transport. DB Station&Service AG's terms of use had to be modified accordingly to which the Bundesnetzagentur raised no objections.

In view of the station prices' special relevance and market players' current uncertainty, the Bundesnetzagentur had focused on the effects of the planned changes. DB Station&Service AG had been requested early on to provide a picture of the financial impact. The Bundesnetzagentur then investigated the reasons for the cost increases in the regions most badly affected. This nationwide review revealed that the real cost increases actually exceeded the two per cent price increase decided upon. Since the standard of review for tarification laid down in railway legislation prescribes congruence with the costs entailed, there was no reason for the Bundesnetzagentur to object. The same applied when using a multi-year analysis for the calculation. This analysis had been introduced in the 2012 Station Price List after the Bundesnetzagentur had commented on severe price fluctuations within a twelve-month period. In the multi-year analysis the cost development of the past three years is examined and used as the basis for pricing, thereby eliminating singular price spikes.

Subsequent verifications by the Bundesnetzagentur
In a notification dated 12 April 2012 the Bundesnetzagentur ordered DB Station&Service AG to recalculate the charges payable by HamburgKölnExpress GmbH (HKX) for station use from the actual date on which the company became operational until 8 December 2012 and not to levy charges for the period preceding the start-up date. More specifically, the Bundesnetzagentur instructed DB Station&Service AG to recalculate the charges on the basis of year 2010 prices, multiplied by a train length factor of one. As compensation for the increase in costs in the intervening period, the company was permitted to add a surcharge of 3.3% on the calculated price.

HKX has been offering long-distance rail passenger transport on the route between Hamburg and Cologne since 23 July 2012 and is hence in competition with DB Fernverkehr AG. In line with the operational concept, trains with a length of 178 m are used for the carriage of passengers. In the pricing system in force until 31 December 2010, a multiplier of 2 was to be applied to the base price for train lengths of 180 m and longer (train length factor). The system was changed in the 2011 station pricing system. First, the train length was decreased to 170 m and second, for trains this length or longer, the base price was multiplied by

a factor of 3 instead of 2. As a result of these changes, the price payable by HKX for station use increased by 62.9% whereupon the company filed a complaint with the Bundesnetzagentur.

The Bundesnetzagentur came to the conclusion that the price increase drastically curtailed HKX's competitive opportunities. Modification of the train length factor made it excessively difficult to exercise the rights of access established in railway law, thereby posing a risk to HKX's planned market entry in the long-distance rail passenger transport segment.

There was no objective justification for the 62.9% price increase resulting from the modifications of the train length factor. The Bundesnetzagentur had already stated in its notification of 19 November 2010 that it considered the train length factor not compliant with railway law until DB Station&Service AG could provide evidence to the effect that the factor was based on costs or that it mirrored users' interests. The Administrative Court in Cologne confirmed the Bundesnetzagentur's decision in the interim proceedings; the principal proceedings are pending.

Please refer to "Rail diversity" in the magazine on p. 19.

Working group on pricing for medium-sized IMs

The working group on calculation bases for IMs took up its tasks in 2012. The group was established in cooperation with the Association of German Transport Companies (VDV) as a forum in which to discuss the regulatory requirements of pricing, especially those of medium-sized IMs. The working group consists of representatives from VDV, the Bundesnetzagentur and medium-sized IMs. It is the working group's goal to shed light on practical problems and to pinpoint the rail market's particularities.

The tasks will probably be completed in the course of 2013. The plan is to draw up a calculation basis to be used by VDV for elaborating a pricing template for its members. The concept is designed to facilitate price verification for both sides since it would give IMs greater legal certainty in their price calculations and would transform the Bundesnetzagentur's review into a more standardised procedure.

International cooperation

In rail regulation, international cooperation is becoming ever more important. The pooling of European rail regulators in the network IRG-Rail plays a crucial role in this context.

In 2012 the 21 members of IRG-Rail continued their successful work. The Group was chaired by the Bundesnetzagentur's Vice-President, Dr. Iris Henseler-Unger. The rail regulators from Finland, Greece, Poland, Slovakia, Slovenia and Spain joined the network which was originally established on 9 Juni 2011 by 15 regulatory bodies (from Denmark, Germany, Estonia, France, Croatia, Latvia, Luxembourg, Macedonia, the Netherlands, Norway, Austria, Sweden, Switzerland, Hungary, the United Kingdom).

In its second year IRG-Rail again managed to complete an ambitious work programme and to adopt numerous opinions. It was and still is the Group's goal to speak with one voice on regulatory issues in Europe. IRG-Rail's working groups – some of which are chaired by the Bundesnetzagentur – drew up position papers on important European rail issues such as the recast of the First Railway Package, cooperation on rail freight corridors, market monitoring, charges and international passenger transport.

In its discussions on the recast of the First Railway Package, IRG-Rail particularly welcomed the policy set out in the proposed directives for strengthening regulatory bodies' independence and expanding their competencies, functions and resources to enable them to carry out their tasks effectively. IRG-Rail also took this opportunity to express concerns about certain issues, eg the proposals for deadlines or the introduction of notification procedures since this would severely restrict national regulatory bodies' activities.

IRG-Rail also took an active part in the discussions in the period preceding the presentation of the Fourth Railway Package. This package is intended to fully open passenger transport services, encourage further separation of the divisions in IMs and to reform the European Rail Agency (ERA). IRG-Rail is of the opinion that a further opening of the passenger transport segment, which has already been achieved in some Member States, is an important step towards a competitive European rail market. Of vital importance are the basic prerequisites which take due account of users' requirements and the structure of the market and which need to ensure efficient regulation. Furthermore, competition-related regulations for the award of public contracts and improved access to rolling stock are deemed essential.

As far as international freight traffic is concerned, the focus was on the common agreement on major aspects of the freight traffic ordinance, especially cooperation between the national regulatory bodies. To this end IRGRail drafted harmonised and transparent processes for complaints processing in cross-border freight transport. These were published as guidelines in October 2012 and are intended to serve as guidance for the national regulatory bodies and the parties concerned.

Where charging issues are concerned, IRG-Rail's work is designed to establish a common understanding of the different calculation principles. The Group plans to publish a joint recommendation. In October 2012 IRG-Rail published two opinions on this subject which provide an overview of the various charging systems and which are to serve as a guideline for national regulatory bodies in their handling of the cost concept of directly incurred costs. IRG-Rail also published its first joint Market Monitoring Report.

In January 2013 the Chair passed from Dr. Iris Henseler-Unger to Mrs. Anna Walker from the British regulator ORR and hitherto Vice-Chair of IRG-Rail, with Jacques Prost of the ILR being elected new Vice-Chair of IRG-Rail.

Please refer to "On the right track" in the magazine on p. 24.

The position papers and Market Monitoring Report are available at www.irg-rail.eu.

Strategic Plan 2013

The Bundesnetzagentur is required under section 122(2) of the Telecommunications Act (TKG) to include a strategic plan in its Annual Report, listing matters of legal and economic policy in telecommunications to be addressed by the Bundesnetzagentur in the current year. In addition, we are reporting here on all our main projects in all fields of activity in which issues of fundamental importance are expected in 2013.

Energy

The following activities should be highlighted from the large number scheduled for 2013 in the energy sector.

Further acceleration of network expansion: Network Development Plan 2013
In 2012 the first Electricity Network Development Plan was drawn up, consulted on and modified by the transmission system operators (TSOs) and submitted to the Bundesnetzagentur. The plan sets out the expansion measures needed in the national grid up to 2022/2032 to secure electricity supplies into the future. We carried out a strategic environmental assessment of the proposed measures, compiling our results in an environmental report. This is an important first step enabling us to take proper account of environmental aims in the subsequent planning and approval processes, when we move from the previous, relatively abstract level to the specific planning of corridors and routes.

In November 2012 we submitted the confirmed Electricity Network Development Plan 2012, as the draft for a Federal Requirements Plan, and the accompanying environmental report to the Federal Minister of Economics and Technology.

In 2013 national network development plans for electricity and gas will again be drawn up by the TSOs in accordance with sections 12b and 15a of the Energy Act (EnWG).

The object of these plans is to identify future demand for transport capacities and, based on this, the investments needed in the electricity and gas transmission systems. The TSOs made a start in 2012 on developing various scenarios. The draft plans for the electricity and gas networks must be submitted to us by the beginning of March and April 2013 respectively. We will then closely review the plans and may request modifications, if need be.

The first Federal Requirements Plan is expected to be passed as federal law in the summer. This will make binding the expansion requirements needed to secure energy supplies for the specific electricity grid projects. The legislation will allow the TSOs to apply to us for federal sectoral planning for those projects spanning national or federal state borders. At this stage, the exact corridors for future power lines will be made binding. Federal sectoral planning replaces regional impact assessment and is the next stage in the planning process. The Federal Requirements Plan also includes expansion projects within individual federal states for which the

energy requirements have likewise been made binding. These projects require regional impact assessment in line with the applicable federal state legislation.

Once federal sectoral planning and regional impact assessment have been completed, the first planning approval procedures, as the last step in the planning process, can be carried out. This is likely to take place in 2014. We are only able to carry out planning approval for projects crossing national or federal state borders given an ordinance issued by the federal government, with the consent of the German Bundesrat.

Expanding the grid infrastructure is a project that affects society as a whole and therefore requires widespread acceptance among the general public and other interested parties. The legislator has thus provided the opportunity for the public to participate in all decisions relating to grid expansion. This ensures that whole communities can become involved and all legitimate interests be taken into consideration.

We will therefore again go beyond our legal obligations in 2013 in holding public information events and open discussions such as the Technology Dialogue.

Besides comprehensive information and involvement via the Internet, we are keen to ensure our presence in the regions concerned, wherever possible. The wide involvement of all groups in the community as initiated in 2012 will therefore be continued. In addition to the activities required as part of the federal sectoral planning process, the Network Development Plan 2013 and the scenario framework for the 2014 plan, we will hold our own discussion and information meetings at various locations throughout the country and will take part in events organised by others.

