CONSOLIDATED REPORT

ON THE PROGRESS OF ELECTRICITY AND GAS PROJECTS OF COMMON INTEREST

Ljubljana

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1. Summary

1.1 Introduction

The Energy Union strategy reconfirmed infrastructure as an essential element for completing the internal energy market, integrating renewables and ensuring security of supply. Projects of common interest ("PCIs") represent the most important hardware links and provide a significant contribution to the objectives of European energy policy. The strategy also underlined the importance of transparency, accessible information for investors and coherence in the existing funding schemes[1].

On the basis of its legal obligation pursuant to Article 5 of Regulation (EU) No 347/2013, the Agency monitors the progress achieved in implementing the PCIs, based on the inputs from project promoters. The current report represents the first iteration of this exercise and it provides a comprehensive picture about the state of play of the priority projects and the developments that have taken place since their inclusion in the first Union list of PCIs. This summary gives an overview of the findings and recommendations which are common to both the gas and electricity sectors. Separate chapters include in-depth analyses of the gas and electricity projects and the sector specific findings and recommendations.

1.2 Main findings for PCIs

In spite of the differences in the characteristics and use of gas and electricity infrastructure, a number of common phenomena are observed in both sectors.

As regards the compliance with the reporting obligation, the Agency positively notes a very high (over 90%) response rate from promoters by the expiry of the legal deadline. The submitted reports, however, often contain data of a mediocre or low quality, with missing or inconsistent information. The Agency refined the received inputs via additional questions to the promoters and the National Regulatory Authorities ("NRAs") review of the data.

Although PCIs are meant to have priority at a European level, several PCIs are either not included at all in any **National Development Plan** or are mentioned only in the development plans of some of the involved Member States. Many projects with clear cross-border impacts are **not recognized as a national priority in all concerned Member States**.

For both the electricity and gas lists, half the projects are more advanced (i.e. have started the permitting process), and therefore can be considered as "projects on the way", as they have the potential to contribute to the completion of the internal energy market within a certain timeframe. The other half of the projects are still at an initial stage, for which there is a higher degree of uncertainty regarding their design, budget and completion date.

The progress of the projects indicates that currently **slightly more than half of the PCIs are behind the original schedule as planned in 2012/2013**, being either delayed or rescheduled. This means that fewer PCIs are expected to be commissioned in the coming years compared to what was planned when the first PCI list was prepared.

[1] Cf. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee on the regions and the European Investment Bank, Brussels, 25.2.2015, COM(2015) 80 final, p. 8.

Delays in project advancement – which occur as a result of a circumstance external to projects whose timely implementation is still necessary – are less likely to appear in a pre-permitting phase than at more advanced phases of development. **Permit granting issues** are cited both by gas and electricity promoters as one of the major drivers for delays[2]. Projects which are delayed are delayed on average by 2 years.

Rescheduling – which occurs when a promoter voluntarily postpones the implementation of the project due to various external reasons making the project's realisation within the originally planned timeframe less necessary – occurs mostly in the planning phase and results in an average postponement of project implementation by at least 2 years. Rescheduling, which affects more projects in gas than in electricity, is often explained by market uncertainties and by a project's development being dependent on or correlated with other investments.

Therefore, projects face different challenges at different implementation stages and status of maturity. More advanced projects – i.e. those which are either in permitting or a more mature phase – are more likely to be delayed than rescheduled, while less-advanced PCIs – i.e. those still in the planning phase – are more often subject to rescheduling than to delays.

Approximately 20% of the promoters in both gas and in electricity either did not provide information about the **works performed since the adoption of the first PCI list** or indicated that it is non-applicable. This casts a shadow of doubt over the ambitions and the relevance of these projects on the current or on the upcoming lists.

Since a number of projects are off the initially planned path, the expected commissioning dates are also impacted. Current expectations are for a **"project commissioning peak"**[3] whereby a large number of PCIs are planned to come online within a relatively narrow timeframe of 5-6 years. In particular, the years 2019 and 2020 represent the peak years in gas and electricity when more than 30 PCIs are expected to be commissioned in each sector during these two years. During this period, the assets that will be required will reach a magnitude which has never been observed in earlier investments of the undertakings. If plans go ahead as reported by the promoters, **€37.6 billion in electricity and €55 billion in gas would be invested between 2015 and 2022, totalling €92.6 billion for reported CAPEX only**.

The expected level of investments is not distributed equally among the various priority corridors. The budgets of the **Southern Gas Corridor** projects in gas and the **North-Sea Offshore Grid** projects in electricity are expected to amount to **roughly half of the overall expected investments** in each sector respectively.

Regulation (EU) No 347/2013 introduced tools dealing with the **maximum duration of the permit granting process**. The Agency notes that the benefits of these provisions are not fully taken advantage of yet, while in the meantime the maximum allowed length of the permitting procedures where Regulation (EU) No 347/2013 applies is fast approaching and shall expire in May 2017[4]. However, project promoters report that in certain cases the permitting procedure can be concluded in just a few months, while other promoters (mostly of projects that have been in the pipeline

[2] For sector-specific reasons for delays please refer to the relevant chapters in this report.
[3] The number of PCIs to be commissioned however, falls on a smaller number of years in gas than in electricity where there are periods of rather low (5 PCI/year) and rather high (10 PCI/year) number of projects scheduled for commissioning.
[4] The provisions of Chapter III of Regulation (EU) No 347/2013 do not apply to projects for which the project promoter submitted an application before 16 November 2013.

already before Regulation (EU) No 347/2013 entered into force) report that these stages have lasted or are expected to last for years.

1.3 Recommendations for the PCIs

Drawing on the main findings of the monitoring activity, the Agency recommends the following actions.

Projects at various levels of maturity differ in terms of the likelihood and the timeline for their realisation. The Agency considers that a **better distinction between PCIs considered for the upcoming lists based on their maturity levels** would help gain a more realistic picture about their contribution to the European energy infrastructure, the short- and long-term consequences of their delay (if any), and help foster a better understanding of the specific difficulties which they appear to be facing.

Because the Union lists are valid for a limited period of time, **priority should be given to those projects on the next PCI list and those project promoters who demonstrate progress** in line with the original implementation plans during the two-year period when they enjoyed the PCI status after being included on the PCI list. Projects **where no reasonable progress** is **visible** need to be carefully assessed during the next round of PCI selection, in order to identify the reasons for lagging behind the original plans.

Where the lack of progress can be traced back to **reasons external of the promoter**, greater awareness about the specific circumstances of the project, intervention to help overcome the difficulties, and tailor-made support by the Regional Groups and the European Commission may be necessary, either in a bilateral or a regional format. However, **promoters which have not carried out any activity to develop their project** in the reporting period may bring no added value and it may be good to reconsider the PCI status for their projects.

Specific attention should be given by NRAs, Regional Groups and the European Commission to rescheduled and delayed projects.

For example, **rescheduled** PCIs, i.e. projects which now appear not to be needed in the original timeframe, **may not merit inclusion in the PCI list at this time**, but in the later rounds of PCI selection they may prove to be important and necessary again.

In view of the high number of **delayed** projects, promoters are encouraged to **raise awareness and indicate the difficulties** they encounter to the Regional Groups and the European Commission and the **permit granting process should be further enhanced** by addressing the factors that impact the duration of the permit granting.

In order to accelerate permitting, the Commission and the Competent Authorities are invited to explore the various factors that have an impact on the permit granting duration, with a view to:

- Standardise procedures, technical and environment standards.
- Take measures to accelerate access to land and land compensation.
- Enhance cooperation with local governments.
- Identify best practices and share them among Competent Authorities.

The **integrity and the consistency of the PCI selection and the PCI monitoring processes** should be ensured. The current PCI monitoring exercise is the first one in a series of forthcoming monitoring activities and its accuracy would be enhanced by improving the information available to the Agency about the PCI status, progress, and difficulties.

The European Commission, in cooperation with the ENTSOs and the NRAs, is invited to take action to ensure integrity between the PCI selection and PCI monitoring procedures via the following actions:

- Agree on common data set and definitions of various indicators to be used throughout the process of Ten-Year Network Development Plan (TYNDP) drafting, PCI selection and PCI monitoring activities. Harmonising data collection and availability would also ease the administrative burden on the project promoters for reporting.
- Draw up a less detailed implementation plan for less advanced projects to be submitted during the PCI selection process.
- The results of PCI monitoring should be taken into account in the next round of PCI selection (e.g. PCIs in breach of Regulation (EU) No 347/2013 should not be included in the next PCI list, the necessity of rescheduled PCIs should be carefully assessed, the adequacy of progress made, as well as the reasons for delays and the possibilities to overcome difficulties).
- Require project promoters to explain and justify to the Regional Groups differences between reported information or the difficulties in providing the requested data.

The Agency notes the importance of the **full implementation of Regulation (EU) No 347/2013** and the improvement of the envisaged regulatory and financial tools in order to ensure the timely implementation of projects with high European priority.

In order to improve the overall PCI process, TSOs and NRAs / Member States should ensure that **PCIs are listed in all relevant National Development Plans** and Regional Investment Plans, in pursuit of consistency and in order to meet legal requirements of Article 3 (6) of Regulation (EU) No 347/2013.

The project promoters are strongly encouraged to make efforts to **improve the completeness and quality of the data** they provide in the framework of the PCI monitoring to increase confidence in the robustness of their projects and the reliability of the whole PCI process. Also, they should follow a constructive cooperation approach with competent authorities, NRAs, and other promoters and set a realistic implementation plan of the project (permitting, construction) to result in lower chances for project delays and rescheduling.

2. Background and legal basis

In order to facilitate the development of Europe's energy infrastructure, the European Union ("EU") adopted Regulation (EU) No 347/2013 of 17 April 2013 on guidelines for trans-European energy infrastructure[5]. Regulation (EU) No 347/2013 sets out a legislative framework for infrastructure planning and project implementation. Within this framework, projects included in the Union-wide

[5] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0347&from=en

list of PCIs benefit from accelerated and streamlined permit granting procedures, improved regulatory regime and – where appropriate – financial support under the Connecting Europe Facility ("CEF"). PCIs are selected according to a procedure established by Regulation (EU) No 347/2013 to contribute to the implementation of one of the nine priority infrastructure corridors in the domains of electricity, gas and oil, and three Union-wide infrastructure priority areas for electricity highways, smart grids and carbon dioxide transportation networks. The first Union list of PCIs consists of 245 PCIs (134 for electricity and 104 for gas, 7 for oil) [6] or 248 projects in total[7].

Article 5(4) of Regulation (EU) No 347/2013 stipulates that, for each project falling under the categories set out in Annex II.1 and 2, promoters of gas and electricity PCIs shall submit, by 31 March of each year following the year of the inclusion of a PCI in the Union list, an annual report to the relevant competent authority as referred to in Article 8 of Regulation (EU) No 347/2013 and to the Agency. This project promoter's report shall give details of the progress achieved in the development of the project, the delays compared to the original implementation plan where applicable and a revised plan to overcome the delays where relevant.

In the Agency's view, it is essential that the annual reports also include an updated evaluation of the expected benefits and costs, as well as of the expected increase of the cross-border grid transfer capability (in electricity) associated with each project. Pursuant to Article 5(5) of Regulation (EU) No 347/2013, the Agency shall submit a consolidated report to the Regional Groups within three months of the receipt of the project promoters' reports, which includes the evaluation of the progress achieved and (where appropriate) recommendations on how to overcome the delays and difficulties encountered.

One of the main focuses of the Agency's report is to monitor the progress of the projects' implementation, i.e. whether they are on time, ahead of schedule, delayed, or rescheduled. In order to ensure consistency and facilitate better understanding of the projects' progress, the Agency prepared questionnaires in a standard format and provided to the project promoters guidance regarding the definitions of the terms "delayed" and "rescheduled". The terms are defined in the following way:

- The term "delayed" is used to describe the progress of projects which are still needed at the expected date, but cannot be delivered on time due to various external factors, such as permitting, environmental, legislative reasons, etc.

- The term "rescheduled" is used to describe the progress of projects which are voluntarily postponed by the promoters due to changes of the external drivers of the projects (e.g. postponed connection of new generation in electricity, lower demand for gas or electricity, less urgent need for an investment due to updated network planning data or giving priority to other transmission solutions).

The Agency also made a clear distinction between "delay" and "difficulty" encountered by the project promoters. A PCI is considered as experiencing difficulties in case of a postponement of less than six month, without, however, a significant change in the estimated costs or benefits expected to be derived from the project.

[6] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1391&from=EN
[7] PCI 8.1.2 consist of 4 alternative projects.

VOLUME 1: ELECTRICITY PROJECTS

1 Introduction

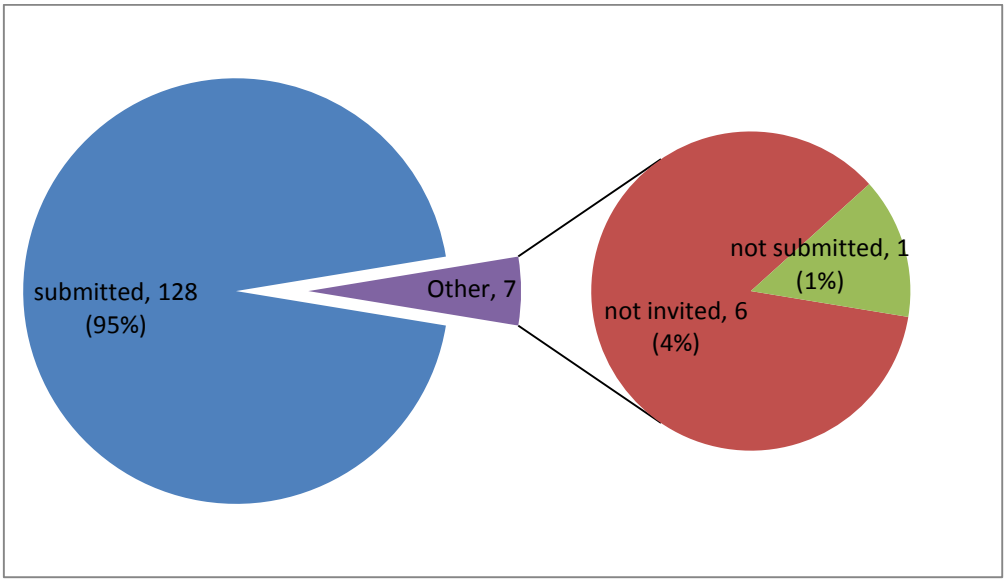
1.1 Overview of the reports received from the project promoters

1.1.1 Fulfilment of the reporting obligation

On 19 December 2014 the Agency invited all the PCI promoters for which the Agency had the contact details (i.e. the promoters of 129 out of 135[8] electricity projects) to fill in the monitoring report questionnaires. 128 submitted a report to the Agency by 31 March 2015[9]. Information on submissions, as well as on the list of projects for which no report was submitted is included in *Annex I: "Information on the submission of the monitoring reports".*

A graphical depiction of the submission statistics is presented in Figure 1.

Figure 1: Projects reporting



1.1.2 Completeness and adequacy of the submitted data

Completeness of the submitted reports varies among projects, but also among sections of the questionnaire. After an initial review of the reports, the Agency identified a **significant number of incomplete reports**. Project promoters who submitted an incomplete report were requested to focus on selected pieces of missing information and to provide, at least, the date of submission of file for the permit granting process, the 2015 estimated CAPEX figure, the updated expected GTC increase, the updated expected commissioning date, the type of the project, and the starting and (if relevant) the ending point (i.e. location) of the project. The Agency performed a series of **validity checks**, and in case of inconsistencies, it went back to project promoters asking for **clarifications**. For more details on the approach and the clarifications asked, please refer to *Annex III: Clarification and validation of submitted data*.

After the requested clarifications were received by the Agency, the completeness of data increased, i.e. the estimated 2015 CAPEX was provided for 120 (94%) of the projects, for which a report was submitted, the updated expected GTC increase for 106 (92%) of transmission projects, the updated expected commissioning date for 111 (88%), the type of project for 128 (100%), and the position (starting and ending points) for 106 (97%) of the relevant projects. For the rest of the data,

[8] The number of electricity PCIs is 134, but PCI 1.10 includes two projects, so the number of projects is 135. The monitoring report was therefore submitted for 127 PCIs, consisting of 128 projects.
[9] Out of the 128 received monitoring reports, one was submitted a few hours after the deadline due to technical difficulties.

completion rate varies a lot depending on the case, but a general remark is that 2012 data, and the submission of data relevant to the implementation plan of the projects as of 2012 was lower than the data relevant to the implementation plan as of 2015. For the exact information regarding data completeness for each question included in the transmission questionnaire, please refer to *Annex IV: Data completeness (transmission and smart grid PCIs).*

2 Overview of the projects

2.1 Breakdown of projects by category, type of infrastructure and priority corridor

2.1.1 Categories of projects

Out of the 127 PCIs and 128 projects covered by the report[10], **115 (90%) projects fall into the transmission category, 11 (8%) projects into the storage category and 2 projects (2%) into the smart grids category.** Out of the transmission projects 48 are interconnectors and 65 are internal transmission projects[11].

Almost **half of the projects belong to** the infrastructure priority corridor **"North South electricity interconnections in Central Eastern and South Eastern Europe" (NSI East)**, followed by "North South electricity interconnections in Western Europe" (NSI West), "Northern Seas offshore grid" (NSOG) and "Baltic Energy market Interconnection Plan" (BEMIP), as depicted in Figure 2 and Figure 3.

The prevalence of the NSI-East corridor projects as well as the overwhelming share of transmission projects strongly influences the outcome of the overall statistical results.

Figure 2: Breakdown of projects per priority corridor and thematic area Smart Grid

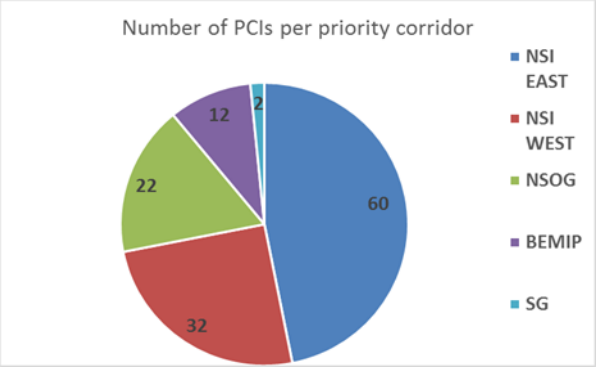
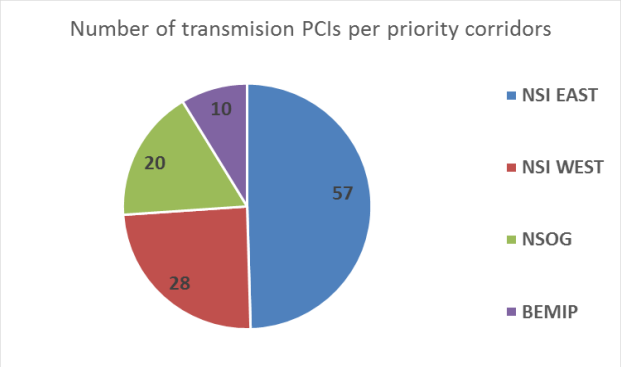


Figure 3: Breakdown of transmission projects per priority corridor



For a better analysis and monitoring of the projects, project promoters were required to identify, based on the different elements or technology that the projects involve, which of the following categories their projects felt into:

Transmission

- Combined investments
- AC transmission line
- Offshore DC transmission cable
- DC transmission line

Storage

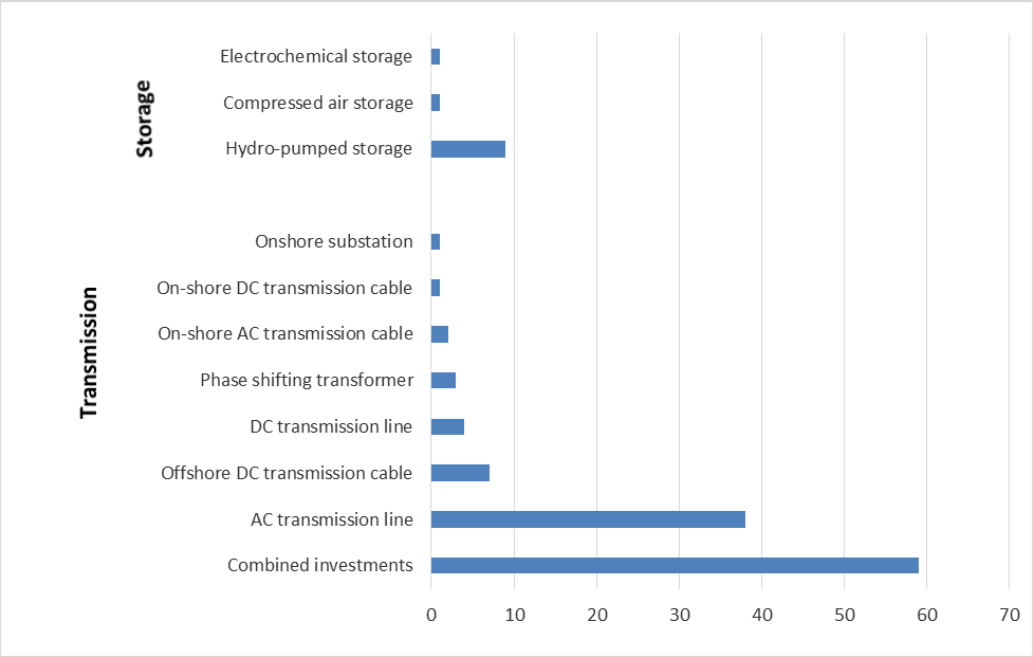
- Hydro-pumped storage
- Compressed air storage
- Electrochemical storage

[10] As mentioned in Section 1.1.1 PCI 1.10 corresponds to 2 projects.
[11] Two projects which are cancelled are not included.

- On-shore AC transmission cable[12]
- Phase shifting transformer (PST)
- On-shore DC transmission cable
- Onshore substation

From the submitted data, it is revealed that most of the transmission projects which submitted a report fall into the "combined investments" category (59 projects, i.e. 51%). AC transmission lines also represent a significant share, with 38 projects (33%), while all the other categories have a share of less than 7%, as illustrated in Figure 4.

Figure 4: Breakdown of projects by category for transmission and storage projects



Given the high share of combined investments, this category is further analysed, so that a clearer picture of the technology used can be formed. Data on the elements included in the projects labelled as "combined investments" were submitted for all but one of the 59 projects of this category.

The components that make up combined investments are the following: AC/DC line, on-shore AC/DC cable, off-shore AC/DC cable, on-shore/off-shore substation, transformer, back-to-back substation, PST and Reactive Compensation Device (RCD).

The combination of AC line with one of the following elements: on-shore substation/ transformer/ back-to-back substation/ PST, or RCD has a share of 57% of the total combined investments (33 projects). 4 projects are a combination of AC line, transformer/RCD, while 4 cases are a combination of on-shore and off-shore DC cable and on-shore substation. The occurrence of the other combinations of equipment is low, as no more than 2 projects reported the same combination. For more details please refer to *Annex V: Combined investments components*.

[12] Short onshore parts of off-shore cables are not included.

2.1.2 Types of projects

The analysis of the type of projects is carried out for 127 projects only as the information was not provided for one cancelled project. Out of these projects, **85 (67%) are new investments, 23 (18%) are mixed solution which are considered as mostly new investments, 9 (7%) are voltage upgrade, 5 (4%) are mixed solution** considered mostly as reinforcement, 4 are extension and 1 is identified as replacement.

2.2 Presence in the Ten Year Network Development plan and National Development Plans

The project promoters' reports show that 114 (89%) out of 128 reported projects are included and assessed in the ENTSO-E Ten Year Network Development Plan 2014 (TYNDP 2014). Out of the **14 projects not included in the TYNDP 2014**, there are 10 transmission projects[13] and 4 storage projects[14]. For more details please refer to *Annex VI: PCIs not included in the ENTSO-E TYNDP 2014, Regional Investment Plans, and National Network Development Plans*.

The non-TYNDP 2014 transmission projects are located in NSI West (4 projects), in NSI East (5 projects) and NSOG (1 project) corridors. Out of the 4 non-TYNDP 2014 storage projects, 2 are in the NSI East, 1 in the NSI West and 1 in BEMIP.

Regarding the inclusion in the national network development plans (NNDP), project promoters reported that **22 (17%) out of 128 reported projects do not appear in any of the NNDPs**. Out of the 22 projects, **15 are transmission projects** (4 in NSOG, 1 in NSI West, 2 in BEMIP and 8 in NSI East), 6 are storage projects (1 NSI West, 2 NSOG, 1 BEMIP and 2 NSI East), and 1 is a smart grid project.

Finally, **12 out of the 48 interconnection projects appear only in one of the respective NNDPs of the two hosting countries**.

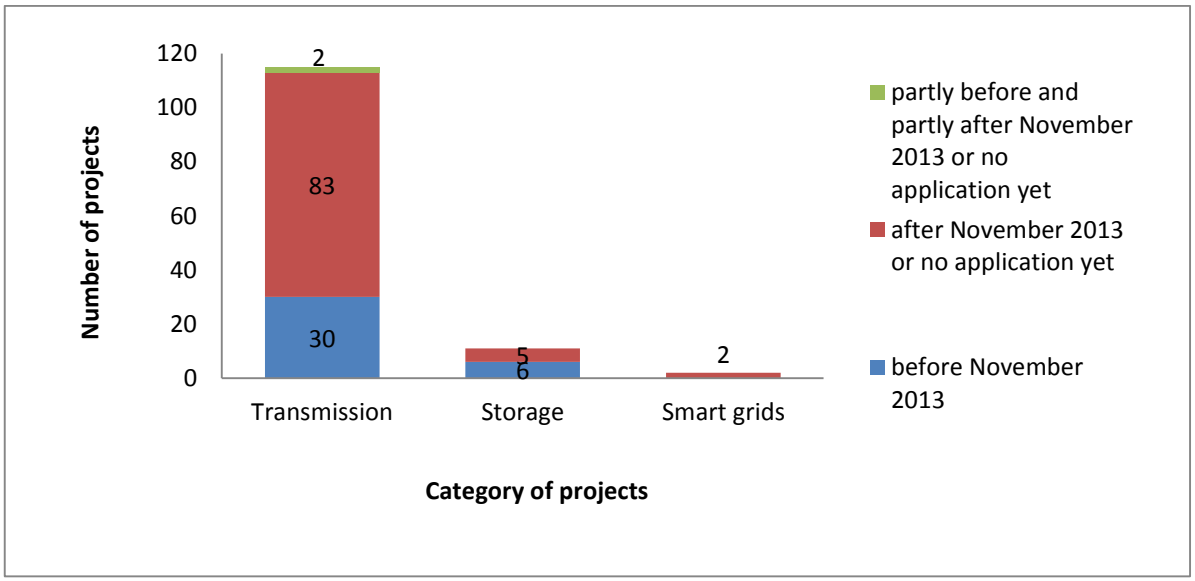
2.3 Permitting status before and after 16 November 2013

One of the main purposes of Regulation (EU) No 347/2013 is the acceleration of the project implementation. For PCIs in the permit granting process for which a project promoter has submitted an application file before 16 November 2013, nevertheless, the provisions of Chapter III ("Permit Granting and Public Participation") shall not apply. Therefore, the analysis of the trends in the progress of those two groups of PCIs in the future can provide some interesting conclusions on the impact of the relevant provisions of Regulation (EU) No 347/2013 on the projects' implementation time. The statistics of the submission of application before 16 November 2013 is shown in Figure 5 per category of projects.

[13] Out of 10 projects not included in the TYNDP 2014, according to the clarifications provided by the project promoters, 2 projects are commissioned, 2 projects are not included because they do not fulfil any longer the eligibility criterion of XB GTC increase, and 5 projects are included in the Regional Investment Plans.

[14] As mentioned in the ENTSO-E TYNDP, for these projects project promoters did not provide any data and therefore no assessment could be carried out.

Figure 5: Statistics of the submission of an application for the permit granting process before 16 November 2013



2.4 Expected increase of interconnection transfer capacity

Out of 115 transmission projects, 104[15] (90%) reported a cross-border GTC[16] increase, out of which 48 include interconnection lines, 48 include internal lines, 3 include substations, 3 of them are phase shifting transformers, and two are cancelled projects. Out of these 104 projects, one has already been commissioned.

The detailed list of the expected increase in cross-border GTC for the 102 transmission projects, which are not cancelled, per project and border are presented in *Annex VII: Expected increase of cross border GTC*.

2.5 Alterations in technical characteristics

Based on the project promoters' reports, **42 out of 128 projects (33%) altered their technical characteristics (e.g. route, length, voltage, capacity, location) since 2012**. Noteworthy alterations of the technical characteristics were reported for 39 (34%) transmission, 2 storage (18%), and one of the two smart grids project.

For transmissions projects, the following three main categories of alteration of technical characteristics can be identified:

- Increase/decrease of length/capacity or voltage of the lines,
- Rerouting of line or definition of route
- Identification of the substation/converters locations

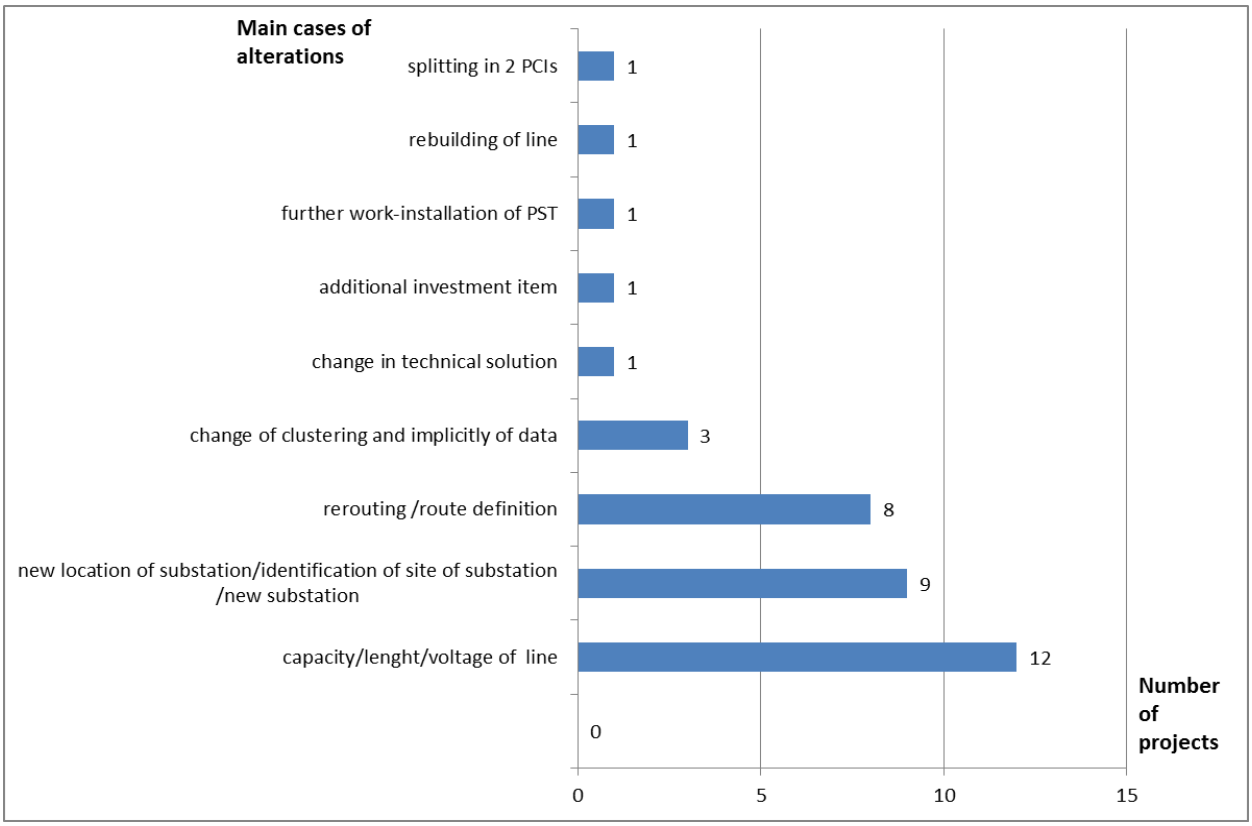
[15] No information was provided for one interconnection line and 9 internal lines. One internal line provided a value for the grid transfer capability which is not related to the XB GTC.
[16] In this report we refer to the term "cross-border grid transfer capability", in line with ENTSO-E Guideline for Cost Benefit Analysis of Grid Development Projects, version 14 November 2013.

For more than one third of the projects for which project promoters reported alterations in technical characteristics, the alteration is related to the increase or decrease of the line's length, capacity or voltage. Almost half of the transmission projects are altered due to re-routing of the line or identification of new substation locations as shown in Figure 6.

Further to the above listed main cases of alterations, less frequent alterations were reported due to the inclusion of phase-shifting transformer, change of clustering, splitting of the project into 2 projects, rebuilding of the line, identification of new connection points, additional investment item, reduced primary distribution substations and elimination of substation.

No significant correlation between advancement of projects and alterations in technical characteristics was found.

Figure 6: Alteration of technical characteristics



3 Status and progress of the projects

3.1 Status of projects

In order to identify the advancement of the projects, promoters were required to indicate in which of the following statuses their project felt in:

- under consideration
- planned, but not yet in permitting
- permitting
- under construction
- commissioned

- cancelled

The above classification reflects the status used by the ENTSO-E TYNDP, however the wording "planned, but not yet in permitting" was amended in order to avoid overlapping of statuses.

In this section, an analysis regarding the current status of the reported projects is presented, followed by an assessment of implementation status compared to initial planning, a concise description of the work performed within the stages, and an analysis of the progress of the most important phases.

3.1.1 Current status

a. Overview

Out of the 128 reported transmission, storage and smart grids projects, **16% are currently "under consideration", 30% are "planned but not yet in permitting" and 2% have been cancelled, while 37% are in the permitting stage, 13% are in the construction phase and 2% have been commissioned**[17].

The current status for transmission and storage projects is presented respectively in Figure 7 and Figure 8. Regarding the smart grids projects, one is in permitting stage and the other is under consideration.

Figure 7: Transmission reported projects current status

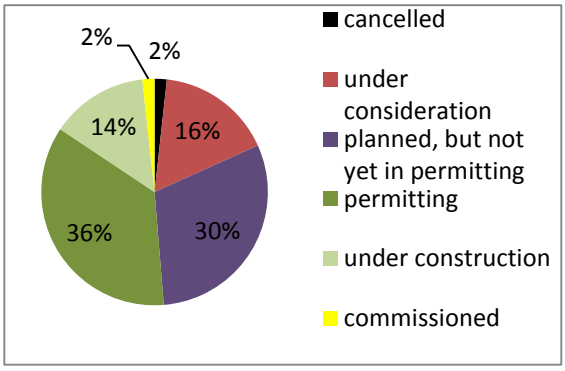
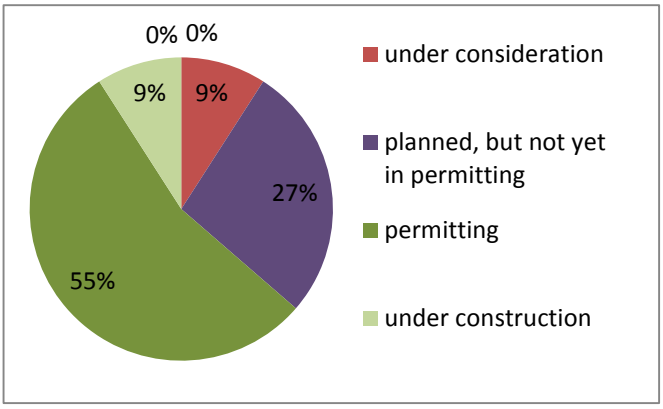


Figure 8: Storage reported projects current status

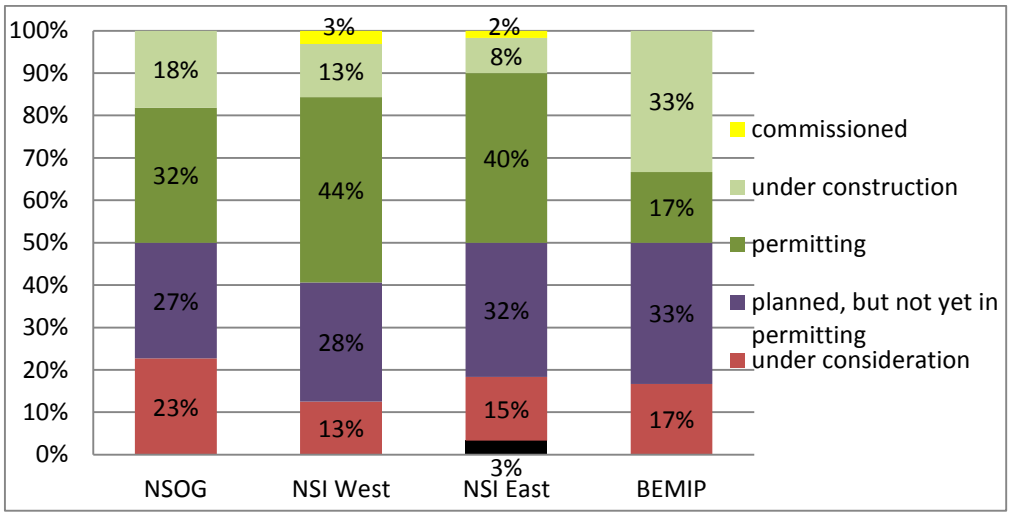


b. Current status per priority corridor

By comparing the statistics of the different priority corridors in Figure 9, it emerges that projects in the NSI West corridor are slightly more advanced, as 60% of them are in the permitting or subsequent stages, compared to 50% of the projects for the other corridors.

[17] In some cases where projects comprise of several parts, some parts of the projects may have been commissioned, but the status of the project is determined by the status of the least progressed item.

Figure 9: Breakdown of the status of the reported projects by priority corridor



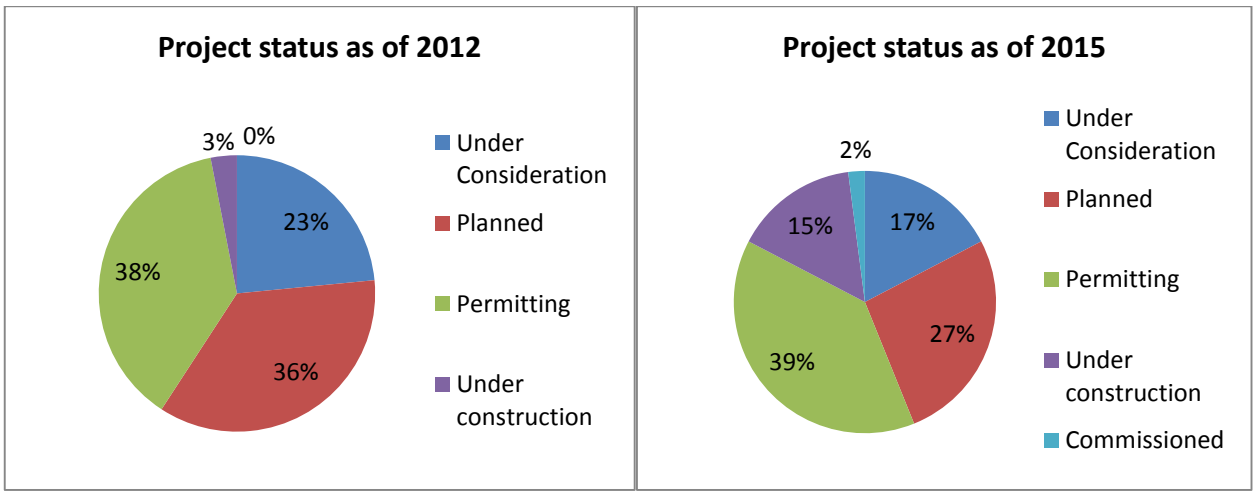
However, one must be cautious in drawing conclusions, as the current status of a project does not fully reflect its implementation progress, as the initial status (in 2012) of the project is not captured. This issue is analysed in the following Section 3.1.2.

3.1.2 Status progress

For the purpose of the analysis of this section, the current status of the projects (as indicated in the 2015 questionnaire) is compared with the status of the projects as indicated in the ENTSO-E Ten Year Network Development Plan 2012 (TYNDP 2012).[18]

The pie charts of Figure 10 below depict the status of projects in years 2012 and 2015. The figure includes data of 98 transmission projects, which were also included in the TYNDP 2012[19].

Figure 10: Comparison of transmission project status between 2012 and 2015



[18] The Agency notes that the terms for the investment status in the TYNDP 2012 is not fully aligned with the terms of status as used for the purpose of the monitoring. However, for the sake of simplicity and to allow comparison "design & permitting" status in the TYNDP 2012 is considered in this section as "permitting", while "planned" status in the TYNDP 2012 corresponds to "planned, but not yet in permitting."

[19] Storage and smart grid projects were not taken into account, as they were not part of the TYNDP 2012.

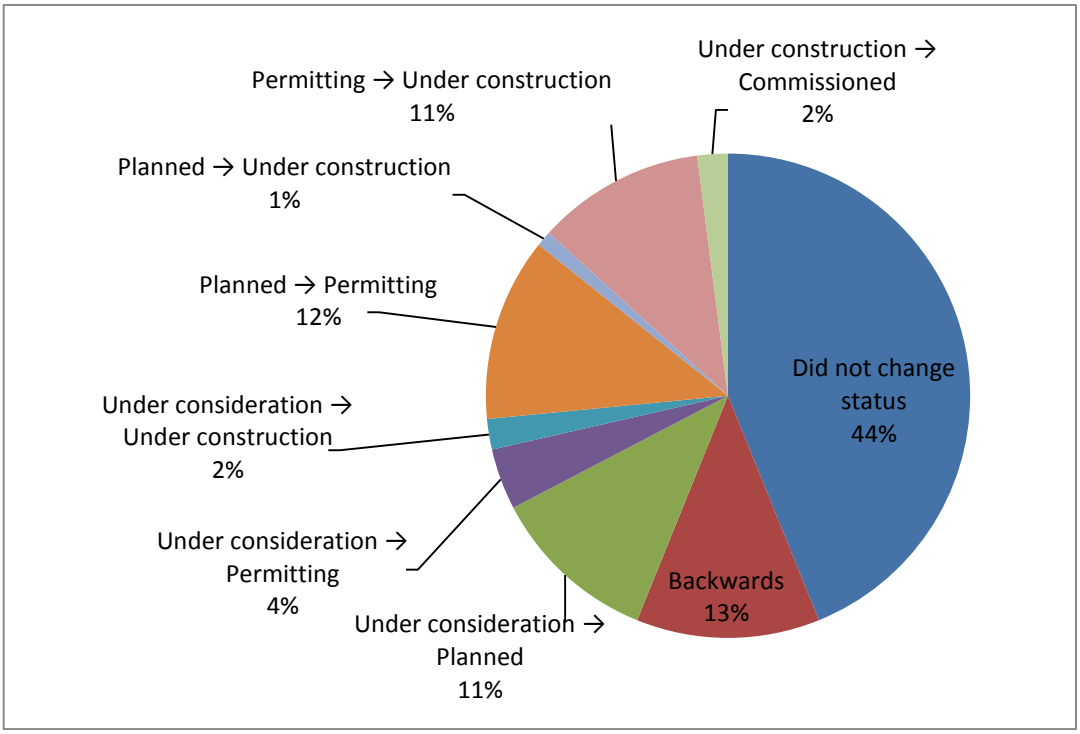
By comparing the two graphs it can be noted that the number of "under consideration" projects has dropped by 6%, and the number of "planned" projects has dropped by 9%. The number of projects in "permitting" status is almost the same, while the **percentage of projects "under construction" has increased from 3% to 15%**, signalling a progress in the overall implementation. However, the picture may be distorted by the fact that for 15 transmission projects no data was available in 2012. To understand more deeply the progress achieved from 2012 to 2015, the exact change of the status phases of the projects is presented in Figure 11.

