



Progress needs broadband

Private investment requires more government stimuli

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Besides transport and energy infrastructure, communications infrastructure is steadily gaining in importance in the regional competition to attract investment. As the appeal of data-intensive services and networked devices rapidly increases, modern networks become more and more important. Empirical studies show the positive impact of broadband on economic growth, although they also point to the huge amount of investment necessary.

Germany scores below average to date in terms of availability of high-speed broadband infrastructure. It is also worrying that Germany is not up to speed in meeting its political targets of providing future-proof broadband connectivity rates of at least 50 Mbit/s. On the basis of fibre-optic technology this rollout could cost at least EUR 85 bn.

Differences in infrastructure raise concern about competitiveness in rural regions. In Germany, broadband coverage shows a significant gulf both between west German and east German federal states as well as between urban and rural regions. While the rollout is progressing in the heavily populated regions there is usually no viable business model for projects in rural areas without government subsidies. Under the current political and regulatory guidelines, the specific cost structure for broadband projects will not result, on sound business calculations, in the rural rollout making any decisive progress in the near future. This applies especially to many parts of Mecklenburg-Western Pomerania, Brandenburg and even the Oberpfalz region of Bavaria.

Rural projects will require more government support if they are to meet the broadband targets. The so-called "profit gap model" appears to be particularly beneficial in many situations. In this case, the government compensates the private investor for a foreseeable profitability gap in the economically unprofitable areas via subsidies. This is a useful model because it seeks an equilibrium between competition and expansion targets on the one hand and the public budget targets on the other. The approach involves time-limited interventions in market activity. Further bold steps should follow the current initiatives. For example, issues such as higher support volumes and avoiding inefficiencies in local rollout activities should be tackled soon. Furthermore, there is a need for financial compensation mechanisms that support the economically weak federal states, counties and municipalities which, in most cases, are underserved.

There is no standard blueprint for the rollout of broadband. Starting with a realistic economic feasibility analysis based on the local features, efforts should be taken to work out the best rollout model in terms of technology (e.g. fixed-line versus mobile), type of funding and time horizon, respectively. Nevertheless, the rollout can only be an economic success if complemented with the modern services that are a good fit for the network technology.



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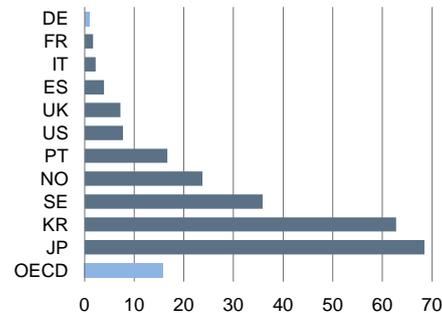
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Broadband coverage causing concern

Germany scores at one-sixteenth of the OECD average

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Share of fibre-optic connections in total broadband connections (%)



As of June 2013

Source: OECD

Besides transport and energy infrastructure, modern communications infrastructure is steadily gaining in importance as a location factor for business investment. The performance capacity of communications infrastructure is crucial for the performance and growth trend of an economy as a whole.¹ Empirical studies report that in the advanced economies a 10% increase in broadband connections has driven the growth of gross domestic product (GDP) per capita in the past by over 1% per year. Part of the reason for this, according to estimates, is that taken together the broadband-based modern technologies generate 40% of productivity growth in the EU.² Furthermore, an empirical study focusing on 34 advanced industrial countries shows that a doubling of transmission speed in the broadband network increased the growth of GDP in the past by 0.3 of a percentage point on average.³

Similarly, political institutions are also working intensively on this issue at the various levels of administration. At the latest, the German government's "Broadband Strategy" of 2009 and the "Digital Agenda" of the European Commission's "Europe 2020" initiative of 2010 have prominently documented the huge value attached to high-performance communications infrastructure.

Going by the rollout targets set out by policymakers there is a further need for action. Even the milestones of the Broadband Strategy will only be achieved to a limited extent in the foreseeable future.⁴ In Germany, for instance, the public has access to at least 1 Mbit/s of bandwidth nation-wide, but there are still sizeable gaps especially for bandwidth of over 50 Mbit/s.⁵ Correspondingly worrying for Germany is its ranking in an international comparison of modern high-performance broadband infrastructure. The share of fibre-optic connections in total broadband connections in Germany is just under 1%, whereas the OECD average is 16%, and in Japan no less than 70%.

