



European
University
Institute

FSR **ENERGY**

Florence School of Regulation

ROBERT
SCHUMAN
CENTRE FOR
ADVANCED
STUDIES

ENLARGING INCENTIVE REGULATION TO IMPROVE PUBLIC AWARENESS AND TRUST IN ELECTRICITY TRANSMISSION INFRASTRUCTURE DEVELOPMENT

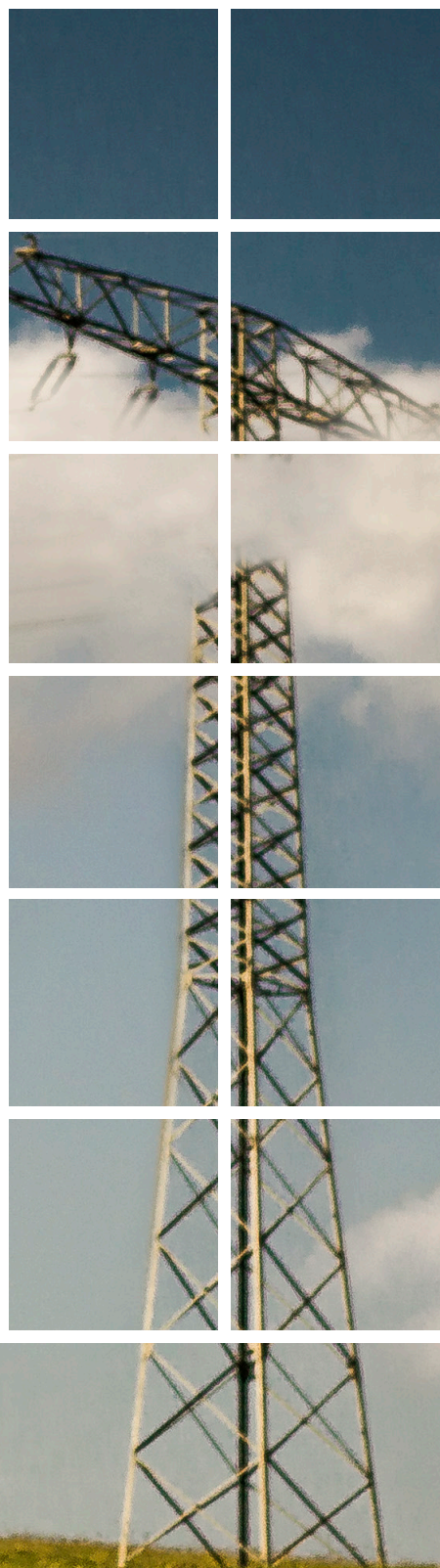
RESEARCH
REPORT

MAY 2018

AUTHORS

PRADYUMNA BHAGWAT
NICO KEYAERTS
LEONARDO MEEUS

THIS STUDY HAS BEEN COMMISSIONED BY ENTSO-E



© European University Institute, 2018

This text may be downloaded only for personal research purposes. Any additional reproduction for other purposes, whether in hard copies or electronically, requires the consent of the Florence School of Regulation. If cited or quoted, reference should be made to the full name of the author(s), editor(s), the title, the year and the publisher. Views expressed in this publication reflect the opinion of individual authors and not those of the European University Institute.

QM-02-18-724-EN-N

doi: 10.2870/681129

ISBN: 978-92-9084-637-6

© Pradyumna Bhagwat, Leonardo Meeus, Nico Keyaerts, 2018

European University Institute

Badia Fiesolana

I – 50014 San Domenico di Fiesole (FI) Italy

fsr.eui.eu

eui.eu

cadmus.eui.eu

This study has been commissioned by ENTSO-E

©Cover photo credit: David Kutschke on Visual Hunt / CC BY-ND

Abstract

The need for substantial investment in the European electricity transmission grid to meet the ambitions of market integration and decarbonisation is well known. However, the development of these projects has a significant impact on the public at large. As the public becomes increasingly active in expressing its concerns and opposition, stakeholder engagement activities to raise awareness and build trust in infrastructure development are becoming more and more important, as well as challenging. Suboptimal stakeholder engagement by project developers leads to distortion in the network planning and development process. Therefore, it is crucial that project promoters are encouraged to implement innovative and effective stakeholder engagement strategies, and to reflect the outcomes of those activities in the design of the projects. This report re-examines and assesses the possibility of enlarging incentive regulation to improve the performance of project promoters in building public awareness and trust in infrastructure development projects. The study is structured into three blocks:

- 1) Taking stock of the obstacles to stakeholder engagement activities and current activities organised by project developers.
- 2) Innovation in the context of the economic regulation of project developers (TSOs).
- 3) Enlarging incentive regulation to, first, include other regulators and, second, to consider economic incentives for other stakeholders involved in project development.

Keywords

Electricity transmission infrastructure, European electricity network regulation, incentive regulation, public acceptance, stakeholder engagement.

Robert Schuman Centre for Advanced Studies

The Robert Schuman Centre for Advanced Studies (RSCAS), created in 1992 and directed by Professor Brigid Laffan, aims to develop inter-disciplinary and comparative research on the major issues facing the process of European integration, European societies and Europe's place in 21st century global politics.

The Centre is home to a large post-doctoral programme and hosts major research programmes, projects and data sets, in addition to a range of working groups and ad hoc initiatives. The research agenda is organised around a set of core themes and is continuously evolving, reflecting the changing agenda of European integration, the expanding membership of the European Union, developments in Europe's neighbourhood and the wider world.

Details of the research of the Centre can be found on:

www.eui.eu/RSCAS/Research

Research publications take the form of Working Papers, Policy Papers, and e-books. Most of these are also available on the RSCAS website:

www.eui.eu/RSCAS/Publications

The EUI and the RSCAS are not responsible for the opinions expressed by the author(s).

The Florence School of Regulation

The Florence School of Regulation (FSR) was founded in 2004 as a partnership between the Council of the European Energy Regulators (CEER) and the European University Institute (EUI), and it works closely with the European Commission. The Florence School of Regulation, dealing with the main network industries, has developed a strong core of general regulatory topics and concepts as well as inter-sectoral discussion of regulatory practices and policies.

For more information: fsr.eui.eu

Contents

Acknowledgments	1
Executive summary.....	2
1 Introduction.....	6
2 Taking stock of the current state of affairs	8
2.1 Obstacles to engaging in activities to raise public awareness and trust	8
2.1.1 Economic Incentives	10
2.1.2 TSO procedures, organisation and culture	11
2.1.3 Legitimacy	12
2.2 TSO activities to raise public awareness and trust.....	13
2.2.1 Corporate level and project-level stakeholder engagement activities.....	14
2.2.2 Compensation activities.....	17
2.3 Quantifying the impact of stakeholder engagement	19
2.3.1 Independent variables for quantifying the impact of stakeholder engagement	20
2.3.2 Dependent variables for quantifying the impact of stakeholder engagement.....	21
2.3.3 Limitations of the quantification approach	25
2.3.4 Hypothetical example for understanding the utility of quantification.....	25
3 Revisiting incentive regulation	28
3.1 Revisiting incentive regulation frameworks	28
3.1.1 Cost plus, price/revenue cap and output-based regulation	28
3.1.2 Selecting a regulatory instrument to regulate specific tasks.....	29
3.1.3 Alignment of regulatory tools with the resources of the regulator	30
3.2 Revisiting incentive regulation in the context of raising public awareness and trust.....	32
3.2.1 Revisiting cost-plus regulation for stakeholder engagement	32
3.2.2 Revisiting price-cap regulation for stakeholder engagement.....	32
3.2.3 Revisiting output regulation for stakeholder engagement.....	34
3.2.4 Summary of Pros and Cons of the regulatory approaches	37
4 Enlarging incentive regulation.....	38
4.1 Enlarging incentive regulation to include other regulators.....	38
4.1.1 Including other government agencies and authorities.....	39
4.1.2 Including the public and organised stakeholder groups.....	41
4.1.3 Including independent experts	42
4.2 Enlarging incentive regulation to consider incentives for other stakeholders.....	43
4.2.1 Innovative incentives for the public	43
4.2.2 Default option on non-agreement	44

5	Conclusions and recommendations for future work.	46
6	Bibliography.....	48
7	Annex I: ENTSO-E SDC Survey.....	52
8	Annex II: Internal workshop for ENTSO-E members 18 October 2017	59
9	Annex III: External workshop 14 November 2017	66

Acknowledgments

The authors would like to thank:

- The European Commission, ENTSO-E and RGI for supporting this study.
- All the NRAs, TSOs, NGOs, and other (public) authorities that participated in the workshops that informed this study in October and November 2017
- Experts at the RGI annual conference 2018, ACER Electricity Infrastructure Task Force and the Copenhagen Energy Infrastructure forum for helping further enhance our study.
- All those who provided their expertise, insights and support during the development of this study.

Executive summary

It is well known that there is a need for substantial investment in the European electricity transmission grid to meet the ambitions of market integration and decarbonisation. However, the development of these projects has a significant impact on the public at large. As the public becomes increasingly active in expressing its concerns and opposition, stakeholder engagement activities to raise awareness and build trust in infrastructure development are becoming more and more important, as well as challenging.

Suboptimal stakeholder engagement by project developers leads to a short-term distortion of infrastructure planning and development; namely, delays of the actual project implementation. Although there is limited (publicly available) quantitative data, we may cautiously presume that there are financial costs attached to these delays. In addition to the short-term distortion, suboptimal stakeholder engagement practices may also lead to long-term distortions in the network planning process.

Considering the resulting distortions, it is crucial that project promoters are encouraged to implement innovative and effective stakeholder engagement strategies, and to reflect the outcomes of those activities in the design of the projects

This report re-examines and assesses the possibility of enlarging incentive regulation to improve the performance of project promoters in building public awareness and trust in infrastructure development projects.

The methods of analysis used in this research include taking stock of literature from academia and industry on current practices for stakeholder engagement. This is complemented with expert roundtable discussions on current project developers (TSOs and third-party infrastructure investors) practices, their strengths and limitations, and innovative regulatory practices. The results of the study are structured as three blocks:

- Taking stock of the obstacles to engaging in activities for raising public awareness and trust and current activities organised by project developers.
- Innovation in the context of the economic regulation of project developers (TSOs).
- Enlarging incentive regulation to, first, include other regulators such as other government agencies and authorities, public and organised stakeholder groups and independent experts, and, second, to consider economic incentives for other stakeholders involved in project development.

From the insights gained from expert workshops and interviews, it is observed that obstacles for effective stakeholder engagement continue to exist. There are three main obstacles:

- There is limited economic incentives to perform the activities
- TSOs' internal procedures, organisation and culture are not fully adapted to the stakeholder context.
- There is an issue with the legitimacy of the TSO to engage in some activities.

Additionally, TSO resources allocated to public awareness and trust activities are limited. According to the survey conducted as part of this research on European electricity TSOs, budgets for this range between 1% and 2% of the general expense budget or 'a few million euros' and teams were staffed with between 3-4 to 40 employees. The limited availability of resources can also be a limiting factor for determining the stakeholder engagement activities that are undertaken.

Project promoters are increasingly engaging in innovative stakeholder activities. These activities are usually a mix of three levels:

- Corporate level stakeholder engagement
- Project-level stakeholder engagement
- Compensation of stakeholders.¹

However, there is a fundamental gap in terms of empirical analysis or assessment regarding the impact of such activities. The availability of this information would substantiate the debate and help both TSOs and NRAs considering economic incentives for stakeholder engagement activities. This information should be made publicly available. Possible variables (See Table I) that could be used for conducting such an econometric analysis are conceptually discussed. Furthermore, the limitations of such an approach are also presented. Further research on quantifying the impact of stakeholder engagement is recommended. It is also recognised that an econometric analysis will take time to complete; in the meantime, however, NRAs can take steps based on the other two recommendations in this study.

Table I: Summary of variables that can be used for the econometric analysis

Independent variable	Company-specific dependent variable	Societal dependent variable
Budget and Staff Media reports	Stock price Brand valuation Regulatory asset base	Congestion management Delays Project cost

Given that TSOs see financial risk as an obstacle to engaging in more activities to raise public awareness and trust, it is recommended to review the economic incentive frameworks proposed by the national regulatory authorities and to consider their suitability for dealing with the tasks and costs. The three incentive regulations tools studied in this report are:

- Price or revenue cap regulation
- Cost-plus regulation
- Output-based regulation

Each incentive regulation tool has its pros and cons (See Table II). Furthermore, an interdependence exists between the level of sophistication of the regulatory tool and the resource and skills required to design and implement it. NRAs have already started to use different combinations of these tools. However, it is too early to identify the best approach for stakeholder activities. Some of the more innovative incentive regulation approaches appear to be very promising such as in Great Britain. Their implementation requires significant regulatory sophistication in terms of NRA resources; therefore, it is important to ensure the alignment of regulatory tools utilised and resources available for the NRA to administer these tools.

¹ Note that compensation can be of a financial nature, involving payments to affected stakeholders, or there can be compensation in kind by adjusting the project to create fewer externalities (typically at the expense of a higher project construction cost).

Table II: Summary of pros and cons of the regulatory approaches from a stakeholder engagement perspective

PROs		CONs
Cost-Plus	Simple to implement	<ul style="list-style-type: none"> - Information asymmetry between TSO and NRA not addressed - No incentive for cost control or innovation - NRA bias towards choosing the least controversial stakeholder engagement level
Price/Revenue cap	<ul style="list-style-type: none"> - Relatively Simple to implement - Incentivises cost efficiency 	<ul style="list-style-type: none"> - No explicit incentive for enabling stakeholder engagement activities - Company bias towards choosing the least controversial stakeholder engagement level
Output (BE/IT)	- Incentivises on-time commissioning	<ul style="list-style-type: none"> - No explicit incentive for enabling stakeholder engagement activities - The challenge of establishing a baseline for measuring the delays may cause observability issues. - The possibility of controllability issue as delays may be due to several factors - Company bias towards choosing the least controversial stakeholder engagement level
Output (GB)	<ul style="list-style-type: none"> - The explicit incentive for stakeholder engagement - (neutral) Expert evaluation encourages innovation by reducing the level of controversy bias. 	- Evaluation is dependent on the quality of external experts

It may be beneficial to enlarge incentive regulation in the context of infrastructure development to include other actors with expertise and skills that are not traditionally present within NRAs (or project promoters), as regulators. The inclusion of other government authorities can, for instance, help to address the legitimacy issue of compensation payments by offering a legal framework for such compensations. The public could provide input to NRAs on estimating reasonable costs of stakeholder engagement activities such as bypassing a natural area. Independent experts could assist NRAs with assessing the performance of project promoters in their field of expertise such as stakeholder relations. While these other regulators bring valuable expertise, it is essential that regulatory actions are aligned; otherwise, project development might be obstructed rather than facilitated. Incentive regulation may be expanded to consider incentives for other stakeholders. Incentives that are directly applicable to stakeholders may help them understand the importance of infrastructure projects for society. Further research on developing and testing innovative approaches towards enlarging

incentive regulation for stakeholder engagement is recommended. The key conclusions and recommendations for future work from this study are summarised below.

Key conclusions and recommendations for future work.

Conclusions:

Conclusion 1: Stakeholder opposition is a pressing problem. Obstacles to effective stakeholder engagement and to the implementation of such measures continue to exist.

Conclusion 2: Project developers are involved in several stakeholder engagement activities; however, such stakeholder engagement activities need to be mainstreamed and move beyond the pilot project stage.

Conclusion 3: A fundamental gap exists in terms of empirical work or assessment regarding the impact of stakeholder engagement activities.

Conclusion 4: The incentive regulatory tools that were assessed each have pros and cons. Furthermore, there is dependence between the level of sophistication of the regulatory tool and the resources and skills required to design and implement it.

Conclusion 5: NRAs have already started to use different combinations of these tools. However, it is too early to identify which approach will work best for stakeholder engagement activities.

Conclusion 6: Incentive regulation can be enlarged to include other regulators and to consider incentives for other stakeholders.

Recommendations for future work:

Recommendation 1: Econometric analysis should be conducted to support the quantification of costs and benefits of stakeholder engagement activities. Furthermore, this information should be made publicly available by the project promoters to enable analyses by either NRAs or third parties.

Recommendation 2: Share and implement best practices among NRAs on innovative ways to incentivise TSOs to engage in state of the art stakeholder engagement approaches.

Recommendation 3: NRAs should experiment with enlarging incentive regulation by considering a role for other regulators and by developing ways to incentivise other stakeholders.

1 Introduction

The need for substantial investment in the European electricity transmission grid is well known. The investment is necessary to meet the ambitions of market integration and decarbonisation as reflected in the EU third package on energy liberalisation. The goals are reiterated in the recently proposed package on clean energy for all Europeans.

In the context of public engagement, electricity infrastructure projects have a significant impact on the public at large, which has become increasingly active in expressing concerns and opposition. In recent times, due to easier access to information, technology and education, stakeholders have become more aware, organised and demanding. Therefore, stakeholder engagement activities are becoming increasingly more challenging and important for project promoters to raise public awareness and trust in infrastructure development. It is important to note that about 1/3rd of the 93 Connecting Europe Facilities (CEF) actions for energy infrastructure, up to November 2017, have at least some elements of public acceptance² issues (see Annex III). Moreover, these problems are not limited to TSOs³ but are also faced by private entities such as project promoters.

Suboptimal stakeholder engagement by project developers leads to a short-term distortion of infrastructure planning and development; namely, delays of the actual project implementation. Although there is limited (publicly available) quantitative data on this, we may cautiously presume that there are financial costs attached to these delays (at a minimum the discounting effect on the benefits of the project).

In addition to the short-term distortion, suboptimal stakeholder engagement practices in the context of the network planning process may also lead to long-term distortions. For example, in a bid to secure public support, a project promoter might exclude those options in network planning that have a greater risk of public opposition. Thus, the issue of enhancing stakeholder engagement is urgent.

Considering the consequential emergence of these short-term and long-term distortions, it is vital to ensure that project promoters are encouraged to implement innovative and effective stakeholder engagement strategies and reflect the outcomes of those activities in the design of the projects. From a regulatory perspective, the use of 'incentive regulation' is standard practice for the effective and efficient implementation of different TSO functions, including stakeholder engagement. This research reviews and assesses the possibility of enlarging incentive regulation to improve public awareness and trust in infrastructure development and consequently provides recommendations on the same.

In the first part of this report, a review of the current state of affairs with regard to stakeholder engagement for raising public awareness and trust in transmission infrastructure development is conducted. Three key obstacles to effective stakeholder engagement are identified and assessed. Furthermore, the study takes stock of on-going stakeholder activities by project developers. A framework that classifies these activities into three categories is used. These categories are corporate level stakeholder engagement, project-level stakeholder engagement and compensations. Finally, a conceptual insight into avenues for quantifying the impact of stakeholder engagement activities on infrastructure project development is provided.

In the second part of the report, incentive regulation to raise public awareness and trust in the context of infrastructure development is re-examine. Three regulatory tools are assessed: price or revenue

² Cohen et al. (2014) define social acceptance as '*as a set of outcomes and aspects that leave locals at least as well off as they were before the project.*' (p5)

³ Note that the insights provided in this report may also be applicable to project developers other than TSOs.

cap regulation, cost-plus regulation and output-based regulation. Furthermore, avenues for including costs of raising public awareness and trust in these regulatory instruments are explored. Finally, expansion of incentive regulation frameworks to encompass other relevant stakeholders such as other government agencies and authorities, the public at large and independent experts is analysed. The possibility of enlarging incentive regulation frameworks by designing and implementing innovative incentive mechanisms for stakeholders by the TSOs is also explored.

The analytical approach is twofold, representing the stages of the research. The first stage consisted of conducting desktop research to identify, analyse and categorise innovative practices in stakeholder engagement that are currently being applied by transmission system operators in Europe. One of the key resources (amongst others) used during this part of the research was the Renewable Grid Initiative's good practices database (RGI Database).

The second stage consisted of a series of interactions with stakeholders and experts. These (formal and informal) interactions were used to shape, to debate and to verify the insights of the desktop research and provided a crucial avenue for further understanding the topic as well as feedback on the approach applied in this research.

The first interaction was in the form of a survey of the TSOs conducted in collaboration with the ENTSO-E System Development Committee. The survey aimed to gain insights and identify examples of the obstacles faced by TSOs while engaging stakeholders. The survey received responses from 11 TSOs out of about 40 TSO members of ENTSO-E.

The second interaction was an internal workshop for ENTSO-E members held on 18 October 2017 in Brussels. The workshop was attended by representatives from RGI, FSR and ENTSO-E members from Belgium, France, Germany Slovenia and Spain (See Annex II). The third interaction was an external workshop held on 14 November 2017 in Brussels. The workshop was attended by representatives from transmission system operators (TSOs), non-governmental organisation (NGOs), ACER, national regulatory authorities (NRAs) and academia (see Annex II for more details).

Additionally, NRAs and other stakeholders were invited to comment on the preliminary findings, and the research was also presented at the RGI's 'Grids meet Renewables' conference held in Brussels, Feb 20, 2018. The preliminary research ideas were also presented in an early stage at the BNETZA science dialogue (October 2017).

The remainder of the report is structured as follows. Chapter 2, takes stock of the ongoing efforts of project developers to raise public awareness and trust and looks at obstacles to engaging in those activities. Chapter 3 and Chapter 4 focus on revisiting and enlarging incentive regulation, respectively. The concluding chapter summarises the key findings of this research and puts forward recommendations for further research.

2 Taking stock of the current state of affairs

This chapter takes stock of the current state of affairs with regard to raising public awareness and trust. This section is based on insights gained from expert workshops, interviews, case-studies from the RGI Database and desktop research. In Section 2.1, three key obstacles to effective stakeholder engagement are identified and assessed. In Section 2.2, activities that are currently being conducted by the TSOs to raise public awareness and trust are reviewed. In Section 2.3 a conceptual understanding of possible approaches towards quantifying the impact of stakeholder engagement on infrastructure project development is provided.

