

**OPINION No 06/2019  
OF THE AGENCY FOR THE COOPERATION OF  
ENERGY REGULATORS**

**of 15 January 2019**

**ON THE IMPLEMENTATION OF THE EU ELECTRICITY TEN-YEAR  
NETWORK DEVELOPMENT PLAN**

THE AGENCY FOR THE COOPERATION OF ENERGY REGULATORS,

Having regard to Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators<sup>1</sup>, and, in particular, Articles 6(7) and 6(8) thereof,

Having regard to the favourable opinion of the Board of Regulators of 12 December 2018, issued pursuant to Article 15(1) of Regulation (EC) No 713/2009,

Whereas:

**1. INTRODUCTION**

- (1) Articles 6(7) and 6(8) of Regulation (EC) No 713/2009 task the Agency with monitoring the progress regarding the implementation of investments to create new interconnection capacity and the implementation of the electricity Union-wide ten-year network development plan ('EU TYNDP') adopted by the European Network of Transmission System Operators for Electricity ('ENTSO-E').
- (2) In addition, recital (7) of Regulation (EC) No 713/2009 emphasises the Agency's essential role in monitoring regional cooperation between transmission system operators ('TSOs') as well as the execution of the tasks of ENTSO-E, to ensure that the cooperation between TSOs proceeds in an efficient and transparent way for the benefit of the internal market in electricity.
- (3) This Opinion assesses the transmission investments in the EU TYNDP 2016<sup>2</sup> and transmission investments which are not included in the EU TYNDP 2016, but included in a relevant National Development Plan ('NDP') and identified in the

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<sup>1</sup> OJ L 211, 14.8.2009, p.1.

<sup>2</sup> For the purpose of the Opinion the EU TYNDP 2016 is considered as the package of documents published by on 20 December 2016. The EU TYNDP 2016 investments are listed in the so called 'Project Assessment Sheets'. <https://docstore.entsoe.eu/Documents/TYNDP%20documents/TYNDP%202016/projects/TYNDP2016-project-sheets.pdf>

Agency's Opinion No 08/2017 on electricity projects in the NDPs and the EU TYNDP as having cross-border relevance.

- (4) In its Opinions No 01/2017 on the draft EU TYNDP 2016 and No 08/2017, the Agency reviewed the draft EU TYNDP 2016 and requested amendments, including the removal of specific investments<sup>3</sup>. In this regard, the information on the investments in the EU TYNDP 2016 has to be read in conjunction with the Agency's Opinions.
- (5) In order to detect inconsistencies or other cross-border problems in the development of interconnections, the Agency requested the national regulatory authorities ('NRAs') to provide information on the part of each investment which is implemented under their own jurisdictions (i.e. 'national part of an interconnection'). Therefore, the monitoring is performed at national investment level (i.e. for each internal investment or national part of an interconnection).

## 2. PROCEDURE

- (6) On 21 August 2018, the Agency invited NRAs from 31 jurisdictions, including all EU Member States (Northern Ireland and Great Britain as separate jurisdictions), Norway and Switzerland<sup>4</sup> to participate in the monitoring activity by providing inputs on the progress of their own national transmission investments.
- (7) By 30 November 2018, 29 NRAs provided input to the Agency via an online data collection tool (EU Survey) and/or by email. The number and rate of reported investments per jurisdiction is presented in Table 1.

Table 1: Number of relevant transmission investments (national parts) and rate of reporting per jurisdiction<sup>5</sup>

Jurisdiction	Number of relevant national investments	Reported national investments
Austria	13	13 (100%)
Belgium	21	21 (100%)
Bulgaria	7	7 (100%)
Croatia	11	11 (100%)
Cyprus	1	1 (100%)

<sup>3</sup> The Agency's Opinion No 01/2017 and No 08/2017 requested ENTSO-E to remove the investments in EU TYNDP clusters 261 'Long-term conceptual "West-East corridor" in North Sea' (incl. investment 1256), 271 'Long term conceptual project "Northern Seas offshore grid infrastructure"' (incl. investment 1264), 282 'ASEP (France, Italy and Spain) (incl. investment 1297), and investments 8 'Seia – Penela', 478 'Penela – Paraimo / Batalha', 481 'Penela' of EU TYNDP cluster 2 (Portugal) from the EU TYNDP 2016.

<sup>4</sup> Norway and Switzerland are observers in the Agency's working structures and they were invited to participate in the monitoring activity on a voluntary basis.

<sup>5</sup> Transmission investments which were already commissioned or cancelled before the issuance of the EU TYNDP 2016 are out of the scope of this Opinion. For those investments please refer to previous EU TYNDPs, as well as to the Agency's Opinions No 16/2014 and No 08/2016.

Czech Republic	15	15 (100%)
Denmark	12	12 (100%)
Estonia	8	8 (100%)
Finland	4	4 (100%)
France	29	29 (100%)
Germany	82	82 (100%)
Greece	12	12 (100%)
Hungary	7	7 (100%)
Italy	31 <sup>6</sup>	31 (100%)
Ireland	22	22 (100%)
Latvia	8	8 (100%)
Lithuania	7	7 (100%)
Luxembourg	2	2 (100%)
Malta	0	N/A
Netherlands	13	13 (100%)
Norway	5	5 (100%)
Poland	17	17 (100%)
Portugal	13	13 (100%)
Romania	12	12 (100%)
Slovak Republic	4	4 (100%)
Slovenia	4	4 (100%)
Spain	35	35 (100%)
Sweden	7	7 (100%)
United Kingdom (Great Britain)	66	66 (100%)
United Kingdom (Northern Ireland)	6	6 (100%)
Switzerland	22	0
<b>TOTAL</b>	<b>496</b>	<b>474 (96%)</b>

### 3. ASSESSMENT OF THE PROGRESS OF TRANSMISSION INVESTMENTS

#### 3.1. General comment

- (8) According to Article 6(8) of Regulation (EC) No 713/2009, the Agency shall investigate the reasons for any inconsistencies between the EU TYNDP and its implementation and make recommendations to the TSOs, NRAs or other competent bodies concerned with a view to implementing the investments in accordance with the EU TYNDP.
- (9) In the Agency's view, the monitoring of the implementation of investments in electricity transmission networks should, in principle, include an evaluation over time

<sup>6</sup> Regarding the EU TYNDP 2016 investment item 28.70 '*Villanova (IT) - Lastva (ME)*', the Italian NRA reported that the investment has been split into 2 stages (1<sup>st</sup> stage: 600 MW, 2<sup>nd</sup> stage: additional 600 MW) and they constitute 2 separate investments.

of four fundamental aspects, namely expected benefits, costs, increase of transfer capacity, and the status and progress of each investment<sup>7</sup>.

- (10) This Opinion focuses on the evolution of the status and progress of the investments. Regarding other aspects, please refer to the Agency's Opinions No 16/2014 and 08/2016 on the implementation of electricity transmission investments as well as on the Agency's consolidated reports on the progress of projects of common interest<sup>8</sup>.
- (11) To that end, the Agency compared the information in the draft EU TYNDP 2016 for each investment (where applicable, as amended by the Agency's Opinions No 01/2017 and No 08/2017 in January and April 2017) to the information provided by the NRAs in the framework of this monitoring activity (from August until November 2018).

### 3.2. Completeness of data

- (12) 402 investments are within the scope of this monitoring activity (294 are internal investments and 108 are interconnections), which correspond to 496 national investments (as the interconnections consist of two or more national investments, while some of them may involve a jurisdiction out of the scope of the current analysis). Out of 496 national investment, NRAs provided information on 474 of them (i.e. 96%)<sup>9</sup>.
- (13) Based on the provided data, the Agency concludes the following with respect to the completeness of the data:
- (a) information regarding the status of the investment is available for 99% of the assessed national parts<sup>10</sup>;
  - (b) information regarding the commissioning date of the investment is available for 92% of the assessed national parts (excluding national parts which are cancelled)<sup>11</sup>;
  - (c) information regarding the progress of the investment is available for 90% of the assessed national parts (excluding national parts which are either cancelled or commissioned).