Ambitious rollout targets worldwide

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Region	Name	Year	Target
European Union	Digital Agenda	2010	Union-wide coverage with at least 30 Mbit/s by 2020; 50% coverage with at least 100 Mbit/s by 2020
Germany	The Federal Government's Broadband Strategy	2009	75% of households with transmission rates of at least 50 Mbit/s by 2014
Finland	National Broadband Strategy	2008	99% coverage with at least 100 Mbit/s by 2015
United Kingdom	Government Digital Strategy	2013	95% coverage with at least 24 Mbit/s by 2017
Sweden	Broadband Strategy for Sweden	2009	40% coverage with at least 100 Mbit/s by 2015; 90% coverage by 2020
United States	The National Broadband Plan	2010	100 m households with at least 50 Mbit/s by 2015; 100 m households with at least 100 Mbit/s by 2020

¹ See Bahrke, Michael and Hanno Kempermann (2014). Regionen im Wettbewerb. IW-Trends 1/2014. Cologne.

² See Czernich, Nina et al. (2011). Broadband Infrastructure and Economic Growth.; Fornefeld, Martin et al. (2008). The Impact of Broadband on Growth and Productivity; Katz, Raul L., et al. (2010). The impact of broadband on jobs and the German economy, Intereconomics; or Qiang, Christine Zhen-Wei and Carlo M. Rossotto, C.M. (2009). Economic Impacts of Broadband, Information and Communications for Development: Extending Reach and Increasing Impact.

³ See Rohman, Ibrahim Kholilul and Bohlin, Erik (2012). Does Broadband speed really matter for driving economic growth? Investigating OECD countries.

⁴ See BMWi (2013). Dritter Monitoringbericht zur Breitbandstrategie der Bundesregierung. Berlin.

⁵ See TÜV Rheinland (2013). Szenarien für eine kosteneffiziente flächendeckende Versorgung.

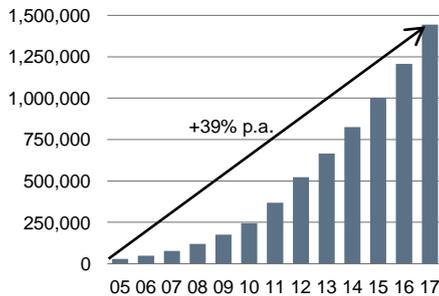


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No growth limits on the horizon

4

IP data volume, global, petabytes

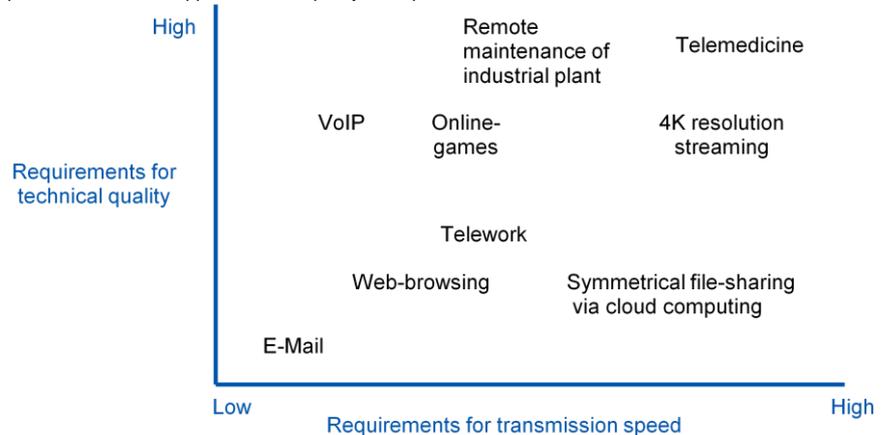


Sources: OECD, Cisco Visual Networking Index

Wide variety of applications place very diverse demands on the network

3

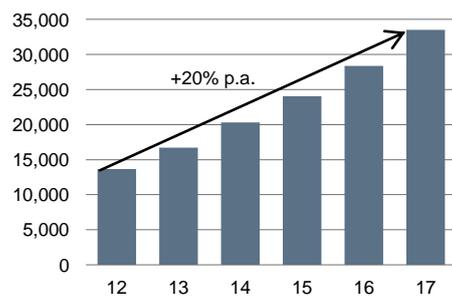
Requirements of online applications for quality and speed of transmission network



Data volume in Germany has doubled in five years

5

IP data volume in DE, petabytes



Source: Cisco Visual Networking Index

Source: According to Kruse, Jörn

Most recently, the German government has further extended the rollout targets beyond those of the 2009 Broadband Strategy. By 2018, the target is to make bandwidth of 50 Mbit/s available to all German households across the country. The newly founded "Network Alliance Digital Germany" is meant to increase the pace of the rollout. To this end, government policymakers and business leaders regularly exchange ideas at high-level meetings on the challenges and demands looming and agree tasks, roadmaps and milestones to address them. However, it is also crucial that this exchange does ultimately result in actual investments.