2.1 Obstacles to engaging in activities to raise public awareness and trust

According to the ACER monitoring report (ACER, 2017) on the progress of projects of common interest about half of the electricity PCIs are behind their initial scheduling due to voluntary rescheduling, e.g. in response to changing market conditions or delays. The project developers of delayed electricity projects frequently⁴ cite permitting issues as one of the reasons for the delay. As stakeholder engagement is an important aspect of the permitting process, this can be considered as one of the key determining factors for the delays in transmission infrastructure projects. The persisting delays due to public support issues suggest that the initiatives do not have the desired impacts.

Additionally, TSO resources for public awareness and trust activities are fairly small. According to a survey of European electricity TSOs, budgets range to a few percentage points of general budgets and teams staffed with one to a few dozen persons (see Box 1 and Annex I). The limited resources may be one factor, among others, that is limiting the impact of the stakeholder engagement activities.

In this chapter, three of the main obstacles faced by the TSOs are discussed. The first obstacle is the framework offering economic incentives to engage in the activities. The second obstacle is the internal TSO procedures, organisation and culture, which may not be adjusted to the complexity of the task at hand. The third main obstacle is the legitimacy of the activities. It should also be noted that in the functioning of a TSO, these obstacles are not mutually exclusive from one another.

The first obstacle is not the focus of this report and therefore is not discussed in Chapters 4 and 5. Nevertheless, several good practices are presented to offer inspiration to TSOs. For the latter two obstacles, the study explores in more depth how enlarging incentive regulation frameworks through innovative approaches that go beyond just revisiting the current incentive regulation can lower or remove the obstacles.

Box 1: TSO resources committed to activities to raise public awareness and trust

The quantity of resources allocated by the TSOs towards stakeholder engagement can provide an idea of the level and quality of activities that the TSOs undertake.

As part of this study, a survey (Annex I) of European electricity TSOs was conducted to provide insights and identify examples of key obstacles faced by these organisations in engaging stakeholders. In total, about 40 ENTSO-E members across Europe were approached during the period of surveying. The survey received responses from 11 ENTSO-E members. The respondents were predominantly northwest European TSOs along with a few central and eastern European

⁴ In 2016, about two thirds of the electricity project promoters who were delayed in that year cited permitting as one of the reasons for the delay, while in 2015 about half of the electricity project promoters who were delayed in that year cited permitting.

TSOs. The survey collected information on the resources committed to stakeholder engagement activities both regarding budgets and staffing.

The survey revealed that resources invested in stakeholder activities are limited, with significant differences between TSOs. The staffing for these activities differed from 3-4 up to 40 employees. The respondents indicated that budgets for this represent around 1%-2% of the general expense budget (or described as 'a few million euro' by some respondent was allocated for stakeholder engagement activities. The breakdowns of the two key results from the survey are illustrated in Figure 1(a-b), respectively.

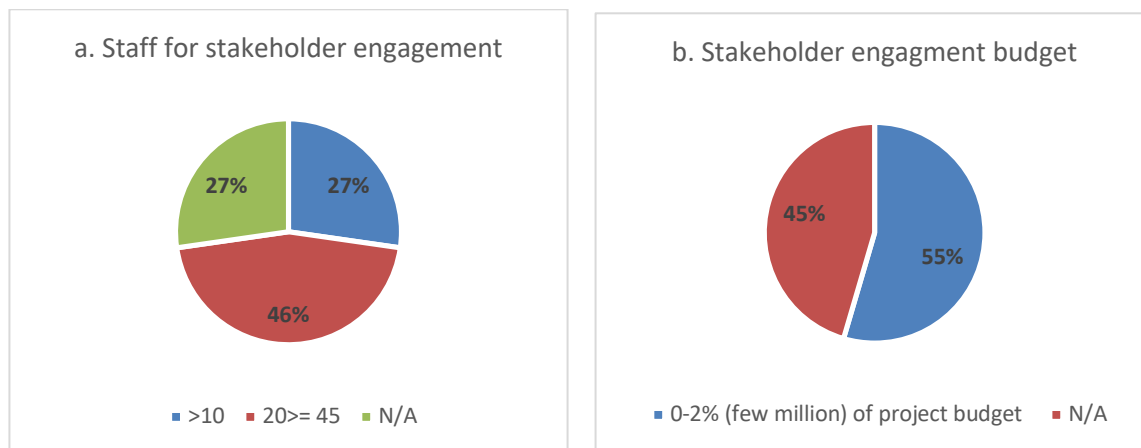


Figure 1(a-b): Key results from the FSR-ENTSOE Survey

There are two caveats to bear in mind when considering these survey results: 1) Survey respondents often indicated that the numbers are best guesses as resources are dispersed in the TSO organisations; 2) budgets for compensation activities are treated separately.

Another observation comes from the 2017 CMO/Deloitte survey on marketing budgets for different industries in the United States. The survey found that the US energy sector (note that the reported numbers in that survey include utilities and also oil and gas) spends on average 4% of its overall budget on marketing, which is a form of stakeholder engagement; much less than e.g. the 13% spent by mining companies, which is also a B2B industry (See Figure 2).

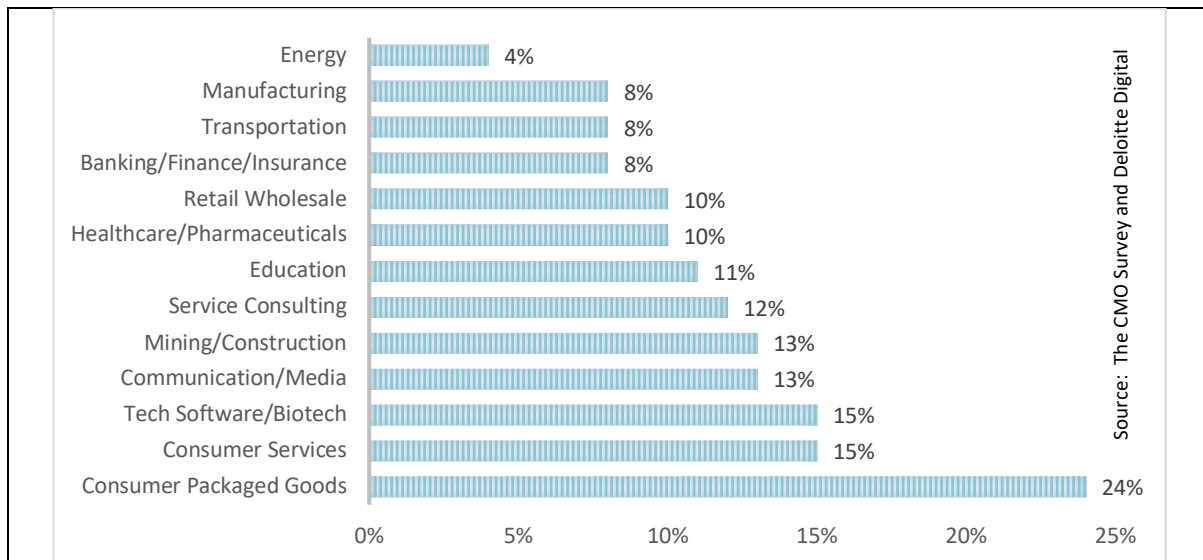


Figure 2: Marketing budget by industries in the United States (Source: Moorman (2017))

Notwithstanding the differences between Europe and the US and the specificities that come with being a regulated monopoly, both surveys indicate that the resources invested in public awareness and trust building by the energy industry are relatively low. However, it should be noted that there could be regional differences in the relative importance of the obstacles. The TSO landscape is diverse with large and small TSOs having to take on similarly large projects like PCIs.

2.1.1 Economic Incentives

Any activity undertaken by a firm entails costs. Furthermore, the resources allocated to any activity would eventually depend upon the total resources that are at the disposal of the firm (e.g. the total budget for a project). Furthermore, the level of engagement of a firm in an activity is dependent upon the benefit that it would expect to derive from this activity.

The same holds true for the stakeholder engagement activities that a TSO carries out. The level of those activities is likely to depend on the incentive that the TSO receives to conduct those activities. These incentives would range from tangible financial benefits arising from the timely commissioning of projects to more intangible gains such as a better public image for the firm.

The costs of stakeholder activities and the benefits they bring are largely unknown. They might not be monitored by TSOs, or the data is at least not publicly available. It would be useful for TSOs to start measuring or estimating with the use of suitable proxies the costs and benefits to conduct a cost-benefit analysis (CBA). This could shed light on the performance of stakeholder activities and may indicate whether those activities add value or increase costs for the energy consumers.

Without such information, both the TSO and NRA operate blindly and may adopt a prudent, conservative attitude towards possible costly innovations with uncertain returns. Today, TSOs experiment with innovative approaches. However, within the current economic framework, moving from pilots to practice can be complicated. For example, a TSO may treat the additional cost of these activities that do not constitute acquiring or building an asset as an operating expense (OPEX)⁵.

⁵ Berman and Knight (2013) define operating expenses as 'the costs required to keep the business going from day to day.'

However, this additional opex may not be accepted by the regulator and thus may leave the TSO with an additional cost. Such a situation may create a disincentive for innovation. We discuss economic incentives in greater detail in Chapter 3

2.1.2 TSO procedures, organisation and culture

Traditionally, the TSOs' tasks were focused on achieving technical excellence in terms of their operations. The interaction was limited to the transmission system operator and organisations such as the NRAs. Therefore, TSOs have not been very consumer-centric nor have they had any incentive to change their procedures, organisation or culture. However, now firms have to deal with the stakeholders to ensure public acceptance of their projects. These new activities require an equally diverse set of competencies and skills.

Furthermore, due to better access to information and education, the level of public awareness is ever-rising. Consumers and other stakeholders want to be involved in the decision-making process. In some cases, change in the political regime has also forced the TSO to perform activities out of their comfort zone that require innovation. Even the approaches used for certain activities such as spatial planning and environmental planning that have been used traditionally require innovation. Such innovation may also require a separate or greater set of skills. These tasks can then be either outsourced to external experts or developed within the organisation.

The use of outdated practices in the field can be considered as the first major obstacle that impedes the effective implementation of stakeholder engagement activities. This situation could arise when the TSO lacks the right background and skills to engage effectively with the public. Thus, to keep up with this change, it is necessary for the TSO to review and update the company's procedures, organisation and culture as required. Some TSOs are already engaged in a transformational change of their processes, organisation and culture. Some of these examples are elaborated in Box 2.

Box 2: Examples of evolving TSO procedures, organisation and culture.

In 2016, the Belgian TSO Elia unveiled its Infrastructure 3.0 plan. This plan aimed to *'help Elia become a benchmark for the management of infrastructure projects and implement a society-based approach to secure the general public's acceptance – or even support – of our investments.'* (ELIA, 2016). This consisted of a restructuring of ELIA's organisational structure. With regard to stakeholder engagement, a separate Public Acceptance Division has been in existence within ELIA's management structure since 2016, headed by the 'Chief Public Acceptance Officer'.

According to the RGI database, the French and Dutch TSOs, RTE and Tennet, have also changed their internal organisation. At RTE (in 2012) the reorganisation of its national departments led to the creation of a new department called 'Département Concertation et Environnement'. Tennet (in 2013) restructured its department for onshore projects, and two 'citizen officers' were appointed to expand resources for stakeholder dialogue.

As part of their corporate social responsibility strategy, the Irish TSO EirGrid works with the National Adult Literacy Agency (NALA) to make their documents easier for non-experts to understand. EirGrid follows 'plain English' guidelines while developing written contents. According to EirGrid's 2016 Annual Report, in 2016, two key public documents created by EirGrid were 'plain English certified' (EirGrid, 2016). An example of this approach of EirGrid is the information leaflet 'Have Your Say' that was launched in November 2016. This leaflet explains in 'plain English' how EirGrid carries out the development of the transmission grid and how the public and other stakeholders

can influence this process. The document won the Plain English Award (overall) in 2017 (NALA, 2017).

The case of the Italian TSO Terna provides several examples of steps taken to change the TSO's procedures, organisation and culture. Since 2001, when it received certification for UNI EN ISO 9001: 2000, the TSO has obtained several certifications for complying its management systems with the requirements of the International Organization Standardization (ISO) standards (Terna, 2017).

The main certifications achieved by Terna are for Quality (ISO9001:2015), Environment (ISO14001:2004), Occupational Safety (BS OHSAS18001:2007), Anti-Bribery (ISO37001), Energy (ISO50001:2011), Information Security Management System (ISO/IEC 27001:2005), Multisite Working Laboratory Accreditation (ISO/IEC 17025:2005) and the Accreditation of Multisite Calibration Centre (Terna, 2018).

Another example of cultural change is that Terna has also been ranked in several sustainability indices, as discussed in greater detail in Chapter 5 of this report. Terna also adjusted its hiring practices, employing professionals with environmental backgrounds in different departments that are related to grid expansion.

2.1.3 Legitimacy

A third obstacle that may affect the efforts and outcomes of the activities to raise public awareness and trust is the legitimacy of project promoters and the activities they engage in.

Adger et al. (2005) define legitimacy as 'the extent to which decisions are acceptable to participants and non-participants that are affected by those decisions.' It involves having credibility or authority in the domain of the task; in other words, TSOs need the mandate to engage in their activities, and this mandate can be a legal mandate or a kind of moral right that is accepted by the public.

TSOs have a clear legal mandate for carrying out the monopoly activities such as operating the grid and ensuring the security of supply. In many cases, the TSOs also have a social responsibility, which can be part of a legal or moral mandate, to work towards the betterment of the society at large. For instance, a TSO may be tasked with supporting the energy transition to a decarbonised energy system in its role as infrastructure operator, but also beyond that role. TSOs, like any other organisation, may also call for a moral mandate to engage in activities that are just and fair for society.

However, the recent experiences of TSOs with public opposition against new infrastructure developments and the resulting delays, discussed during the two workshops (see Annex II and III), suggest that the public does not fully accept the mandate of the TSO. The lack of legitimacy may partly be attributed to TSOs being unknown by the public. Indeed, since the unbundling of the energy sector, TSOs have a role with few direct interactions with the public and many citizens may not even know the name and the function of their national TSO(s).

To gain legitimacy, the TSO should explain to the stakeholders its role in the supply of energy, connecting electricity producing units with energy consumption centres. In the second order, TSOs should explain their role in the energy transition and how the activities of the TSO contribute to that change. In particular, project developers should inform the people about why infrastructure projects are important contributing elements of the energy transition. Stakeholders who are fully aware of the importance of taking action (such as investing in a new transmission line) may have a more positive attitude towards the TSO, the activity and the related costs such as paying for a community project to compensate strongly affected communities.

In reaching out to the public to gain legitimacy, there is a link with the previous obstacle of the TSOs' internal organisation and culture. Firstly, the transmission function in the energy sector depends largely on business-to-business relationships, whereas in matters of legitimacy, the TSO has to interact with individuals from outside the energy sector. For these individuals understanding the nuances and intricacies regarding the need for transmission infrastructure may not be very clear or easy to understand. Secondly, TSOs acknowledge that they have traditionally been largely reactive in matters of stakeholder engagement, although many TSOs make efforts to become more proactive as illustrated in Chapter 2.

2.2 TSO activities to raise public awareness and trust

Project developers cite public acceptance among the external factors for delays, yet project developers can do and often are making substantial efforts to face these challenges and raise public awareness and trust in their infrastructure development. They, for instance, inform the public about projects, they consult the public, or they even form partnerships with the public. Considering such activities, it can be argued that TSOs and other project developers have some level of control over public acceptance issues.

Stakeholder activities have been catalogued from an industry perspective by the Renewable Grid Initiative (RGI), a collaboration platform for and by TSOs and NGOs (see, e.g. Schneider and Sander, 2012); also from a social sciences (stakeholder theory) or economic sciences perspective by, for instance, the 'stakeholder ladder' by Friedman and Miles (2006), or the distinction between direct project costs and cost of externalities by Tobiasson and Jamasb (2014), respectively. These academic and practitioners' perspectives are integrated into the classification in this study, which is orientated to the economic regulation of the stakeholders involved in infrastructure development.

In this report, which focuses on economic regulation, a categorisation is proposed based on the nature of the activities and related costs. TSOs, like any other business organisation, can gain support for their core business by engaging in three types of activities.

- Activities that create goodwill⁶ in general: corporate level stakeholder engagement
- Activities that create goodwill for specific projects: project-level stakeholder engagement
- Damages for negative externalities (of specific projects): compensation

It should be noted that in practice, TSOs utilise a combination of one or more of the activities mentioned above.

The following section discusses these types of activity, making a distinction between corporate level stakeholder engagement activities and project-level stakeholder engagement activities, on the one hand, and stakeholder compensation activities, on the other hand. Examples of activities, as collected through a survey of European electricity TSOs, the RGI best practice database and other public sources are showcased. Finally, the controversy over the type of activities from a regulatory perspective is discussed.

⁶ Commons (1936) provides the following explanation of goodwill: *'goodwill is the high point of fair competition and reasonable value in the public interest, contrasted with the economics of free competition and maximum net income for private interests, regardless of others and regardless of public interest. Goodwill is, further, the meeting point of pure institutional economics and pure net-income economics. It has two sides. On the net-income side it augments the private net income beyond that of competitors. On the institutional side it is the reasonable ethical relation towards other buyers and sellers, who are also members of the same national economy.'* (p239)

2.2.1 Corporate level and project-level stakeholder engagement activities

Stakeholder engagement activities aim to bring the stakeholder perspective into an organisation's internal business processes. They can concern the improvement of the goodwill of stakeholders towards the whole of the business organisation – this is the corporate level stakeholder engagement. The activities can also concern the improvement of goodwill towards specific endeavours of the organisation such as infrastructure development in the case of TSOs – this is the project-level. Before discussing the differences between these two types of stakeholder engagement activities, the commonalities between all stakeholder engagement activities are discussed.

2.2.1.1 Corporate level stakeholder engagement

Corporate level stakeholder engagement activities are defined here as the interactions with stakeholders that are not related to a specific project investment but are conducted with the public at large. The goal of such engagement is to create goodwill regarding the TSOs as a corporate entity and for all of its business activities. Through building name recognition, a strong reputation and positive image with the public, the TSO expects to reap the rewards, indirectly, by experiencing larger levels of public support in general and during the execution of specific projects.

The most common examples of corporate level stakeholder engagement are corporate social activities, educational campaigns (on energy supply chain), advertisement, and sponsoring. The costs entailed for these kinds of stakeholder engagement can be classified as corporate level costs.

Corporate level stakeholder engagement practice 1: social media presence

In recent years, with the advent of social media, firms can directly and easily reach the public at large via the internet and the public can provide direct feedback on these activities. Several TSOs across Europe are utilising new media channels and social media websites to promote and create awareness regarding their day-to-day activities. Examples of TSOs on the micro-blogging site Twitter are RTE, Tennet, 50Hertz amongst others. Figure 3 illustrates the Twitter presence of the four TSOs. Similarly, TSOs also have a presence on the social media website Facebook. These platforms are monitored and updated by the TSOs at very regular time intervals (if not continuously).



Figure 3: A snapshot of the Twitter handles for four TSOs

Corporate level stakeholder engagement practice 2: education activities

Another example of the corporate level stakeholder interaction initiative is the education programme of 50Hertz in Germany. According to the RGI database, educational events are organised annually at primary schools by 50Hertz in collaboration with the Independent Institute for Environmental Issues.

The goal is to engage school students in learning about the energy transition using information and learning exhibitions. At such events, the students may interact with politicians, industry and other authorities on this topic. This education programme can be seen as a neutral form of stakeholder participation.

Corporate level stakeholder engagement practice 3: socially responsible businesses

Commissioning and utilising NGO reports to monitor the TSOs' social responsibility can be considered as an example of corporate level stakeholder engagement. ELIA, the Belgian TSO, commissioned a report from Aves Natagora / Belgian BirdLife, an NGO working for bird and nature protection, in collaboration with Natuurpunt, INBO and Vogelbescherming Vlaanderen on 'Reducing bird mortality caused by high and very high voltage power lines in Belgium' (Derouaux et al., 2012).

Swissgrid hosted a general meeting with representatives of important Swiss NGOs (Greenpeace, WWF Pro Natura and Swiss Energy Foundation) to discuss grid development. The stated goal of this exercise was that of fostering transparent and open communication. The meeting discussed possibilities for future cooperation and future challenges for Swissgrid as the owner of the transmission network. The RGI database reports that this event was held in 2012.

The Spanish TSO RED Electrica (REE), in collaboration with the Mediterranean Institute for Advanced Studies (MIAS), the University of the Balearic Islands and the Spanish National Research Council (CSIC), has developed an innovative method for the recovery of *Posidonia Oceanica* seagrass meadows – which are vital for the survival of the Mediterranean ecosystem (REE, 2016). It is estimated that 1-5% of annual seagrass global degradation can be attributed to wind farms and submarine cables (RGI database). This restoration project was implemented at the Balearic Islands, and was completed in 2016. A detailed methodological guide will be published by REE to make it possible to replicate this method at other locations. It should be noted that the R&D was initially part of the compensation for the interconnector between Mallorca and Ibiza. However, in time the project expanded into a corporate level activity. The next stage of this project is called the 'subsea forest' and involves the large-scale recovery of *Posidonia* meadows.

To reduce bird mortality (especially of the Saker Falcon populations, an endangered species), the Hungarian TSO MAVIR have installed artificial nests on power pylons. As of 2015, 404 nests have been installed. The programme also organised several awareness events for children as well as adults along with online nest monitoring. The company also began a bird conservation blog in 2014. According to the database, 250 Saker Falcons accounting for 75% of its population in Hungary nest on these pylons. Furthermore, the live online monitoring has a viewership of 1.2 million globally. MAVIR also receives feedback and requests for presentations on its activities three to five times a month.

As part of the LIFE Birds on Electrogrid initiative, the Lithuanian TSO LitGrid is collaborating with the Lithuanian ornithological society to reduce the impact of overhead transmission lines on bird life. The expected results are the following. Installation of 8,600 bird diverters in selected areas covering 108 KMs of transmission line (2014-2018). Installation of 6,000 fishbone devices and 6,000 increased diameter insulators to protect white storks from being caught in a short circuit. Installation of 500 nesting boxes on 110kV polls for the common kestrel bird. For more details see European Commission (2016)

A higher level of controversy over corporate level stakeholder engagement costs

According to the discussion during the workshops (see Annexes II and III), corporate level stakeholder engagement costs raise significantly more controversy than project-level stakeholder costs. The root

of the controversy lies in the debate over whether a natural monopoly such as a TSO with a regulated income stream should be spending money on activities to build name recognition and corporate reputation, which are generally part of the corporate level stakeholder engagement strategy – especially since the benefits of these activities not always immediately quantifiable.

