

OUTLOOK ON THE EUROPEAN DSO LANDSCAPE 2020

**THE TRENDS THAT WILL CHANGE
THE NAME OF YOUR GAME**



**BUSINESS
SCHOOL**



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FUTURE OF DISTRIBUTION SYSTEM OPERATORS IN EUROPE'S ENERGY SECTOR

PREFACE

The Vlerick Energy Centre is proud to present the results of our web-based survey on the future of Distribution System Operators (DSOs) in Europe's energy sector.

This research project launches the KPMG Research Chair at Vlerick Business School. The project has also been supported by the European sector organisations CEDEC, EDSO, Eurelectric, and GEODE, whom we thank for rallying support among their members and for challenging us to ensure the relevance of the research.

In conducting the survey, we polled the views of 108 executives from no less than 24 countries on changes they foresee in the industry landscape by 2020. These executives represent up to 70% of European customers¹. We also invited industry experts and thought leaders to give their take on our results – so their views have also been included in the report.

The insights presented in this report encompass changes in the DSO environment, role, ownership and regulatory framework.

Thank you for your interest, and enjoy reading our report!



Koen Tackx
Professor of Management Practice
Vlerick Business School



Leonardo Meeus
Associate Professor & Director Energy Centre
Vlerick Business School

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IN PARTNERSHIP WITH



¹ EDSO (the European Distribution System Operators' Association for Smart Grids) represents up to 70% of European customers. Most of the EDSO members participated in our survey, as well as many non-EDSO members. The web-based survey was conducted during the months of March and April 2015.

CHANGES IN THE DSO ENVIRONMENT

The liberalisation process at the end of the 20th century reformed the energy sector into competitive production and supply activities, and monopolistic transmission and distribution network activities. Distribution System Operators have a regulated mandate to own and operate the electricity distribution network in an area that ranges from a few streets up to the entire territory of a country. This survey includes most of the large, and some of the smaller, companies of the more than 2300 DSOs in Europe. 60% of the participants in the survey serve more than 1 million customers, and 10% of the participants serve fewer than 100,000 customers.

During the past century, large power generators (hydro, nuclear, coal and gas) generated electricity that was brought to consumers via a grid made of high-voltage transmission lines and cables that fed into a medium- and low-voltage distribution network. It was like a waterfall – with electricity flowing in just one direction, from very high to progressively lower voltages.

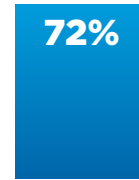
Today, this situation is changing rapidly. In addition to the large power plants, there are a whole range of renewable energy units – like biomass stations, wind mills and photovoltaic panels – and other smaller units, like cogeneration plants, that deliver both heat and electricity. A whole raft of municipalities, households and businesses own these smaller units, which generate electricity for local consumption.

Millions of such smaller units are already generating electricity all over Europe. **98% of our survey respondents** think that the trend towards decentralised generation will continue². These units generate electricity either as a by-product (e.g. in the case of cogeneration) or in function of weather conditions (e.g. in the case of solar and wind generators). As a result, matching supply with demand is becoming increasingly challenging. Whereas supply used to follow demand, demand is now expected to become more flexible to follow supply. **70%** of the respondents predict that demand response will become mainstream by 2020 – which will require a modernisation of the network

infrastructure, including the way we measure and bill consumption. **72%** believe that the EU's 80% rollout target for smart meters can be reached by 2020.

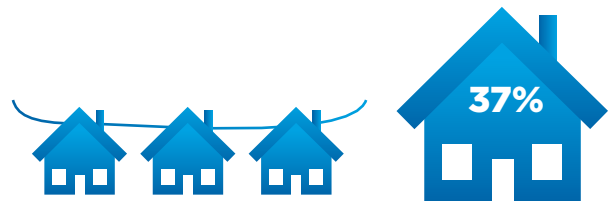


Demand response will become mainstream by 2020



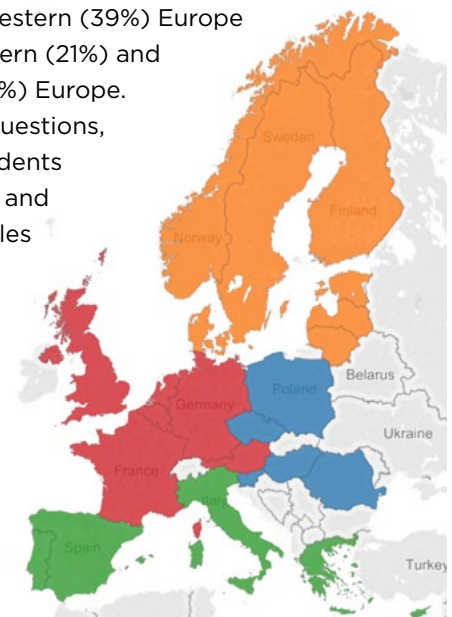
EU's 80% rollout target for smart meters can be reached by 2020

37% believe that it will become common for customers to self-supply their demand and go off-grid by 2020. Indeed, the rapid development of batteries makes this a plausible future for customers that want to be energy-independent.