Urgent need for fast broadband in future

Interest in modern communications is rising around the world. Information flows are undergoing root-and-branch changes. Traditional value-added chains are opening up and completely new offers are emerging, in the services sector in particular. The developments not only in the areas of smart grids, Industry 4.0,⁶ cloud computing and telemedicine but also visual media and gaming are merely first harbingers of the upcoming change. All of these "hyper-connectivity" services are continually fuelling the desire for data and thus driving the demand for increasingly high-performance communications infrastructure.⁷

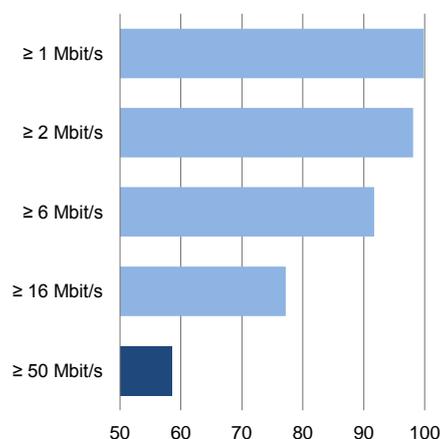
Software and hardware maker Cisco estimates that IP data volume will increase six-fold worldwide between 2010 and 2017, probably running to around 1.5 million petabytes by then (1 petabyte = 10^{18} bytes = 1 bn gigabytes). This represents average annual growth of no less than 39% between 2005 and 2017. Incidentally, for Germany alone it is expected that the IP data volume will come to 34,000 petabytes p.a. in 2017 (average growth from 2012 to 2017: +20% p.a.).⁸

The capacity bottlenecks are already starting to have a visibly negative impact on companies today. A survey conducted by The Cologne Institute for Economic Research found that 54% of all companies already complain today that the

Shortage of modern infrastructure

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Broadband availability in DE, % of households



As of mid-2013

Source: TÜV Rheinland

⁶ See Heng, Stefan (2014). Industry 4.0: Upgrading of Germany's industrial capabilities on the horizon. Deutsche Bank Research.

⁷ According to "Nielsen's Law", the speed of a user's internet connection rises by 50% p.a. on average.

⁸ See Cisco Visual Networking Index (2013).

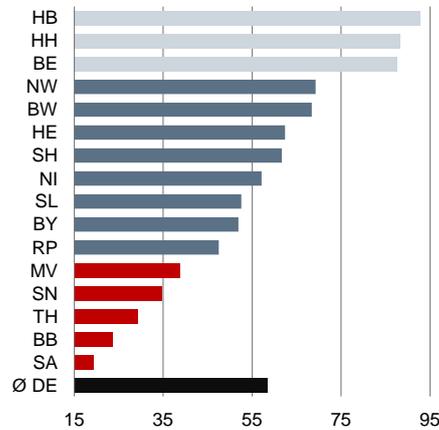


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Broadband coverage in Länder blocs

7

Households with access to at least 50 Mbit/s broadband capacity, %



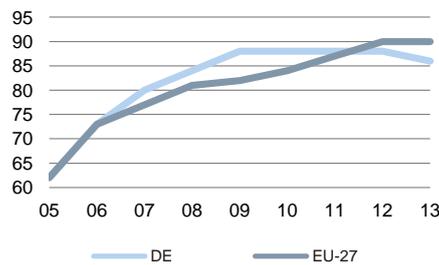
As of mid-2013

Source: TÜV Rheinland

German companies fall below EU average

8

Use of broadband, % of companies

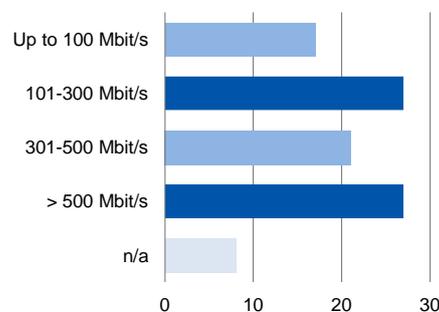


Source: Eurostat

Two peaks for expected demand

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Q.: "How much bandwidth will you require in 5 to 10 years' time?"* (%)



*Representatives of business, public sector and academia

Source: IT Planning Council

inadequate network capacity places constraints on their day-to-day business.⁹ Similarly, TNS-Infratest reports that 84% of the companies it surveyed said they would require minimum bandwidth of 100 Mbit/s within ten years.¹⁰ So this means that the politically targeted rollout will not fully satisfy the foreseeable demand even if it reaches that level in the first place.¹¹

Strong regional disparities spark concern

It is particularly worrying that over time German companies have been falling behind internationally in broadband use. Moreover, German companies occupy only a midtable ranking in the EU-27 in the use of broadband speeds of over 30 Mbit/s.