In the expert workshops arguments for both perspectives were offered. On the one hand, it can be argued that such activities do not add any value in terms of increase in benefit. On the other hand, a positive image may be useful for improving public support during the execution of new transmission expansion projects. Furthermore, the regulatory frameworks governing such activities are sometimes unclear. The following hypothetical example was provided during our interaction with an expert. It may be that a TSO is not allowed to spend money on sponsoring a community by paying for the naming rights of the football stadium, but it may be allowed to pay for the construction of a new stadium for the community as part of a compensation package. Considering the ambiguity in regulatory practice, corporate level stakeholder engagement costs are subject to a significant level of controversy.

2.2.1.2 Project-level stakeholder engagement

Project-level stakeholder engagement is defined here as the interactions with stakeholders involved in specific investment projects with the goal of creating goodwill for the project in the short term. In many countries, including the stakeholder perspective in infrastructure development decision-making (such as permitting) is considered so important that project-level activities are made mandatory for the project developer. Examples of such stakeholders are project affected parties such as the neighbours of the project corridor or the mayors of towns in the project corridor, but also stakeholders who have an indirect interest at stake such as environmental groups. Furthermore, the costs entailed in executing such activities can be defined as project-level costs of stakeholder engagement.

Examples of project-level stakeholder engagement activities include local dialogue forums, stakeholder workshops, information campaigns (at an early stage of project development), information stands and fairs, project branding, educational campaigns, public consultation of network planning, and project advisory boards. The best practice examples, as collected by the RGI, show that effective project-level stakeholder engagement requires a combination of these activities.

Project-level stakeholder engagement practice 1: SuedOstLink, 50 Hertz

The SuedOstLink being built by 50Hertz is an illustration of good project-level stakeholder engagement. The German TSO 50Hertz plans to build a 580 KM HVDC connection from Saxony-Anhalt in the north to Bavaria in the south. The 50Hertz website (2018) explicitly states '*SuedOstLink: continuous dialogue improves the planning results*'. The TSO applied three key activity formats to engage with the stakeholders to enable public participation during the planning and approval process.

To provide stakeholders with insight into the planning process as well as to receive direct feedback from experts on this particular project, 50Hertz has held three 'planning forums' since the summer of 2016. The stakeholders consisted of politicians, regional and local administration representatives as well as experts on relevant topics such as the environment and economics. This is an example of neutral/proactive stakeholder involvement.

The second format for interaction involved inviting the public at large (and town representatives) to attend 'Information markets' that were set up in the town halls of relatively large municipalities in the region. The goal of this exercise was to provide an update on the development of the project and at the same time receive feedback for better planning of identified route corridors. 50Hertz has organised ten of these 'information markets' since the autumn of 2017.

The third format called the 'info-tour' was targeted at the same group as the 'information market' and consisted of using an open-air lorry called the 'DialogMobil' to disseminate information during market days or in pedestrian areas. To date, 50Hertz have organised such a program once. done this once.

Project-level stakeholder engagement practice 2:

The Italian TSO Terna assessed the impact of a new overhead line between Calabria and Sicily on the migratory bird populations in the region. Two radars were utilised to collect data on the migratory patterns, numbers and flying height of the birds. Observation points operated by ornithologists were set up on both sides of the strait of Messina. The data was collected over a period of three years and included more than 115,000 migratory bird passages, tracking 70,000 birds in the spring and 45,000 in the autumn. The results of the study concluded that the overhead line did not have any impact on the bird traffic. Furthermore, the study provided valuable insights on general bird migration in the region as well as the specific impact of overhead lines on bird migration. Terna developed this research practice in collaboration with the NGOs: Ornithologica and MEDRAPTORS, and the eco-ethology laboratory at the University of Pavia. More details on Terna's initiatives for reducing the impact of power lines on bird life are available in (Terna, 2017).

In partnership with the Lithuanian Fund of Nature, LitGrid carried out environmental surveillance at the construction site for the LitPol link. This was done in addition to the Environmental impact assessment (EIA) carried out in 2010. Between April – August 2014, monitoring was undertaken for identifying protected species and habitats. A rare early-marsh orchid was identified and relocated. The results from the monitoring process were made available to all stakeholders.

Low level of controversy of project-level stakeholder engagement costs

Project-level stakeholder engagement activities are widely adopted by transmission system operators, and their costs are not controversial in regulatory terms as they are seen as project development costs, consent costs or alike. Some project-level stakeholder activities are even mandatory by law, for instance, the organisation of one or more public consultations as part of the permitting process. Note that NRAs decide mandatory activities at national level.

2.2.2 Compensation activities

The mere engagement of stakeholders to generate public support may not be sufficient in the case that some stakeholders suffer negative externalities of a project. In welfare economics, compensation is a way to mitigate those negative effects (Hicks, 1939). The beneficiaries of a project could share back some of the project's benefits as damages to those affected to make them better off. The outcome of the project and compensation would thus leave everyone better off than a situation without the project.

Compensation can be of a financial nature, involving payments to affected stakeholders, or it could involve compensation in kind by adjusting the project to create fewer externalities (typically at the expense of a higher project construction cost). The most common examples are direct monetary compensation to project affected persons such as landowners and farmers, community monetary compensation such as building of community centres, hospitals and sports facilities, or building sound screens on highways in the vicinity of the overhead transmission line. Non-monetary compensation may consist of changing the project design by undergrounding or modifying the route, use of compact pylon designs, etc.

Many countries have compensation schemes for objectively negatively affected stakeholders such as landowners who suffer a reduction in the value of their land; these countries include e.g. Belgium, UK, France, Slovenia, Spain and Sweden.

Several countries have schemes to compensate by means of funding community projects; these countries include, e.g. France, Germany, Ireland, Italy, Slovenia and Spain. Non-monetary compensations have been provided by TSOs in, e.g., Belgium, Germany, France, Italy

Compensation, three practices: Ireland, Italy and France

Eirgrid, the TSO from the Republic of Ireland provides community-level compensations in specific geographic locations surrounding a new infrastructure, called 'proximity pay'. The compensation is provided in the form of grants from a 'Community Fund' set up by EirGrid. This concept of Community Fund is part of EirGrid's company policy and will be utilised for any new transmission infrastructure project.

An example of such compensation is the 110kV Mullingar-Kinnegad line. A total fund of €360,000 was made available to organisations of communities situated 2 kilometres on either side of the line. According to the RGI database, in 2016, 37 community groups received funding from the 'Mullingar-Kinnegad Fund' for various activities such as music, athletics, sports, childcare services and senior citizen support. More Information about this project is available in (RGI, 2016).

In Italy, the TSO signs an initial 'Protocol of Understanding' with relevant eligible authorities. The total amount of money for compensation is set as a percentage of total cost and its allocation to the authorities is based on a method developed by an expert consultant. Terna then creates a list of project categories that it would fund. Based on this list, the local authorities propose activities within these categories. Next, a contract is signed between Terna and the municipality. Commonly funded community projects are playgrounds, streetlights, pedestrian/cycling paths and restoration work of schools and heritage (RGI, 2016).

The French TSO, RTE, builds public support through appropriate monetary compensation in the form of funding community projects as well as through non-monetary compensation. In accordance with an agreement established with the French State, RTE must dedicate 8% to 10% of the (re)construction costs to the funding of projects that bring sustainable improvements to an area such as a hospital. The projects are proposed by various categories of stakeholders and are part of the 'Project Support Programme'. To improve the selection of projects, RTE included a crowdfunding element as a way for stakeholders to directly express their preference for certain community projects.

The innovative non-monetary compensation approach used by RTE to foster public acceptance involves adjustments to the project design. RTE decided to implement a new pylon design while upgrading a 400kV overhead line for better integration with the surrounding landscape to improve public acceptance. Furthermore, RTE decided to involve the public directly in the decision-making regarding the new pylon design.

Initially, a tender was floated for new concepts, which led to the submission of 80 innovative designs. Based on local requirements, this list was then reduced to three proposals. These three proposals were discussed in forums called 'expert commissions' where citizens could provide their input. Eventually, the 'Équilibre Pylon design' was selected. 16 KM out of the 30 KM long 400kV line would

be equipped with the new pylon design.⁷ More information on this project is available on the RTE webpage.

A higher level of controversy over compensation costs

Compensation costs can be considered to have a significantly high level of controversy and are the most controversial among the three approaches discussed in this topic. The reasons that the provision of compensation can be controversial are the following. Firstly, not all TSOs have a mandate to make decisions regarding payments of compensation. For some TSOs (such as Terna), the quantity of money that can be spent on compensation is strictly regulated. Furthermore, all consumers eventually pay the cost of compensation. Therefore, such compensations entail a significant reallocation of welfare from society as a whole, towards a set of selected parties. These beneficiaries may be individuals or a community. A degree of subjectivity is involved in perceiving or assessing the transparency behind the purpose of such transfer of wealth even when it is done within the necessary and required legal boundaries. The views on the legitimacy and purpose of compensation may vary from the above-described definition to the other extreme that would perceive it as ‘bribing’ these parties to ensure the implementation of the project, even if this is a subjective and mistaken perception. Compensation activities also open the possibility of strategic games by vested interests to make monetary or political gains, e.g. holding out to get the maximum amount of compensation.

2.3 Quantifying the impact of stakeholder engagement

Despite the abundance of qualitative evidence of TSOs undertaking diverse public engagement initiatives, e.g. in the RGI database, there is little quantitative assessment of the impact of these activities on the project developers’ business. Currently, the lack of (publicly available) data makes it impossible to perform a quantitative analysis

Empirical work regarding stakeholder engagement activities, on the one hand, and the performance of the project developers, e.g. in terms of developing infrastructure, on the other hand, requires a robust econometric analysis. The sector could either conduct their own quantitative analysis or make the data available to the public for assessment. Such an analysis would substantiate the debate and help both TSOs and NRAs in dealing with economic incentives to raise public awareness and trust. Furthermore, such an analysis would give greater confidence to regulators for incentivising such activities as they would now have a better understanding of the costs and benefits of various stakeholder engagement activities. Box 3 provides an illustrative example of the impact of quantification.

Greene (2003) describes econometrics as *‘the field of economics that concerns itself with the application of mathematical statistics and the tools of statistical inference to the empirical measurement of relationships postulated by economic theory.’* Several modelling techniques with increasing levels of complexity have been proposed in the literature for conducting econometric analysis (e.g., linear regression models, nonlinear regression models, simultaneous equation models etc.) (Greene, 2003). However, any robust econometric analysis requires the identification of relevant independent and dependent variables.⁸ The evaluation would further entail the monitoring of relevant data for several countries, projects and years to build a data set for analysis. Furthermore,

⁷ See RGI database and www.rte-ligne-avelingavrelle.com for more details.

⁸ In econometric analysis the independent variables are the factors that explain the behaviour of a dependent variable (the outcome), i.e. the change of an independent factor explains to small or large extent the change in the dependent variable. (See Greene (2003) for more details on econometric analysis).

the analysis must be performed to the highest methodological standards to rule out, e.g. selection bias⁹ and the effect of data that are not independent of each other and to be explicit about all choices and assumptions that are inherent in such analytical research.

In the remainder of this section, possible independent and dependent variables that could be used for conducting such an econometric analysis are conceptually discussed, along with the limitations of such an approach. Table 1 summarises the variables, company-specific dependent variables and societal dependent variable that are discussed in more detail.

Table 1: Summary of variables that can be used for the econometric analysis

Independent variable	Company-specific dependent variable	Societal dependent variable
Budget and Staff Media reports	Stock price Brand valuation Regulatory asset base	Congestion management Delays Project cost

2.3.1 Independent variables for quantifying the impact of stakeholder engagement

In this section, two possible independent variables that can be used as inputs for an econometric analysis to quantify the impact of stakeholder engagement are identified and discussed, namely: staff and budget, and media reports.

2.3.1.1 Staff and Budget

For a firm to conduct any activity requires expending resources. The resources may be a combination of person-hours that employees dedicate towards the task and the monetary cost incurred over and above the employee costs. The same holds true for stakeholder engagement. The project developer must allocate resources towards such public acceptance activities and may have a set budget for the same. This variable can be measured in a disaggregated manner by logging the number of manhours that employees spent on specific stakeholder engagement activities and monetary overheads from such beyond the employee time or in an aggregated manner as the total cost to the company of an activity *ex-post*. In case the company has set a budget *ex-ante* for activity, this can also be considered as the value of the variable.

However, limitations to a collection of this data are evident from the responses to the survey (See Annex I) that was conducted as part of this study. Respondents often indicated the numbers are best guesses as resources are dispersed in the TSO organisations (usually a mix centralised resources in corporate level departments and decentralised resources in regional and/or project-based teams). Therefore, accurately measuring the staff and budget allocation for stakeholder engagement requires a significant effort that entails an administrative cost.

2.3.1.2 Media reports

Another independent variable used in the literature on econometric analysis that could be relevant is the media reporting of stakeholder events. The impact of positive and adverse media reports on the dependent variables used for the analysis can then be assessed.

⁹ Selection bias can for instance occur when activities that were perceived as successful are structurally reported more than activities that were perceived to have a negative outcome, as a result the data set would be wrongly skewed towards more successful activities.

This variable was applied by Henisz et al. (2014) in the context of the gold mining industry. The research aimed to *'study [...] the financial impact of stakeholder engagement through the development of media-based stakeholder event data that captures the level of conflict or cooperation between the company and its various political, social, and economic stakeholders.'* According to the authors, such an approach has several advantages, namely: the availability of a greater sample size. The opinions and actions reported by media may give a better representation of the relationship between the stakeholders and the company compared to a third-party evaluation. Furthermore, these reports would also provide a clear view of how the stakeholders perceive the company.

However, the collection of such variable data can be a daunting task. Henisz et al. (2014) analysed 50,000 stakeholder events that were reported in the media. The analyses focused on data for 26 mines owned by 19 publicly listed companies over a period of 15 years (1993-2008). Furthermore, an econometric model is a simplification of reality and thus certain discrete choices and assumptions are made while conducting the analysis. To ensure consistency in the evaluation of the media reports, Henisz et al. (2014) utilise several 'inter-rater agreement' (IRA) indices to assess the convergence of different data collector's judgements. The authors define IRA as *'the level of similarity between different coders' judgments and the extent to which their work can be considered interchangeable'* based on the work of LeBreton and Senter (2008). Another example of the complexity was the identification of verbs and a quantification of the 'degree of conflict/cooperation' they convey. The study identified more than 11,000 verbs and used a variation of the scale developed by Goldstein (1992) for the quantification. Therefore, it is critical to provide appropriate training to the persons that would be involved in this process.

2.3.2 Dependent variables for quantifying the impact of stakeholder engagement

In this section, six possible dependent variables that can be used for econometric analysis are identified. The dependent variables are further classified based on their relevance to a company or societal benefit. The company-specific dependent variables are stock prices, brand valuation and Regulatory asset base; the dependent variables relevant from the perspective of societal benefit are congestion management costs, project delays and project costs.

2.3.2.1 Company-specific dependent variables

An econometric analysis that is conducted from a firm's perspective requires dependent variables that would aid in measuring the impact on the performance of the firm. Such quantification would provide insight to the investors and the management for deciding on allocating resources for stakeholder engagement activities.

2.3.2.1.1 Company stock prices

The development of transmission infrastructure projects requires access to finance from external investors. These investors use several criteria including the stock market value of the company under consideration while making their investment decisions. An adverse impact on these criteria would thus have an impact on the ability to access finance. Thus, an inter-relationship between stakeholder engagement and company stock prices could prove to be an important indicator for project developers. However, this variable would be applicable only to TSOs that are listed on the stock market.

An approach towards quantifying the financial impact of stakeholder engagement that has been utilised in the literature is based on the 'instrumental stakeholder theory' (Clarkson, 1995; Donaldson and Preston, 1995; Jones, 1995). On instrumental stakeholder theory, Jones (1995) argues that *'Certain types of corporate social performance are manifestations of attempts to establish trusting, cooperative firm/stakeholder relationships and should be positively linked to a company's financial*

performance.' As discussed in Section 2.3.1.2, Henisz et al. (2014) conducted an econometric analysis of data from the gold mining industry to empirically prove the instrumental stakeholder theory for the gold mining industry in Canada. The results from the study indicated the *'existence of a direct positive and economically substantive relationship between stakeholder support and financial market valuation.'* In follow-up research Dorobantu et al. (2017) assessed the impact that the mobilisation of a critical mass of political and social stakeholders would have on an organisation's market value.

Another variation of the variable that can be utilised is replacing stock prices by the company's sustainability index ranking as the proxy for gauging the impact of stakeholder engagement. This variation can be used by stock-market listed as well as unlisted companies; however, it is necessary to be listed on a sustainability index. Terna has already been listed on sustainability indices (Terna, 2016). The Dow Jones corporate sustainability assessment methodology is described in (RobecoSAM, 2016)

2.3.2.1.2 Brand valuation

Another dependent variable that can be used as a proxy for gauging the impact of stakeholder engagement activities is the brand value. A positive impact on brand valuation would be indicative of a positive company perception by the public and vice versa for negative impact on brand valuation. Brand valuation too can impact the access to finance from external investors as this may form part of the assessment criteria. The advantage of this variable is that it can be used by stock market listed as well as unlisted firms. Jones (2005) develops a model of stakeholder equities that can be used as a tool for assessing the value of a relationship between a brand and multiple stakeholders.

2.3.2.1.3 Regulatory asset base

The regulated asset base of the TSO can be another dependent variable that can be utilised as a proxy for the firm's performance. The regulatory asset base is a key determining factor for a TSO's annual revenue and consequently the performance of the firm. An essential element in calculating the value of RAB is the new investment in new projects that are to be included. Therefore, RAB can be considered as a dependent variable to assess the impact of stakeholder engagement on the company's performance

2.3.2.2 Societal benefit

An econometric analysis can also be conducted from a regulator's perspective. In such a case, dependent variables that provide insight on societal benefit are required for the assessment. Such an analysis can be used by the regulator when evaluating the need for and the level of incentive required to enable stakeholder engagement activities.

2.3.2.2.1 Congestion management costs

A key dependent variable from the societal benefit perspective for assessing the impact of stakeholder engagement is the congestion management cost. When the capacity of the grid to carry electricity is constrained, the TSO is required to carry out congestion management by taking steps such as re-dispatching. However, re-dispatch actions are costly in terms of more expensive electricity generation units being activated with potentially higher carbon emissions. Reinforcement of the grid infrastructure may remove the structural congestions and thus the need for re-dispatching actions. In other words, the avoided costs of re-dispatching may be a benefit of timely implementation of infrastructure projects.

Figure 4 below depicts the aggregated congestion management costs for Germany as recorded on the ENTSO-E transparency platform for the years 2015, 2016 and 2017 (ENTSO-E, 2018a)^{10,11}. It can be observed that over the past three years, the average annual cost has been roughly €950 million. This is a cost which would be passed on to the consumer. Thus, early completion of transmission expansion projects would lead to savings from avoided re-dispatch costs and improve overall societal benefit. These financial savings could then be used by the TSO to expand their public acceptance activity programmes. It can be noted here that the German network expansion plan (NEP), envisages an investment of €32–34 billion by 2030.

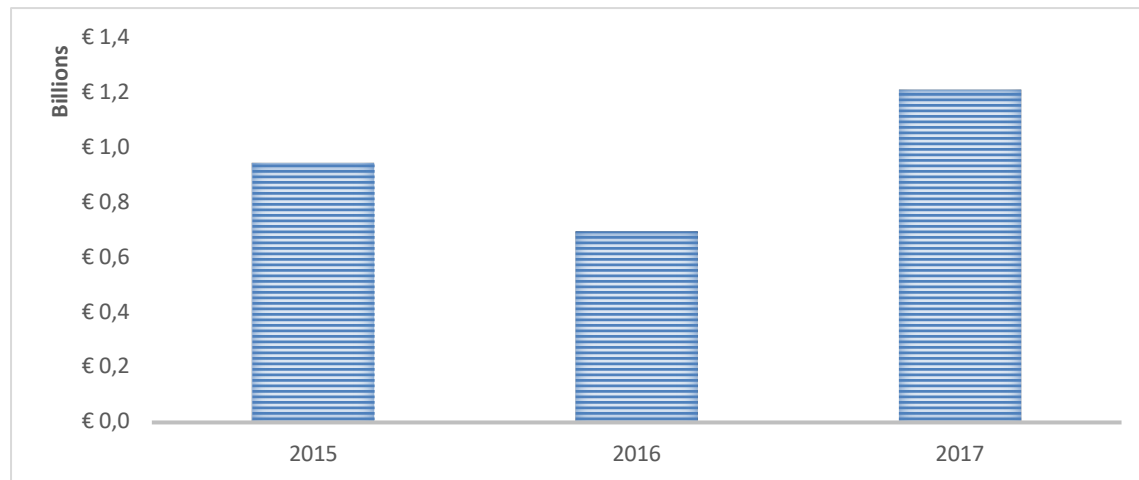


Figure 4: Cost of Congestion Management for German TSOs (Source: ENTSO-E Transparency platform)

At the EU level, an estimation of the cost of ‘no grid’ due to lack of new investment is presented in the summary report by ENTSO-E on Europe Power System 2040 (ENTSO-E, 2018b). The report states that *‘[a] lack of new investments by 2040 would hinder the development of the integrated energy market and would lead to a lack of competitiveness. In turn, this would increase prices on electricity markets leading to higher bills for consumers. By 2040, the ‘No Grid’ extra bill (€43 billion a year in the average case) would be largely above the expected cost of the new grid (150bln€ in total in the TYNDP 2016 plus internal reinforcements, 25% discount rate).’* However, it should be noted that the cost reported in this document would be dispersed among several actors in the system.