Implementation of the energy concept: "Energy of the Future" Monitoring Administrative Unit
The federal government's energy concept "Energy of the Future" sets out the framework for a new direction in energy supply. The federal government is accompanying this reorientation with targeted monitoring to ensure that the energy objectives of security of supply, economic viability and environmental sustainability are achieved. Details of implementation of the energy concept were set out for the first time in a monitoring report entitled "Energy of the Future", published in December 2012. This report comprises information from the Ministry of Economics and Technology (BMWi) on grid and plant expansion, replacement investment and energy efficiency, and from the Ministry for the Environment (BMU) on the expansion of renewables. To accompany this monitoring process, the federal government established an expert commission which has provided an independent assessment of the report. On this basis, the federal government will inform the Bundestag and, where necessary, make recommendations. The reports are also open to comment by the general public.

Implementation of the *Energiewende* will be reviewed annually on the basis of in-depth monitoring; a detailed progress report is scheduled for 2014.

An administrative unit was set up at the Bundesnetzagentur to support the two ministries in drawing up the monitoring report and to manage the involvement of the public as regards both organisation and content.

Security of electricity supplies: back-up power plants
Until all the necessary grid expansion measures have been completed, the generation capacity required in particular in southern Germany must be guaranteed. We will therefore continue to support back-up power plants as required on the basis of the market simulations and network analyses made by the TSOs. We will ensure that there are no unreasonable power plant closures. Furthermore, we will take due account of the increased significance of gas power plants for the transmission network and take any measures necessary towards improving fuel supply.

We welcome the amendments made to the EnWG at the end of 2012, which give the TSOs and the Bundesnetzagentur responsibilities to prevent unreasonable plant closures. We have also been given new tasks, most notably in connection with examining the systemic relevance of power plants planned for closure and the payment of costs by the network operators.

We will continue to closely monitor the situation in the transmission systems in 2013 and – where necessary – take further concrete measures ourselves, or recommend courses of action.

Cross-border flows: cooperation between the TSOs
The *Energiewende* in Germany means that large volumes of electricity are transported over long distances, primarily from north to south. This puts a strain on networks not only in Germany, but also – for physical reasons – in our neighbouring countries. These loop flows lead to a tense situation in terms of network security above all in Poland and the Czech Republic, without these countries being able to use the electricity. We will therefore continue our efforts to ensure that in 2013 suitable remedies will again be developed in cooperation with the German TSOs and their European partners.

One such planned measure is the joint project between 50Hertz Transmission GmbH in Germany and PSE-O in Poland, which aims at reducing cross-border flows through the operators' intervention in scheduling. A similar approach for the German-Czech border is being discussed with the Czech TSO. Furthermore, talks are taking place with Poland and the Czech Republic on jointly procuring and operating phase-shifting transformers that would enable electricity flows on the interconnectors to be reduced.

We actively support these projects and see them as a short-range solution for improving network security in the Central-East European countries affected by loop flows and in (northern) Germany.

For the long term, however, grid expansion is the only way to avoid such overloads in both Germany and our neighbouring countries. In the medium term, we remain committed to further developing and improving compensation payments between Europe's TSOs for mutual use of the networks.

New regulations for the connection of offshore wind farms: Offshore Grid Connection Plan 2013

The new legislation which came into force at the beginning of 2013 regulating the connection of offshore wind farms (previously regulated by section 17(2a) to (2c) of the EnWG) will entail considerable implementation. We have been given various responsibilities concerning, for instance, confirmation of the TSOs' offshore network development plan and the allocation and transfer of capacity to the new power lines listed in the plan, as well as general powers for supervising the operators' grid connection obligation. We will also monitor how costs are passed on through the new offshore surcharge.

Operation of energy supply networks: defining security requirements

The safe operation of energy supply networks is, alongside reliability and efficiency, a key element of our future energy supply. One focus here is on adequate safeguards against threats to communication and information technology (IT) systems used for network control. In consultation with the Federal Office for Information Security (BSI), we will draw up and publish a catalogue of security requirements for the operation of telecommunications and electronic data processing systems used to control energy networks, thus also helping to strengthen security of supply in this area.

Security of gas supply: analysis of weak points and review of the supply situation

The Bundesnetzagentur is assigned various tasks in order to be able to react swiftly to potential shortages in the natural gas supply. As in 2012, we will request a report from the TSOs on their analysis of weak points in accordance with section 16(5) of the EnWG, for our evaluation. Also of particular importance to us is information on network and storage capacity and on physical gas flows.

In light of the supply shortage experienced in February 2012, the TSOs have been asked to provide by 31 March 2013 a list of gas power plants classed as "systemically relevant" to the electricity grid. It will then be our task to look at the supply situation at these plants as well as at suitable measures to maintain the security of electricity and gas supply.

Trade and transparency: implementation of the Regulation on wholesale energy market integrity and transparency

Energy trading is important both for generators and for large-scale users. The importance of electricity and gas trading is increasing, as small and municipal companies in particular are able to gain competitive advantages in supplying customers through more flexible trade strategies. Furthermore, trading on exchanges is taking on a greater role in the integration of renewable energies.

The increasing economic importance and Europeanisation of electricity and gas trading called for a fundamental improvement in European market supervision. This was achieved by the Regulation on wholesale energy market integrity and transparency (REMIT), which entered into force in December 2011 and which prohibits market manipulation and insider trading in the energy wholesale market.

The European regulators are in the process of collating comprehensive trading and fundamental data. This will provide the basis for subsequent trade monitoring where potential breaches of REMIT will be identified, investigated by the national energy regulators and, where necessary, sanctioned in cooperation with the law enforcement agencies. The aim is to increase confidence in the integrity of the European energy market and, in this way, to guarantee affordable energy supplies.

Responsibilities for the enforcement of REMIT are regulated in Germany by the Market Transparency Body Act, agreed in November 2012. The Act tasks us with setting up an appropriate scheme for monitoring trading activity. Also, the market transparency body for electricity and gas will be set up within the Bundesnetzagentur, in cooperation with the Bundeskartellamt (Federal Cartel Office). Bundling these tasks and cooperating with the Bundeskartellamt will enable efficient supervision of those parts of the value chain that are key to competition and to market integration of renewable energies.

Under the new REMIT regulations, all German participants in the wholesale energy market need to register with the Bundesnetzagentur. In addition, market participants are required to disclose their trading and generation data.

Completion of the internal energy market by 2014: framework guidelines and network codes

A core element of the Third Energy Package on electricity and gas market liberalisation is the development of network codes in order to promote cross-border trade and competition in the pan-European energy market. The first step is for the European Agency for the Cooperation of Energy Regulators (ACER) to draw up framework guidelines. These provide the frame for the network codes drafted by the European electricity and gas network operator associations (ENTSO-E and ENTSOG).

In the electricity sector these are

- the network code central to the design of future electricity markets, relating to capacity allocation and congestion management and regulating the integration of European markets at all levels,
- the two network codes on grid connection, and
- the network codes on electricity balancing and system operation, aimed at standardising the TSOs' tools.

In the gas sector, ENTSOG completed the network codes on capacity allocation and balancing at the end of 2012. The codes will pass through the European Commission's comitology process in the first quarter of 2013, with the close involvement of the European energy regulators. At the same time, a network code not yet legally binding is to be implemented early by TSOs from seven countries as part of a pilot scheme to create a European auction platform. Work is also in progress, with our participation, on the network code for interoperability and on the framework guidelines for tariff structures.

Since these European requirements will ultimately be binding for the German market as well, we are playing an active part throughout their development. It is important to incorporate the particular needs of the German market and to consider the implications for consumers. When it comes to transposing the requirements into national law, we will consult with the energy industry to identify scope for implementation and will carry out any necessary approval and determination procedures. Framework conditions which have proved effective in Germany should remain in place. In areas with potential for improvement, lessons can be learned from our European neighbours.

Market coupling and harmonisation: practical implementation

The coupling and harmonisation of the European wholesale (day-ahead) electricity markets is not only a major European project, but also key to the success of the *Energiewende*. Coupling the markets more closely reduces price fluctuations and enables intermittent generation from renewable sources to be better incorporated by spreading electricity supply and demand over a wider basis. Market coupling also allows optimum utilisation of power plants throughout Europe, with account taken of the congestion in cross-border transmission capacities.

The pan-European market coupling process, coordinated by the Bundesnetzagentur, should be completed by 2014. This project is an important component in the completion of the internal energy market by 2014, as decided by the European Council on 4 February 2011.

The next milestone is North-West European market coupling in 2013, covering Great Britain, Scandinavia and Central West Europe in one step.

Price regulation

Determination of the revenue cap for the second regulatory period

The second regulatory period for electricity network operators begins on 1 January 2014. One of our areas of focus in 2013 will therefore be to set the revenue caps as provided for by section 4 of the Incentive Regulation Ordinance (ARegV) that define the maximum revenue network operators may generate. The caps aim both to guarantee the investment ability of the TSOs in particular and to ensure that network users do not have to pay excessive network charges. Based on the

data we receive, we determine the starting point and the individual elements of the company-specific revenue path. The revenue caps start out from the costs examined. In view of the growing number of grid expansion measures, cost increases cannot be ruled out in all cases. In setting the caps, account must be taken of individual efficiency levels in the standard procedure and of standardised efficiency levels in the simplified procedure.

The individual efficiency levels will be determined in 2013 by national benchmarking of all distribution system operators (DSOs) participating in the standard procedure. An integral part of this project, in which we are supported by external consultants, is a cost driver analysis to find the cost drivers that best guarantee the comparability of operators in terms of the services they provide. Two statistical analytical methods, data envelopment analysis (DEA) and stochastic frontier analysis (SFA), are applied to determine the operators' individual efficiency levels. The analyses use both the standardised and the actual total costs of the operators, with the result that four efficiency levels are determined for each individual operator. In line with best billing, the best of the four efficiency levels for each operator is taken, each level being at least 60 percent of the total costs, as required by section 12 of the ARegV.