In this context, there are substantial disparities in supply coverage both between the heavily-populated urban areas and the rural regions as well as between eastern and western Germany. In the urban regions where competition reigns, close to 80% of households now have access to bandwidth of at least 50 Mbit/s, while in rural regions merely 14%, i.e. less than 20% of the urban level.¹²

Furthermore, in the west German federal states bandwidth of at least 50 Mbit/s is available to 39% of households on average. By contrast, the average in the east German federal states (excluding Berlin) is only 29%. Note that the investment prerequisites in the eastern federal states are much worse than in the western federal states, a fact due especially to the lower population density.¹³ It is to be feared that this disparity could even grow in the foreseeable future.

Demand differs very considerably in the regions

The necessity of providing better infrastructure in the underserved rural and eastern regions is often called into question, one reason being the lack of demand for broadband. In particular, there are many potential users in underserved areas who appear to have come to terms with the given infrastructure. Some households seem to find it quite difficult to realise the benefit of having broadband speeds of over 16 Mbit/s given the range of services currently available. This is why only a surprisingly small number of households have switched yet after being offered faster internet. Dialog Consult estimates that in 2013 merely 1% of households in Germany expressed interest in broadband of over 50 Mbit/s.¹⁴ And fast broadband is still not very widespread even among German companies. In this context, a mere 8% use bandwidth with a speed of 100 Mbit/s or more.¹⁵

In fact, it is found in practice that many of the high-performance networks in the rural areas are too often being utilised far less than assumed in the economic feasibility analysis. Experience shows that too few of the potential customers actually upgrade to the faster broadband network and pay an economically

⁹ See Institut der deutschen Wirtschaft Köln (2014). Infrastruktur zwischen Standortvorteil und Investitionsbedarf.

¹⁰ See IT Planning Council (2013). Digitales Deutschland 2020.

¹¹ See Neumann, Karl-Heinz (2014). TK-Investitionen. Investitionsprojektionen und Erreichung der Ziele der Breitbandstrategie. WIK-Consult.

¹² See TÜV Rheinland (2013). Bericht zum Breitbandatlas.

¹³ We refer to the Broadband Investment Index of German management consulting firm MICUS which shows how good the rollout conditions are in the respective region. The higher the value (product of inhabitants per sq. km and number of main distribution frames (MDFs) per sq. km), the higher the expected profitability of the infrastructure investment in this region. For German counties, for example, the MICUS Broadband Investment Index varies as a proxy for the expected profitability of infrastructure investment between 0.43 (Mecklenburg-Strelitz) and 773 (city of Munich).

¹⁴ See Dialog Consult and VATM (2013). 15. TK-Marktanalyse Deutschland 2013.

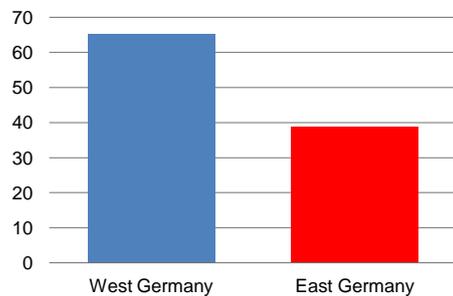
¹⁵ See Federal Statistical Office (2013). Unternehmen und Arbeitsstätten.



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West Germany leads both in terms of modern connections ... 10

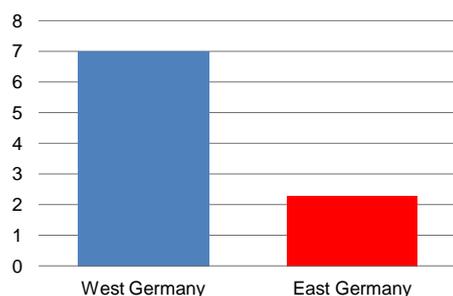
Households with broadband connection > 50 Mbit/s, DE, 2013, %



Source: TÜV Rheinland

... and investment prerequisites 11

Broadband Investment Index, DE, 2013

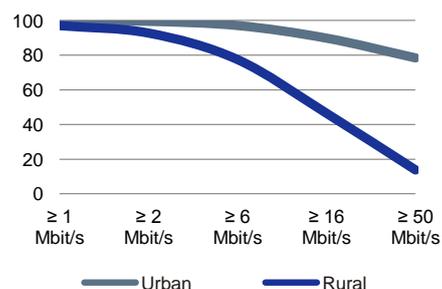


*The higher the value (product of inhabitants per sq. km and number of main distribution frames (MDFs) per sq. km), the higher the expected profitability of the infrastructure investment.