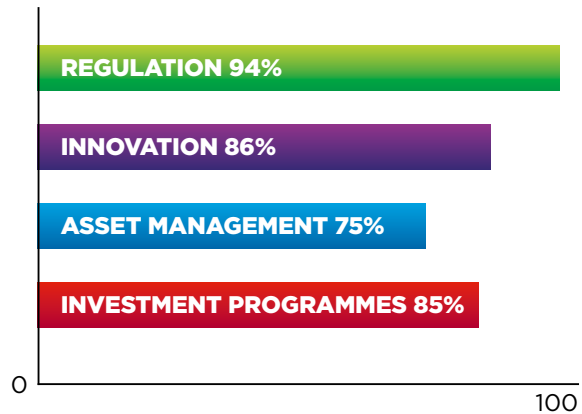
37% Go off-grid by 2020

In this regard, there are more 'believers' in Eastern (46%) and Western (39%) Europe than in Northern (21%) and Southern (23%) Europe. In the open questions, many respondents cite batteries and electric vehicles as important drivers for change in the DSO business.



² Most questions were structured on a 6-point Likert scale, so that respondents had to take a position (remaining neutral was not an option). However, we did include the option to remain anonymous, and 34 of the 108 executives that participated used this option.

Not surprisingly, the respondents expect a fast-moving industry, with important changes in regulation (94%), innovation (86%), asset management (75%) and investment programmes (85%) in the DSO business. Larger operators, and operators that are privately owned, expect more changes in innovation than smaller operators and operators that are (partly) publicly owned.



MY TAKE

**RONNIE BELMANS,
CEO ENERGYVILLE & EXECUTIVE
DIRECTOR GLOBAL SMART GRID
FEDERATION:**

“The challenges stated here are just the beginning of a process of which we see only the tip of the iceberg. What will more electrification bring (EV, heat pumps)? Will local interactions between consumers be enabled (e.g. direct energy exchange between buildings)? Will DSOs be limited to the ‘wiring company’ business?”

**JEAN-MICHEL GLACHANT,
DIRECTOR FLORENCE SCHOOL
OF REGULATION:**

“This excellent survey confirms that EU power systems are entering a fundamental revolution driven by distributed generation, prosumers, storage and interactive demand. Our DSOs aren’t ostriches: they do see the storm. The question is: How will they act & react?”

**GERT DE BLOCK,
SECRETARY GENERAL CEDEC:**

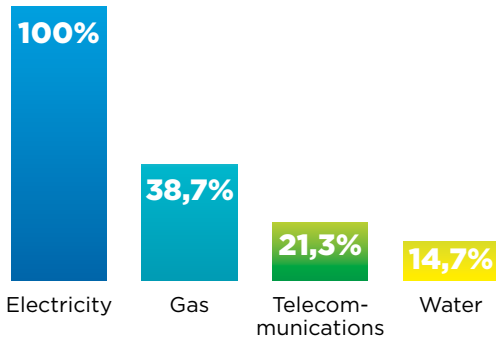
“These real-life experiences and visions of leading DSO experts reflect that the energy transition and the multi-utility model are here to stay, and that these experts are well aware of the strategy changes needed to optimise this (r)evolution. However, a long-term vision, unambiguous energy and climate policy objectives at the EU and national levels, and the necessary transformation of the regulatory framework are key to creating a stimulating environment that fosters effective and innovative investments by the DSO as market facilitator.”

**GIAN CARLO SCARSI,
HEAD OF THE DSO UNIT
AT EURELECTRIC:**

“This report on the future role of DSOs, as perceived by the very industry players at the core of the evolution process, provides powerful – and sometimes surprising – insights into what the perceived future challenges are. This is not gazing into the crystal ball, but a reasoned overview of what industry experts see (or perhaps don’t see) coming. A great and useful piece of information for industry, policy makers, and regulatory authorities.”