One can notice that **43% of the projects experienced progress**, compared to 57% which did not move to a more advanced phase or even moved backwards.

More specifically, regarding the projects that moved forward, 36 projects (37%) progressed one phase forward, 5 projects progressed 2 phases forward and 2 of the projects progressed 3 phases.

43 projects (44%) did not achieve progress in terms of their status. Most of them (22 cases) are in "permitting" status. As far as the rest of the non-progressing projects is concerned, 6 are "under consideration", 14 are "planned" and 1 is "under construction". However, this finding does not imply that no works were performed on these projects within the last 2.5 years. The analysis in *Section 3.1.3 "Work performed"* reveals that progress was made also within the same stage.

Figure 11: Progress of main stages between 2012 and 2015



(*) 98 PCIs, for which status in 2012 and 2015 was known, were taken into account

There are also 12 projects which moved backwards. (For more details on these projects please refer to *Section 5.3 "Reasons for progress backwards"* of the Report).

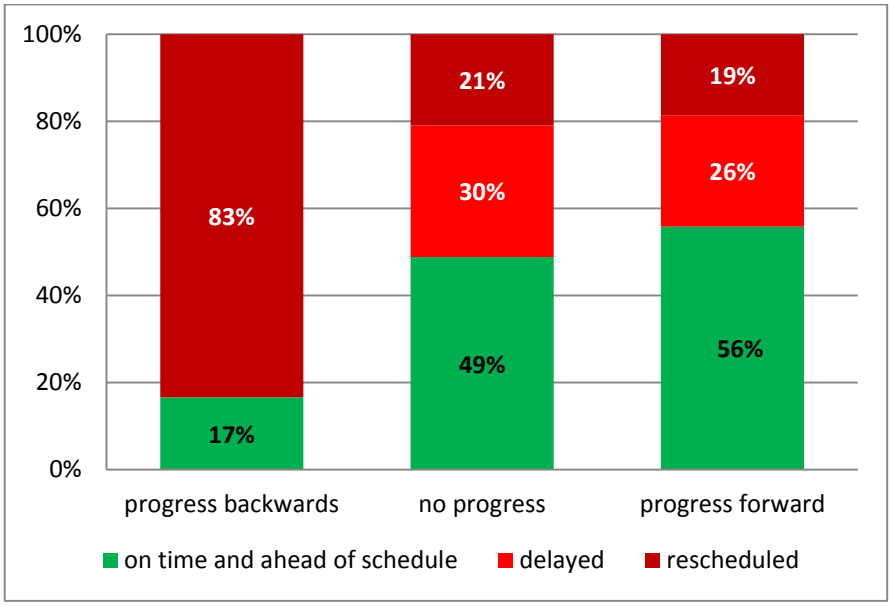
For analysis regarding the duration of delays of the most important phases of the implementation plan of the projects (i.e. public consultation, permit granting process, pre-application procedure, Environmental Impact Assessment, statutory procedure, tendering for construction, construction, commissioning), please refer to *Annex IX: Phase duration and delays*.

3.1.3 Works performed

Project promoters provided information regarding works performed between spring 2012 and January 2015. For 97 out of 126 reported projects (excluding 2 cancelled projects) the project promoters indicated that some works had been performed and **only for 4 projects they reported that no work had been performed at all.** No answer regarding works performed was submitted for 25 projects. (For an overview of the specific works reported in different stages, please refer to *Annex VIII: Works performed*).

The analysis shows that even in case of no transition between stages, there is still progress within the stage. On the other hand, as shown in Figure 12, a correlation is identified between stage transition and current progress of a project (on time/delayed/rescheduled). More specifically, those projects that progressed forward tend to be slightly more on time than the ones with no status transition and significantly more on time than those projects which have moved backwards.

Figure 12: Change of stage and current progress compared to the planning of summer 2012



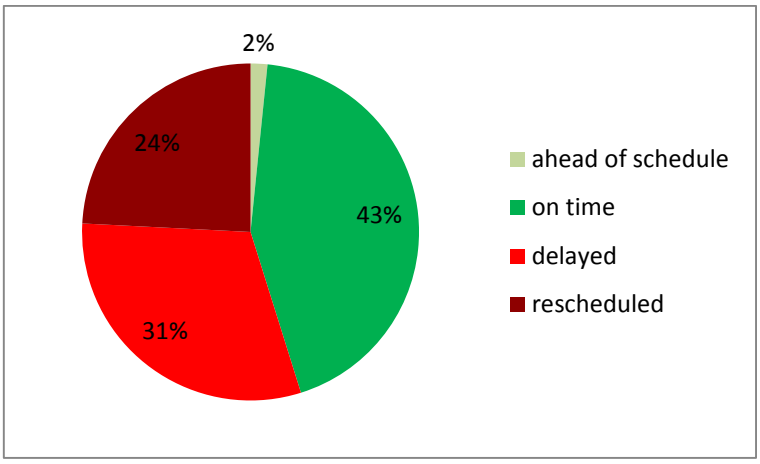
3.2 Time progress

In this section, the current time progress of the projects is analysed in comparison to the reported schedule of implementation as of summer 2012. The analysis of progress is carried out per project category, status, region and type for 124 reported projects, excluding the projects which are cancelled or already commissioned[20].

Figure 13 shows that 31% of the projects are delayed and 24% are rescheduled compared to 2012 schedule. Regarding the project categories the analysis of the data shows that 32 (29%) transmission projects are delayed and 27 (24%) are rescheduled, 6 (55%) storage projects are delayed and 2 (18%) are rescheduled. Out of the 2 smart grid projects, 1 is rescheduled and 1 is delayed.

[20] Out of 2 commissioned projects one was ahead of schedule and one was on time.

Figure 13: Overall progress compared to the initial planning of summer 2012



In the following figures, the current progress by project status (Figure 14) and by priority corridor (Figure 15) is presented.

Figure 14: Current progress by project status [number of projects and (%)]

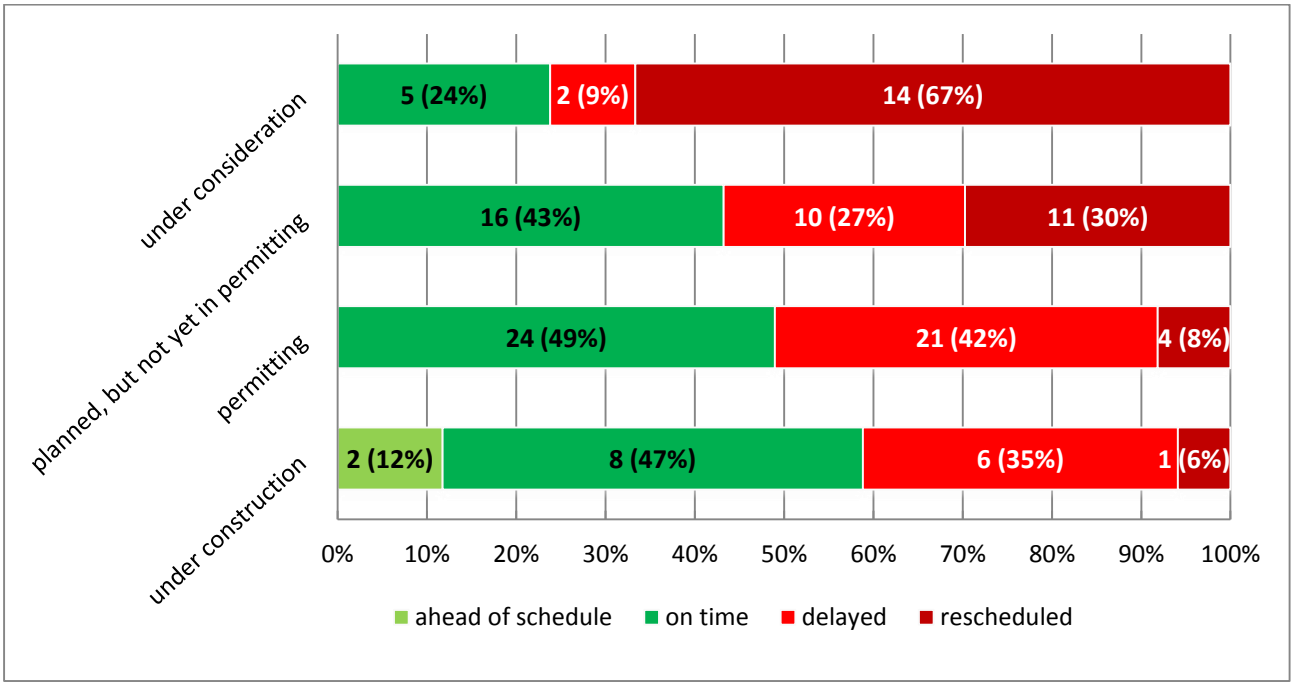
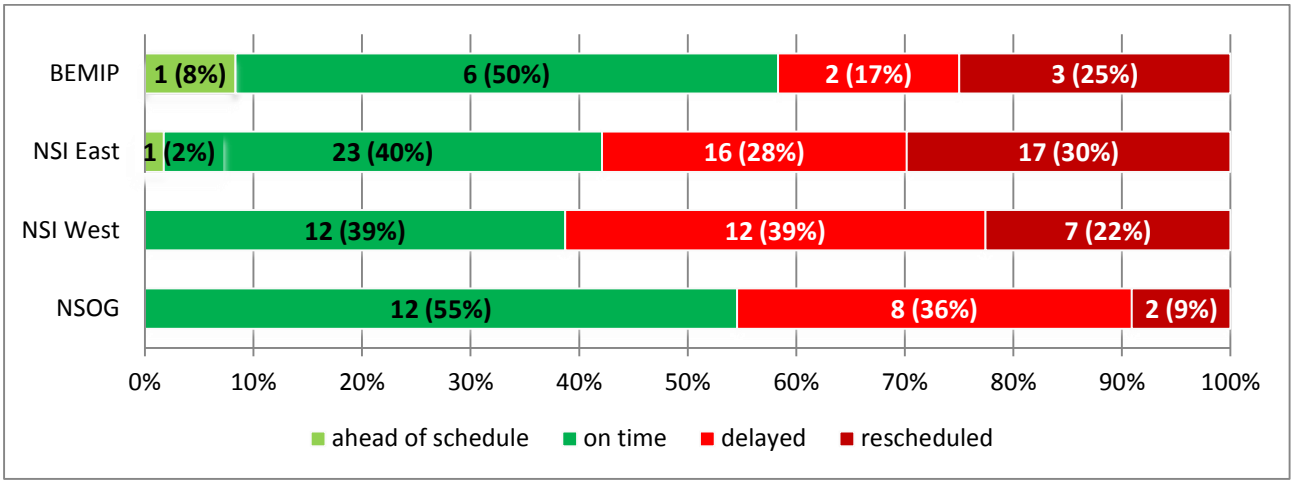


Figure 15: Current progress by corridor (%)



3.2.1 Projects ahead of schedule and on time

Projects in BEMIP and NSOG corridors seem to be performing better, as more than half of them are on time or ahead of schedule (about 58% (7 projects) in BEMIP and 55% (12 projects) in NSOG)), compared to approximately 40% for the NSI East (24 projects) and NSI West (12 projects) corridors.

Also, a clear correlation between project status and timeliness is noticed: projects that are in a more advanced status tend to keep to schedule more than projects that are still under consideration.

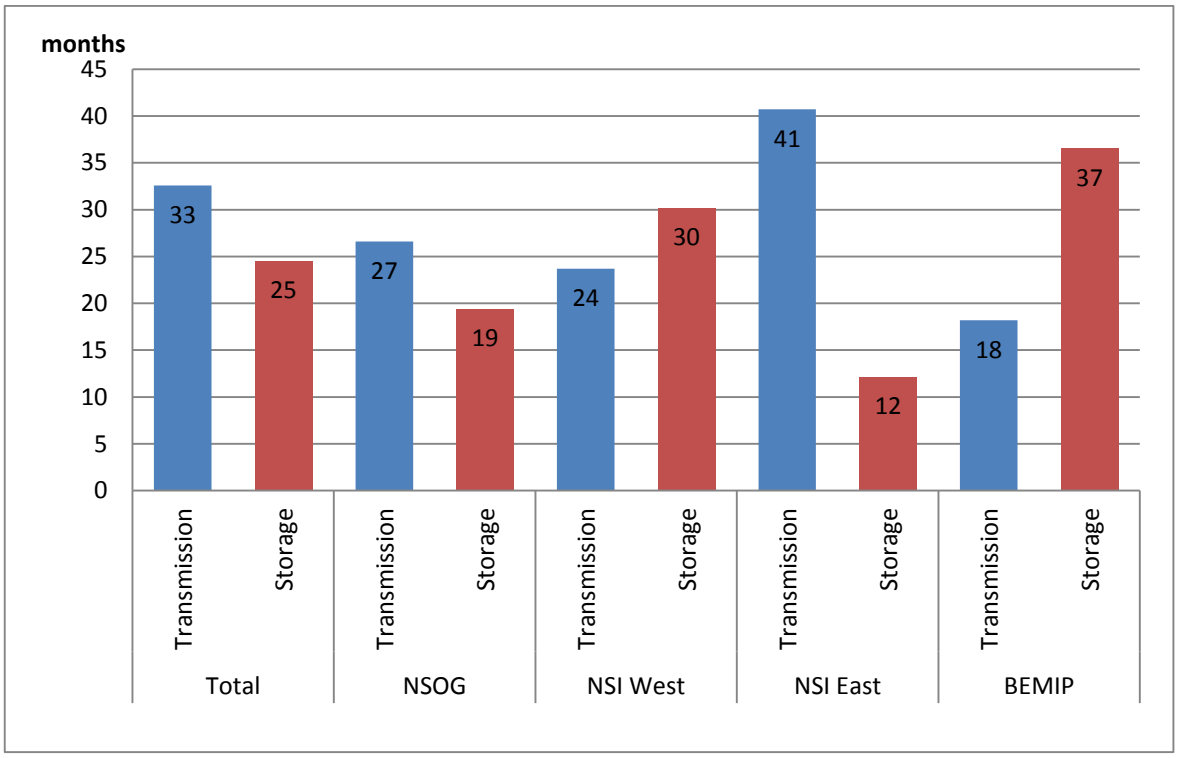
3.2.2 Delayed projects

Overall 39 (i.e. 31%) projects are delayed compared to 2012 planning. While the percentage of delayed projects is similar in the NSOG, NSI-West and NSI East corridors (within a range between 29% and 37%), BEMIP corridor seems to be performing better, as only 17% of the projects in this corridor are delayed.

Regarding the status of the projects, **most of the delayed projects are either in permitting phase (44%) or under construction (35%)**. Among those projects which are in a less advanced status, the share of delayed projects is significantly lower (10% for projects under consideration, and 26% for planned but not into the permitting projects). Therefore, **when projects enter into the permitting status they are more likely to accumulate delays than before.**

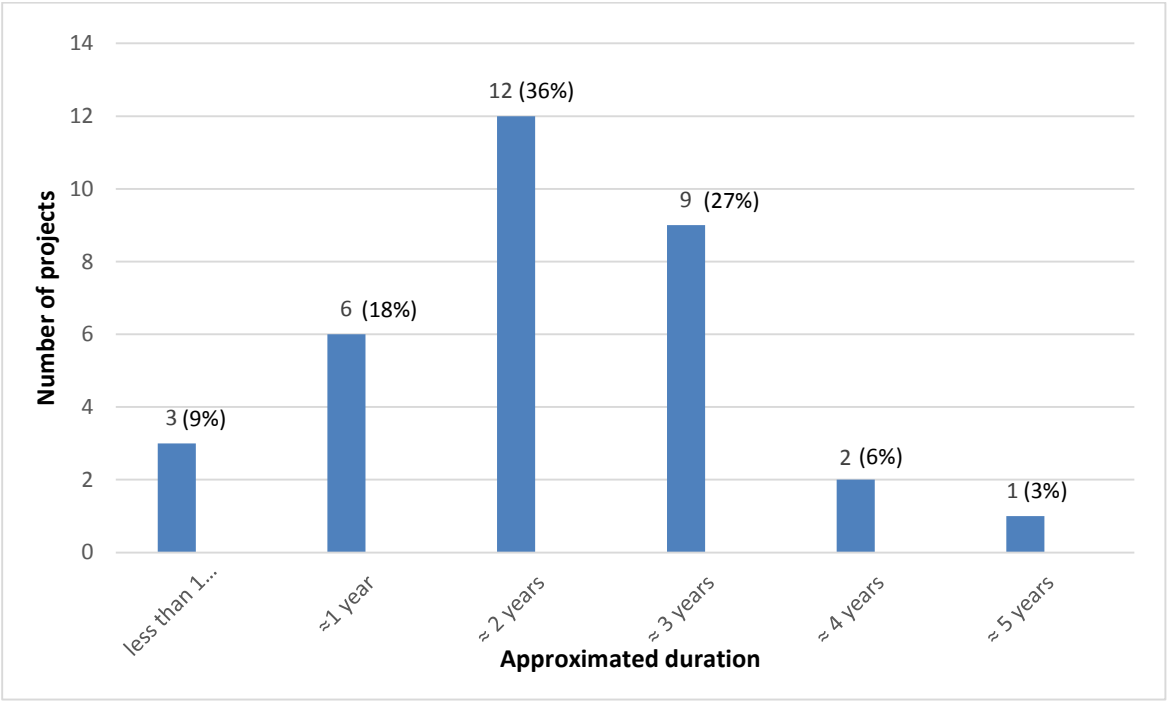
Figure 16 shows that **the average total delay is 33 months for transmission projects and 25 months for storage projects.** The longest average delay for transmission projects is noticed in the NSI East corridor, while the shortest delay is noticed in the BEMIP corridor. Regarding storage projects, the longest delay is noticed in the BEMIP corridor, while the shortest in the NSI East corridor, however, it must be noted that the sample includes only one project per corridor.

Figure 16: The breakdown of the delayed projects by average duration (approximated in months)



The distribution of delayed transmission projects (33 projects) by the length of delay is presented in Figure 17. Regarding transmission projects, most of the delayed projects (36%, i.e. 12 projects) are delayed by 2 years.

Figure 17: The breakdown of the delayed transmission projects by duration (approximated in years)



3.2.3 Rescheduled projects

Overall, 24% of the reported projects are rescheduled compared to 2012 planning.

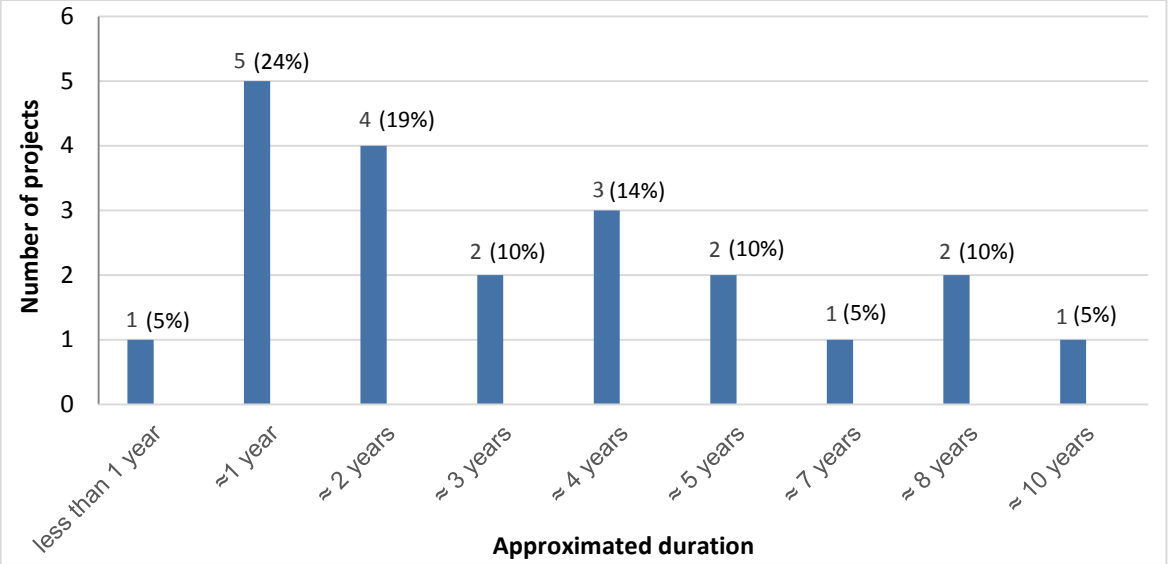
The share of rescheduled projects is the highest in the NSI East corridor (30% i.e. 17 projects), followed by BEMIP (25% i.e. 3 projects) and the NSI-West (23% i.e.7 projects). The lowest share of rescheduled projects is reported for the NSOG (9% i.e. 2 projects) corridor.

Regarding the status of the projects, the most interesting finding is that **2/3 of the projects which are under consideration have been rescheduled.** Among projects with a more advanced status, the share of rescheduled projects is significantly lower and decreases in line with the advancement of the project.

Therefore, in contrast to delayed projects **the share of rescheduled projects is decreasing with the (more advanced) status.**

The duration of rescheduling follows a broader distribution than the duration of the delays as shown in Figure 18: The breakdown of the rescheduled projects by duration (approximated in years). The shortest rescheduling time is 6 month and the longest time is 10 years. Only one project is rescheduled by less than 1 year, 9 of them (43%) are rescheduled by 1 or 2 years in comparison to 2012. However, 4 (20 %) of the projects rescheduled by more than 7 years, which extends the duration of the average rescheduling up to 3 years and 7 months[21].

Figure 18: The breakdown of the rescheduled projects by duration (approximated in years)



3.2.4 Time and progress per category and type of project

Figure 19 shows that for combined investments and AC transmission lines, which account for the largest percentage of the projects, the share of on-time and ahead-of-schedule projects is similar (48%). The share of on-time projects is lower for hydro-pump storage projects (22%), DC transmission lines (0%) and phase shifting transformers (33%), but calculated over a significantly smaller sample size.

[21] For those cases where values fall in between integer years, the approximated values are used for the statistical purposes (e.g. a duration of 1,6 years is accounted for 2 years, and a duration of 1,4 years is accounted for 1 year).

Figure 19: Current progress by project category

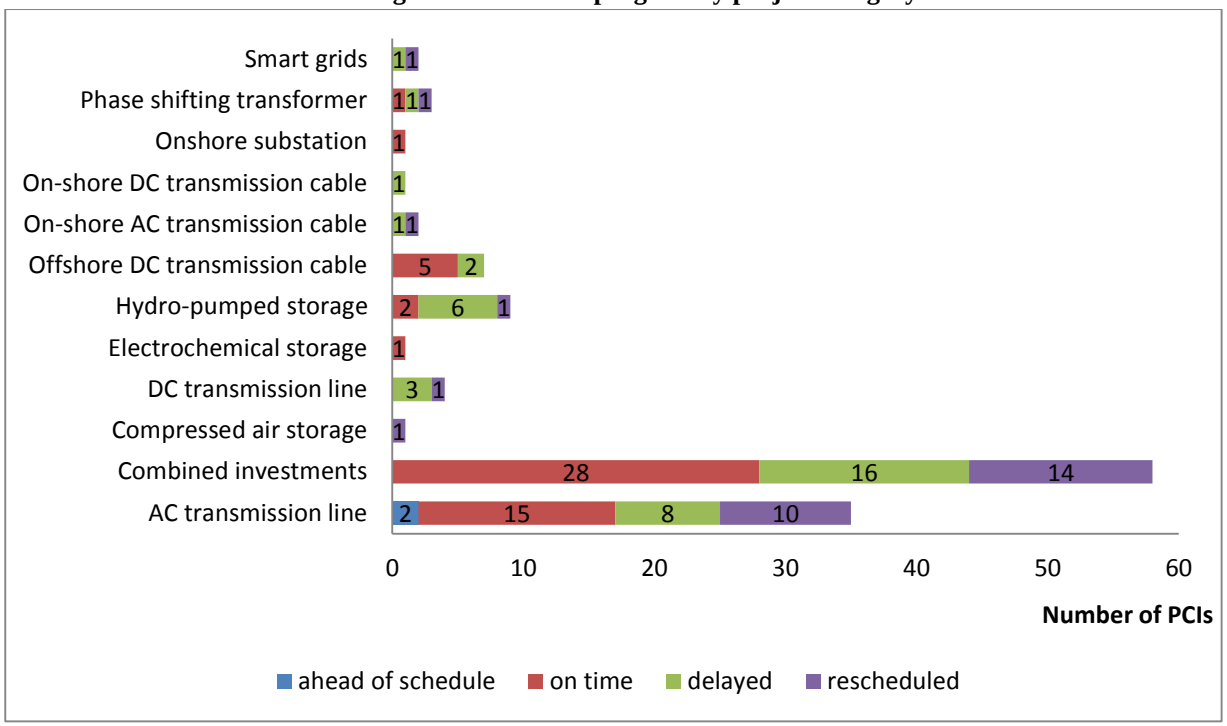
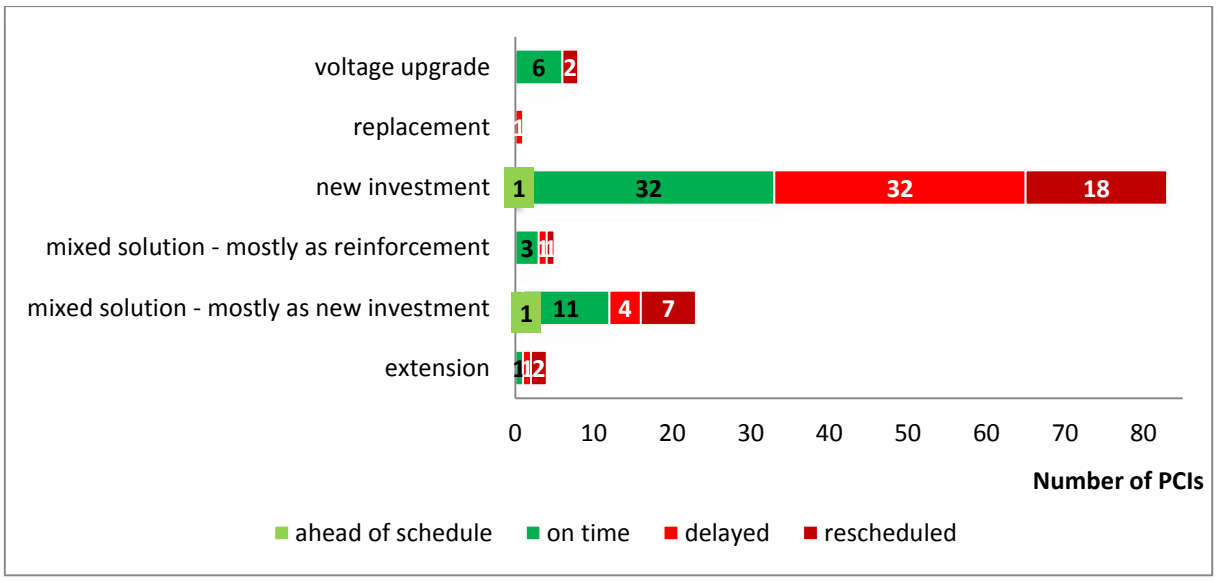


Figure 20 shows that for projects that involve more complex permitting procedures (i.e. new investments and mixed-projects-mostly-new- investments), the share of delayed and rescheduled projects is higher than projects that are voltage upgrade or reinforcement (25% and 40% respectively), although it must be noted that the sample size of the latter projects is very small.

Figure 20: Current progress by project type



3.2.5 Expected commissioning dates

The number of projects that are expected to be commissioned per each year is illustrated in Figure 21, excluding the 2 cancelled projects. **The most frequent year of commissioning is 2020** (i.e. 20 projects), while commissioning date can extend up to 2030. It can be also concluded that the commissioning dates tend to change, as **for 76% of the projects[22] the expected commissioning date is different from what was reported in 2012.**

Figure 21: Number of projects to be commissioned per year (estimated in 2012 and 2015)

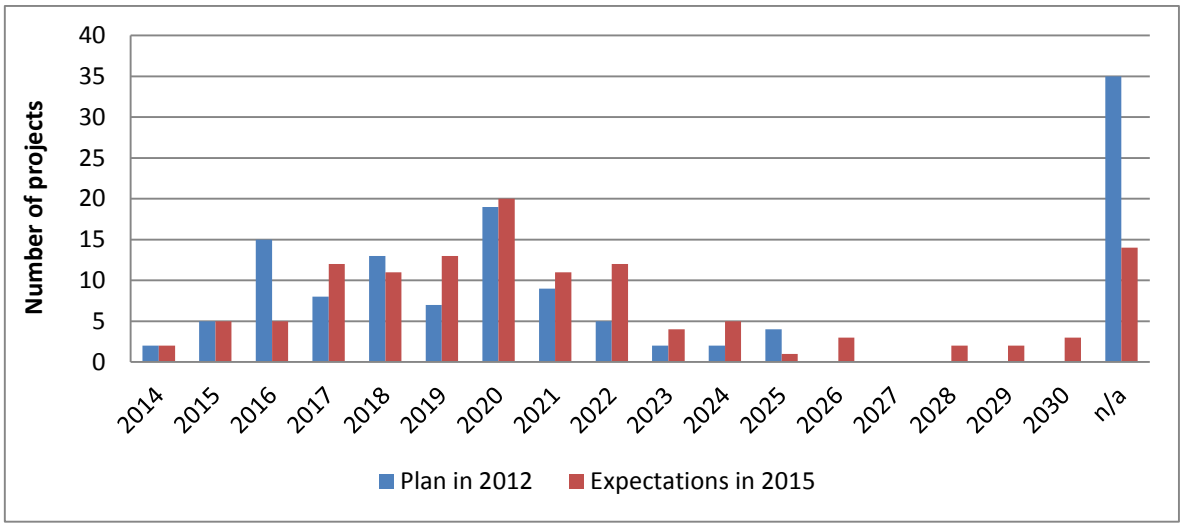
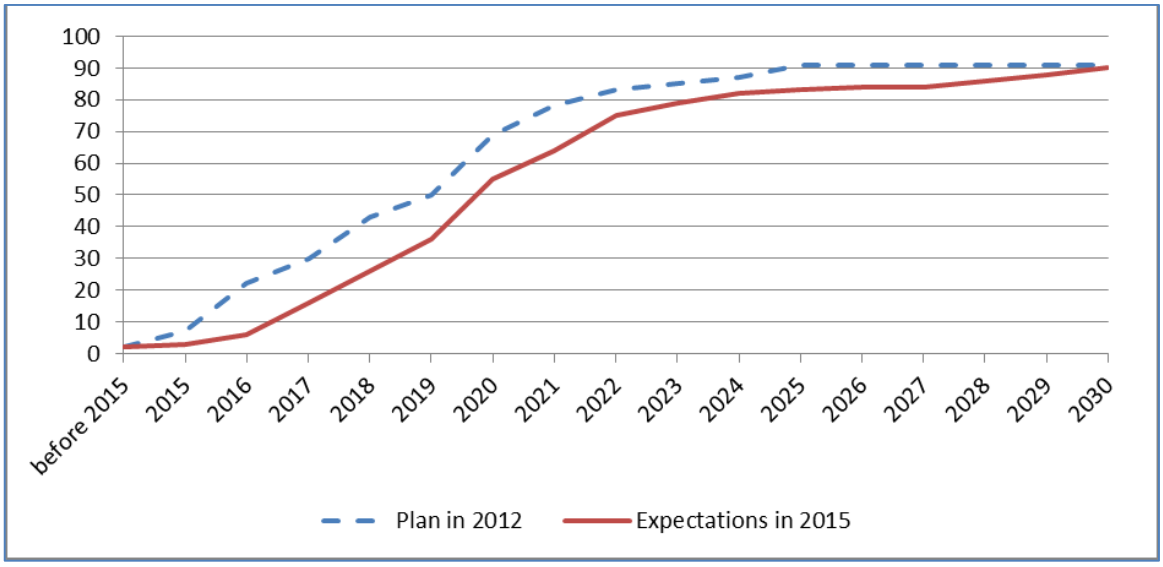


Figure 22 illustrates that commissioning tends to be postponed, since only 45% of projects are on time or ahead of schedule. For example in 2012, the project promoters expected 15 projects to be commissioned in 2016, while currently only 5 projects are expected to be commissioned in 2016, with the 10 remaining projects expected to be commissioned between years 2017 and 2021. Regarding regional perspective, it is noted that in all corridors, with the exception of BEMIP, the commissioning is delayed compared to 2012 expectations.

Figure 22: Cumulative number of projects to be commissioned per year



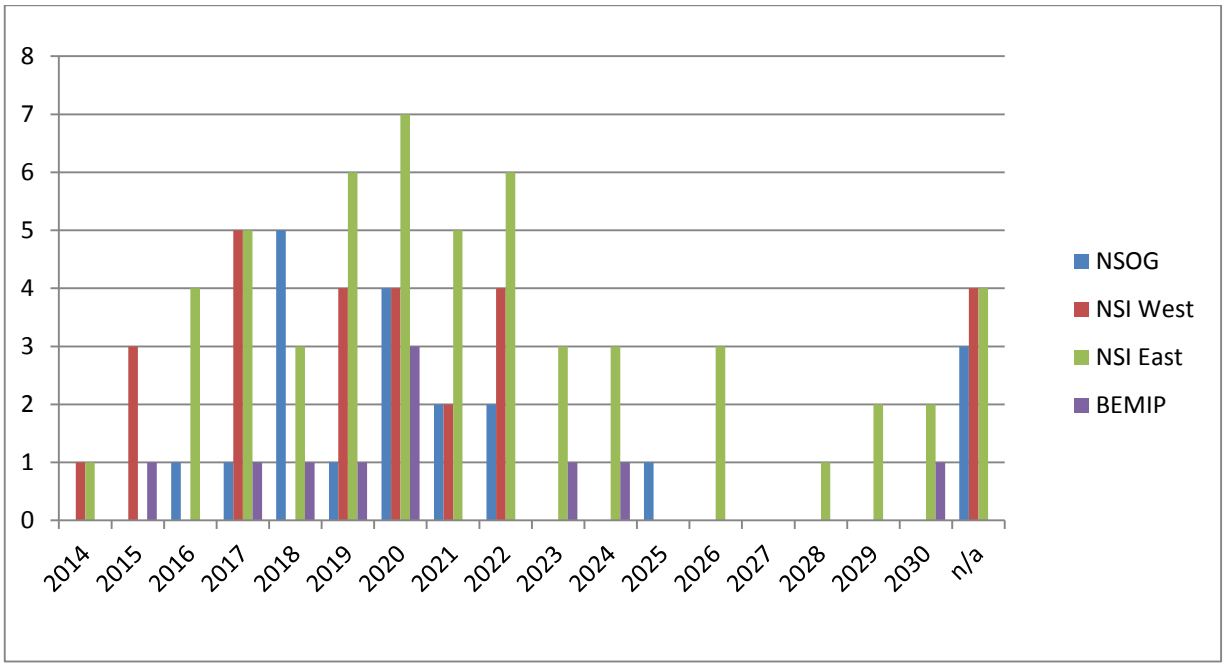
(*) Only 91 projects for which 2012 expected commissioning was available are taken into consideration

[22] Only projects, for which expected commissioning for both 2012 and 2015 was reported, were taken into account.

For 15 projects the project promoters did not report a commissioning date (see *Annex X: PCI specific information* for the full list). This lack of date may be a signal of strong uncertainty on the project. It should be carefully considered on a case-by-case basis whether such projects should remain in the PCI list.

Figure 23 shows the expected commissioning dates as of 2015 for transmission projects in the 4 corridors.

Figure 23: Expected commissioning by year and region in 2015



4 Costs and Benefits

The Agency's questionnaire included an information request on costs and benefits of each project. Promoters were requested, in line with the ENTSO-E CBA methodology, to use the following parameters:

- 25 years of operation;
- 4% discount rate (real);
- No residual value;
- All costs and benefits discounted to the present and expressed in the price base of that year (2015).

4.1 Investment costs

The currently expected investment costs (CAPEX) were reported for 106 projects out of 115 submitted reports for transmission projects, and for all smart grid and storage projects (i.e. 2 and 11 projects respectively).

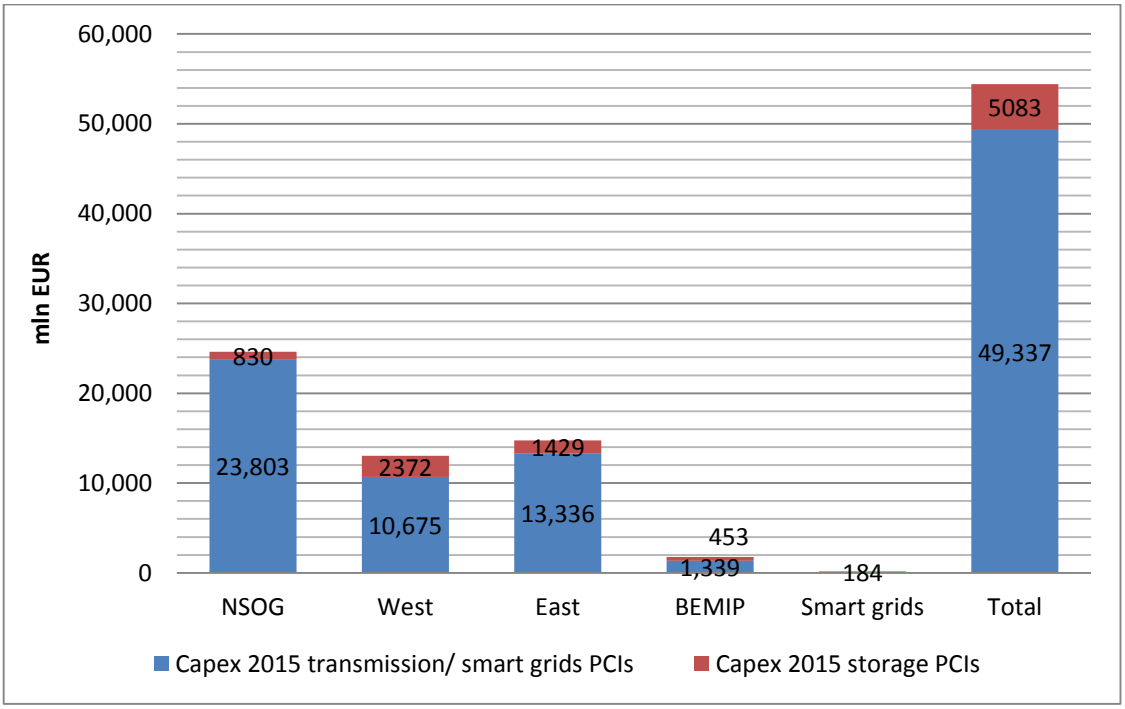
The Agency requested information about the expected investment cost of each project ("best estimate"), as well as about the expected downward and upward variations of this cost. While acknowledging that the definition of an "expected value" is not straightforward, the following figures are presented for the expected "best estimate":

The total expected investment cost of the projects, which reported values, is **€54.6 billion (€49.3 billion** for transmission projects, **€5 billion** for storage projects, and **€184 million** for smart grid projects).

For 8 projects the project promoter did not report the investment cost (see *Annex III: Clarification and validation of submitted data* for the full list). This lack of information may be a signal of strong uncertainty on the project. It should be carefully considered on a case-by-case basis whether such projects are entitled to remain in the PCI list.

The total investment costs of the projects, which reported values, are presented per priority corridor or thematic area in Figure 24.

Figure 24: CAPEX 2015 per priority corridor & smart grids



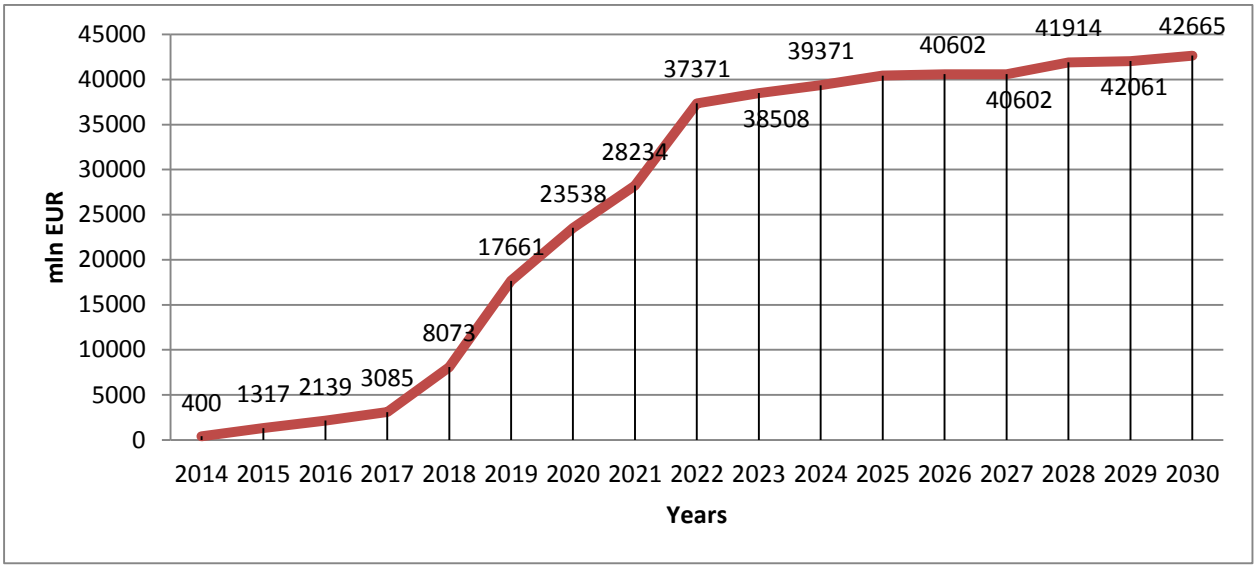
It must be noted that the percentage of CAPEX that corresponds to projects "under consideration" is 43% for the NSOG corridor, 0% for the NSI West corridor, 16% for the NSI East corridor, and 27% for the BEMIP corridor.

The reported data on expected CAPEX show that CAPEX related to **the NSOG priority corridor projects accounts for 45% of the total expected investment cost**, even though only a relatively low number of reported projects (19%) are included in this priority corridor[23]. This finding is explained by the technological features of some projects in this corridor (off-shore grid), as a large number of off-shore DC cables[24] are included.

[23] The percentage is calculated with reference to the PCIs that submitted CAPEX data.
[24] The PCIs that include off-shore DC cables in the NSOG corridor account for more than 85% of the total expected cost of this corridor.

Figure 25 illustrates the yearly CAPEX needs, making the simplifying assumption that the CAPEX of each project is spent in the year of commissioning. According to the reported time-line and the estimated investment costs, if all projects were commissioned by the reported expected years, **CAPEX needs would be around €7 billion per year between 2018 and 2022.** By 2022 it sums up to a cumulated CAPEX of **€37.6 billion** (or more than 87% of the total expected cost of the projects)[25].