Source: Broadband Investment Index

Increase in bandwidth correlates with gap between urban and rural areas 12

Broadband availability in DE, % of households



As of mid-2013

Source: TÜV Rheinland

appropriate higher price for its use. So network expansion is not automatically a commercial success by any means. Customers are showing less and less interest in the bandwidth itself, but taking more interest in the services available with the technology. This suggests that for the rollout projects to become profitable in the first place it is necessary to launch a regional marketing drive that convinces an adequate number of potential customers in a sufficiently large, homogeneous area (e.g. a county) of the benefits of switching by offering them attractive package deals (combining fixed-line and mobile telephony, internet, video and hardware). Moreover, if local governments with their access to the public at large, enhanced municipal utilities as modern multi-utility service providers and municipal housing companies also lend their support, the prospects of such projects being a success are all the better.

In practice, a variety of rollout models are to be found, with these going back not only to the market solution but also to specific local features. These range from proprietary expansion (government rolls out the network itself as the owner) and the various types of capital-sharing models (government directly cooperates with a private-sector company on the rollout) right through to the profit gap model (government compensates the private-sector investor for the expected profitability gap in the actually unprofitable areas by means of subsidies). The profit gap model appears to be particularly conducive to achieving a desired end in many situations because it seeks an equilibrium between competition and expansion targets on the one hand and the budget targets of the public sector (the debt brake, for example) on the other via comparatively small yet time-limited interventions in market activity.

Investment volume and support for the rollout

Substantial efforts need to continue in order to push ahead with the broadband rollout. TÜV Rheinland, for instance, calculates that even in the most favourable variant a minimum of EUR 20 bn would have to be invested on top of the money needed for routine maintenance in order to offer all German households bandwidth of at least 50 Mbit/s on the basis of the already existing technology. If, by contrast, the rollout were to be based on future-proof fibre-optic technology, it is likely in fact that instead of EUR 20 bn over and above the maintenance outlays some EUR 85-94 bn would be required. One factor in particular that drives up the necessary investment costs is the still very minor penetration of this technology in rural regions.¹⁶

EU worried about competition-distorting impact of public subsidisation 13

Article 107 (1) of the Treaty on the Functioning of the European Union (TFEU):

"Save as otherwise provided in the Treaties, any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market."

Exceptions:

- Small aid amounts and guarantees (as defined by the de minimis Regulation)
- Services of general economic interest
- Compatibility with internal market pursuant to Article 107 (3c) of the TFEU
- Federal framework scheme on duct support

Sources: European Commission, Breitband.NRW

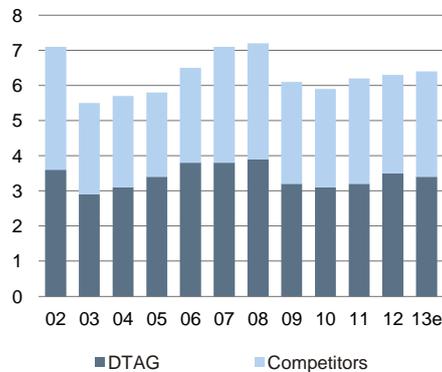
¹⁶ See TÜV Rheinland (2013). Szenarien und Kosten für eine kosteneffiziente flächendeckende Versorgung der bislang noch nicht mindestens mit 50 Mbit/s versorgten Regionen.