The revenue cap is determined on this basis, taking account of inflation and the quality element. In setting the revenue caps for 2014, the adjustments to the costs for 2014 that cannot be controlled on a lasting basis must also be taken into account. This concerns in particular costs of the upstream network and decentralised feed-in. The latter arise when operators receive payment for costs from so-called avoided network charges, regardless of whether or not expansion was actually avoided.

Implementation of the determination relating to section 19(2) first sentence of the Electricity Network Charges Ordinance

In December 2012 the Bundesnetzagentur issued a determination amending the regulations for approving agreements on atypical network utilisation according to section 19(2) first sentence of the Electricity Network Charges Ordinance (StromNEV). These new regulations will be implemented in 2013.

Revised determination on the expansion factor

In 2012 there were intensive discussions as to whether or not and to what extent incentive-based regulation should take account of the costs arising from higher investments owing to the *Energiewende*. We still see no serious need for amending the current regulatory framework and administrative practice. However, with a view to improving the investment climate, a proposal was made to take account of the costs incurred by DSOs for expansion investment at high-voltage level in full via investment measures and no longer by means of the expansion factor. This proposal met wide approval at the last meeting of the national Regulatory Working Group on 7 November 2012 and is therefore expected to be implemented soon. As a consequence, we would need to amend our determination on the use of other parameters to determine the expansion factor as referred to in section 10(2) second sentence para 4 of the ARegV for DSOs (BK8-10/004). This will also provide an opportunity for us to review the main points of the determination.

Determination on network reserve capacity and idle current charges

Certain price elements are implemented differently in practice, creating the need for a determination to ensure consistent application throughout the country. This concerns in particular the price elements for reserve capacity and idle current.

Determination on quality regulation

The scope of the determination on the start of application, details and procedure for determining the quality element for network reliability in electricity distribution networks according to sections 19 and 20 of the ARegV (BK8-11/002) will be validated and, where necessary, modified in 2013.

Energy information network: swift implementation

Owing to the increasing importance of decentralised generation capacity for system stability and hence for supply security in Germany, we will in 2013 ensure that the necessary exchange of data and information between market participants and the establishment of the energy information network are driven forward.

Having moderated numerous bilateral talks in 2012 between TSOs and balancing account managers, DSOs and generation plant operators, in order to determine actual data requirements, we will also push for swift implementation of the energy information network. For indeed, the success of the *Energiewende* in Germany depends on well-functioning data exchange between all those involved.

Renewable gas: promoting connection to the grid

One of our key concerns is to make a contribution towards achieving the federal government's ambitious expansion goals with respect to biogas feed-in. In moderating informal negotiations between network

operators and those wishing to connect and resolving questions of interpretation regarding the regulations of Part 6 of the Gas Network Access Ordinance (GasNZV), we aim to create secure investment conditions. In addition, feeding in hydrogen created via electrolysis, or rather synthetic methane, as a storage technology is becoming more and more important. Together with the facility operators we will seek to enable such facilities to be connected to the gas network and so promote the technology.

Telecommunications

The following telecommunications activities should be highlighted from the large number scheduled for 2013.

Promoting broadband deployment

Next Generation Access Forum

Next Generation Access (NGA) rollout in Germany is not driven by one individual company alone, rolling out one technology nationwide. Rather, there are now a large number of established business models. This variety of models and participants requires coordination of a greater number of potential providers and users at the wholesale level, too. Multilateral agreement on technical interfaces and operative processes is needed to enable the new NGA networks to realise cross-network services. Interoperability is therefore a core element in the success of the rollout of future broadband network infrastructure. Here, the NGA Forum – set up and moderated by the Bundesnetzagentur – has acted as a platform for tackling challenges constructively and finding concrete solutions.

Since its creation, the NGA Forum has been able to complete a large number of service specifications (Layer 2 bitstream access, Layer 0 ducts and Layer 0 dark fibre, Layer 2 business customer product, bitstream concept for cable networks, diagnosis interface, Layer 2 standard agreements using examples of several technologies). Furthermore, first steps were taken to implement the business processes defined under our auspices in an order interface which can be used generally in the market.

The documents drawn up were very well received by a large number of market participants and associations. The majority of companies in the market base their network models on the Layer 2 bitstream specification developed by the NGA Forum and are working on its implementation. Indeed, many network operators require compatibility with the NGA Forum's specifications from manufacturers when investing in network technology. The NGA Forum has taken on a leading role in Europe, too, with its specifications. Work on coordinating specifications and processes will be continued in the coming year with the aim of improving interoperability. The group will also address other issues as and when they arise.

Introduction of vectoring

The issue of vectoring has dominated discussions in the field of telecoms regulation for some time now. Telekom Deutschland GmbH (Telekom) plans to upgrade its own very high bit rate digital subscriber line (VDSL) network with vectoring technology. This access technology will ultimately enable Telekom to offer more customers higher bit rate broadband access at a minimum speed of 25 Mbit/s. Vectoring can – under good conditions – provide a download speed of up to 100 Mbit/s and a maximum upload speed of 40 Mbit/s.

Vectoring currently requires access to all the copper pairs at the sub-loop distribution frame (street cabinet). Access to unbundled copper pairs at the cabinet might therefore not be possible if vectoring were implemented.

Telekom has significant market power and is therefore obliged under current regulations to allow competitors access to the local loop at a street cabinet or distribution frame as well. As this may no longer be possible if vectoring were introduced, it might be necessary to amend the current local loop

- regulatory order issued on 21 March 2011,
- reference offer, and
- contracts in place between Telekom and its competitors.

In light of its plans, Telekom submitted a request on 19 December 2012 that the requirement laid down in the local loop regulatory order of 21 March 2011 – that Telekom should provide access to the unbundled local loop at the street cabinet – be partially lifted in order to enable use of VDSL technology.

Ruling Chamber 3, being responsible in this matter, launched transparent and open-ended proceedings immediately after the request was submitted to give all interested market players the opportunity to set out their positions in detail. A public hearing on Telekom's application was held on 24 January 2013; this created

a very significant amount of interest amongst the market players, and numerous written comments were received even before the hearing. During the proceedings, the Ruling Chamber raised a large number of important questions concerning the technical, economic and legal aspects of introducing vectoring, inviting comments from the public by 18 February 2013.

The Chamber is in the process of assessing the responses, after which it will swiftly draw up a draft decision for national consultation. Once the consultation procedure is complete, the draft decision with any necessary amendments will be submitted for comment to the European Commission and the other Member States of the European Union (EU). A final decision cannot be issued until this process is complete.

The procedure still allows the market players themselves to work together constructively to find solutions they are all happy with, eliminating disagreement and minimising the regulatory decision.

Infrastructure atlas

The Bundesnetzagentur's nationwide infrastructure atlas is provided to encourage shared use of existing infrastructures. The data was previously supplied on a purely voluntary basis, but the atlas has now been placed on a statutory footing by the 2012 amendment of the TKG. An online version of the infrastructure atlas was launched on 18 December 2012. The new legal footing, together with the introduction of the online data access system, creates the basis for continuous optimisation of the database – in terms of both quality and quantity – in 2013. The users of the nationwide infrastructure atlas are able to apply for secure access to a web geographic information system (GIS) application. The simplified procedure and the improved database will together enable more effective use of the information contained in the infrastructure atlas. The aim here is to facilitate the use of synergies and further boost broadband deployment.

Promoting broadband deployment through state aid

With a view in particular to ensuring open access in line with demand, the federal government's Ducts Framework Regulation gave the Bundesnetzagentur new tasks in promoting broadband deployment through state funding. This role will become increasingly important in 2013 in light of the extended targets of the federal government's broadband strategy, and also because of the additional tasks for us as a result of parallel aid schemes in the individual federal states, with whom we hope to continue our close cooperation. In addition, the European Commission's revised state aid guidelines, which came into force on 1 January 2013, give the national regulatory authorities a much stronger role. This will raise the question of how our new function can be incorporated into national state aid practices.

Net neutrality

The question as to whether or not increasing data volumes in the telecommunications networks can and may be managed through differentiated data packet transmission (eg by introducing quality classes) has been discussed at both national and international level under the keyword "net neutrality" for some years now. In 2012, the Body of European Regulators for Electronic Communications (BEREC) produced key contributions on the basic concepts of net neutrality. Amongst other things, the documents deal with questions of transparency and quality of service (QoS) and with surveys on current traffic management arrangements and their possible effects on competition.

Following the 2012 amendment of the TKG, the net neutrality debate has now found its way into our legal framework. In addition to a wide set of instruments for transparency obligations and minimum quality requirements, the possibility for end users to access services and applications of their choice has become one of our regulatory aims. Key groundwork has been laid with our recent QoS study and our request for information.

In 2013 we will need to look more closely at the circumstances under which regulatory action on our part is necessary. We first need a clear definition of the requirements for QoS and hence for differentiation. Another focus will be on finding out to what extent existing offers in the retail market are "net neutral". We will therefore develop key elements on this subject and consult on them in the market.

Market regulation

Market definition and market analysis

In 2012, a draft document for consultation was published on access to the public telephone network at a fixed location for residential and non-residential customers (Market 1 of the Relevant Markets Recommendation 2007). This year will see the evaluation and publication of the results of this consultation process, followed by consensus with the Bundeskartellamt and

final notification to the European Commission, the EU Member States and BEREC. Definition of the market by the President's Chamber is expected in the first half of 2013.

A request for information was made at the end of 2012 for the market for wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location (Market 4 of the Relevant Markets Recommendation 2007). This will provide the basis for a draft document for consultation to be published in 2013. The subsequent steps will be evaluation and publication of the results of the consultation process, consensus with the Bundeskartellamt, final notification to the European Commission, the EU Member States and BEREC, and definition of the market by the President's Chamber.