<sup>7</sup> Agency's Opinion No 16/2014, p. 2.

<sup>8</sup> The Agency's PCI monitoring reports (2015-2018) are available on its website:

[https://www.acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Pages/Publications.aspx](https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Pages/Publications.aspx)

<sup>9</sup> With the exception of the Swiss NRA, which provided no input, all other NRAs – from the EU Member States and Norway – provided input on all the relevant national investments under their jurisdictions.

<sup>10</sup> For 3 national investments in Austria, i.e. EU TYNDP 2016 investment items 210.1380 'Wurmlach (AT) - Somplago (IT)', 198.136 'Bodensee study: border (DE-AT) – CH' and 198.986 'Wullenstetten – border area (DE-AT)', the Austrian NRA communicated to the Agency that it has no information about the status of these investments since they are not included in the Austrian NDP.

<sup>11</sup> The list of national investments with missing commissioning date information can be obtained from the extract of the Agency's TYNDP monitoring database (excel spreadsheet) published together with this Opinion. [https://www.acer.europa.eu/Official\\_documents/Acts\\_of\\_the\\_Agency/Opinions/AccompanyingdocumenttotheopinionontheimpEUelectric/Extract-of-ACER-TYNDP-monitoring-database-12-12-2018.xlsx](https://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Opinions/AccompanyingdocumenttotheopinionontheimpEUelectric/Extract-of-ACER-TYNDP-monitoring-database-12-12-2018.xlsx)

### 3.3. Status of the investments

- (14) In the Agency's view, an investment should be classified by one of the following status categories: 'commissioned', 'cancelled', 'under construction', 'in permitting', 'planned but not yet in permitting' or 'under consideration'<sup>12</sup>.
- (15) For 20 national investments (4%) the status data is not available either in the EU TYNDP 2016 and/or it was not provided by the NRAs. 124 national investments (26%) indicated progress in their status compared to April 2017<sup>13</sup>. The remaining investments either did not change their status (277 national investments or 58%) or even regressed (53 national investments or 12%).
- (16) The 'reverse progress' of the investments can be typically explained by either the cancellation of the investment, the removal of the investment from the NDP (due to its immaturity or less urgent need for it), or by changes in the technical scope of the investment. However, in some cases, it appears that the indicated 'regression' is not a real change in status, but the result of former misapplication of the Agency's status definitions, in particular regarding the 'under consideration' and 'planned, but not yet in permitting' statuses<sup>14</sup>.
- (17) The status of the national investments in the EU TYNDP 2016 and the current status of the investments as reported by the NRAs is shown in Figure 1 and 2 respectively. The striking feature of these Figures is that most national investments are under consideration and their share within all national investments is even increased over the past 2 years (from 38% to 41%) due to regression of some investments, which were previously in a more advanced status. For information on the evolution of the status of each investment, please refer to the extract of the Agency's TYNDP monitoring database (excel spreadsheet) published together with this Opinion.

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<sup>12</sup> This practice is in line with the Agency's previous monitoring activities on the implementation of transmission investments in the electricity sector and on the progress of projects of common interest.

<sup>13</sup> In those instances, where the NRA(s) review of the investments in the draft EU TYNDP 2016 and in the NDPs confirmed the status indicated in the draft EU TYNDP 2016, that status is considered still valid as of April 2017.

<sup>14</sup> For Agency's definitions on these 2 status categories and their fundamental difference please refer to the Agency's Opinion No 05/2017, p. 19-20.

Figure 1: Status of the national investments in EU TYNDP 2016

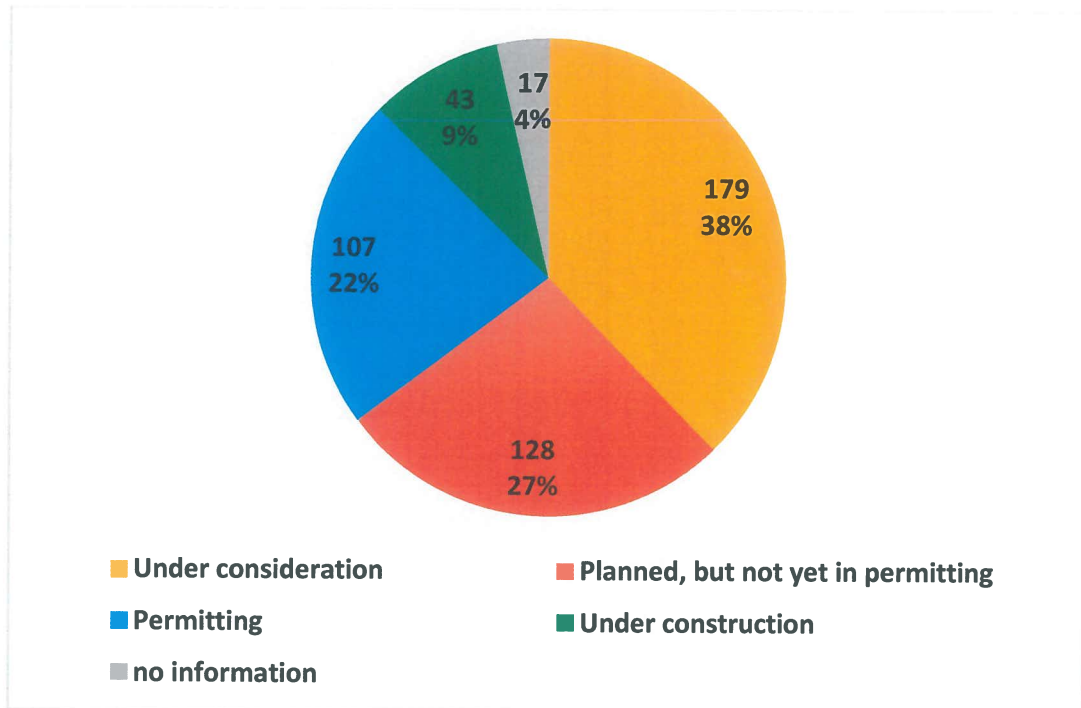
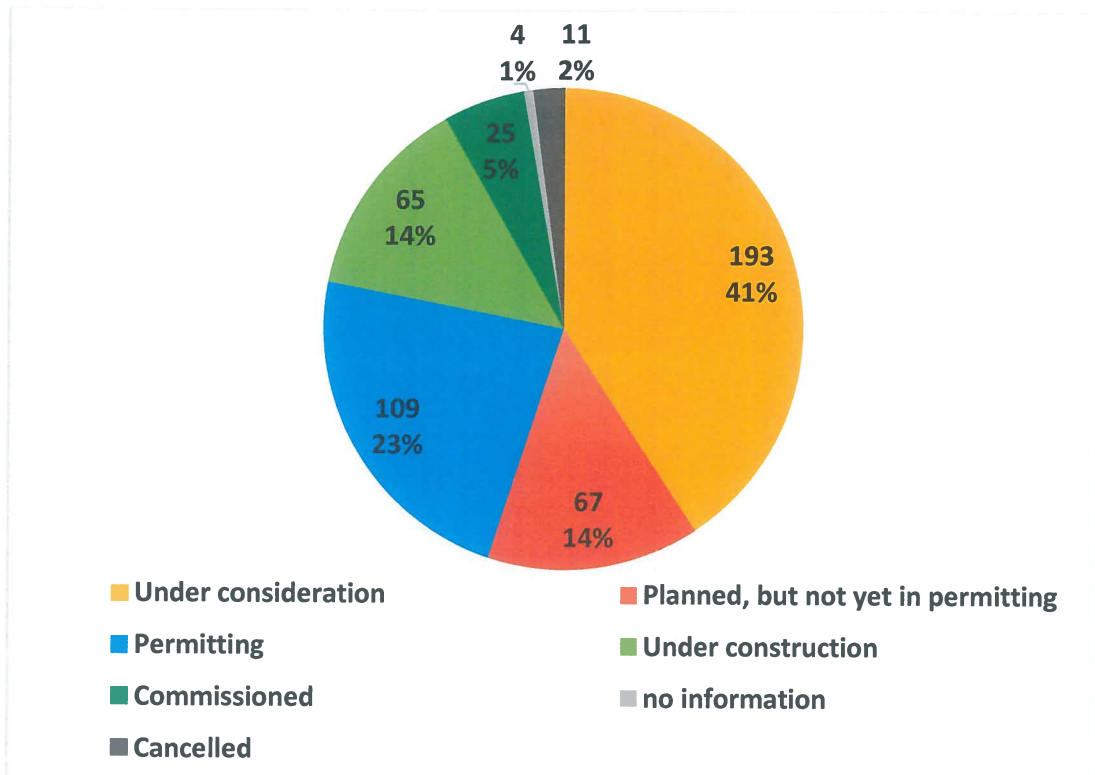