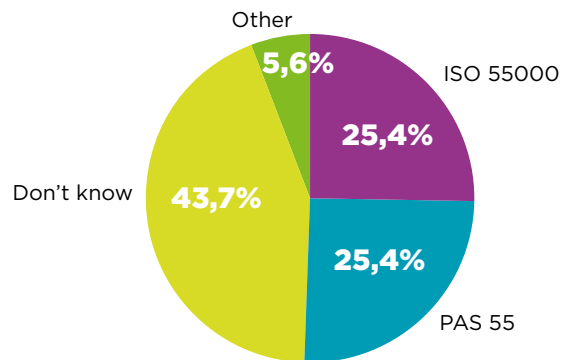
CHANGES IN THE DSO ROLE

DSOs are by definition asset-centric companies that manage electricity distribution infrastructure assets, such as electrical lines and cables, substations, and transformers. **45%** of the operators also manage other networks: most commonly natural gas networks (39%), but also telecommunication networks (21%), even more than water networks (15%).



Such multi-utility operators are much more common in Western Europe (79%). In our survey, **65%** of the respondents believe that multi-utility is the future of the DSO business. This is more controversial among operators that currently focus on electricity than among operators that are already multi-utility – among the latter, a very high 91% expect a multi-utility future.

77% of the respondents expect that the investment level in the electricity DSO business will increase substantially by 2020. This explains why **94%** see asset management as a core activity for generating value from their asset portfolio. Key asset management tools include asset databases (91%), total cost of ownership (88%), and asset management standards (82%). PAS 55 and ISO 55000 are the two most used standards; however, **44%** of the respondents are not aware of the standard used by their company.



72% of the survey respondents think that DSOs will become more service-focused than asset-oriented. They expect that their role will include: functioning as a data hub to facilitate market access (89%), actively controlling distributed generation (82%), and being responsible for demand response and balancing at the local level (82%).



MY TAKE

**DANIEL PAIRON,
GLOBAL LEAD KPMG
ASSET MANAGEMENT:**

“The results of the survey demonstrate that top management expects asset management to create even more value than ever before it’s high on their agenda.”

**ANA AGUADO,
SECRETARY GENERAL
EDSO**

“The energy transformation is a fact – and when it kicks in and starts having a positive impact on citizens’ lives, we’ll look back and wonder why we didn’t do it sooner. Especially for DSOs, it will be their responsibility to make this new era secure and successful.”

**REINHARD BREHMER,
CHAIRMAN GEODE:**

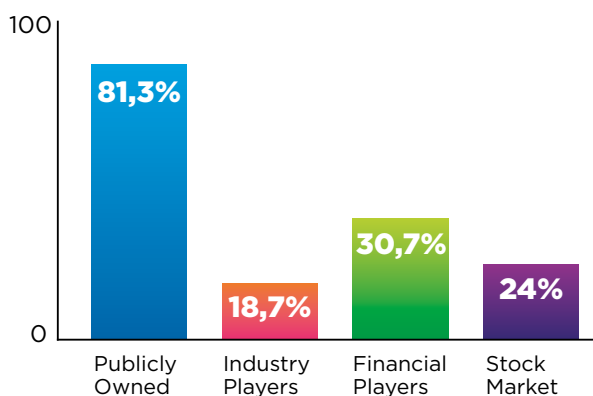
“This survey clearly shows that the DSOs understand – and will fulfil – their new roles like data hub, market facilitation, local load balancing, demand response, etc. – but only if there is a sustainable regulatory framework that gives them the necessary investment possibilities.”

**WALTER VAN DEN BOSSCHE,
CEO EANDIS & PARTNER VLERICK ENERGY
CENTRE:**

“I think that DSOs will have a pivotal role in future interactive and flexible energy markets. If they are serious about putting consumers at the heart of the energy market, they not only have to deliver the technical solutions to allow the individual balance between demand and supply, they must also play an important role as a neutral market facilitator. Informing and empowering ‘smart users’ will be key to unlocking the possibilities of flexibility.”

CHANGES IN THE DSO OWNERSHIP

Public authorities at the local, regional, and national levels have often strategically invested in the assets of DSOs. Most of the respondents in the survey (81%) indeed work for a DSO that has a public owner, and almost half of the DSOs (49%) are fully publicly owned. **31%** of the respondents have financial players as shareholders, 19% have other industry players as shareholders, and 24% are listed on the stock market. Note that 'other industry players' are usually DSOs that are part of a holding that is also active in energy production and supply activities.