Analysis of the complementary market for wholesale broadband access (bistream market) (Market 5 of the Relevant Markets Recommendation 2007) was launched at the beginning of 2013 with a formal request for information. The results of the market definition and market analysis procedures will be put out to consultation and the other formal steps in the process (agreement with the Bundeskartellamt, notification to the Commission, etc) taken forward in 2013. Here too, as in the previous study of this market, complex interrelations will again need to be analysed and discussed. These include the question of regionalisation, the effects of NAG/NGN (next generation network) migration on the market situation, and the integration of different access technologies and their effects on competition.

Under the new TKG (section 15a(1) and (3)), the Bundesnetzagentur is empowered to issue administrative rules for the market definition and market analysis procedures. These will set out our general approach to and methods for market definition and market analysis for a specified period of more than one regulation cycle, with a view to following consistent regulatory concepts within the meaning of section 2(3) para 1 of the TKG. Just as with market definition and market analysis, so too will the administrative rules be consulted on nationally and consolidated at European level. Following the relevant preparatory work in 2012, the public consultation process is due to be launched in the first half of 2013.

Regulatory proceedings

Ruling Chamber 3 will be dealing with the following fundamental issues:

- approval of monthly rental charges for local loops;
- regulatory framework for the introduction of vectoring;
- revision of the reference offer for local loop access (ordering and booking tool arrangements, main distribution frame (MDF) scaleback, ordering and provision QoS, provider switching); condition: Telekom Deutschland GmbH (Telekom) submits its reference offer;
- review and definition of the reference offer for NGN interconnection;
- finalisation of the decisions on mobile termination rates and fixed network termination rates for Telekom Deutschland GmbH (Telekom) and competitors; and
- preparatory work on the regulatory orders for broadcast transmission, local loop access and bitstream access.

Consumer protection

Consumer protection (Part 3 of the TKG) has long been one of our main concerns. The 2012 amendment of the TKG has considerably widened the legal framework in this area. In 2013, we will continue with and intensify the implementing measures begun in 2012, with our focus including the following areas:

Switching provider in the telecommunications market, section 46 of the TKG

An escalation procedure for complaints from subscribers changing provider was put into place in 2012 shortly after the revised TKG entered into force. The information obtained as to where remaining problems lie will be assessed in 2013. It is already clear from the complaints received that some subscribers moving house, for instance, are without service for fairly long periods of time. We plan to discuss this issue separately with the industry in order to develop common solutions. Lastly, we will actively accompany the introduction of the automated processes for switching provider scheduled by the industry for 2013.

Transparency in the retail market

If competition among telecommunications providers is to thrive, offers in the retail market must be transparent. This means, for instance, that Internet customers

need to know about differences between the speeds given in their contracts and those actually provided. We will evaluate the responses to our request for information on the content of standard contracts and will assess the results of the study on the service quality of broadband access. The next step will be to see whether or not improvements for consumers can be achieved by establishing concrete transparency requirements for end customer contracts.

Should we be delegated the power to issue a relevant ordinance (section 45n of the TKG), we will in 2013 also need to discuss with the federal ministries concerned, the German Bundestag and the industry how we can eliminate transparency deficits in the telecommunications market with the help of framework provisions for promoting transparency, publishing information and controlling costs through additional service facilities.

Number misuse and telephone spam

Investigating number misuse will remain a priority task in 2013, with particular attention on combating illegal call queues.

Some of the regulations on call queues provided for in the revised TKG took effect in September 2012. As anticipated, we received a large number of consumer complaints and enquiries, as well as enquiries from companies and industry associations concerning the interpretation and implementation of the arrangements. We expect this trend to continue and increase in 2013. The legislation currently in force is a transitional arrangement which will be tightened up considerably when the final provisions on call queues come into force on 1 June 2013. Compliance with these stricter regulations will be monitored by our specialist section and will be enforced using any measures seen fit. Companies in severe breach of the regulations will be fined.

Another strategic priority will be investigating violations of the pricing message regulations (section 66b of the TKG). This results from the legal requirement to provide free pricing messages for call by call, which took effect on 1 August 2012. The initial measures taken in 2012 and the consistently high level of interest from the press in this subject are again likely to encourage an increasing number of consumers to contact us with reports of non-compliance with the regulations. As in 2012, we will exercise our discretionary powers in taking appropriate action against such breaches.

We will also continue to target the constantly high number of complaints about telephone spam by imposing severe fines. This will encourage the call centres and advertising companies to keep to the long-standing rules. We will make increased use of our investigatory powers in order to secure evidence that the advertising companies and call centres have been acting illegally. We will continue to support the work of the Federal Ministry of Justice in its evaluation of the Unfair Competition Act (UWG) and will provide our insight drawn from fines proceedings with a view to strengthening consumer protection.

Frequency Management

Future provision of frequencies in the 900 MHz and 1800 MHz bands

We are currently reviewing the regulatory options for making available frequencies in the 900 MHz and 1800 MHz bands for which the usage rights expire in 2016. Our aim is swift and efficient provision of the frequencies, enabling the rollout of high-speed networks. We therefore need to look not only at the 900 MHz and 1800 MHz spectrum for which assignments will soon expire in 2016, but also at other suitable frequency bands. In the interest of predictable regulation, it is our job to develop a suitable procedure for assigning the frequencies. On the one hand, we need to take account of the declared interest in having planning certainty on reassignment of the 900 MHz and 1800 MHz spectrum as soon as possible. On the other hand, we cannot ignore the call to look at the different frequency bands as a whole and/or include all available and suitable frequencies for rural area coverage and capacity expansion in broadband wireless access.

Our scenarios for the future provision of spectrum in the 900 MHz, 1800 MHz and other bands (Scenarios Paper Project 2016) for sustainable frequency planning were presented at a public meeting on 9 November 2012. Public consultation on the paper began in November 2012 and ran until 31 January 2013.

We had announced that we would decide on the future grant of the frequency usage rights in due time, ie approximately three years, before assignments for the 900 MHz and 1800 MHz spectrum expired. Under the TKG, the President's Chamber is required to issue a decision on the order for and choice of proceedings prior to frequency assignment, should spectrum be scarce. This decision is currently scheduled for 2013, giving companies the necessary planning and investment certainty.

Updating the Frequency Plan

Sub-plans will continue to be updated, partly to achieve further flexibility, with the aim of bringing the Plan into line with new EU targets and implementing Decisions of the European Conference of Postal and Telecommunications Administrations (CEPT)/Electronic Communications Committee (ECC). Changes needed on account of urgent national planning requirements will also be made.

We will begin initial planning work based on the international resolutions as preparation for implementing the results of the World Radiocommunication Conference 2012 (WRC-12). The provisions of the forthcoming Frequency Ordinance will be incorporated into a general Plan update and taken into account in future planning.

The procedure for updating the Frequency Plan has been revised following the 2012 amendment of the TKG. Publication of the updated Plan is scheduled for 2013.

Technical regulation

Market surveillance

Under our market surveillance activities we monitor compliance with the requirements of Directive 2004/108/EC on the electromagnetic compatibility of equipment (EMC Directive) and the Directive on radio equipment and telecommunications terminal equipment (R&TTE Directive) with a view to restricting, or preventing, non-compliant products from being placed on the market, in the interests of consumer protection and fair competition. Our work in 2013 will concentrate on the following activities in addition to the regular checks under the two Directives:

- Extended cooperation with customs and other market surveillance authorities. The focus here is to prevent non-compliant products from non-EU countries from being imported for free circulation (including those products offered via electronic media such as Internet auction platforms and online shops). We have noticed an increasing shift of distribution channels to the Internet.

- We have agreed cooperation with the Federal Environment Agency (UBA) concerning the legal requirements for electrical and electronic waste. German marketers are required to pay contributions towards the proper disposal of waste equipment. In light of the increase in online trade, we need to reach new agreements with the UBA since quite often no contributions are paid for equipment sold online.

- National and international bodies need to consider how the market surveillance process can be changed in light of past experience, with the aim of achieving greater efficiency and increasing the effectiveness of specific measures (such as marketing bans).

- Implementation of a uniform electronic tool to be used by all European market surveillance authorities for risk assessment of products which come under the EMC and R&TTE Directives.

- Publication of individual market surveillance results, in particular marketing bans, on the consumer platform of the Internet-supported information and communication system for pan-European market surveillance (ICSMS).

Electromagnetic fields

The amended versions of the EMF Controls Ordinance (BEMFV) and the 26th Ordinance on the Federal Immission Control Act will come into force in 2013. Both Ordinances contain complementary regulations aimed at protecting persons exposed to electromagnetic fields emitted by radio equipment, while the BEMFV sets the framework for assessing radio equipment. Existing arrangements for the exchange of data between the federal states' immission control authorities and the Bundesnetzagentur will need to be brought into line with the amended regulations. In this connection, plans include introducing purely numerical calculation methods to determine compliance distances for radio equipment.

Similar plans aim to provide a uniform national basis for defining compliance distances for amateur radio equipment. In this case, we will provide free software ("WattWächter") capable of running on nearly all operating systems which will enable radio amateurs to assess the compliance of their own stations with the limits protecting persons exposed to electromagnetic fields.

Electromagnetic compatibility standardisation

We will continue our involvement in the work begun in the European Committee for Electrotechnical Standardization (CENELEC) and the International Electrotechnical Commission (IEC)/International Special Committee on Radio Interference (CISPR) to increase the immunity of sound and television (TV) broadcasting receivers and components of broadband cable TV networks and to add to the electromagnetic compatibility (EMC) standards.