¹⁰ The platform provides monthly congestion management costs for each TSO over the period of Jan 2015 – Dec 2017. The congestion costs presented consist of three components, re-dispatching costs, countertrading costs and other costs. Re-dispatching actions are observed to account for most of the congestion management costs for the TSOs under consideration. The re-dispatching costs for Germany are further made up of costs of multilateral remedial actions (MRAs), interruptible loads, feed-in management of renewables and activation of reserve power. This is in accordance with the Art. 2 (26) of EU Regulation 543/2013. It should be noted that the website also explicitly states that *‘the displayed costs are preliminary values and may be subject to updates’*.

¹¹ The platform also offered the following explanation regarding the reporting of the counter trading costs: *‘There are certain network constellations, e.g. when tie lines are concerned, where TenneT applies counter trading measures with EnDK on joint request of 50Hertz and TenneT. Due to the joint request, the costs for the counter trade are borne by TenneT and 50Hertz in equal shares.’*

Box 3: Illustration of quantification - Thuringian power bridge project

This box describes a hypothetical example to illustrate how the knowledge of the costs and benefit may impact the attitude of project developers and NRAs towards stakeholder engagement. The illustration is based on the Thuringian power bridge project. The reason for using this example is that the investment cost, as well as congestion management cost savings due to the project, are known.

The total project cost for the Thuringian power bridge project was €348 million (Commission, 2013). According to 50Hertz, the development of this project led to congestion management savings of €318 million between 01/2016 and 03/2018 (Verse, 2018). Therefore, in a hypothetical situation, if such a project had faced delays due to permitting issues or public engagement issues, it could be assumed that there would be the loss of societal benefit from congestion management cost for each month of delay. On the other hand, by completing the project early or on time, the additional cost incurred from the greater public engagement that may be required to speed up the development process can be recovered from savings of congestion management cost.

If such a quantification was available to the project developer ex-ante, the project developer might be encouraged to undertake innovative stakeholder engagement activities to ensure rapid completion of the project. On the other hand, the quantification would aid the NRA in deciding whether or not to provide any additional incentive.

Furthermore, congestion management is the only proxy that is considered. There may be other currently unquantified benefits (or costs), the quantification of which would further aid in decision making for project developers and regulators alike.

2.3.2.2.2 Project delays

A short-term distortion that may be caused by suboptimal stakeholder engagement by project developers is delays of the actual project implementation. The latest ACER (2017) report on the progress of projects of common interests confirms this distortion. It is observed that more than half of the electricity PCIs are behind their initial scheduling because they were rescheduled, e.g. to deal with changing market conditions, or, for the majority, because they were delayed by external factors. The report also provides a detailed analysis of the external factors that are cited for the delays of the analysed year. The analysis indicates that public support is the direct or indirect reason for the delays (e.g. 20/33 projects mentioned permits as the main reason for delays over the course of 2016/2017; this was also the main reason cited in 2015/2016).

Although there is no (publicly available) quantitative data on the matter, it may be cautiously presumed that there are financial and societal costs attached to these delays (at a minimum the discounting effect on the benefits of the project). Thus, the effect of stakeholder engagement activities can be evaluated in terms of the impact on the timelines for completion of the project. Further monetisation from the impact of delays can be developed based on an econometric analysis that considers aspects such as security of supply, congestion management (as discussed earlier) etc. Some regulators already provide dedicated incentives for timely completion of transmission infrastructure projects (discussed in later chapters). However, as can be inferred from the findings of the ACER report, the causes for delays go beyond stakeholder engagement. Therefore, project delays can be considered as a relevant dependent variable in an econometric analysis for assessing the impact of stakeholder engagement.

2.3.2.2.3 Project costs

Any savings that may occur due to a reduction in the project costs can be considered as a societal benefit and vice versa. Therefore, the use of project costs as an output for an econometric analysis can provide useful insights about the societal impact of stakeholder engagement activities. A hypothetical example could be that the implementation of an innovative stakeholder engagement strategy may have a strong correlation to a reduction in the total project costs. This variable would be more relevant for the regulators as the TSO may not have incentives for reducing the total project costs as the project would become part of their RAB and they would be remunerated according to the regulatory regime in the member state.

2.3.3 Limitations of the quantification approach

The use of an econometric analysis provides quantification of activities under consideration. However, it is important to highlight some of the limitations of this approach. One limitation that is already discussed in Section 0 and 2.3.2 is the difficulty of monitoring the data.

A second crucial limitation is that a statistical correlation is not necessarily indicative of causality. In other words, a strong statistical correlation between an independent and dependent variable may not mean that the change in the dependent variable was solely due to the change in the independent variable. This is due to the presence of other variables that may not be accounted for in the analysis and yet may have a strong effect on the dependent variable. Such variables are called disturbance variables (Greene, 2003). For instance, a stock market valuation of a company may be affected by the general economic or political situation. The speed of the renewable transition in Germany has had a strong impact on the congestion management costs, thus would implicitly impact the results of the quantification. Haney and Pollitt (2013) highlight the difficulty in selecting variables in the context of benchmarking. The authors state that *'Transmission service provision involves a complicated relationship between inputs and outputs. Ideally all inputs, outputs and environmental variables should be measured directly or indirectly in assessing transmission system performance. If all variables are not considered and if regulators decide to choose or weight certain variables, the measured efficiency can change significantly.'*

Thirdly, even if the same methodology is applied for conducting the econometric analysis for all TSOs, the results may not be easily comparable. This is because most TSOs operate in differing institutional settings. This would reflect several aspects of project development such as project delays and project cost. This issue is described by Jamasb and Pollitt (2001) in the context of international benchmarking of TSOs. The authors claim that international benchmarking *'raises particular difficulties. The most notable issue is that of comparability and quality of data, which may only be improved in time and requires co-operation among the regulators. In addition, when comparing monetary units the correct handling of currency exchange rates is of particular importance. Relative differences in input prices (e.g. wage rates, taxes, and rates of return on capital) beyond the control of the firm may have to be taken into consideration.'*

Henisz et al. (2014) also conducted their study on mines that were in one country (Canada) thus making the results comparable. The authors explicitly state that one of the limitations of their research is a generalisation of the results beyond the data set under consideration. The authors state that an avenue for future research is to study *'not only trade-offs but also complementarity between resource allocations to enhance stakeholder cooperation and productive efficiency.'*

2.3.4 Hypothetical example for understanding the utility of quantification

To better understand the utility of this quantification, two hypothetical examples are presented in this section.

The first example is of a project developer building a transmission line to alleviate congestion in a region. The project cost is estimated to be € 100 million and is expected to be commissioned in ‘n’ months. An econometric analysis provides a correlation between stakeholder engagement activities and saving in project development time presented in Table 2. It can be assumed that cost of the activities increases depending upon the required resources, skills as well the comprehensiveness of the activity and innovation. Note that any additional stakeholder engagement activity would impact the project cost. The other dependent variables used to assess the societal benefit is congestion management cost. The analysis considers four different scenarios of congestion management costs that are incurred each month without the construction of this line (see Table 3).

Table 2: Correlation between stakeholder engagement activities and saving in project development time

Stakeholder engagement Approach	Additional costs of the activity (€ Million)	Timing savings (months)
A (No additional activity)	0	0
B	1	1
C	5	3
D	15	5
E	25	10

Table 3: Scenarios indicating of congestion management costs that are incurred each month

Scenario	Congestion Management Cost (Mil €/Month)
I	1
II	2
III	3
IV	4

Table 4 provides insight into the change in societal benefit in the four congestion management cost scenarios when the project developer utilises the above-mentioned five different approaches to stakeholder engagement.

Table 4: Impact of stakeholder engagement on societal benefit.

SHE Approach	Δ Project cost (Mil €)	Congestion Management Cost Saving (Mil €)				Δ Societal benefit (Mil €)			
		Scenario I	Scenario II	Scenario III	Scenario IV	Scenario I	Scenario II	Scenario III	Scenario IV
A	0	0	0	0	0	0	0	0	0
B	1	1	2	3	4	0	1	2	3
C	5	3	6	9	12	-2	1	4	7
D	15	5	10	15	20	-10	-5	0	5
E	25	10	20	30	40	-15	-5	5	15

From the perspective of societal benefit, such quantification would provide the NRA with greater insight while deliberating the trade-off between higher project costs due to stakeholder engagement vis-à-vis improvement in societal benefit.

On the other hand, the project developer may decide to implement an activity proactively if it sees a company-specific benefit. Consider the example of a project developer that is listed on the stock market and has a stock price of €50 per share and a market capitalisation of €1 billion. The market capitalisation is the product of the number of shares and the price. Based on hypothetical econometric analysis, Table 5 presents the impact of positive and negative news articles with regards to stakeholder engagement. Negative news has an adverse impact (lower share price) while positive news has a favourable effect (increase in share price). The quantification of this aspect allows the project developer to decide if (proactively) and how much to invest in stakeholder engagement from the perspective of the company reputation and shareholder wealth.

Table 5: Impact of media coverage

No of negativ e News Articles	Impact on stock price (%/Article)			
	Negative News		Positive News	
	-1%	-5%	+1%	+5%
	Δ stock price (€/Share)			
1	-0.5	-2.5	0.5	2.5
2	-1.0	-5.0	1.0	5.0
3	-1.5	-7.5	1.5	7.5
	Δ market capitalisation (€)			
1	- 10,000,000	- 50,000,000	10,000,000	50,000,000
2	- 20,000,000	- 100,000,000	20,000,000	100,000,000
3	- 30,000,000	- 150,000,000	30,000,000	150,000,000

3 Revisiting incentive regulation

To the extent that TSOs experience financial risk as an obstacle to engaging in more activities to raise public awareness and trust, it may be necessary to review the economic incentive frameworks proposed by the national regulatory authorities and to check their appropriateness to deal with the tasks and costs that have been discussed extensively in the second chapter of this report.

Since the liberalisation of the power sector, the use of ‘incentive regulation’ has become a standard practice among European regulators for effective and efficient implementation of grid tasks. In economic theory the concept of incentives is explained by Laffont and Martimort (2002) as follows:

The starting point of incentive theory corresponds to the problem of delegating a task to an agent with private information. This private information can be of two types: either the agent can take an action unobserved by the principal, the case of moral hazard or hidden action; or the agent has some private knowledge about his cost or valuation that is ignored by the principal, the case of adverse selection or hidden knowledge. Incentive theory considers when this private information is a problem for the principal, and what is the optimal way for the principal to cope with it. (p. 4)

The above-quoted definition can be translated to the power industry as follows. The regulatory authority is the principal, and the regulated (monopolistic) network is the agent. Incentives are used by the regulator to steer the actions of network companies towards the desired outcome.

However, two classic assumptions do not hold true in practice. Firstly, it is assumed that the network operator’s entire cost is controlled by the regulator as a whole (Laffont and Tirole, 1993). However, network operators perform several heterogeneous tasks that each require the application of unique regulatory tools, each with advantages and disadvantages that have been discussed in the literature (Rious et al., 2008; Saguan et al., 2008; Saplacan, 2008). Secondly, in practice regulators may face limitations in their abilities to implement the desired regulatory tool effectively (Glachant et al., 2013).

In this chapter, incentive regulation to raise public awareness and trust in the context of infrastructure development is revisited. We describe how the key regulatory tools of price or revenue cap regulation, cost-plus regulation and output-based regulation are connected to the task that is to be regulated and to the skills, expertise and resources of the NRA and TSO that are needed to implement the regulatory framework. The second section of this chapter explores how the costs of raising public awareness and trust can be included in these regulatory instruments.

3.1 Revisiting incentive regulation frameworks

3.1.1 Cost plus, price/revenue cap and output-based regulation

Glachant et al. (2013) originally identified five key regulatory tools that can be applied for regulating the various tasks performed by the system operator. The five regulatory tools identified are cost-plus regulation, price cap regulation, output regulation, a menu of contracts and yardstick regulation. The latter two can be considered sophisticated versions of the other tools and are not discussed further in this report.

Cost plus regulation is based on the principle that the regulated firm can recover the costs that are incurred for service provided, including a fair rate of return on the capital invested (Joskow, 2008). This is a relatively simple tool. The regulator ascertains the costs of the network operator by auditing their accounts. These audited costs are then used as a basis for setting the tariff for the regulated service.

Price or revenue cap regulation can be considered as having a greater complexity compared to cost plus regulation. In this tool, the regulator sets a maximum price (or revenue) that the firms can earn for providing a service. This price is set for a fixed regulatory period (Joskow, 2008). Thus, the firm is incentivised to improve its efficiency by reducing the costs over this period to maximise its profit. However, this is not an incentive for the firms to reveal their real costs to the regulator. Therefore, the regulator would need to become better at setting a correct reference price/efficiency factor for regulating the given task. An error in setting the price cap may lead to windfall profits or crippling losses for the network operators

Output regulation focuses on incentivising improvements in the quality of output that it provides (Vogelsang, 2006). The utilisation of such a tool requires a high degree of sophistication in terms of regulator's abilities. In this tool, the regulator links the reward-penalty for the firm to its output based on a set of key performance indicators (KPIs). In such regulation, the firm has flexibility in the approach that it may use to reach these targets.

3.1.2 Selecting a regulatory instrument to regulate specific tasks

Following Glachant et al. (2013), the appropriateness of these tools for regulating a given task can be assessed based on a framework consisting of two dimensions. These dimensions are the features of the task to be regulated, on the one hand, and the abilities and resources of the regulatory authority, on the other hand. The first dimension consists of three criteria, namely, controllability, predictability and observability of the task. Figure 5 illustrates the proposed decision tree to align tasks, regulatory tools and regulator's abilities.

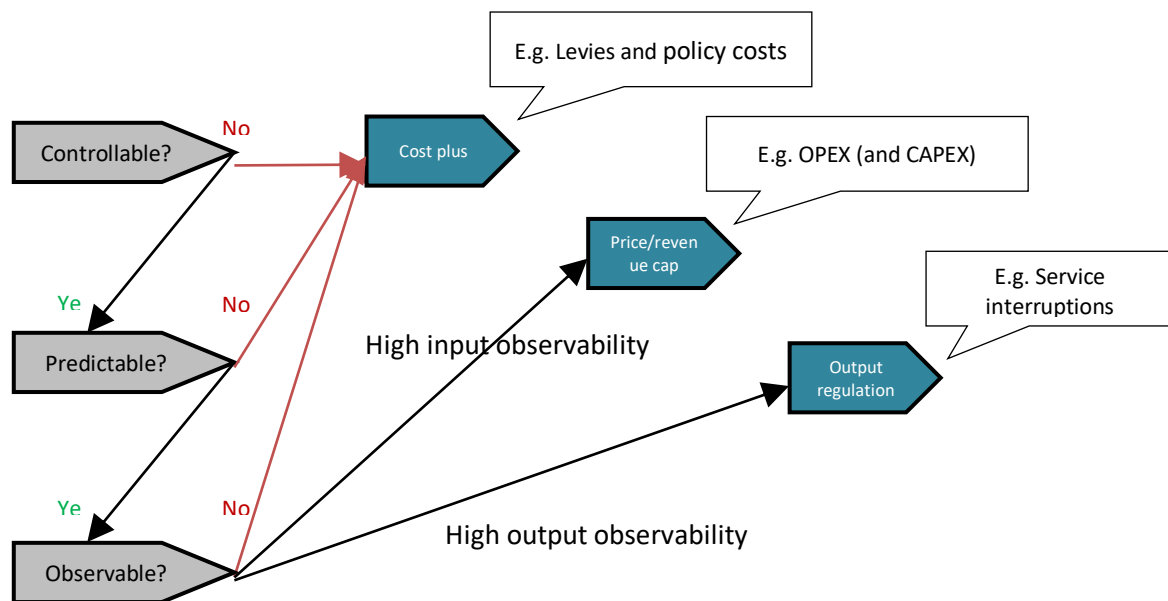


Figure 5: Decision tree to align tasks, regulatory tools and regulator's abilities (Based on (Glachant et al., 2013))

A task can be controllable if the network operator can largely control and enhance the efficiency of the targeted task. This may either be attained by increasing the level of output for the same input or by reducing the input required for the given output level. If the firm is unable to control the efficiency level of the task, incentive regulation would be ineffective as the efficiency level cannot be predicted. In this scenario, a cost-plus approach would be considered as a preferred alternative. On the other hand, if the task is controllable, incentive regulation can be utilised for regulating such tasks.

The second fundamental regulatory characteristic of the task is predictability, i.e. the ability to foresee the outcome of the task. If the task is controllable and has a high degree of predictability, a complex

incentive mechanism could be implemented, provided that the regulator has a sufficient level of expertise. On the other hand, if the predictability of the task is low, a cost-plus approach could be applied.

A task can be considered observable if the impact of the effort by the network operator can be reasonably observed ex-post by the regulator and the network operator. However, it is important to implement credible key performance indicators within the network operation process to ensure effective monitoring. The degree of observability of a task may vary from historical data sets of a single firm to data from several comparable firms. If the level of observability is high and the regulator has the relevant expertise, it may choose to implement an advanced regulatory tool such as menu contracts or yard-stick competition. If the resources of the regulator are limited, the choice of a cost-plus scheme may be the desirable regulatory framework.

The current practice in Europe is to apply price cap or revenue cap regulation (20 countries) to the TSO expenses to perform its tasks. Several countries (15) apply cost-plus (or rate-of-return) regulation, sometimes using a combination with price cap for opex and cost-plus for capex. Output-based regulation is applied in few instances, but in Great-Britain and Italy, and recently in Belgium, the regulatory frameworks for the transmission level have some elements to reward performance based on output proxies (See Table 6).

3.1.3 Alignment of regulatory tools with the resources of the regulator

Glachant et al. (2013) observe that *'[t]he practice of regulation is significantly different from its theoretical frame. Notably, the textbook model of regulators is always assuming that they have all the required abilities to design and implement the theoretically most efficient regulatory regime. However, in practice, lowly or badly endowed regulators may not be inclined or able to apply the most complex or most innovative regulatory tools to the network operators under their jurisdiction.'* In this section, the interdependence of the regulatory tools and the resources of the regulations are discussed in greater detail.

The economic literature that conceived regulatory tools generally assumed that regulators have all the necessary skills to choose and administer the most efficient regulatory tool. However, in practice regulators may face limitations in their abilities and make decisions in the realm of bounded rationality. Thus, the regulator may not have the necessary cognitive, computational and administrative abilities required to implement the desired regulatory tool effectively. Therefore, the regulator's resources in terms of budget, skills and powers may limit the level of sophistication of the regulatory tool it may implement. Let us consider the alignment of cost-plus, price/revenue cap and output regulation from the perspective of the regulator's resource requirement (Illustrated in Figure 6).

Cost-plus regulation due to its low level of regulatory complexity would require the auditing of the TSOs books ex-post and the ability to justify it in a court if required. Eventually, the regulator would set the tariff based on the audited costs.

Price/revenue cap regulation is a forward-looking regulation that entails forecasting expected trajectory of efficient cost over the entire regulatory period. There exists a possibility that errors may arise if an unexpected change occurs in any of the factors used in calculating the 'allowed revenue'. Thus, such an approach makes setting the correct efficiency factor and reference price complex task. Consequently, a higher level of skill is required.

Output regulation is even more complex than the price/revenue cap and cost-plus approaches. Such regulation requires that the regulator defines a performance target explicitly for a given output along

with a financial incentive for attaining this target. According to Glachant et al. (2013) *‘[t]his would necessitate from the regulator a definition of how the network operator already produces the various outputs and how it should be done better. It should also weigh the gains that any improvement of these outputs may have for the society as a whole vis-à-vis the value left to the operator in the financial incentive. Only under these conditions might the network operator be able to make an efficient arbitrage between the costs and the benefits that an operational effort for output performance will generate for the society.’* Thus, due to the higher level of complexity, the regulator would also require a higher level of resources and skills for administering such a mechanism.



Figure 6: Illustration of incentive regulation tools in terms of the level of resources required by the regulator.

The assessment presented in ACER (2016) based on a survey of NRAs provides insight into the current resources of the regulators across Europe. Significant heterogeneity between member states is observed (see Table 6). While some NRAs have less than 12 full-time equivalent staff units (FTEs), others, such as Great Britain, have more than 220 FTEs.

No clear correlation between the FTE and the sophistication and complexity of the incentive regulation practice is observed. The larger NRAs do go beyond cost-plus, but the same is observed with some of the smaller NRAs, such as Estonia where a price/revenue cap approach is used. Relatively smaller NRAs do not apply output regulation except for Belgium, which is classified as a small-mid size NRA. One of the reasons that a clear correlation is not observed is that the FTE is a weak proxy for resources available for the NRA to regulate a TSO. Some NRAs can focus their resources on the regulation of the TSO while others have a broader set of activities to perform. For instance, in Belgium, CREG is not responsible for regulating the DSOs. This is also observed by Rious and Rossetto (2018): *‘these numbers must be interpreted with caution, as they inevitably reflect the differences in size and structure of the national markets, the duty to regulate only electricity or natural gas too, and possibly the additional tasks and powers introduced at national level.’*

Table 6: A classification of NRAs based on the total resources for energy regulation in full-time equivalent staff units (FTEs) (Source: ACER (2016)) and current practice of incentive regulation (based on ACER Recommendation 2014/03 (ACER, 2014) and own research)

NRA Size	Member State	NRA	Current incentive regulation practices
Micro (< 12 FTE)	Malta	REWS	Cost-plus
	Estonia	ECA	Price/Revenue cap
	Cyprus	CERA	Cost-plus
	Luxembourg	ILR	Price/Revenue cap
Small (12 -50 FTE)	Lithuania	NCC	Price/Revenue cap
	Finland	EV	Price/Revenue cap
	Denmark	DERA	Cost-plus
	Latvia	PUC	Cost-plus, Price/Revenue cap
	Slovenia	AGEN-RS	Price/Revenue cap

Small-Mid (50 - 75 FTE)	Ireland	CER	Price/Revenue cap
	Croatia	HERA	Cost-plus
	Slovakia	RONI	Price/Revenue cap
	Belgium	CREG	Capex, Price/Revenue cap (opex), Output based (some elements since 2017)
	Portugal	ERSE	Capex, Price/Revenue cap (opex)
Medium (90-140 FTE)	Greece	RAE	Cost-plus
	Netherlands	ACM	Price/Revenue cap
	France	CRE	Capex, Price/Revenue cap (opex)
	Austria	E-Control	Cost-plus
	Sweden	EI	Price/Revenue cap
	Bulgaria	EWRC	Cost-plus
Large-mid (170-175 FTE)	Italy	AEEGSI	Capex, Price/Revenue cap (opex), Output based (some elements)
	Spain	CNMC	Cost-plus
Large (> 220 FTE)	Czech Rep.	ERU	Capex, Price/Revenue cap (opex)
	Hungary	HEA	Price/Revenue cap
	Poland	URE	Capex, Price/Revenue cap (opex)
	Romania	ANRE	Price/Revenue cap
	Germany	BNetzA	Price/Revenue cap
	GB	OFGEM	Price/Revenue cap, Output based (some elements)

3.2 Revisiting incentive regulation in the context of raising public awareness and trust

To the extent that activities to raise public awareness and trust in electricity infrastructure projects represent costs that are not fundamentally different from other TSO costs, their costs can be treated by the default incentive regulation frameworks implemented by the respective national regulatory authorities.