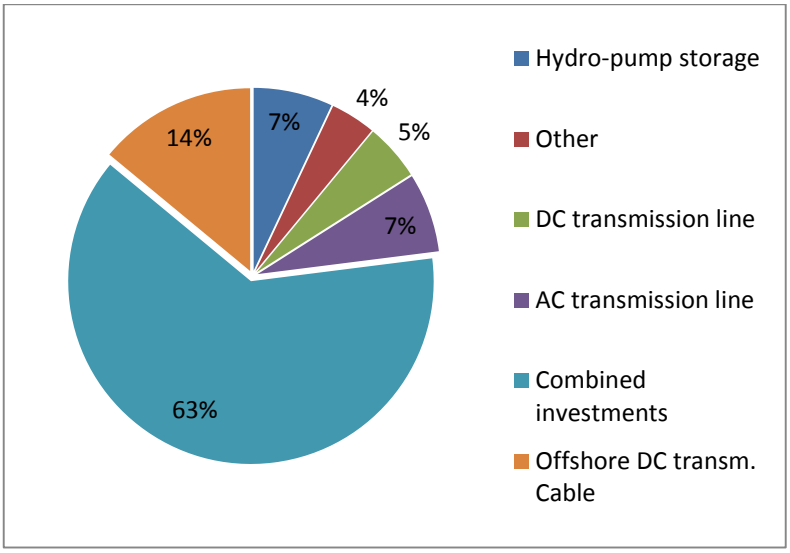
Figure 25: Cumulative CAPEX needs per year



(*) 2025 CAPEX is not mentioned on the graph as it corresponds to just one project.

The total investment costs of the transmission, storage, and smart grids projects per category of investment, are presented in Figure 26**.**

Figure 26: CAPEX 2015 per PCI category



[25] This data is calculated on a sample of 113 PCIs, for which the commissioning date was provided.

4.1.1 Investment costs progress

The overall trend of estimated CAPEX between 2012 and 2015 is featured in Figure 27 and Figure 28 for transmission /smart grids and storage projects:

Figure 27: Progress of transmission and smart grids projects CAPEX compared to initial planning (% of PCIs)

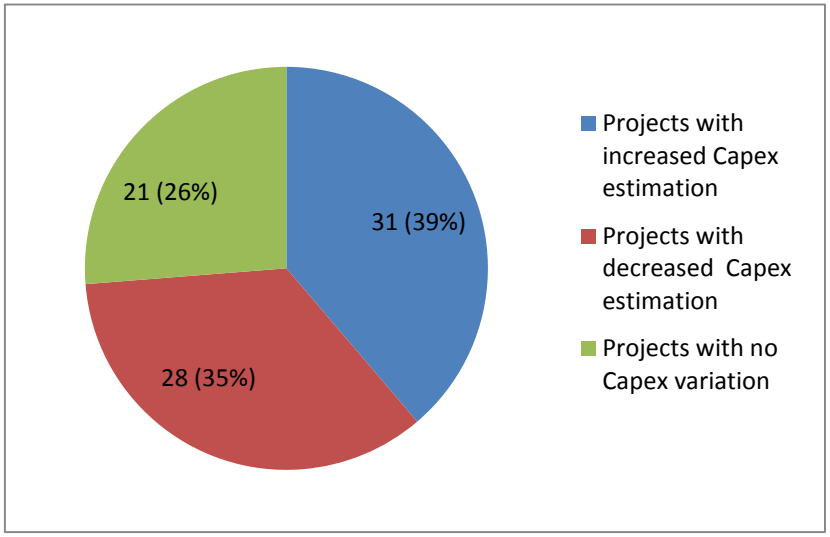
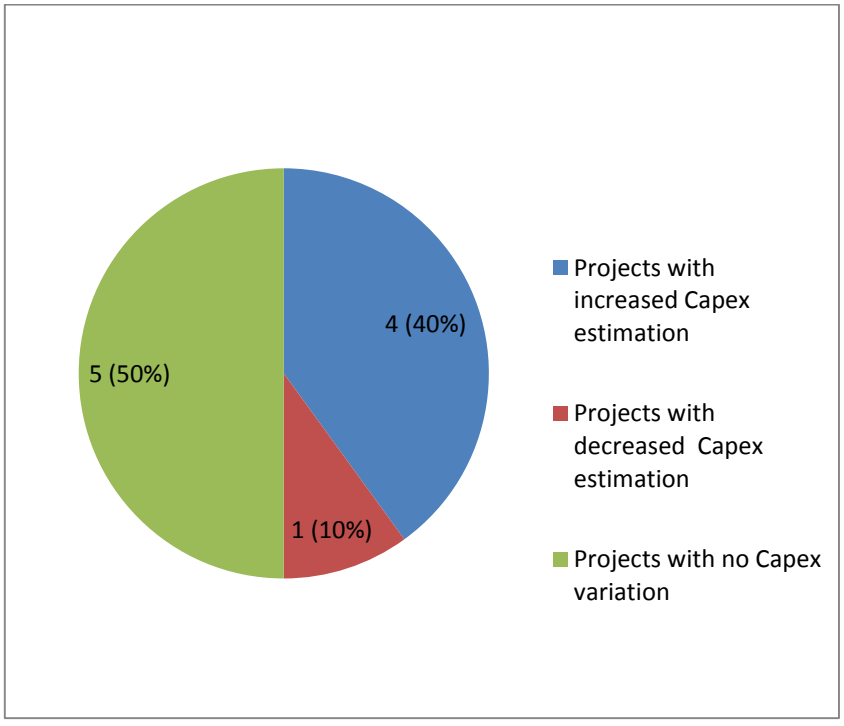


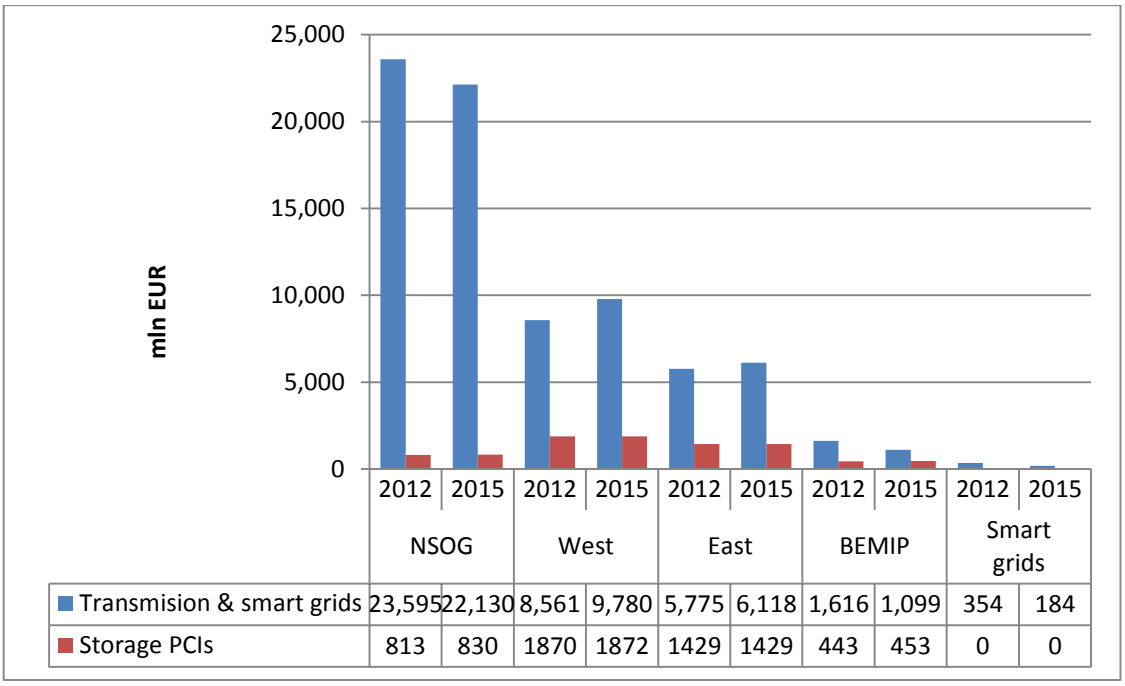
Figure 28: Progress of storage projects CAPEX compared to initial planning (% of PCIs)



a. CAPEX progress per priority corridor / smart grids

In Figure 29 a comparison between the reported estimated investment costs in 2012 and 2015 is featured. The total estimated investment costs for these projects decreased from **€44.5 billion** in 2012 to **€43.9 billion** in 2015.[26]

Figure 29: Progress of estimated CAPEX 2012-2015



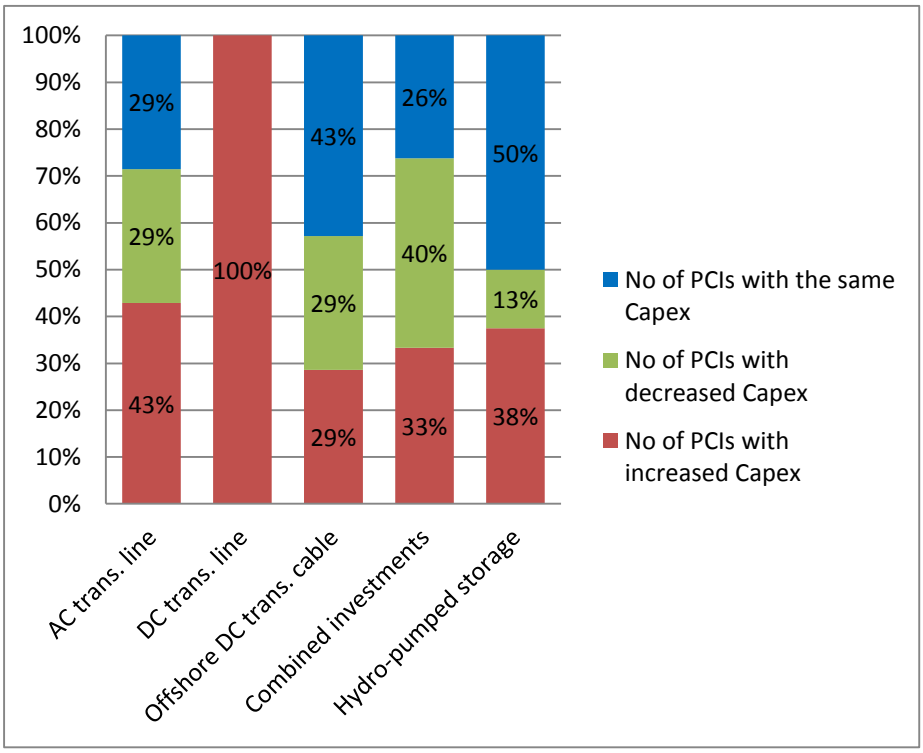
	2012	2015	2012	2015	2012	2015	2012	2015	2012	2015
	NSOG		West		East		BEMIP		Smart grids	
Transmision & smart grids	23,595	22,130	8,561	9,780	5,775	6,118	1,616	1,099	354	184
Storage PCIs	813	830	1870	1872	1429	1429	443	453	0	0

b. CAPEX progress per type of project

In Figure 30, the progress of CAPEX estimation between 2012 and 2015 for the major 5 investment categories is featured, as a percentage of the total number of projects. These 5 categories account for more than 96% of the total investment cost.

[26] It is also noted that the graph is based on the reported values for 2012 estimations included in the promoters' questionnaires of 2015, although in 2 cases discrepancies were identified with the data reported in 2012 questionnaires (please see *Annex III: Clarification and validation of submitted data*).

Figure 30: CAPEX trends 2012-2015 per type of PCI



	Number of projects with available data
AC trans. line	21
DC trans. line	3
Offshore DC trans cable	7
Combined investments	42
Hydro-pumped storage	8

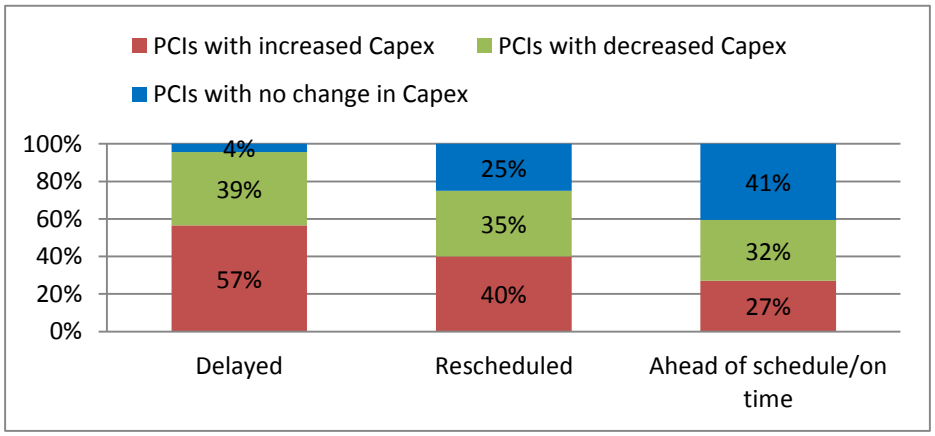
The sample of projects with available data significantly varies among the different categories of projects. It must be noted that all DC transmission lines projects tend to increase their CAPEX estimation. However, this conclusion is based on a small sample.

c. Correlation of the CAPEX progress with progress status

In

Figure 31, the correlation of the trend of estimated CAPEX between 2012 and 2015 and their reported progress status is presented:

Figure 31: Correlation of Progress of CAPEX with "delayed/reschedulled" status



The above figure provides a clear indication that **delayed implementation of a project is more likely to increase its budget**, as 57% of delayed projects reported an increased budget in 2015 compared to 2012, while it is less for projects which are rescheduled and ahead of schedule / on-time (40% and 30% respectively).

d. Reasons for differences

59 transmission projects reported differences in CAPEX expectations in 2012 and 2015. The most frequent reasons for the differences are the following:

- better estimations and reduced risks of CAPEX estimation (21 occurrences)
- change of project scope (17 occurrences)
- technical alterations (8 occurrences)
- increased estimation of cost of parts of the project (7 occurrences)
- change in currency rate (5 occurrences)

Other reasons for cost differences include bankability of terms and conditions of contract, increased estimation of cost of works, higher costs for licensing, cost increase due to provisions of licensing process, mistakes in previous calculations, underestimating costs on purpose, and compensation for residents living close to overhead lines.

It must be noted that promoters mentioned that DC-cable prices are expected to increase due to the limited number of suppliers.

4.1.2 Investment costs variances

For the completion of the questions referring to expected downward/upward variation of CAPEX, promoters were asked to calculate the corresponding values taking into account that presence of risks, contingencies and uncertainties may lead to a cost range. The following formulas were suggested to calculate this expected downward/upward variation:

$$Upward\ variation = \frac{\text{upper value of cost range} - \text{cost estimate}}{\text{cost estimate}}$$

$$Downward\ variation = \frac{\text{cost estimate} - \text{lower value of cost range}}{\text{cost estimate}}$$

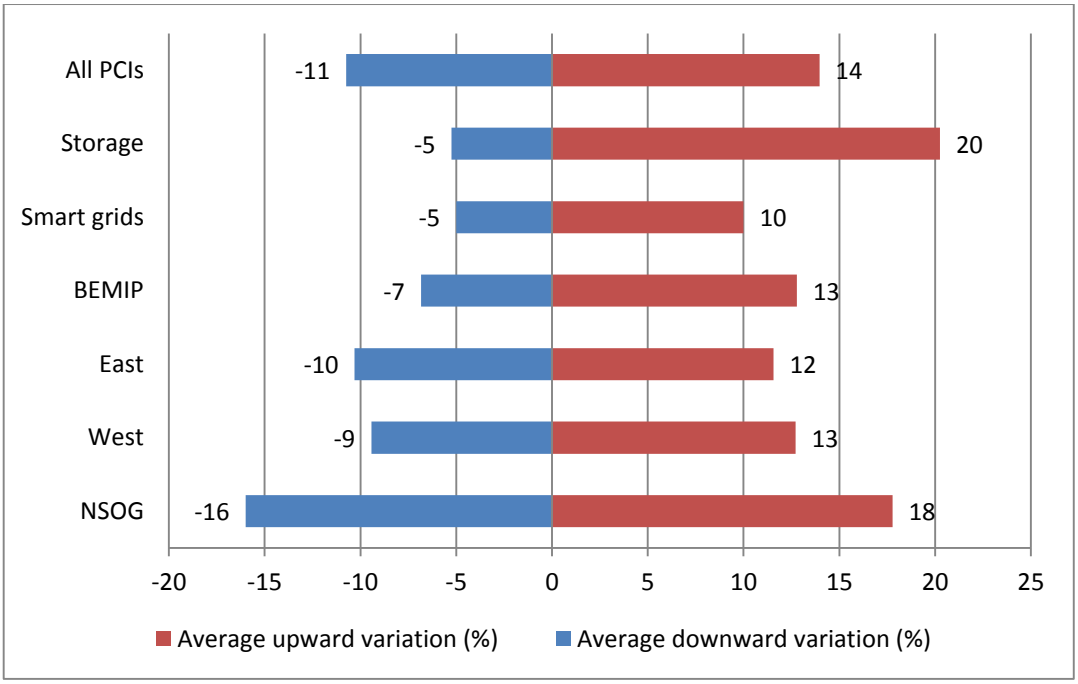
In Table 1, the range of estimated CAPEX for projects that reported a variance different than 0 is featured:

Table 1: CAPEX variation

	(€)	(%)
Aggregate CAPEX 2015 for projects which reported variance	36,172	-
Downward variation of CAPEX	31,734	-12%
Upward variation of CAPEX	41,676	+15%

Figure 32 32 presents the CAPEX variation per regional group (calculated as an average of the percentage variations of all projects that reported variances). **Storage projects in general and projects from the NSOG report the highest upward variation** (respectively +20% +18%), a fact that may be attributed to the technological features of these projects.

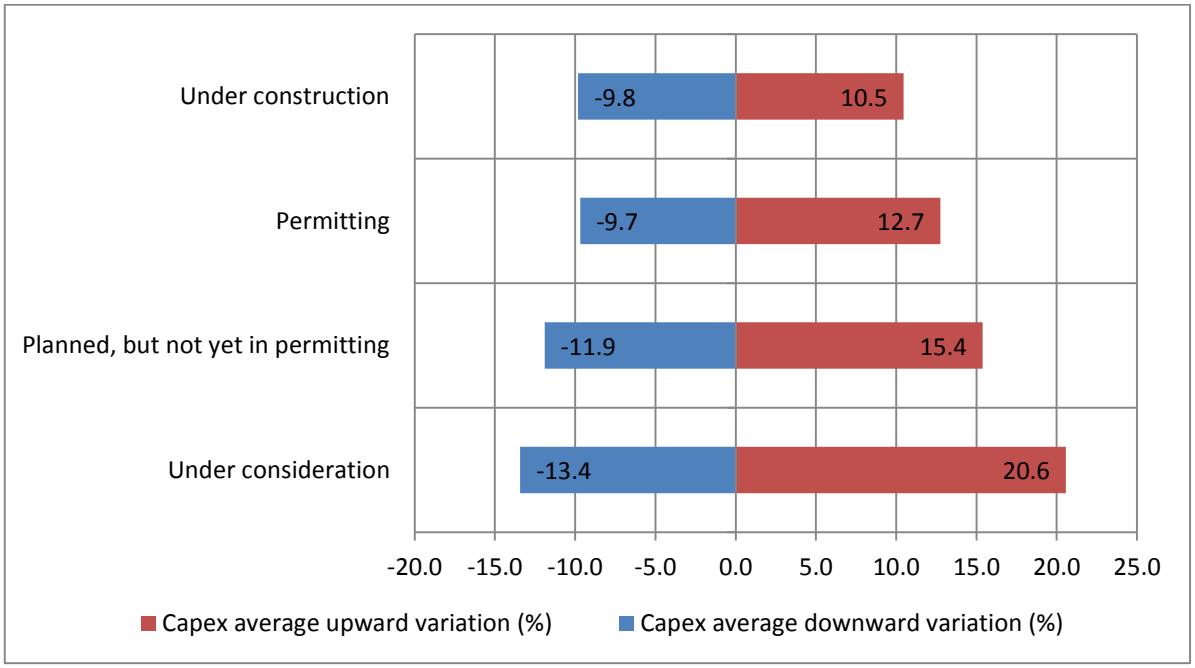
Figure 32: CAPEX variation per region / category (%)



(*) Only projects with variance different than 0 for at least upward variance were taken into account (except for cases that it is explicitly mentioned that variance is calculated to be 0).

Figure 33 explores the correlation of expected CAPEX variations and the current status of the projects. It is evident that the more advanced a project is, the narrower is the expected range of variation (especially upward variation).

Figure 33: Correlation between CAPEX variation and current status

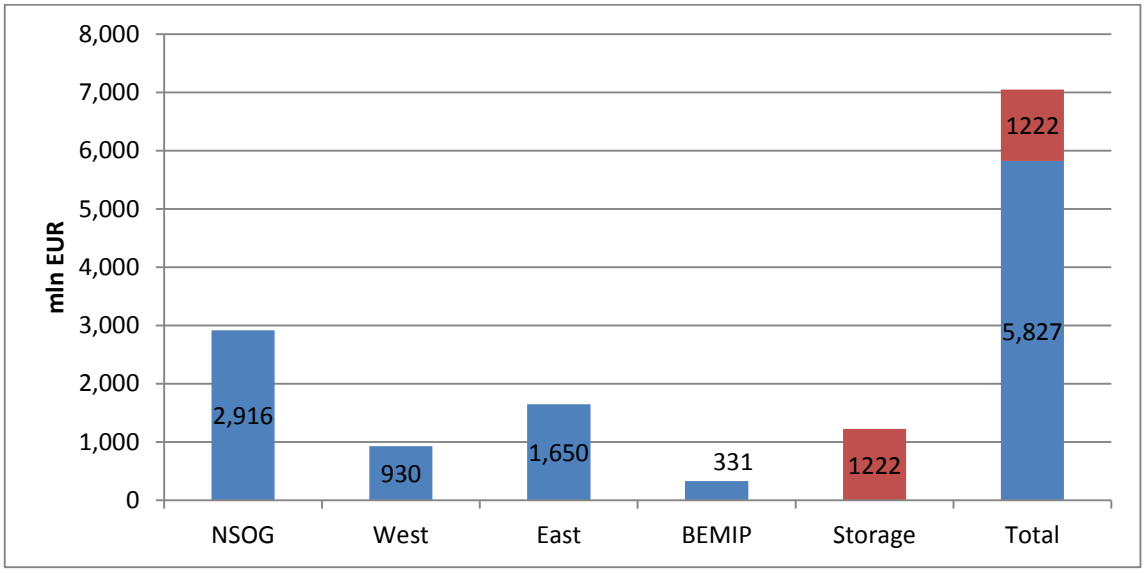


(*) Only projects with variance different than 0 for at least upward variance were taken into account (except for cases that it is explicitly mentioned that variance is calculated to be 0).

4.2 Life-cycle costs

Figure 34 presents the total life-cycle costs per region for the transmission and storage projects, which reported values.

Figure 34: Life cycle costs



Despite the limited amount of information on life-cycle costs (89 out of 118 projects for which investment cost was reported), it can be observed that the **net present value of life-cycle costs, which are mostly related to operational expenditures, represents 18% of the NPV of capital expenditures of the corresponding projects**[27].

As the lifecycle cost increases the total cost of a project by a significant share, the Agency concludes that life-cycle costs should be properly taken into account into the cost benefit analysis for infrastructure development.

4.3 Benefits

When replying to the Agency's questionnaire, promoters were asked, in line with the ENTSO-E CBA methodology, to use the following approach to calculate the expected benefits:

- For years from the expected year of commissioning (start of benefits) to midterm (if any), extend midterm benefits backwards.
- For years between midterm and long term, linearly interpolate benefits between the midterm and long term values.
- For years beyond long term horizon (if any), maintain benefits at long term value.

4.3.1 Data received

In Table 2 the number of projects that completed the fields of increase socio-economic welfare (SEW), enhancement of security of supply (SOS), losses, other benefits, and variations of total benefits and the corresponding percentages are presented:

[27] One project, which calculated lifecycle costs for a period different than 25 years, was not taken into account in this calculation.

Table 2: Completion of data fields

		SEW (*)	SoS (*)	Losses (**)	Other benefit(*)	Downward variation of total benefits (%)	Downward variation of total benefits (%)
Transmission and smart grid PCIs	No of projects	87	12	69	10	66	67
	%	76%	10%	60%	9%	57%	58%
Storage PCIs		9	2	8	5	5	5
		82%	18%	73%	45%	45%	45%

(*) Non 0 fields.

(**) (Out of them 25 reported zero losses.)

4.3.2 Aggregate values of the benefits reported

Concerning **SEW,** a total of **€105.6 billion** were reported for 95 projects, which correspond to a sum of estimated **CAPEX** of **€44.4 billion**[28].

In 62 cases out of 95 projects, the SEW benefit is higher than 1.18 times the investment costs.

Concerning variation of losses, 33 PCIs reported positive benefits, 14 projects reported negative benefits, 25 projects reported zero loss variations, 3 projects reported non monetised losses (MWh), and 2 values reported were not clarified or referred to different time period than 25 years.

Due to the low completion rate of the fields corresponding to SoS, losses and other benefits, and the variety in the reported values (positive or negative benefit, non-monetised benefit) the total benefits reported do not provide a meaningful figure; therefore, variations of benefits is not meaningful to report, either.

5 Delays and difficulties encountered by project promoters and their handling

As described in Section 3.2 of this Report, more than half of the assessed projects are behind their 2012 timeline (31% encounter delays and 24% are rescheduled), and the average overall lag is more than 2 years. Identifying the reasons of delays and difficulties, therefore, is an important goal of this report, as the Agency aspires to provide policy makers and involved authorities with the necessary information they would need to make the necessary policy decisions to address the identified problems.

The following paragraphs analyse in more detail the reasons of delays, rescheduling, and cancellation.

5.1 Reasons for delays

In case a PCI was stated as "delayed", project promoters were asked to report and prioritise the 3 most important reasons for delay. 38 out of 39 delayed projects indicated at least the main reason for delay. For 59% of them (i.e. 23 projects) more than one reason for delays were identified (in 11 cases 2 reasons, and in 12 cases 3 reasons), meaning that for these projects the delay is due to more than one non-favourable conditions. The statistics of the main reasons for delay and their occurrence are described in Figure 35 below.

[28] One project, which reported benefits for a period different than 25 years, was not taken into account in this calculation.

5.1.1 Main reason for delay

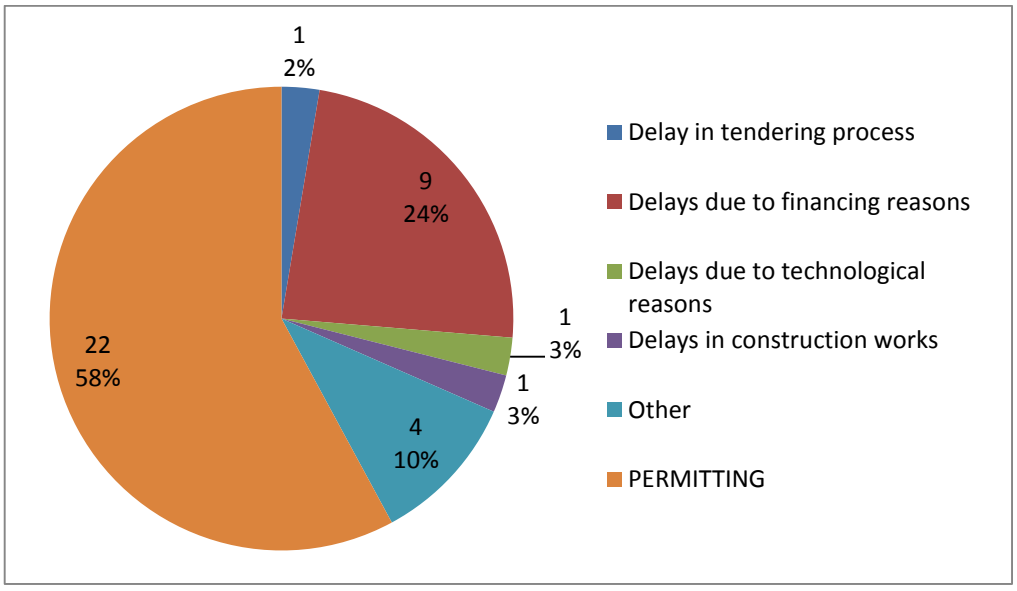
As depicted in Figure Figure 35, **the overall most frequent main reason for delay identified by 22 (58%) respondents is permit granting**.

Project promoters were requested to analyse further the permit granting problems, and Figure 36 shows the break-up and share of the various permit granting reasons responsible for the delays as reported by project promoters. 8 of the respondents indicated that the **main permitting reason for delays is environmental issues**[29], including re-routing and/or siting or re-siting of substations. 5 of the respondents indicated as the main permitting reason for delays **national law changes** affecting permitting, including complexities with the implementation of Regulation (EU) No 347/2013. 3 of the respondents admitted their responsibility in the project delay, indicating as the main reason of permitting delay, the delayed preparation of necessary application files by the project promoter. 6 respondents indicated as the main permitting reason for delays "other permit granting reasons". These other permitting reasons included changes of the national status of the project (in order to continue land-permit granting procedures), secondary permitting during land rights acquisition and construction phase, obligation of archaeological assessment of the site, opposition against technical characteristics of the project (size of the converter) and noise from transformer, extra requirements by the local authorities (i.e. further studies).

The second most frequent main reason for delays is "financing", referred to by 9 of the replies. However, it must be noted that 5 out of the 9 replies came from the same TSO, and 3 replies are related to storage and smart grid projects.

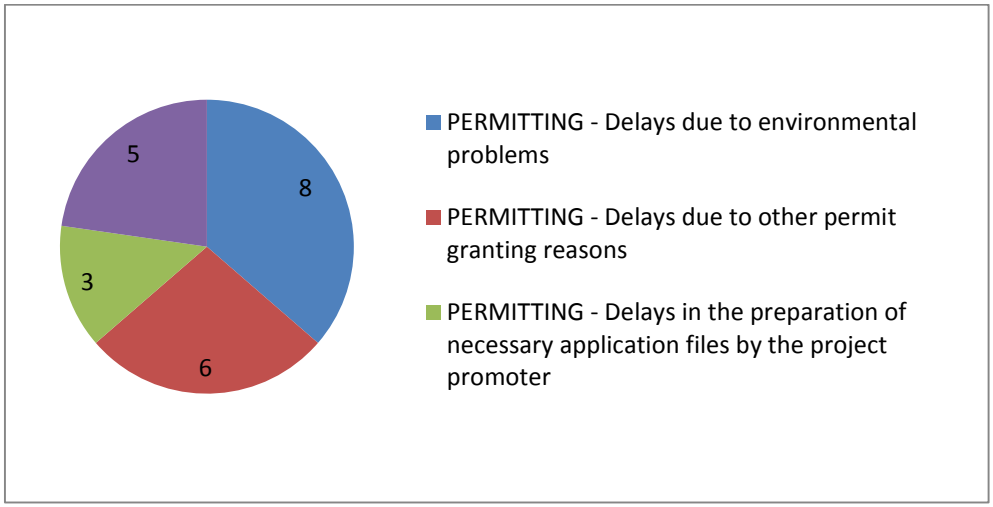
The rest of the delayed projects (7 PCIs) are delayed because of the tendering process, construction works, technological reasons or other reasons.

Figure 35: Main reasons for delay for all PCIs



[29] Environmental problems also include problems with cultural heritage authorities or any other authority that is involved in the environmental procedure.

Figure 36: Break-up of the permitting reasons reported as main reason of delay (overall)



5.1.2 Assessment of the main reasons for delays by infrastructure categories and per priority corridor

Figure 37 and Figure 38 present the main reasons of delays of transmission and storage projects broken down by priority corridors. Considering the small number of the sample per Regional Groups (6 replies in NSOG, 8 in NSI West, only 1 in BEMIP, and 1 to 3 replies per corridor for storage), there are serious limitations in drawing conclusions on reasons of delays at a regional level. Nonetheless, one can conclude that **permitting reasons, and especially those related to environmental issues, are the most frequent reasons for delays in all corridors and for both transmission and storage.** Financing seems to be the most frequent reason for delays (5 replies) in the NSI East corridor (from the same promoter), while it is reported only once in the other three corridors.

It can be noted that**, for the NSI East corridor the permitting reasons are mostly associated to environmental problems, while in the other corridors the reasons reported are more balanced**.

Beyond the 2 storage projects which were reported as delayed due to financing reasons, 3 storage PCIs encounter delay due to permitting and one due to other investment. Environmental problems as a reason for delay were not reported for storage PCI. The only delayed smart grid project is delayed due to financing reasons.

Figure 37: Main reasons of delays of transmission projects by priority corridor

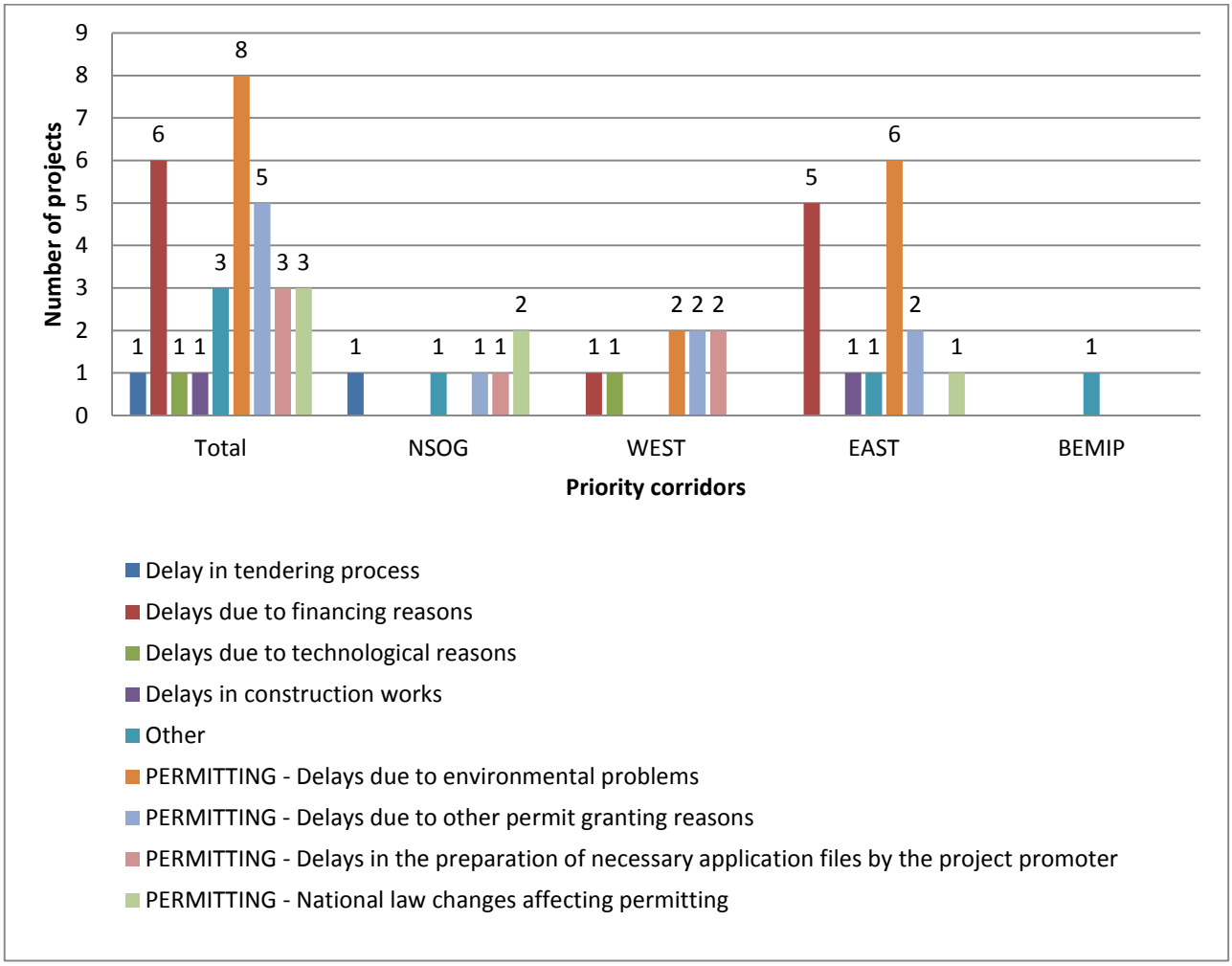
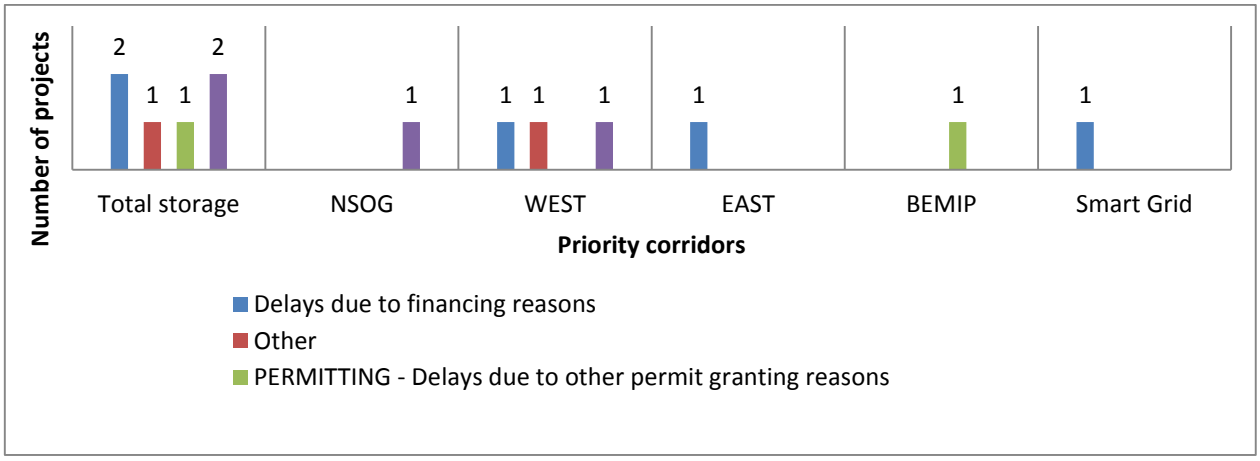


Figure 38: Main reasons of delays for storage and smart grid by priority corridor



5.1.3 Second and third most important reasons for delays

For 23 projects, the project promoters reported a second most important reason for delay out of which 12 provided a third reason, as well. The reported second and third reasons are shown in Table 3. One can notice a great variety of reasons, permitting reasons occur as the most frequent second reason (7 occurrences), and delays due to risks related to the national regulatory framework is the most mentioned third reason (4 occurrences).

Table 3: The most important second and third reasons for delays of projects

	2nd reason (No of occurrences)	3rd reason (No of occurrences)
Other	8	4
Delays due to risks related to the national regulatory framework or future regulatory decisions	2	4
Delays due to financing reasons	2	1
Delays related to acquisition of or access to land	2	1
Delay in tendering process	1	1
Delay related to finalisation of agreements and coordination across borders	1	1
PERMITTING - Delays due to other permit granting reasons	3	0
PERMITTING - Delays in the preparation of necessary application files by the project promoter	2	0
PERMITTING - Delays due to environmental problems	1	0
PERMITTING - National law changes affecting permitting	1	0

5.2 Reasons for rescheduling

For all rescheduled projects (30 PCIs), the main reason for rescheduling was reported. The frequency of the main reasons for rescheduling is presented in Figure 39. The two most frequent main reasons are the following:

- **correlation with other prioritised transmission** investments (5 transmission PCIs, one of the two rescheduled storages), which typically means that need for the project depends the realisation of another investment
- **changes in the overall planning data input**, including generation, demand and transmission (6 PCIs)

In 5 occurrences, the project promoters indicated changes on the generation side (either in relation to new renewable based generation or other types of generation) as a main reason for rescheduling. Changes on the demand side and rescheduling of works during the construction phase occurred, each of them, only once.

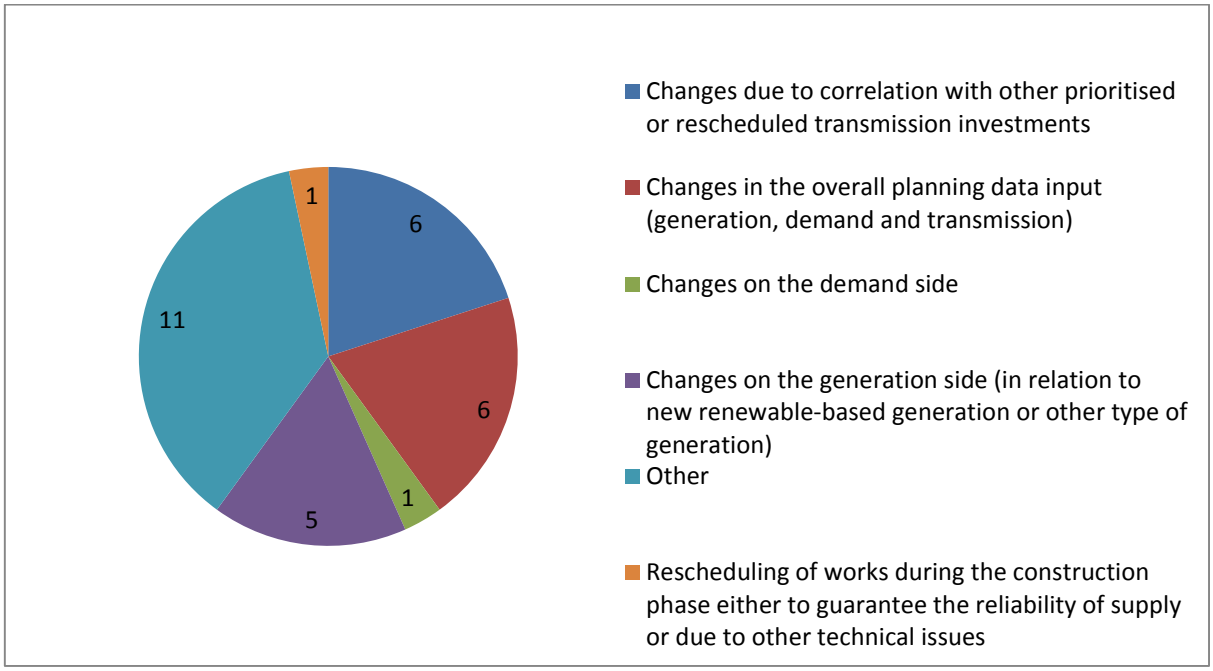
For 11 PCIs the project promoters reported other reasons for rescheduling, the most important of which are the following:

- ongoing assessment of the technical solution
- the feasibility of the project
- necessary changes in the project status in relation to the permit granting
- lack of social acceptance

- regulatory uncertainty (the other one of the two rescheduled storage)

The Agency notes that the last 3 reasons for rescheduling can be considered also as delay as these reasons do not change the need for the project, and the postponement is not a voluntary choice of the promoter.