It will be particularly necessary to do so in the following areas:

- smart grids and smart metering: EMC requirements for electrical and electronic products in the band from 2 kHz to 150 kHz;
- moderation in the case of a conflict of interest between the power electronics and communications industries over smart microgrids, with respect to the protection rights for powerline communication automatic meter reading (PLC AMR) applications and unwanted emissions from power electronics products;
- light-emitting diode (LED) lamps: adequate consideration of the interference potential in EMC standards;
- influence on the swift completion of standards at IEC/CISPR level;
- multimedia equipment: limiting the interference in the band below 30 MHz as well;
- consideration of the IEC's technical specification (publicly available specification – PAS) for the assessment of interference from plasma flat screens in the next version of the EMC standard for multimedia equipment;
- electromobility: EMC requirements for equipment for the inductive charging of electric vehicles; and
- clarification of the legal regulatory framework in classifying inductive chargers as industrial, scientific and medical (ISM) radio frequency (RF) equipment as defined in the Radio Regulations of the International Telecommunication Union (ITU), in particular in light of the framework conditions laid down in Directive 1999/5/EC on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity, which is currently undergoing revision.

Radio & Telecommunications Terminal Equipment Directive

In October 2012, the European Commission published a proposal for a Radio Equipment Directive (COM(2012) 584) to replace the Radio & Telecommunications Terminal Equipment (R&TTE) Directive.

The proposal contains far-reaching changes, most importantly removing telecommunications terminal equipment from the scope of the Directive, which in future will cover radio equipment only. The draft title is therefore the "R Directive". Telecommunications terminal equipment will in future be covered by the EMC Directive (2004/108/EC), which is currently undergoing revision, and by Commission Directive 2008/63/EC on competition in the markets in telecommunications terminal equipment. The provisions of Decision No 768/2008/EC, part of the New Legislative Framework, will also be implemented through the new Directive.

The current R&TTE Directive is transposed into German national law by the Radio Equipment and Telecommunications Terminal Equipment Act (FTEG). We – as the market surveillance authority – are responsible for implementing the FTEG and will therefore be involved through the BMWi in discussions on the Commission's proposal.

Broadcasting standardisation

We will step up our activities in the field of broadcasting standardisation and play an active part in the work of international standardisation organisations and bodies. Our aim here is to promote the interoperability of broadcast receiving equipment (including TV sets and set-top boxes) and thereby counter the increasing trend towards fragmentation in the technical market.

There are a growing number of standardisation projects being launched in connection with multiscreen technologies within ITU's Telecommunication Standardization Sector (ITU-T) and also within the European Telecommunications Standards Institute (ETSI) and the Digital Video Broadcasting Project (DVB). We need to ensure that the necessary procedures for conditional access/digital rights management (CA/DRM) in conjunction with broadcasting content can still be implemented within these new frameworks. End users need to be able to consume and save such content with their own purchased equipment irrespective of the CA/DRM system used, provided they have the necessary rights.

The "Action Pact for Consumer-Friendly Terminals for Horizontal Markets – Interchangeable CA/DRM Systems" has set interoperability as its goal. This group of broadcasters, platform and network operators, terminal equipment manufacturers, chip manufac-

turers, CA/DRM providers and consumer representatives – headed by the Bundesnetzagentur – is working together to develop a detailed specification defining the technical parameters which will enable universal and interoperable implementation within a secure environment.

Alongside all these activities, we are also working on a specification for second-generation cable networks within an ITU-T study group responsible for recommendations for integrated broadband networks. This work has special significance above all in respect of economic policy.

Automated information procedure

The automated information procedure as provided for by section 112 of the TKG provides a key contribution to public safety. The procedure enables legally authorised bodies such as public safety authorities and emergency service centres to retrieve customer data (eg names and addresses) from telecommunications service providers as part of their investigations, for instance. The data can be retrieved securely and at all times using certified encryption technology.

The legislative amendments made in 2008 entailed additional requirements for the procedure, in particular that email addresses and mobile equipment identities should also be made available. Only if the technical framework for all involved is aligned and updated will this be possible. Our goal for 2013 is therefore to take the information procedure forward. One step will be to replace the integrated services digital network (ISDN) base with Internet Protocol (IP), thus ensuring a modern procedure for use in the future, too.

International affairs

BEREC

We will continue to provide input in 2013 for the many activities and discussions within BEREC. BEREC will be focusing its activities on promoting NGN rollout, improving consumer welfare and protection and reinforcing the internal market, as set out in its Work Programme for 2013. The main issues for 2013 include drafting opinions as part of the Article 7/7a procedure, the exchange of information on further developments in the field of NGN, in particular with a view to efficient NGN/NGA regulation, net neutrality, and practical implementation of the new EU Roaming Regulation. In addition, BEREC will prepare opinions on a number of draft recommendations proposed by the European Commission, most significantly those on relevant product and services markets, non-discrimination obligations and cost methodologies for key wholesale access products, net neutrality, and certain aspects of the universal service.

We will actively engage in the discussions and activities concerning the various recommendations the Commission plans to make. Special mention should be made here of the planned recommendation on non-discrimination obligations and cost methodologies for key wholesale access products (such as access to unbundled loops and bitstream access). The Commission has revised its original plans and will now draft just one recommendation to cover these aspects, instead of two. We will assist in drawing up BEREC's position on the proposal.

The European Commission will also revise its recommendation on relevant product and services markets within the electronic communications sector susceptible to *ex ante* regulation, on the basis of the responses to the public EU-wide consultation process launched in October 2012. In light of the fundamental significance for future regulatory activities, we will actively participate in preparations for the draft recommendation and in developing BEREC's opinion on the draft.

One focus of BEREC's work in the field of international roaming in 2013 will be the preparations for implementing the decoupling obligation, which requires roaming services to be offered separately from national mobile services, in line with the provisions of the new Roaming Regulation. We will take an active role in this preparatory work and in defining the technical requirements, ensuring that they are in accordance with the new provisions.

World Radiocommunication Conference 2015 preparations

The World Radiocommunication Conference 2015 (WRC-15) of the ITU will revise some or, exceptionally, all of the Radio Regulations with the aim of enabling innovative radio applications to access the radio spectrum as needed and efficiently use the scarce spectrum resources.

The new study period preparing for WRC-15 began immediately after the conclusion of WRC-12. In 2013, we will again be involved in the European preparations for WRC-15, providing scope for further developments for innovative radio applications in all radiocommunication services. In all, there are some 30 topics on the

agenda, including mobile broadband, earth observation radars with improved environmental observation characteristics, modern anti-collision radio technology for vehicles, regulations for unmanned aviation, and modernisation of maritime radiocommunications.

Qualified electronic signatures
Qualified electronic signatures are the electronic equivalent of hand-written signatures. They are becoming increasingly important owing to their high level of security, the possibility of tracing changes to a signed document and the legally secure way of linking a qualified certificate to a natural person at national and international level. We will continue in 2013 with our tasks to ensure this high level of security, for instance by establishing and monitoring a secure and trustworthy infrastructure for qualified electronic signatures, supervising and, in some cases, accrediting certification service providers, and operating the root certification authority for these providers.

Qualified electronic signatures are already being used in many fields, for example for verification procedures for recycling and waste disposal, electronic mailboxes for courts and public administration, and electronic land registers. As from 2013, holders will be able to use the signature function of their identity cards so as to generate qualified electronic signatures; this will make electronic signatures more interesting for individuals generally. Unlike the contact-based signature cards currently in use, a new technology will enable the qualified certificate to be loaded onto a contactless identity card, which can then be used as a signature card. This will bring about a further increase in 2013 in the demand for our advisory services in the use of qualified electronic signatures, for instance in business processes.

In 2013, we will complete the work begun in 2012 to migrate the old root system to a new one and establish the secondary system required for security reasons. This will ensure that we continue to meet the technical requirements imposed on us as the national root certification authority.

Post

The following postal activities should be highlighted from those scheduled for 2013.

Survey of basic working conditions
We will launch a new survey in 2013 of the basic working conditions among companies providing licensed postal services. A licence is required by anyone commercially providing a letter post service for items weighing no more than 1,000g (section 5(1) of the Postal Act – PostG). The aim of the survey is to find out to what extent there are gaps in wage levels, working hours, holiday entitlements, etc between certain branches or regions.

Future demand for postal universal services
In Germany, a minimum set of letter and parcel services and press delivery services must be accessible to everyone throughout the country (universal service). The scope and quality of the universal service are regulated in the Postal Universal Service Ordinance (PUDLV), which has remained in force unchanged since 1999.

The PostG stipulates that universal services should be redefined, as required, in line with demand and technical and social developments. Changes in postal users' needs should therefore also be accommodated in the legal requirements for the universal service.

Developments both among providers and among users themselves show a significant change in the demand for postal services. This process is continuing, with no end in sight.

The way people communicate has vastly changed, impacting the letters market. People are increasingly using electronic substitutes for personal mail. There is now hardly any demand for certain basic services, as users are wholly or partly substituting other methods of communication. Since we expect the decrease in the demand for physical letters to continue, we may need to consider how the current minimum requirements for letter services should be changed in line with user needs. A study commissioned by the Office of Technology Assessment at the German Bundestag is also looking at the convergence of postal services and information and communication technologies and the implications for the universal postal service in the future.

Parcel services have also been considerably affected by the increase in online trade. Residential customers are increasingly using the alternative solutions now emerging for home delivery. The fundamental technological developments in the growing parcels

market also point to the possible need for changes to the requirements for key parcel services in line with demand.

Detailed information on the actual needs of users in relation to basic postal services is required before work on possible amendments to the PUDLV can begin. Such information is best obtained through market research.

The WIK consultancy has therefore been asked to compare the different approaches to market research on universal services. On the basis of research already carried out in other countries, the ultimate aim is to identify the best approach for assessing the need for changes to the universal service in Germany. This should also include an initial assessment as to which universal service characteristics may need revising.

We will closely follow this process and use the findings to develop a proposal on the universal service as required under section 47 of the PostG as part of our activity report to the Federation's legislative bodies. We will invite participation from specialists and other interested parties in our work.

Rail

The Bundesnetzagentur expects some fundamental changes to its work environment in 2013 as a result of the planned amendment of rail regulatory legislation. One strategic priority will be developing the framework for incentive-based regulation.

Our day-to-day activities will centre on reviewing the prices charged by the Deutsche Bahn (DB) infrastructure companies, the implications of noise-differentiated track access charges, preparations for the next framework timetable period, and capacity allocations in service facilities and major transport hubs.