Figure 2: Current status of the national investments as reported by NRAs



- (18) Since April 2017, 11 national investments (5 in the Baltic region, 3 in France, 1 Austria-Italy interconnection and 1 in Slovenia) have been cancelled: 3 due to changes to the overall planning inputs, 3 due to economic reasons, 1 due to re-prioritisation of the investment's implementation against other investments of the project promoter, 2 due to changes regarding other related infrastructure investments, 1 due to changes in the overall planning inputs and 1 due to environmental problems.
- (19) The Agency notes that the number of cancelled investments in the EU TYNDP 2016 is significantly lower than the number of cancelled investments in the EU TYNDP 2014<sup>15</sup>, which could indicate improved robustness of the EU TYNDP planning over time. The list of cancelled national investments is presented in Table 2.

Table 2: Cancelled national investments reported by NRAs

Jurisdiction / national part	Investment name	Internal / Interconnection	EU TYNDP-investment ID	Status in EU TYNDP 2016	Reason of cancellation
Austria	Lienz (AT) – Veneto region (IT)	Interconnection	26.63	Planned, but not yet in permitting	Changes due to other related / enabler infrastructure investments
Italy	Lienz (AT) – Veneto region (IT)	Interconnection	26.63	Planned, but not yet in permitting	Changes due to other related investments
France	Cornier - Chavalon 400 kV	Interconnection	199.1051	Under consideration	The studies showed that the investment was not economically sound
France	new 400-kV France-Switzerland interconnection	Interconnection	274.1226	Under consideration	The studies showed that the investment was not economically sound
France	New HVDC cross-border	Interconnection	275.1227	Under consideration	The studies showed that

<sup>15</sup> The Agency's TYNDP monitoring exercise in 2016 identified 52 cancelled investment components (i.e. national parts of an investment). Cf. Section 4 of the Agency's Opinion No 08/2016, p. 20.

	link between France and Switzerland				the investment was not economically sound
Latvia	TEC1-TEC2	Internal	170.1063	Under consideration	Re-prioritization of the project's implementation against other investments of the project promoter
Lithuania	Aizkraukle (LV)- Panevėžys (LT)	Interconnection	170.1065	Under consideration	Changes due to the overall planning inputs <sup>16</sup>
Lithuania	Back-to-back in Alytus	Internal	123.1038	Planned, but not yet in permitting	Changes due to the overall planning inputs <sup>17</sup>
Lithuania	Viskali (LV) - Musa (LT)	Interconnection	170.1064	Under consideration	Changes due to the overall planning inputs <sup>18</sup>
Lithuania	330 kV line Visaginas (LT) – Kruonis (LT)	Internal	170.380	Under consideration	Changes due to the overall planning inputs
Slovenia	Udine Sud (IT) - Okroglo (SI)	Interconnection	N/A <sup>19</sup>	Under consideration	Environmental problems

- (20) Since April 2017, 25 national investments have been commissioned, out of which 21 are internal lines and 4 are part of an interconnection. 6 commissioned national investments are in Germany, 4 are in the Iberian peninsula (Portugal, Spain), 3 in Poland, 2 in Belgium, 2 in the Czech Republic, 2 in Italy, 2 in the United Kingdom and the remaining 4 commissioned investments are located in France, Greece,

<sup>16</sup> The Lithuanian NRA indicated that the investment was related to the Baltic synchronisation project. The new synchronisation connection plan does not include this investment.

<sup>17</sup> *Idem.*

<sup>18</sup> *Idem.*

<sup>19</sup> No EU TYNDP investment item number as the investment was not included in the draft EU TYNDP 2016. The Agency's Opinion No 08/2017 identified the investment as having cross-border relevance.



Luxemburg and Romania. More information about the commissioned national investments is provided in Table 3.

Table 3: Commissioned national investments reported by NRAs

Jurisdiction / national part	Investment name	Internal / Interconnection	EU TYNDP-investment ID	Commissioning date
Belgium	BRABO I: PST 4 and upgrade 150 kV Doel – Zandvliet	Internal	24.609	2016
Belgium	STEVIN: Horta (Zomergem) – Stevin (Zeebrugge)	Internal	75.444	2017
Czech Republic	New 400 kV OHL Výškov - Čechy-střed	Internal	55.302	2016
Czech Republic	PST Hradec	Internal	177.889	2017
France	Geneva's lake (West)	Interconnection	22.57	2018
Germany	Offshore-Wind connection (Nordergründe)	Internal	42.160	2016
Germany	DolWin2	Internal	42.654	2016
Germany	Südwestkuppelleitung	Internal	205.193	2016
Germany	New 380 kV double circuit OHL Audorf - Hamburg/Nord	Internal	251.148	2017
Germany	PST Vierraden	Internal	94.992	2018
Germany	Upgrade of existing 220 kV line Vierraden-Krajnik to double circuit 400 kV OHL.	Interconnection	94.139	2018
Greece	400kV OHL Filippi (GR) – Lagadas (GR)	Internal	147.244	2016
Italy	Uprate Rondissone (IT) -Trino (IT)	Internal	21.922	2017

Italy	Udine Ovest (IT) - Redipuglia (IT)	Internal	N/A <sup>20</sup>	2017
Luxembourg	Luxembourger Ring	Internal	40.447	2016
Poland	Kozienice- Siedlce Ujrzanów	Internal	123.374	2018
Poland	Vierraden (DE)- Krajnik (PL)	Interconnection	94.139	2018
Poland	double-circuit OHL Ostrołęka - Olsztyn Małki	Internal	123.335	2018
Portugal	Pedralva - Ponte de Lima	Internal	1.3	2017
Romania	New 400 kV OHL Resita (RO) - Pancevo (RS)	Interconnection	144.238	2018
Spain	Mezquita- Morella	Internal	203.1069	2016
Spain	PST Arkale	Internal	184.594	2017
Spain	Uprate D.Rodrigo - Aljarafe	Internal	269.1228	2018
United Kingdom (Great Britain)	Sellindge - Dungeness Reconductoring	Internal	74.450	2016
United Kingdom (Great Britain)	Western HVDC Link	Internal	77.452	2017

### 3.4. Progress in the implementation of the investments and their expected commissioning date

- (21) In line with the previous monitoring activities of the Agency, the Agency requested NRAs to indicate, for each national investment, whether it was on track<sup>21</sup> compared to the commissioning date planned in the draft EU TYNDP 2016 - or where different - to the commissioning date communicated by NRAs to the Agency (see Agency's Opinion No 08/2017)<sup>22</sup>.