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DTAG holds lion's share by a whisker 14

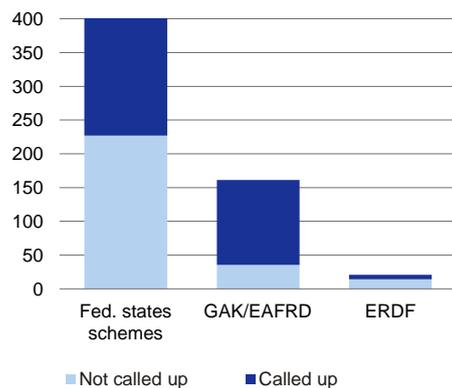
Investment in telecommunications plant and equipment, EUR bn



Sources: BNetzA, Dialog Consult

Merely half the available funds are called up in the first place 15

Public funding available and called up in DE, EUR m



GAK: Gemeinschaftsaufgabe Verbesserung der Agrarstruktur und des Küstenschutzes (contractual agreement for the improvement of agricultural structure, living conditions in rural areas and coastal protection); EAFRD: European Agricultural Fund for Rural Development;

Source: Goldmedia

Rollout requires support with sound judgement

It is foreseeable that the rural rollout will often only succeed with relatively strong government support. Accordingly, Germany's municipalities, federal states and federal government as well as the EU launched a number of support schemes quite a while ago to foster the broadband rollout. These are referred to as the GAK (contractual agreement for the improvement of agricultural structure, living conditions in rural areas and coastal protection), the EAFRD (European Agricultural Fund for Rural Development) and the ERDF (European Regional Development Fund). The financially flourishing federal states in particular have already set up support schemes. However, because of the differences in their policy approaches, financial resources and specific geographical circumstances, their efforts concentrate on very differing aspects. For example, Bavaria (12.6 m inhabitants, 70,600 sq. km in area), which mainly focuses on direct financial aid, has earmarked EUR 1.5 bn in state subsidies to reach the broadband targets. By contrast, Hesse (6 m inhabitants, 21,100 sq. km in area), which has so far increasingly counted on state guarantees, has put up close to EUR 500 m to reach the targets. Furthermore, the EU's "Connecting Europe Facility" (CEF) will add EUR 1 bn for strategic infrastructure investment during the period from 2014 through to 2020. When granting subsidies the policymakers emphasise the efficiency imperative. This means that when selecting the projects that are worth being subsidised it is necessary to consider the benefits to society in all areas.

The political institutions at the various levels (also of the EU) are called upon in the event of any government subsidies to ensure that neither the prospect of potential subsidies nor the granting of funds itself may lead to undesired competitive distortions. It follows that subsidies should be used only when it is apparent that a private-sector solution is unlikely to emerge in a certain region but the infrastructure rollout itself is desired politically.¹⁷

Rich variety of flagship projects in the regions 16

Rüsselsheim: Stadtwerke Rüsselsheim, the municipal utilities authority of Rüsselsheim, plan to make the fibre-optic network accessible everywhere within the town limits by 2020. The related investment is estimated to total EUR 40 m. Of this total, EUR 30 m will be covered by a state guarantee deemed "no aid". In this project, the municipal utilities participate at all three levels of value-added: building and operation of the infrastructure as well as marketing of the telecommunications services over the network. It is intended that the fibre-optic network in Rüsselsheim be operated on an open-access basis with other service providers also obtaining access to fibre-optics as a transmission medium. For the rollout, Stadtwerke Rüsselsheim is teaming up with gewobau, a municipal housing services provider.

Odenwald county: The Odenwald-Regionalgesellschaft mbH (Oreg) is rolling out broadband infrastructure via Brenergo GmbH, a wholly-owned Oreg subsidiary, with Odenwald county as the chief shareholder. HSE Medianet acts as network operator. The investment volume for the 320 km of network to be set up is roughly EUR 20 m. This is being funded with loans from the regional banks and backed up by state guarantees. The project is to give rise to an end-to-end system of conduits which in areas already covered by fibre-optics will be laid parallel to the existing cables. The target is to enable 97% of all potential users in the county's 15 towns and municipalities, i.e. 44,000 households and 3,000 companies, to benefit from broadband access at transmission rates of at least 50 Mbit/s. The risk of network capacity being underutilised is borne by Brenergo.

Marburg-Biedenkopf county: The county and Deutsche Telekom AG have contracted to roll out an area-wide broadband network by mid-2015. Companies and inhabitants in the county's 22 towns and municipalities will be able to obtain internet access at transmission speeds of at least 25 Mbit/s. While the county's broadband company handles the construction of the network, Deutsche Telekom AG is responsible for its technology and operation. The investment volume runs to EUR 10 m. The project is geared to the profit gap model. This means that the profitability gap expected to loom between investment costs and revenues will be plugged by government grants.

¹⁷ See BMWi (2012). Möglichkeiten der Breitbandförderung.