Another focus will continue to be on European developments and requirements in the field of rail regulation, such as establishment of the rail freight corridors and the impact of the recast of the First Railway Package.

The activities set out below are just some of those that rail regulation will address in 2013.

Price regulation

Level of prices charged by the DB infrastructure companies

The past few years have seen a trend towards partly significant price increases among the DB group's infrastructure companies, in particular DB Netz AG and DB Station&Service AG. Since the increasing track access charges and station prices constitute a substantial cost item for market participants, we will in 2013 be looking closely at the level of the prices.

As far as the assessment of track access charges is concerned, we will focus on determining the infrastructure managers' capital base. This will involve making more precise definitions, enabling us to make more detailed statements about the appropriateness of the return on capital and in turn draw conclusions about the appropriateness of the level of the charges as a whole. We are updating our 2009 report on capital costs; this will ensure that the interest rates are also up-to-date as required for *ex ante* review.

In respect of station prices, we expect to receive early information about the anticipated development in the prices in the coming year. This will be followed by official notification of the 2014 station price list. The aim of all involved is for the price list to be made available earlier than in previous years in order to facilitate planning by access beneficiaries.

Noise-differentiated track access charges

The introduction of noise-differentiated track access charges in December 2012 was a much regarded innovation in DB Netz AG's track pricing system. It also created a new regulatory task for us in 2013, namely to monitor the impact of the new pricing measure in conjunction with the funding for retrofitting freight wagons with low-noise brake systems. There may be a need for action as a result of the revised system, since the incentive effect of a shared bonus remains to be seen: the share funded by the state is paid directly to the wagon keepers, while the other share – paid to the rail freight operators – differentiates between high and low-noise wagons and favours the latter. The question may arise as to whether there should be an even higher incentive to upgrade wagons.

Efficiency-oriented incentive regulation

In light of the planned amendment of rail regulation law, we expect to see a fundamental change in price regulation rules, with a transition from the current cost plus regulation to efficiency-oriented incentive regulation and the definition of price caps. A key element underlying this regulatory approach is the determination of efficient costs, requiring significant knowledge and theoretical understanding.

To this end, a report will be drawn up analysing the economic regulatory approaches and experiences with efficiency-oriented regulation in other countries and comparable industries. The findings, expected in spring 2013, will provide the basis for recommendations as to future regulation. Incentive-based regulation can still only be implemented successfully if we identify infrastructure managers' potential cost drivers, in addition to the cost basis, and hence create the basis for analysing causalities. Furthermore, methods need to be developed to measure efficiency while taking into account the specific circumstances in the rail sector.

Access regulation

Establishment of rail freight corridors

Regulation (EU) No 913/2010 requires several rail freight corridors to be established by the end of November 2013; these include corridor 1, which runs along the Rhine from the Netherlands, through Germany and Switzerland, to Italy. It is becoming apparent that this will have considerable implications for current path allocation procedures and may lead to conflicts as yet unknown. Ahead of this, a traffic market study will be conducted, which will provide a new instrument in terms of planning train paths and which will need our careful evaluation in light of the capacity allocation problems. Planning the paths for the freight corridors ultimately means that the regulators in the individual countries concerned will for the first time need to cooperate on a concrete, decision-oriented basis.

Assessment of the planned systematic track management scheme

Current legislation is based on the allocation of paths upon request (open access to the rail network), which resolves path conflicts. However, Germany's largest infrastructure manager is looking at a new concept for long-term capacity planning which is based on systematic rail paths and aims to enable more efficient use of existing capacity. This track system needs to be reassessed in respect of its legal aspects. For instance, the planning concept gives rise to new practical implications and fundamental competition issues, such as the allocation of path capacities for passenger and freight traffic.

Preparations for the framework timetable period 2016-2020

With the current framework timetable period ending in December 2015, requests for the new period (2016-2020) need to be filed with the rail network operators in 2014. In 2009, DB Netz AG received some 30,000 bandwidth requests from access beneficiaries. We will need to analyse potential problems connected with the next framework agreement period well before requests are submitted, in mid-2013 at the latest. Market players should be involved so as to take account of the needs of potential applicants (railway undertakings, regional transport authorities). We will subsequently need to address any questions which arise, for instance on the level of utilisation of the available infrastructure capacity, the implications for regional passenger rail traffic subject to transport contracts, the problems surrounding freight corridors and single-track lines, and the transparency and verifiability of changes made to existing framework agreements. Legal clarification or even amendment of the standard framework agreement may be necessary.

Capacity allocation in service facilities

We will continue in 2013 to pay special attention to the allocation of capacity in service facilities, which constitute significant bottlenecks in terms of the development of rail traffic. Only when there is non-discriminatory access for all access beneficiaries to the major transport hubs (eg to service facilities near key industrial companies) can competition in rail transport, and in particular freight transport, develop.

At the end of 2010, after intensive consultation with the market, we published a position paper setting out our key conclusions with a view to improving non-discriminatory access to service facilities. We are now closely following implementation of these conclusions. In the meantime, DB Netz AG has introduced a new scheme for allocating capacity in its service facilities. As with path allocations for the working timetable, all usage requests received by a certain date are processed together and, apart from a transitional arrangement for existing contracts, allocations are made only for the next working timetable period.

The new capacity allocation system was first put into operation by DB Netz AG at the end of 2012. As far as we are concerned, there is a need for further action.

There are, for example, doubts as to whether DB Netz AG's procedure for allocating specific tracks in service facilities before or after a train has arrived or departed is transparent and non-discriminatory.

Likewise, the current procedure for processing requests raises the question as to whether there is a consistent definition of capacity and whether all requests are processed fairly. A dispute surrounding a planned decision by DB Netz AG about a conflict gives us cause to look more closely at DB Netz AG's responsibility to ensure that a fair balance is struck between the requirements for one railway undertaking's extensive utilisation concepts and the needs of other users. Decisions in favour of large and established railway undertakings must not result in undertakings with less extensive traffic concepts being squeezed out across the board.

Furthermore, insufficient account is still being taken of ad hoc rail freight traffic which is steadily increasing and which requires limited but often very short term capacity. It has become clear that even more weight must be given to this increase in ad hoc freight traffic operated by both DB Netz AG and a large number of other infrastructure managers.

We will continue to review access to service facilities using our findings made in 2012 and will push for further improvements in access to major transport hubs.

International affairs

Independent Regulators Group – Rail/ European market monitoring

We will continue to provide input for the work of the Independent Regulators Group – Rail (IRG-Rail) following Germany's successful tenure as Chair in 2011 and 2012. The group plans to continue its work in 2013 in the areas of access, charges, market monitoring and legislative proposals.

One of the tasks carried out by the regulatory bodies represented in the group is to collect market data and information on developments in the national railway sectors and to compile the findings in a joint market monitoring report. The first report is due to be published in early 2013 and compares up to 95 common indicators and parameters used to assess the individual national markets. This valid and up-to-date picture of the railway markets in Europe will help in dealing with future rail regulatory challenges in a wider, European context. A second market survey is planned for 2013.

Implementing acts of the European Commission

As part of the recast of the First Railway Package, the European Commission has been given various powers to issue implementing acts. The Commission has announced its intention to adopt the first implementing acts on issues related to cross-border rail passenger services, more specifically determining the principal purpose of the service and assessing the economic equilibrium of public-service contracts. We will actively follow the legislative procedures for these two issues.

European regulatory framework

In close cooperation with the Federal Ministry of Transport, Building and Urban Development and as part of the activities within IRG-Rail, we will continue to actively engage in discussions on taking the European regulatory framework forward. On 30 January 2013, the European Commission announced its proposals for a Fourth Railway Package. The proposed measures focus on the full liberalisation of domestic passenger rail markets, the structural separation of infrastructure and railway undertakings, technical interoperability, vehicle authorisation and strengthening the role of the European Railway Agency (ERA).

European Network of Rail Regulatory Bodies

The recast of the First Railway Package provides for the establishment of a new formal body, the European Network of Rail Regulatory Bodies (ENRB). The ENRB takes over from the informal working group of regulatory authorities led by the European Commission and includes the Commission as one of its official members. The ENRB was formally established at the end of 2012 and will be able to fully unfold its activities in 2013. One of the plans is for the ENRB to review the Commission's drafts for numerous implementing acts provided for in the recast before they are submitted to the Single European Rail Area Committee (SERAC), so as to be able to take necessary account of the regulatory bodies' experience. We will be actively involved in the development and the work of the ENRB. We will also continue to participate in IRG-Rail's activities in carefully monitoring the Commission's planned implementing acts and drawing up its own opinions on the proposals where appropriate.

The Bundesnetzagentur's core tasks and organisation

The Bundesnetzagentur is primarily responsible for promoting competition in the regulated areas and ensuring non-discriminatory access to networks. In doing so it profits from a task-oriented organisational structure, which meets the many and varied requirements and at the same time allows it to respond to new tasks in an open and flexible manner.

Functions and structure

The Bundesnetzagentur, originally known as the Regulatory Authority for Telecommunications and Post, was set up on 1 January 1998 as a separate higher federal authority within the scope of business of the Federal Ministry of Economics and Technology. It took over the responsibilities of the former Federal Ministry of Post and Telecommunications and the Federal Office for Post and Telecommunications. On being assigned responsibilities under the new Energy Act and the amended General Railway Act the Regulatory Authority for Telecommunications and Post was renamed the Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railway, commonly known as the Bundesnetzagentur, in 2005.