76% of the survey respondents expect that investment needs will require substantial amounts of new equity by 2020. Some DSOs are expecting new equity to come from financial players (66%) and international players (60%). 69% also believe that more collaboration among DSOs is required. Collaboration can take different forms – e.g. alliances, joint-ventures, or M&A – and 54% think that M&A is the most beneficial way to collaborate. This can be partly explained by the fact that 72% see local public service as a barrier to M&A. Finally, note that multi-utility operators are more positive towards M&A than operators offering electricity only (65% versus 44%).



MY TAKE

**JEAN-ARNOLD VINOIS,
HONORARY DIRECTOR
EUROPEAN COMMISSION
AND ADVISOR NOTRE
EUROPE:**

“I have the impression that DSOs expect their future to depend on the interest shown by other players, such as financial players and international players, while there is a clear expectation of more cooperation, rationalisation and concentration to come.”

**RONNIE BELMANS, CEO ENERGYVILLE
& EXECUTIVE DIRECTOR GLOBAL
SMART GRID FEDERATION:**

“Go for an IPO. Having a value in the open is very important to reduce the regulatory risk, as the regulator then has a clear validation of the RAB, which leads to less discussion about remuneration.”

RUDI OSS, PRESIDENT CEDEC:

“The responses show that DSOs actively reflect on their future and how to make the necessary investments in future-proof assets. There are many options for cooperation, which can already be seen today with DSOs increasingly collaborating in certain fields like ICT. The challenge is to find the right balance between efficiency and staying close to the customer and the local authorities, both of whom will play an important role in the energy transition.”

CHANGES IN THE DSO REGULATORY FRAMEWORK

Regulation is the domain in which the highest percentage of respondents (94%) expects important changes – but only a mere **50%** think that their regulator has a good understanding of the challenges the industry is facing.

MY TAKE

GARRETT BLANEY, CO-CHAIR OF CEER WORKING GROUP ON THE FUTURE ROLE OF DSOS:

“This report is relevant to the recent European Energy Regulators (CEER) conclusions document on the future role of DSOs. It is interesting to see that not all DSOs think that regulators understand their challenges. As regulators, we aim to encourage vibrant and innovative DSOs, while ensuring that customers and market participants get a good DSO service at least cost.”

VALERIA TERMINI, CEER VICE PRESIDENT AND CO-CHAIR OF CEER WORKING GROUP ON THE FUTURE ROLE OF DSOS:

“This research is further confirmation that, consistent with the vision expressed by European Energy Regulators in the Bridge to 2025, a perfect storm of innovation is indeed approaching for DSOs. On a national level as well, a growing number of NRAs are fully invested in promoting this process. Output-based incentive regulation for an efficient deployment of smart distribution systems is the new frontier for DSO regulation, one that aims to truly promote the DSOs’ new role. This concept reaches beyond smart grids and highlights the role of network users alongside the DSOs. In turn, large-scale regulatory change to accompany the DSO transformation feeds on the exchange of best practices, acting as benchmarks for NRAs and further incentivising innovation for DSOs.”

RUUD BERNDSEN, DIRECTOR REGULATION ALLIANDER & PARTNER OF THE VLERICK ENERGY CENTRE:

“I think that this survey reflects the challenge for DSOs to propose – in close co-operation with stakeholders – a number of necessary changes in the existing framework of European and national rules, standards and agreements. Changes that facilitate innovation, yet guarantee a system in which everyone has access to reliable, affordable and sustainable energy under equal conditions.”

JEAN-ARNOLD VINOIS, HONORARY DIRECTOR EUROPEAN COMMISSION AND ADVISOR NOTRE EUROPE:

“This report confirms the traditional divide and misunderstanding between the regulator and the regulated bodies. There is an urgent need to close this gap and facilitate the transition by enhancing the dialogue between them. That may also be a role for Vlerick Business School.”

CONCLUSION

The 108 DSO executives we surveyed expect a lot of changes in their business. By 2020, the business environment will change significantly, as well as the role of DSOs in this environment. The majority of DSOs expect that this will have an impact on their ownership structures. Moreover, although much regulatory change is expected, only half of the respondents think that their regulatory authority has a good understanding of the challenges they face.

The Vlerick Energy Centre will continue to work on these challenges in the Research Chair partnership with KPMG and the other partners of the Centre.

Jorn Deneve, Partner KPMG: “The results of this collaboration can lead to a better understanding of the operational models and the regulatory challenges in the DSO landscape in Europe. Our final aim is to provide companies in the energy sector with an even better service thanks to these valuable insights.”