Figure 39: Main reasons for rescheduling of transmission and storage PCIs

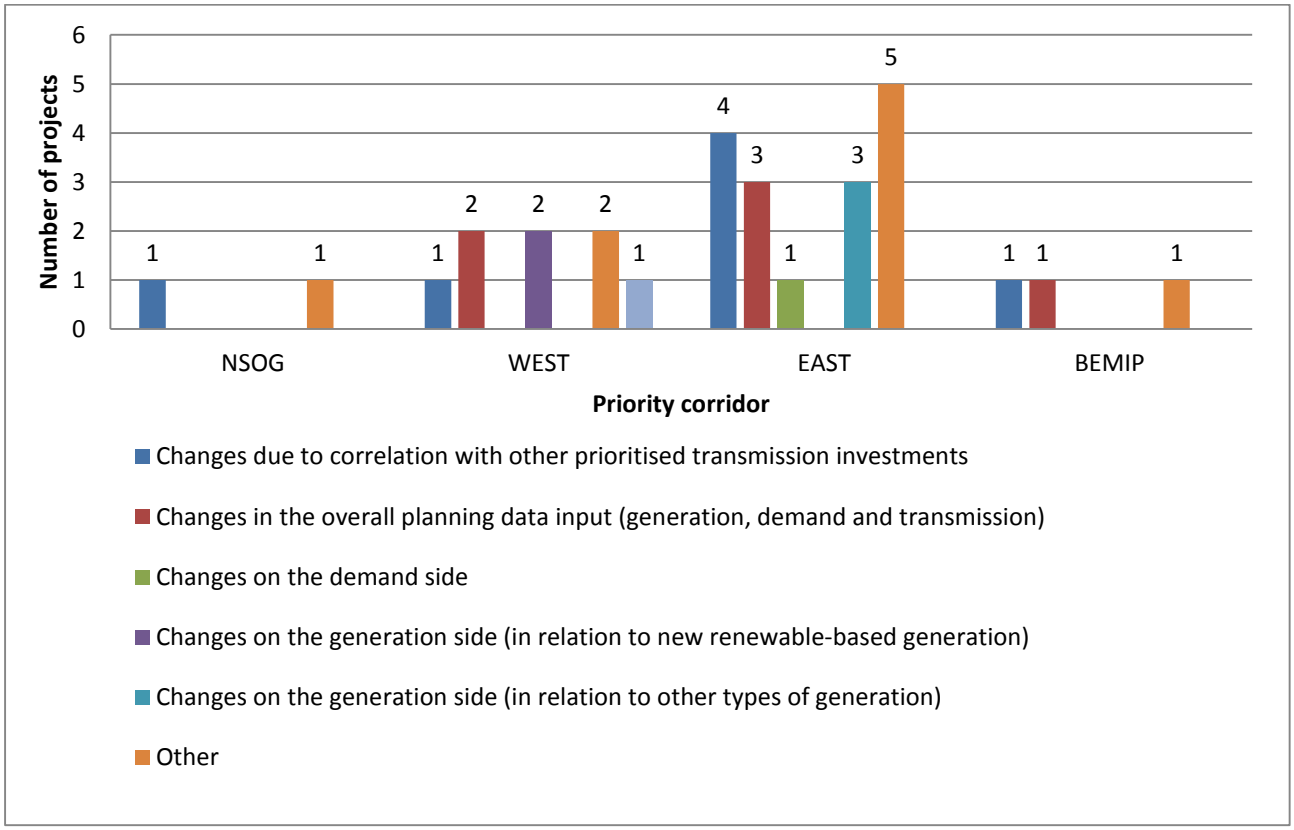


Additional reasons for rescheduling were reported for 5 out of the 30 rescheduled projects[30]. The reason is the same in 3 cases: more time is needed for the inclusion of the project in the national and respective regional spatial-land planning documents. In one case the additional reason for rescheduling is the change of design of the storage project due to technological advancement.

From a regional perspective, there seems to be a **large dispersion of reasons among the priority corridors**, as presented in Figure 40. Change due to other prioritised investment is a common reason noticed in all corridors. Changes on the generation side due to new renewable generation were only reported in the NSI West, while due to other generation type only in the NSI East.

[30] In one case the project promoter provided several reasons for delay without prioritisation.

Figure 40: Main reasons for rescheduling per priority corridor



5.3 Reasons for progress backwards to "under consideration"

There are 11 projects reported by the promoters to be "under consideration" while they were at least in a "planned" status as of summer 2012. For one project the promoter reported "planned" status, while its previous status was "design & permitting" as of summer 2012 according to the TYNDP 2012. In 10 instances the project promoters reported these projects to be rescheduled, but in two instances, the projects reported to be "on time." Since the respective reports do no show backward progress, the Agency concludes that the status of these two projects in the TYNDP 2012 could be incorrect.

The main reasons for the backwards progress (reported as reasons for rescheduling) obtained from the reports are the following:

- The investment was put under consideration in the National Development Plan due to changes in feasibility conditions and planning scenarios (4 PCIs)
- Different scenarios of generation and load expected in the coming years; uncertainty about the technical solutions (feasibility analyses in progress) (1 PCI)
- Social acceptance (1 PCI)
- In depth analysis showed lower than anticipated utilisation of the line (1 PCI)
- Realisation of the investment is linked to another rescheduled investment (1 PCI)
- Alternative solutions were identified and the necessity of the investment is reconsidered for a later date (1 PCI)
- Uncertainties concerning design, ownership, regulatory framework (1 PCI).

5.4 Reasons for cancellation

There are two projects reported by the project promoters to be **cancelled** (See *Annex X: PCI specific information*). They are both internal transmission lines and the indicated reason for cancellation is common: the overall planning process and inputs had been changed (i.e. the investors failed to build the previously planned wind farms). Both projects are included in the NSI East priority corridor.

5.5 Difficulties

In total, there are 8 projects which were indicated by promoters to be facing difficulties.[31] They are all transmission projects and they are located in the priority corridors of NSOG (2 PCIs), NSI West (5 PCIs) and NSI East (1 PCI). In the BEMIP corridor no PCI is experiencing difficulties.

The identified difficulties are the following:

- Constraints due to competing projects;
- Uncertainties concerning design and ownership of the investment
- Legal and regulatory uncertainties
- Permitting uncertainties
- National law changes affecting permitting
- Difficulties due to environmental problems
- Difficulties related to acquisition of or access to land
- Changes in policy (regarding electromagnetic fields)
- Protracted discussions with public, public agencies, NGOs and permitting authorities due to legal changes
- Technical challenges and routing
- Prolongation of tendering period due to request of bidders for an extension of time
- Delays in finalization of agreements concerning use of third party system operator's infrastructure
- Ongoing public and political discussion about the necessity of the project.
- Legal changes affecting technical solution.

The difficulties reported by the promoters show a great similarity with the reasons for delays with two exceptions: the constraints related to the competing projects and delays in the finalisation of agreements concerning use of third party system operator's infrastructure.

5.6 Measures taken or proposed by project promoters to overcome the delays and difficulties

5.6.1 Measures taken by project promoters to overcome delays and difficulties

Regarding transmission PCIs, in most of the cases it was reported that measures had been taken by either the project promoters or by other parties (e.g. NRAs, competent authorities, ministries) to solve delays and difficulties. These measures include:

[31] I.e. problems that resulted in project postponement in less than six months without causing a significant revision of the estimated costs or benefits.

- Cooperation with the national regulatory authority (e.g. on funding difficulties and allocation rules)
- Communication and lobbying activities with stakeholders (e.g. with real estate owners, governments)
- Change of the investment so that it is independent from generation, hence independent from agreements (like inter-governmental agreements, or any power purchase agreement, feed-in tariff or contract for difference) which caused the delay
- Carrying out additional reports, studies (e.g. studying alternatives to solve the problems of local public acceptance and other construction obstacles, additional information was submitted to the permitting authority, renewal of the Environmental Impact Assessment)
- Creation of public awareness and direct involvement of the local citizens and stakeholders (meetings, public exhibitions, roundtables, workshops; strategic cooperation with media and embraced institutions etc.)
- Administrative measures (e.g. request a process to include the project into the national and respective regional spatial-land planning documents)
- Application for co-funding under the Connection Europe Facility.

Regarding storage PCIs, measures reported include contacts with national authorities, application for CEF funding, renegotiated terms of action plan, and raising awareness of the local community.

However, only in a few cases, project promoters reported that the measures taken had solved the reason for delays.

5.6.2 Measures proposed by project promoters to overcome delays and difficulties

Further to the measures already taken, the project promoters proposed a number of extra measures to overcome delays and difficulties of their projects. These measures include the following:

- Monitor key risks and dependencies and engage closely with stakeholders, including the supply chain, landowners, consenting authorities and regulators.
- In one case, national law of a non-EU member state (but within European Economic Area) does not allow the project promoter, as being a third party promoter, to build an interconnector on its territory. Changes in the law are proposed to overcome this legal barrier.
- Direct and ongoing liaison between NRA, government, and permitting authorities
- Improving the PCI process by creating a viable and deliverable PCI with SEW and GTC benefits and by also increasing flexibility (e.g. taking account changing scenarios and stakeholder engagement)
- Submission of report to the respective NRAs requesting approval for early expenditure for material with long delivery times and early commencement of detailed design.
- Consideration of alternative sites
- Action and commitment from the Competent Authorities to assist the promoters in enhancing local public acceptance
- Monitoring and political engagement from the EC services and ACER/NRAs through the PCI monitoring report tool, and corresponding strong actions with the responsible authorities
- General commitment of all opinion leaders and local governors to the project

- Creation of public awareness, that remodelling the grid infrastructure is stimulatory and a necessity of a modern community (or state)
- Adequate capacities for the permitting administrations
- Consistent regulation (nationwide, Europe wide) of technical standards (electromagnetic fields, noise) and upgrade of existing power lines to accelerate the permitting process (220 kV up to 380 kV)
- Standardisation of the mitigation measures for the same infrastructure in the same habitat on EU level by EC
- Problems with land ownership and land compensation could be solved if a national importance status is awarded to the PCIs at national and European level.
- Especially for **storage** PCI promoters, a clear policy to allow for storage of renewable energy is proposed, as well as support for pumped hydro power PCIs.

6 Main findings and recommendations of the Agency

6.1 Main findings

General considerations

- The monitoring activity covers 127 PCIs and 128 projects, which submitted a monitoring report. 7 PCIs did not submit a report
- According to the reports received, 14 projects are not included in the ENTSO-E TYNDP, 8 projects are not included in the Regional Investment Plans, and 35 projects are not fully included in the National Network Development Plans.
- 16 projects that correspond to internal projects reported expected increase of cross-border GTC lower than 500MW and in one case only the value of GTC was reported without any impact on other MS border. Therefore all these projects seem not to meet the criteria to be PCIs.

Timeliness of the projects

- 2 electricity PCIs have been commissioned, 66 are expected to be commissioned between 2015 and 2020, and 33 are expected to be commissioned in the period 2021 to 2025.
- 2% of electricity PCIs have been cancelled, 16% are under consideration, 30% are planned but not in permitting, 37% is under permitting, 13% is under construction and 2% are commissioned.
- More than half of the projects are delayed or rescheduled (31% of electricity PCIs are delayed, and 24% are rescheduled), resulting in a lower amount of commissioned PCIs per year than was expected in 2012 over the next 10 year horizon.
- 15 project reports did not include a commissioning date, which may be a signal of strong uncertainty on these projects and may raise doubts on the PCI labelling for these projects.
- Projects under permitting tend to be more likely to accumulate delays than projects in another status. Therefore, projects which are currently in a pre-permitting stage are expected to accumulate more delays (when they enter the permitting stage). If this trend prevails commissioning will be further postponed compared to the currently foreseen dates.
- The main reason for delays relates to various permitting reasons, the most frequent of which is environmental issues.

- Financing seems to be one of the most frequent main reasons for delays in the NSI East, however, 5 out of the total 6 transmission projects in all corridors, which reported this reason, belong to the same promoter.
- The reasons for rescheduling of projects are somewhat dispersed. The more frequent are the prioritisation of other investments and changing generation/demand planning conditions.

Costs and Benefits

- The net present value of the total expected investment cost of the projects, which reported values, is €54.6 billion.
- If all projects were commissioned on-time, investment would be around €7 billion per year in the period 2018 to 2022. Cumulatively €37.6 billion of CAPEX would be injected by 2022.
- The net present value of the total life-cycle costs of the projects, for which this information was reported, amounts to a net present value of €7 billion. By taking into account the same pool of projects, it can be noted that the net present value of the total life-cycle costs corresponds to 18% of the net present value of the investment costs.
- Benefits are reported by project promoters only to a limited extent. However, SEW benefit alone outweighs investment costs of the corresponding projects more than 2 times.

Regional perspective

- In general, projects in NSOG and BEMIP priority corridors seem to progress faster and implemented in a more timely manner than projects in NSI West and NSI East priority corridors.
- In the NSI East priority corridor environmental permitting and financing seem to be the most crucial reasons for delay, while in other regional groups the reasons for delays are more balanced.

Other findings

- Completeness of the submitted reports varies among projects, but also among specific sections of the report. The data required in the monitoring templates in many cases was not reported. When reported, the submitted data was not in all cases reliable and robust, as it came out of the Agency's and NRAs' validation checks.
- For 36 projects the chapter III of Regulation (EU) No 347/2013 does not apply.
- Share of alterations (one third) is quite high and concerns projects in every status phase, not only those in pre-permitting status.

6.2 Recommendations

Improving the overall PCI process:

- TSOs and NRAs / Member States should ensure that PCIs in all relevant NNDPs and Regional Investment Plans are listed, in pursuit of consistency and in order to meet legal requirements of Article 3 (6) of Regulation (EU) No 347/2013.
- TSOs and NRAs / Member States should ensure integrity between the PCI selection and PCI monitoring procedures by the following means:
    - Agree on a common data set, definitions of various indicators used on which to provide projections, cost and benefit categories/calculations, etc. aligned with TYNDP. This harmonised approach would enable the proper monitoring of progress

and the comparability with the initially submitted data. With this regard, further improvement of the data base and calculations of values included in the ENTSO-E TYNDP is of utmost importance.

- Draw up a less detailed implementation plan for less advanced projects to be submitted during the PCI selection process[32], counterbalanced with an assessment of the main factors /risks affecting the implementation and their consequences on costs and benefits.
- Results of PCI monitoring should be taken into account in the next round of PCI selection (e.g. PCIs in breach of Regulation (EU) No 347/2013 should not be included in the next PCI list, the necessity of rescheduled PCIs should be carefully assessed, as well as the reasons of delays and the possibilities to overcome difficulties).
- In order to improve monitoring of benefits, CBA methodology should be improved and implemented on a PCI level.

- Projects promoters should adopt a constructive cooperation approach with competent authorities, NRAs, and other promoters and set a realistic implementation plan of the project (permitting, construction) to result in lower chances for project delays and rescheduling.
- Projects promoters should make efforts to improve the completeness and quality of the data they provide in the framework of the PCI monitoring to increase confidence in the robustness of their projects and the reliability of the whole PCI process.
- Project promoters should explain and justify to the Regional Groups differences between reported information or difficulties in providing the requested data.

Improving infrastructure planning and its consistency:

- TSOs and ENTSO-E should ensure that information on commissioning dates, on the status and time progress, on investment and life-cycle costs, as well as on benefits is duly presented in the national development plans, in the regional investment plans and in the ENTSO-E TYNDP.
- TSOs and ENTSO-E should harmonise the classification of project status in the development plans to the terms used in this report: “under consideration”, “planned but not yet in permitting”, “permitting”, “under construction”, “commissioned” and “cancelled”.

Accelerating permitting:

- The Commission / Competent Authorities should explore the various factors that have an impact on the permit granting duration (especially the environmental permitting aspects), with a view to:
  - standardise procedures, technical, and environment standards
  - take measures to accelerate access to land and land compensation
  - identify best practices and share them among Competent Authorities

[32] A need for identification and differentiation between “advanced” and “less advanced” projects was already proposed in ACER opinion No 16/2013 on the draft Regional Lists of Proposed Electricity Projects of Common Interest 2013 in Section 2.4. (p. 7)

- PCI promoters should raise awareness and indicate the difficulties they encounter (e.g. with regard to permit granting) to the Regional Groups / European Commission, in order to allow them to mediate and intervene if appropriate.

Enabling investment

- The highly demanding level of expected investment, especially for the years up to 2022, calls, on the one hand, for careful consideration of the available financing tools, and, on the other hand, for a cautious prioritisation of the most urgent projects. The prevailing adverse financing conditions in some regions may need to be further examined. ACER in cooperation with NRAs and the Commission can investigate whether there is a need for improved financing tools to facilitate the provision of the necessary capital for the materialisation of the projects.
- The Commission should take into account investment needs indicated by the monitoring report for certain years, when it decides to schedule the available resources.

VOLUME 2: GAS PROJECTS

7 Introduction

7.1 Overview of the reports received from project promoters

7.1.1 Fulfilment of the reporting obligation

The 2013 list of PCIs for the gas sector includes 104 projects, of which 84 are transmission, 13 are LNG, and 7 are underground gas storage projects. The project company of one PCI was liquidated in the spring of 2014, therefore no report was submitted for this PCI. **The promoters of all the other 103 PCIs provided their report by 31 March 2015, and the Agency highly appreciates the timeliness of the project promoters' submission.** This chapter takes into account all the provided information for all 103 PCIs in gas.

7.1.2 Completeness and adequacy of the submitted reports

After the submission of the reports, the Agency carried out a validity check of the received data in order to identify whether the reports are complete or some information is missing, and whether there are inconsistencies. The Agency notes that the **information related to project identification, technical parameters and expected costs is provided in full for all projects.**

Nevertheless, the Agency **identified a significant number of reports as incomplete**. Most of the incomplete information is related to a few categories of issues, such as the projects' status and progress. In particular, implementation schedules at project level are often missing, even though project promoters are obliged to draw up an implementation plan for PCIs[33]. In many instances, promoters do not provide the required information without specifying whether the information in question is not available[34] or non-applicable. It is consequently not possible to make a clear distinction between information which was simply not available to the promoter and that which was available, but not provided in the report. In several cases of missing data and data inconsistencies, the Agency sought clarifications from the project promoters.

The Agency notes that those cases where project promoters do not provide the required information related to important aspects of the projects at the time of both the PCI selection in 2013 and the PCI monitoring in 2015 deprive the Agency and the other stakeholders from the ability to properly compare the data regarding the projects' milestones and make the assessment of the projects' progress difficult. **The Agency is of the view that the non-provision of important information regarding the implementation plan of a project, including *inter alia* its schedule, may be an indication that the project is very immature, and may also lead to doubts about the project's compliance with Article 5(1) of Regulation (EU) No 347/2013. The Agency invites project promoters to carefully consider the need to draw up an implementation plan for the PCI and the importance of including the relevant information in their future reports.**

A detailed overview of the results of the data validity check and clarification process is provided in *Annex XII: Preparatory Activities by the Agency*.

7.1.3 Overview of the projects – basic information

7.1.3.1 Distribution of PCIs by priority corridor and type of infrastructure

The vast majority of PCIs in natural gas are gas transmission projects, followed by liquefied natural gas (LNG) and underground gas storage (UGS) projects. About half of the PCIs are located in the priority corridor "North-South gas interconnections in Central Eastern and South Eastern Europe"

[33] Pursuant to Article 5(1) of Regulation (EU) No 347/2013.
[34] Some project promoters indicated that their initial planning in 2013 covered different implementation stages and thus the information in the currently required breakdown is not available, or may be provided only on the basis of estimations.

(NSI East), followed by "North-South gas interconnections in Western Europe" (NSI West), BEMIP and the Southern Gas Corridor (SGC) (Figure 41).

Figure 41: Number of PCIs by type and by priority corridor

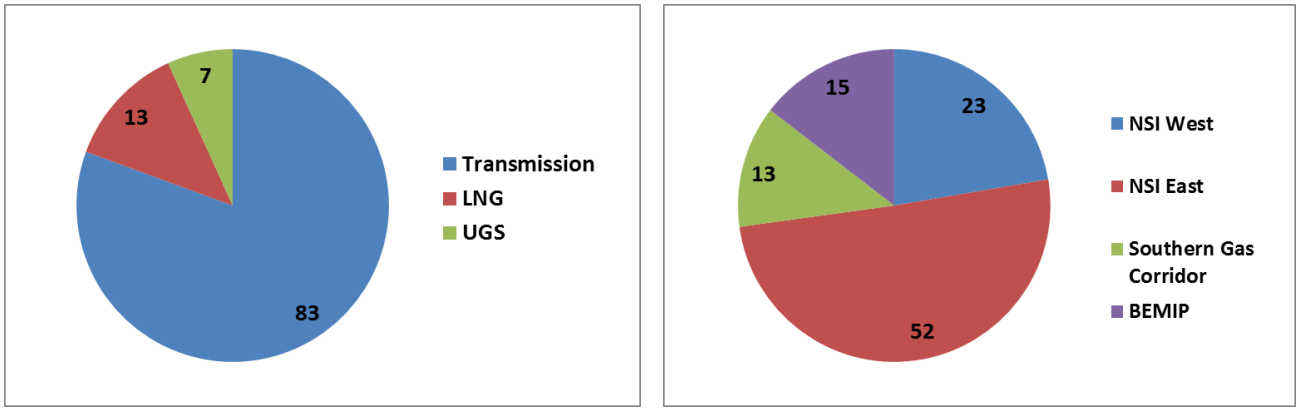
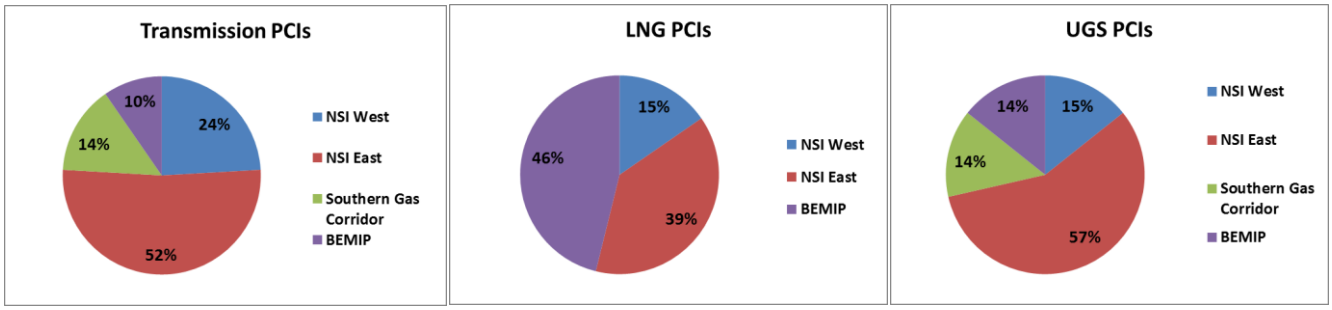


Figure 42: Share of PCIs by type and priority corridor



Due to the fact that **the priority corridor "NSI East" and the category "transmission" include a significantly higher number of projects in comparison to other corridors and types of infrastructure, the characteristics of these categories heavily impact the results of the reporting**. For a thorough analysis and in order to highlight differences between corridors and types of infrastructure, the Agency examined the reports in three aspects: 1. on an aggregate level; 2. by breakdown per priority corridor and; 3. per PCI category (infrastructure type).

7.1.3.2 Consistency between the PCI list and national development plans

Half of the **transmission projects** are included in the **National Development Plan (NDP) of a single Member State**, and only an additional 25% are listed in the NDP of two Member States. As for **LNG and UGS PCIs**, approximately half of them in each category are included in the NDP of a Member State, and none are present in any other NDPs. The Agency notes that a greater coordination in listing the PCIs of all types in relevant NDPs, if appropriate, would contribute to consistency, particularly in view of the fact that the projects for which reports are provided are believed to be of *common interest* to at least two Member States, for instance serving the purpose of security of gas supply[35]. **The Agency invites project promoters to work closer with their counterparties and stakeholders in various Member States to help assure that PCIs are properly reflected in all relevant NDPs**.

[35] The Agency recalls that pursuant to Article 4(6) of Regulation (EU) No 347/2013 PCIs shall become an integral part of the relevant regional investment plans and the relevant national 10-year network development plans.

As regards the evaluation of the consistent implementation of the Union-wide network development plans with regard to the energy infrastructure priority corridors and areas, the Agency refers to its previous opinion, which addressed this subject[36].

7.1.3.3 Commissioned projects

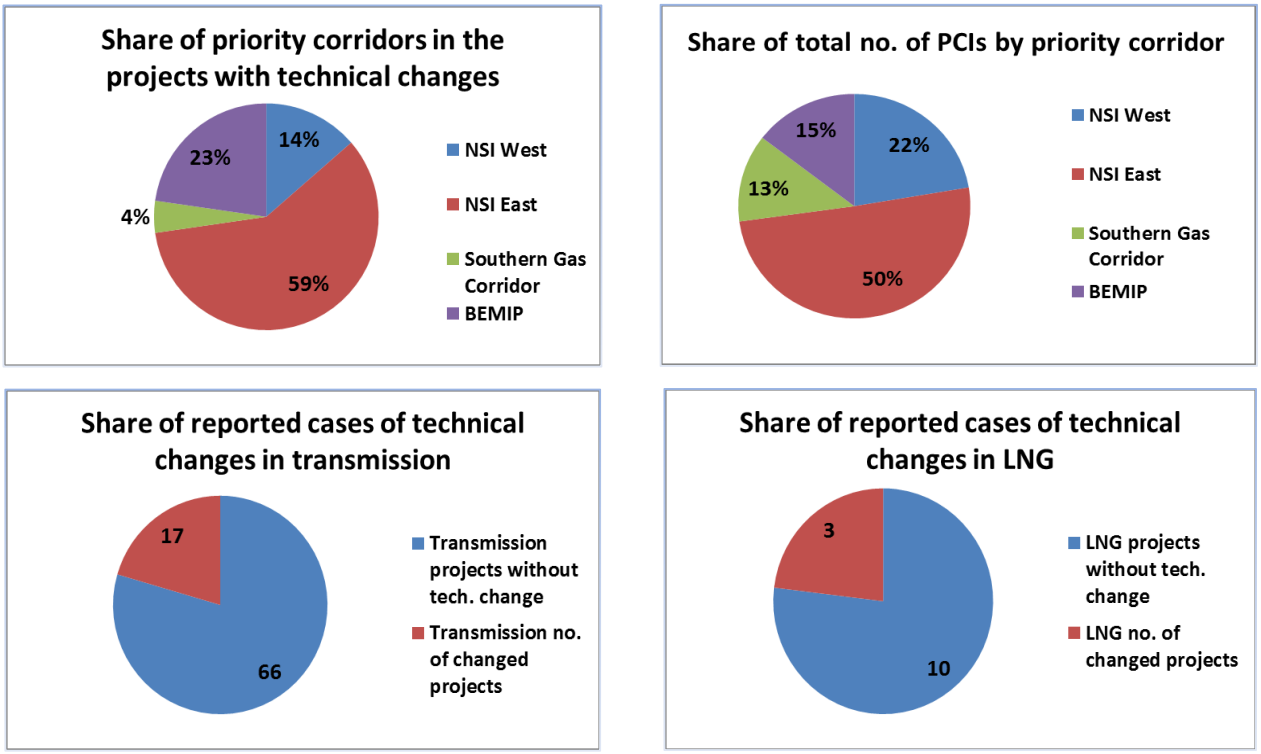
Since the adoption of the 2013 PCI list, two projects have been commissioned by 31 January 2015. In the course of 2015, three additional PCIs are to be commissioned, rather than six as originally planned.

7.1.3.4 Project changes and amendments

Major technical changes have occurred in the case of approximately **20% of the PCIs** since the time when the information on them was submitted in the course of the selection process for the first Union list of PCIs. The changes took place in transmission and LNG projects. For UGS projects, no technical changes are reported.

The technical changes typically involve modifying the length of the pipeline, the pipe diameter and the compressor power, as well as the inclusion of new or the removal of earlier planned technical equipment from the scope of the project. In certain cases, project promoters report that the project's advancement led to a better understanding of the technical specifications, *which is not a change per se compared to the original planning but rather the due outcome of a proper project development*. In one instance, the project was merged with another project, which led to changes in all technical characteristics.

Figure 43: Major technical changes



[36] Opinion of the Agency for the Cooperation of Energy Regulators No 22/2014 of 23 December 2014 on the implementation of the investments in gas network development plans.

Project up-scaling is the result *inter alia* of changes in the location of a planned interconnection point or of the inclusion of new functions for the specific infrastructure (e.g. continuous availability instead of only in crises, new option for re-loading and bunkering of LNG). **Downscaling** (for example, fewer technical equipment, smaller diameter, lower compressor power) is typically explained by the promoters as adjustments bringing the project to a more optimal size than the one foreseen by the original plan, while still delivering the same expected results as reported by project promoters[37]. Table 4 shows the reported specific technical changes by type.

Table 4: Reported specific major technical changes

Pipeline length increased	3
Compressor power increased	3
Project technical parameters better defined	3
Less technical equipment used	2
Diameter reduced	2
Pipeline length reduced	2
Project merged with another project into a new PCI	1
Additional technical equipment used	1
Compressor power reduced	1
New parts/functions of the facility	1
Storage capacity reduced	1
Total number of PCIs with major technical changes	**20**

The instances where a major technical change of a PCI occurs appear to increase with the advancement of project maturity[38]. One of the two PCIs which have been commissioned since 2013 was realised with changes. A much larger share of PCIs which are under construction (43%) and at the design and permitting stage (30%) have been modified in comparison to those which are under consideration (9%) or planned but not yet in the design and permitting stage (4%).

A possible explanation for this "higher maturity, more change" phenomenon is that, by the time a project reaches a more mature stage, either external circumstances (for example, supply-demand balance, available technology, general parameters of the system infrastructure in which the project is to be built, etc.) **change, or the project planning becomes more accurate and thus requires project refining**, or a combination of the above.

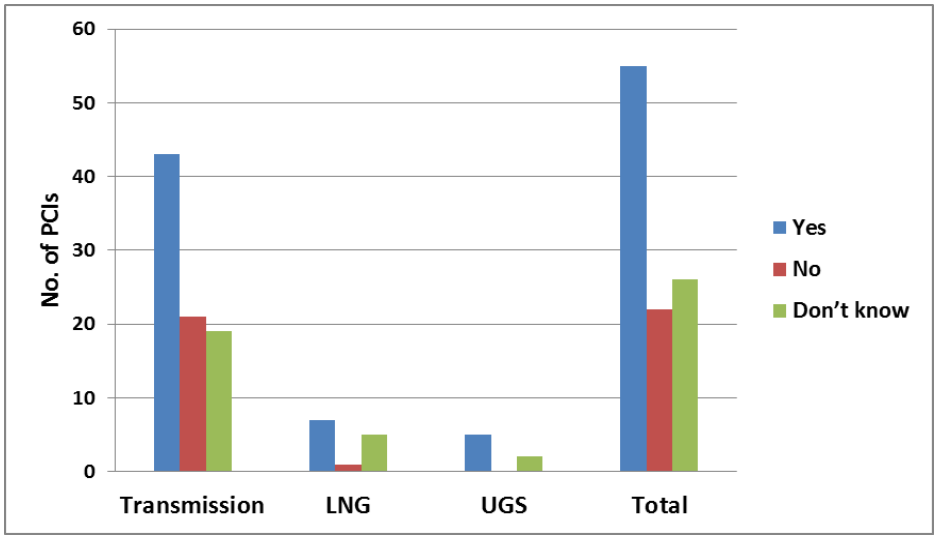
7.1.3.5 Financial assistance

About 50% of the PCI promoters intend to apply or have already applied for **financial assistance through the CEF**. Roughly 25% do not intend to apply or have not yet applied for any assistance, and another 25% have not yet decided whether to opt for such support or not. Figure 44 illustrates the intentions of project promoters regarding the use of CEF funds.

[37] Projects with major technical changes may no longer fulfil the criteria to be PCIs. The current scope of the consolidated report does not allow the Agency to carry out individual checks regarding the consequences of major technical changes for each relevant PCI. However, the information regarding technical changes would prove useful for the next PCI selection procedure. It is therefore essential to better link the PCI selection and PCI monitoring phases so that a clear evolution of the candidate projects can be examined and the consequences of changes can be tracked and understood.

[38] Several PCIs were at an early (non-mature) project stage when they were selected for the first Union-wide PCI list.

Figure 44: Intention to use CEF funds

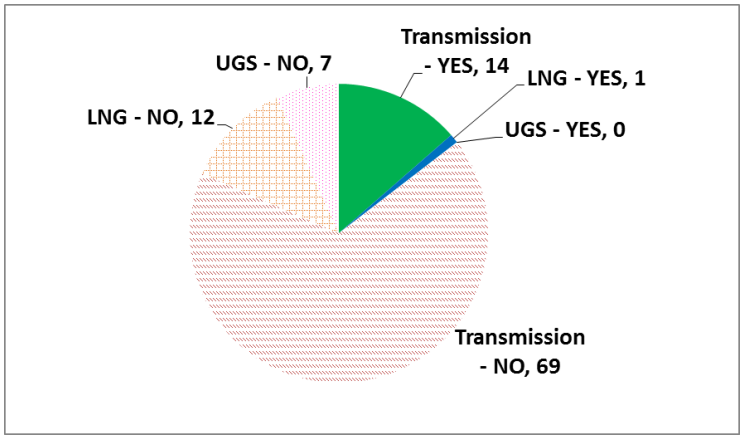


7.1.3.6 Costs and benefits

The **cost-benefit information reported by project promoters** should be considered only as illustrative in the current report. Only 15% of all PCI promoters carried out any kind of cost-benefit analysis (CBA) in 2013 or before, and only in the transmission and LNG sectors. The CBAs – as implemented – vary in methodology and in the extent of the PCI covered[39], and are generally likely not to be methodologically in line with the requirements of Article 11 of Regulation (EU) No 347/2013, since **no Union-wide CBA methodology was available for gas at the time when such CBAs were carried out**. The relevant question[40] in the reporting forms aimed at finding out whether there was *any kind* of CBA carried out by the project promoters, even though the CBA as performed might have not been in line with Article 11 of Regulation (EU) No 347/2013. Figure 45 illustrates the performance of CBAs.

In the Agency's view, **in all of the cases where the project promoters report that they intend to apply for the inclusion of the project on the second PCI list, it is imperative that they carry out the CBA anew,** by properly using the adopted CBA methodology at Union level in compliance with Article 11 of Regulation (EU) No 347/2013[41].

Figure 45: Number of CBAs carried out for the 2013 PCIs



[39] For instance, in certain cases the CBA does not cover all the sections of a cross-border pipeline, but only those located in a Member State.
[40] Section 4 of the questionnaires.
[41] Unless their projects cannot be properly modelled by the Union-wide CBA methodology.

Key findings:

- All promoters fulfilled their reporting obligation.
- The quality and the completeness of the reports by the project promoters in particular regarding implementation schedules must be improved in the future.
- PCIs usually appear only in those Member States' National Development Plan where the project is going to be built and not in the plans of other Member States, even though such projects would possibly impact more than one Member State.
- PCIs – similarly to other major infrastructure projects – constantly evolve by adapting to the changing technical and market conditions of the time; consequently, they cannot be considered as stationary concepts and should be on the standing agenda for cooperation between competent authorities, NRAs, Regional Groups and project promoters themselves. It would require further consideration what level of major technical changes could be acceptable within the limited period of 2 years of the validity of a PCI list.
- Many projects which are granted PCI status are in an early – i.e. not mature – project stage which is another reason leading to major technical changes when the project is progressing. In particular with respect to downscaling it should also be considered that with an excessive modification of project properties, the criteria for PCI status might not be fulfilled any more (or it might be fulfilled but to another extent).
- As a Union-wide CBA methodology in gas was not available in 2013, the cost-benefit information submitted by project promoters can only be used on a case-by-case basis. The Agency underscores the importance of the next PCI list and future reports by PCI promoters, whereby they will be requested to carry out a CBA and provide its outcome in line with the methodology approved by the European Commission[42].

8 Progress of the PCIs

8.1 Current status[43]

Just over half (52%) of the projects are reported to be beyond the planning stage[44]. The remainder (48%) are either planned but not yet in design and permitting, or are under consideration, or have been cancelled.

[42] Commission Opinion of 25.07.2014 on the cost-benefit analysis methodologies concerning trans-European energy infrastructures.

[43] In order to classify the PCIs based on their current status, promoters reported by choosing one of the pre-defined categories as follows: 1. Commissioned; 2. Cancelled; 3. Under construction; 4. In design and permitting phase; 5. Planned but not yet in design and permitting phase; 6. Under consideration.
Being "commissioned" or "cancelled" means that the PCI has completed its final stage. A PCI's progress across the other stages – in their order – demonstrates the advancing maturity level of the project. In the Agency's view, a key moment in considering whether a project is sufficiently mature, is the time when the promoter files an investment request. Pursuant to section 2.1 of the Agency's recommendation regarding cross-border cost allocation (CBCA) requests submitted in the framework of the first Union list of electricity and gas projects of common interest, a "sufficiently mature" project is a project exhibiting: (1) sufficient certainty and thus strong confidence about the expected costs and benefits assessed by the cost-benefit analysis, and (2) good knowledge about the factors affecting expected costs and benefits and their ranges. In addition, permitting procedures need to have started in all hosting countries and construction needs to be about to start reasonably soon.

[44] The projects beyond the planning stage have been either commissioned, or are under construction, or are in the design and permitting phase.

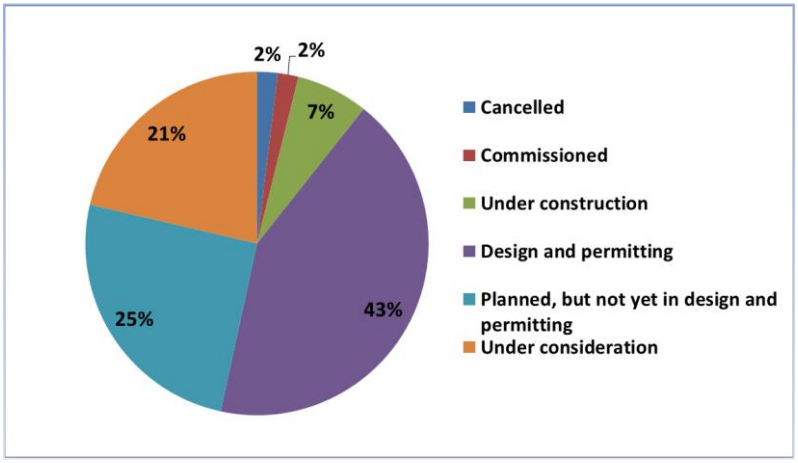
Transmission projects, which constitute the majority of PCIs, are roughly 50-50 split between stages that are beyond planning (design and permitting, construction, or already commissioned), and earlier project stages (planned but not yet in design and permitting or under consideration only). In **LNG** almost 70% of PCIs are beyond planning i.e. in the design and permitting phase, while only 30% are either under consideration or planned but not yet in design and permitting stage. **Underground gas storage** includes more projects in the planning phase (57%) and less in the design and permitting stage (43%).

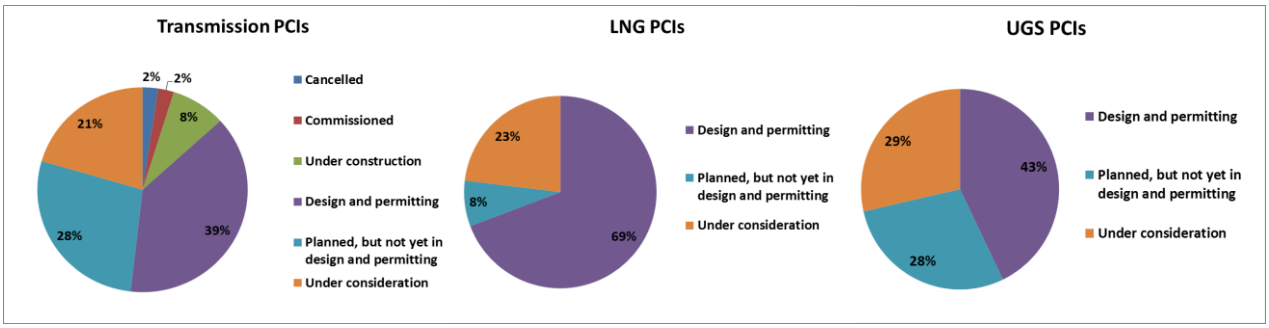
In transmission, two PCIs have already been commissioned and seven are under construction. In LNG and underground gas storage however, no construction has started or commissioning taken place. The first LNG PCIs are currently planned to come online in 2017, while UGS projects are expected to be commissioned from 2018-2020 onwards.

Two transmission projects have been cancelled. All LNG and underground gas storage PCIs are still reported as being developed by the promoters. Figure 46 illustrates the progress of PCIs (overall and by type of infrastructure).

As regards the **breakdown by priority corridor,** in the NSI East and NSI West groups of projects the PCIs which are beyond the planning stage and those still at it are roughly split 50-50, with the number of more mature projects being slightly higher. In BEMIP, the project progress status is very similar to that of NSI East and NSI West, but in BEMIP the less mature projects slightly outnumber the more mature ones.

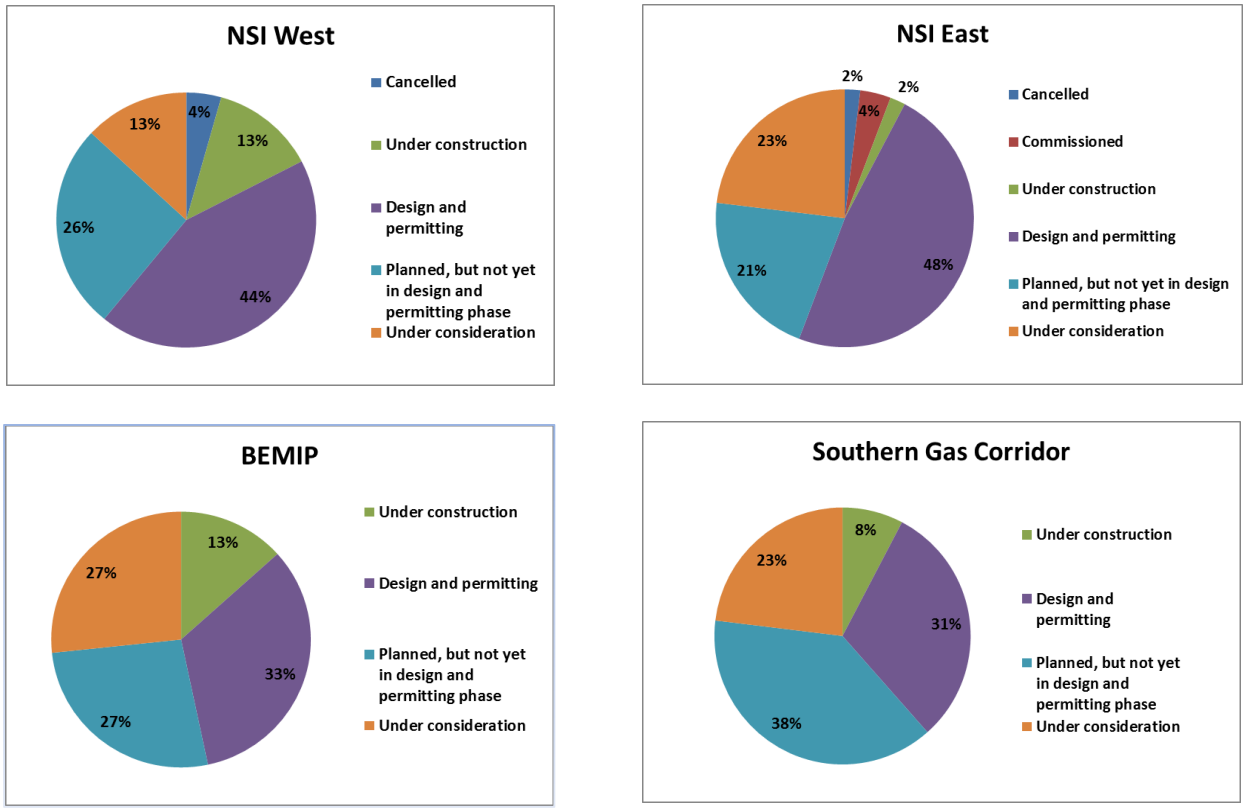
Figure 46: PCI implementation status (general and breakdown by category)





In the Southern Gas Corridor around two-thirds of the projects are still under consideration or are planned[45], i.e. immature projects dominate in this Regional Group[46]. As a number of the projects in this corridor are completely dependent on the related upstream investments, their progress and the essential project features, such as the capacity and the routing, are therefore influenced by the decisions of the upstream players. The monitoring of this corridor requires a specific approach, since several of its projects are not located in the European Union[47] and thus the related activities, such as permit granting procedures, may not take place pursuant to the provisions of Regulation (EU) No 347/2013. Figure 47 illustrates the PCI progress by priority corridors.