First and foremost, the Bundesnetzagentur's remit is to promote competition through regulation in the telecommunications, postal, energy and rail sectors and to guarantee non-discriminatory network access. In the telecommunications and postal sectors it ensures nationwide appropriate and adequate services and provides frequency regulation and numbering arrangements. Moreover, the Bundesnetzagentur now plays a key role as the national planning authority for electricity transmission lines crossing national or state borders in the context of the *Energiewende*. These responsibilities are laid down in the Telecommunications Act, the Postal Act, the General Railway Act, the Energy Act, the Grid Expansion Acceleration Act and in other special laws (such as the Amateur Radio Act, the Renewable Energy Sources Act, the Electromagnetic Compatibility of Equipment Act, the Radio Equipment and Telecommunications Terminal Equipment Act and the Law Ensuring the Provision of Posts and Telecommunications Services) and are detailed additionally in a number of ordinances and other implementing provisions. Furthermore, the Bundesnetzagentur is the competent authority under the Electronic Signatures Act (SigG) and as such is tasked with setting up and monitoring a secure and reliable qualified electronic signatures infrastructure.

The Bundesnetzagentur's tasks and activities are complex and wide in scope. They range from cases addressed in quasi-judicial proceedings in regulation areas, reporting requirements and planning authority responsibilities right down to its nationwide presence for investigating and processing frequency interference complaints. To meet these diverse requirements, the Bundesnetzagentur must have a task-oriented organisational structure, which ensures both the efficient performance of its statutory duties and the ability to assume new duties in an open and flexible manner.

Below the management level the Bundesnetzagentur comprises Ruling Chambers and departments. The President's Chamber takes decisions in particular on award proceedings for scarce radio spectrum resources and the imposition of universal service obligations. In the telecommunications sector it determines which markets require regulation and which companies have significant market power in these markets. On the basis of these determinations, the Ruling Chambers then decide on the regulatory measures to be imposed on companies with significant market power. This is how decisions are reached on details of the obligations in respect of, for example, network access conditions or ex ante and ex post price controls. In the postal sector the Ruling Chamber focuses on (ex ante and ex post) rates approval and the control of anti-competitive practices, including the regulation of access to the postal network. In the energy sector the Energy Act gives decision-making powers for general and individual matters of access to electricity and gas networks and for network tariffs to the Ruling Chambers.

The departments perform specialised and central administrative functions. These include economic and legal policy issues in the various areas of regulation, and the relevant international coordination as well as technical aspects of frequencies, standardisation, numbering and public safety. The Bundesnetzagentur is active in international standardisation bodies, cooperating in the development of next generation networks and new radio systems. Another major departmental function is to give Ruling Chambers specialist assistance in their decision-making. All relevant rail regulation tasks are performed by the rail department, as the General Railway Act does not yet provide for a Ruling Chamber.

All of the Bundesnetzagentur's responsibilities have a strong international element. Coordination at European level, in particular, is becoming an increasingly important aspect of its regulatory activity. This is reflected by the fact that the international functions are largely concentrated in one department together with the functions of postal regulation.

In the telecommunications sector the Bundesnetz–agentur is mainly responsible for the key decisions and determinations to promote the triad of investment, innovation and competition for the citizens' benefit. Another central focus in the telecommunications sector remains consumer protection. With the entry into force of the amended Telecommunications Act the Bundesnetzagentur is thus particularly concerned with problems related to changes of provider in order to protect consumers. In addition, it continues to vigorously combat misuse as regards unlawful use of telephone numbers and cold calling. Another primary function is to ensure transparency of end customer contracts, in particular with respect to the bandwidth guaranteed in the contract. It also maintains a database of sites of fixed transmitters operating above a specified power level. Also of particular importance for consumers are the resolution of radio interference, the dispute resolution procedure under section 47a of the Telecommunications Act and section 10 of the Postal Services Ordinance (PDLV) and general consumer services.

In the energy sector it is the Bundesnetzagentur's duty to create and secure the basis for efficient competition in the electricity and gas markets, mainly through unbundling and regulating non-discriminatory access to the energy networks, including rates regulation. It also monitors the development of upstream generation and import markets, along with the retail markets, and assumes key functions under the Renewable Energy Sources Act. The government's decision in 2011 to exit nuclear power as a part of the *Energiewende*, together with the accelerated expansion of renewable energy sources, also require regulatory measures for the security of supply and special efforts for connecting offshore wind farms to the electricity transmission networks.

One of the major tasks for the Bundesnetzagentur in the context of the *Energiewende* is the fast, comprehensive expansion of the electricity transmission networks. To achieve this, the Bundesnetzagentur has been given wide-ranging competences in network development planning and in planning law for high voltage lines crossing federal state and national borders. As part of network development planning, a draft Federal Requirements Plan is prepared and presented to the legislator, as a basis for determining the priority needs of network expansion set by the energy sector. Following the adoption of the Federal Requirements Plan the planning procedures for high voltage lines crossing federal state and national borders continue under the Federal Specialist Planning and the subsequent approval procedure.

In rail regulation the Bundesnetzagentur monitors compliance with the legislation on rail infrastructure access. One of the Bundesnetzagentur's main tasks is to ensure the non-discriminatory use of rail infrastructure for the railway undertakings and other access

beneficiaries. The term rail infrastructure includes the infrastructure and services connected with both tracks and service facilities (eg stations, freight terminals). Rates regulation includes an examination of the amount and structure of the infrastructure charges and of other charges levied by the infrastructure managers.

A nationwide presence is vital for the Bundesnetzagentur to perform its duties well. To ensure consistency the Bundesnetzagentur's regional offices, which are fundamental for maintaining contact with consumers and the industry, are managed and coordinated centrally by a single department.

The regional offices are mainly responsible for technical matters. They provide information, for instance, on compliance with the Telecommunications Act, electromagnetic environmental compatibility provisions and the Electromagnetic Compatibility of Equipment Act. They are also in charge of frequency assignment, for instance for private mobile radio systems, for granting site certificates and for sampling equipment under their market surveillance duties. Another important area is the investigation and processing of radio interference using state-of-the-art measuring equipment, monitoring compliance with regulations generally and carrying out radio monitoring and inspection orders under the Telecommunications Act and the Electromagnetic Compatibility of Equipment Act.

At a number of locations regional offices also carry out executive functions on behalf of the Bundesnetzagentur's headquarters. In particular, this involves activities in number administration, number misuse and cold calls, registration of photovoltaic systems or railway infrastructure, and not least the work of the Shared Service Center (SSC). The SSC performs human resources administration tasks for other authorities and beneficiaries – predominantly within the scope of business of the Federal Ministry of Economics and Technology.

Human resources management

Human resources management is a top priority at the Bundesnetzagentur. It is important both to deploy staff optimally and to recruit new qualified staff. This is possible when human resources management takes account of work requirements and staff skills and preferences equally. Only the combination of pro-active and appropriate staff deployment and motivated employees will allow the Bundesnetzagentur to perform its responsibilities in an efficient and cost-effective way at times of tight budgets. Aspiring to modern human resources management, the Bundesnetzagentur offers not only corporate health schemes, but also models for balancing work and family life.

In recruiting new staff the Bundesnetzagentur requires not only excellent specialist knowledge, but also the ability to structure and address complex new tasks in an interdisciplinary team quickly and with a flair for practical solutions. Given its diverse areas of activity, the Bundesnetzagentur attaches particular importance to an interdisciplinary work approach. It employs approximately 2,700 specialists, specifically lawyers, economists, engineers from various disciplines, physicists, mathematicians, computer scientists and administrative staff. For its new functions as part of the accelerated expansion of the electricity transmission networks, posts have also been created for graduates in environmental and landscape planning, spatial development, environmental technology, geography, biology and communications. They will be an important contribution to fulfilling the new duties efficiently and properly.

The Bundesnetzagentur has been providing places for apprentices since 1999. In view of the recruitment of future staff and the challenges of demographic change the training qualifications offered by the Bundesnetzagentur have become ever more diverse. Vocational training is available for office communication trainees, electronic equipment and systems trainees and for IT specialist trainees for system integration and applications development. Since 2011, the Bundesnetzagentur has also offered a practice-oriented programme to train students (Bachelor of Engineering/Electrical Engineering and Bachelor of Science) to work as technicians for electronic equipment and systems at the Bundesnetzagentur. Moreover, in 2012 for the first time two temporary civil servants (with the rank of Regierungsinspektor) were hired for the preparatory service in the new university degree “IT in Public Administration”. The vocational training courses are offered at different Bundesnetzagentur locations, in particular at the regional offices.

In 2012, a total of 163 young people were trained at the Bundesnetzagentur in various occupations. Of the 30 trainees who successfully completed their training in 2012, 28 decided to stay with the Bundesnetzagentur.

Budget

The Bundesnetzagentur's income and expenditure is budgeted for in the federal budget, in the departmental budget of the Federal Ministry of Economics and Technology.

The table below shows the income for 2012 (target and performance) and 2013 (budget).

Type of income	Target 2012 in €1,000	Performance 2012 in €1,000	Target 2013 in €1,000
Telecoms fees, contributions and other charges	77,166	64,569	77,158
Fees and other charges in the postal sector	42	37	5
Fees and other charges in the rail sector	98	57	86
Fees and other charges in the energy sector (electricity and gas)	329	5,546	851
Fees and other charges under the Grid Expansion Acceleration Act (NABEG)	0	0	7,500
Other administrative income, eg fines, rents and disposals	1,507	3,788	1,090
Administrative income	79,142	73,997	86,690

The shortfalls in telecommunications in 2012 are due to the fact that the contributions for the protection of interference-free frequency usage could only be levied for one, and not as originally planned for two, contribution years. The amendment to the ordinance required for levying contributions for two years could not be adopted in the fiscal year 2012, but is foreseen for 2013. Once again, surpluses were generated in the energy sector, mainly due to fees being collected from previous years.