FINAL WORD FROM THE VLERICK ENERGY CENTRE CHAIRMAN, DANIEL DOBZENI:

“Decentralised generation and demand-side contribution to balancing with (in the future) storage will change the power sector like never before. To Keep the Lights On in this period of turbulence and change, the industry actors must quickly acquire new knowledge and experience. Through dedicated education, networking and research, our Centre strives to actively support our customers in achieving their ambitious objectives.”

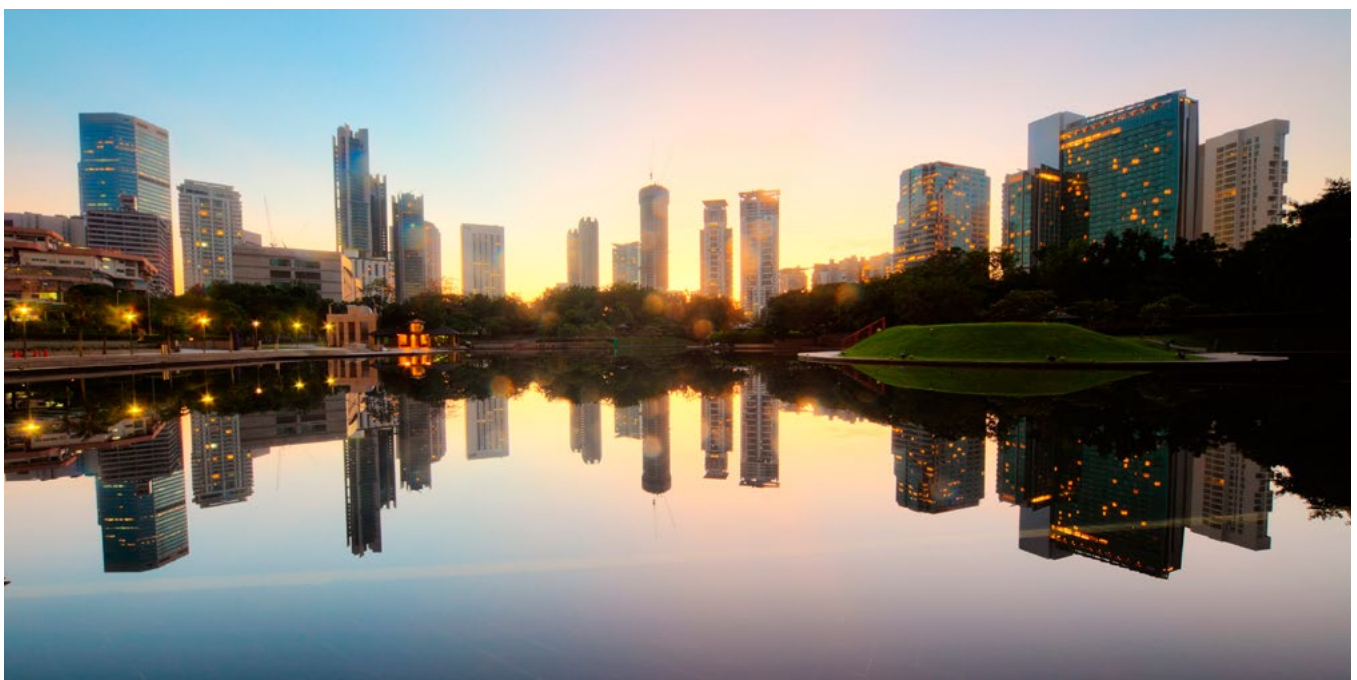
VLERICK ENERGY CENTRE

The **Vlerick Energy Centre** is a platform for discussing the future of energy, focusing on the roles of Distribution System Operators (DSOs) & Transmission System Operators (TSOs). Our flagship international executive education programme – The Future Grid Managers Programme – is a joint initiative with the Florence School of Regulation, which tackles the management challenges and opportunities specific to DSOs and TSOs in the energy industry in Europe.

For more information on the study or to explore the Vlerick Energy Centre activities, please contact:



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APPENDIX SURVEY QUESTIONS & RESULTS TABLE

IN YOUR OPINION, HOW IMPORTANT WILL CHANGES IN THE FOLLOWING DOMAINS BE FOR YOUR INDUSTRY IN THE NEXT FIVE YEARS?