Figure 47: PCI implementation status by priority corridor



The current status of the PCIs does not reflect the value of the projects, but rather gives an idea about their potential implementation timeline. **Half of the projects in the first PCI list are still in a less mature, planning stage,** and are more suitable to fulfil a longer-term need**.** The other **half are beyond the planning phase and could be more realistically relied upon for increasing cross-border capacity in the near future.**

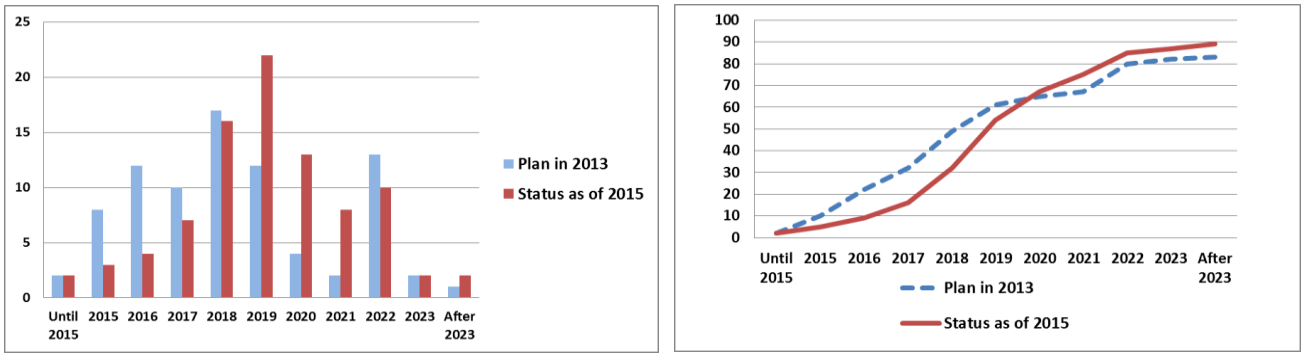
The Agency notes that there appears to be a considerable mismatch between the reported degree of maturity of the PCIs and the promoters' reported expectations regarding the PCI commissioning dates, according to which around 80% of the PCIs are going to be commissioned in the coming 7 years[48]. **The Agency invites the project promoters and the stakeholders to strive for better consistency between the steps needed to achieve the necessary project maturity, the overall project implementation schedules, and the actual pace of the project advancement.**

[45] I.e. they have not yet reached the design and permitting stage.
[46] Also, as it will be further reported, most of these projects (77%) are reported as "rescheduled".
[47] However, these projects can have a significantly beneficial impact on the diversification of sources and thus on the security of gas supply to the European Union.
[48] I.e. 85 PCIs until 2022.

8.2 Expected commissioning dates

The submitted reports[49] indicate that **for many projects the expected year of commissioning has slipped by 2-3 years in comparison to the original plan. Almost half (49%) of the gas PCIs have been either rescheduled or delayed** in comparison to the plans submitted in 2013[50]. Figure 48 illustrates that, due to the delays or rescheduling, the number of commissioned PCIs is expected to catch up with the originally planned number only by 2019-2020, and that 2 projects are now scheduled for commissioning beyond 2023, i.e. beyond the horizon of the TYNDP 2013-2022 and the 2013 PCI list.

Figure 48: Expected commissioning dates (number of PCIs per year and cumulative number)



According to the current expectations of the project promoters, **the majority of PCIs (ca. 70 projects) are to be commissioned within a five-year window between 2018 and 2022[51]** (Figure 49).

Outlook for the next 5 years

*According to the original planning as informed in 2013, PCIs were expected to be commissioned at a steady rate of approximately 10 projects per year between 2015 and 2019, and thereafter the commissioning pace were to fall sharply[52]. **Current expectations are for a slow take-off in the annual number of commissioned projects in 2015-2017, followed by a sharp increase in 2018 and 2019** (caused by a high number of projects promoted by a few TSOs)[53], and **a moderate reduction in the following 3 years (2020-2022)**.*

[49] Project promoters were invited to indicate in their reports the originally planned and the currently expected commissioning dates of their PCIs. Commissioning dates as expected in 2015 were informed by project promoters to the Agency for 86% of the projects (89 out of 103 PCIs) and 82% for the dates planned in 2013 (84 replies out of 103). Six promoters indicated that the commissioning date is "non-applicable", although only one registered delay and four indicated that the project is on time.

[50] See Figure **54**.

[51] The original plans called for a similarly intensive PCI commissioning period, which was supposed to take place between 2015 and 2019.

[52] Except for the year 2022 when about 10 PCIs were – and also currently are – expected to come online.

[53] Almost half of all the projects expected to be commissioned during the peak period of 2018-2019 (39 PCIs in total) are promoted by 3 TSOs. In addition, half of all the projects that are to be commissioned in 2018-2019 have already been subject to delay or rescheduling (however, the scope of these projects behind schedule is not exactly the same as the scope of the projects promoted by the 3 TSOs).

The Agency notes that these **current expectations about the commissioning timing may not be realistic**, especially if the modest number of projects commissioned or under construction since the adoption of the PCI list in 2013 and to 31 January 2015[54] is taken into account. The Agency notes that **only two PCIs have been commissioned during the reporting period**, with seven more reported as being under construction, and that **in order to commission ca. 70 projects[55] within the period of 2018-2022, the pace of construction and commissioning will have to be accelerated several times over compared to the pace observed in 2013-2015[56]**.

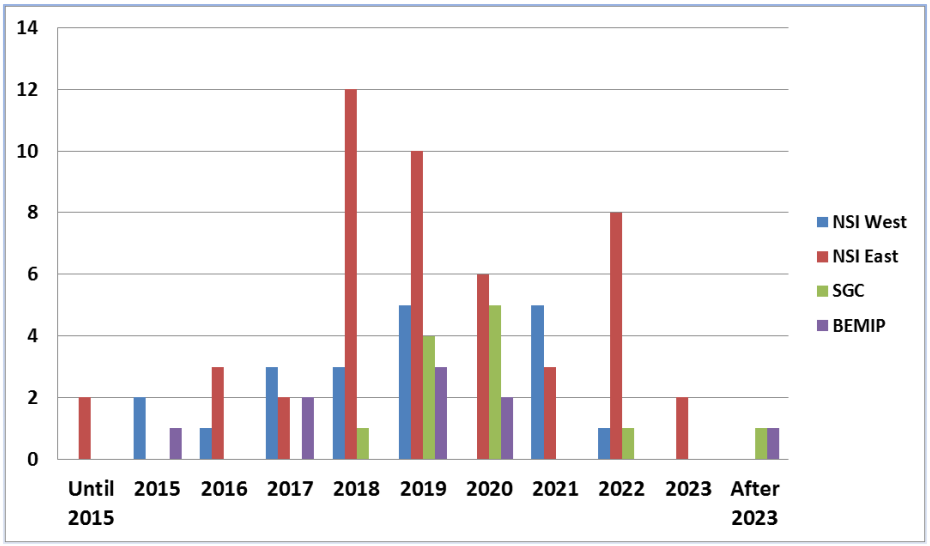
The Agency notes that **the financial resources needed for the implementation of these projects are very substantial and far exceed the ones currently available from CEF funds**, for which about 50% of the project promoters have already decided to apply. Suffice to point out that according to the current project plans as reported by project promoters, **investments in the PCIs by the same year (2019) will exceed €23 billion if plans go ahead as reported[57].** The Agency notes that such an annual level of investment in gas infrastructure may be well above the typical levels of the recent years[58], and it may put a considerable peak demand on the services and the material supply chain which are needed for the implementation of works associated with the investment. **The Agency calls on project promoters and other stakeholders to carefully consider the scheduling of PCI candidates and the associated investment in the context of a realistic approach to securing inputs required for the investment.**

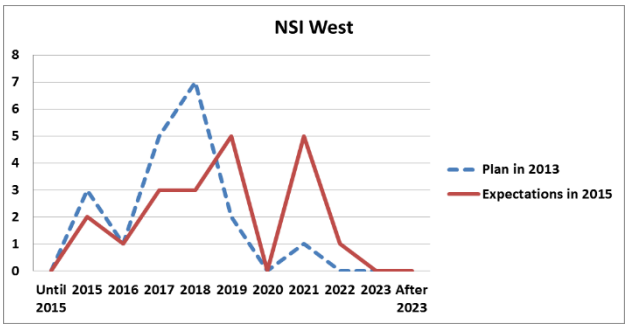
The Agency also notes that, to achieve a higher rate of project implementation, the early planning stages (pre-design) will also have to be shortened, in improved cooperation of TSOs, NRAs, competent authorities and other stakeholders. **The Agency therefore calls on the members of the Regional Groups to work on:**

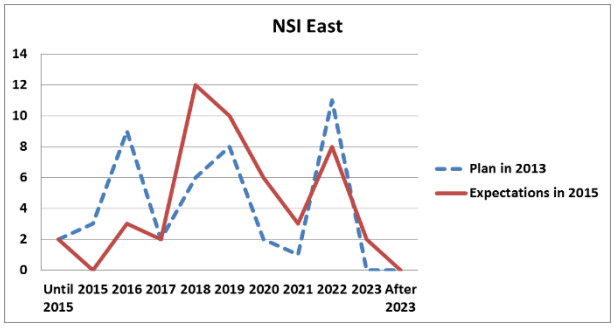
- **the consistent setting of priorities;**
- **the use of transparent project selection criteria that assure the adequate prioritization of projects;**
- **the proper alignment and use of the tools available for accelerating the project implementation in a most efficient way**.

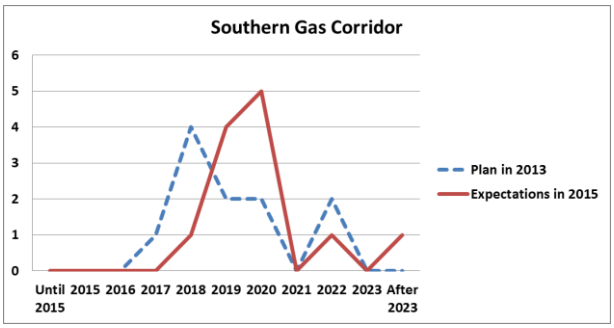
[54] 31 January 2015 was the cut-off date for the validity of the information in the promoter's reports.
[55] This figure may be marginally lower if it is taken into account that some competing PCIs will not be realized.
[56] For instance, taking on the average 9 months for tendering and 2 years for construction as a point of reference, at least 15 projects would need to enter the tendering process in the early summer of 2015 and be in construction in 2016. In addition, more than 20 project promoters would need to start tendering in 2016 and construction in 2017, in order to achieve on time the currently planned commissioning date.
[57] This data is calculated on a sample of 88 PCIs (the projects for which a commissioning date was provided). When calculating the CAPEX outlays, the Agency took the conservative assumption that 100% of the indicated CAPEX is realized in the year of commissioning of the project. In reality, most of the CAPEX may be mobilized in the tendering and construction period i.e. within a timeframe even earlier than 2018-2022. This figure may be marginally lower if it is taken into account that some competing PCIs will not be realized.
[58] On the basis of the information received by the Agency regarding the costs of gas infrastructure covering mainly regulated projects. It is noted however, that the value of total annual investments in gas infrastructure in the European Union is likely to be higher.

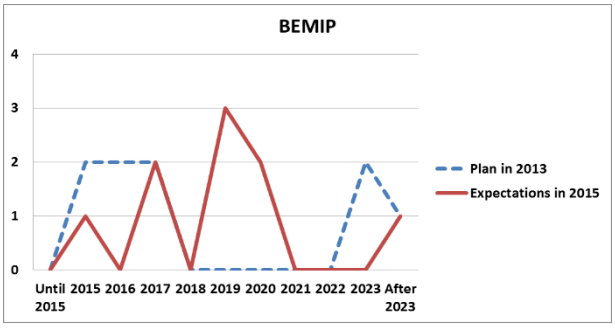
Figure 49: Expected commissioning dates and no. of PCIs by priority corridor (status as of 2015)











8.3 Permitting status before and after 16 November 2013

Regulation (EU) No 347/2013 introduced a number of elements to help shorten the implementation schedule of PCIs. However, the relevant provisions of Chapter III in Regulation (EU) No 347/2013 are not applicable to the PCIs in the permit granting stage for which a project promoter has submitted an application before 16 November 2013.

As regards the **pre-application procedure**[59] in permitting, the overwhelming **majority of the relevant PCIs**[60] indicated that the step is **not applicable**, which may mean that they either do not foresee such a step or that they are exempt from the provisions of Regulation (EU) No 347/2013 as mentioned above. In some cases it was reported that the application took place before 2013. For

[59] For this step, Art. 10(1a) of the Regulation prescribes that it may take maximum 2 years.
[60] The PCIs examined here are those either in the design and permitting phase or more advanced.

those projects where a current or future date was indicated, the 2-year maximum duration was respected in the planning schedule.

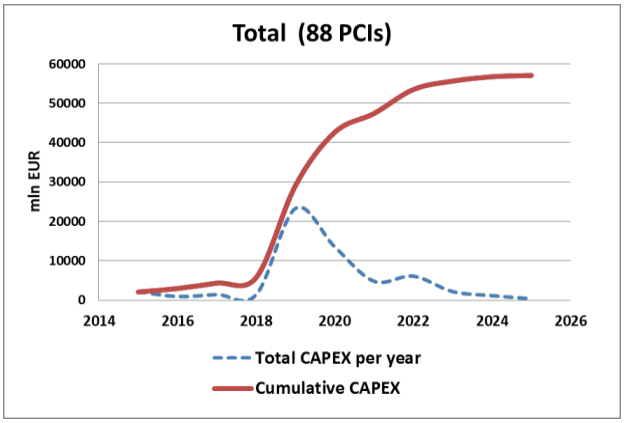
Concerning the **statutory procedure**[61], around half of the project promoters indicate that this step has either been completed or is not applicable. From the reports of the promoters who did provide dates, it is evident that a large number of projects went through a statutory procedure which lasted longer than 18 months. However, the applications for these projects were filed before the 16 November 2013 deadline, and thus the limitations of the procedure's duration are not applicable. In several cases, the planning of the procedure indicates a timeline in compliance with Regulation (EU) No 347/2013; however, a few promoters mention in their reports a planned procedure period in excess of 18 months. As regards the length of the statutory procedure, there are reported cases of record-setting short procedures (1-2 months), but at the same time there are projects on the other extreme, which have been in the procedural pipeline well before the adoption of Regulation (EU) No 347/2013 i.e. their statutory procedure has been going on for 7-8 years.

The Agency recommends to Regional Groups, stakeholders and project promoters to work closer with the competent authorities to achieve a better awareness of the statutory procedural aspects of PCIs, including striving for shortening the procedure's duration by sharing best practices, and in any case making sure that the statutory procedure's duration does not exceed the limits foreseen in Regulation (EU) No 347/2013.

8.4 Costs

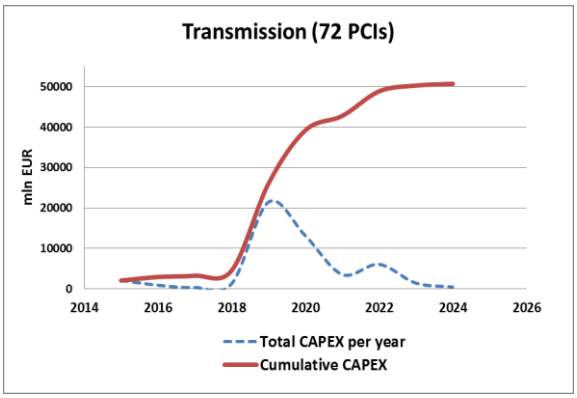
According to the project promoters' plans, in case all the projects are commissioned in the reported years, **CAPEX outlays will be highly concentrated in 2018-2022** (CAPEX **amounting to €49 billion** or around 86% of the total expected cost of the projects)[62]. CAPEX is forecasted to **peak in 2019, when the expected CAPEX amounts to €23.4 billion** in that year alone. Figure 50 illustrates projected CAPEX levels overall and per type of infrastructure (annual and cumulative). The data used in this section covers only the PCIs for which a commissioning date was provided (88 PCIs).

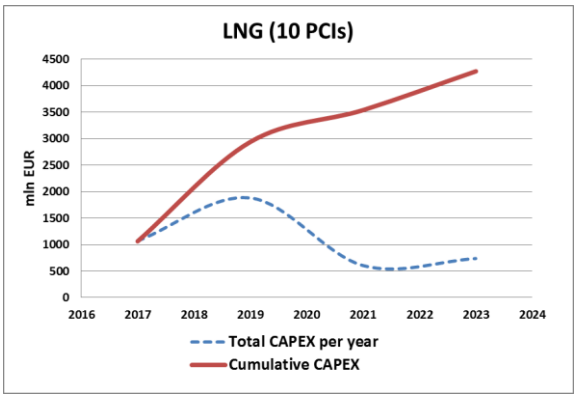
Figure 50: Projected CAPEX

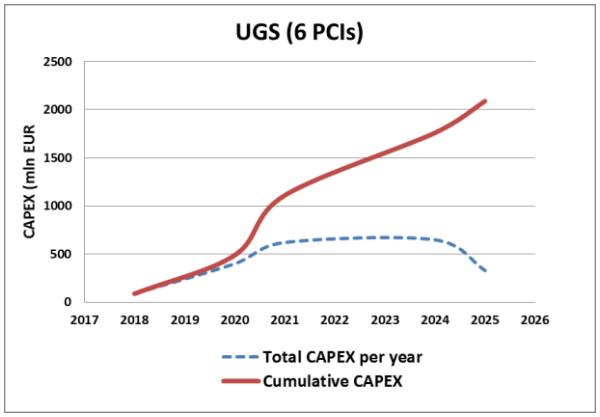


[61] This stage should not take more than 1.5 years according to Article 10(1c) of the Regulation.

[62] When calculating the CAPEX outlays, the Agency made the conservative assumption that 100% of the indicated CAPEX is realized in the year of commissioning of the project. In reality, most of the CAPEX may be mobilized in the tendering and construction period, i.e. within a timeframe even earlier than 2018-2022. Please note that that not all PCIs will be implemented as the PCI list also contains competing projects.



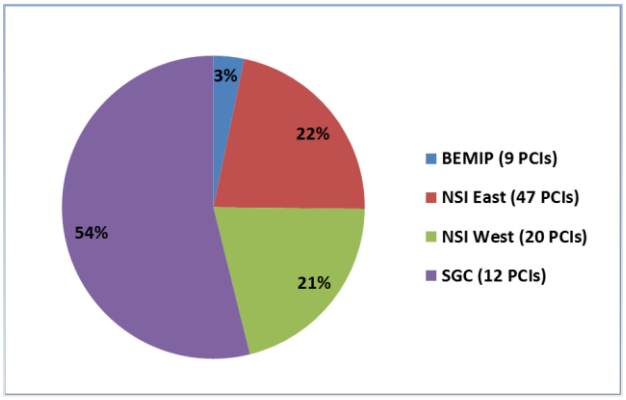




8.4.1 CAPEX per Regional Group

The reported data on CAPEX forecasts show that the CAPEX of PCIs in **the Southern Gas Corridor accounts for more than half of the total investments** expected for the period of 2015-2025 (Figure 51), even though only a relatively low number of PCIs (15%)[63] is located in this Corridor. The explanation is in the **considerable size and complexity of the SGC projects**[64], as the corridor was designed to be one of the major alternative routes for gas supply to Europe. It must be noted though that this priority axis contains several competing projects, not all which are going to be implemented.

Figure 51: CAPEX by Corridor



[63] From the sample of 88 PCIs for which a commissioning date was provided.
[64] The average length of the SGC transmission projects amounts to 485 km, while in BEMIP it amounts to 147 km, NSI East 108 km and NSI West 171 km.
The pattern is similar for the average diameter of transmission PCIs: 1262 mm for SGC projects, 700 mm for BEMIP, 848 mm for NSI East and 897 mm for NSI West projects.

The Agency also notes that CAPEX in the **NSI East projects**, which account for approximately half of the PCIs[63], is expected to represent **only 22% of the total PCI investment cost**. A possible explanation may be in the fact that most of these projects are for new interconnectors or capacity expansions of existing transmission infrastructure, and are also of a relatively limited length.

The **BEMIP** projects, which represent about 10% of the PCIs[63], account for only 3% of the expected CAPEX. The **NSI West** projects (23%[63]) account for 21% of the total expected CAPEX. Figure 52 illustrates the average expected CAPEX per PCI by Corridor and type of infrastructure and Figure 53 provides information about the total expected CAPEX annual outlays by Corridor and type of infrastructure.

Figure 52: Average of total expected CAPEX by corridor and type of infrastructure

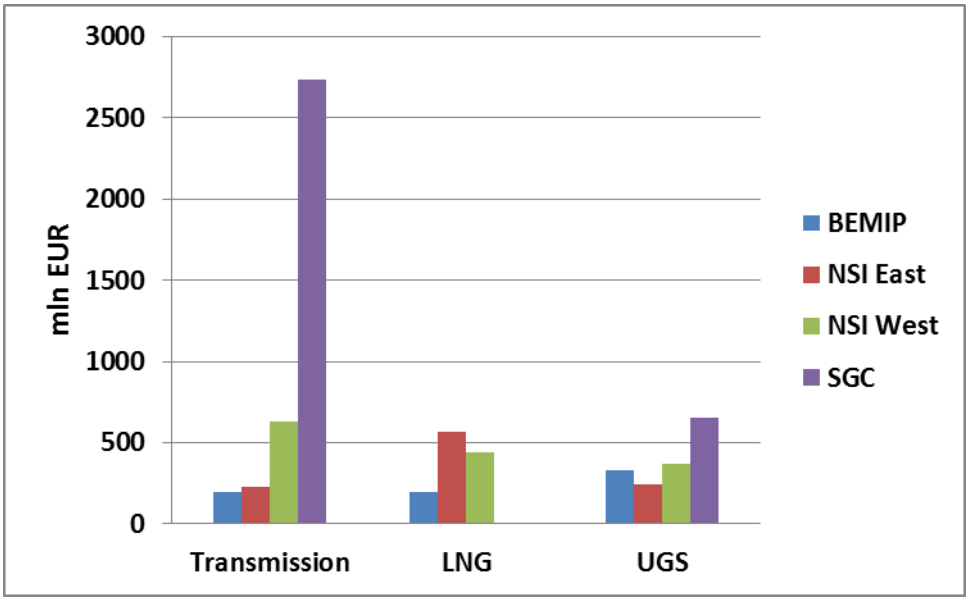
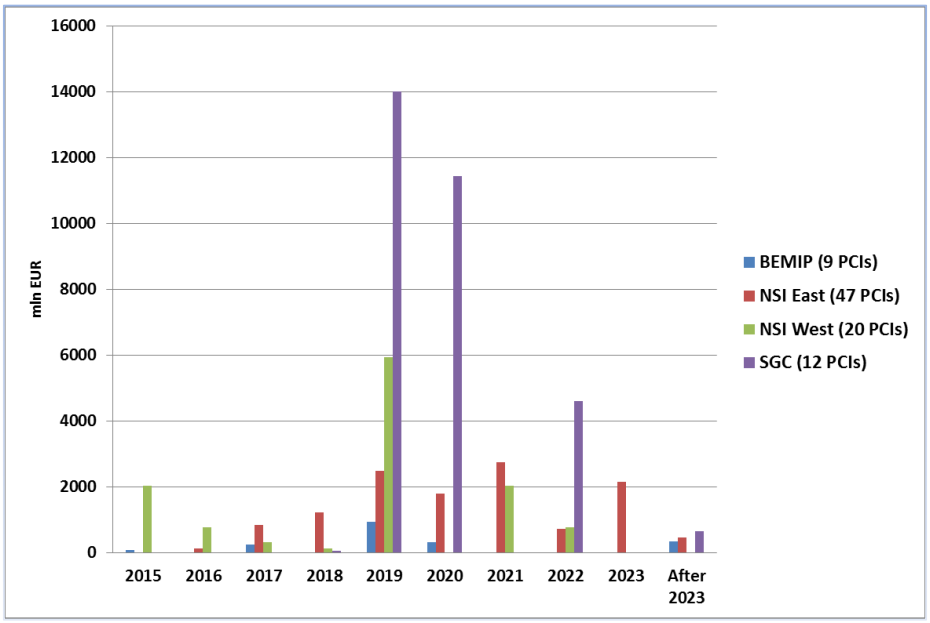


Figure 53: Annual CAPEX per corridor



8.5 Progress according to schedule

One of the most important indicators of a project's progress is its ability to achieve the desired milestones by the planned deadlines. In its communication on the Energy Union, the European Commission highlights that "the right infrastructure is a precondition for completing the energy market, integrating renewables and security of supply"[65]. Furthermore, the Impact Assessment of the European Commission's proposal for Regulation (EU) No 347/2013 highlighted that there are several factors – *inter alia* problems with permit granting procedures and public opposition and problems related to the regulatory framework and financing – which can hinder the development of an energy infrastructure project[66]. This chapter reviews the status of the PCIs regarding their compliance to the initial and the reported schedule of implementation.

8.5.1 Implementation status compared to initial planning

Almost half of the PCIs are behind the 2013 schedule, either because of delays or because of rescheduling[67]. At an aggregate level, the number of delayed projects is roughly equal to that of rescheduled projects. However, there are certain differences between the various priority corridors and project categories.

The overall degree of maturity (implementation status) of a project does not necessarily predestine whether it is on or behind schedule. However a certain link could be traced both by looking at the project types and at the share of PCIs in a certain implementation stage within all delayed and rescheduled cases.

For example, the share of the **transmission projects** which are behind schedule is higher for the less mature PCIs[68]. Regarding **LNG and underground gas storage projects** however**, all projects in the more mature (design and permitting) stage are behind schedule**.

As regards the **implementation status, the majority of the delayed projects are in the design and permitting phase** (61% of the delayed PCIs), whereas those **under consideration** make up the second biggest group (27%) of delayed PCIs[69]. The share of delayed PCIs within these two implementation categories is also considerable – one in every three projects within both stages respectively is delayed.

For **rescheduling** the picture is different – here **most of the rescheduled projects are planned but not yet in the design and permitting phase** (44% of the rescheduled PCIs), whereas the second biggest group consist of those which are in the **design and permitting** stage (33%)[69]. The share of rescheduled PCIs among those which are **planned but not yet in the design and permitting phase** is significant – **almost every second project is rescheduled in this category**.

[65] COM(2015) 80 final – Energy Union Package: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, a Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy.
[66] SEC(2011) 1234 final - Commission Staff Working Paper, Executive Summary of Impact Assessment accompanying the document Regulation of the European Parliament and of the Council on guidelines for the implementation of European energy infrastructure priorities repealing Decision No. 1364/2006/EC.
[67] Please see Section 2 for definition of the terms "delay" and "rescheduling".
[68] These are projects being either under consideration or planned but not yet in the design and permitting stage.
[69] It must be noted that projects in three particular implementation stages (a. design and permitting; b. planned, but not yet in design and permitting; c. under consideration) constitute 89% of all PCIs, hence there is a higher likelihood that delayed or rescheduled projects appear in one of these stages.

8.5.2 Projects on time or ahead of schedule

Out of the 103 gas PCIs, only one project is ahead of schedule[70]. Forty-three projects are on time. In **transmission**, roughly half of all PCIs are on time or ahead of schedule. For **underground gas storage facilities**, only two out of seven projects are on time according to their 2013 schedule, and in **LNG** a single PCI out of 13 was reported to be progressing as planned in 2013.

8.5.3 Delays

In **transmission**, delays affect a minor part of the projects (~15%), but in **LNG** and **underground gas storage facilities** more than half of the PCIs are reported as facing delays.

In the **BEMIP** and the **NSI West** corridors approximately one-third of the projects are reported to be facing delays. This figure is somewhat lower in the **NSI East** Corridor, where one in every four projects is delayed. In the **Southern Gas Corridor** no delays were reported at all, but only rescheduling.

The average delay is 24 months in transmission[71], 29 months in LNG[72], and 23 months in UGS[73].

8.5.4 Rescheduled projects

While roughly 25% of **transmission and LNG** projects have been rescheduled, a smaller part (15%) of UGS **projects** was affected by this action.

Transmission projects were postponed by 24 months on average. In the case of UGS projects, the average rescheduling is for a period of 12 months[74] while for LNG projects it is more than 3 years (40 months).

The shortest instance of rescheduling has resulted in a year's postponement, while the longest entails a postponement of 4-5 years.

The share of rescheduled projects is the highest in the **Southern Gas Corridor** (77%), while in the other priority corridors the number of postponed projects varies between 15% and 25% of the total.

8.5.5 Summary

In terms of timing, about half of the transmission projects appear to be on track according to the original schedule, followed by UGS facilities where some 30% are on schedule. LNG projects are visibly suffering from heavy delays and rescheduling with only about 10% of them being on time.

The main reason for falling behind schedule **in transmission is rescheduling** which **dominates over delays**. However, **UGS and LNG facilities appear to be more sensitive to delays,** which prevent them from progressing despite the promoters' intentions.

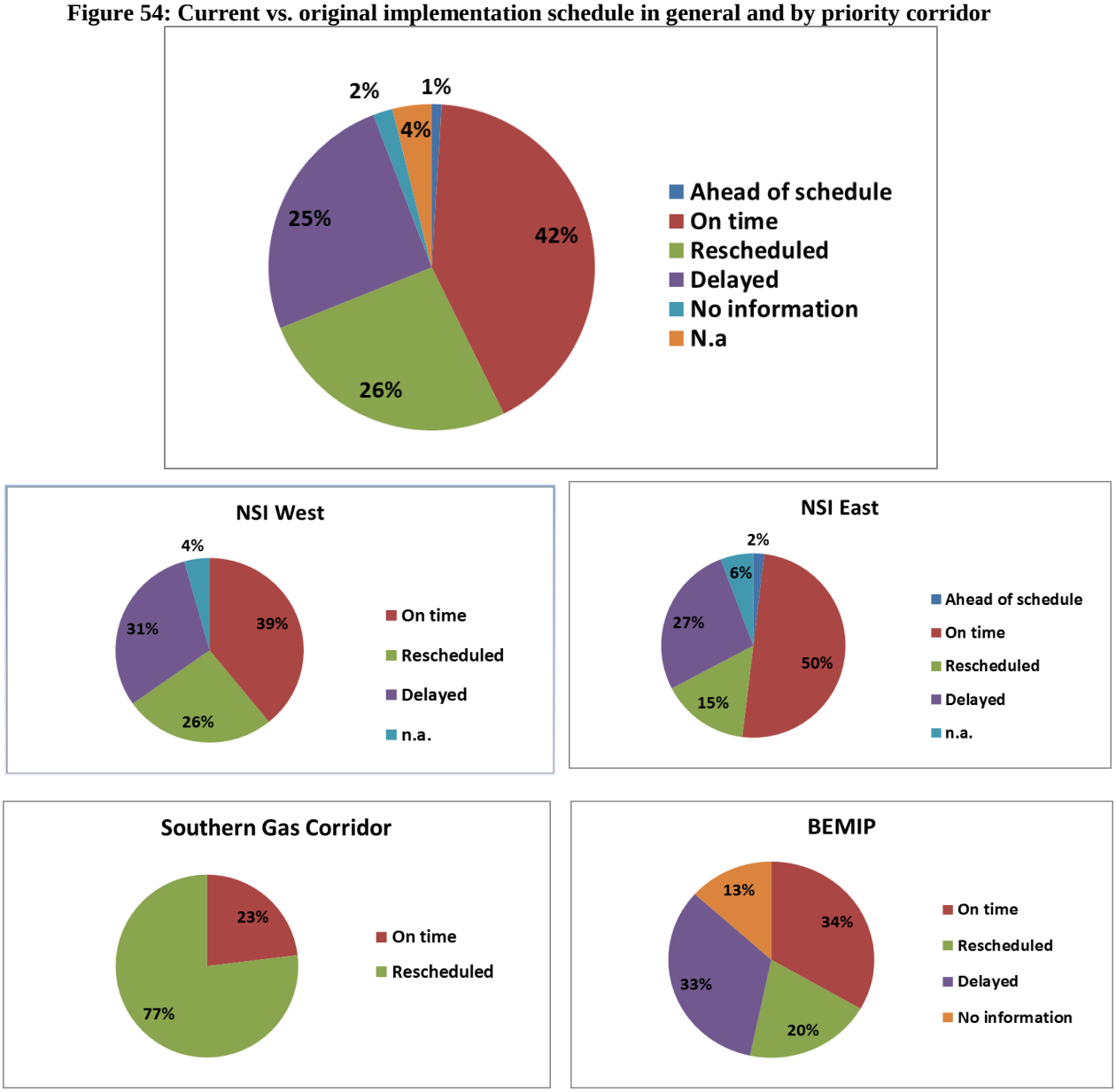
In the **NSI East, NSI West and BEMIP** corridors, **both delays and rescheduling** are of concern to promoters, with delays dominating. In the **Southern Gas Corridor** there are no delayed projects: postponements here are caused solely by **rescheduling, which affects 77% of the PCIs in the Corridor**.

The progress of the various PCIs per priority corridor is illustrated in

[70] The project promoter reported that the PCI is expected to be commissioned 2 years earlier than the last update of the planning. This last update however introduced a postponed commissioning date compared to the 2012 situation when the PCI selection process began. The commissioning is now expected to take place earlier than foreseen by the latest plans, but later than the original plans.
[71] Half a year (7 months) being the shortest and 5 years being the longest delay.
[72] A bit more than a year (15 months) being the shortest and 4.5 years being the longest delay.
[73] 18 months being the shortest and 2 years being the longest delay.
[74] Only one storage project was rescheduled.

Figure 54 below[75].

Figure 54: Current vs. original implementation schedule in general and by priority corridor



The progress of the various PCIs per type of infrastructure is illustrated in Figure 55 below.

Figure 55: Current vs. planned implementation schedule by category

[75] n.a. indicates projects which have been either commissioned or cancelled.

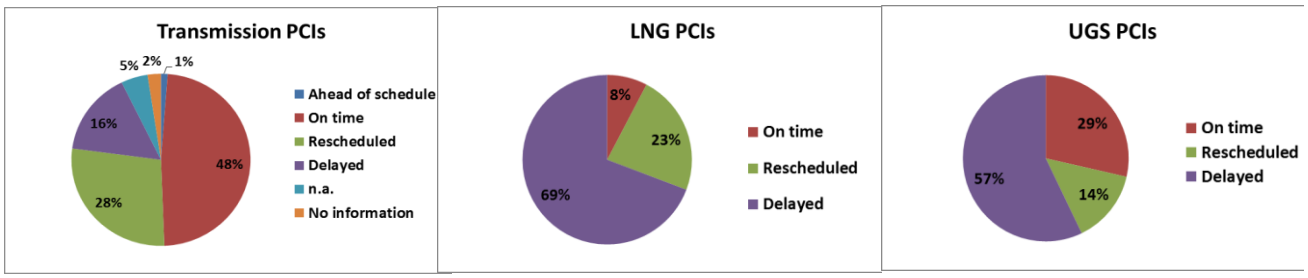
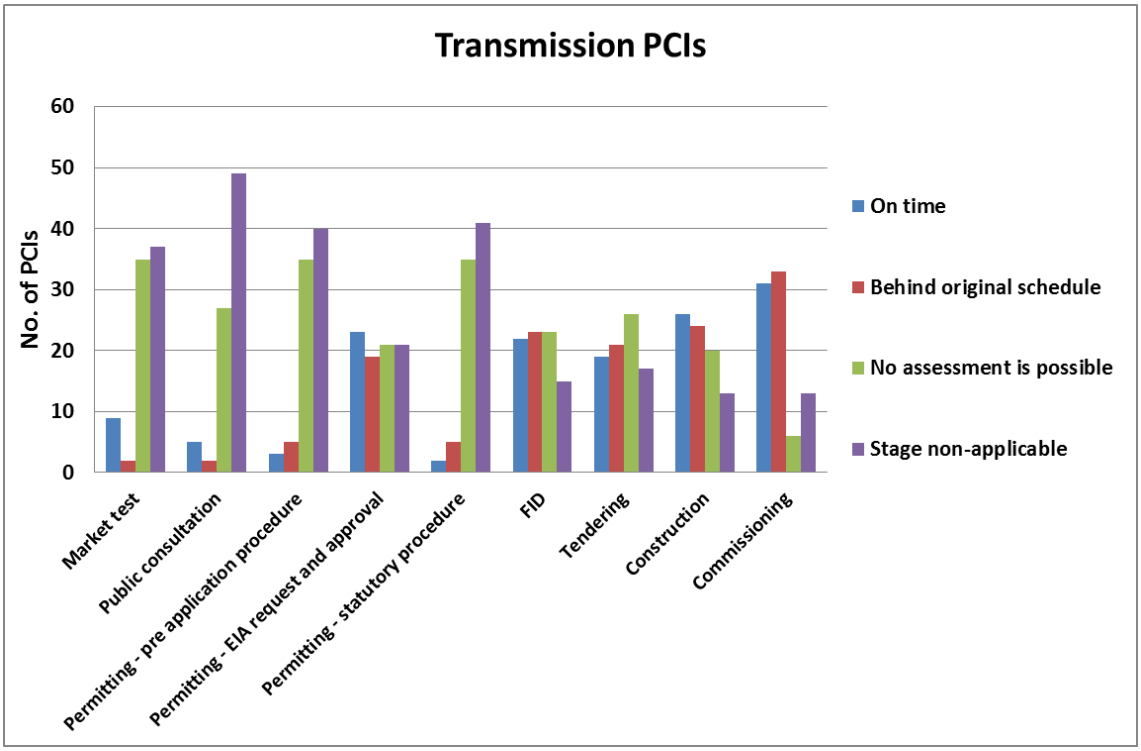


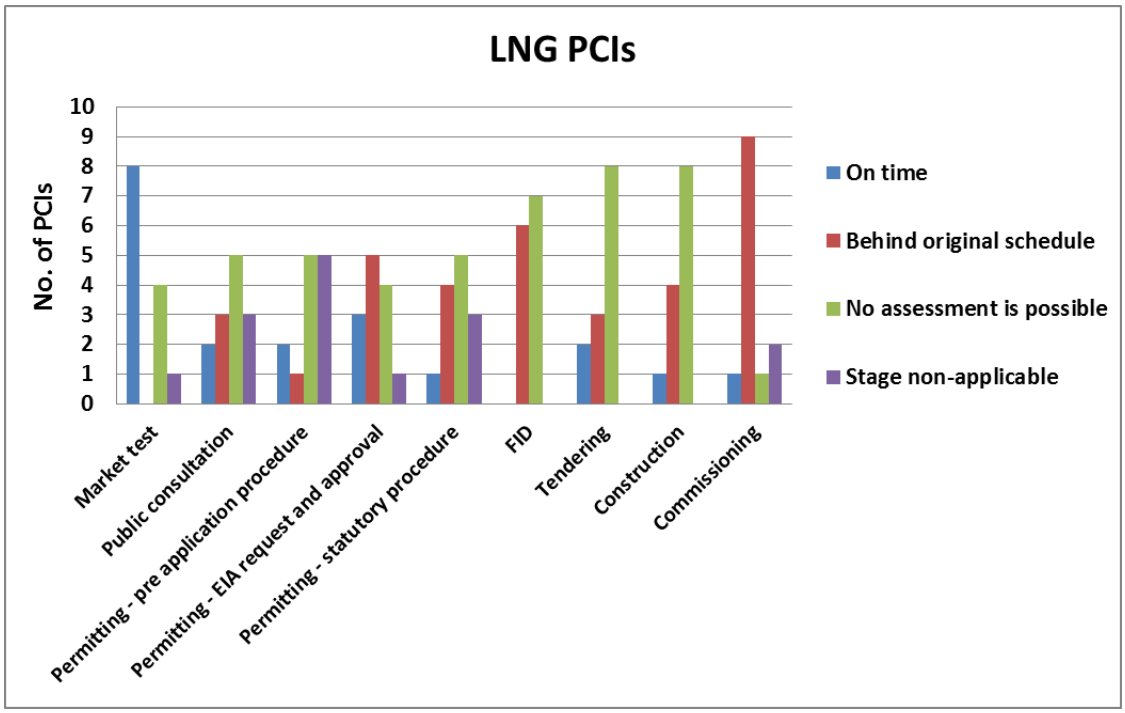
Figure 56 illustrates the **projects' progress with a breakdown by the most important project development stages (milestones)**[76]. The bars show the **number of PCIs which are currently expected to achieve (either in 2015 or in the future) the relevant implementation stage as planned in 2013**. Several project promoters did not provide progress-wise information with a breakdown by project stage.

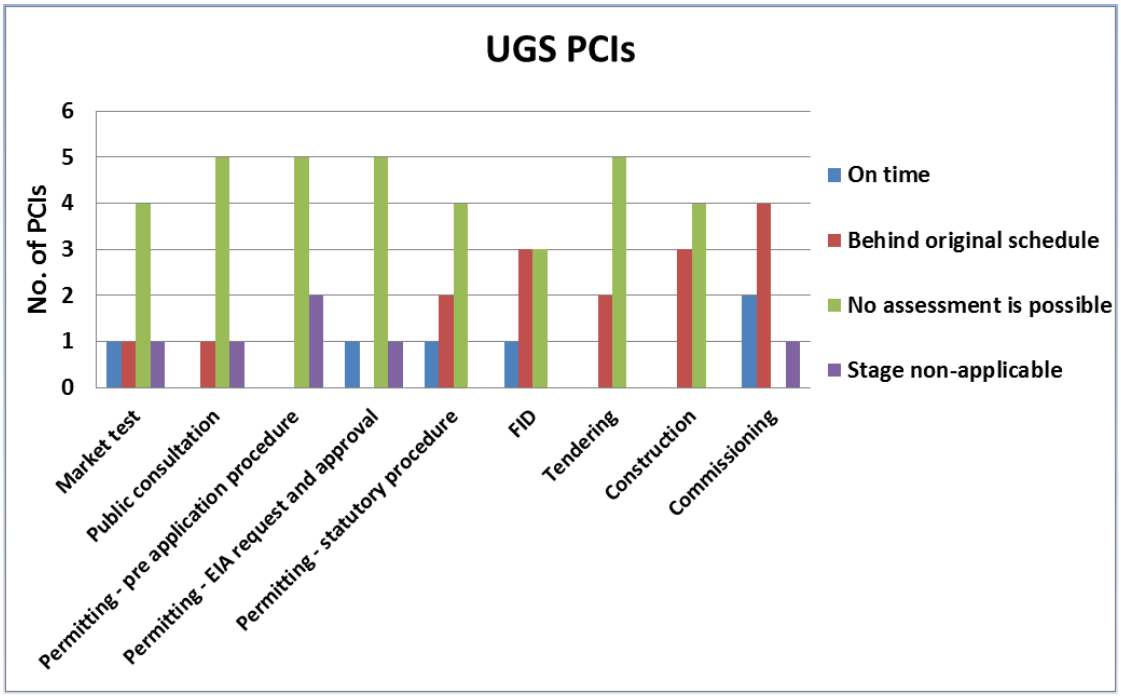
Across all project categories it is evident that **PCIs which reached the planned milestones barely outnumber the PCIs which lag behind. In many instances the analysis could not be carried out due to information missing (in part or completely) or being indicated as non-applicable. In the case of LNG and UGS, projects that progress on schedule are actually well outnumbered by those which are behind the original schedule**. Falling behind schedule is indifferent to the specific project stage: projects fail to keep by the planned milestones even when they are most mature, i.e. at the stages of tendering, construction, and commissioning.

Figure 56: Project progress by the selected milestones (current vs. planned)



[76] The Agency compared the originally planned ending time for the selected project stages to the currently expected dates for the completion of the stages. In case one or both of the dates – either the 2013 plans or the 2015 expectations – were missing, the Agency considered that the information is not available. Some promoters indicated that they had not been required to submit their original project planning along the same project implementation stages in the PCI selection process as in the current PCI monitoring. Consequently, not all missing information can be considered as non-reporting by promoters.