<sup>20</sup> *Idem.*

<sup>21</sup> For a definition of the different progress categories, please refer to Section 5 of the Agency's Opinion No 16/2014.

<sup>22</sup> For national investments, which were not included in the draft EU TYNDP 2016, but considered by the NRA as having cross-border relevance, the currently expected commissioning date was compared to the commissioning date provided by the NRAs for the Agency's Opinion No 08/2017.

- (22) 211 out of 395 national investments (53%) are on time or even ahead of schedule compared to the planning of the EU TYNDP 2016, whereas 81 national investments (21%) encountered delays and 102 (26%) were rescheduled<sup>23</sup>.
- (23) Most of the delayed national investments are in permitting status (63%), followed by investments in under construction (18%), planned but not yet in permitting status (12%), and under consideration (7%).
- (24) As shown in Table 4, the most frequently reported main reasons (44%) for delay are related to permit granting, which is in line with the findings of previous monitoring<sup>24</sup>.

Table 4: Main reasons for delay

Main reasons for delay	Number of national investments
PERMITTING - Delays due to other permit granting reasons	16
PERMITTING - Delays due to environmental problems / delays related to obtaining environmental permits	11
PERMITTING - National law changes affecting permitting	6
PERMITTING - Delays in the preparation of necessary application files by the project promoter / delays due to incompleteness of application to NRAs	3
Delays due to risks related to the national regulatory framework or regulatory opposition	7
Delays in construction works	7
Delays due to lawsuits and court proceedings	5
Delays due to technological reasons	4
Delayed project implementation on the project partner's side	4
Delays related to acquisition of or access to land	2
Delays due to correlation with other delayed infrastructure investments	2
Delays due to adaptations following public consultation process	2
Delay related to finalisation of agreements and coordination across borders	2
Delays due to financing reasons	1
Strong social opposition	1
Delays in progressing with studies due to complex territory	1
Delays due to TSO prioritises applications for connection from interconnectors with a PCI status	1

<sup>23</sup> Commissioned and cancelled national investments are excluded from this assessment. In addition, for 43 national investments, the relevant NRA did not provide any information, thus only 395 national investments are considered for the assessment of progress in national investments.

<sup>24</sup> The most frequently reported main reason for delay was related to permitting both during the Agency's monitoring activity of electricity transmission investments in 2014 and in 2016.

Delayed sub-sea surveys due to the overall complexity.	1
Other (not specified) / various reported reasons	5
<b>TOTAL</b>	<b>81</b>

- (25) For rescheduling, the overall picture is remarkably different. Most rescheduled national investments are under consideration (66%), followed by planned, but not yet in permitting (22%), in permitting status (8%) and under construction (4%).
- (26) As shown in Table 5, the most frequently reported main reason (40%) for rescheduling is related to the initial stage of the investment, where the implementation plan was still preliminary. For the list of delayed and rescheduled investments and the main reasons for delay or rescheduling, please refer to Annex I and II respectively.

Table 5: Main reasons for rescheduling

<b>Main reasons for rescheduling</b>	<b>Number of national investments</b>
Project was still at an initial stage and previous implementation plan was preliminary	41
Project on hold	14
Changes in the overall planning data input and consequent impact on needs or benefits of the investment	9
Changes on the generation side (in all, but 7 instances in relation to new renewable-based generation)	9
Changes due to complementarity with other rescheduled transmission investments	6
Commissioning date was underestimated in last TYNDP	5
Changes in schedule due to possible interruptions of the lines	3
Due to ongoing / additional studies	7
Changes due to priority given to other transmission investments	1
Changes in the estimated costs	1
Included in project as contestable build	1
Other projects at the Italian Northern border	1
Investment is substituted by another	1
Other (not specified)	3
<b>TOTAL</b>	<b>102</b>

### **3.5. Uncertainties regarding investments under consideration compared to more advanced investments**

- (27) The Agency notes that the share of rescheduled investments is distributed differently in the early stage of development compared to more advanced investments. 101 out of 193 national investments under consideration (52%) are rescheduled or their progress cannot be assessed by the NRA due to lack of sufficient data. In the case of more advanced statuses, the share of rescheduled national investments (or investments

with unclear progress) is significantly lower: 35% for national investments in planned, but not yet in permitting status, 10% for investments in permitting status, 8% for investments under construction.

- (28) The Agency also notes that for 33 (17%) national investments under consideration, the expected commissioning date could not be provided by the NRA(s), in most cases due to non-inclusion of the investment in the latest NDP. For 92 (48%) additional national investments, the commissioning date was defined beyond a ten-year's time-horizon (i.e. after 2028).

### 3.6. Asymmetrically developed interconnections across borders

- (29) The Agency finds that 25 interconnection investments (around 25% of the interconnections which have been fully monitored in this Opinion) have a different status across the borders. This is not necessarily an inconsistency, but could point to limited cross-border coordination. In 3 instances, the difference between the corresponding national parts is more than one status. In 3 instances, one national part of the interconnection is cancelled, while the other national part is still under consideration, or planned, but not yet in permitting. The interconnection investments with different statuses or commissioning dates on the two side of the border are listed in Table 6.

Table 6: Interconnections with different status per national part

Investment name	EU TYNDP investment ID	Country / jurisdiction 1	Status in jurisdiction 1	Country / jurisdiction 2	Status in jurisdiction 2
Udine Sud (IT) - Okroglo (SI)	N/A <sup>25</sup>	Italy	Under consideration	Slovenia	Cancelled
HVDC interconnection between Italy and Slovenia	150.616	Slovenia	Under consideration	Italy	Permitting
Cirkovce (SI) - Heviz (HU), Žerjavenec (HR)	141.223	Hungary	Already constructed <sup>26</sup>	Slovenia	Permitting
Reinforcement Tartu (EE)-Valmiera	170.1010	Estonia	Planned, but not yet in permitting	Latvia	Permitting

<sup>25</sup> The investment is not included in the EU TYNDP 2016.

<sup>26</sup> The Hungarian NRA indicated that the Hungarian part of the interconnection has been already constructed, connection works and commissioning is feasible once the Slovenian part is constructed.

(LV) 330 kV OHL					
Reinforcement Tsirgulina (EE) and Valmiera (LV) 330 kV OHL	170.1011	Estonia	Planned, but not yet in permitting	Latvia	Permitting
Viskali (LV) - Musa (LT)	170.1064	Lithuania	Cancelled	Latvia	Under consideration
Aizkraukle (LV) - Panevėžys (LT)	170.1065	Lithuania	Cancelled	Latvia	Under consideration
New 400 kV line in Denmark and Germany to upgrade transfer capacity between DK1 & DE	39.144	Denmark	Permitting	Germany	Under construction
Isar (DE) - St Peter (AT)	47.212	Austria	Under construction	Germany	Permitting
Greenlink	286.1385	United Kingdom (Great Britain)	Permitting	Ireland	Planned, but not yet in permitting
Vöhringen (DE) - Westtirol (AT)	47.689	Austria	Planned, but not yet in permitting	Germany	Under consideration
New 2x400 kV interconnection between Gabčíkovo (SK) and Gönyü (HU)	48.214	Hungary	Planned, but not yet in permitting	Slovak Republic	Permitting
Pleinting (DE) - St. Peter (AT)	187.997	Austria	Under construction	Germany	Planned, but not yet in permitting
New 2x400kV interconnection between	48.695	Hungary	Planned, but not yet in permitting	Slovak Republic	Permitting