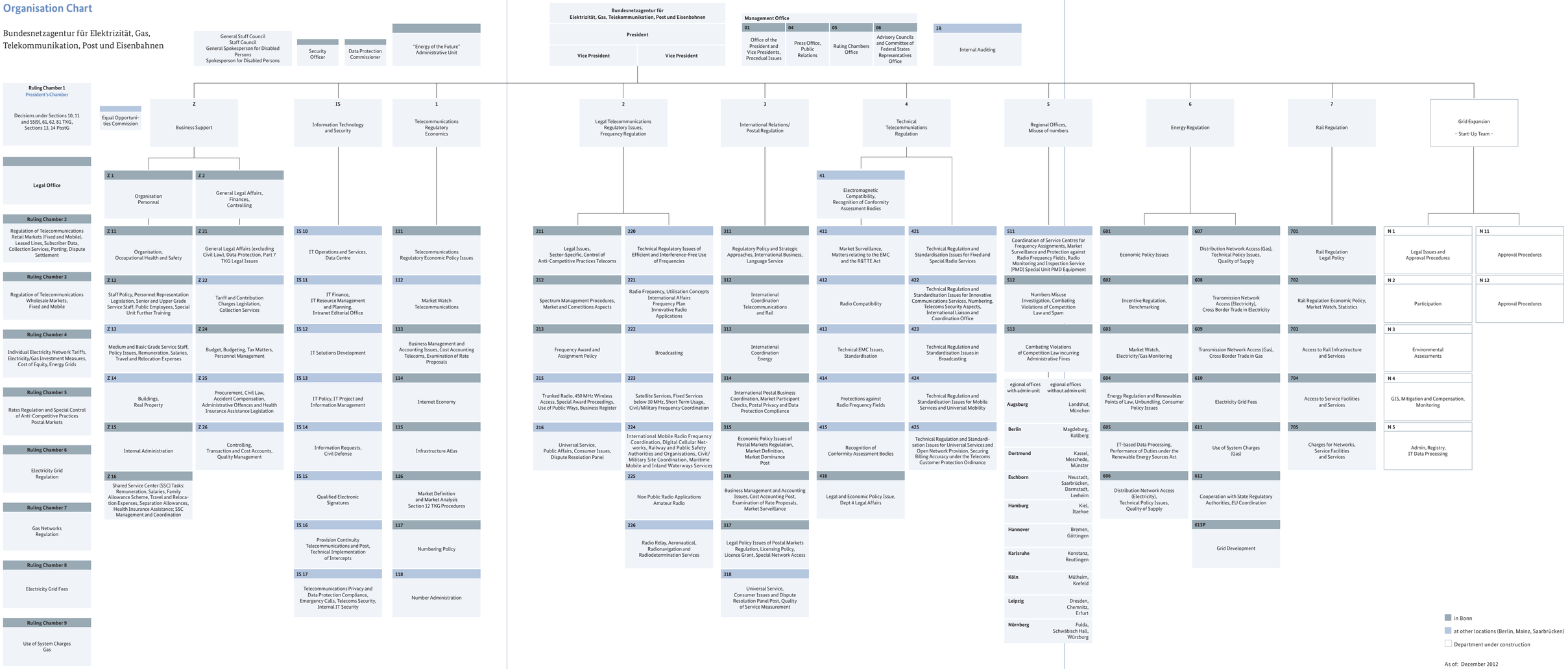
For grid expansion there is an estimated income of €7.5m for the 2013 budget due to administrative proceedings on Federal Specialist Planning under the provisions of the Grid Expansion Acceleration Act.

The chart below shows the expenditure for 2012 (target and performance) and 2013 (budget). The increase in budgeted expenditure for 2013 is based on an extensive range of new tasks relating, amongst others, to NABEG, and to the estimated rents for government-owned property under standardised property management.

Type of expenditure	Target 2012 in €1,000	Performance 2012 in €1,000	Target 2013 in €1,000
Personnel costs	115,581	118,841	122,400
General administrative expenditure, appropriations	52,317	48,145	51,353
Investment	12,170	14,249	14,049
Total expenditure	**180,068**	181,235	**187,802**

Organisation Chart

Bundesnetzagentur für Elektrizität, Gas, Telekommunikation, Post und Eisenbahnen



List of abbreviations

3

3 GPP 3rd Generation Partnership Project

A

ACER Agency for the Cooperation of Energy Regulators

AEG General Railway Act

AFuG Amateur Radio Act

AGB General terms and conditions

ANCOM Romanian telecommunications regulatory authority

ARegV Incentive Regulation Ordinance

AusglMechV Equalisation Scheme Ordinance

B

BEMF EMF Controls Ordinance

BEUC Bureau Européen des Unions de Consommateurs

BfDI Federal Commissioner for Data Protection and Freedom of Information

BEREC Body of European Regulators for Electronic Communications

BIPT Belgian postal and telecommunications regulatory authority

BKV Balancing group manager

BMWi Federal Ministry of Economics and Technology

BVerwG Federal Administrative Court

BWA Broadband wireless access

C

CA/DRM Conditional Access/Digital Rights Management

CEER Council of European Energy Regulators

CENELEC European Committee for Electrotechnical Standardization

CEPT European Conference of Postal and Telecommunications Administrations

CERP European Committee for Postal Regulation

CISPR Comité International Spécial des Perturbations Radioélectriques

CR Cognitive Radio

ct/kWh Cent pro Kilowattstunde

D

DB AG Deutsche Bahn AG

DEA Data envelopment analysis

De-Mail Legally binding digital mail service

DHL Deutsche Post DHL

DIHK German Association of Chambers of Industry and Commerce

DP AG Deutsche Post AG

DPD Dynamic parcel distribution

DSL Digital subscriber line

DT AG Deutsche Telekom AG

DVB-T Digital video broadcasting – terrestrial

E

e expected

EBSAG Electricity Balancing Stakeholder Advisory Group

ECC Electronic Communications Committee

EEG Renewable Energy Sources Act

EEX European Energy Exchange

EIBV Rail Infrastructure Usage Regulations

EIU Rail infrastructure manager

EMF Electromagnetic fields

EMV Electromagnetic compatibility

EMV-RL EMC Directive

EMVG Electromagnetic Compatibility of Equipment Act

EnLAG Power Grid Expansion Act

ENTSOG European Network of Transmission System Operators for Gas

ENTSO-E European Network of Transmission System Operators for Electricity

ENRB European Network of Rail Regulatory Bodies

EnWG Energy Act

EPEX European Power Exchange

ERA European Rail Agency

ERG European Regulators Group

ERGEG European Regulators Group for Electricity and Gas

ERGP European Regulators Group for Postal Services

ETSI European Telecommunications Standards Institute

EU European Union

EVU Railway undertaking

F

FNB Transmission system operators (gas)

FTEG Radio Equipment and Telecommunications Terminal Equipment Act

FTTB Fiber to the building

FTTH Fiber to the home

G

GB Gigabyte

GasNEV Gas Network Charges Ordinance

GG Basic Law

GHz Gigahertz

GLDB Geolocation databases

GPL Gaspool

GSM Global System for Mobile Communications

GW Gigawatt

H

HFC Hyper Fiber Coax

HGÜ High voltage direct current transmission

H-Gas High calorific value gas

HKX Railway company

HSPA High speed packet access

HT Peak price

HVt Main distribution frame

I

ICSMS Internet-supported information and communication system for pan-European market surveillance

IEC International Electrotechnical Commission

ILR Luxembourg regulatory authority for electricity, gas, telecommunications, post and railway

IMT International Mobile Telecommunications

IP Internet protocol

IPTV Internet protocol television

IRG Independent Regulators Group

IRG-Rail Independent Regulators' Group – Rail

ISDN Integrated services digital network

ISDN-PMx Primary rate multiplex access

IT Information technology

ITU International Telecommunication Union

K

kbit/s Kilobit per second

KEP Courier, express and parcel services

km kilometre

KPI Key performance indicators

KVz Cable distributor

kW Kilowatt

kWh Kilowatt hour

KWK Combined heat and power

KWKG Combined Heat and Power Act

L

L-Gas Low calorific value gas

LED Light-emitting diode

LTE Long Term Evolution

M

M2M Machine-to-machine

Mbit Megabit

Mbit/s Megabit per second

MHz Megahertz

MMS Multimedia messaging service

MoU Memorandum of understanding

MW Megawatt

MWh Megawatt hour

N

NABEG Grid Expansion Acceleration Act

NBS Service Facilities Statement

NCG NetConnect Germany

NEP Gas Gas Network Development Plan

NEP Strom Electricity Network Development Plan

NGA Next generation access

NGN Next generation network

O

ORR UK Office of Rail Regulation

OVG NRW Higher administrative court of North-Rhine Westphalia

P

PCIs Projects of Common Interests

PDLV Postal Services Ordinance

PDSV Postal Data Protection Ordinance

PEntgV Postal Rates Regulation Ordinance

Pkm Passenger kilometre

PostG Postal Act

PSTN Public switched telephone network

PTS Swedish postal and telecommunications regulatory authority

PTSG Law Ensuring the Provision of Posts and Telecommunications Services

PUDLV Postal Universal Service Ordinance

R

REMIT-VO REMIT Regulation

RL Directive

RRS Reconfigurable radio systems

RSPP European Radio Spectrum Policy Programme

R&TTE Radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity

R&TTE-RL R&TTE Directive

S

SDR Software defined radio

SEA Strategic environmental assessment

SFA Stochastic frontier analysis

SGV Rail freight

SigG Electronic Signatures Act

SIM Subscriber identity module

SMS Short messaging service

SNB Network Statement

SPFV Long-distance passenger rail services

SPNV Regional passenger rail services

SSC Shared service center

StromNEV Electricity Network Charges Ordinance

T

TAL Local loop

TK Telecommunications

TKG Telecommunications Act

tkm Tonne kilometre

TYNDP Ten-Year Network Development Plan

TWh Terawatt hour

U

UMTS Universal Mobile Telecommunications System

UNECE United Nations Economic Commission for Europe

ÜNB Transmission system operator

UPS United Parcel Service

UVPG Environmental Impact Assessment Act

UWG Unfair Competition Act

V

VDS Compressor station

VDSL Very high speed digital subscriber line

VDV Association of German Transport Companies

VNB Distribution system operators

VoIP Voice over Internet Protocol

vzbv Federation of German Consumer Organisations

W

WIK Wissenschaftliches Institut für Infrastruktur und Kommunikationsdienste

WRC World Radio Conference

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