The **types of works performed between the submission of a candidate for the 2013 PCI list and 31 January 2015** can be generally grouped as follows[77]:

[77] Project promoters were invited to report on the type of works performed between the submission of a candidate for the 2013 PCI list and 31 January 2015. Reports were provided for 84 out of 103 projects (some project promoters indicated the answer as "non-applicable" while the remaining ones left it blank). Definite responses covered 65 transmission, 12 LNG and 7 UGS projects. The range of responses is rather wide and varies according to the specific features of the PCIs.

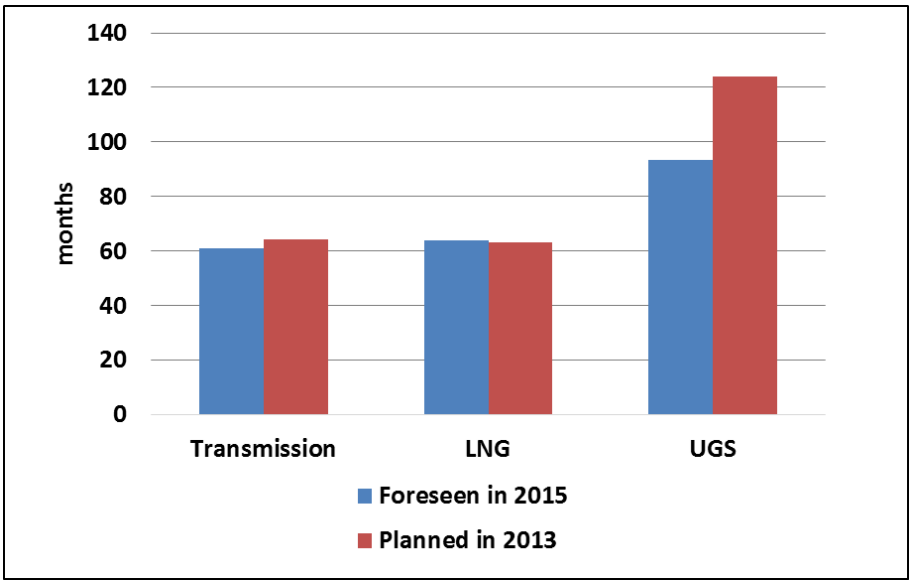
- Studies
  - Feasibility studies
  - Design studies
  - Basic engineering
  - Environmental Impact Assessment (EIA)
- Permitting
- Financing and funding approval
- Front End Engineering Design (FEED)
- Design works and tendering
- Construction works

One project promoter reported not to have performed any work and fifteen promoters indicated that the information on the works performed since 2013 was "non-applicable"[78].

Overall, the works performed concentrate on studies (around one-third of projects) and on permitting.

The promoters' expectations about the **average time needed for the completion of a project's cycle from the market test to commissioning have not significantly changed since 2013**. For example, according to the project promoters' reports, the **average time needed for the implementation of a transmission PCI from market test to commissioning is around 63 months,** while in 2013 it was 64 months. Similarly, **for LNG the expected time is now approximately 70 months**, while in 2013 it was 72 months. Information about the total time needed for the implementation of **UGS projects** covers only 2 PCIs and should be treated as non-representative. Figure 57 illustrates the expected duration of the project cycles in 2013 and 2015.

Figure 57: Expected project cycle average length from market test until commissioning (months)



[78] Project promoters who indicated "non-applicable" either did not provide information on the implementation schedule and thus may be considered as not to have carried out any works or reported to have completed some of the project stages already, in which case selecting "non-applicable" is probably inappropriate in their report.

Key findings:

- At present, approximately 50% of the PCIs are in the planning stage and the other 50% are in a more mature stage, beyond the planning.
- About 80% of all projects of common interest are expected to be commissioned in the coming 7-8 years (mostly within the five-year period 2018-2022), which currently appears unrealistic in light of the progress experienced since the adoption of the first PCI list.
- Half of the PCIs have accumulated a delay or have been rescheduled since 2013, which leads to a postponement of the commissioning dates by 2-3 years on average.
- The investments to be realised from 2015 to 2022 amount to almost €55 billion, or €7 billion per year. The majority of investments are planned to be realised concurrently in a short, five-year timeframe.
- Projects can deviate from the original schedule at any implementation stage and, once they are off-schedule, it is not possible to recuperate the lost time any more. There is not a single implementation stage at which the number of projects progressing in line with their original plans is significantly higher than the ones lagging behind.

9 Delays and difficulties encountered by the project promoters

9.1 Delays

Almost one in every four PCIs was reported as facing a delay[79]. The majority of the delayed projects are reported to be in the design and permitting stage, followed by those which are under consideration. There is one project delayed in the construction phase, however in this case the delay is explained by the need to spread the workload over longer time.

The top reasons for delays in the implementation of PCIs are as follows (see Table 5 for more details):

1. Financing reasons;
2. Other reasons[80];
3. Permitting (permit granting delay other than law changes and re-routing / re-sizing)
4. Technological reasons (including re-routing and/or re-sizing initiated by the project promoter);
5. Risks related to the national regulatory framework or future regulatory decisions.

[79] In the questionnaire, project promoters were invited to choose from a set of pre-defined answers the main, the second and the third reasons for the delay. In those cases where the pre-defined choices would not reflect reality, promoters could indicate "other", and give an explanation. The reported reasons were assessed and weighted on the basis whether they were chosen as the main, the second or the third reason for the delay. **Each promoter who was facing a delay provided at least one reason.**

[80] Promoters were invited to explain what exactly "other" reasons for delay they face (if any), apart from the pre-defined choices in the reporting forms. A review of the reported reasons for delays is provided below.

Table 5: Reasons for delay (value based on the weighted scores[81])

Financing reasons	19
Other reasons	16
Permitting (permit granting delay other than law changes and re-routing / re-sizing)	14
Technological reasons (including re-routing and/or re-sizing initiated by the project promoter)	8
Risks related to the national regulatory framework or future regulatory decisions	8
Correlation with other delayed infrastructure investment	6
Permitting - environmental issues	6
Construction works	3
Permitting (national law changes, including non-implementation of Regulation 347/2013 for enhanced permitting)	3
Rerouting or resizing due to technical reasons	3
Tendering process	3
Finalisation of agreements and coordination across borders	3
Finalisation of agreements with third party promoters	2

Project promoters provided additional information about the reasons for delays and the Agency carried out a **qualitative analysis** of the reported reasons for the delays. According to the analysis, **permitting** delays are related to:

- The granting of an authorisation by local authorities;
- Differing interpretation between the promoter and the competent authority regarding what kinds of permissions are necessary for applying for a planning permit;
- Delays in issuing the required licenses by the competent authorities due to necessary legislative changes and to the delays involving those processes.

Permitting delays related to **Environmental Impact Assessments** are linked to mainly procedural issues, such as:

- The need to amend the existing EIA taking on-board comments from stakeholders, which necessitates the repetition of the entire consultation process (new version must be consulted again);
- Different parts of infrastructure must be examined in a single EIA;
- Decision by the competent authority to put the permitting process on hold for 18 months because of the suspension of the validity of a previous EIA;
- Re-routing requested by the authorities.

Market-related delays are reportedly caused by:

[81] Promoters could indicate the main, the second and third reasons for the delay. The replies were summed up by scoring a reason 3 if it was indicated as the main, 2 if it was indicated as the second and 1 if it was indicated as the third reason for delay.

- Slow market development - low oil price may hamper developments in gas projects by deterring investors from moving on with the project;
- In specific cases pure market economics would not ensure the necessary rate of return and the process to work on alternative solutions takes up a longer time.
- Delays and lack of clarity in the development of transmission and cross-border tariffs, which may negatively impact the project's progress by making the analysis of its viability impossible;

Reasons for reported delays **related to the promoters** themselves are the following:

- Project promoters' internal reasons lead to delays by failing adequately to calculate the longest realistic time for each implementation stage;
- Failing to reach an agreement in the internal decision making process of the organization.

"Other" reasons for delays as indicated by project promoters are the following:

- For projects which are linked (similarly to the concept of "enabler" and "dependent" projects in the selection process of the second PCI list[82]), even when a "dependent" project is ready for implementation, the project will be delayed because of the problems which the "enabler" project is facing, if any;
- Competing projects, which are all planned for the same region/market area, face delays as the advancement of one project could put the competing ones on hold if the promoters consider that they are "losing the race".

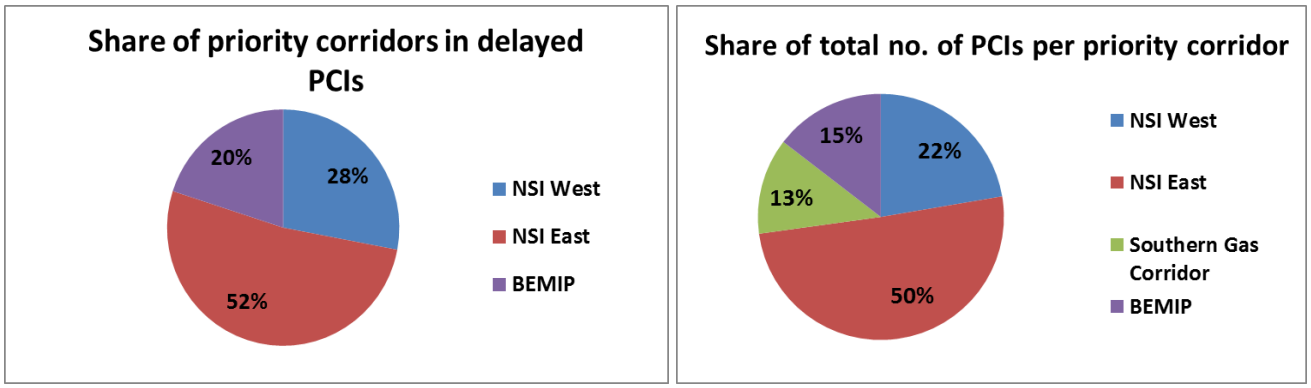
On the basis of the breakdown of the reasons for delays as illustrated above, the Agency took stock of the reasons which appear to **cause the longest delays (2-5 years)**. These reasons include:

- Dependence on or uncertainties related to other delayed infrastructure investment (enabler-dependent projects, competing projects);
- Changes in the project's technical characteristics (mode of operation, rerouting);
- Regulatory uncertainties affecting the analyses of the commercial viability of the project;
- Legislative changes necessary for the issuance of the permits and licences;
- Slow market development;
- Doubts about the commercial viability of the project;
- Lack of funds to realize the project.

In terms of regional distribution, the share of the **NSI East** corridor within the delayed projects is proportionate to the share of this corridor in the total number of projects. Both the **NSI West** and **BEMIP** corridors have slightly more projects delayed than their overall share in the total number of PCIs. Figure 58 illustrates the delayed projects by groups.

[82] An "enabler project" is a project which is (a) needed for the implementation of another project or projects for technical reasons [the "dependent project(s)"], and (b) does not lead to negative net benefits of the projects combined. Enabler and dependent projects are generally expected to be commissioned concurrently or within a short time span from each other's commissioning. Enabler projects may be implemented on their own regardless of the dependent projects. If this is not the case, then it is better to label both (or all if there are more than two) as "twinned projects" (mutually enabling, mutually dependent projects).

Figure 58: Delayed projects



9.2 Rescheduling

Rescheduling affects approximately the same number of projects as delays (about 26% of total[83]), although in this case the shift to later implementation is a **decision taken by the promoters themselves** rather than one caused by an external factor[84]. Most of the rescheduled projects are planned, but not yet in the design and permitting stage, however the second biggest group of rescheduled projects are those in the design and permitting phase.

The **most frequent causes reported by project promoters** on the basis of the pre-defined choices in the reporting form are **demand-side changes** – including both demand for transmission services and gas demand in general and/or for electricity generation – **and uncertainties** related to **changes in another investment**. To a lesser extent, **supply-side changes and uncertainties** are also reported as a reason for making a rescheduling decision.

As regards those PCIs which are rescheduled due to "other" reasons, the **lack of market interest and the low level of interest for LNG in Europe** have been reported. A PCI promoter reported rescheduling due to a change in the implementation concept (revised technical planning). Table 3 provides a review of the reasons for rescheduling reported by the project promoters.

Table 6: Reasons for rescheduling (number of PCIs affected)

Demand side changes/ uncertainties	9
Correlated to other investment's changes	7
Supply side changes/ uncertainties	5
Other	4
Environmental reasons/ restrictions	2

9.3 Difficulties

Project promoters provided detailed information for the difficulties they face[85] for 6 PCIs (3 transmission projects, 2 LNG projects, and one underground gas storage project).

[83] 27 projects out of the 103 for which reports were submitted.
[84] Promoters were requested to provide the reasons for rescheduling by using a pre-defined set of replies or choose „other" and explain the details, in case the answers did not fit with the pre-defined choices in the reporting form.
[85] I.e. problems that resulted in project postponement of less than six months without causing a significant revision of the estimated costs or benefits.

The **difficulties reported are heterogeneous and case-specific**, but generally concern the process for obtaining **authorisations** and external factors, such as the **dependence on other projects** and **market conditions**.

In some cases project promoters reported difficulties in **obtaining planning permits** and investment decisions, and consequently lack of **access to financing sources**. Project promoters also report as difficulties the existence of **competing projects which may hinder the planning approval**. Also, changes in the authorities' expectations were reported as a reason for delaying the planning process.

9.4 Recommendations for overcoming the delays and the difficulties

9.4.1 Recommendations by project promoters

Project promoters propose the following actions[86] to overcome the delays and the difficulties which they face:

- Proposals related to issues relevant for the European Commission, NRAs and competent authorities:
    - The importance of the availability of funds managed by the European Commission and project-specific financial incentives;
    - Clarify the procedure and the way to deal with competing projects on the PCI list must be clarified;
    - In the case of competing projects, ensure a level playing field and, in particular, that all the relevant costs needed for the realisation/operation of the specific project are indicated by promoters.
- Proposals for actions relevant to competent authorities:
    - Remedy the concrete issue which caused the delay of a particular PCI;
    - Make sure that the projects are judged on their credibility and economic merits;
    - Introduce a more streamlined permitting procedure and streamlined regulatory procedures regarding commercial cross-border issues.
- Proposals related to the promoter's own actions:
    - Prepare the necessary project documentation well in advance;
    - Take advantage of the one-stop-shops established in the Member States.

9.4.2 Recommendations by the Agency

The fact that about **half of the PCIs on the 2013 list are already now behind the schedule established two years ago** (delayed or rescheduled) indicates that the majority of the projects either **face considerable obstacles and/or uncertainties** (internal or external) which push the implementation to a later time, or **rely on planning and expectations which are overoptimistic either because of inattentive project planning or because of being in a non-mature stage when selected to be on the PCI list**. A mix of these factors may also lead to postponements.

[86] Project promoters were invited to indicate their recommendations for overcoming delays and other difficulties encountered. Half of the relevant respondents (i.e. those who faced delays or difficulties) provided detailed feedback. In the other cases, there was no answer or promotes considered that no action is needed.

The current PCI monitoring only has one historic reference point, that of the 2013 PCI list, and no previous reference points for the monitoring of the PCIs' progress at all. **The Agency would like to stress the importance of the regular, annual monitoring of the PCIs**, which should enable the assessment of the projects' progress not just in comparison to the original planning, but also regarding its evolution, the changes of reasons for the delays and difficulties, and the results of any remedial action taken in the course of the PCIs' progress.

It transpires from the promoters' reports that the current **changes and uncertainties related to the future of the European energy market** (including both gas and electricity) are the leading cause for projects to be rescheduled and also play a role in the delays of projects. While these specific factors are outside of the influence of any individual stakeholder, other types of difficulties **may be partly or completely remedied by the competent authorities, NRAs, and the project promoters themselves**. In particular, the Agency recommends the following measures which could help overcome delays and difficulties in the implementation of PCIs:

- Facilitating easy, accelerated and coordinated **permit granting and EIA-related procedures,** in particular across borders, and remedying **regulatory uncertainties** would help several delayed projects take off. The Agency recalls Article 8(5) of Regulation (EU) No 347/2013[87], and encourages competent authorities to make utmost efforts to ensure better coordinated procedures in the case of cross-border projects to facilitate the implementation of projects of common interest.
- Ensuring the appropriate **financing** also remains a top issue for promoters of delayed projects. Due to the uncertainties in the gas market the general objective(s) and justification(s) of a project (e.g. market need, security of supply) should be considered and to the extent possible clarified during the PCI selection. For specific high priority projects a better consistency between fulfilling the legally prescribed criteria for applying for CEF funding and shortening the overall implementation process duration for the involved PCIs may be useful. Additionally, the European Commission's new EU Strategic Investment Plan may mobilise a higher level of resources for those projects which have particular added value for the objectives of European energy policy, whenever supported by the results of a proper CBA.
- **Inter-project dynamics** among related projects can also affect implementation. In the case of **"enabler" and "dependent" projects**, difficulties in the implementation in the "enabler" project may lead to delays or rescheduling in the other. The planning of such projects should be coordinated much closer between promoters, and promoters of such projects are encouraged to better align their project implementation activities. For **competing projects**, it is essential that a fair competition takes place and each project is assessed by taking into account all its strengths and weaknesses, all costs and benefits, and that a decision by the NRAs, Regional Groups and/or relevant authorities is taken on time by evaluating all the available options.
- Last but not least, **projects promoters** themselves are encouraged to follow a constructive cooperation with competent authorities, NRAs, and other promoters, and follow the relevant procedures to their best. More realistic planning by accounting for the time needed for the administrative procedures could result in lower chances for project delays and rescheduling.

[87] "If a project of common interest requires decisions to be taken in two or more Member States, the respective competent authorities shall take all necessary steps for efficient and effective cooperation and coordination among themselves, including as regards the provisions referred to in Article 10(4). Member States shall endeavour to provide for joint procedures, particularly with regard to the assessment of environmental impacts."

Key findings:

- Roughly equal shares of the PCIs, 25%-25% of the total, are delayed and rescheduled.
- In delays – where promoters are forced to postpone their investment by an external factor – the most common reasons are related to the lack of financing and difficulties in permitting, administrative procedures and environmental impact assessments.
- For rescheduling – when the decision is taken by promoters based on their judgement and interest – the main reasons are linked to uncertainties in the gas market (both on the supply and the demand side).
- The correlation with the implementation of other projects (enablers or competing projects) appears as a reason for both delays and rescheduling.

10 Main findings, conclusions and recommendations

The Agency welcomes the positive attitude of project promoters to the reporting of the PCIs' progress so far and highlights the importance of the TEN-E framework in fostering the realisation of critically needed gas infrastructure in the Union. The current consolidated report and its subsequent iterations in the coming years will provide an overview of the implementation of the priority projects on aggregated level, and thus will aim to contribute to the European Commission's report on the PCIs pursuant to Article 17 of Regulation (EU) No 347/2013.

The results of the first annual monitoring show that the initial expectations regarding the pace of PCI development and implementation may have been overly optimistic at the time of drafting the first PCI list in 2013. The Agency points out that the first Union list of PCIs contains both projects which have a high chance of being realised within a reasonably short time and projects expected to be implemented later, and which, as such, have a strategic value in the mid- or long-term only. A clearer distinction between these two categories of projects in the upcoming PCI selection procedures could lead to more realistic expectations regarding potential new infrastructure developments, and it would also put in the right context the occasional delay, rescheduling and failure to respect the original project planning milestones.

10.1 The Agency's conclusions

10.1.1 General progress of the PCIs – strengths and weaknesses

The projects of the first PCI list are only partly mature (about 50%) and the immature projects are generally not capable of contributing to the objectives of Article 4(b) of Regulation (EU) No 347/2013 by increasing the availability of cross-border capacity and other infrastructure services in the short-term. Although the project implementation schedules indicate that most of the PCIs would be commissioned by 2022, the fact that **half of the PCIs are already behind schedule** (compared to the 2013 plans)[88] and that **half of the PCIs are in pre-design stages, i.e. non-mature**, casts a shadow of doubt on these expectations.

[88] The commissioning dates are postponed because of the delays and rescheduling to a later date (~2-3 years).

Furthermore, the majority of the PCIs – 70 projects – are **planned to be commissioned within a narrow 5-year window** (2018-2022), with 35 projects expected to be commissioned during just 2 years within this window. To put in place all these 70 projects[89], investments of **€49 billion would need to be realized in that five-year period and shortly before it, most of it falling on 2019-2020**. Given the Union-wide experience in constructing and commissioning major new gas infrastructure over the 2005-2014 period in the Agency's work stream related to unit investment costs in gas infrastructure[90], the expectations of such brisk implementation at a high annual rate of investment could only materialise if the pace of implementation and the volume of investment both go up several times over the levels observed previously.

The Agency notes that permitting and financing difficulties are still the most commonly cited reasons for delays and rescheduling decisions[91], although there is no clear evidence of pre-application and statutory procedures going beyond the maximum length as prescribed by Article 10 of Regulation (EU) No 347/2013. **Uncertainties related to gas demand in Europe, as well as to decisions on the supply-side, which can translate into the above-mentioned financing difficulties, are also strong drivers for rescheduling.**

The works carried out on projects since the inception of the first PCI list include mainly studies and activities related to permitting, with only two projects being commissioned in the meantime. For about a fourth of the non-mature projects, the promoters indicate that the description of works carried out since 2013 is "non-applicable". Almost **20% of all promoters indicate "non-applicable" regarding completed works** and one promoter reports that no works at all have been done since 2013. **The Agency invites all stakeholders to consider to what extent the PCI status of such projects brings an added value, especially in cases where projects are expected to be implemented at a distant date and no activities are carried out during the reporting period.**

10.1.2 Differences among various priority corridors

The four priority corridors generally present similar trends despite the different quantity and varying types of PCIs. However, there are some major differences that can be pointed out.

The **NSI East** corridor includes half of the PCIs. The information on planned commissioning dates makes this corridor remarkable: while in the coming 3 years (2015-2017) only 5 PCIs are expected to be commissioned, in the 3 years thereafter (2018-2020) 27 projects should come online. NSI East project promoters indicate mainly permitting reasons and investment changes as causing the delays and rescheduling.

In the **NSI West** the share of mature[92] projects is the highest compared to the other priority axis. There are 2-3 projects planned to be commissioned on average in the coming years, with 5 being the highest number per year. However, the indicated CAPEX is almost identical to that in the NSI East corridor, where twice as many PCIs are located. NSI West project promoters indicate financing reasons as the main cause for the delays and rescheduling.

Projects in the **Southern Gas Corridor** are mostly in the planning stage and no delays are reported, only rescheduling. This region covers about 10% of the PCIs, and while most of them are relatively immature, about half of all the CAPEX is anticipated here, as projects involve several long trunk pipelines, some of which partially or entirely located offshore. Most of the Southern Gas Corridor projects are reported to be rescheduled due to gas demand and supply uncertainties.

[89] Because of competing projects the number of commissioned PCIs would naturally be lower, but it would still be significantly above the currently observed level of implementation pace.
[90] As set out in Article 11(7) of the Regulation.
[91] Projects in the design and permitting stage represent the majority of delayed projects and they form the second largest group of rescheduled PCIs (33% of all rescheduled projects).
[92] Projects which are either under construction or in the design and permitting stage.

BEMIP focuses mostly on LNG and transmission projects. Half of the PCIs in this corridor are behind schedule, and there is no information about some of the other half. BEMIP promoters of projects which are reported to be delayed or rescheduled indicate the presence of competing projects among the reasons for the postponement.

10.2 General recommendations

10.2.1 Ensuring integrity between the PCI selection and PCI monitoring procedures

In order to improve the authenticity and the authority of the upcoming PCI lists, the Agency notes that **a more nuanced distinction should be made between sufficiently mature projects which have a higher likelihood of being implemented within the planned timeframe[93] and those which are planned with a longer outlook** and - being less mature - have a higher probability to be subject to major technical changes altering the costs and benefits realized by them**. The Agency calls for a more substantial discussion of priorities and practical steps regarding PCI implementation, as well as for enhancing the modalities of cooperation between all stakeholders, in line with the objectives of Regulation (EU) No 347/2013 and the proper alignment of the PCI process to the goals of the Energy Union.**

In case the trend of postponing PCI commissioning dates continues, further exchange of views in Regional Groups and analyses should be carried out in order to correctly assess the reasons for the slow pace towards project implementation. The Agency recalls that **in case a project of common interest is delayed for reasons other than those beyond the control of the project promoter, alternative ways of implementation can be taken** with the involvement of the relevant national regulatory authority, the Member State, the project promoter and the TSOs in whose area the investment is located[94].

Members of the Regional Groups are invited to discuss the issue of rescheduled projects. The implementation of these PCIs is usually put off to a later date because the project promoter considers that the project is not needed or not timely due to various reasons. In such cases **it should be examined whether the rescheduled projects represent an added-value to a PCI list which is valid for a limited time (2 years) and aims to showcase the most promising projects for achieving the objectives of the European energy policy**.

Furthermore, the Agency is of the view that more stringent criteria could be considered and eventually introduced to help realistically assess the strengths and the weaknesses of the PCIs, and to help focus on the best performing projects on the list.

The Agency notes the importance of having a **harmonised data set** to be provided by project promoters **both in the PCI selection and in the PCI monitoring phases**[95], and recommends that the data collection is better aligned in the referred stages among the relevant entities – i.e. the European Commission, the Agency, the competent authorities and ENTSOG. The Agency notes that the alignment of the information related to the **implementation status and stages and to costs and benefits** is particularly important for enabling the carrying out of a sophisticated analysis of the issues involved in the PCI progress.

[93] One of the milestones which show a certain level of maturity is the time when a promoter files an investment request to the relevant national regulatory authority(ies) pursuant to Article 12(3) of the Regulation. **At the time of the completion of this report investment requests for 19 PCIs have been submitted by promoters to the Agency which covers 18% of all gas PCIs**. Out of the 19 submissions, 6 PCIs are indicated to be planned but not yet in the design and permitting stage and 1 PCI was reported to be under consideration.

[94] Pursuant to the provisions of Article 5(7) of the Regulation.

[95] For instance, promoters are requested to indicate the status of their project as either "FID" or "non-FID" when applying for the listing of the project in the TYNDP, which represents a more rudimentary approach to identifying the current project stage than the one included in the Agency's monitoring of the PCIs' progress.

The reasons for delays and rescheduling clearly demonstrate the spill-over effects of a delay, a difficulty or a major change in a certain project to other projects, especially in the case of interlinked PCIs ("twinned" enabler-dependent projects). The **timely recognition of such "twining" links in the PCI selection process** would make it more transparent, indicate the need for specific analyses, help remove or alleviate some specific uncertainties, and generally assist the advancement of the PCIs.

10.2.2 Improving data quality

The Agency regrets that a number of project promoters did not provide all the requested data. The lack of consistent data across all projects makes it difficult to accurately review the overall progress of the projects' implementation, in particular regarding the various implementation stages compared to the original planning. The Agency notes that a more detailed and careful planning by the project promoters would demonstrate a higher level of interest in the implementation of their projects and enhance the credibility of their undertakings by providing a more realistic assessment of commissioning dates, the timing of the projected costs and benefits, and other key project aspects, thus putting the projects in the right perspective of the efficient development of the European gas infrastructure.

In the upcoming PCI monitoring iterations the Agency invites project promoters to strive to provide the most detailed and unambiguous information providing an accurate and sufficiently detailed description of the information projects.

11 ANNEXES

Annex I: Information on the submission of the monitoring reports - electricity

In this Annex, the outcome of the submission of the monitoring reports per priority corridor and thematic area is presented. Totally 7 out of 135 projects did not submit a monitoring report. As presented in the Table I below, 6 out of the 7 not submitted reports are in the Northern Seas Offshore Grid (NSOG) corridor, and one is in the NSI East corridor.

Table I: PCI report submission

Corridor	Number of projects	Number of submitted monitoring reports	Projects for which no report was submitted
NSOG	28	22	**1.1.3**
			1.9.4
			1.9.5
			1.9.6
			1.11.1
			1.11.2
NSI East	61	60	**3.26**
NSI West	32	32	-
BEMIP	12	12	-
Smart Grids	2	2	-
Total	135	128	7

Annex II: Preparatory activities by the Agency - electricity

1. Cooperation with the NRAs

The Agency within its respective working groups (Electricity Working Group and Gas Working Group) and task forces (Infrastructure Task Force and Gas Infrastructure Task Force) ensured the close cooperation of the Agency's Staff with the representatives of the NRAs in drafting the questionnaire forms used by project promoters to fulfil their reporting obligation.

The NRAs were also requested to check and assess the data of the reports deemed relevant to their countries and highlight inconsistencies between the provided data and the information already known to the NRAs. The Agency received verifications/corrections for 22 projects in total. The most frequent reasons for corrections reported by the NRAs include technical details, cost data and status and time progress of the projects. (e.g. different duration of delay, commissioning date, CAPEX and GTC value). The Agency also notes that verification of benefits, were not provided by NRAs.

2. Cooperation with the Competent Authorities - electricity

Competent Authorities[96] along with the Agency are the recipients of the PCI reports submitted by project promoters regarding the progress and – where relevant – delays in the implementation of PCIs. The Agency actively pursued a dialogue with the Competent Authorities to ensure a coordinated approach for obtaining and evaluating the PCI monitoring reports. Following the discussion with the Competent Authorities at a workshop organized by the Agency in Ljubljana on 13 November 2014, it was agreed that in order to reduce the administrative burden, – similarly to a "one-stop-shop" system – project promoters would need to submit their reports only to the Agency, who would then transmit the information to the relevant Competent Authorities (i.e. the Competent Authorities of the hosting countries as reported by the Project Promoters).

Following project promoters' consent, the Agency forwarded the PCI monitoring reports and the clarifications, as they were received, to each relevant Competent Authority between 28 April 2015 and 4 May 2015. For the projects where the Agency did not receive the explicit consent of the project promoter or the project promoter provided a non-confidential version of the report to be forwarded, the Agency informed the relevant Competent Authority(ies) accordingly and sent the non-confidential version of the report, if it was made available. In the follow-up phase, when clarifying information with project promoters, the Agency and the Competent Authorities agreed to keep one another informed of the communication.

Within the framework of cooperation between the Agency and Competent Authorities, the Agency participated in a workshop organised by the EC, on 8 May 2015, where the draft structure of the Agency's monitoring report was presented, and discussion was held on further cooperation between the Agency and the Competent Authorities, the strengths and weaknesses of the reporting by the project promoters, and the relevance of the reporting for the Regional Groups and the PCI process.

3. Consultation and co-operation with project promoters

Representatives of project promoters were informed about the details of the reporting obligation during the sessions of the Regional Groups and by direct email communication from the Agency. Each PCI was treated separately even if there were several undertakings involved in the project, and thus a single contact was established for each project.

[96] As defined in Article 8 of Regulation (EU) No 347/2013.

The Agency received a number of questions and comments from electricity project promoters which referred to various aspects of the draft PCI questionnaire and the overall reporting procedure. The received questions and the respective answers of the Agency's Staff were published in a Questions & Answers document together with the questionnaires on the reporting platform as well as it was distributed to the project promoters and the Competent Authorities.

Throughout the reporting period, the Agency continued to provide technical support to project promoters, mostly on technical issues related to the filling-in of the reporting form.

The Agency used "EUSurvey"[97] for opening the reporting window and posting the reporting forms (specific to each type of infrastructure), and collecting the necessary information from project promoters in a harmonized and structured way. This online platform provided a secure and versatile tool to easily process and analyse the submitted data. The reporting tool was automatically closed upon the expiration of the reporting deadline, i.e. by 00:00 hrs on 1 April 2015.

[97] https://ec.europa.eu/eusurvey/home/welcome

Annex III: Clarification and validation of submitted data - electricity

In the pursuit of presenting a valuable monitoring report, and before starting the analysis of the data received by project promoters, a series of checks was performed, including cross-checking of data available in other documents and logical checks of data within the questionnaire itself to ensure the validity and reliability of the data.

The documents used for cross checking and the data checked are the following:

- Questionnaires submitted in the framework of the PCI selection in 2012:
- Out of 128 analysed PCIs, the Agency had access to 123 submission questionnaires. Data regarding estimated cost of investment was checked.
- The ENTO-E Ten Year Network Development Plan of 2012:
- This document provided information regarding the status of the projects in 2012.
- EC communication on overview of PCIs by country
- Indicated hosting countries of the PCIs were checked against this document to ensure that monitoring reports are forwarded to the relevant Competent Authorities.

The following discrepancies were traced in one or more cases:

- Extreme values in costs, benefits, number of investment items
- Incorrect PCI numbers
- Starting date of a phase after the ending
- Commissioning dates exceeding 1 year
- Incompatible duration of delay and change in commissioning dates
- Different commissioning date in the questionnaire submitted in 2012 than the one indicated in the 2015 questionnaire.
- Different 2012 CAPEX in the questionnaire submitted in 2012 than the one indicated in the 2015 questionnaire.
- Variations of losses in MWh instead of monetary values as requested
- Obvious typing mistakes
- Other contradictory data or unclear answers.

After the validity check, requests for clarification about the traced inconsistencies were sent to all relevant project promoters via email. Clarification request was sent to 44 project promoters, concerning 96 PCIs, and 39 of them provided feedback[98]. Changes of the data were made only after authorization from the project promoters. In order to make the process transparent and avoid misinterpretation by Agency, corrections were made based only on received emails from project promoters. When no clarification was provided or the answer remained unclear the data was not taken into account in the analysis.

NRAs were asked to review the data submitted by PCI promoters, and provided their comments to the Agency. Based on the NRA comments further clarifications were requested from 5 project promoters.

[98] In some cases not all requested clarifications were adressed.

After completing the above mentioned validation process, the following significant discrepancies or shortage of data still remained:

For the following 8 projects expected investment cost was not reported:

PCI number	PCI name
2.11.1	Interconnection between border area (DE), Meiningen (AT) and Rüthi (CH)
2.11.2	Internal Line in the region of point Rommelsbach to Herbertingen, Herbertingen to Tiengen, point Wullenstetten to point Niederwangen (DE) and the border area DE-AT
2.15.3	Internal line between Pavia and Piacenza (IT)
2.15.4	Internal line between Tirano and Verderio (IT)
2.4	PCI France – Italy interconnection between Codrongianos (IT), Lucciana (Corsica, FR) and Suvereto (IT) [currently known as the SA.CO.I. 3 project]
3.19.2	Internal line between Fano and Teramo (IT)
3.2.3	Internal line between Volpago and North Venezia (IT)
3.3	PCI Austria – Italy interconnection between Nauders (AT) and Milan region (IT)

For the following 2 projects, a discrepancy between estimated CAPEX provided in the framework of the 2012 PCI selection and CAPEX provided for the purposes of the monitoring report was identified:

PCI number	PCI name
3.5.1	Interconnection between Banja Luka (BA) and Lika (HR)
4.7	PCI capacity increase of hydro-pumped storage in Lithuania — Kruonis

In cases that dates were not provided in anticipated format (DD/MM/YYYY), no request for clarification was sent to the project promoters. The dates were changed **solely for the purposes of this analysis** in the shown in the following table:

Form of received date	Correction	Example (input)	Example (used data)
YYYY	01/07/YYYY	2015	01/07/2015
MM/YYYY	28-31/MM/YYYY	12/2015	31/12/2015
DD/MM/YY	DD/MM20YY	12/12/15	12/12/2015
YYYY-YYYY	01/07/(Y1+Y2)/2	2015-2019	01/07/2017

Annex IV: Data completeness (transmission and smart grid PCIs) - electricity

Please refer to Annex XI (Transmission template) for the full set of questions that correspond to the numbers in the left column of the following table.

Question	No. of Relevant PCIs	Submitted answers	completion rate
1	117	117	100%
2	117	117	100%
3	117	104	89%
4	117	111	95%
5	117	117	100%
6	117	117	100%
7	-	**11**	-
8	117	112	96%
9	117	117	100%
10	117	93	79%
11	117	117	100%
12	117	117	100%
13	59	58	98%
14	117	116	99%
15	109	106	97%
16	117	116	99%
17	-	**38**	-
18	117	106	91%
19	-	**78**	-
20	115	107[99]	93%
21	115	85	72%
22	-	**49**	-
23	62	57	92%
24	115	68	59%
25	115	68	59%
26	115	82	71%
27	115	75	65%
28	115	75	65%
29	115	73	63%
30[100]	115	87	76%
31[100]	115	12	10%
32	115	69	60%
33[100]	115	10	9%
34	115	44	38%
35[100]	115	66	57%
36[100]	115	67	58%
37	-	70	-
38	115	66	57%
39	-	92	-
40	117	117	100%
41	2	2	100%
42	2	2	100%
43	115	85	74%
44	115	84	73%
45	115	71	62%
46	115	70	61%
47	115	89	77%
48	115	84	73%
49	115	70	61%
50	115	66	57%
51	115	82	71%
52	115	80	70%
53	115	59	51%
54	115	57	50%
55	115	81	70%
56	115	78	68%
57	115	49	43%
58	115	48	42%
59[101]	85	45	53%
59[102]	-	**7**	-
60[101]	85	43	51%
60[102]	-	**7**	-
61[101]	85	19	22%
61[102]	-	**7**	-
62[101]	85	18	21%
62[102]	-	**7**	-
63	115	87	76%
64	115	82	71%
65	115	55	48%
66	115	49	43%
67[101]	85	28	33%
67[102]	-	**2**	-
68[101]	85	27	32%
68[102]	-	**2**	-
69[101]	85	10	12%
69[102]	-	**1**	-
70[101]	85	10	12%
70[102]	-	**1**	-
71	115	79	69%
72	115	77	67%
73	115	48	42%

[99] One cancelled project also provided CAPEX figure, therefore there were 108 submitted answers.

[100] Projects that reported 0 and did not explain the reasons are not taken into account.

([101]) The statistics for this question refer to the projects for which provisions of chapter III of the regulation (EU) No 347/2013 apply.

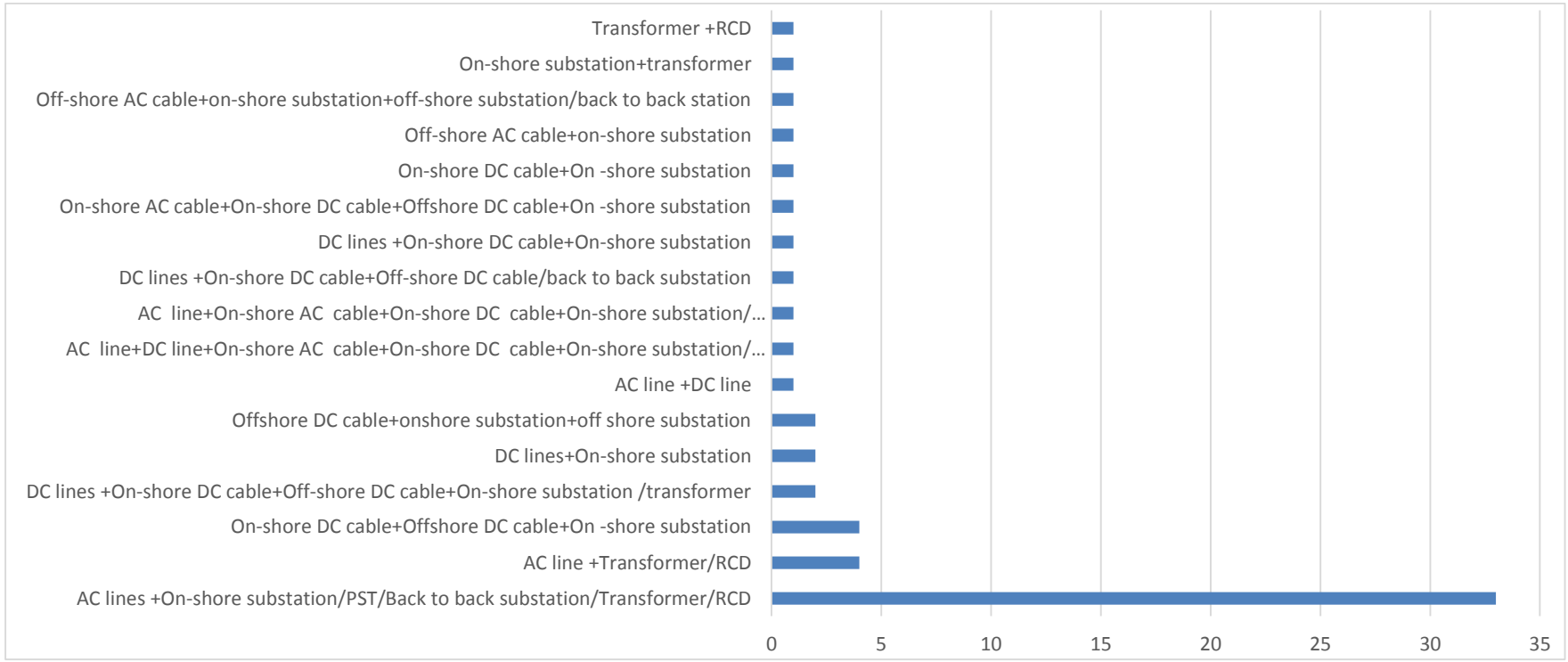
([102]) The statistics for this question refer to the projects for which provisions of chapter III of the regulation (EU) No 347/2013 do not apply.

74	115	45	39%
75(101)	85	20	24%
75(102)	-	**6**	-
76(101)	85	18	21%
76(102)	-	**6**	-
77(101)	85	9	11%
77(102)	-	**2**	-
78(101)	85	9	11%
78(102)	-	2	-
79	-	**24**	-
80	-	**24**	-
81	-	**12**	-
82	-	**12**	-
83	-	**14**	-
84	-	**12**	-
85	-	**4**	-
86	-	**4**	-
87	-	**4**	-
88	-	**4**	-
89	115	81	70%
90	115	79	69%
91	115	42	37%
92	115	42	37%
93	115	78	68%
94	115	77	67%
95	115	51	44%
96	115	51	44%
97	115	82	71%
98	115	81	70%
99	115	49	43%
100	115	49	43%
101	115	90	78%
102	115	91	79%
103	115	61	53%
104	115	62	54%
105	115	93	81%
106	115	103	90%
107	115	78	68%
108	115	84	73%
109	115	115	100%
110	115	91	79%
111	-	**40**	-
112	28	20	71%
113	28	28	100%
114	28	28	100%
115	28	5	18%
116	33	26	79%
117	33	32	97%
118	33	16	48%
119	33	6	18%
120	33	30	91%
121	33	8	24%
122	-	**12**	-
123	-	**27**	-
124	-	**16**	-

Annex V: Combined investments components - electricity

The main categories of the combined investments and their components are shown in the Figure I. The great majority of the combined projects(57%) are a combination of AC line with one of the following elements: on-shore substation/ transformer/ back to back substation/ PST, or RCD. 4 cases of PCIs (8%) are a combination of AC line, transformer/RCD, and also 4 cases (8%) are a combination of on-shore and off-shore DC cable and on-shore substation. Out of 48 combined projects,11 projects (23%) reported a unique combination of the components.

Figure I: Combined investments components



Annex VI: PCIs not included in the ENTSO-E TYNDP 2014, Regional Investment Plans, and National Network Development Plans - electricity

In the following table "X" sign is marked in case a PCI is not reported to be included in the relevant investment plan. "Partially included" is assigned to PCIs which involve more than one countries and it is not included in the NNDPs of all countries.