Rimavská Sobota (SK) and Sajóivánka (HU)					
Wurmlach (AT) - Somplago (IT)	210.1380	Austria	no information	Italy	Permitting
France Ireland interconnector	107.810	France	Under consideration	Ireland	Planned, but not yet in permitting
3rd AC 400 kV Finland - Sweden north	111.396	Finland	Under consideration	Sweden	Planned, but not yet in permitting
Upgrade Meeden (NL) – Diele (DE)	245.1246	Netherlands	Under construction	Germany	Permitting <sup>27</sup>
Wullenstetten - border area (DE-AT)	198.986	Germany	Permitting	Austria	no information
New 380 kV OHL interconnector DK/DE	183.1018	Denmark	Permitting	Germany	Planned, but not yet in permitting
Aragón (ES) region – Marsillón (FR)	270.1211	France	Under consideration	Spain	Planned, but not yet in permitting
HVDC Pamplona area (ES) - Cantegrit (FR)	276.1206	France	Under consideration	Spain	Planned, but not yet in permitting
MAREX	289.1386	United Kingdom (Great Britain)	Under consideration	Ireland	Planned, but not yet in permitting
Maali: Shetland	294.1356	Norway	Under consideration	United Kingdom	Planned, but not yet in permitting

<sup>27</sup> The German NRA indicated that the status is not clear, since the investment is not part of the NDP and it is only an optimisation measure.

(GB) Norway	-			(Great Britain)	
V404 overhead line modernization (CZ – SK)	-	N/A <sup>28</sup>	Czech Republic	Planned, but not yet in permitting	Slovak Republic  Permitting

- (30) Moreover, the Agency finds that 15 interconnections (i.e. around 15% of the interconnections which have been fully monitored in this Opinion if interconnections under consideration are not accounted for) have different commissioning dates for the implementation of their national parts. Also here, this is not necessarily inconsistent, though the Agency would expect commission dates of interconnectors to be reasonably aligned. The interconnection investments with different commissioning dates on the two sides of the border are listed in Table 7.

<sup>28</sup> No EU TYNDP investment item number as the investment was not included in the draft EU TYNDP 2016. The Agency's Opinion No 08/2017 proposed the investment to be included in the EU TYNDP 2016.



Table 7: Interconnections with different commissioning date per national part

Investment name	EU TYNDP investment ID	Country / Jurisdiction 1	Commissioning date in jurisdiction 1	Country / jurisdiction 2	Commissioning date in jurisdiction 2
Nauders (AT) - Glorenza (IT)	26.614	Italy	2021	Austria	2022/23
HVDC interconnection between Italy and Slovenia	150.616	Slovenia	> 2026	Italy	2025
Reinforcement Tartu (EE)-Valmiera (LV) 330 kV OHL	170.1010	Estonia	2024	Latvia	2023
Vöhringen (DE) - Westtirol (AT)	47.689	Austria	2024/25	Germany	2023
Pleinting (DE) - St. Peter (AT)	187.997	Austria	2022	Germany	2024
North Connect (UK-NO)	190.1382	United Kingdom (Great Britain)	2023	Norway	2022
Interconnector from Woodland (IE) to Turleenan (NI)	81.462	Northern Ireland	2023	Ireland	2021
Wurmlach (AT) - Somplago (IT)	210.1380	Austria	no information	Italy	2021
Part of EuroAsia Interconnector: Korakia, (GR: Crete) and	219.1409	Cyprus	2021	Greece	2022

Kofinou (Cyprus)					
Interconnector Doetinchem (NL) – Niederrhein/Wesel (DE)	113.145	Germany	2018	Netherlands	2019
Upgrade Meeden (NL) – Diele (DE)	245.1246	Netherlands	2020/Q1	Germany	no information
Wullenstetten - border area (DE-AT)	198.986	Germany	2020	Austria	no information
New 380 kV OHL interconnector DK/DE	183.1018	Denmark	2022	Germany	2021
Maali Shetland (GB) - Norway	294.1356	Norway	2023	United Kingdom (Great Britain)	>2025
V404 - overhead line modernisation	N/A <sup>29</sup>	Czech Republic	2019	Slovak Republic	2026

- (31) The Agency finds that insufficient cross-border coordination could result in further delays. As it has been previously indicated in Section 3.4., in 2 instances the investments were delayed due to finalisation of agreements and coordination across borders.

<sup>29</sup> No EU TYNDP investment item number as the investment was not included in the draft EU TYNDP 2016. The Agency's Opinion No 08/2017 proposed the investment to be included in the EU TYNDP 2016.

**HAS ADOPTED THIS OPINION:**

1. The Agency finds that 53% of the national investments identified in the Agency's Opinion No 08/2017 as having cross-border relevance progress on time or even ahead of schedule, while 21% of them are delayed, while they are needed at the expected date and 26% of them are rescheduled by the promoter. The most frequently mentioned main reasons for delay are related to permit granting.
2. The results of the Agency's monitoring affirms that investments 'under consideration' are much more exposed to rescheduling. Therefore, the Agency considers that their commissioning is less probable than for more advanced investments.
3. The Agency reiterates its recommendation to ENTSO-E to provide better visibility of the significantly different levels of uncertainty linked to the implementation of these investments by listing the projects under consideration in a separate appendix in the EU TYNDP. Such projects should not be included in reference grids used for the benefit assessment or needs identification process, as doing so would decrease the robustness of the results.
4. The Agency found different statuses under the corresponding national jurisdictions for around 25% of the interconnections, as set out in Table 6.
5. The Agency found different commissioning dates under the corresponding national jurisdictions for around 15% of the interconnections, as set out in Table 7.
6. In the Agency's view, the difference in the status and/or the expected commissioning date across the borders is not necessarily an inconsistency in the implementation of an interconnection. Such difference could still point to limited cross-border coordination among the parties. Therefore, the Agency recommends the relevant TSOs / project promoters and NRAs jointly to review the concerned interconnection investments and, in case of inconsistencies, amend the respective planning and the implementation plans.

Done at Ljubljana on 15 January 2019.

*For the Agency  
Director ad interim*

Alberto POTOTSCHNIG

Annexes:

- Annex I - List of delayed national investments
- Annex II - List of rescheduled national investments

Annexes

Annex I - List of delayed national investments<sup>30</sup>

Jurisdiction / National part	Investment name	Internal / Interconnection	EU TYNDP investment ID	Main reason for delay
Austria	New 220 kV line Nauders (AT) – Glorenza (IT)	interconnection	26.614	Delayed project implementation on the project partner's side
Austria	Isar(DE) - St. Peter (AT)	interconnection	47.212	Delayed project implementation on the project partner's side
Austria	Vöhringen (DE) - Westtirol (AT)	interconnection	47.689	Delays due to technological reasons
Austria	Pleinting (DE) - St. Peter (AT)	interconnection	187.997	Delayed project implementation on the project partner's side
Austria	New 380 kV line St. Peter – Tauern)	internal	47.216	Delays due to lawsuits and court proceedings
Austria	New 380 kV OHL Lienz and Obersielach	internal	26.218	Delays due to technological reasons
Austria	Upgrade Westtirol – Zell-Ziller	internal	47.219	Delays due to technological reasons
Austria	East of Austria (Seyring – Neusiedl / Zaya)	internal	186.886	Delays due to lawsuits and court proceedings
Bulgaria	New 400 kV OHL Maritsa East 1 – Maritsa East 3	internal	142.258	Delays due to financing reasons
Czech Republic	Vernerov - Vitkov	internal	200.308	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or

<sup>30</sup> For the relevant commissioning dates of the investments please refer to the extract of the Agency's TYNDP monitoring database (excel spreadsheet) published together with this Opinion.