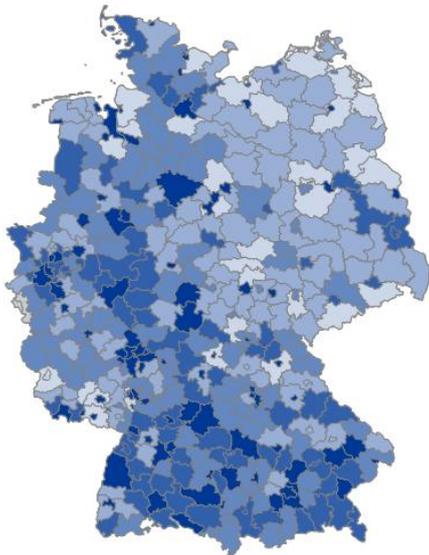


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Wide variety of options for cooperation between the private and public sector

Similarities in economic output patterns ... 17

Gross domestic product per capita by county*



*The darker the colour, the greater the economic output
Source: Deutsche Bank Research

Apart from direct financial promotion there are also other variants of government support. These range from the preparation of infrastructure information and the granting of government guarantees right through to the distribution of project risks across the diverse forms of public-private partnership (PPP).¹⁸ PPP projects involve the different levels of public administration (i.e. federal government, federal states and municipalities) entering project-based partnerships with private-sector companies, fundamentally. The idea of these partnership-based infrastructure projects is that the required resources (e.g. expertise, capital) are brought into a joint venture.

The terms and conditions of such partnerships come in all shapes and sizes as regards planning, construction, funding, maintenance, operation, project risk, ownership structures and revenues. This is because every project starts in a framework of extremely diverse local circumstances (e.g. topography, infrastructure prerequisites). Rollout projects in the counties of Odenwald, Marburg-Biedenkopf, Main-Kinzig and Hersfeld-Rotenburg and in the town of Rüsselsheim give an indication of the potential range.

Although these PPP business models play a decidedly minor role in broadband rollout practice, they nonetheless provide the options necessary for government intervention which can be applied on a case-by-case basis as required – albeit at best with a time component limiting the duration of the action. Of course, the cooperation between the public-sector units at the local level (e.g. municipality or county) and the private sector should be structured at least to the extent that the respective rollout ideas do not interfere with or indeed hinder one another – which unfortunately occurs repeatedly in practice today.

... and broadband availability 18

Broadband availability of at least 50 Mbit/s



The brighter the colour, the higher the degree of coverage
Sources: TÜV Rheinland, BMVI

Conclusion: Network expansion required to shore up potential for competition

Innovative applications not only for corporates but also for households doing business in the areas of Industry 4.0, cloud computing, the internet of things, telemedicine and social media provide but a mere indication of the thirst for capacity which the coming years will bring. However, to drive the expansion of the infrastructure at a sufficient pace it will soon be necessary to overcome certain technical, regulatory and economic obstacles. Responding to the urgency of the matter for business and society, a number of political bodies at the different administrative levels have been occupied with the promotion of the broadband rollout for some time. However, the conclusions they have drawn and the recommendations they have made all too often appear to be inconsistent with one another, which has resulted time and again in delays. This makes one stop and think, since the performance capacity of communications infrastructure is crucial for the performance and development trend of an economy.

Already in the cheapest variant, since it is mainly copper-based, the investment requirements for the broadband rollout in Germany total some EUR 20 bn. However, many members of the business community already say this is not enough. They call for the rollout to be based on future-proof fibre-optic technology. In this case, the necessary investment would run to no less than EUR 90 bn. In other words, huge investment is required.

¹⁸ See Heng, Stefan et al. (2009). Finanzierung – wichtiger Bestandteil eines erfolgreichen Breitbandausbaus. In: BMWI. Fourth National IT Summit.



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Situation differs radically between urban and rural areas

Under the current political and regulatory guidelines the specific cost structure for broadband projects results in the competitive market for the rollout being focused mainly on the heavily populated regions. The reason for this is that in these areas the expected return relative to connection costs is more appealing to the investor. Correspondingly, the urban agglomerations are already seeing the emergence (more or less rapidly) of advanced communications networks – without any government subsidies being disbursed or universal service obligation for broadband being imposed.¹⁹ By contrast, under the current political and regulatory guidelines the broadband rollout in rural areas will not, on the basis of sound business calculations alone, make any decisive progress in the foreseeable future.