PCI Code	PCIs NOT included ENTSO-E TYNDP	PCIs NOT included in Regional Investment Plan	PCIs NOT included in National Network Developments Plan
Transmission			
1.1.2			X[103]
1.7.3			X
1.9.1			Partially included
1.9.2			X
1.9.3	X	X	X
1.10.B			Partially included[104]
1.11.4			X
2.4	X		
2.5.2[105]	X		
2.11.1			Partially included
2.13.2			X
2.14			Partially included
2.15.1			Partially included[104]
2.15.3	X		
2.15.4	X		
3.1.3[106]	X		
3.2.3.	X		
3.3			X
3.4			X
3.5.1			Partially included[104]
3.8.2[107]			X
3.8.3[108]			X

[103] Although there is reference to the year of the NNDP, no specific code or other data is provided.
[104] The country for which the project is not included in the NNDP is a non-EU country.
[105] Commissioned PCI
[106] Commissioned PCI
[107] Cancelled projects
[108] Cancelled projects

3.9.1			Partially included
3.10.1			X
3.10.2			X
3.14.1			Partially included[103]
3.16.2	X	X	
3.18.1			Partially included
3.18.2	X	X	X
3.19.1			Partially included
3.19.2	X		
3.22.1			Partially included[104]
4.3			Partially included
4.4.2			X
4.5.4			X
Storage			
1.11.3	X	X	X
1.12			X
2.19	X	X	X
3.23			X
3.24	X	X	X[103]
3.25	X	X	
4.7.			X
Smart Grids			
10.1		X	X
10.2			Partially included

Annex VII: Expected increase of cross border GTC - electricity

In this Annex based on the information provided by the project promoters the analysis on the expected increase in cross-border grid transfer capability per project, per border and direction is carried out.

Out of 102 transmission PCIs, 29 projects reported the expected increase in XB GTC for both directions of one border and 9 PCIs an impact on a second border. The summary of the expected increase in XB GTC per project and per border is shown in Table III.

Table III

PCI number	Impacted Border 1		XB GTC expected increase Border 1 (MW)	
	Direction 1	Direction 2	Direction 1	Direction 2
1.1.1	UK-BE		1000	
1.1.2[109]		BE-UK		1000
1.10	NO-UK		1400	
1.10.B	NO-UK		1400	
1.11.4	IE-UK		1500	
1.2	North-South		1835	
1.3.1	DK-DE	DE-DK	500	500
1.3.2	DE-DK	DK-DE	500	500
1.4.1	DKW-DE	DE-DKW	720	1000
1.4.2	DE-DK	DK-DE	720	720
1.4.3	DE- DK	DK-DE	720	720
1.5	DK-NL	NL-DK	700	700
1.6	IE-FR	FR-IE	700	700
1.7.1	FR-UK	UK-FR	1400	1400
1.7.2	FR-UK		1000	
1.7.3	FR-UK	UK-FR	1000	1000
1.8	NO-DE	DE-NO	1400	1400
1.9.1	GB- IE		=<3000	
1.9.2	UK-IE		500	
1.9.3	UK-IE		2000	
2.1.	AT-DE		470	470
2.10	DE-DK/NO		1800	
2.11.1	DE-AT-CH		1200	1200

[109] Itself this investment does not provide an increase of XB GTC. It has to be considered together with project 1.1.1 Nemo connection representing a GB to BE subsea interconnector.

PCI number	Impacted Border 1		XB GTC expected increase Border 1 (MW)	
	Direction 1	Direction 2	Direction 1	Direction 2
2.11.2	DE-AT-CH		400-2000	400-2000
2.12	DE-NL	NL-DE	1400	1400
2.13.1	IE-UK NI	UK NI-IE	600	580
2.13.2	IE-NI		570	
2.14.	IT-CH	CH-IT	1000	1000
2.15.1	CH-IT[110]		1000	
2.15.1 (2)	CH-IT[40]		1000	
2.16.1	PT-ES maximum	PT-ES average	1800	500
2.16.2	PT-ES maximum	PT-ES average	1500	300
2.17	PT-ES	ES-PT	400	1000
2.2.1.	DE-BE	BE-DE	1000	1000
2.2.2.	DE-BE	BE-DE	1000	1000
2.2.3	DE-BE	BE-DE	1000	1000
2.3.1[111]	BE-LU		400	
2.3.2	LU-BE		300	
2.5.1	FR-IT[112]		1200	
2.6.	ES-FR	FR-ES	1400	1200
2.7.	ES-FR	FR-ES	2500	2200
2.8.	ES-FR	FR-ES	500-900	100-500
2.9.	DE-NL and DE-CH		500-600	
3.1.1	DE-AT	AT-DE	2320	2320
3.1.2.	AT-DE		1740	1740
3.1.3	AT-DE		580	580
3.10.1	IL-CY	CY-IL	2000	2000
3.10.2	GR(CR)-CY	CY-GR(CR)	2000	2000
3.10.3	CR-GR	GR-CR	2000	2000
3.11.1	DE-CZ		500	
3.11.2	DE-CZ		500	
3.11.3	DE-CZ		500	
3.11.4	DE-CZ		500	
3.11.5	DE-CZ		100	
3.12	DE/CZ, DE/PL <=> DE/AT		600-650 MW	
3.13.	DE-CZ		550	
3.14.1	PL-DE/CZ/SK		800	
3.14.2	PL-DE/CZ/SK		400	
3.14.3	PL-DE/CZ/SK		400	

[110] The project promoter reported that this project is increasing the XB GTC at the Northern border of Italy with all its neighbours with the main impact on the CH border.
[111] The PCI is the first step in the implementation of a total interconnection capacity of 700MW.
[112] The project promoter reported that this project is increasing the XB GTC at the Northern border of Italy with all its neighbours with the main impact on the FR border.

PCI number	Impacted Border 1		XB GTC expected increase Border 1 (MW)	
	Direction 1	Direction 2	Direction 1	Direction 2
3.15.1.	PL-DE/CZ/SK		0-1500	
3.15.2.	PL- DE/CZ/SK		0-1500	
3.16.1	SK-HU		1000	
3.16.2[113]	SK-HU		150	
3.16.3.	SK-HU		200	
3.17	SK-HU		800	
3.18.1	SK-HU		550	
3.18.2[114]	SK-HU		50	
3.19.1	IT-ME[115]		1000-1200	
3.2.1	AT-IT[116]		800	
3.2.2.	AT-IT		320	
3.20.1.	SI-IT[117]		800	
3.20.2	SI-IT[46]		600	
3.21	SI-IT[46]		800	
3.22.1	RO-RS		350	
3.22.2	RO-RS		287	
3.22.3	RO-RS		180	
3.22.4	RO-RS		180	
3.3.	AT-IT[46]		300 (phase 1) + 350 (phase 2)	
3.4	IT-AT	AT-IT	200	275
3.5.1.	HR-BA	BA-HR	504	504
3.5.2.	HR-BA	BA-HR	215	215
3.7.1.	BG-GR		648	
3.7.2	BG-GR		648	
3.7.3	BG-GR		648	
3.7.4.	BG-GR		648	
3.8.1	BG-RO		165	
3.8.4	RO-BG		808	
3.8.5	RO-BG		560	
3.8.6	RO-BG		165	
3.9.1	SI-HU		1085	
3.9.2.	HU-SI(IT)		800	
3.9.3.	HU-SI(IT)		800	
3.9.4.	HU-SI(IT)		800	

[113] The investment does not meet the eligibility criterion of XB GTC increase to be included in the TYNDP 2014 as a project of pan-European significance.
[114] The investment does not meet the eligibility criterion of XB GTC increase to be included in the TYNDP 2014 as a project of pan-European significance.
[115] The project promoter reported that this project is increasing the XB GTC between Italy and Balkan area, and with European Southern East area, especially Romania and Bulgaria.
[116] The project promoter reported that this project is increasing the XB GTC at the Northern border of Italy with all its neighbours with the main impact on the AT border.
[117] The project promoter reported that this project is increasing the XB GTC at the Northern border of Italy with all its neighbours with the main impact on the SI border.

PCI number	Impacted Border 1		XB GTC expected increase Border 1 (MW)	
	Direction 1	Direction 2	Direction 1	Direction 2
4.1	DK-DE	DE-DK	400	400
4.2.1.	LV-EE		600	
4.2.2.	EE-LV		600	
4.3	LT-PL		600	
4.4.1	Baltic-Nordic		700	
4.4.2	LT-SE		700	
4.5.1	LT-PL		500	
4.5.2	LT-PL		500	
4.5.3	LT-PL		300	

The Agency noticed that out of 102 PCIs reporting an expected increase in XB GTC, 16 projects do not fulfil the threshold established in Regulation (EU) No 347/2013 (EU) 347/2013 as individual PCIs, but their contribution should be taken in the context of the cluster[118].

The code and name of the projects that did not reported any value of XB GTC increase are listed in Table IV.

Table IV: Code and name of the PCIs with no XB GTC value reported

PCI code	PCI name in the 2013 Union list of PCIs
2.15.3	Internal line between Pavia and Piacenza (IT)
2.15.4	Internal line between Tirano and Verderio (IT)
2.16.3[119]	Internal line between Frades B, Ribeira de Pena and Feira (PT)
2.4	France – Italy interconnection between Codrongianos (IT), Lucciana (Corsica, FR) and Suvereto (IT) [currently known as the SA.CO.I. 3 project]
2.5.2[120]	Internal line between Trino and Lacchiarella (IT)
3.19.2	Internal line between Fano and Teramo (IT)
3.19.3[121]	Internal line between Foggia and Villanova (IT)
3.2.3.	Internal line between Volpago and North Venezia (IT)
3.6.1.	Internal line between Vetren and Blagoevgrad (BG)
3.6.2.	Internal line between Tsarevets and Plovdiv (BG)
4.5.4	Internal line between Płock and Olsztyn Mątki (PL)

[118] A cluster could contain two or more PCIs and the increase of the XB GTC is assessed on aggregate level from the complementary contribution of the PCIs. The "cluster" does not necessarily correspond to the (clustered) projects of pan-European significance in the EU TYNDP 2014 and it is an outcome from the PCI selection process for the 2013 Union list of PCIs.
[119] The PCI reported only the border affected by the increase of the XB GTC.
[120] The PCI is commissioned and reported only the border affected by the increase of the XB GTC.
[121] The PCI reported a value for the GTC without any cross-border impact.

Annex VIII: Works performed - electricity

To facilitate the analysis, status 'under consideration' and 'planned, but not yet in permitting', are grouped as 'pre-permitting'.

Progress backwards

12 projects have experienced backward. In 7 cases project promoter did not provide any information on works performed and in 2 projects no works were performed. In the 3 remaining cases some studies were undertaken.

No transition to another stage

In 43 cases PCIs did not change stage between 2012 and 2015, but this fact should not be taken as lack of progress. From the analysis of information submitted about works performed it is clear that progress was made also within one stage. The number of PCIs and the works performed in each stage are summarised below:

Pre-permitting

20 projects in pre-permitting did not change stage; In 4 cases project promoter did not provide any information on works performed and 3 PCIs reported that there were no works. In the remaining cases one or more of the following works had been performed:

- Studies, mainly feasibility, environmental, spatial planning, technical, socio-economic.
- Alternative solution and site discovery
- Stakeholder and public consultation
- Preparation of permitting, contract and other documents

Permitting

22 projects in permitting did not change stage. No information was available for 5 PCIs and no actual works were performed in 1 case. In the remaining cases some of the following works were performed:

- Studies, mainly environmental, spatial and feasibility
- Negotiations with landowners and land acquisition
- Tendering
- Public consultations
- In at least 2 cases (where the project consists of various elements) part of the project is already under construction

Under construction

1project that remains under construction has proceeded (except for construction which is obvious) with land acquisition and preparatory works for construction.

Pre-permitting to permitting

16 PCIs went from pre-permitting to permitting stage. 3 projects didn't provide information regarding works. In the remaining cases preparation of permitting documents and their submission took place. Studies (mostly environmental) are under way and consultation with public, stakeholders and competent authorities took place. In one case tendering is under way.

Pre-permitting to under construction

3 Projects moved from pre-permitting to under construction. Information regarding works was available for all of the projects and included permitting process, tendering and construction is mentioned

Permitting to construction

11 projects changed status from permitting to construction. In 9 cases information regarding works was provided. Except for actual construction activities, tendering and preparatory activities for construction took place. Some parts of the projects have been already commissioned.

Under construction to commissioned

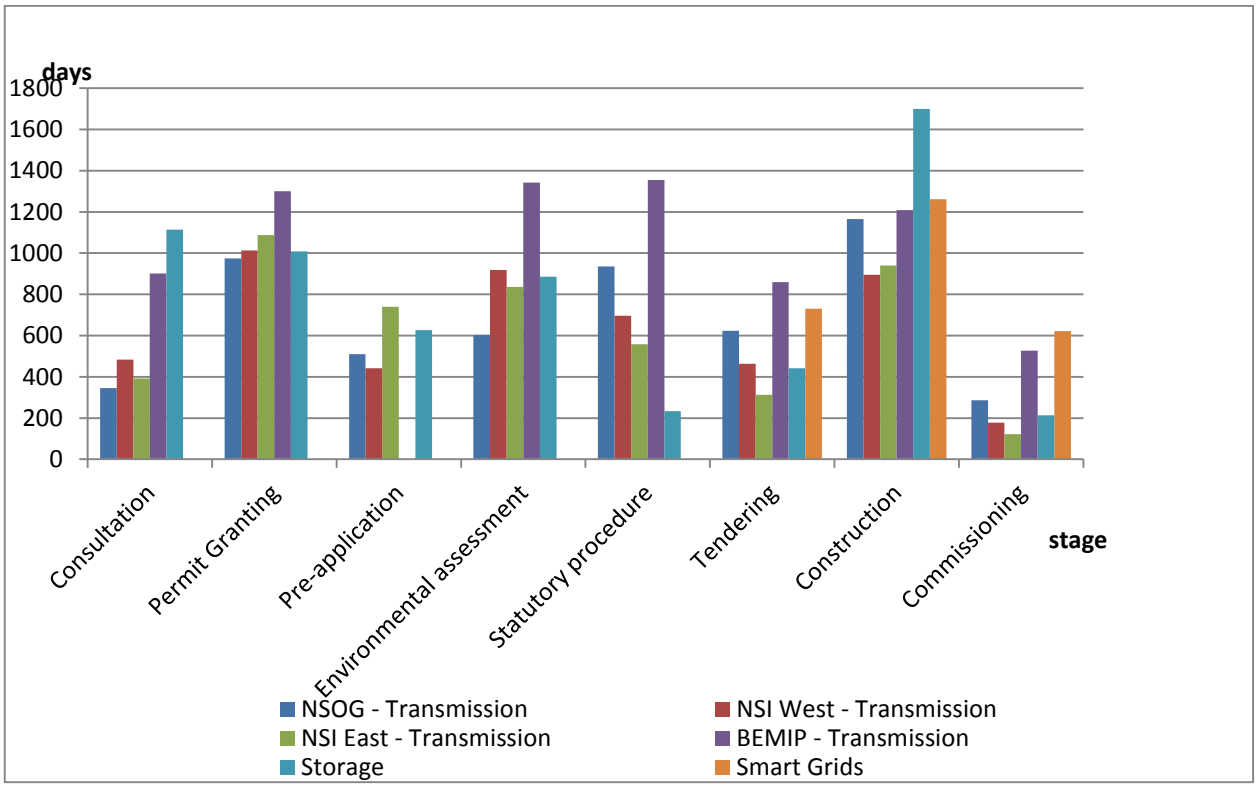
Two projects that are already commissioned finished construction and completed commissioning.

Annex IX: Phase duration and delays – electricity

The Figure II below presents the average expected duration (by project promoters) of the most important implementation phases of the projects by corridor (only for transmission projects), storage and thematic area. The most important phases are considered to be the following:

- Public Consultation
- Permit Granting Process
- Pre-application Procedure
- Environmental Impact Assessment
- Statutory procedure
- Tendering for construction
- Construction
- Commissioning

Figure II: Expected duration of phases



(*) For corridors only transmission projects are taken into account and storage projects are presented separately.

Expected duration of phases between transmission and storage projects is similar for permit granting, pre-application procedure, environmental impact assessment, tendering for construction and commissioning. Significant differences are observed in public consultation and statutory procedure durations; however, storage projects sample is too small to draw any conclusions. Duration of construction, where sample is sufficient, shows that construction is approximately 70% longer compared to transmission PCIs.

Small sample for some of the phases, great variance of answers provided by project promoters and some exceptionally short and long expectations, as Table V demonstrates, have to be taken into account when reading this section.

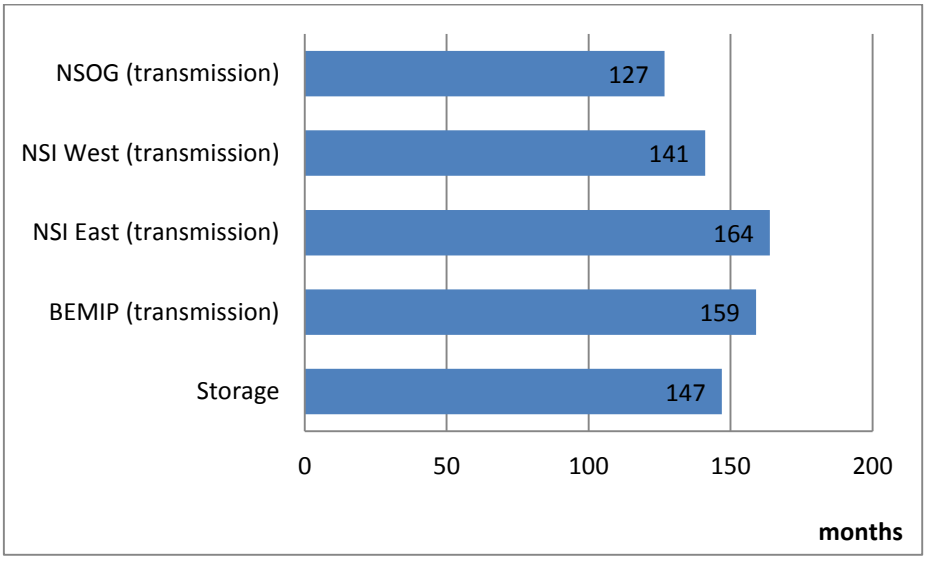
Table V: Max and min duration of phases (in months)

	Transmission		Storage	
	shortest	**longest**	**shortest**	**longest**
Consultation	0.7	93	5	97
Permit Granting	2	163	7	91
Pre-application	1	144	2	50
Environmental assessment	2	116	0.8	91
Statutory procedure	3	79	4	12
Tendering	0 (*)	85	5	43
Construction	5	69	26	86
Commissioning	0 (*)	48	3	12

(*) for these cases 1 day is the reported duration of the stage

In the following Figure III, the expected duration of the average project is presented by priority corridor, taking into account the expected date of commissioning and the starting of the consideration phase. We notice that the average duration varies between 10 and more than 13 years and that PCIs in NSI East and BEMIP corridors indicate the highest expectation of time needed for the completion of a PCI. No comparison with the 2012 schedule is made, as the completion rate of starting of the consideration phase in 2012 is quite low.

Figure III: Expected duration of phases



An analysis of expected duration of each important phase between 2012 and 2015 was performed, and the average expected delay of each phase is shown in Table VI. The conclusions of this analysis are the following:

- In most corridors the expected duration of phases has increased compared to 2012 outlook by a few months.

- Duration differences vary among corridors but without a clear pattern, except for BEMIP corridor, in which the expected duration of the most important phases has dropped.
- Both BEMIP and NSOG corridors seem to be (in average) ahead of schedule in the expected end of commissioning, but this might be attributed to the fact that expected commissioning duration in 2012 was rather long (almost 3 years in BEMIP and around 1.5 years in NSOG corridor) compared to 2015 expectations.

Length (2015): average expected duration as of 2015
Current delay compared to 2012: Currently expected postponement of phase end compared to 2012 expectations
Increase of length compared to 2012: By how many days is expected duration of phase longer.

Table VI

	NSOG Transmission (in months)		
	length (2015)	**current delay compared to 2012**	**Increase of length compared to 2012**
Consultation	12	18	1
Permit Granting	32	14	5
Pre-application	17	18	5
Environmental assessment	20	11	2
Statutory procedure	31	14	15
Tendering	21	13	10
Construction	39	12	1
Commissioning	10	2	30

	NSI West Transmission (in months)		
	Length (2015)	**current delay compared to 2012**	**Increase of length compared to 2012**
Consultation	16	9	-10
Permit Granting	34	7	0
Pre-application	15	/	/
Environmental assessment	31	14	7
Statutory procedure	23	26	7
Tendering	15	11	6
Construction	29	15	-3
Commissioning	6	13	-1

	NSI East Transmission (in months)		
	Length (2015)	**current delay compared to 2012**	**Increase of length compared to 2012**
Consultation	13	5	8

Permit Granting	36	6	1
Pre-application	25	-12	6
Environmental assessment	28	7	-2
Statutory procedure	19	1	12
Tendering	10	14	0
Construction	31	23	5
Commissioning		29	0

	BEMIP Transmission (in months)		
	Length (2015)	**current delay compared to 2012**	**Increase of length compared to 2012**
Consultation	30	9	1
Permit Granting	43	3	-5
Pre-application	/	/	/
Environmental assessment	45	5	3
Statutory procedure	45	12	-40
Tendering	29	16	11
Construction	40	-1	-8
Commissioning	18	-2	-14

	Transmission (in months)		
	Length (2015)	**current delay compared to 2012**	**Increase of length compared to 2012**
Consultation	14	10	1
Permit Granting	36	8	0
Pre-application	21	5	6
Environmental assessment	29	8	0
Statutory procedure	26	9	8
Tendering	15	14	3
Construction	33	17	1
Commissioning	6	17	-4

	Storage (in months)		
	Length (2015)	**current delay compared to 2012**	**Increase of length compared to 2012**
Consultation	37	8	--3
Permit Granting	34	15	2
Pre-application	21	7	6
Environmental assessment	30	12	2

Statutory procedure	8	22	-2
Tendering	15	9	-5
Construction	57	22	6
Commissioning	7	15	-5

Annex X: PCI specific information - electricity

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
1.1.1	NEMO Project	Nemo Link Limited Elia System Operator NV/SA	Before Nov 16 2013	Permitting	2018	On time	
1.1.2	Internal line between the vicinity of Richborough and Canterbury (UK)	National Grid Electricity Transmission	After Nov 16 2013	Permitting	2018	On time	
1.2.	PCI Belgium – two grid-ready offshore hubs connected to the onshore substation Zeebrugge (BE) with anticipatory investments enabling future interconnections with France and/or UK	Elia System Operator SA/NV	Before Nov 16 2013	Under consideration		Rescheduled	Other[122]
1.3.1	Interconnection between Endrup (DK) – Niebüll (DE)	TenneT TSO GmbH, Energinet.dk	After Nov 16 2013	Under consideration	2022	On time	
1.3.2	Internal line between Brunsbüttel and Niebüll (DE)	TenneT TSO GmbH	Before Nov 16 2013	Under construction	2018	On time	
1.4.1	Interconnection between Kassø (DK) – Audorf (DE)	TenneT TSO GmbH; Energinet.dk	Partly before and after	Permitting	2020	On time	
1.4.2	Internal line between Audorf and Hamburg/Nord (DE)	TenneT TSO GmbH	Before Nov 16 2013	Under construction	2017	On time	
1.4.3	Internal line between Hamburg/Nord and Dollern (DE)	TenneT TSO GmbH	Before Nov 16 2013	Under construction	2016	Delayed	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preperation of application files). Please explain in the relevant question below

[122] *The following elements lead to the rescheduling of the project: - the adaptation of the Electricity law which now allows the direct connection of Offshore Windfarms to the onshore grid, while this task was reserved for the TSO before. This caused the withdrawal of one windfarm from the project and altered the scope of the Belgian Offshore Grid drastically. - the delay imposed on the project by another project, which is a pre-condition to the connection of the Offshore Grid to the onshore grid.*

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
1.5	Denmark – Netherlands interconnection between Endrup (DK) and Eemshaven (NL) "COBRA"	TenneT TSO B.V, Energinet.dk	Before Nov 16 2013	Permitting	2019	On time	
1.6	France-Ireland interconnection between La Martyre (FR) and Great Island or Knockraha (IE)	EirGrid plc (IE) and Réseau de transport d'électricité (FR)	After Nov 16 2013	Under consideration	2025	On time	
1.7.1	France – United Kingdom interconnection between Cotentin (FR) and the vicinity of Exeter (UK) [currently known as FAB project]	FAB Link Limited and Reseau de Transport d'Electricite (RTE)	After Nov 16 2013	Planned, but not yet in permitting	2021	On time	
1.7.2	France - United Kingdom interconnection between Tourbe (FR) and Chilling (UK) [currently known as the IFA2 project]	Réseau de Transport d'Electricité (RTE) National Grid Interconnector Holdings Limited	After Nov 16 2013	Permitting	2020	On time	
1.7.3	France – United Kingdom interconnection between Coquelles (FR) and Folkestone (UK) – currently known as the ElecLink project	ElecLink Limited	After Nov 16 2013	Permitting	2018	Delayed	PERMITTING - Delays in the preparation of necessary application files by the project promoter
1.8	Germany – Norway interconnection between Wilster (DE) and Tonstad (NO) (NORD.LINK)	TenneT TSO GmbH; Statnett SF; KfW Kreditanstalt für Wiederaufbau	Before Nov 16 2013	Under construction	2018	Delayed	Delay in tendering process

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
1.9.1	PCI Ireland – United Kingdom interconnection between Co. Offaly (IE), Pembroke and Pentir (UK)	Element Power Ireland Ltd; Greenwire Ltd	After Nov 16 2013	Planned, but not yet in permitting	2021	Delayed	Other[123]
1.9.2	Ireland – United Kingdom interconnection between Coolkeeragh — Coleraine hubs (IE) and Hunterston station, Islay, Argyll and Location C Offshore Wind Farms (UK)	Department of Communications, Energy & Natural Resources (Ireland); Scottish Government (UK); Department of Enterprise, Trade & Investment, Northern Irelan (UK)	After Nov 16 2013	Under consideration		On time	
1.9.3	Ireland – United Kingdom interconnection between the Northern hub, Dublin and Codling Bank (IE) and Trawsfynyd and Pembroke (UK)	Department of Communications, Energy & Natural Resources (Ireland); Scottish Government (UK); Department of Enterprise, Trade & Investment, Northern Irelan (UK)	After Nov 16 2013	Under consideration		On time	
1.10	PCI Norway - United Kingdom Interconnection	Statnett SF National Grid Interconnector Holdings Limited (project A)	Before Nov 16 2013	Permitting	2020	On time	

[123] *"The Memorandum of Understanding (MOU) between the UK and Irish Governments signed 24th January 2013 was to be followed by an Intergovernmental Agreement (IGA) with a year to enable the export of wind from Ireland to UK to help meet UK 2020 renewable energy targets. The IGA was never signed and therefore there is currently no route to market (no PPA /FIT/CfD contract available) for Greenwire's generation. Without a route to market Greenwire cannot finance the generation which is required to underwrite the transmission investment. The delay was not forseeable because we were given strong support for the project by both governments in the build up to and post signing of the MOU. Because of this delay and to capitalize on the work done to date, the promoters, Element Power, have evolved the project to include Greenlink, a direct interconnector between GB and IE which is not dependent on generation, hence is independent from an IGA or any PPA/FiT/CfD etc."*

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
1.10.	PCI Norway – United Kingdom interconnection	NorthConnect KS (project B)	Before Nov 16 2013	Permitting	2022	Delayed	PERMITTING - National law changes affecting permitting, including complexities with the implementation of the new legislation implementing Regulation (EU) 347/2013 for permitting
1.11.3	Hydro-pumped (seawater) storage in Ireland – Glinsk	Organic Power Ltd.	Before Nov 16 2013	Planned, but not yet in permitting	2020	Delayed	PERMITTING - National law changes affecting permitting, including complexities with the implementation of the new legislation implementing Regulation (EU) 347/2013 for permitting
1.11.4	Ireland – United Kingdom interconnection between Glinsk, Mayo (IE) and Connah's Quay, Deeside (UK)	Organic Power Ltd.	After Nov 16 2013	Planned, but not yet in permitting	2020	Delayed	PERMITTING - National law changes affecting permitting, including complexities with the implementation of the new legislation implementing Regulation (EU) 347/2013 for permitting
1.12	PCI compressed air energy storage in United Kingdom - Larne	Gaelectric Energy Storage Ltd	After Nov 16 2013	Planned, but not yet in permitting	2020	Rescheduled	Regulatory uncertainties and change of design due to technology advancement
2.1.	PCI Austria internal line between Westtirol and Zell-Ziller (AT) to increase capacity at the AT/DE border	Austrian Power Grid AG	After Nov 16 2013	Planned, but not yet in permitting	2021	Rescheduled	Other[124]
2.2.1.	Interconnection between Lixhe (BE) and Oberzier (DE)	Amprion GmbH Elia System Operator NV/SA	After Nov 16 2013	Permitting	2019	On time	
2.2.2.	Internal line between Lixhe and Herderen (BE)	Elia System Operator SA/NV	After Nov 16 2013	Permitting	2017	On time	
2.2.3	2.2.3. New substation in Zutendaal (BE)	Elia System Operator SA/NV	After Nov 16 2013	Under construction	2015	Delayed	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files). Please explain in the relevant question below

[124] "*The technical solution is currently in evaluation. A definition will be done based on the gained experiences of the pilot sections, etc. After that a detailed time schedule will be provided.*"

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
2.3.1	Belgium-Luxembourg capacity increase - coordinated installation and operation of a phase-shift transformer in Schifflange	Creos Luxembourg S.A.	Before Nov 16 2013	Under construction	2015	On time	
2.3.2	Belgium-Luxembourg capacity increase - new interconnexion via double circuit 220 kV cable	Creos Luxembourg S.A.; Elia System Operator	After Nov 16 2013	Planned, but not yet in permitting	2022	Rescheduled	Changes due to correlation with other prioritised transmission investments
2.4	PCI France – Italy interconnection between Codrongianos (IT), Lucciana (Corsica, FR) and Suvereto (IT) [currently known as the SA.CO.I. 3 project]	Terna - Rete Elettrica Nazionale SpA	After Nov 16 2013	Under consideration		Rescheduled	Other[125]
2.5.1	Interconnection between Grande Ile (FR) and Piossasco (IT) [currently known as Savoie- Piemont project]	Terna - Rete Elettrica Nazionale SpA, and RTE - Réseau de Transport d'Electricité	Before Nov 16 2013	Under construction	2019	Delayed	Delays due to technological reasons (including any changes, re-routing and/or siting or re-siting of substation(s) initiated by the PP)
2.5.2	Internal line between Trino and Lacchiarella (IT)	Terna - Rete Elettrica Nazionale SpA	Before Nov 16 2013	Commissioned	2014	Ahead of schedule	
2.6.	PCI Spain internal line between Santa Llogaia and Bescanó (ES) to increase capacity of the interconnection between Bescanó (ES) and Baixas (FR)	Red Eléctrica de España, SAU	After Nov 16 2013	Permitting	2017	Delayed	PERMITTING - Delays due to environmental problems (including re-routing and/or siting or re-siting of substation(s)). Environmental problems also include problems with cultural heritage authorities or any other authority that is involved in the environmental procedure
2.7.	PCI France – Spain interconnection between Aquitaine (FR) and the Basque country (ES)	Réseau de Transport d'Electricité and Red Eléctrica de España SAU	After Nov 16 2013	Planned, but not yet in permitting	2022	Delayed	

[125] "*Different scenarios of generation and load expected in the coming years; uncertainty about the technical solutions (feasibility analyses in progress).*"

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
2.8.	PCI Coordinated installation and operation of a phase-shift transformer in Arkale (ES) to increase capacity of the interconnection between Argia (FR) and Arkale (ES)	Red Eléctrica de España SAU	After Nov 16 2013	Planned, but not yet in permitting	2017	Delayed	Delays due to financing reasons
2.9.	PCI Germany internal line between Osterath and Philippsburg (Ultranet)	Amprion GmbH (DE), TransnetBW GmbH (DE)	After Nov 16 2013	Planned, but not yet in permitting	2019	On time	
2.10	Germany internal line between Brunsbüttel-Groβgartach and Wilster-Grafenrheinfeld (DE) to increase capacity at Northern and Southern borders	TenneT TSO GmbH (DE), TransnetBW GmbH (DE)	After Nov 16 2013	Planned, but not yet in permitting	2022	On time	
2.11.1	Interconnection between border area (DE), Meiningen (AT) and Rüthi (CH)	Amprion GmbH TransnetBW GmbH Vorarlberger Übertragungsnetz GmbH Swissgrid AG	After Nov 16 2013	Under consideration		On time	
2.11.2	Internal Line in the region of point Rommelsbach to Herbertingen, Herbertingen to Tiengen, point Wullenstetten to point Niederwangen (DE) and the border area DE-AT	Amprion GmbH, TransnetBW GmbH	After Nov 16 2013	Permitting	2020	On time	
2.12	PCI Germany – Netherlands interconnection between Niederrhein (DE) and Doetinchem (NL)	Amprion GmbH; TenneT TSO B.V.	Before Nov 16 2013	Permitting	2017	On time	

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
2.13.1	Ireland-United Kingdom Interconnection between Woodland (IE) and Turleenan (UK - Northern Ireland)	In Ireland (IE): EirGrid plc, The Oval, 160 Shelbourne Road, Ballsbridge, Dublin 4 In UK - Northern Ireland: SONI Ltd, 12 Manse Road, Belfast, Co. Antrim, BT6 9RT	After Nov 16 2013	Permitting	2019	Delayed	PERMITTING - Delays in the preparation of necessary application files by the project promoter
2.13.2	Ireland - United Kingdom Interconnection between Srananagh (IE) and Turleenan (UK - Northern Ireland)	EirGrid plc. & System Operator Northern Ireland (SONI) System Operator Northern Ireland (SONI)	After Nov 16 2013	Planned, but not yet in permitting		Delayed	PERMITTING - Delays in the preparation of necessary application files by the project promoter
2.14.	Greenconnector	Greenconnector Srl Greenconnector AG	After Nov 16 2013	Permitting	2021	Delayed	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preperation of application files). Please explain in the relevant question below
2.15.1	Interconnection between Airolo (CH) and Baggio (IT)	Terna - Rete Elettrica Nazionale SpA, Swissgrid	Before Nov 16 2013	Permitting	2022	On time	
2.15.2	Upgrade of Magenta substation (IT)	Terna - Rete Elettrica Nazionale SpA	After Nov 16 2013	Permitting	2020	On time	
2.15.3	Internal line between Pavia and Piacenza (IT)	Terna - Rete Elettrica Nazionale SpA	After Nov 16 2013	Under consideration		Rescheduled	Changes in the overall planning data input (generation, demand and transmission)
2.15.4	Internal line between Tirano and Verderio (IT)	Terna - Rete Elettrica Nazionale SpA	After Nov 16 2013	Under consideration		Rescheduled	Changes in the overall planning data input (generation, demand and transmission)
2.16.1	Internal line between Pedralva and Alfena (PT)	Rede Eléctrica a Nacional, S.A:	After Nov 16 2013	Planned, but not yet in permitting	2020	Rescheduled	Changes on the generation side (in relation to new renewable-based generation)
2.16.2	Internal line between Pedralva and Vila Fria B (PT)	Rede Eléctrica Nacional, S.A.	Before Nov 16 2013	Permitting	2015	On time	
2.16.3	Internal line between Frades B, Ribeira de Pena and Feira (PT)	Rede Eléctrica Nacional, S.A.	After Nov 16 2013	Planned, but not yet in	2020	Rescheduled	Changes on the generation side (in relation to new renewable-based generation)

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status permitting	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
2.17	PCI Portugal – Spain interconnection between Vila Fria – Vila do Conde – Recarei (PT) and Beariz – Fontefría (ES)	Red Eléctrica de España SAU, Rede Eléctrica Nacional S.A.	Before Nov 16 2013	Permitting	2017	Delayed	PERMITTING - Delays due to environmental problems (including re-routing and/or siting or re-siting of substation(s)). Environmental problems also include problems with cultural heritage authorities or any other authority that is involved in the environmental procedure
2.18.	PCI capacity increase of hydro-pumped storage in Austria – Kaunertal, Tyrol	TIWAG-Tiroler Wasserkraft AG	Before Nov 16 2013	Permitting	2028	Delayed	PERMITTING - National law changes affecting permitting, including complexities with the implementation of the new legislation implementing Regulation (EU) 347/2013 for permitting
2.19	Obervermuntwerk II	Vorarlberger Illwerke AG	After Nov 16 2013	Under construction	2018	On time	
2.20	PCI capacity increase of hydro-pumped storage in Austria - Limberg III, Salzburg	VERBUND Hydro Power GmBH	Before Nov 16 2013	Permitting		Delayed	Other[126]
2.21.	PCI hydro-pumped storage in Germany — Riedl	Donaukraft Jochenstein AG	Before Nov 16 2013	Permitting		Delayed	Delays due to financing reasons
3.1.1	St. Peter (AT) – Isar/Ottenhofen (DE)	TenneT TSO GmbH; Austrian Power Grid AG	Partly before and after	Permitting	2020	Delayed	PERMITTING - Delays due to environmental problems (including re-routing and/or siting or re-siting of substation(s)). Environmental problems also include problems with cultural heritage authorities or any other authority that is involved in the environmental procedure

[126] "*Investment decision for Limberg III will only be taken after construction permit for part 2 of "Salzburg transmission line" (Project 3.1.2. - Internal line between St. Peter and Tauern (AT)) - delay due to permitting procedure"*

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
3.1.2.	Internal line between St. Peter and Tauern (AT)	Austrian Power Grid AG	Before Nov 16 2013	Permitting	2023	Delayed	PERMITTING - Delays due to environmental problems (including re-routing and/or siting or re-siting of substation(s)). Environmental problems also include problems with cultural heritage authorities or any other authority that is involved in the environmental procedure
3.1.3.	Internal line between St. Peter and Ernsthofen (AT)	Austrian Power Grid AG	Before Nov 16 2013	Commissioned	2014	Delayed	Delays in construction works
3.2.1	Interconnection between Lienz (AT) and Veneto region (IT)	Terna - Rete Elettrica Nazionale SpA, APG	After Nov 16 2013	Planned, but not yet in permitting	2023	On time	
3.2.2.	Internal line between Lienz and Obersielach (AT)	Austrian Power Grid AG	After Nov 16 2013	Planned, but not yet in permitting	2024	On time	
3.2.3.	Internal line between Volpago and North Venezia (IT)	Terna - Rete Elettrica Nazionale SpA	After Nov 16 2013	Under consideration		Rescheduled	Changes in the overall planning data input (generation, demand and transmission)
3.3.	PCI Austria – Italy interconnection between Nauders (AT) and Milan region (IT)	Terna - Rete Elettrica Nazionale SpA	After Nov 16 2013	Under consideration	2020	Rescheduled	Other[127]
3.4	PCI Austria – Italy interconnection between Wurmlach (AT) and Somplago (IT)	Alpe Adria Energia S.p.A.	Before Nov 16 2013	Permitting	2017	Delayed	PERMITTING - Delays due to environmental problems (including re-routing and/or siting or re-siting of substation(s)). Environmental problems also include problems with cultural heritage authorities or any other authority that is involved in the environmental procedure
3.5.1.	Interconnection between Banja Luka (BA) and Lika (HR)	Hrvatski operator prijenosnog sustava d.o.o. (Croatian transmission system	After Nov 16 2013	Planned, but not yet in permitting	2022	Rescheduled	Other[128]

[127] *"Project feasibility to be proved, especially concerning phase 2"*

[128] "*Preparatory activities for a feasibility study. The agreement of the competent bodies of the Croatia and Bosnia and Herzegovina about the implementation of future activities."*

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
		operator LLC)					
3.5.2.	Internal lines between Brinje, Lika, Velebit and Konjsko (HR) including substations	Hrvatski operator prijenosnog sustava d.o.o. (Croatian Transmission System Operator Ltd.)	After Nov 16 2013	Planned, but not yet in permitting	2021	Rescheduled	Other[129]
3.6.1.	Internal line between Vetren and Blagoevgrad (BG)	Elektroenergien sistemen operator (ESO) EAD	After Nov 16 2013	Planned, but not yet in permitting	2026	Delayed	Delays due to financing reasons
3.6.2.	Internal line between Tsarevets and Plovdiv (BG)	Elektroenergien sistemen operator (ESO) EAD	After Nov 16 2013	Planned, but not yet in permitting	2024	Delayed	Delays due to financing reasons
3.7.1.	Interconnection between Maritsa East (BG) and N. Santa (EL)	Elektroenergien Sistemen Operator EAD, Bulgaria and Independent Power Transmission Operator (IPTO) S.A., Greece	After Nov 16 2013	Planned, but not yet in permitting	2021	On time	
3.7.2	Internal line between Maritsa East and Plovdiv (BG)	Elektroenergien sistemen operator (ESO) EAD	After Nov 16 2013	Permitting	2019	Delayed	Delays due to financing reasons
3.7.3	Internal line between Maritsa East and Maritsa East 3 (BG)	Elektroenergien sistemen operator (ESO) EAD	After Nov 16 2013	Permitting	2017	On time	
3.7.4.	Internal line between Maritsa East and Burgas (BG)	Elektroenergien sistemen operator (ESO) EAD	After Nov 16 2013	Permitting	2021	Delayed	Delays due to financing reasons

[129] *"Preparatory activities for a feasibility study for the whole cluster. The agreement of the competent bodies of the Croatia and Bosnia and Herzegovina about the implementation of future activities."*

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
3.8.1	Internal line between Dobrudja and Burgas (BG)	Elektroenrgien sistemen operator (ESO) EAD	After Nov 16 2013	Planned, but not yet in permitting	2022	Delayed	Delays due to financing reasons
3.8.2.	Internal line between Vidno and Svoboda (BG)	Elektroenergien sistemen operator (ESO) EAD	After Nov 16 2013	Cancelled			
3.8.3.	Internal line between Svoboda (BG) and the splitting point of the interconnection Varna (BG) - Stupina (RO) in BG	Elektroenergien sistemen operator (ESO) EAD	After Nov 16 2013	Cancelled			
3.8.4	Internal line between Cernavoda and Stalpu (RO)	CNTEE TRANSELECTRICA SA	After Nov 16 2013	Permitting	2019	Delayed	PERMITTING - National law changes affecting permitting, including complexities with the implementation of the new legislation implementing Regulation (EU) 347/2013 for permitting
3.8.5	Internal line between Gutinas and Smardan (RO)	CNTEE TRANSELECTRICA SA	After Nov 16 2013	Permitting	2020	On time	
3.8.6	Internal line between Gadalin and Suceava (RO)	CNTEE TRANSELECTRICA SA	After Nov 16 2013	Permitting	2021	On time	
3.9.1	Interconnection between Žerjavenec (HR)/Heviz (HU) and Cirkovce (SI)	ELES, d.o.o., sistemski operater prenosnega elektroenergetskega omrežja	After Nov 16 2013	Permitting	2019	Delayed	PERMITTING - Delays due to environmental problems (including re-routing and/or siting or re-siting of substation(s)). Environmental problems also include problems with cultural heritage authorities or any other authority that is involved in the environmental procedure
3.9.2.	Internal line between Divača and Beričevo (SI)	ELES, d.o.o., sistemski operater prenosnega elektroenergetskega omrežja	After Nov 16 2013	Permitting	2021	On time	