				preparation of application files).
Czech Republic	R Mirovka substation	internal	200.312	Delays due to correlation with other delayed infrastructure investments (for transmission investments)
Czech Republic	Kocin - Mirovka	internal	35.313	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Czech Republic	Mirkovka - V413	internal	200.314	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Czech Republic	Babylon - Bezdecin	internal	55.303	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Czech Republic	Babylon - Vyskov	internal	55.304	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Denmark	DKW-GB link	interconnection	167.998	PERMITTING - Delays due to other

				permit granting reasons (different than law changes, environmental problems or preparation of application files).
Denmark	COBRA Cable	interconnection	71.427	Delays in construction works
France	ElecLink	interconnection	172.1388	Delays in construction works
France	GridLink	interconnection	285.1383	Delays due to incompleteness of application to national regulatory authorities
France	AQUIND Interconnector	interconnection	247.1381	Delays due to risks related to the national regulatory framework or regulatory opposition
France	France-Alderney-Britain	interconnection	153.987	Delays due to incompleteness of application to national regulatory authorities
Germany	Brunsbüttel - Niebüll	internal	258.667	Delays related to acquisition of or access to land
Germany	Cloppenburg East - Merzen	internal	132.663	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Germany	Dollern - Hamburg/Nord	internal	251.147	Delays due to lawsuits and court proceedings
Germany	Rommerskirchen - Weißenthurm	internal	135.179	Delays due to lawsuits and court proceedings
Germany	Dollern - Elsfleth/West	internal	207.676	Delays due to technological

				reasons (i.e. technological modifications are expected)
Germany	Conneforde - Cloppenburg East	internal	132.666	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Germany	Güstrow - Wolmirstedt	internal	240.200	PERMITTING - Delays due to environmental problems
Greece	Part of EuroAsia Interconnector: Korakia (Crete, GR) and Kofinou (CY)	interconnection	219.1409	Various reasons for delay reported by the NRA <sup>31</sup>
Greece	Part of EuroAsia Interconnector: (Korakia (Crete) – Athens)	internal	219.1410	Various reasons for delay reported by the NRA <sup>32</sup>
Hungary	New 400 kV line between Cirkovce (SI) – Heviz (HU) / Zerjavenec (HR)	interconnection	141.223	The Hungarian part of the interconnection has been already constructed, connection works and commissioning are feasible once the Slovenian part is constructed.
Ireland	Greenlink	interconnection	286.1385	Sub-sea surveys underway, but delayed due to the overall complexity.

<sup>31</sup> The Greek NRA indicated the following reasons for delay: delay in the preparation of necessary application files by the project promoter, delay due to correlation with other delayed infrastructure investments, delay in tendering process, delay related to finalisation of agreements with third-party promoters, delay in construction works, delay due to technological reasons and delay due to financing reasons.

<sup>32</sup> See footnote 31.

Ireland	Woodland (IE) to Turleenan (NI)	interconnection	81.462	Delays due to lawsuits and court proceedings
Ireland	MAREX	interconnection	289.1386	Delays due to TSO prioritises applications for connection from interconnectors with a PCI status.
Italy	Merchant line "Castasegna (CH) - Mese (IT)"	interconnection	250.1384	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Italy	New 220 kV line Nauders (AT) – Glorenza (IT)	interconnection	26.614	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Italy	HVDC Sicily (IT) - Tunisia (TN)	interconnection	29.635	Delays due to risks related to the national regulatory framework or regulatory opposition
Italy	ITA-4	interconnection	31.642	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Italy	HVDC Verderio (IT) - Sils (CH)	interconnection	174.1014	Delay related to finalisation of agreements and coordination across borders



Italy	Wurmlach (AT) - Somplago (IT)	interconnection	210.1380	PERMITTING - Delays due to environmental problems
Italy	Slovenia t.b.d. (SI) - Salgareda (IT)	interconnection	150.616	Delay related to finalisation of agreements and coordination across borders
Italy	Removing limitations in Central Italy	internal	33.1041	The reasons for delay (vs. the commissioning date in year 2022 as indicated in the TYNDP 2016) are still unclear at this stage <sup>33</sup> .
Italy	Second stage Foggia (IT) - Villanova (IT)	internal	127.86	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Italy	Magenta substation	internal	31.932	Delays in construction works
Italy	Laino (IT) - Altomonte (IT)	internal	127.645	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Italy	Uprate Calenzano - Colunga	internal	33.90	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental

<sup>33</sup> The Italian NRA indicated that the delay is potentially connected with the long length of routes (>300 km) to be reassessed in order to remove current limitations. The commissioning date is currently set by Terna (TSO) as "long term".

				problems or preparation of application files).
Italy	Volpago substation	internal	26.1039	PERMITTING - Delays due to environmental problems
Latvia	Grobina (LV) - Imanta (LV)	internal	124.385	Delays in construction works
Netherlands	Doetinchem (NL) -Niederrhein / Wesel (DE)	interconnection	113.145	Delays in construction works
Netherlands	COBRA Cable	interconnection	71.427	Delays in construction works
Portugal	Fontefría (ES) - Vila Nova de Famalicão (PT)	interconnection	4.496	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Portugal	Fundão - Falagueira	internal	2.9	PERMITTING - Delays due to other permit granting reasons (different than law changes, environmental problems or preparation of application files).
Portugal	Ponte de Lima substation	internal	4.500	PERMITTING - Delays due to environmental problems
Romania	Interconnector Suceava (Ro) - Balti (MD)	interconnection	N/A	The project is correlated with synchronous interconnection of Ukrainian and Moldovan power systems with Continental Europe power system

Romania	400 kV OHL Portile de Fier - Resita	internal	144.269	PERMITTING - National law changes affecting permitting
Romania	400 kV substation Resita	internal	144.701	Delays in construction works (i.e. the works contract was cancelled due to insolvency of the executor). The TSO analyses different options to continue and complete the works.
Romania	Upgrade of the existing 220kV double circuit OHL Resita – Timisoara – Sacalaz – Arad to 400kV double circuit line	internal	144.270	PERMITTING - National law changes affecting permitting
Romania	400kV OHL Cernavoda - Stalpu	internal	138.273	PERMITTING - National law changes affecting permitting
Romania	400 kV OHL Smardan - Gutinas	internal	138.275	PERMITTING - National law changes affecting permitting
Romania	220kV Stalpu substation upgrade to 400 kV	internal	138.715	PERMITTING - National law changes affecting permitting
Romania	400 kV OHL Gadalin - Suceava	internal	138.276	PERMITTING - National law changes affecting permitting
Slovenia	New 400 kV line between Cirkovce (SI) – Heviz (HU) / Zerjavenec (HR)	interconnection	141.223	Delays related to acquisition of or access to land
Spain	SE Fontefria 400/220kV substation	internal	4.498	PERMITTING - File awaiting a response from the APA (Portuguese Environmental Agency) on cross-border consultations.

Spain	Beariz 400kV substation	internal	4.499	PERMITTING - File awaiting a response from the APA (Portuguese Environmental Agency) on cross-border consultations.
Spain	Beariz - Fontefria	internal	4.18	PERMITTING - File awaiting a response from the APA (Portuguese Environmental Agency) on cross-border consultations.
Spain	New substation Reboria	internal	151.523	Change scope planning that made it necessary to restart processing. Strong social opposition
Spain	New substation Sama	internal	151.522	PERMITTING - Delays due to environmental problems (i.e. need for rerouting)
Spain	Double circuit Gozon-Sama	internal	151.928	Not provided
Spain	New 400 kV line Castejón-Ichaso	internal	255.1455	Delays due to adaptations following public consultation process <sup>34</sup>
Spain	Morella - La Plana	internal	203.538	PERMITTING - Delays due to environmental problems
Spain	La Plana/Morella - Godelleta	internal	193.927	Delays in progressing with studies due to complex territory (environmental category and urban development).