3.2.1 Revisiting cost-plus regulation for stakeholder engagement

The choice for cost plus might be inspired by the simplicity of the regulatory framework for the TSO and the NRA. However, in a cost-plus approach, the incentive for the TSOs to control their costs is limited. Moreover, there is no strong incentive for innovation. In a cost-plus regime, TSOs face the risk that innovation costs are audited as inefficient and thus the TSOs will be less inclined to participate in such activities.

Considering the controversy of each type of activity discussed in Section 2.2, another drawback of this approach is that the NRAs may have a bias towards implementing the least controversial activities while deciding upon the costs from stakeholder engagement that the firm may recover. More concretely it would imply that project-level activities may be given priority over company level and compensation activities.

3.2.2 Revisiting price-cap regulation for stakeholder engagement

Following the logic explained in the previous section, some NRAs may want to apply a price/revenue cap to the project stakeholder engagement, corporate stakeholder engagement, and compensation activities. This regulatory framework is most effective in the case that the TSO activities improve the cost efficiency of the TSO. In other words, as long as the costs of the different stakeholder activities are less than the benefits of those activities that are captured by the TSO, the financial incentive

inherent in the design of the price cap mechanism alone should be sufficient for TSOs to engage or engage more in stakeholder engagement activities as they return an extra profit for the TSO within the regulatory period. As discussed in Section 3.1.3, such a regulatory approach entails a greater degree of complexity compared to cost-plus but is simpler compared to output regulation.

A good example of a stakeholder engagement activity being used under the price/revenue cap regime to improve cost-efficiency is that of the Elia LIFE+ project (<http://www.elia.be/en/safety-and-environment/Project-Life-Elia>). In this project, the newly adopted vegetation management approaches in the corridor under and along an overhead line result in lower maintenance costs and lower overall costs over the lifetime of the project (see Box 4). The reduction of costs due to this activity would improve the performance of the project in terms of cost-efficiency.

In a price / revenue cap approach, TSOs will prioritise activities that result in the highest direct improvement of cost efficiency. The most effective innovation may not be in stakeholder engagement if other activities can bring larger cost savings.

Furthermore, a price/revenue cap approach allows the TSOs to choose the type and combination of stakeholder engagement (project, corporate, compensation) that they wish to apply. Considering the different levels of controversy for each type of activity discussed in Section 2.2, the company may have a bias towards using the least controversial level of stakeholder engagement.

There are also arguments against the effectiveness of price cap regulation to bring forth innovation in stakeholder engagement. As cost-efficiency is the only proxy to assess the performance of the TSO, in such a mechanism, the incentive is not targeted towards an activity such as stakeholder engagement but rather aggregated. Furthermore, the benefits of the stakeholder engagement activities might be dispersed (system benefits) and the part that is captured by the TSO might be too small compared to the TSO costs. The benefits might also come much later, spilling over into the next regulatory periods, making it uncertain whether the TSO can still capture them. The impact of stakeholder activities may not be as clear due to the lack of quantifiable indicators that connect activities and their benefits. In the absence of such indicators, project developers may not have sufficient incentives to utilise innovative stakeholder engagement activities. For activities that generate dispersed or future benefits, cost-plus or output regulation might be better fits.

Box 4: Innovative Vegetation Management

The Life Elia-RTE project is aimed at applying innovative vegetation management techniques to create ecological corridors along the routes of the high voltage lines in the forests of Belgium and France. The project involves project-level stakeholder engagement in the form a co-creation by the TSOs and the NGO to innovate the vegetation management of the TSOs. The project was provided with a budget of 3 million euros and was co-financed by the European Commission, the Walloon Regional government, Elia and RTE to varying degrees. A cost-benefit analysis was conducted to assess the impact of this project in 2015 (LIFE Elia-RTE and Elia, 2015). The analysis compared the innovative vegetation management methods used in the project with traditional vegetation management being implemented by ELIA in Belgium.

Elia utilises four different activities for traditional vegetation management, namely: Rotary milling, manual felling, pollarding trees and pruning of lateral branches. These activities were compared with seven ecological restoration actions of the LIFE methods. These actions have been classified into four groups, namely: structured edges, open land management (pasturing), natural habitats,

and ponds and invasive species. For the cost-benefit analysis, only the first three groups were compared.

The cost-benefit also compares the two modes of vegetation management in terms of ‘other impacts’. The categories of impacts assessed are landscape and nature, social acceptability and communication, local embedding, production of new values, practical improvements, institutional, administrative and strategic aspects and finally positioning in European legislation. Table 7 presents the results of the financial comparison from the CBA presented in the LIFE Elia-RTE and Elia (2015) report.

Table 7: Results of the financial comparison from this CBA ((Source: LIFE Elia-RTE and Elia (2015))

Comparison of traditional management / LIFE method		With WACC = 5%	
Actions	ROI (years)	After 30 years	After 30 years
Planted edges	9	1.9 times cheaper	1.4 times cheaper
Restored edges	3	2.1 times cheaper	1.8 times cheaper
Pasturage	6	2 times cheaper	1.8 times cheaper
Pasturage in hard conditions	5	4.7 times cheaper	3.9 times cheaper
Mowing	6	4.9 times cheaper	2.5 times cheaper
Natural habitats (heathlands)	3	5.3 times cheaper	3.9 times cheaper
Natural habitats (peatlands)	9	3 times cheaper	1.8 times cheaper

The report concludes that the innovative vegetation management method leads to a significantly shorter time for costs to break even, between 3 to 9 years. Furthermore, it would be 1.4 to 3.9 times cheaper compared to traditional rotary milling. These cost savings would be directly captured by the TSO within the regulatory period under a price/revenue cap regime.

The analysis claims that the ELIA-LIFE approach would improve societal acceptability of TSOs and build trust with concerned stakeholders, facilitate permitting, construction and renovation of overhead lines. Finally, the project also integrates European legislation such as Natura 2000 and similar directives.

3.2.3 Revisiting output regulation for stakeholder engagement

The choice for output regulation depends on the availability of a credible and robust proxy to measure the output performance of the TSO. It should not lead to a ‘mark to the marker’ approach by TSOs (doing just enough to tick the box and cash the premiums). While it is acknowledged as a very attractive option to regulate TSOs, it depends on good proxies. If the proxies are not good then it is probably the worst option (as TSOs will do things that do not lead to the desired outcomes). Some approaches to output regulation are illustrated in detail. See Box 5 for more details of the three cases from Italy, Belgium and GB.

During Italy's fourth regulatory period (2012-2015) a premium remuneration for TSOs that were able to meet predefined timelines for the implementation of infrastructure projects. The approach consisted of three types of incentives: a premium return on investment for completed projects; a premium for work in progress; and, a penalty for projects exceeding their planned commissioning date. (See Box 5 for details). Similarly, in Belgium there are dedicated incentives for 'strategic investment projects'. These mainly consist of an additional remuneration for the project. This incentive too was linked to the timely completion of the projects.

As project timeline is the only proxy for performance, such an approach would have some drawbacks that are similar to the price/revenue cap approach. Firstly, there is an observability issue due to the difficulty in setting the baseline for assessing the delay. Furthermore, as several factors apart from stakeholder engagement can have an impact, the project timeline controllability could be difficult.

OFGEM has adopted an output-based incentive for the development of a high-quality TSO stakeholder engagement strategy (which can be seen as project and corporate level engagement activities). In this case, a targeted incentive, amounting to 0.5% of their annual allowed revenues, was provided for encouraging high-quality stakeholder engagement activities. Such an approach allows the NRA to ensure stakeholder engagement by incentivising such activities specifically. Apart from enabling greater stakeholder engagement, the approach followed by OFGEM allows the regulator greater control over setting the agenda in terms of the vision for this stakeholder engagement. Depending upon the output assessment criteria, the incentive could be targeted towards innovation in a desired activity or combination of desired stakeholder engagement activities (project / corporate / compensation).

Another innovative practice that Ofgem applies is appointing external experts for assessing the stakeholder activities thus mitigating issues arising from the need for greater regulatory abilities for administering a complex incentive regulatory approach. Although the approach is dependent on the ability of the experts, they can be unbiased (low bias) in their assessment of a particular activity from the perspective of its level of controversy and thus encourage innovative approaches.

Box 5: Innovative Incentive Regulation Approaches

Italy

In Italy, a premium remuneration was offered for TSOs that were able to meet predefined timelines for the implementation of infrastructure projects. Dedicated regulatory frameworks for strategic electricity transmission investment were applicable in the fourth regulatory period (2012-2015). During this period twenty-five projects received dedicated incentives.

The approach consisted of three types of incentives as discussed below. A premium return on investment for completed projects: a two-percentage-point increase in return on investment was provided for twelve months.

A premium for work in progress: a two-per cent premium was provided for projects that could meet predefined annual milestones for authorisation or construction work. The project milestones were established by agreement between the project developer and the regulator for each project and expressed in monetary value. A 'threshold' amounting to at least seventy per cent of the accumulated value of the milestones of the previous year is set to assess the progress. A two per

cent premium set for all work that has been in progress since 31 December of that previous year is provided if the threshold is met.

A penalty for projects exceeding their planned commissioning date: If the actual commissioning of the project is delayed beyond twelve months, the project promoter must pay a lump sum penalty in the amount of two per cent calculated on 110 % of the invested capital and pro rata of the months that the project is late. In the 5th regulatory period, Italy moved away from this approach. For more details please refer to Keyaerts and Meeus (2017, 2015).

Belgium

Commission for Electricity and Gas Regulation (CREG) offers dedicated incentives for ‘strategic investment projects’. These mainly consist of an additional remuneration for the project. Strategic investments are primarily aimed at improving EU integration and may be entitled to receive an additional mark-up (ELIA, 2016).

According to Elia (2016): *‘this additional remuneration is calculated as a percentage of the cumulative actual amount dispensed (investment amounts are capped per year and per project).’* The additional incentive is linked to the OLO rate (free-risk rate). The mark-up is applied at full rate if the OLO rate is equal to or below 0.5%. If the OLO is higher, then the mark-up is reduced proportionally, capped at 2.16%. The application of the additional remuneration is also conditioned to the on-time commissioning of the investment. In case of a delay, a penalty amounting to 10 % of the amount earned for the project will be incurred by the project developer. For more details on this please refer to Elia (2016).

Great Britain

Under the RIIO-ET1 regime, OFGEM has adopted an output-based incentive for the development of a high-quality TSO stakeholder engagement strategy (which could be seen as project and corporate level engagement activities).

The OFGEM ‘Electricity Distribution Stakeholder Engagement Incentive Scheme - Guidance Notes’ states that *‘The aim of the Stakeholder Engagement Incentive Scheme is to encourage network companies to engage proactively with stakeholders to anticipate their needs and deliver a consumer-focused, socially responsible and sustainable energy service.’*

Under this scheme, a transmission operator may receive 0.5% of their annual allowed revenues as an additional reward depending upon the assessment of their quality stakeholder engagement strategies. Within the category of customer satisfaction, the output is recognised as ‘Effective Stakeholder Engagement’. A panel of independent experts is appointed by OFGEM to assess the activities of TSOs and allocate the reward; thus, indicating an enlargement of incentive regulation to include independent experts (discussed further in Section 5.1.3).

An overall score out of ten is awarded to each TSO. The incentive available is in proportion to the overall score. To illustrate the magnitude of additional income for the TSO, Table 8 provides the scores and the financial reward (in GBP) that the three electricity TSOs received.

Table 8: The scores and financial rewards for electricity TSOs from Stakeholder Engagement Incentive Scheme 2015/16

	Score	Financial Reward
Scottish Power Electricity Transmission (SPETL)	6.25	£0.75m

National Grid Electricity Transmission (NGET)	6.25	£3.81m
Scottish Hydro Electricity Transmission (SHETL)	6.00	£0.68m

It should also be noted that within the customer satisfaction category there is another output called 'Develop customer/stakeholder satisfaction survey'. It entails an incentive of +/- 1% (for more information refer to OFGEM (2012)).

3.2.4 Summary of Pros and Cons of the regulatory approaches

Table 9 presents a summary of the pros and cons of applying the different regulatory approaches for incentivising stakeholder engagement.

Table 9: Summary of pros and cons of the regulatory approaches from a stakeholder engagement perspective

PROs		CONs
Cost-Plus	<ul style="list-style-type: none"> - Simple to implement 	<ul style="list-style-type: none"> - Information asymmetry between TSO and NRA not addressed - No incentive for cost control or innovation - NRA bias towards choosing the least controversial stakeholder engagement level
Price/Revenue cap	<ul style="list-style-type: none"> - Relatively Simple to implement - Incentivises cost efficiency 	<ul style="list-style-type: none"> - No explicit incentive for enabling stakeholder engagement activities - Company bias towards choosing the least controversial stakeholder engagement level
Output (BE/IT)	<ul style="list-style-type: none"> - Incentivises on-time commissioning 	<ul style="list-style-type: none"> - No explicit incentive for enabling stakeholder engagement activities - Difficulty in establishing a baseline for measuring the delays may cause observability issues. - The possibility of controllability issue as delays may be due to several factors - Company bias towards choosing the least controversial stakeholder engagement level
Output (GB)	<ul style="list-style-type: none"> - The explicit incentive for stakeholder engagement - (neutral) Expert evaluation encourages innovation by reducing the level of controversy bias. 	<ul style="list-style-type: none"> - Evaluation is dependent on the quality of external experts

4 Enlarging incentive regulation

The application of incentive regulation is generally understood as a regulatory authority providing an incentive framework to natural monopolies for performing a given regulated task efficiently and in the interest of society. The application of incentive regulation for TSOs to raise public awareness and trust in infrastructure development is discussed in detail in the previous chapter. However, incentive regulation may be expanded to encompass other relevant stakeholders such as other authorities, the public at large or independent experts.

Enlarging incentive regulation can be approached in two ways: one way is through the inclusion of other actors than the energy regulator to help regulate the TSO; the other is through the consideration of incentives for other stakeholders than the TSO. These two forms of enlarging incentive regulation are explored in the two subsequent sections of this chapter, showcasing the ongoing innovations in both enlargement dimensions.

4.1 Enlarging incentive regulation to include other regulators

Obtaining public acceptance is a challenging task consisting of several skills dimensions such as stakeholder engagement, communication and negotiation skills, partnership building, and non-market strategy development. For a long time in the energy industry, these skills were of lesser importance and thus less present within TSO and NRA organisations as the traditional focus of the business has been on cost-effective operational excellence in a business-to-business (B2B) context among energy-sector professionals.

At present, stakeholders are more demanding and self-aware because they have better access to information, are better educated and have access to technology that makes it easier to organise interest groups. TSOs that are investing in transmission infrastructure projects have to deal directly with the public, who are not energy-sector professionals, to ensure public acceptance of their projects. In other words, the TSO context is enlarging from a pure B2B to one including business-to-citizen (B2Ci)¹² relationships.

In this enlarged context, the benefit of and need for a different set of competencies, skills and expertise is clear. Nowadays, even conducting activities that have been important from a much earlier time, such as spatial planning and environmental planning, require the TSOs and NRAs to innovate. Competencies, skills and expertise can be brought in to assist NRAs by enlarging incentive regulation to include other actors to help guide project promoters in their activities to raise public awareness and trust in infrastructure development. This study distinguishes three groups of other regulators, which are government agencies and authorities, the public and organised stakeholder groups, and third-party experts. The costs for TSOs that may originate from input from these other regulators remain a matter for the energy regulator to decide.

Before describing ongoing innovation in the context of enlarging incentive regulation, it should be highlighted that even though different actors can help with regulating the TSO, by steering it in the desired direction, such steering can be effective only if there is alignment between the interests of these regulators. Well-intentioned but misaligned efforts may have a counterproductive effect that could lead to a project being delayed or cancelled, rather than speeding up the development process. Examples of such misalignment are decisions that defend opposing interests and decisions that are

¹² Adapted from the concept business-to-consumer business (B2C).

made without being fully aware of the consequences for another regulator. The decision of one regulator to implement undergrounding of a cable may, for instance, imply a multiplication of the total cost of the project that is borne eventually by all energy consumers. This aspect becomes even more complicated due to the different layers of regulators that exist at the EU, national and local levels.

4.1.1 Including other government agencies and authorities

A number of government agencies and authorities are involved in several stages of the development process of infrastructure projects. In that process, they also shape the public acceptance activities in which the project promoters engage. Here, two typical cases of involvement of other authorities are discussed.

The first type is the government as law-making authority that adopts legal frameworks. These legal frameworks must be executed by the project promoters and NRAs. Several countries have for instance a legal framework for compensation costs. As discussed in Chapter 2, compensation is controversial from an energy regulation viewpoint as it implies a redistribution of welfare. The government, as the elected representatives of society, has the legitimacy to decide on a compensation framework.

In France, the compensation framework is established in the public service contract between the state and the TSO (See Box 6). This ‘contract’ requires that RTE conceives a *plan d’accompagnement de projet* which aims to bring sustainable economic development to affected regions. For lines of 400kV or over, the community payments are 10% of the investment cost for the line (*coût d’investissement pour des lignes nouvelles*), and for line strength of 225kV, the compensation is set at 8% of the investment cost for the line. In accordance with the French legislation, the management of the compensation is determined by local stakeholder committees set up by the regional government. The compensation amount and activities are decided based on the negotiations between the TSO, committees and local authorities (RTE, 2017).

Box 6: The French compensation framework

The French compensation framework is set by the *contrat de service public entre l’Etat et RTE* (most recent version of 5 May 2017). Following the contract RTE’s 24th commitment reads:

Associer à tout projet de création de ligne aérienne de 400kV, 225kV et haute tension du réseau public de transport un plan d’accompagnement de projet (PAP) dont l’objectif est de contribuer au développement économique durable des territoires traversés. Pour répondre à des situations exceptionnelles, RTE pourra proposer à l’autorité administrative l’extension de ce dispositif à d’autres types d’ouvrage. L’Etat fixera alors, après avis de la CRE, les modalités de celui-ci dans l’objectif de trouver le meilleur compromis entre les intérêts du territoire et ceux du service public de l’énergie

In Italy, there is a regulatory framework that explicitly allows the consideration of possible compensation costs in the cost-benefit analysis of a project. The compensation framework is determined by the State and the Regions that have to ensure the balance of interests in the context of establishing infrastructure locations. To balance the impact of infrastructure that is concentrated in a region, compensatory measures may be included (See Box 7).

Box 7: The Italian compensation framework

The Italian legal framework is set by Article 1(4)(f) of Law 239/2004 as quoted below; the underlined passage refers to the possible compensation measures.

4. Lo Stato e le regioni, al fine di assicurare su tutto il territorio nazionale i livelli essenziali delle prestazioni concernenti l'energia nelle sue varie forme e in condizioni di omogeneità sia con riguardo alle modalità di fruizione sia con riguardo ai criteri di formazione delle tariffe e al conseguente impatto sulla formazione dei prezzi, garantiscono:

(...)

f) l'adeguato equilibrio territoriale nella localizzazione delle infrastrutture energetiche, nei limiti consentiti dalle caratteristiche fisiche e geografiche delle singole regioni, prevedendo eventuali misure di compensazione e di riequilibrio ambientale e territoriale qualora esigenze connesse agli indirizzi strategici nazionali richiedano concentrazioni territoriali di attività, impianti e infrastrutture ad elevato impatto territoriale, con esclusione degli impianti alimentati da fonti rinnovabili;

The compensation framework in Germany is established by the 'Stromnetzentgeltverordnung' and sets a limit of 40,000 euro per kilometre of 380 kV overhead line. The framework is implemented by means of agreements for payments between TSOs and affected communities (See Box 8).

Box 8: The German compensation framework

The German framework is set by Stromnetzentgeltverordnung (StromNEV) §5(4). The original text reads:

(4) Soweit Betreiber von Elektrizitätsversorgungsnetzen auf Grundlage einer Vereinbarung mit Städten oder Gemeinden oder Interessenverbänden der Städte und Gemeinden Zahlungen an Städte oder Gemeinden, auf deren Gebiet eine Freileitung auf neuer Trasse errichtet wird, entrichtet, sind die Zahlungen des letzten abgeschlossenen Geschäftsjahres nach Maßgabe des Satzes 2 als Kostenposition bei der Bestimmung der Netzkosten nach § 4 zu berücksichtigen. Eine Berücksichtigung nach Satz 1 ist nur für die Fälle des § 43 Nummer 1 des Energiewirtschaftsgesetzes bei tatsächlicher Inbetriebnahme der Leitung und nur bis zu der angegebenen Höhe einmalig möglich: 1. Höchstspannungsfreileitungen ab 380 Kilovolt 40 000 Euro pro Kilometer; 2. Gleichstrom-Hochspannungsfreileitungen ab 300 Kilovolt 40 000 Euro pro Kilometer.

In 2012, the Irish government released a policy statement on the strategic importance of transmission and other energy infrastructure (DCENR, 2012) (See Box 9). In line with this policy, the state-owned TSO EirGrid has developed a framework for implementing 'community gains mechanisms' as part of its Grid 25 Programme. There are two elements for providing compensation: 1) Community Fund and 2) Proximity Payments.