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
3.9.3.	Internal line between Beričevo and Podlog (SI)	ELES, d.o.o., sistemski operater prenosnega elektroenergetskega omrežja	After Nov 16 2013	Planned, but not yet in permitting	2026	On time	
3.9.4.	Internal line between Podlog and Cirkovce (SI)	ELES, d.o.o., sistemski operater prenosnega elektroenergetskega omrežja	After Nov 16 2013	Planned, but not yet in permitting	2026	On time	
3.10.1	Interconnection between Hadera (IL) and Vasilikos (CY)	DEH Quantum Energy Ltd	After Nov 16 2013	Planned, but not yet in permitting	2019	On time	
3.10.2	Interconnection between Vasilikos (CY) and Korakia, Crete (EL)	DEH Quantum Energy Ltd	After Nov 16 2013	Planned, but not yet in permitting	2022	On time	
3.10.3	Internal line between Korakia, Crete and Attica region (EL)	DEH Quantum Energy Ltd	After Nov 16 2013	Planned, but not yet in permitting	2020	On time	
3.11.1	Internal line between Vernerov and Vitkov (CZ)	CEPS, a.s. - The transmission system operator of the Czech Republic	After Nov 16 2013	Permitting	2023	Delayed	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files). Please explain in the relevant question below
3.11.2	Internal line between Vitkov and Prestice (CZ)	CEPS, a.s. - The transmission system operator of the Czech Republic	After Nov 16 2013	Permitting	2020	On time	
3.11.3	Internal line between Prestice and Kocin (CZ)	CEPS, a.s. - The transmission system operator of the Czech Republic	After Nov 16 2013	Permitting	2028	Rescheduled	Changes on the generation side (in relation to other types of generation)
3.11.4	Internal line between Kocin and Mirovka (CZ)	CEPS, a.s. - The transmission system operator of the Czech Republic	After Nov 16 2013	Permitting	2024	Rescheduled	Changes on the generation side (in relation to other types of generation)

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
3.11.5	Internal line between Mirovka and Cebin (CZ)	CEPS, a.s. - The transmission system operator of the Czech Republic	After Nov 16 2013	Permitting	2029	Rescheduled	Changes on the generation side (in relation to other types of generation)
3.12	PCI internal line in Germany between Lauchstädt and Meitingen to increase capacity at Eastern borders	50Hertz Transmission GmbH, Amprion GmbH	After Nov 16 2013	Planned, but not yet in permitting	2022	On time	
3.13.	PCI internal line in Germany between Halle/Saale and Schweinfurt to increase capacity in the North-South Corridor East	50Hertz Transmission GmbH & TenneT TSO GmbH	Before Nov 16 2013	Under construction	2016	Ahead of schedule	
3.14.1	Interconnection between Eisenhűttenstadt (DE) and Plewiska (PL)	Polskie Sieci Elektroenergetyczne S.A, 50Hertz Transmission GmbH	Before Nov 16 2013	Under consideration	2030	Rescheduled	Other[130]
3.14.2	Internal line between Krajnik and Baczyna (PL)	Polskie Sieci Elektroenergetyczne S.A	After Nov 16 2013	Planned, but not yet in permitting	2020	On time	
3.14.3	Internal line between Mikułowa and Świebodzice (PL)	Polskie Sieci Elektroenergetyczne S.A	After Nov 16 2013	Planned, but not yet in permitting	2020	On time	
3.15.1.	Interconnection between Vierraden (DE) and Krajnik (PL)	50Hertz Transmission GmbH & Polskie Sieci Elektroenergetyczne S.A	Before Nov 16 2013	Under construction	2017	Rescheduled	Rescheduling of works during the construction phase either to guarantee the reliability of supply or due to other technical issues

130 *"The analysis evaluating the effectiveness of the construction of the third interconnection with German power system was performed" […]The results of PSE's analysis show that it is possible to achieve the increase of cross border capacity to 1800-2000 MW with a different approach. The reinforcements in the internal Polish transmission network, which prove necessary despite the cross border capacity increase needs, yield comparable results with significantly lower costs. [..] "Based on the above described conditions PSE and 50Hertz intend to concentrate in a first step on the proposed reinforcements and to consider the construction of the third interconnection line between Poland and Germany in a second step, in 2030 as the earliest date. The decision on the construction of the third interconnection will be taken after the internal infrastructure development has been completed and after the evaluation of the needs for further development has been performed."*

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
3.15.2.	Coordinated installation and operation of phase shifting transformers on the interconnection lines between Krajnik (PL) – Vierraden (DE) and Mikulowa PL) - Hagenwerder (DE)	50Hertz Transmission GmbH & Polskie Sieci Elektroenergetyczne S.A	After Nov 16 2013	Permitting	2017	Rescheduled	Changes due to correlation with other rescheduled transmission investments
3.16.1	Interconnection between Gönyű (HU) and Gabčikovo (SK).	Slovenská elektrizačná prenosová sústava, a.s., MAVIR Hungarian Independent Transmission Operator Company Ltd.	After Nov 16 2013	Planned, but not yet in permitting	2018	Rescheduled	Changes on the demand side
3.16.2	Internal line between Velký Ďur and Gabčikovo (SK)	Slovenská elektrizačná prenosová sústava, a. s.	Before Nov 16 2013	Under construction	2016	On time	
3.16.3.	Extension of Győr substation (HU)	MAVIR Hungarian Independent Transmission Operator Company Ltd.	After Nov 16 2013	Under consideration	2018	Rescheduled	Changes due to correlation with other rescheduled transmission investments
3.17	PCI Hungary – Slovakia interconnection between Sajóvánka (HU) and Rimavská Sobota (SK)	MAVIR Hungarian Independent Transmission Operator Company Ltd. and Slovenská elektrizačná prenosová sústava, a.s.	After Nov 16 2013	Planned, but not yet in permitting	2018	Rescheduled	Changes due to correlation with other prioritised transmission investments
3.18.1	Interconnection between Kisvárda area (HU) and Velké Kapušany (SK)	Slovenská elektrizačná prenosová sústava, a.s. and MAVIR Hungarian Independent Transmission Operator Company Ltd.	After Nov 16 2013	Under consideration	2029	Rescheduled	Changes in the overall planning data input (generation, demand and transmission)

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
3.18.2	Internal line between Lemešany and Velké Kapušany (SK)	Slovenská elektrizačná prenosová sústava, a. s.	After Nov 16 2013	Under consideration	2030	Rescheduled	Changes due to correlation with other rescheduled transmission investments
3.19.1	Interconnection between Villanova (IT) and Lastva (ME)	Terna - Rete Elettrica Nazionale SpA, Crnogorski Elektroprenosni Sistem AD.	Before Nov 16 2013	Under construction	2019	Delayed	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files). Please explain in the relevant question below
3.19.2	Internal line between Fano and Teramo (IT)	Terna - Rete Elettrica Nazionale SpA	After Nov 16 2013	Under consideration		Rescheduled	Other[131]
3.19.3	Internal line between Foggia and Villanova (IT)	Terna - Rete Elettrica Nazionale SpA	After Nov 16 2013	Permitting	2019	Delayed	Other[132]
3.20.1.	Interconnection between West Udine (IT) and Okroglo (SI)	ELES, d.o.o., sistemski operater prenosnega elektroenergetskega omrežja Terna S.p.A. - Rete Elettrica Nazionale	After Nov 16 2013	Under consideration		Rescheduled	Changes in the overall planning data input (generation, demand and transmission)
3.20.2	Internal line between West Udine and Redipuglia (IT)	Terna - Rete Elettrica Nazionale SpA	Before Nov 16 2013	Under construction	2016	Delayed	PERMITTING - Delays due to environmental problems (including re-routing and/or siting or re-siting of substation(s)). Environmental problems also include problems with cultural heritage authorities or any other authority that is involved in the environmental procedure
3.21	PCI Italy – Slovenia interconnection between Salgareda (IT) and Divača — Bericevo region (SI)	ELES, d.o.o., sistemski operater prenosnega elektroenergetskega omrežja Terna S.p.A. - Rete Elettrica Nazionale	Before Nov 16 2013	Under consideration		On time	

131 *"social acceptance"*
132 *"Delay in the permitting process (EIA) concerning the part Foggia-Gissi still under authorization."*

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
3.22.1	Interconnection between Resita (RO) and Pancevo (RS)	CNTEE TRANSELECTRICA & ELEKTROMREZA SRBIJE	After Nov 16 2013	Permitting	2016	On time	
3.22.2	Internal line between Portile de Fier and Resita (RO)	CNTEE TRANSELECTRICA SA	After Nov 16 2013	Permitting	2017	Delayed	PERMITTING - Delays due to environmental problems (including re-routing and/or siting or re-siting of substation(s)). Environmental problems also include problems with cultural heritage authorities or any other authority that is involved in the environmental procedure
3.22.3	Internal line between Resita and Timisoara/Sacalaz (RO)	CNTEE TRANSELECTRICA SA	After Nov 16 2013	Permitting	2022	On time	
3.22.4	Internal line between Arad and Timisoara/Sacalaz (RO)	CNTEE TRANSELECTRICA SA	After Nov 16 2013	Planned, but not yet in permitting	2022	On time	
3.23	PCI hydro-pumped storage in Bulgaria — Yadenitsa	NATSIONALNA ELEKTRICHESKA KOMPANIA EAD	After Nov 16 2013	Permitting	2021	On time	
3.24	PCI hydro-pumped storage in Greece - Amfilochia	TERNA ENERGY S.A.	After Nov 16 2013	Permitting	2021	Delayed	Delays due to financing reasons
3.25	PCI battery storage systems in Central South Italy	Terna - Rete Elettrica Nazionale SpA	Before Nov 16 2013	Permitting	2015	On time	
4.1	Kriegers Flak Combined Grid Solution	Energinet.dk, 50 Hertz Transmission GmbH	Before Nov 16 2013	Permitting	2018	On time	
4.2.1.	Interconnection between Kilingi-Nõmme (EE) and Riga CHP2 substation (LV)	Latvian TSO "Augstsprieguma tikls" AS, Estonian TSO "Elering" AS and Latvian transmission system owner "Latvijas elektriskie tīkli" AS	After Nov 16 2013	Permitting	2020	On time	

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
4.2.2.	Internal line between Harku and Sindi (EE)	Elering AS	Before Nov 16 2013	Planned, but not yet in permitting	2020	On time	
4.3	Estonia/Latvia/Lithuania synchronous interconnection with the Continental European Networks	Litgrid AB, Augstsprieguma tīkls AS, ELERING AS	After Nov 16 2013	Planned, but not yet in permitting	2024	Rescheduled	Other[133]
4.4.1	Internal line between Ventspils, Tume and Imanta (LV)	"Augstsprieguma tikls"AS, "Latvijas elektriskie tikli" AS	After Nov 16 2013	Under construction	2019	On time	
4.4.2	Internal line between Ekhyddan and Nybro/Hemsjö (SE)	Affärsverket svenska kraftnät	Before Nov 16 2013	Planned, but not yet in permitting	2023	Delayed	Other[134]
4.5.1	LT part of interconnection between Alytus (LT) and LT/PL border	Litgrid AB	Before Nov 16 2013	Under construction	2015	On time	
4.5.2	Internal line between Stanisławów and Olsztyn Mątki (PL)	Polskie Sieci Elektroenergetyczne S.A.	After Nov 16 2013	Under construction	2020	On time	
4.5.3	Internal line between Kozienice and Siedlce Ujrzanów (PL)	Polskie Sieci Elektroenergetyczne S.A.	After Nov 16 2013	Under construction	2017	Ahead of schedule	
4.5.4	Internal line between Płock and Olsztyn Mątki (PL)	Polskie Sieci Elektroenergetyczne S.A.	After Nov 16 2013	Under consideration	2030	Rescheduled	Changes in the overall planning data input (generation, demand and transmission)
4.6.	PCI hydro-pumped storage in Estonia- Muuga	Energiasalv OÜ	Before Nov 16 2013	Under consideration	2024	Delayed	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files). Please

133 *"According to results of the Feasibility study the optimistic scenario for completion of the PCI "Estonia / Latvia / Lithuania synchronous interconnection with the Continental European networks" is year 2020, more realistic – 2025."*

134 "*Main reasons for delay are: - Permission for access to land corridor for the grids planned route from land owners more difficult than previous foreseen. - Affärsverket Svenska kraftnät has changed estimated time for the permission process due to new information."*

PCI number	PCI name	Project promoter(s)	Permit granting file submission	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable) explain in the relevant question below
4.7.	PCI capacity increase of hydro-pumped storage in Lithuania — Kruonis	Lietuvos energija, UAB	After Nov 16 2013	Planned, but not yet in permitting		Rescheduled	Due to other investment
10.1	North Atlantic Green Zone	ESB Networks Ltd. EirGrid PLC Northern Ireland Electricity Limited SONI Limited	After Nov 16 2013	Permitting	2018	Delayed	Delays due to financing reasons
10.2	Green-Me	Enel Distribuzione S.p.A. Electricité Réseau Distribution France SA RTE Réseau de Transport d'Electricité Terna S.p.A.	After Nov 16 2013	Under consideration	2019	Rescheduled	Other[135]

[135] "*The realization of the project relies on an adequate financing level, and on the confirmation, from each promoter, on the sustainability of the project.*"

Annex XI: Questionnaire templates - electricity and gas

The templates are attached as separate files.

Annex XII: Preparatory activities by the Agency - gas

I. Cooperation with the NRAs

The Agency within its respective working groups (Electricity Working Group and Gas Working Group) and task forces (Infrastructure Task Force and Gas Infrastructure Task Force) ensured the close cooperation of the Agency's Staff with the representatives of the National Regulatory Authorities in carrying out the questionnaire form for each infrastructure type used by project promoters to fulfil their reporting obligation.

II. Cooperation with the competent authorities

Competent authorities[136] along with the Agency are the recipients of the annual reports submitted by project promoters regarding the progress and – where relevant – delays in the implementation of PCIs. The Agency actively pursued a dialogue with the competent authorities to ensure a coordinated approach for obtaining and evaluating the PCI monitoring reports.

Following the discussion with competent authorities at a workshop organized by the Agency in Ljubljana on 13 November 2014, it was agreed that in order to reduce the administrative burden, project promoters would need to submit their reports by using a form via a single online "window" set up by the Agency, who would then transmit the reports to the relevant competent authorities. The reporting form which promoters used to submit their reports was consulted and complemented with the information needs of the competent authorities so that any additional queries launched vis-à-vis project promoters could be minimised. The Agency forwarded the received PCI monitoring reports to each relevant competent authority. Subsequently, in cases where clarifying information was sought from the project promoters, the Agency and the competent authorities kept one another informed of the communications.

The Agency took stock of the cooperation and informed the competent authorities and the European Commission about the structure of its consolidated report to facilitate the discussion on a harmonized approach for the reporting of competent authorities at the workshop organized by the Commission on 8 May 2015.

III. Consultation and cooperation with project promoters

Consultation phase

Representatives of project promoters were informed about the details of the reporting obligation during the sessions of the Regional Groups and by direct email communication from the Agency. Each PCI was treated separately on its own merits even if there were several undertakings involved in the project, and thus a single contact was established for each project.

[136] As defined in Article 8 in the Regulation.

The Agency received a number of questions and comments from promoters in gas which focused mostly on the issue of cooperation and organizational details of submitting a single report for each PCI where there is more than one undertaking involved. Other questions touched on the parts related to technical details on the use of the reporting tool, on costs and the cost-benefit analysis, for which no ENTSOG methodology existed at the time of the compilation of the first list of PCIs. For this reason, issues related to cost-benefit analysis were flagged as optional in the reporting form.

Throughout the reporting period, the Agency continued to provide technical support to project promoters, mostly on technical issues related to the filling-in of the reporting form.

Reporting tool

The Agency used "EUSurvey"[137] for opening the reporting window and posting the reporting forms (specific to each type of infrastructure), and collecting the necessary information from project promoters in a harmonized and structured way. This online platform provided a secure and versatile tool to easily process and analyse the submitted data. The reporting tool was automatically closed upon the expiration of the reporting deadline, i.e. by 00:00 hrs on 1 April 2015.

Clarification and consolidation of submitted reports

Following the expiration of the deadline for the submission of the reports on 31 March 2015, the Agency carried out a consistency check of the received data in order to identify incomplete and incoherent inputs.[138] After the identification of essential missing or unclear data, the Agency contacted the project promoters for clarifications. 46 project promoters were contacted (29 for transmission PCIs, 11 for LNG PCIs, 6 for UGS PCIs) and 91 requests for clarification were made (73 for transmission PCIs, 11 for LNG PCIs and 7 for UGS PCIs). After the clarifications were received, the updated data were included in the report files only upon authorization from project promoters, and the resulting project-level reports transmitted to the relevant competent authorities.

IV. Data validity check and consolidation

After the submission of the reports, the Agency carried out a validity check of the received data in order to identify missing data and inconsistencies.

The data validity check identified several inconsistencies in the submitted reports. The Agency identified 11 PCIs in gas (10 transmission, 1 LNG) where the current project implementation schedule, as compared to the schedule in the 2013 Union list of PCIs, does not correspond to the data in the implementation table. Specifically, 7 PCIs (all in transmission) were identified as being marked "on time", while the data in the implementation table shows delay. Also, 3 PCIs (all in transmission) were marked "rescheduled" or "delayed" while the commissioning date as it was expected in 2013 corresponds with the date planned in 2015.

Moreover, 8 PCI promoters reported several dates related to multiple project stages (6 in transmission, 1 LNG, 1 UGS). In these cases, the Agency took into consideration the date related to the first stage of the project.

[137] https://ec.europa.eu/eusurvey/home/welcome
[138] The Agency's approach to handling data inconsistencies is described in paragraph 1.3.2.

Besides, in numerous instances the dates of project timelines as reported were incomplete, multiple or provided in an ambiguous format. In such cases, the dates were converted to a suitable format and corrected when necessary; in cases where a range of dates is reported (e.g. 2012-2014 or quarter instead of month), the midpoint of the range has been taken (year, month or day as appropriate).

In the following cases of data inconsistency, clarifications were sought from project promoters:

- Inconsistent or divergent information provided in various sections of the report;
- Providing text information (e.g. "completed" "finished" "started") instead of a date;
- Required data missing from the report;
- Apparent mistakes where the intended answer is not obvious.

The vast majority of clarifications requested by the Agency from the project promoters concern the implementation timeline of the PCIs. For example, in cases where information for more mature stages of the project's development was provided, but was missing for the early stages, clarifications were requested.

Also, in order to avoid confusion between cases where information was not available to project promoters and cases where the information was available, but the relevant sections of the report form were left blank, project promoters were invited to specify when information is not available to them (n/a).

Where relevant, additional timeline-related information was requested from project promoters only for the following stages of projects, which were considered to be fundamental for the purposes of the Agency's Consolidated Reports:

- Market test status (carried out or not, results available or not)
- Public consultation of art. 9(4) of Regulation 347/2013 (carried out or not, results available or not)
- Permitting status – pre-application procedure
- Permitting status – EIA request and approval
- Permitting status – statutory procedure
- Final Investment Decision (taken or not)
- Tendering (used or not, completed or not)
- Construction (completed or not)
- Commissioning (completed or not)

Annex XIII: PCIs not included in the ENTSO-G TYNDP 2013-2022 and National Network Development Plans – gas

In the following table the "X" sign indicates cases where a PCI is not reported as included in the relevant investment plan. "Partially included" is used for PCIs which involve more than one country and are not included in the NDPs of all involved countries. N.a. is used in cases where the project promoter indicated that the information does not apply to the PCI.

PCI code	PCIs NOT included in ENTSOG TYNDP	PCIs NOT included in National Network Development Plan
Transmission		
5.1.1		X
5.1.2.	X	
5.10.		
5.11		
5.12.		X
5.13		
5.14.		
5.15.		X
5.17.1		
5.17.2		
5.18.		
5.19.		
5.2		
5.20.		
5.4		Partially included
5.5		
5.6.		Partially included
5.7.		
5.8.		
5.9.		
6.1.1.		
6.1.10		
6.1.11.		
6.1.2.		
6.1.3.		
6.1.4.		
6.1.5.		

6.1.6.		
6.1.7.		
6.1.8.		
6.1.9.		
6.10.		
6.11.		
6.12.	X (project is cancelled)	
6.13.1		
6.13.2		
6.13.3		
6.14		
6.15.1		
6.15.2		
6.17.		Partially included
6.18		
6.2.1.		
6.2.2.		
6.2.3.		
6.2.4.		
6.2.5.		
6.2.6.		
6.2.7.		
6.2.8.		
6.2.9.		
6.21.		
6.22.1		X
6.23.		
6.3.		
6.4.		
6.5.2.		
6.5.3.		
6.5.4.		Partially included
6.6.		
6.7.		
6.8.1		Partially included
6.8.2.		
7.1.1.		n.a.

7.1.2.		
7.1.3		X
7.1.4		Partially included
7.1.5		
7.2.1.	X	n.a.
7.2.2		X
7.2.3.		X
7.3.1		Partially included
7.4.1.		
7.4.2.		
8.1.1.		
8.2.1		Partially included
8.2.2		
8.2.3.		
8.3.		
8.4		
8.5.		
8.8.		
LNG		
5.16		
5.3.		
6.19		
6.22.2		X
6.5.1.		
6.9.1		X
6.9.2		X
8.1.2.1.		
8.1.2.2.		X
8.1.2.3		X
8.1.2.4.	X	X
8.6.		X
8.7.		
Underground gas storage		
5.1.3	X	
6.20.1.		
6.20.2.		
6.20.3		n.a.

6.20.4		X
7.3.2		
8.2.4		X

Annex XIV: PCI specific information – gas

PCI number	PCI name	Project promoter(s)	Current status	Expected year of commissioning	Current progress	Most important reason for delay or rescheduling (if applicable)
Transmission						
5.1.1	Physical reverse flow at Moffat interconnection point (Ireland/United Kingdom)	BGE(UK) Limited and Gaslink	Under consideration	(information not provided)	On time	n.a.
5.1.2.	Upgrade of the SNIP (Scotland to Northern Ireland) pipeline to accomodate physcial reverse flow between Ballylumford and Twynholm	Premier Transmission LImited (PTL)	Under consideration	2021	Delayed	Correlation with other delayed infrastructure investment
5.10.	PCI Reverse flow interconnection on TENP pipeline in Germany	Fluxys TENP GmbH	Design and permitting	2018	On time	n.a.
5.11	PCI Reverse flow interconnection between Italy and Switzerland at Passo Gries interconnection point	Snam Rete Gas S.p.A.	Under construction	2015	Rescheduled	Correlated to other investment's changes

5.12.	PCI Reverse flow interconnection on TENP pipeline to Eynatten interconnection point (Germany)	Flxys TENP GmbH	Planned, but not yet in design and permitting phase	2018	On time	n.a.
5.13	PCI New Interconnection between Pitgam (FR) and Maldegem (BE)	GRTGaz / Fluxys Belgium	Under construction	2015	On time	n.a.
5.14.	PCI Reinforcement of the French network from South to North on the Arc de Dierrey pipeline between Cuvilly, Dierrey and Voisines (France)	GRTgaz	Under construction	2016	Delayed	Construction works
5.15.	Cluster implementing gas compressor optimisation in the Netherlands including the following PCIs:	Gasunie Transport Services	Design and permitting	2017	On time	n.a.
5.17.1	Interconnection between France and Luxembourg	Creos Luxembourg S.A.; GRTgaz	Planned, but not yet in design and permitting phase	(information not provided)	Delayed	Financing reasons
5.17.2	Reinforcement of the interconnection between Belgium and Luxembourg	CREOS/Fluxys Belgium	Cancelled	n.a.	n.a.	n.a.

5.18.	PCI Reinforcement of the German network to reinforce interconnection capacities with Austria [currently known as Monaco pipeline phase I] (Haiming/Burghausen-Finsing)	bayernets GmbH	Design and permitting	2017	On time	
5.19.	PCI Connection of Malta to the European Gas network (gas pipeline with Italy at Gela and Floating LNG Storage and Re-gasification Unit (FSRU))	Maltese Ministry for Energy and Health	Planned, but not yet in design and permitting phase	2022	Rescheduled	Demand side changes/ uncertainties
5.2	PCI Twinning of Southwest Scotland onshore system between Cluden and Brighouse Bay. (United Kingdom)	BGE(UK) Limited	Design and permitting	2017	On time	n.a.
5.20.	PCI Gas Pipeline connecting Algeria to Italy (Sardinia) and France (Corsica) [currently known as Galsi & Cyréné pipelines]	Edison SpA (Galsi) – GRTgaz SA (Cyrénée)	Design and permitting	2019	Delayed	Permitting - permit granting delay other than law changes and re-routing / re-sizing

5.4	PCI 3rd Interconnection Point between Portugal and Spain	REN-Gasodutos, S.A. and Enagas, S.A.	Planned, but not yet in design and permitting phase	2019	Rescheduled	Demand side changes/ uncertainties
5.5	PCI Eastern Axis Spain-France – interconnection point between Iberian Peninsula and France at Le Perthus [currently known as Midcat]	Enagás, S.A., TIGF, GRTgaz	Planned, but not yet in design and permitting phase	2021	Rescheduled	Correlated to other investment's changes
5.6.	PCI Reinforcement of the French network from South to North – Reverse flow from France to Germany at Obergailbach/Medelsheim Interconnection point (France)	GRTgaz ; GRTgaz Deutschland	Under consideration	2021	Rescheduled	The project has been delayed pending on one hand confirmation of market, currently not favouring LNG in Europe and on the other hand a solution to odorization issues.
5.7.	PCI Reinforcement of the French network from South to North on the Bourgogne pipeline between Etrez and Voisines (France)	GRTgaz	Design and permitting	2019	On time	n.a.
5.8.	PCI Reinforcement of the French network from South to North on the east Lyonnais pipeline between St Avit and Etrez	GRTgaz	Planned, but not yet in design and permitting phase	2021	Rescheduled	Correlated to other investment's changes

5.9.	Reverse-flow interconnection between Switzerland and France	GRTgaz	Design and permitting	2018	On time	n.a.
6.1.1.	Poland – Czech Republic Interconnection [currently known as Stork II] between Libhošť – Hať (CZ/PL) – Kędzierzyn (PL)	NET4GAS, s.r.o.; Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Design and permitting	2019	Delayed	Correlation with other delayed infrastructure investment
6.1.10	Pogórska Wola - Tworzeń pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Design and permitting	2020	Ahead of the schedule	n.a.
6.1.11.	Strachocina - Pogórska Wola pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Design and permitting	2019	On time	n.a.
6.1.2.	Lwówek - Odolanów pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Design and permitting	2018	Delayed	Permitting - environmental issues
6.1.3.	Odolanów compressor station	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Under consideration	n.a.	On time	
6.1.4.	Czeszów - Wierzchowice pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Design and permitting	2016	Delayed	Permitting - environmental issues
6.1.5.	Czeszów - Kiełczów pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Design and permitting	2016	On time	n.a.

6.1.6.	Zdzieszowice - Wrocław	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Design and permitting	2018	On time	n.a.
6.1.7.	Zdzieszowice - Kędzierzyn pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Design and permitting	2018	On time	n.a.
6.1.8.	Tworóg - Tworzeń pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Planned, but not yet in design and permitting phase	2018	On time	n.a.
6.1.9.	Tworóg - Kędzierzyn pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Design and permitting	2018	On time	n.a.
6.10.	Gas Interconnection Bulgaria-Serbia (currently known as IBS)	Ministry of Energy of the Republic of Bulgaria	Design and permitting	2018	Delayed	Tendering process
6.11.	PCI Permanent reverse flow at Greek-Bulgarian border between Kula (BG) - Sidirokastro (EL)	HELLENIC GAS TRANSMISSION SYSTEM OPERATOR (DESFA) SA., BULGARTRANSGAZ EAD.	Commissioned	n.a.	n.a.	n.a.
6.12.	Increase of the transmission capacity of the existing pipelnie from Bulgaria to Greece	Bulgartransgaz EAD	Cancelled	n.a.	n.a.	n.a.

6.13.1	Városföld-Ercsi-Győr pipeline + enlargement of Városföld Compressor station + modification of central odorization	FGSZ Natural Gas Transmission Private Company Limited by Shares	Planned, but not yet in design and permitting phase	2019	Rescheduled	Demand side changes/ uncertainties
6.13.2	Ercsi-Százhalombatta pipeline	FGSZ Natural Gas Transmission Private Company Limited by Shares	Planned, but not yet in design and permitting phase	2019	Rescheduled	Correlated to other investment's changes
6.13.3	Csanádpalota or Algyő compressor station	FGSZ Natural Gas Transmission Private Company Limited by Shares	Planned, but not yet in design and permitting phase	2019	Rescheduled	Demand side changes/ uncertainties
6.14	PCI Romanian - Hungarian reverse flow at Csanádpalota or Algyő	FGSZ Natural Gas Transmission Private Company Limited by Shares	Planned, but not yet in design and permitting phase	2019	Rescheduled	Demand side changes/ uncertainties
6.15.1	Integration of the Romanian Transit and Transmission System	TRANSGAZ	Under consideration	2018	Delayed	Technological reasons (including re-routing and/or re-sizing initiated by the project promoter)

6.15.2	Reverse flow at Isaccea	Transgaz	Under consideration	2018	Delayed	Technological reasons (including re-routing and/or re-sizing initiated by the project promoter)
6.17.	PCI Connection to Oberkappel (AT) from the southern branch of the Czech transmission system	NET4GAS, s.r.o.	Design and permitting	2022	On time	n.a.
6.18	PCI Adriatica pipeline	Snam Rete Gas S.p.A.	Design and permitting	2021	Rescheduled	Environmental reasons/ restrictions
6.2.1.	Poland - Slovakia interconnection	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.; eustream, a.s.	Planned, but not yet in design and permitting phase	2019	On time	n.a.
6.2.2.	Rembelszczyzna compressor station	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Under construction	2016	On time	n.a.
6.2.3.	Rembelszczyzna - Wola Karczewska pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Planned, but not yet in design and permitting phase	2022	On time	n.a.
6.2.4.	Wola Karczewska - Wronów pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Under consideration	2022	On time	n.a.

6.2.5.	Wronów node	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Planned, but not yet in design and permitting phase	2022	On time	n.a.
6.2.6.	Rozwadów - Końskowola - Wronów pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Under consideration	2022	On time	n.a.
6.2.7.	Jarosław - Rozwadów pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Under consideration	2022	On time	n.a.
6.2.8.	Hermanowice - Jarosław pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Under consideration	2022	On time	n.a.
6.2.9.	Hermanowice - Strachocina pipeline	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Design and permitting	2018	On time	n.a.
6.21.	PCI Ionian Adriatic Pipeline (Fieri (AB) – Split (HR))	Plinacro Ltd	Design and permitting	2020	On time	n.a.
6.221	Gas pipeline Constanta (RO) - Arad (RO) - Csanadpalota (HU) [currently known as AGRI]	AGRI Project Company SRL (RO)	Under consideration	2023	Delayed	Feasibility Study finalisation- longer than expected
6.23.	PCI Hungary – Slovenia interconnection (Nagykanizsa – Tornyiszentmiklós (HU) – Lendava (SI) – Kidričevo)	Plinovodi, Družba za upravljanje s prenosnim sistemom, d.o.o; FGSZ Natural Gas Transmission	Planned, but not yet in design and permitting phase	2020	On time	n.a.

		Private Company Limited by Shares				
6.3.	PCI Slovakia - Hungary Gas Interconnection between Veľké Zlievce (SK) - Balassagyarmat border (SK/HU) - Vecsés (HU)	eustream, a.s.; Magyar Gáz Tranzit Zrt.	Commissioned	n.a.	n.a.	n.a.
6.4.	PCI Bidirectional Austrian – Czech interconnection (BACI) between Baumgarten (AT) – Reinthal (CZ/AT) – Břeclav (CZ)	NET4GAS, s.r.o.; GAS CONNECT AUSTRIA GmbH	Design and permitting	2020	Delayed	Permitting - national law changes, including non-implementation of Regulation 347/2013 for enhanced permitting
6.5.2.	Gas pipeline Zlobin – Bosiljevo – Sisak – Kozarac – Slobodnica (HR) (Cluster Krk LNG Regasification Vessel and evacuation pipelines towards Hungary, Slovenia and Italy)	Plinacro Ltd	Design and permitting	2019	On time	n.a.
6.5.3.	LNG evacuation pipeline Omišalj – Zlobin (HR) – Rupa (HR)/Jelšane (SI) – Kalce (SI)	Plinovodi, Družba za upravljanje s prenosnim sistemom, d.o.o.; Plinacro, limited liability company for natural gas transmission	Design and permitting	2022	On time	n.a.
6.5.4.	Gas pipeline Omišalj (HR) – Casal Borsetti (IT) (Cluster Krk LNG	Plinacro Ltd	Under consideration	after 2023	On time	n.a.

	Regasification Vessel and evacuation pipelines towards Hungary, Slovenia and Italy)					
6.6.	PCI Interconnection Croatia – Slovenia (Bosiljevo – Karlovac – Lučko – Zabok – Rogatec (SI))	Plinacro Ltd	Design and permitting	2018	On time	n.a.
6.7.	PCI Interconnection Slovenia – Italy (Gorizia (IT)/Šempeter (SI) – Vodice (SI))	Plinovodi d.o.o.	Design and permitting	2020	Rescheduled	Correlated to other investment's changes
6.8.1	Interconnection Greece – Bulgaria [IGB] between Komotini (EL) – Stara Zagora (BG)	ICGB AD (with shareholders BEH EAD 50%, IGI Poseidon 50%)	Design and permitting	2018	Delayed	Rerouting or resizing due to technical reasons
6.8.2.	Necessary rehabilitation, modernization and expansion of the Bulgarian transmission system.	Bulgartransgaz EAD	Planned, but not yet in design and permitting phase	2019	On time	n.a.
7.1.1.	Gas pipeline from the EU to Turkmenistan via Turkey, Georgia, Azerbaijan and the Caspian [currently known as the combination of the "Trans Anatolia Natural Gas Pipeline" (TANAP), the "Expansion of the South-Caucasus Pipeline" (SCP-(F)X) and the	Southern Gas Corridor Closed Joint Stock Company	Under construction	2019	On time	n.a.

	"Trans-Caspian Gas Pipeline" (TCP)]					
7.1.1.	Trans-Caspian Gas Pipeline (TCP)	W-Stream Caspian Pipeline Company Limited	Under consideration	2019	Rescheduled	Most of the listed differences between the 2013 and the 2015 timetable occured due to a different structuring and higher level of detail of the provided information in the new form. The version from 2013 was transformed into the new template as carefully as possible. The only significant change is the shift of the FID to the end of the tendering process. Since Pre-feasibility studies for TCP already existed before 2013, the consideration phase also started that early. Please note that the provided implementation timetable is valid for the first stage of the project development ("early gas"), which is expected to deliver 8 to 10 Bcm/a.
7.1.2.	Gas Compression Station at Kipi (EL)	HELLENIC GAS TRANSMISSION SYSTEM OPERATOR (DESFA) SA.	Planned, but not yet in design and permitting phase	2020	Rescheduled	Demand side changes/ uncertainties
7.1.3	Trans Adriatic Pipeline (TAP)	TAP AG	Design and permitting	2020	Rescheduled	Supply side changes/ uncertainties

7.1.4	Gas pipeline from Greece to Italy via Adriatic Sea [currently known as the "interconnector Turkey - Greece - Italy" (ITGI)]	IGI POSEIDON S.A. and DESFA S.A.	Design and permitting	2020	Rescheduled	Supply side changes/ uncertainties
7.1.5	Gas Pipeline from Bulgaria to Austria via Romania and Hungary.	TRANSGAZ	Design and permitting	2019	On time	n.a.
7.2.1.	Trans-Caspian Gas Pipeline (TCP)	W-Stream Caspian Pipeline Company Limited	Under consideration	2019	Rescheduled	Most of the listed differences between the 2013 and the 2015 timetable occured due to a different structuring and higher level of detail of the provided information in the new form. The version from 2013 was transformed into the new template as carefully as possible. The only significant change is the shift of the FID to the end of the tendering process. Since Pre-feasibility studies for TCP already existed before 2013, the consideration phase also started that early. Please note that the provided implementation timetable is valid for the first stage of the project development ("early gas"), which is expected to deliver 8 to 10 Bcm/a.
7.2.2	Upgrade of the pipeline between Azerbaijan and Turkey via Georgia, SCP FUTURE EXPANSION	Azerbaijan South Caucasus Pipeline Ltd.	Planned, but not yet in design and permitting phase	(information not provided)	Rescheduled	Supply side changes/ uncertainties

7.2.3.	White Stream	White Stream Limited	Under consideration	2022	Rescheduled	Correlated to other investment's changes
7.3.1	Pipeline from offshore Cyprus to Greece mainland via Crete	IGI POSEIDON S.A.	Planned, but not yet in design and permitting phase	2020	Rescheduled	Supply side changes/ uncertainties
7.4.1.	Gas compression station at Kipi (EL) with a minimum capacity of 3bcm/a	Hellenic Gas Transmission System Operator (DESFA) SA.	Planned, but not yet in design and permitting phase	2020	Rescheduled	Demand side changes/ uncertainties
7.4.2.	Interconnector between Turkey and Bulgaria	Bulgartransgaz EAD	Planned, but not yet in design and permitting phase	2018	On time	n.a.
8.1.1.	Interconnector between Finland and Estonia "Balticconnector"	Gasum Oy and AS EG Võrguteenus	Design and permitting	2020	Rescheduled	Demand side changes/ uncertainties
8.2.1	Enhancement of Latvia-Lithuania interconnection	JSC "Latvijas Gaze", AB "Amber Grid"	Planned, but not yet in design and permitting phase	2020	(information not provided)	(information not provided)
8.2.2	Enhancement of Estonia-Latvia interconnection	AS EG Võrguteenus	Design and permitting	2019	Rescheduled	Correlated to other investment's changes

8.2.3.	Capacity enhancement of Klaipeda-Kiemenai pipeline in Lithuania	AB Amber Grid	Under construction	2015	On time	n.a.
8.3.	Poland - Denmark interconnection "Baltic Pipe"	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.;	Under consideration	n.a.	n.a.	n.a.
8.4	PCI Capacity expansion on DK-DE border	Gasunie Deutschland Transport Services GmbH	Under construction	2016	On time	n.a.
8.5.	Poland - Lithuania interconnection [currently known as "GIPL"]	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.; AB Amber Grid	Planned, but not yet in design and permitting phase	2019	On time	n.a.
8.8.	Upgrade of entry points Lwówek and Włocławek of Yamal-Europe pipeline in Poland	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Under consideration	n.a.	On time	n.a.
LNG						
5.16	PCI Extension of the Zeebrugge LNG terminal	Fluxys LNG	Design and permitting	2019	Delayed	Financing reasons
5.3.	PCI Shannon LNG Terminal located between Tarbert and Ballylongford (Ireland)	Shannon LNG Limited	Design and permitting	2019	Delayed	Risks related to the national regulatory framework or future regulatory decisions

6.19	PCI Onshore LNG Terminal in the Northern Adriatic (IT)	Gas Natural Rigassificazione Italia (Gas Natural Fenosa Group)	Design and permitting	2021	Delayed	Permitting - permit granting delay other than law changes and re-routing / re-sizing
6.22.2	LNG Terminal in Constanta (RO)	AGRI LNG Project Company SRL (RO)	Under consideration	2023	Delayed	Feasibility Study finalisation-longer than expected
6.5.1.	LNG Regasification vessel in Krk (HR)	LNG Hrvatska d.o.o. za poslovanje ukapljenim prirodnim plinom	Design and permitting	2019	Rescheduled	The project was rescheduled because of the change in the development concept. Instead of the migration concept (as described in item 20) it is planned to construct a classic onshore LNG terminal. It also has to be mentioned that even though all necessary documents are prepared and submitted to the relevant national authority, there is a slight delay in obtaining the location permit which could result in further delay of latter project activities.
6.9.1	Independent Natural Gas System LNG Greece	GASTRADE S.A.	Design and permitting	2017	Delayed	Permitting - permit granting delay other than law changes and re-routing / re-sizing

6.9.2	Aegean LNG Import Terminal	Public Gas Corporation, Greece, DEPA S.A.	Design and permitting	2017	Rescheduled	The Action has not been launched according to the original time schedule mainly due to the late determination of the precise location of the project, resulting from a beyond scheduled preparation of the draft EIA study. It should be noted that the proposed location is linked to DEPA's continuous efforts to respond to the demands and concerns of the local communities that have questioned in the past the examined locations of the FSRU project. To this note, the Environmental Impact Assessment Study was delayed to include detailed reference to the said concerns and at the same time ongoing and future studies will be implemented to include an even more extensive report on safety and other matters. The project has also been awarded funding from the CEF program and the 2014 call. DEPA is waiting for the final hard copy of the grant decision for signature. Ultimately, the project's overall time schedule has not been severely impacted and with the necessary actions the above obstacles can be overcome.

8.1.2.1.	Finngulf LNG Terminal	Gasum Oy	Under consideration	2023	Rescheduled	Main reason to rescheduling is the lack of market demand and non-existing commercial feasibility of the LNG terminal investment. Gasum needs redo the 2013 market potential analysis and the market testing based on the market potential analysis. The capacity and location of the terminal must be re-considered based on the results of the before mentioned commercial surveys. The commercial and technical feasibility of FSU and FSRU implementation must be performed in order to find the most economical way of the investement implementation. The benefits to the market are equal but delayed according the foreseen implementation schedule.
8.1.2.2.	Paldiski LNG	Balti Gaas Plc	Design and permitting	2019	Delayed	When the project was first entered into the PCI list, it was expected that the application for CEF grant

						can be made in 2014. Due to the situation in the Baltic Region, whereby there are three competing LNG projects in the PCI and the ensuing political discussions on the topic, the project was prevented from submitting the said application in 2014. It will now attempt to file in 2015. It remains to be seen, if this is the final delay in this matter. There are costs for the promoter pursuant to the delay, but not to the project. Within the same discussions, the technical specifications expected from the projects by the local authorities have also somewhat changed, resultin in the focus shifting to phase 1 only at this stage.
8.1.2.3	Tallinn LNG Terminal	Vopak	Design and permitting	2017	Delayed	Permitting - permit granting delay other than law changes and re-routing / re-sizing
8.1.2.4.	Latvian LNG	AS Latvenergo	Under consideration	n.a.	Delayed	Delay takes place due to the decision of the EC which was in favour of Regional LNG terminals to be located in Estonia and Finland.
8.6.	Gothenburg LNG terminal in Sweden	Swedegas AB	Design and permitting	2017	Delayed	Slow market development in the region. The SECA directive was expected to have a bigger impact on the market than it actually did. Low oil price is hampering development short-term. Shipping industry under pressure, delaying investments in new ships. Lack of supporting national policy

						framework.
8.7.	Capacity extension of Świnoujście LNG terminal in Poland	Operator Gazociągów Przesyłowych GAZ-SYSTEM S.A.	Planned, but not yet in design and permitting phase	n.a.	On time	
Underground gas storage						
5.1.3	Development of the Islandmagee Underground Gas Storage (UGS) facility at Larne (Northern Ireland)	Islandmagee Storage Ltd (IMSL)	Design and permitting	2021	Delayed	Financing reasons
6.20.1.	Construction of new gas storage facility on the territory of Bulgaria	Bulgartransgaz EAD	Under consideration	n/a	On time	
6.20.2.	Chiren UGS expansion	Bulgartransgaz EAD	Planned, but not yet in design and permitting phase	2021	On time	
6.20.3	South Kavala Storage in Greece	Hellenic Republic Asset Development Fund (HRADF)	Under consideration	2020	Delayed	A study was performed in order to estimate the economic attractiveness of the project. This has not been clearly demonstrated, due to the law differential between the gas prices in summer and in winter. For this reason, an alternative way of return has to be agreed with RAE, with the relevant consultation still ongoing.

6.20.4	Depomures	GDF SUEZ Energy Romania SA	Design and permitting	2018	Delayed	Financing reasons
7.3.2	Mediterranean Gas Storage (LNG Storage in Cyprus)	Ministry of Energy, Commerce, Industry and Tourism (MECIT)	Design and permitting	2024	Rescheduled	Supply side changes/ uncertainties
8.2.4	Modernization and expansion of Incukalns Uderground Gas Storage	JSC "Latvijas Gaze"	Planned, but not yet in design and permitting phase	2025	Delayed	Financing reasons