<sup>34</sup> The investment is in early stage of definition. The investment was submitted to public consultation in Q2/2018 and it is under adaptation as a consequence of the hearing process, which generates delay.

Spain	New line 400 kV Muruarte -Ichaso	internal	255.1251	Delays due to adaptations following public consultation process <sup>35</sup>
Spain	Fontefría (ES) - Vila Nova de Famalicão (PT)	interconnection	4.496	PERMITTING - File awaiting a response from the APA (Portuguese Environmental Agency) on cross-border consultations.
United Kingdom (Great Britain)	DKW-GB link	interconnection	167.998	PERMITTING - Delays due to environmental problems
United Kingdom (Great Britain)	ElecLink	interconnection	172.1388	Delays in construction works
United Kingdom (Great Britain)	Greenlink	interconnection	286.1385	Delays due to risks related to the national regulatory framework or regulatory opposition
United Kingdom (Great Britain)	North Connect (UK-NO)	interconnection	190.1382	Delays due to risks related to the national regulatory framework or regulatory opposition
United Kingdom (Great Britain)	AQUIND Interconnector	interconnection	247.1381	Delays due to risks related to the national regulatory framework or regulatory opposition
United Kingdom (Great Britain)	GridLink	interconnection	285.1383	Delays due to risks related to the national regulatory framework or regulatory opposition

<sup>35</sup> *Idem.*

United Kingdom (Great Britain)	France-Alderney-Britain (FAB)	interconnection	153.987	Delays due to risks related to the national regulatory framework or regulatory opposition
United Kingdom (Great Britain)	Bramford Twinstead	- internal	69.747	Delays due to correlation with other delayed infrastructure investments

Annex II - List of rescheduled national investments<sup>36</sup>

Jurisdiction / National part	Investment name	Internal / Interconnection	EU TYNDP investment ID	Main reason for rescheduling
Belgium	Complementary connection	internal	120.933	Project was still at an initial stage and previous implementation plan was preliminary
Belgium	1 GW to Antwerp area	internal	120.1053	Project was still at an initial stage and previous implementation plan was preliminary
Belgium	BRABO III: Liefkenshoek - Mercator	internal	297.604	Changes in the overall planning data input (Timing is depending on the evolution of production capacity and grid infrastructure in the Antwerp region)
Belgium	Van Eyck - Gramme	internal	252.105	Project was still at an initial stage and previous implementation plan was preliminary
Belgium	Massenhoven - Van Eyck	internal	252.1456	Project was still at an initial stage and previous implementation plan was preliminary
Belgium	2nd interconnection UK - BE	interconnection	121.934	Project was still at an initial stage and previous implementation plan was preliminary
Belgium	Lonny – Achène - Gramme: HTLS upgrade (under study)	interconnection	280.1008	Project was still at an initial stage and previous implementation plan was preliminary

<sup>36</sup> For the relevant commissioning dates of the investments please refer to the extract of the Agency's TYNDP monitoring database (excel spreadsheet) published together with this Opinion.

Belgium	BELUX Long-Term	interconnection	40.65	Changes in the overall planning data input and consequent impact on needs or benefits of the investment
Belgium	2nd interconnection between Belgium and Germany	interconnection	225.1107	Project was still at an initial stage and previous implementation plan was preliminary
Belgium	Aubange (BE) – Moulaine (FR): PSTs (under study)	interconnection	173.1281	Project was still at an initial stage and previous implementation plan was preliminary
Belgium	Belgium - Netherlands: further evolution	interconnection	262.1257	Project was still at an initial stage and previous implementation plan was preliminary
Croatia	OHL 400 kV Lika - Brinje	internal	136.617	Project was still at an initial stage and previous implementation plan was preliminary
Croatia	OHL 400 kV Lika - Velebit	internal	136.618	Project was still at an initial stage and previous implementation plan was preliminary
Croatia	Substation 400/110 kV Lika	internal	136.619	Project was still at an initial stage and previous implementation plan was preliminary
Croatia	Substation 400/220 kV Brinje	internal	136.62	Project was still at an initial stage and previous implementation plan was preliminary
Croatia	OHL 400 kV Konjsko - Velebit	internal	136.633	Project was still at an initial stage and previous implementation plan was preliminary



Czech Republic	Mirovka - Cebin	internal	35.316	Changes due to complementarity with other rescheduled transmission investments
Estonia	330 kV OHL Tartu - Balti (L300)	internal	170.1012	Changes in schedule due to possible interruptions of the lines
Estonia	Reinforcement Tartu (EE) – Valmiera (LV) 330 kV OHL	interconnection	170.101	Changes in schedule due to possible interruptions of the lines
Estonia	Reinforcement Tsirgulina (EE) and Valmiera (LV) 330 kV OHL	interconnection	170.1011	Changes in schedule due to possible interruptions of the lines
France	Upgrade Cantegrit - Saucats	internal	276.1207	Commissioning date was underestimated in last TYNDP
France	Upgrade Cantegrit - Marsillon	internal	276.1208	Commissioning date was underestimated in last TYNDP
France	Lonny – Achène - Gramme: HTLS upgrade (under study)	interconnection	280.1008	Project was still at an initial stage and previous implementation plan was preliminary
France	Aubange (BE) – Moulaine (FR): PSTs (under study)	interconnection	173.1281	Project was still at an initial stage and previous implementation plan was preliminary
France	Aragón region (ES) – Marsillón (FR)	interconnection	270.1211	Commissioning date was underestimated in last TYNDP
France	HVDC Pamplona area (ES) - Cantegrit (FR)	interconnection	276.1206	Commissioning date was underestimated in last TYNDP
France	Britib	interconnection	296.1437	Commissioning date was underestimated in last TYNDP
Germany	BorWin4	internal	129.658	Investment is substituted by another

Germany	SylWin2	internal	192.659	Changes on generation side (in relation to new renewable-based generation)
Germany	Altenfeld - Grafenrheinfeld	internal	204.686	Due to ongoing studies
Germany	Großgartach - Endersbach	internal	206.682	Other (not specified)
Germany	Emden - Halbmond	internal	207.94	Other (not specified)
Greece	Southern Aegean Interconnector	internal	293.1435	Project was still at an initial stage and previous implementation plan was preliminary
Greece	Southern Aegean Interconnector	internal	293.1433	Project was still at an initial stage and previous implementation plan was preliminary
Greece	Southern Aegean Interconnector	internal	293.1434	Project was still at an initial stage and previous implementation plan was preliminary
Greece	Southern Aegean Interconnector	internal	293.1432	Project was still at an initial stage and previous implementation plan was preliminary
Greece	Southern Aegean Interconnector	internal	293.1431	Project was still at an initial stage and previous implementation plan was preliminary
Greece	Southern Aegean Interconnector	internal	293.1436	Project was still at an initial stage and previous implementation plan was preliminary
Greece	2nd interconnection line between Maritsa East (BG) – Nea Santa (GR)	interconnection	142.256	Project was still at an initial stage and previous implementation plan was preliminary