The size of the community fund was based on the length and voltage of the line. (110kV: €15,000 per km, 220 kV: €30,000 per km, 400 kV: €40,000 per km). New transmission (sub)stations in rural regions

are considered as 1km length line for the given voltage. The proximity payments are based on the distance from the infrastructure (up to 200 meters). The maximum proximity payment of €30,000 at 50m (to €5000 at 200m) from a 400kV infrastructure element and the lowest would be €2,000 for a residential building located at a distance of 200m from a 110kV infrastructure element (EirGrid, 2014, n.d.; RGI, 2016).

Box 9: The Irish compensation framework

The Irish governments' policy document 'Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure' states the following:

'The Government reaffirms, in conclusion, the imperative need for development and renewal of our energy networks, in order to meet both economic and social policy goals. The planning process provides the necessary framework for ensuring that all necessary standards are met and that comprehensive statutory and non-statutory consultation is built into the process.'

We acknowledge the need for social acceptance and the appropriateness of exploring ways of building community gain considerations into project planning and budgeting. Delivering long-lasting benefits to communities is an important way of achieving public acceptability for infrastructure.'

The State network companies are mandated to plan their developments in a safe efficient and economic manner. They are also required to address and mitigate human, environmental and landscape impacts, in delivering the best possible engineering solutions.'

The second case is agencies and authorities that play a role in the permitting process. All infrastructure projects must acquire clearances from authorities that oversee spatial planning and the environment. The consent-obtaining procedures of these authorities often involve obligations to run project-level stakeholder engagement activities, such as to inform and consult the public, and may include (financial) compensation rules such as compensation for impact on nature. In most countries these authorities are separated from the energy regulator, meaning that the NRA and the other agencies have to coordinate to some extent their decisions or at least be mutually aware of the impact of their decisions.

The German NRA, Bundesnetzagentur (BNetzA) provides an exceptional example as in their case, the competences of energy regulator, coordinator of stakeholder engagement, and one-stop-shop¹³ (Mituta, 2014) for permitting for projects of common interest are all in one hand. This may help to improve alignment to some extent even though the competencies are organised in different departments.

4.1.2 Including the public and organised stakeholder groups

Non-governmental organisations, public interest associations and related stakeholders play a key role in stakeholder engagement and provide innovative solutions in their area of expertise. Such entities

¹³ In the context of the projects of common interest, the Ten-E regulation (347/2013) of the European Union mandate 'The establishment of a competent authority or authorities integrating or coordinating all permit granting processes ('one-stop shop') should reduce complexity, increase efficiency and transparency and help enhance cooperation among Member States. Upon their designation, the competent authorities should be operational' (European Parliament, 2013).

can complement the NRA in day-to-day oversight of the activities. NGOs and the public can act as a check for the stakeholder engagement process. This can also be a factor in encouraging greater transparency regarding transmission infrastructure development. There are several examples of good experiences with combined planning and cost discussion involving NGOs and the public. Here, three examples in which the public and stakeholder groups have been involved to 'regulate' project developers are discussed.

The first example deals with establishing reasonable costs of non-financial compensation measures. The British TSO, National Grid, invited the public to assess the value of different options to reduce the visual impact of infrastructure projects; in other words, the public helped the TSO to conduct a willingness-to-pay study that was fed into the regulatory process (National Grid, 2012). The eventual aim of this research was to gain insight about the size of the fund to be dedicated for mitigation methods during the RIIO-T1 period, and the British regulator made its own assessment of the study and eventually set rules for the regulatory framework regarding a fund for reducing visual impacts. This study may thus be classified as a mix of a project-level stakeholder engagement activity and a compensation-related activity.

The second example deals with the inclusion of NGOs in incentive regulation. The Belgian TSO, ELIA commissioned a report from a group of NGOs¹⁴ with expertise in bird and nature protection. The report focused on 'Reducing bird mortality caused by high and very high voltage power lines in Belgium' (Derouaux et al., 2012). Thus, the NGOs were able to provide solutions to the issue while at the same time fulfilling the stakeholder engagement goals of the TSO.

A third example of including the public and other stakeholder groups in regulating the TSO is the LIFE Elia-RTE project. The project involves project-level stakeholder engagement in the form of a cooperation between the TSOs and the NGOs to innovate in the vegetation management of the TSOs. The activity also envisaged involvement of NGOs in the activities such as improving the bio-diversity in project corridors. The cost-benefit analysis conducted indicated significant cost savings arising from the use of innovative vegetation management. Thus, in a price cap regime, the involvement of NGOs would aid the TSO in improving its cost efficiency.

4.1.3 Including independent experts

The third kind of regulator that may be included in incentive regulation are independent experts to help with very specific tasks. The NRAs may accomplish these tasks in two ways. Firstly, they may be accomplished in-house. The NRAs may develop the necessary skill sets within their own organisation by hiring or retraining staff. On the other hand, in several cases, the NRAs opt to hire independent external experts with the necessary knowledge required for accomplishing the given task.

An example of the involvement of independent experts in enforcing output regulation comes from OFGEM in the UK. Under the RIIO-ET1 regime, a transmission operator may receive 0.5% additional allowed annual revenue depending upon the assessment of their quality stakeholder engagement strategies. Thus directly linking stakeholder engagement to monetary incentives for the TSO (OFGEM, 2017a, 2017b).

The companies are required to provide a demonstration to the effect that: 1) a robust public engagement strategy has been implemented; 2) the transmission system operator must provide outcomes of the public engagement process. The performance of the TSOs is assessed, annually, by a

¹⁴ The NGOs were Aves/Natagora, Natuurpunt, INBO and Vogelbescherming Vlaanderen

panel of independent experts. The panel then awards a score out of ten for the TSO. The revenues of the company will be adjusted in accordance with their scores (OFGEM, 2017a, 2017b).

Project promoters may also engage independent experts to assist in self-regulation of the companies. An innovative approach utilised by some TSOs is allowing external agencies to audit corporate level performance targets. This can, for instance, be accomplished by being included in sustainability indices. The Dow Jones Sustainability Index is an example of such an index.

Such indices provide a way of benchmarking for these TSOs to compare their performance with the best organisations in terms of sustainability and it offers a reputational incentive for improving their performance and following through on, for instance, a stated social mission. Additionally, being part of such indices may also have a positive impact on the corporate image of the company. An example of a TSO that is included on several sustainability indices is Terna (Terna, 2016).

4.2 Enlarging incentive regulation to consider incentives for other stakeholders

In this section, practices of offering incentives to other stakeholders in the context of infrastructure development and the default course of action in the absence of agreement between project developers and the stakeholders are discussed. These two elements form the second dimension of enlarging incentive regulation.

4.2.1 Innovative incentives for the public

In the context of compensations, implementing an innovative incentive mechanism may lead to a more efficient outcome in comparison to a standard compensation method. These incentives would be directed towards the public rather than the project developer. To illustrate this alternative a parallel can be drawn from the airline industry. Airlines often use innovative instruments of congestion management on overbooked flights to minimise their costs of rebooking passengers.

On an overbooked flight, one may consider denying the last passengers a seat on the flight. This would entail a certain tangible cost to the airline for rerouting these passengers and some intangible costs that may arise from the inconvenience caused to the passenger. On the other hand, some airlines employ an auction where compensation is paid to passengers willing to rebook. In such a situation, the decision rests with the passenger on whether to forfeit his right to a seat and at what price. Eventually, such a situation may lead to a more efficient outcome as compared to the default option (first come, first served). Of course, it should also be noted that airlines keep the money that is paid by passengers that do not show up for the flight, thus recovering part (if not all) of the additional costs required for congestion management.

The default option for a TSO is then to decide the network topology for the new line and to follow it up ex-post with project-level stakeholder engagement. Eventually, negotiated payments in cash or kind to individuals or communities can be considered as an example of standard compensation methods. Generally, in such situations, the project developer engages with the affected persons after fixing the project parameters to build support for the project.

As an alternative, incentivising the stakeholders to welcome transmission infrastructure projects in their vicinity may provide a more efficient outcome. For example, such an incentive scheme could take the form of a tender or auction of project packages consisting of a combination of the electricity infrastructure project, one or more community projects that are financially supported by project promoter (e.g. a school, or a hospital) and financial compensations. One could imagine a community being offered the choice between an overhead line close by and a new hospital, or an overhead line

further away (e.g. built on rougher terrain that makes it more expensive for the project developer) without the hospital. It can be noted that the inclusion of other regulators (as discussed in 4.1) may be relevant in such a case. The NRA may not have the requisite skill to accurately assess the overall benefit of the combination of a transmission line and a community project. Or it might not have the mandate to consider the welfare effects of non-energy projects. In such a scenario it is recommended that other regulators are involved, such as government authorities or experts to help with the assessment and the decision making (or even decision taking).

In 2013, Tennet began a pilot project to allow financial participation (15% of investment sum) of affected citizens in the investment for the 'west-coast line' in northern Germany via a financial instrument called citizens' bonds. Preference (up to 10,000 euro) was given to citizens living within a 5KM radius. It is reported that 100 households participated in the bonds. Tennet's approach can also be revisited as an attempt at utilising innovative incentives for citizens. In this case, by investing in the bonds, it can be said that the citizens have a (monetary) interest in the successful completion of the project. At the same time, for the TSO, such an approach not only mitigates public opposition but also provides another source of project financing. This was a pilot project that has not been repeated. Currently no assessment of this pilot project is publicly available.

Another example of innovative public engagement comes from France. In 2016, RTE began using a crowdfunding approach for improving public acceptance of the new power line. RTE launched a webpage (www.mesprojetsterritoriaux.fr) in collaboration with the crowd-funding website ULULE. Citizens can submit their project proposals on the website, and pre-selected projects are uploaded for crowd-funding. When the crowd-financing goal is reached RTE co-finances the project. This innovative approach allows greater public involvement in projects that would receive PAP (Plan d'Accompagnement de Projet) as well as supporting these projects financially. For more details on this approach, please see RTE (2018b).

This aspect is novel and has so far not been extensively researched. Therefore, further research on developing incentive mechanisms for stakeholders is recommended. Furthermore, such innovative approaches to stakeholder engagement could be tested by applying them to pilot projects to assess their effectiveness and impact on social welfare.

4.2.2 Default option on non-agreement

In most situations, the application of an effective stakeholder engagement strategy would lead to resolution of all disputes and completion of the project. In this case, there may be some eventual additional costs involved for the project promoters. However, there may be situations where agreement cannot be reached between the TSO and the stakeholders. Such scenarios may threaten the eventual development of the project with the worst-case scenario being the cancellation of the project.

To deal with such eventualities, in most countries, some type of legal framework is in existence that would allow expropriation of private property for the projects that are deemed critical to the larger interest of society¹⁵. The expropriation of land may be done by the government itself, or the developer may be mandated to exercise such rights. First, in Box 10, the case of Sweden is presented, where in case of a disagreement between the landowners and the TSO, the Swedish mapping, cadastral and land registration authority (Lantmäteriet) decides about land acquisition.

¹⁵ It should be noted that depending on the legal framework of a country, property owners may have the option to take a legal recourse to oppose this action.

Box 10: Default compensation method for landowners in Sweden (Svenska Kraftnet)

The Swedish constitution (Constitution, Chapter 2, Article 18), allows expropriation of land to 'satisfy pressing public interests' with payment of appropriate compensation. The compensations offered are based on the principles set in the Swedish Expropriation Act. The TSO can get access to the land based on the Utility Easement Act that grants it a special status similar to that of compulsory acquisition (Norell, 2008). However, in most cases (approximately 95%) a voluntary easement agreement is reached based on compensation (Norell, 2008). If the landowner and Svenska Kraftnet do not reach an agreement, the TSO will make an application to the Swedish mapping, cadastral and land registration authority (Lantmäteriet) for a resolution. Lantmäteriet, based on their due process, would then decide upon the matter.

According to the public website of the Swedish TSO Svenska kraftnät (2015), the default compensation offered to landowners is summarised as follows. If a power line is built on the land, a lump sum offer of 25% premium on top of the reduced value of the land (due to the line) is made to the landowners for the perpetual leasing of the land. Apart from the lump sum compensation, any damage during the construction of the line is repaired by the developer. Six types of compensations (excluding compensation of legal costs in certain cases) are specified by the TSO. A land lease agreement is signed between the landowner and the TSO to build and manage the transmission line of the land.

In case of transmission infrastructure projects, in some countries, the TSO may be mandated to conduct this activity to complete the project. An example is that of the UK where National Grid is mandated to exercise such rights for their projects. However, exercising this right may not be in the best interests of the TSO as this may have a long-term negative impact on the public opinion of the company in exchange for a short-term gain. Thus, in the future, the TSO may face even greater difficulty while engaging stakeholders on other projects. In Box 11, the case of the UK is described in greater detail.

Box 11: Default option on non-agreement in Great Britain

In GB, the TSO National Grid is mandated to exercise the right granted in the development consent order to expropriate land for development of the new electricity transmission assets. The process that is required to be followed regarding the acquisition of land is explained in National Grid (2013). The following paragraph from the document details the expropriation procedure.

'Where National Grid has been unable to obtain a voluntary Agreement from a third party, following the grant of a Development Consent Order for new electricity transmission assets, National Grid will seek to acquire the relevant land or land rights over the relevant land through the compulsory acquisition powers granted to it through the Development Consent Order. A copy of the Order and a compulsory acquisition notice will be served by National Grid on the relevant third party, and the notice will be posted on or near to the relevant land. Generally, following the processes for compulsory acquisition of land and land rights under both Part 1 of the Compulsory Purchase Act 1965 and the Acquisition of Land Act 1981, National Grid will implement the compulsory acquisition provisions of the Order by serving a 'notice to treat' or, if the Order provides, by a 'general vesting declaration'. Compensation would then be calculated and, if due, payable to the relevant third party in accordance with the relevant provisions of the land compensation legislation.'

Guidance on Land Rights for New Electricity Transmission Assets – National Grid (2013).

5 Conclusions and recommendations for future work.

This research reviews and assesses the possibility of enlarging incentive regulation to improve public awareness and trust in infrastructure development.

Project developers and experts confirm that obstacles to effective stakeholder engagement continue to exist, and three of these are discussed extensively in this report. The first key obstacle is the framework offering economic incentives to engage in these activities. The second key obstacle is the internal TSO procedures, organisation and culture, which may not be appropriate for the complexity of the task at hand. The third key obstacle is the legitimacy of the activities engaged in by the project developer. These three obstacles can exist simultaneously, in various combinations.

The review of the industry literature and the interviews with project developers show that project developers are involved in various stakeholder engagement activities. These activities can be classified into three categories: corporate level stakeholder engagement, project-level stakeholder engagement and compensations. It is important to note that these practices are not mutually exclusive and developers may use a combination of the three approaches.

The analysis of the available literature and expert sources makes clear that there exists a fundamental gap in terms of empirical work or assessment regarding the impact of the aforementioned activities. Empirical work regarding stakeholder engagement activities, on the one hand, and the performance of the project developers, e.g. in terms of developing infrastructure, on the other hand, requires a robust econometric analysis. The availability of this information would substantiate the debate and help both TSOs and NRAs in dealing with economic incentives for such stakeholder engagement activity. Furthermore, a better understanding of the impact would give greater confidence to regulators for incentivising such activities. This information should be made publicly available. In this research, some possible independent and dependent variables that could be used for conducting such a quantitative analysis are conceptually discussed along with the limitations of such an approach. It is recommended that further research be conducted using econometric analysis for developing indicators to quantify costs and benefits from stakeholder engagement activities. It is also recognised that an econometric analysis will take time. NRAs can already take steps based on the other two recommendations from this study in the meantime.

In the context of the incentive regulation framework, three regulatory tools to raise public awareness and trust in infrastructure development are analysed: price or revenue cap regulation, cost-plus regulation and output-based regulation. Each of these approaches has its pros and cons. Furthermore, an interdependence exists between the level of sophistication of the regulatory tool and the resources and skills required to design and implement it. It is clear that NRAs have already started to use different combinations of these tools. However, it is too early to identify which approach will work best for stakeholder engagement activities. NRAs may have to experiment to some extent and come to a functional regulatory framework over time, learning what works best in the specific context of the country. Some of the more innovative incentive regulation approaches appear to be very promising such as in Great Britain. However, they require significant regulatory sophistication in terms of resources and skills for effective implementation. Therefore, it is important that there is an alignment between the regulatory tools utilised and resources available for the NRA to administer these tools.

Furthermore, two avenues for expanding incentive regulation frameworks for stakeholder engagement are explored. The first approach is to include other actors than the energy regulator to guide the TSO to efficiently raise public awareness and build trust in the development of complex projects. These actors can be classified into three categories, namely: government agencies and

authorities, public and organised stakeholder groups, and independent experts. The other approach is to design and implement, by the TSOs and NRAs, innovative incentive mechanisms for stakeholders. Therefore, to expand incentive regulations, NRAs and TSOs will need to continue to be innovative in their approach towards stakeholder engagement. It is recommended that further research is undertaken on developing and pilot testing innovative approaches to enlarge incentive regulation for stakeholder engagement with the aim of turning them into common practice and moving on from pilot projects. The key recommendations for future work are summarised in Box 13.

Box 13: Key conclusions and recommendations for future work.

Conclusions:

Conclusion 1: Stakeholder opposition is a pressing problem. Obstacles to effective stakeholder engagement and to the implementation of such measures continue to exist.

Conclusion 2: Project developers are involved in several stakeholder engagement activities; however, such stakeholder engagement activities need to be mainstreamed and move beyond the pilot project stage.

Conclusion 3: A fundamental gap exists in terms of empirical work or assessment regarding the impact of stakeholder engagement activities.

Conclusion 4: The incentive regulatory tools that were assessed each have pros and cons. Furthermore, there is dependence between the level of sophistication of the regulatory tool and the resources and skills required to design and implement it.

Conclusion 5: NRAs have already started to use different combinations of these tools. However, it is too early to identify which approach will work best for stakeholder engagement activities.

Conclusion 6: Incentive regulation can be enlarged to include other regulators and to consider incentives for other stakeholders.

Recommendations for future work:

Recommendation 1: Econometric analysis should be conducted to support the quantification of costs and benefits of stakeholder engagement activities. Furthermore, this information should be made publicly available by the project promoters to enable analyses by either NRAs or third parties.

Recommendation 2: Share and implement best practices among NRAs on innovative ways to incentivise TSOs to engage in state of the art stakeholder engagement approaches.

Recommendation 3: NRAs should experiment with enlarging incentive regulation by considering a role for other regulators and by developing ways to incentivise other stakeholders.

6 Bibliography

- 50Hertz, 2018. SuedOstLink: continuous dialogue improves the planning results [WWW Document]. 50Hertz website. URL <http://www.50hertz.com/en/Grid-Extension/Onshore-projects/SuedOstLink/Public-participation> (accessed 1.24.18).
- ACER, 2017. Consolidated Report on the progress of electricity and gas projects of Common Interest for the year 2016. Ljubljana.
- ACER, 2016. ACER Taking stock of the regulators' human resources: Summary of findings. Ljubljana.
- ACER, 2014. Recommendation of the Agency for Cooperation of Energy Regulators No 03/2014 on incentives for projects of common interest and on a common methodology for risk evaluation. Ljubljana.
- Adger, N.W., Arnell, N.W., Tompkins, E.L., 2005. Successful adaptation to climate change across scales. *Glob. Environ. Chang.* 15, 77–86. doi:10.1016/j.gloenvcha.2004.12.005
- Berman, K., Knight, J., 2013. *Financial Intelligence, Revised Edition: A Manager's Guide to Knowing What the Numbers Really Mean*. Harvard Business Review Press.
- Clarkson, M.B.E., 1995. A Stakeholder Framework for Analyzing and Evaluating Corporate Social Performance. *Acad. Manag. Rev.* 20, 92. doi:10.2307/258888
- Cohen, J.J., Reichl, J., Schmidthaler, M., 2014. Re-focussing research efforts on the public acceptance of energy infrastructure: A critical review. *Energy* 76, 4–9. doi:10.1016/j.energy.2013.12.056
- Commission, E., 2013. Electricity Interconnection: Halle/Saale - Schweinfurt (DE).
- Commons, J.R., 1936. Institutional Economics. *Am. Econ. Rev.* 26, 237–249.
- DCENR, 2012. Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure. Dublin.
- Derouaux, A., Everaert, J., Brackx, N., Driessens, G., Martin Gil, A., Paquet, J.Y., 2012. Reducing bird mortality caused by high-and very-high voltage power lines in Belgium, final report. Elia Aves-Natagora.
- Donaldson, T., Preston, L.E., 1995. The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications. *Acad. Manag. Rev.* 20, 65. doi:10.2307/258887
- Dorobantu, S., Henisz, W.J., Nartey, L., 2017. Not All Sparks Light a Fire: Stakeholder and Shareholder Reactions to Critical Events in Contested Markets. *Adm. Sci. Q.* 62, 561–597. doi:10.1177/0001839216687743
- EirGrid, 2016. Annual Report 2016. Dublin.
- EirGrid, 2014. Grid25 Initiatives. Dublin.
- EirGrid, n.d. Community Fund and Proximity Payments - Direct benefits to local areas when we develop the grid. Dublin.
- ELIA, 2016. Elia Annual Report 2016. Brussels.
- ENTSO-E, 2018a. ENTSO-E Transparency Platform [WWW Document]. ENTSO-E. URL <https://transparency.entsoe.eu/> (accessed 2.8.18).
- ENTSO-E, 2018b. European Power System 2040: Completing the map - The Ten-Year Network Development Plan 2018 System Needs Analysis. Brussels.