	Very important	Important	Neutral	Not important	Not at all important
Regulation	68,5%	25,0%	3,7%	1,9%	0,9%
Innovation	42,1%	43,9%	13,1%	0,9%	0,0%
Asset management	20,6%	54,2%	23,4%	1,9%	0,0%
Investment programs	24,3%	60,7%	13,1%	1,9%	0,0%

PLEASE INDICATE TO WHAT EXTENT YOU AGREE OR DISAGREE WITH THE FOLLOWING STATEMENTS

	Strongly Agree	Agree	Rather Agree	Rather Disagree	Disagree	Strongly Disagree
The trend towards decentralized generation will continue in the next five years	52,4%	39,8%	5,8%	1,0%	1,0%	0,0%
Demand response will become mainstream in the next five years	10,8%	28,4%	30,4%	25,5%	4,9%	0,0%
Customers that self-organize their energy supply and go off-grid will be common within the next five years	0,0%	17,6%	19,6%	29,4%	22,5%	10,8%
The regulatory authorities have a good understanding of the challenges my industry is facing	2,0%	12,7%	35,3%	29,4%	15,7%	4,9%

PLEASE INDICATE TO WHAT EXTENT YOU AGREE OR DISAGREE WITH THE FOLLOWING STATEMENTS

	Strongly Agree	Agree	Rather Agree	Rather Disagree	Disagree	Strongly Disagree
The future role of DSOs will include functioning as a data hub to facilitate market access	52,0%	26,5%	10,2%	4,1%	5,1%	2,0%
Active control of distributed generation and demand response will become part of the role of DSOs in the next five years	31,7%	32,7%	17,8%	10,9%	6,9%	0,0%
Balancing responsibility at the local level will become part of the role of DSOs in the next five years	17,3%	35,7%	28,6%	11,2%	5,1%	2,0%
The 80% target for the roll-out of smart meters by 2020 will be implemented and achieved in most countries	10,4%	35,4%	26,0%	20,8%	5,2%	2,1%
The future of the DSO business will include multi-utility networks (combining functions in distribution of gas, electricity, water, heat,...)	14,1%	32,3%	18,2%	17,2%	14,1%	4,0%

PLEASE INDICATE TO WHAT EXTENT YOU AGREE OR DISAGREE WITH THE FOLLOWING STATEMENTS WITH RESPECT TO ASSET MANAGEMENT.

	Strongly Agree	Agree	Rather Agree	Rather Disagree	Disagree	Strongly Disagree
Given managerial and regulatory evolution, asset management as a strategic and tactical discipline will become a core activity to generate optimal value out of the use of your asset portfolio in the coming five years	33,0%	39,4%	21,3%	2,1%	2,1%	2,1%
Total cost of ownership will become one of the top three criteria for maintenance and investment decisions within the next five years	25,6%	43,3%	18,9%	8,9%	2,2%	1,1%
Future investment decisions will be based on the information delivered by a database containing all relevant data gathered about assets (operational, maintenance, monitoring, performance as well as financial).	31,5%	41,3%	18,5%	8,7%	0,0%	0,0%
An Asset Management standard will be supportive to create awareness on the topic and to support the journey towards a more asset management driven DSO	20,2%	38,2%	23,6%	12,4%	4,5%	1,1%
DSOs will be more service oriented than asset focused in the future	25,3%	24,2%	22,1%	21,1%	7,4%	0,0%

PLEASE INDICATE TO WHAT EXTENT YOU AGREE OR DISAGREE WITH THE FOLLOWING STATEMENTS

	Strongly Agree	Agree	Rather Agree	Rather Disagree	Disagree	Strongly Disagree
In the next five years the investment level in the industry will increase substantially	16,3%	23,9%	35,9%	19,6%	4,3%	0,0%
The investment needs will require important amounts of new equity in the coming five years	8,8%	36,3%	31,9%	19,8%	3,3%	0,0%
Equity investments in the industry will increasingly come from international players	9,0%	25,8%	24,7%	29,2%	10,1%	1,1%
Equity investments in the industry will increasingly come from financial investors (like pension funds, infrastructure funds or similar)	10,0%	22,2%	33,3%	22,2%	10,0%	2,2%
The investment needs in the industry will require more collaboration (such as alliances, joint ventures, mergers and acquisitions) between DSOs in the next five years	12,1%	30,8%	26,4%	24,2%	5,5%	1,1%
Mergers and acquisitions are the best answer to generate benefits from collaboration	3,4%	23,0%	27,6%	28,7%	14,9%	2,3%
Local public service can be an important factor not to do M&A	12,2%	34,1%	25,6%	18,3%	8,5%	1,2%



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