Policy must be consistent and reliable

Fundamentally, the scope for businesses to be able to plan long-term infrastructure investments hinges directly on the reliability of political targets. In this context it is pivotal that the political powers that be in the various administrative units (from the municipalities through to the EU) consistently coordinate their positions on critical issues such as price differentiation by region and quality of service²⁰. For example, the option of price differentiation, as permitted by the US regulator FCC, might lead – on the basis of market-oriented calculations – to infrastructure investments not even being made in rural regions in the first place. The numerous political decision-makers of the various administrative units are thus called upon to develop – in concert with the infrastructure providers, financiers and users – the type of investment, funding and capital-sharing models which will enable the profitable rollout of broadband infrastructure on an extensive basis.²¹

Outlook: Government must intensify its efforts across the country if promises regarding high-performance broadband are to come true

Still several obstacles on the way to the target

In conclusion, it remains to be said that policymakers have already taken steps in the right direction. In this context, we refer to examples such as the newly established "Network Alliance Digital Germany" with the plans it announced for a roadmap, the amendments to the Municipal Code which grant the government authorities more latitude for suitable intervention measures (also for the broadband rollout in particular), as well as the extension of the open access obligation proposed to be included in the amendment to the Telecommunications Act (to date this only applies to the DTAG network). However, these steps will have to be followed by further bold steps towards improved broadband availability. For instance, efforts should be made to boost the support volume²² and the efficiency of support schemes, to avoid competition-blocking situations between the local government units and the private sector and to improve the cooperation options for the building and use of the networks (also whole-buy in particular).

A key issue here is that in view of the specific local features of every project (e.g. in terms of topography, existing infrastructure, political and budgetary room for manoeuvre) there is no such thing as a standard blueprint for the broadband rollout in Germany as a whole; this has been made abundantly clear by the

¹⁹ The universal service obligation for broadband describes a legal entitlement to broadband access for everyone that is based on what are referred to as services of general interest.

²⁰ Quality of service (QoS) refers to different aspects of transmission service (e.g. latency, variation in latency (jitter) and data loss rate).

²¹ See Heng, Stefan (2011). Net neutrality: Innovation and differentiation are not polar opposites. Deutsche Bank Research.

²² One no doubt tongue-in-cheek proposal for financing the increased government expenditures has been put forward by Professor Torsten Gerpott of the Department of Technology and Operations Management at the University of Duisburg-Essen: he suggested in a German newspaper that the federal government sell its shares in Deutsche Telekom AG (see Gerpott, Torsten J. (July 10, 2014). Wer bezahlt das Internet? Frankfurter Rundschau).



Progress needs broadband: Private investment requires more government stimuli

flagship projects in the regions. This means that, starting with a realistic economic feasibility analysis, efforts should be taken to work out the best rollout model in terms of technology (where is fixed-line required, where are alternative but less powerful technologies such as mobile or satellite sufficient?), type of funding and time horizon, respectively. In this event it is clear that the rollout can only be an economic success if complemented with the modern services that are a good fit for the network technology (ranging from the ongoing automation of value-added and building technology through to cloud computing and high-quality videostreaming, social networks and gaming). This is all the more true as the customers are attaching less and less importance to the technology itself but, understandably, more and more importance to the services made possible by the technology.

Government involvement always hinges on efficiency imperative

While the rollout is progressing in the heavily populated regions there is usually no viable business model for projects in rural areas without government subsidies. Under the current political and regulatory guidelines the specific cost structure for broadband projects will not, on sound business calculations, result in the rollout making any decisive progress in rural areas in the foreseeable future, especially in many parts of Mecklenburg-Western Pomerania, Brandenburg and even the Oberpfalz region of Bavaria. So if the government hopes to meet its own rollout targets in the given timeframe it will have to assume a bigger role than it has to date – at least on a national basis – especially in terms of funding. In the market context, it appears that in many situations the profit gap model is particularly conducive to achieving the desired end. This is because it seeks an equilibrium between competition and expansion targets on the one hand and the budget targets of the public sector on the other via comparatively small yet time-limited interventions in market activity. However, even if the government does intensify its rollout efforts, the efficiency imperative of subsidy policy alone will ensure that one simple and harsh reality remains: given limited resources (from budget and specialised staff right through to civil engineering capacities) and microeconomic profitability targets it will not be possible to roll out a top-notch network providing nation-wide coverage in the foreseeable future.

Rollout requires government support with sound judgement

In essence it can be said that more government stimuli will be required in Germany to ensure that the politically desired broadband targets can actually be met. But, furthermore, it also holds for every case of government involvement that a permanent re-monopolisation or indeed large-scale re-nationalisation will foster precisely those inefficiencies that were addressed by the Postal Reform a quarter of a century ago. So the broadband rollout requires government support, but these efforts need to be coordinated and based on sound judgement. After all, blind activism and intervention in competition would in the long term not be of any help to either the telecommunications industry on its own or the economy as a whole.

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