- European Commission, 2016. LIFE Birds on Electrogrid - Installation of the bird protection measures on the high voltage electricity transmission grid in Lithuania, European Commission. Brussels.
- Friedman, A.L., Miles, S., 2006. Stakeholders: Theory and practice. Oxford University Press on Demand.
- Glachant, J.-M., Saguan, M., Rious, V., Douguet, S., 2013. Incentives for investments: Comparing EU electricity TSO regulatory regimes. doi:10.2870/80768
- Glachant, J.M., Khalfallah, H., Perez, Y., Rious, V., Saguan, M., 2013. Implementing incentive regulation and regulatory alignment with resource bounded regulators. *Compet. Regul. Netw. Ind.* 14, 265–290. doi:10.1177/178359171301400303
- Goldstein, J.S., 1992. A Conflict-Cooperation Scale for WEIS Events Data. *J. Conflict Resolut.* 36, 369–385. doi:10.1177/0022002792036002007
- Greene, W.H., 2003. *Econometric analysis*, Prentice Hall. doi:10.1198/jasa.2002.s458
- Haney, A.B., Pollitt, M.G., 2013. International benchmarking of electricity transmission by regulators: A contrast between theory and practice? *Energy Policy* 62, 267–281. doi:10.1016/j.enpol.2013.07.042
- Henisz, W.J., Dorobantu, S., Nartey, L.J., 2014. Spinning gold: The financial returns to stakeholder engagement. *Strateg. Manag. J.* 35, 1727–1748. doi:10.1002/smj.2180
- Hicks, J.R., 1939. The Foundations of Welfare Economics. *Econ. J.* 49, 696. doi:10.2307/2225023
- Jamasb, T., Pollitt, M., 2001. Benchmarking and regulation: International electricity experience. *Util. Policy* 9, 107–130. doi:10.1016/S0957-1787(01)00010-8
- Jones, R., 2005. Finding sources of brand value: Developing a stakeholder model of brand equity. *J. Brand Manag.* 13, 10–32. doi:http://dx.doi.org/10.1057/palgrave.bm.2540243
- Jones, T.M., 1995. INSTRUMENTAL STAKEHOLDER THEORY: A SYNTHESIS OF ETHICS AND ECONOMICS. *Acad. Manag. Rev.* 20, 404–437. doi:10.5465/AMR.1995.9507312924
- Joskow, P.L., 2008. Incentive Regulation and Its Application to Electricity Networks. *Rev. Netw. Econ.* 7, 547–560. doi:10.2202/1446-9022.1161
- Keyaerts, N., Meeus, L., 2017. The regulatory experience of Italy and the United States with dedicated incentives for strategic electricity transmission investment. *Util. Policy* 46, 71–80. doi:10.1016/j.jup.2017.04.005
- Keyaerts, N., Meeus, L., 2015. The experience of Italy and the US with exceptional regulatory incentives for exceptional electricity transmission investments (No. 2015/44), EUI RSCAS. Florence.
- Laffont, J.-J., Martimort, D., 2002. *The Theory of Incentives*. Princeton University Press.
- Laffont, J.-J., Tirole, J., 1993. *A Theory of Incentives in Procurement and Regulation*. MIT Press, Cambridge, MA.
- LeBreton, J.M., Senter, J.L., 2008. Answers to 20 questions about interrater reliability and interrater agreement. *Organ. Res. Methods* 11, 815–852. doi:10.1177/1094428106296642
- LIFE Elia-RTE and Elia, 2015. A cost-benefit analysis of an alternative vegetation management.
- Mituta, M., 2014. One stop shop for PCIs in Germany (Presentation). Bundesnetzagentur.
- Moorman, C., 2017. *The CMO Survey*. Durham, NC.

- NALA, 2017. EirGrid win Plain English Awards [WWW Document]. NALA website. URL <https://www.nala.ie/news/eirgrid-win-plain-english-awards> (accessed 2.1.18).
- National Grid, 2013. Guidance on land rights for new electricity transmission assets. London.
- National Grid, 2012. Consumer Willingness to Pay research. London.
- Norell, L., 2008. Land Acquisition for Infrastructure in the Nordic Countries, in: FIG WORKING WEEK.
- OFGEM, 2017a. RIIO-ET1 Annual Report 2015-16. London.
- OFGEM, 2017b. Decision on the RIIO-T1 and GD1 Stakeholder Engagement Incentive 2016-17 – Transmission and Gas Distribution Networks.
- OFGEM, 2012. RIIO-T1: Final Proposals for National Grid Electricity Transmission and National Grid Gas. London.
- RGI, 2016. Community payments: case studies from across europe. Berlin.
- Rious, V., Glachant, J.M., Perez, Y., Dessante, P., 2008. The diversity of design of TSOs. *Energy Policy* 36, 3323–3332. doi:10.1016/j.enpol.2008.05.010
- Rious, V., Rossetto, N., 2018. Continental incentive regulation, in: Meeus, L., Glachant, J.-M. (Eds.), *Electricity Network Regulation in the EU The Challenges Ahead for Transmission and Distribution*. Edward Elgar Publishing, Florence.
- RobecoSAM, 2016. CSA Guide - RobecoSAM's Corporate Sustainability Assessment Methodology.
- RTE, 2018a. Avelin-Gavrelle : Reconstruction de la ligne 400 000 volts entre Lille et Arras [WWW Document]. Réseau Transp. d'électricité. URL <http://www.rte-france.com/fr/projet/avelin-gavrelle-reconstruction-de-la-ligne-400-000-volts-entre-lille-et-arras> (accessed 1.24.18).
- RTE, 2018b. Mes Projects Territoriaux [WWW Document]. RTE. URL <https://www.mesprojetsterritoriaux.fr/> (accessed 1.26.18).
- RTE, 2017. Contrat de service publique entre l'Etat et RTE. Paris.
- Sanguan, M., De Muizon, G., Glachant, J.M., Leveque, F., 2008. La régulation incitative appliquée au transport de l'électricité: Théorie et application au Royaume-Uni, en Espagne, en Belgique, en Norvège et en Italie.
- Saplacan, R., 2008. Competition in electricity distribution. *Util. Policy* 16, 231–237. doi:10.1016/j.jup.2008.03.004
- Schneider, T., Sander, A., 2012. European Grid Report: Beyond Public Opposition, Lessons Learned Across Europe. Renewable Grid Initiative: Berlin, Germany, Berlin.
- Svenska kraftnät, 2015. Compensation to landowners [WWW Document]. Sven. kraftnät website. URL <https://www.svk.se/en/grid-development/the-construction-process/compensation/> (accessed 1.26.18).
- Terna, 2018. Our certifications [WWW Document]. Terna webpage. URL <http://www.terna.it/en-gb/chi-siamo/trasparenzaeintegrita/certificazioni.aspx> (accessed 2.1.18).
- Terna, 2017. Terna Sustainability Report.
- Terna, 2016. Sustainability indexes [WWW Document]. Terna webpage. URL <http://www.terna.it/en-gb/sostenibilita/performance/indicisostenibilita.aspx> (accessed 1.30.18).
- Tobiasson, W., Jamasb, T., 2014. Sustainable Electricity Grid Development and the Public: An Economic

Approach (No. 1411). Cambridge, UK.

Verse, B., 2018. System and market integration of renewables: 50Hertz' experiences and assessment.

Vogelsang, I., 2006. Electricity transmission pricing and performance based regulation. *energy J.* 27, 97–127.

7 Annex I: ENTSO-E SDC Survey

Survey report

ENTSO-E SDC survey on enlarging incentive regulation to improve public awareness and trust in infrastructure development – FSR study

September 2017, ENTSO-E SDC task force for FSR study

ENTSO-E SDC TF leader: Tomasz Okraszewski (Transnet BW)

Survey design: Leonardo Meeus (FSR), Nico Keyaerts (FSR)

Rapporteur: Nico Keyaerts

Do not cite or circulate without the authors' permission

Responses

11 responses coming from

Belgium	France	Poland
Croatia	Germany (2)	Sweden
Denmark	Macedonia	Switzerland
Finland		

Context of the survey

The Florence School of Regulation (FSR) study, in collaboration with ENTSO-E and RGI, on enlarging incentive regulation to improve public awareness and trust in infrastructure development was announced at and warmly welcomed by the Copenhagen Infrastructure Forum in June 2017. One of the objectives of the study is to take stock of the ongoing innovation in stakeholder activities by project promoters.

Therefore, a survey has been organised by FSR and ENTSO-E with the aim of tapping into the collective memory and knowledge of the electricity TSO community and collecting the experiences with public acceptance activities.

TSOs engage more and more in **activities** like branding, communication, public relations and stakeholder engagement to build trust with the public at large; good relations with all stakeholders support your business, whereas bad relations can be detrimental to it.

The first part of this survey deals with the recent **experience in** of TSOs regarding the abovementioned activities of branding, communication, public relations, stakeholder engagement (including compensation activities).

The second part of this survey deals with the **motivation** that is driving these activities. Motivation can be found as part of a corporate mission, strategy or culture, it can be the desire to avoid repetition of a past negative experience, or there could be financial or reputational incentives that encourage to engage in the aforementioned activities?

The third part of the survey deals with the **organisational setup** for undertaking these activities. Are these activities important at the project-level, or at the corporate level? Are they organised at country level or on a regional/local level? Are all skills and competences present in-house or are some activities outsourced? What are the budgets spent and resources invested on these activities? What is the relative importance of the above activities and how is performance tracked?

1. Taking stock of activities

Three groups of TSO activities to raise public awareness and build trust in infrastructure development can be identified in the survey: project-level stakeholder engagement, corporate level stakeholder engagement, and compensation activities.

1.A. Project-level stakeholder engagement

Examples of project-level stakeholder engagement activities include local dialogue forums, stakeholder workshops, information campaigns (at early stage of project development), information stands and fairs, project branding, pedagogic campaigns, public consultation of network planning, project advisory board.

1.B. Corporate level stakeholder engagement

Examples of corporate level stakeholder engagement activities include employee branding campaigns, social missions and CSR activities, company branding, educational campaigns on electricity transmission, corporate level communication, good neighbour campaign, stakeholder alliances.

1.C. Compensation activities

Examples of compensation activities include policies for compensation of home/land owners, policies for visual impact compensation, supporting community projects.

Table 1: summary of responses on activities

	PROJECT	CORPORATE	COMPENSATIONS
BE (Belgium)	Early stage information, awareness creation methodology	Employee branding campaign, change (internal) programme	Policy for home owner, policy for EMF, policy for visual

DE (Germany)	Local dialogue forums	Social mission, CSR, PR	
DK (Denmark)	Stakeholder workshops	Employee branding	
FI (Finland)	Information campaigns	Branding	
FR (France)	Project branding (INELFE), pedagogic campaign EMF, citizen jury to do co-design, public consult of regional plan	'Power grid of tomorrow' campaign	8%-10% of project budget for community projects
HR (Croatia)	Communication experts	Branding, corporate level communication	
MK (Macedonia)			
PL (Poland)	Information campaigns	Brand building, stakeholder alliances, good neighbour campaign	
SE (Sweden)			Property loss compensation
CH (Switzerland)	Early consultations, info stands and fairs, project advisory board		
Disclaimer: the survey aimed at getting an indication of the range of activities that TSOs engage in and does not claim to be an exhaustive listing of all activities that the respondents engage in			

2. Taking stock of resources (budgets, staff) invested by TSOs

Out of the eleven TSOs that replied to the survey:

- 3 indicated to have a staffing of less than 10 FTE; 5 indicated to have staffing of more than 20 (up to approximately 45) *
- 6 indicated to have budgets in the range of a few million euro or 0-2 % of project budgets or general expenses budgets**

*Caveat: survey respondents often indicated the numbers are best guesses as resources are dispersed in the TSO organizations (usually a mix centralized resources in corporate level departments and decentralized resources in regional and/or project based teams)

** Caveat: budgets for compensation activities are treated separately

Table 2: summary of responses on resources

	STAFF	BUDGET
BE (Belgium)	43	A few million, +/- 0.5% allowed revenue
DE (Germany)	/	Few million at corporate level (but not allowed sponsoring or pure image branding etc.)
DK (Denmark)	20	/
FI (Finland)	6	Approximately 1 million
FR (France)	/	Few millions at corporate level, appr. 5% of project budgets for project-level and 8-10% of project budget for compensations
HR (Croatia)	3-4	Appr. 2% general expenses budget
MK (Macedonia)	1	/
PL (Poland)	14	/
SE (Sweden)	/	/
CH (Switzerland)	20	Very small relative to project budgets (but large benefits)

3. Other observations

On incentives for TSOs to engage in activities to raise public awareness and trust: few respondents answered positively on the presence of dedicated financial or reputational incentives to engage in those activities

On incentives for other stakeholders to support infrastructure project development: there were no examples included in the responses of incentives being given to other stakeholders

On costs and benefits of stakeholder activities: the respondents did not share quantitative (financial) information with respect to the possible costs of limited public support and benefits of stakeholder activities to raise support; the respondents referred to project time delays as a proxy for costs.

Appendix: Survey questions

SDC Survey for an ongoing study on ‘Enlarging incentive regulation to improve public awareness and trust in infrastructure development.’¹⁶

Respondent information

Organisation: Click or tap here to enter text.

Contact person: Click or tap here to enter text.

Email: Click or tap here to enter text. phone: phone: phone: Click or tap here to enter text.

Survey questions

Part A: Experience with activities like branding, communication, public relations and stakeholder engagement

1. As an organisation, do you engage in one or more of the aforementioned activities?
Yes ☐ /No ☐

If your answer to question 1 is *yes*, continue with question 2; if your answer is *no*, you can immediately go to question 6.

2. Illustrate recent experience with branding
Click or tap here to enter text.
3. Illustrate recent experiences with communication
Click or tap here to enter text.
4. Illustrate recent experiences with public relations
Click or tap here to enter text.
5. Illustrate recent experiences with stakeholder engagement (national or local authorities, NGOs, local associations, local population...)
Click or tap here to enter text.
6. What other activities, if any, are you engaged in and how much? Please give examples
Click or tap here to enter text.
7. Do you want to share anything else regarding the experience of your organisation with these activities?
Click or tap here to enter text.

Part B: Motivation

8. Are these activities part of a corporate mission, strategy or culture? Please illustrate.
Click or tap here to enter text.

¹⁶ As the goal is to seek alignment of all stakeholders, ‘Incentive’ is to be understood here not only on TSOs, but may also be on authorities, NGOs, local population, citizens, i.e. to ‘nudge’ them.

9. Can you describe a past negative experience with an infrastructure project that you would like to avoid repeating? Can you list the reasons the project was crippled? How important was that project in terms of benefits for society? How big was the delay of those benefits? Please illustrate with monetary values if possible.
Click or tap here to enter text.
10. Can you describe a previous positive experience with an infrastructure project that you would like to take inspiration from? Can you list the measures which supported the success? How large were the cost savings/benefits for your organisation? Please illustrate with numbers.
Click or tap here to enter text.
11. Are there monetary or reputational incentives from the regulatory authority on your company to engage in the aforementioned activities? If yes, how large are they in absolute terms and compared to your allowed revenue? Please illustrate with numbers.
Click or tap here to enter text.
12. Are there monetary or reputational incentives of any kind on other stakeholders key to the project (local authorities, other authorities, NGOs, local population...) to engage them in the aforementioned activities? If yes, can you describe them as specifically as possible.
Click or tap here to enter text.
13. Do you want to share anything else regarding the motivation of your organisation?
Click or tap here to enter text.

Part C: Organisational setup

Budget and staff resources

14. As an organisation, do you have a dedicated budget for the aforementioned activities?
Yes ☐ / No ☐
15. If your answer to question 14 is *no*, how are the activities you do funded? Please illustrate with numbers.
Click or tap here to enter text.
16. If your answer to question 14 is *yes*, how large are the budgets committed to these activities? Please illustrate with numbers and, if relevant, specify the budgets allocated for branding, for communication, for public relations and/or for stakeholder engagement.
Click or tap here to enter text.
17. If your answer to question 14 is *yes*, what can you spend the related budgets on? Are there compulsory expenses or conversely forbidden actions?
Click or tap here to enter text.
18. How does the budget for aforementioned activities compare to budgets for other business processes in your organisation?
Click or tap here to enter text.
19. How many staff are involved in the activities you undertake? Please illustrate with numbers and specify per activity if relevant.
Click or tap here to enter text.

Organisational structure

20. Are the resources for these activities organised centrally in a dedicated department or at project-level? Please illustrate.

Click or tap here to enter text.

21. Are the resources for these activities used country wide or per region? Please illustrate.

Click or tap here to enter text.

22. Are the skills and competences present in-house or brought in from outside the organisation? Please illustrate.

Click or tap here to enter text.

23. Beyond resources from your company, are there other resources, possibly from other stakeholders, supporting the process? If yes, please describe them.

Click or tap here to enter text.

24. Is there a formal framework for these activities that you have to obey? Please describe the flexibility options you have in this respect; and the flexibility options you wish you had.

Click or tap here to enter text.

25. Please list the main (kind of) stakeholders of your infrastructure project? Do/can/may you engage with all? What motivation do they have and what role do they play?

Click or tap here to enter text.

26. How do most influential stakeholders act on the project? Is it satisfactory from your perspective? Does it look satisfactory from these/other stakeholders' perspective?

Click or tap here to enter text.

27. What measure would you recommend to incentivise on (or nudge) each and every stakeholders listed above, including, but not only, your company and local authorities? Please explain briefly why.

Click or tap here to enter text.

28. Conversely, what would you consider inappropriate incentives? Please explain briefly why.

Click or tap here to enter text.

Tracking performance

29. Does your organisation have KPIs concerning the aforementioned activities? Please illustrate.

Click or tap here to enter text.

30. Besides monetary KPIs, what other indicators do you use? Please illustrate.

Click or tap here to enter text.

31. Does your organisation involve the stakeholders in measuring these KPIs? Do you use stakeholder satisfaction surveys? Do you use expert assessments? Please illustrate.

Click or tap here to enter text.

32. Do you want to share anything else regarding the organisational setup for these activities?

Click or tap here to enter text.

8 Annex II: Internal workshop for ENTSO-E members 18 October 2017

Workshop report

Internal workshop on enlarging incentive regulation to improve public awareness and trust in infrastructure development – FSR study

18 October 2017, Avenue de Cortenbergh 100, 1000 Brussels

Chair: Tomasz Okraszewski (Transnet BW), Sébastien Lepy (RTE)

Moderators: Leonardo Meeus (FSR), Nico Keyaerts (FSR)

Rapporteur: Nico Keyaerts

Attendance

ENTSO-E members, RGI and FSR

Belgium	Slovenia
France	Spain
Germany	

Programme of the workshop

- Welcome and EC Copenhagen Infrastructure Forum outcomes by Sébastien Lepy and Tomasz Okraszewski

- Outcomes of the FSR/ENTSO-E survey and revisiting incentive regulation by Nico Keyaerts and Leonardo Meeus
- Brainstorm session moderated by Nico Keyaerts

Observations in the survey concerning resources invested and presumed costs and benefits of stakeholder activities

Out of the eleven TSOs that replied to the survey:

- 3 indicated to have a staffing of less than 10 FTE; 5 indicated to have staffing of more than 20 (up to approximately 45) *
- 6 indicated to have budgets in the range of a few million euro or 0-2 % of project budgets or general expenses budgets**

*Caveat: survey respondents often indicated the numbers are best guesses as resources are dispersed in the TSO organizations (usually a mix centralized resources in corporate level departments and decentralized resources in regional and/or project based teams)

** Caveat: budgets for compensation activities are treated separately

Discussion:

- One possible cost (benefit) estimate is redispatch costs that can be avoided by implementing the project as the saved redispatch costs can fully or partially pay for the project

Introduction to brainstorm: revisiting incentive regulation (*FSR preliminary thinking*)

A. Including the activities in incentive regulation

Depending on the resources, skills and competences of the regulator and the TSO and depending on the assessment of a task as largely controllable, largely predictable and largely observable activities fit less or more with cost plus incentive regulation, price cap incentive regulation or output based incentive regulation.

A.1 Including project-level stakeholder engagement activities in incentive regulation

Arguments for price cap: often the default scheme, when there are no robust proxies to measure performance of project-level activities and sufficient if innovation of these activities resorts cost savings for the TSO

Arguments for cost plus: some project-level stakeholder engagement activities are compulsory; it could be argued that the activity therefore is not sufficiently under control of the TSO

Arguments for output regulation: there are no obvious proxies for measuring the performance of project-level stakeholder engagement activities

A.2 Including corporate level stakeholder engagement activities in incentive regulation

Arguments for price cap: often the default scheme, sufficient if innovative corporate stakeholder engagement activities bring forth cost savings for the TSO

Arguments for cost plus: there are weak arguments for cost plus as corporate level activities tend to be controllable, predictable and observable

Arguments for output regulation: there exist proxies for some corporate level stakeholder engagement activities, e.g. brand value calculation methods, methods for sustainability rankings

A.3 Including compensation activities in incentive regulation

Arguments for price cap: often the default scheme and can be sufficient when TSO innovation in compensations brings cost savings for the TSO, e.g. the ELIA-RTE Life project focused on increasing biodiversity under overhead lines and the changed business processes lead to overall lower maintenance costs for the TSO

Arguments for cost plus: compensations are sometimes regulated by dedicated laws and policies and the TSO executes those policies, passing through the costs

Arguments for output regulation: there is no experience with proxies for performance of compensation activities

A.4 Distortions of building block approach versus totex

When different incentive regulation schemes coexist for different activities, there might be distortions when TSOs shift cost between activities; a totex approach in which all costs are treated the same remedies that distortion.

B. Beyond the energy regulator: who are the regulators of these activities

The skills and competences involved in these activities go beyond the traditional skills and competences of energy regulators. Several countries have experimented with involving other

government authorities, the public and NGOs, and independent experts to help regulate the TSO in the area of public awareness and trust in infrastructure building.