Greece	LEG1	interconnection	284.1405	Project was still at an initial stage and previous implementation plan was preliminary
Ireland	Srananagh - South Donegal : A new EHV link from Srananagh to South Donegal	internal	82.463	Changes on the generation side (in relation to new renewable-based generation)
Ireland	Greenwire South	internal	287.1442	Project on hold
Ireland	Greenwire South	internal	287.1443	Project on hold
Ireland	Greenwire South	internal	287.1444	Project on hold
Ireland	Greenwire South	internal	287.1445	Project on hold
Ireland	Greenwire South	internal	287.1446	Project on hold
Ireland	MAREX	internal	289.1387	Included in project as contestable build
Ireland	Greenwire North (internal line)	internal	290.1447	Project on hold
Ireland	Greenwire North (internal line)	internal	290.1369	Project on hold
Ireland	Greenwire North (internal line)	internal	290.1448	Project on hold
Ireland	Greenwire North (internal line)	internal	290.1449	Project on hold
Ireland	Greenwire North (internal line)	internal	290.145	Project on hold
Ireland	Greenwire Loop Cable	internal	291.1454	Project on hold
Ireland	Omagh South to South Donegal Interconnector	interconnection	82.896	Changes on the generation side (in relation to new renewable-based generation)
Ireland	Greenwire South	interconnection	287.1439	Project on hold
Ireland	Greenwire South	interconnection	287.1441	Project on hold
Ireland	Greenwire North	interconnection	290.144	Project on hold
Ireland	A subsea HVDC interconnector between Wales (Pentir - tbc) and Ireland (Dublin area - tbc)	interconnection	292.1453	Due to ongoing studies: pending evaluation of how much more interconnection to the UK is required, for example as part of increased offshore

				wind deployment in the Irish sea.
Italy	Partanna (IT) - Ciminna (IT)	internal	N/A	Changes in the overall planning data input (generation, demand and transmission) and consequent impact on needs or benefits of the investment
Italy	Avisè (IT) - Chatillon (IT)	internal	N/A	Other projects at the Italian Northern border
Italy	Udine Sud (IT) - Okroglo (SI)	interconnection	N/A	Changes due to priority given to other transmission investments
Italy	First 1000 MW - Rejim Maatoug (TN) - Montalto (IT)	interconnection	283.1378	Project was still at an initial stage and previous implementation plan was preliminary
Italy	Second 1000 MW HVDC Rejim Maatoug (TN) - Montalto (IT)	interconnection	283.143	Project was still at an initial stage and previous implementation plan was preliminary
Italy	Second stage - Villanova (IT) - Lastva (ME)	interconnection	28.70	Changes in the overall planning data input (generation, demand and transmission) and consequent impact on needs or benefits of the investment
Lithuania	330 kV Panevezys - Musa	internal	124.378	Investment still under consideration (for being part of the Baltic synchronization project III stage)
Luxembourg	BELUX Long- Term	interconnection	40.65	Due to ongoing studies (i.e. development of network together

				with Germany is also under consideration)
Netherlands	Zuid-West 380 kV	internal	103.439	Project was still at an initial stage and previous implementation plan was preliminary
Poland	Mikułowa - Świebodzice	internal	230.355	Changes due to complementarity with other rescheduled transmission investments
Poland	Ostrołęka - Stanisławów	internal	123.373	Changes due to complementarity with other rescheduled transmission investments
Poland	Baczyna substation	internal	230.1035	Changes due to complementarity with other rescheduled transmission investments
Poland	Baczyna - Plewiska	internal	230.1232	Changes due to complementarity with other rescheduled transmission investments
Portugal	Pedralva - Sobrado	internal	1.2	Changes in the overall planning data input (generation, demand and transmission) and consequent impact on needs or benefits of the investment
Portugal	V.Minho - R.Pena - Fridão -Feira	internal	1.4	Changes on the generation side (in relation to new renewable-based generation)
Portugal	Rib. Pena	internal	1.474	Changes on the generation side (in relation to new

				renewable-based generation)
Portugal	V.P.Aguiar - Carrap. - Estarreja	internal	1.476	Changes on the generation side (in relation to new renewable-based generation)
Portugal	Fundão substation	internal	2.484	Changes due to complementarity with other rescheduled transmission investments
Portugal	Fridão substation	internal	1.941	Changes on the generation side (in relation to new renewable-based generation)
Slovenia	Uprate Divaca – Cirkovce	internal	141.225	Changes in the overall planning data input (generation, demand and transmission) and consequent impact on needs or benefits of the investment
Slovenia	ITA-6	interconnection	150.616	Project was still at an initial stage and previous implementation plan was preliminary
Spain	Escatrón - La Secuita	internal	157.545	Project was still at an initial stage and previous implementation plan was preliminary
Spain	New axis Ejea-Aragón region 400 kV	internal	270.1212	Due to additional studies <sup>37</sup>

<sup>37</sup> The Spanish NRA indicated that within the "High Level Group for South-West Europe" framework, both TSOs were requested to update the justification of the investments based on the new results of the cost-benefit analysis (CBA) carried out during the preparation of the TYNDP 2018.

Spain	Ejea de los Caballeros substation	internal	270.1214	Due to additional studies <sup>38</sup>
Spain	Aragón region substation	internal	270.1215	Due to additional studies <sup>39</sup>
Spain	New substation Pamplona area	internal	276.121	Changes in the estimated costs
Spain	Aragón region (ES) –Marsillón (FR)	interconnection	270.1211	Due to ongoing studies <sup>40</sup>
Spain	HVDC Pamplona area (ES) - Cantegrit (FR)	interconnection	276.1206	Due to ongoing studies <sup>41</sup>
Spain	Additional investments France-Spain (Investments to be created)	interconnection	278.1267	Project was still at an initial stage and previous implementation plan was preliminary
Spain	New OHL ES - PT: Reinforcement in the Douro river area	interconnection	257.1253	Project was still at an initial stage and previous implementation plan was preliminary
United Kingdom (Great Britain)	Eastern HVDC Link	internal	298.453	Changes in the overall planning data input (generation, demand and transmission) and consequent impact on needs or benefits of the investment
United Kingdom (Great Britain)	HINP - SEAB New Double Circuit	internal	78.458	Changes on the generation side (in relation to other types of generation)
United Kingdom (Great Britain)	WYLF-PEMB HVDC Link	internal	79.769	Changes in the overall planning data input (generation, demand and transmission) and consequent impact

<sup>38</sup> *Idem.*

<sup>39</sup> *Idem.*

<sup>40</sup> *Idem.*

<sup>41</sup> *Idem.*

				on needs or benefits of the investment
United Kingdom (Great Britain)	East Coast Offshore	internal	86.781	Changes in the overall planning data input (generation, demand and transmission) and consequent impact on needs or benefits of the investment
United Kingdom (Great Britain)	East Coast Offshore	internal	86.782	Changes in the overall planning data input (generation, demand and transmission) and consequent impact on needs or benefits of the investment
United Kingdom (Great Britain)	Gallant	internal	295.1438	Project was still at an initial stage and previous implementation plan was preliminary
United Kingdom (Great Britain)	Greenwire South	interconnection	287.1439	Project was still at an initial stage and previous implementation plan was preliminary
United Kingdom (Great Britain)	Greenwire South	interconnection	287.1441	Project was still at an initial stage and previous implementation plan was preliminary
United Kingdom (Great Britain)	MAREX UK - Ireland Interconnector	interconnection	289.1386	Project was still at an initial stage and previous implementation plan was preliminary
United Kingdom (Great Britain)	Greenwire North	interconnection	290.144	Project was still at an initial stage and previous implementation plan was preliminary
United Kingdom (Great Britain)	HVDC interconnector between Wales and Ireland	interconnection	292.1453	Project was still at an initial stage and previous



				implementation plan was preliminary
United Kingdom (Great Britain)	Maali: Shetland (GB) - Norway	interconnection	294.1356	Project was still at an initial stage and previous implementation plan was preliminary
United Kingdom (Great Britain)	ANAI: Abengoa Northern Atlantic Interconnection	interconnection	281.1379	Project was still at an initial stage and previous implementation plan was preliminary
United Kingdom (Great Britain)	Britib	interconnection	296.1437	Project was still at an initial stage and previous implementation plan was preliminary