B.1 Involving other regulators to assess what is a reasonable cost

Environmental, planning and other government authorities set standards for stakeholder engagement in consent procedures (many EU countries), set frameworks for compensation payments that are executed by TSOs (e.g. Germany, France, Italy)

The public contributes to willingness-to-pay studies for different compensations (e.g. Great-Britain) and to defining policies for compensation payments (e.g. farmer compensation in France)

B.2 Involving other regulators to help drive down costs

NGOs and TSOs co-create to innovate business process approaches (e.g. ELIA-RTE Life project to improve biodiversity)

B.3 Involving other regulators to measure performance

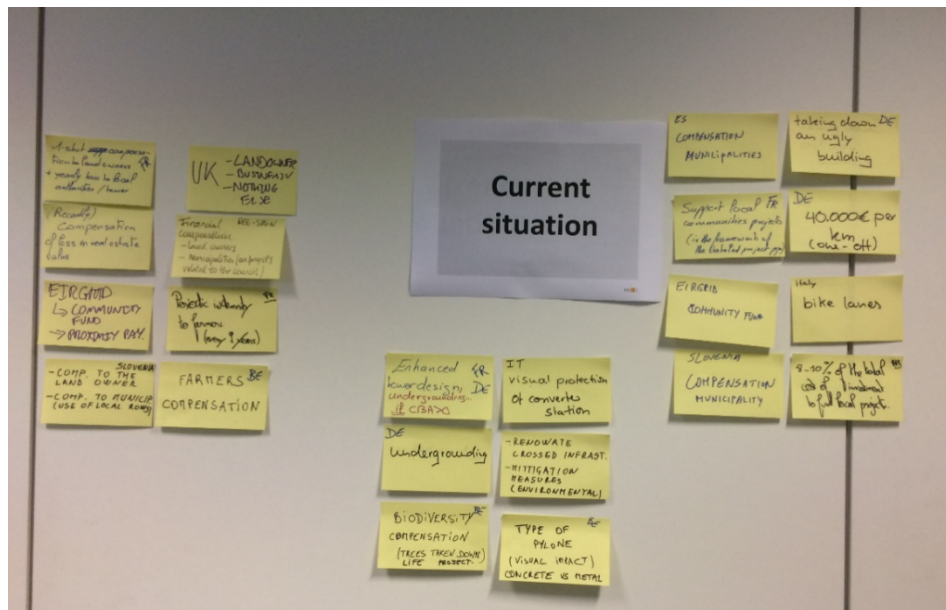
Independent experts provide external audits of sustainability performance of TSOs (e.g. Italian TSO is included in Dow Jones sustainability index) and evaluate stakeholder engagement strategies (e.g. Great-Britain stakeholder strategy graded by expert panel with score determining financial incentive)

Brainstorm session

Three questions were discussed: A/ what is the current experience with compensation activities for raising public awareness and trust in infrastructure development, B/ what is the framing used for compensation activities, and C/ how can the legitimacy of compensation activities be improved

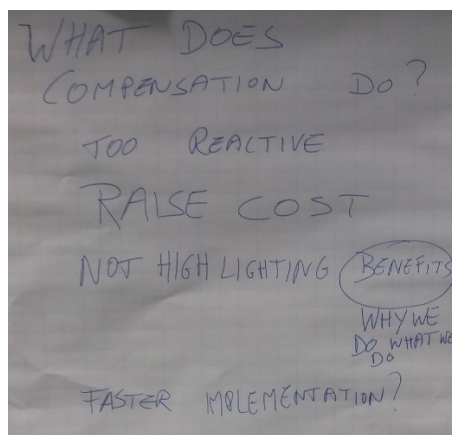
A. What is the current experience with compensation activities?

The brainstorm brought to light three clusters of current compensation activities, which were compensations of affected individuals such as farmers and land owners, financial support to community projects, and compensations in the form of adjustments to the project design like undergrounding a section of the project.

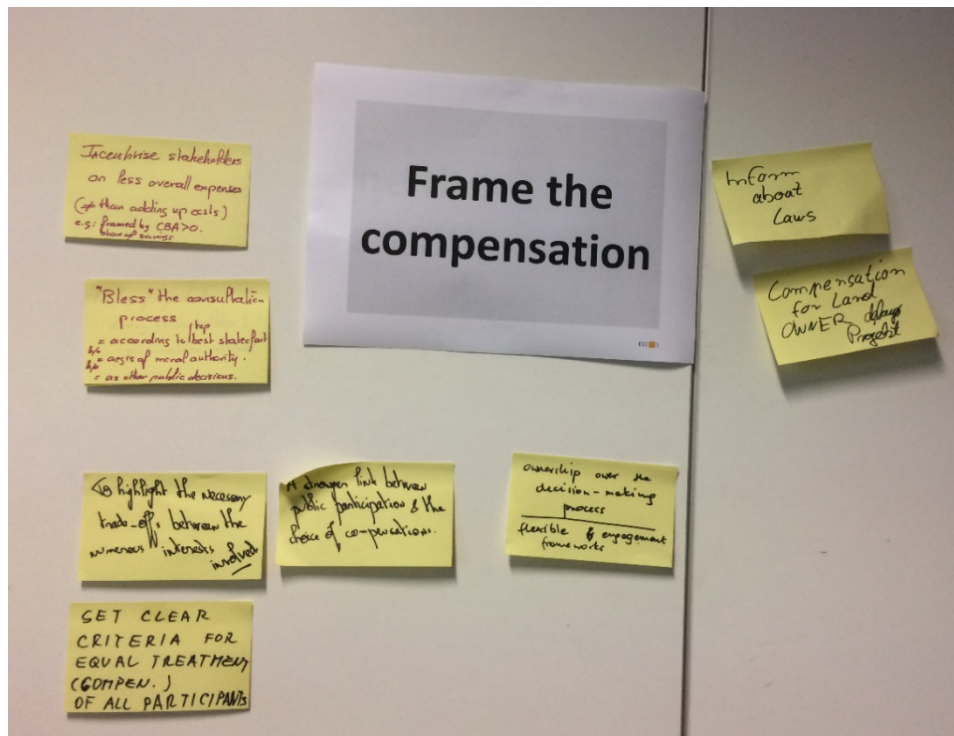


B. What is the framing used for compensation activities?

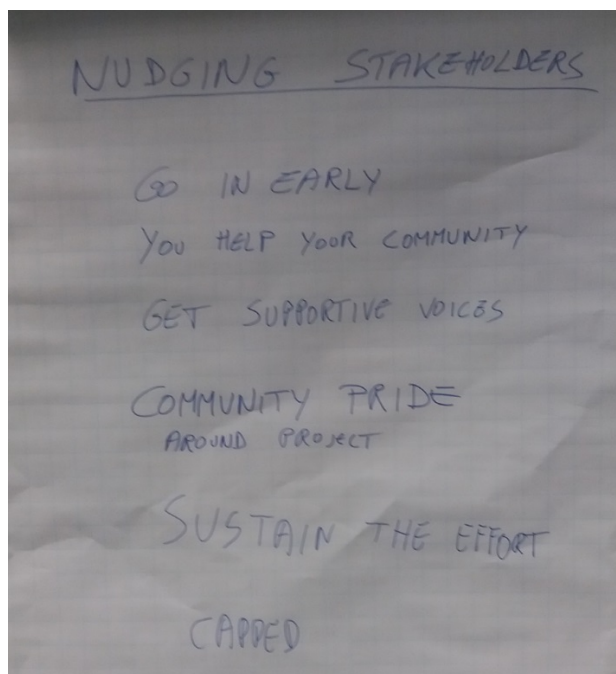
The discussion revealed that the current perception of compensation activities is that these activities are reactive, raise costs without a clear benefit and do not necessarily bring faster project implementation, e.g., when affected actors hold out to get more compensation.



Discussing the framing of the compensation, it was argued that to take control of the framing, TSOs must better explain to the public the overall welfare improvement (highlighting a positive cost benefit analysis). TSOs should also highlight the inevitable trade-offs between different interests, and do the best possible consultation of the public. It was also argued that the link between the consultation process and the choice of compensation measures should be stronger.



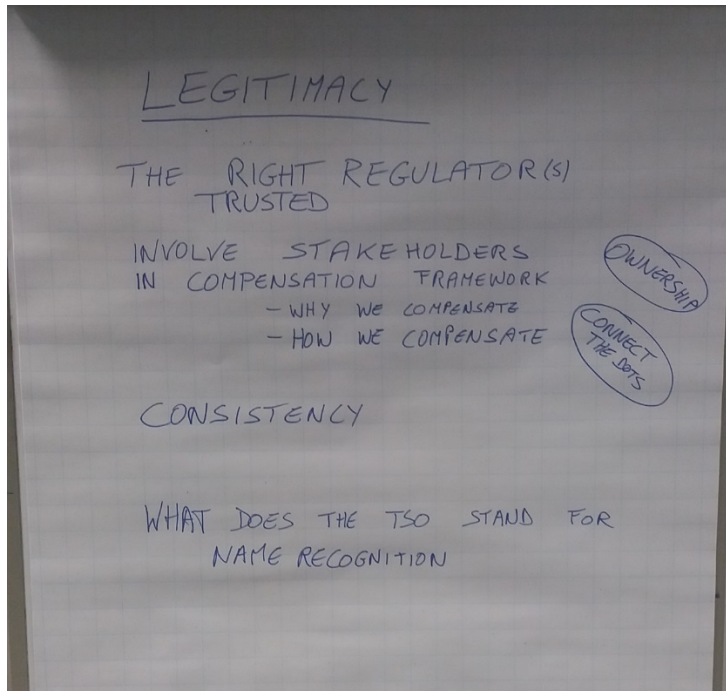
Several practical do's and don'ts to convince stakeholders to support a project were discussed: there have been positive experiences with early communication and with drawing attention to doing something good for the community. It is also important to sustain efforts.



C. How can the legitimacy of compensation and other stakeholder activities be improved?

Brainstorming about the legitimacy (the moral right to do something) several criteria for improved legitimacy were discussed.

- The public needs to trust the regulator(s) to take decisions in the interest of the public.
- Stakeholders need to be involved; they need to be made aware of the importance of the project and how compensation helps the project and the public
- There must be consistency in how the activities are done
- TSOs need to work on what they stand for as the public might not know the TSO



Workshop conclusions

The challenge of raising public awareness and trust in infrastructure building is complex with many actors who have different perspectives. Simple solutions do not exist and to advance and innovate, open discussion among all stakeholders is necessary.

The FSR study in collaboration with ENTSO-E and RGI, which was welcomed by the European Commission at the Infrastructure Forum in June 2017, is contributing to this debate by bringing together the different perspectives of actors and showing the ongoing innovation in the industry.

9 Annex III: External workshop 14 November 2017

Workshop report

External Workshop on enlarging incentive regulation to improve public awareness and trust in infrastructure development – FSR study

14 November 2017, Avenue de Cortenbergh 100, 1000 Brussels

Chair: Gerald Kaendler (ENTSO-E)

Moderators: Leonardo Meeus (FSR), Nico Keyaerts (FSR)

Rapporteur: Nico Keyaerts

Attendance

1/ per organisation

TSO/ENTSO-E 12	NGO 2
NRA/ACER 3	Academic 2
EC 3	

2/ Geographical (location of interests)

Germany 7	Belgium 2
France 2	EU 4
Independent 2	Transnational associations 5

Context of the workshop and FSR study in collaboration with ENTSO-E and RGI

The Florence School of Regulation (FSR) study, in collaboration with ENTSO-E and RGI, on enlarging incentive regulation to improve public awareness and trust in infrastructure development was announced at and warmly welcomed by the Copenhagen Infrastructure Forum in June 2017. The Infrastructure Forum is looking forward at discussing the results and the possible need of regulatory changes at the next Infrastructure Forum meeting in 2018.

Roundtable 1: Which activities are most important to improve public awareness and trust in infrastructure projects?

Introduction: According to the ACER monitoring report on the progress of projects of common interest (PCI) about 1/3rd of electricity PCIs are delayed.¹⁷ Delays, as opposed to rescheduling, is for external reasons which often are directly or indirectly related to (limited) public support for the projects. It can be argued that public support issues are exogenous factors for project developers as many activities can be engaged in to raise public awareness and trust. Examples of these activities are project-level stakeholder engagement (info stands, public consultations, open houses, etc.), corporate level stakeholder engagement (branding, advertising, corporate social responsibility, social mission, education campaigns, etc.) and compensation activities (adjusting the project, financial payments to individuals, engaging in community projects, etc.).

Polling results:

Answer Summary						
Answer options	▲	'project-level stakeholder engagement (e.g. info stands)'	◆	'corporate level stakeholder engagement (e.g. branding)'	●	'compensation activities'
Number of answers received	6		4		5	

¹⁷ ACER, 2017. Consolidated report on the progress of electricity and gas projects of common interest. Ljubljana, 30 June 2017.

Discussion:

On activities in general

- In general, the activities are good, but engagement is predominantly reactive
- Of 93 CEF actions about 1/3rd has element of public acceptance
- Not only problem of TSOs also private project developers
- Project and corporate level engagement first, but also compensation has value in bringing something real to affected community
- It is about getting project done, consumers do not care about what activities help best
- Examples discussed come from one part of Europe (note by rapporteur: the western/central European electricity system), something to keep in mind

On project-level

- Early and sustained engagement when you enter an area
- Project-level is important as it is most targeted engagement to all specific stakeholders of a project, corporate level engagement might not be able to reach that variety of stakeholders

On corporate level

- Most TSOs face public acceptance issues, the problem seems somewhat less severe for TSOs that engage before they go in with a project
- Not always clear what corporate level engagement brings to the table

On compensation

- Damage control should be last on mind
- Not necessarily TSO approach, sometimes raised by politicians to just pay the farmers, the...
- Paying off nimby not the way to go, compensations go to few people while costs go into tariffs for all consumers
- Just adding money to a project is not a solution; you can make undergrounding the standard, multiplying the cost by 6-8 or use half that money to engage in a different way

FSR wrap-up: the polling results and the debate confirmed that all three types of activities are relevant even if there are some differences in their ranking. Today, many project developers engage in some or all of these types of activities. Nevertheless, some corporate level activities are controversial (e.g. advertising or sponsoring activities) and compensations should rather come last to mind as it is the most controversial as it means redistributing wealth from the many to the few.

Roundtable 2: What is the main obstacle for TSOs to engage in these activities?

Introduction: ENTSO-E and FSR did a survey among European electricity TSOs to identify lighthouse examples. There were 11 replies (out of around 40 ENTSO-E members) from predominantly northwest European TSOs and a few central and eastern European TSOs. The survey collected some information

on the resources committed to stakeholder related activities both in terms of budgets and in terms of staffing; these resources are limited.

Out of the eleven TSOs that replied to the survey:

- 3 indicated to have a staffing of less than 10 FTE; 5 indicated to have staffing of more than 20 (up to appr. 45)*
- 6 indicated to have budgets in the range of a few million euro or 0-2% of project budgets or general expenses budgets**

*Caveat: survey respondents often indicated the numbers are best guesses as resources are dispersed in the TSO organizations

** Caveat: budgets for compensation activities are treated separately

The 2017 CMO/Deloitte survey on marketing budgets finds that the US energy sector (including utilities and including also oil and gas) spends on average 4% of its overall budget on marketing, which is a form of stakeholder engagement; much less than e.g. the 13% spent by mining companies, which is a B2B industry.¹⁸

Notwithstanding the differences between Europe and the US, the imperfection of marketing budgets as a proxy for the wide range of activities discussed in the workshop and the particular role of grid operators in the industry, both surveys suggest that the resources invested in public awareness and trust building by the energy industry are fairly low.

Polling results:

Answer Summary							
Answer options	▲	'limited economic incentives (financial risk)'	◆	'legitimacy of activities (reputational risk)'	●	'TSO procedures, organization and culture'	■
Number of answers received	4		3		6		

Discussion:

On obstacles in general:

- Are there other obstacles than these three?
- There could be regional differences in the relative importance of the obstacles. The TSO landscape is diverse with large and small TSOs having to take on similarly large projects like PCIs

¹⁸ <http://deloitte.wsj.com/cmo/2017/01/24/who-has-the-biggest-marketing-budgets>; last accessed 22 November 2017

On limited economic incentives:

- TSOs do experiment with innovative approaches, but the economic framework to move from pilots to established practice is not strong enough. It is important to be consistent with all projects and e.g. think about the treatment of additional costs as OPEX when there is not an asset that is owned by the TSO. This OPEX is not always accepted, leaving the TSO with the higher cost of an activity that may have helped the project.
- With limited budgets we need to balance different interests. E.g. if cables become the standard, benchmarking among TSOs will just mean the average cost has also multiplied by 6 or 8.

On legitimacy of the activities:

- Legitimacy for engaging in the activities has to come first to allow TSOs to change internally
- Legitimacy is key for public acceptance as legitimacy means the people are in it together
- Project developers are reluctant to pay landowners or to put a cable because those actions increase, even multiply, the costs. Raising the costs when not everyone agrees is the main challenge and it can only be done if there is legitimacy.
- TSO operation would be easier if there was clarity on what can be done as activities and what is absolutely forbidden activities

On TSO procedures, organization and culture:

- The main obstacle is the practices employed by project developers in the field; economic regulation does not solve the problems if TSOs do not have the right background to engage with the public
- TSOs and other project developers have sometimes operated for a long time in specific political regimes; they are now asked to enter in these innovative activities
- TSOs have a legitimacy, a mandate to do certain things. Historically, TSOs have not been consumer centric. Consumers and other stakeholders want to be involved

FSR wrap-up: the polling results and debate indicate that even though the relative importance of the three obstacles might differ, TSOs in practice face a combination of all three, with possibly regional differences.

Some TSOs are engaged in transformational change of their processes, organization and culture (e.g. Elia, Eirgrid). In terms of legitimacy all stakeholders have a responsibility to explain their roles in the energy transitions, to explain why infrastructure projects are important, and to explain the public why higher costs are justified (e.g. paying for a community hospital) to get the project done (continued in roundtable 3). The economic incentives are further discussed in roundtable 4.

Roundtable 3: Who are the most important regulators of these activities?

Introduction: one dimension of legitimacy is the actors that 'regulate' the activities to raise public awareness and trust in infrastructure development.

Polling results:

Answer Summary				
Answer options	▲ ‘the energy regulator’	◆ ‘environmental, planning and other government agencies’	● ‘NGOs, the public and other stakeholders’	■ ‘independent experts’
Number of answers received	6	9	3	0

Discussion:

General:

- The case of Germany is unique as both the economic regulation and the planning authority are bundled in the national regulatory authority for energy
- Different actors can help with regulating the TSO, meaning steering it in the right direction, but only if there is alignment; if regulators are not aligned they will kill the project instead of helping it
- The NRA is for day-to-day, the government provides long term rules and NGOs and the public check
- There are also different regulators at EU, national and local levels that need to be aligned

On the energy regulator

- In some countries the energy regulator will give an opinion on the network development plan assuming that the plan has the blessing of society; the regulator then expects the TSO to implement that plan

On the environmental, planning and other government agencies:

- It is important to get input from state representatives, to help steer actions. The costs of the activities are then a matter of the energy regulator

On NGOs, the public and other stakeholders

- There are some good experiences with combined planning and cost discussion involving NGOs; the government should be transparent about why certain projects are on a list for cabling and other projects not

On independent experts

- Independent actors can play a supportive role, but are not ‘regulators’
- In Germany there are good experiences with bringing in experts in moderating

FSR wrap-up: the polling and the debate indicate that the majority of stakeholders sees the energy regulator or state authorities as the main regulators, acknowledging a role for other actors in supporting regulation.

In practice, other actors than the energy regulator are already involved to regulate the TSOs in the area of public awareness and trust building. Environmental, planning and other government authorities set rules for engaging with the public in permitting procedures and decide on financial compensation frameworks. NGOs, the public and other stakeholders are involved in studies on public willingness to pay for certain options in the project design, they co-develop policies for compensations and can help with innovation in areas where they more expertise (e.g. land maintenance). Also independent experts have been involved in regulating TSOs by evaluating stakeholder engagement strategy documents or auditing the sustainability performance of TSOs.

Roundtable 4: What is the best way to incentivize TSOs to engage in these activities?

Introduction: Project developers are expected to engage with the public and the costs involved in those activities should be appropriately dealt with. The energy regulator then has to reflect on how to give economic incentives. There are roughly three approaches to incentive regulation: cost plus (accepting efficient costs to enter in the asset base plus a fair remuneration), price or revenue cap (mimicking competition by giving cost efficiency incentives), and output based regulation (often linked to quality and performance targets).

The choice for one or the other can be seen as a trade-off involving the skills and resources of the regulator and the TSO and the assessment whether an activity is largely controllable, predictable and/or observable.

Polling results:

Answer Summary				
Answer options	▲ 'cost plus'	◆ 'price cap'	● 'output regulation'	■
Number of answers received	4	3	6	

Discussion:

General:

- Price/revenue cap for opex and cost plus for capex, but projects were late or not done at all, new incentive introduced with extra money for timely completed strategic projects; to avoid cost overrun risk for the consumers, the budget is the one originally approved for the projects so a later change to cabling would not affect the incentive
- Probably a mix works better, but simple cost plus to be avoided; on the other hand, if an activity increases benefits of the project it is an efficiently incurred cost and there will not be a problem
- Permits often delayed because public opposition which is not controllable, not predictable, then cost plus is fair, but TSOs have many things under control like getting all documents ready on time
- Different ways to incentivize the TSO, but we should avoid micro management
- Involve the public in tendering different options, option 1 is 2 billion project and option 2 is 1.8 billion but includes a hospital the community was missing; this will be an incentive for the public to support projects
- The incentives should allow to experiment, incentive regulation for these activities is a trial-and-error exercise, starting out with cost plus to eventually end up in output based once there are good performance indicators might be a sensible approach

On cost plus

- Cost plus is simplest, but if the problem is changing the TSO then offering the TSO board the opportunity to earn money will work better

On output regulation

- Output regulation risks to become a thick the box exercise, what is a good performance indicator besides just getting the project done
- Output seems the best option, unless you get it wrong because then it is the worst option

FSR wrap-up: the debate made clear there are no straightforward solutions and that also in incentive regulation there needs to be some room for trial-and-error to move up the learning curve for both the TSO and the regulator.

Price cap might be sufficient for making TSOs engage in those activities that bring direct cost reductions for the TSO. Other activities may raise the cost for the TSO whereas the benefits of the project are reaped elsewhere in the energy system. In such cases output regulation can be the better option of a good performance indicator can be defined; if not, cost plus may be appropriate.

Workshop conclusions

The challenge of raising public awareness and trust in infrastructure building is complex with many actors who have different perspectives. Simple solutions do not exist and to advance and innovate, open discussion among all stakeholders is necessary.

The FSR study in collaboration with ENTSO-E and RGI, which was welcomed by the European Commission at the Infrastructure Forum in June 2017, is contribution to this debate by bringing together the different perspectives of actors and showing the ongoing innovation in the industry.

