Updated CESEC ELECTRICITY ACTION PLAN (April 2020 update)¹

Action plan Progress Review Infrastructure priority projects

Interconnection Bulgaria- Greece and internal reinforcement in Bulgaria (a cluster of 4 PCIs) **Project / CESEC sides Action** Responsible entities **Timing Challenges / Comments** PCI 3.7.1 Permit granting completion BG: Ministry of Energy 04/2018 03/2020: Project under construction Interconnection Maritsa East (BG) - Nea Santa (EL) **GR:** Competent authority Bulgaria, Greece Elecktroenergien Sistemen Operator EAD/ESO, Construction completion 05/2023 **GR: IPTO** Elecktroenergien Sistemen Operator EAD/ESO Commissioning 05/2023 **GR: IPTO** PCI 3.7.2 Permit granting completion Elecktroenergien Sistemen Operator EAD/ESO 04/2019 03/2020:Project under construction Internal line Maritsa East - Plovdiv (BG) Construction completion Elecktroenergien Sistemen Operator EAD/ESO 05/2022 Bulgaria Commissioning Elecktroenergien Sistemen Operator EAD/ESO 05/2022 Permit granting completion BG: Ministry of Energy 04/2018 08/2019:Project under construction PCI 3.7.3 Internal line Maritsa East - Maritsa East 3 (BG) Construction completion Elecktroenergien Sistemen Operator EAD/ESO 06/2021 Bulgaria Commissioning Elecktroenergien Sistemen Operator EAD/ESO 06/2021 PCI 3.7.4 Permit granting completion BG: Ministry of Energy 08/2018 05/2019: Project under construction Elecktroenergien Sistemen Operator EAD/ESO Internal line Maritsa East - Burgas (BG) Construction completion 04/2021 Bulgaria Commissioning Elecktroenergien Sistemen Operator EAD/ESO 06/2021 Reinforcement of the interconnection between Bulgaria and Romania ("Black Sea Corridor")

Enhancement of the cross-border transmission capacity between Bulgaria, Romania and Greece and comprising the following 2 project clusters:

| PCI 3.8.1 | Permit granting completion | BG: Ministry of Energy | 04/2019 | Project under construction. |
|----------------------------------|----------------------------|--|-------------|--------------------------------------|
| Internal line Varna - Burgas | Construction completion | Elecktroenergien Sistemen Operator EAD/ESO | 09/2021 | |
| Bulgaria | Commissioning | Elecktroenergien Sistemen Operator EAD/ESO | 09/2021 | |
| PCI 3.8.4 | Construction completion | C.N.T.E.E. TRANSELECTRICA S.A. (RO) | 12/2021 | Project under construction. |
| Internal line Cernavoda - Stalpu | Commissioning | C.N.T.E.E. TRANSELECTRICA S.A. (RO) | 12/2021 | |
| Romania | | | | |
| PCI 3.8.5 | Final investment decision | C.N.T.E.E. TRANSELECTRICA S.A. (RO) | 2017 (done) | Permitting does not fall under TEN-E |
| Internal line Gutinas - Smardan | Permit granting completion | RO: Ministry of Energy | 2018 | Regulation provisions |
| Romania | Construction completion | C.N.T.E.E. TRANSELECTRICA S.A. (RO) | 12/ 2023 | |
| | Commissioning | C.N.T.E.E. TRANSELECTRICA S.A. (RO) | 12/2023 | |

¹ Project timelines defined in this Electricity Action Plan have been updated following the CESEC Senior officials meeting of 25/03/2020. Therefore, project timelines have not yet factored in possible delays due to the covid-19 crisis.

Enhancement of the transmission capacity along the East-West corridor in South-East Europe from Italy to Romania via the Balkans and comprising the following 3 project clusters

Italy — Montenegro Interconnector (PCI 3.19. Completed and Commissioned 11/2019)

Interconnection Romania — Serbia ("Mid Continental East Corridor") and internal reinforcements in Romania (4 projects)

| Project / CESEC sides | Action | Responsible entities | Timing | Challenges / Comments |
|---|----------------------------|-------------------------------------|-------------------|---|
| PCI 3.22.1 (PECI status) | Construction completion | RS: Elektromreža Srbije | 12/2024 | Completed on Serbian side |
| Interconnection Resita (RO) - Pancevo (RS) | | RO: C.N.T.E.E. TRANSELECTRICA S.A. | | Under construction on Romanian side |
| Romania, Serbia | Commissioning | RS: Elektromreža Srbije | 12/2024 | Completion delayed from 2020 to 2024 |
| | | RO: C.N.T.E.E. TRANSELECTRICA S.A. | | |
| PCI 3.22.2 | Construction completion | RO: C.N.T.E.E. TRANSELECTRICA S.A | 12/2024 | Under construction |
| Internal line Portile de Fier - Resita | Commissioning | RO: C.N.T.E.E. TRANSELECTRICA S.A | 12/2024 | Completion delayed from 2021 to 2024 |
| Romania | | | | due to insolvency of general contractor |
| PCI 3.22.3 | Final investment decision | C.N.T.E.E. TRANSELECTRICA S.A. (RO) | 2018 | Permitting |
| Internal line Resita - Timisoara/Sacalaz | Permit granting process | Romanian Ministry of Energy | 05/2021 | Completion delayed from 2023 to 2025 |
| Romania | Construction completion | C.N.T.E.E. TRANSELECTRICA S.A. (RO) | 12/2025 | |
| PCI 3.22.4 | Final investment decision | C.N.T.E.E. TRANSELECTRICA S.A. (RO) | N.A | Planned but not yet in permitting |
| Internal line Arad - Timisoara/Sacalaz | Permit granting end date | Romanian Ministry of Energy | N.A | Technical design&specification on-going |
| Romania | Construction completion | C.N.T.E.E. TRANSELECTRICA S.A. (RO) | 12/2027 | |
| | | Transbalkan corridor | | |
| PECI-Transbalkan corridor | Permit granting | Relevant Competent Authorities | 2019-2021 | Lack of appropriate grant funds for |
| - Section I: See info on PCI 3.22.1 | Construction completion | CGES, EMS, NOS-BIH | 2021-2025 | sections III and IV. |
| - Section III: AC OHL 400kV Obrenovac (RS)- Bajina | Commissioning | CGES, EMS, NOS-BIH | 2025 | Section III: pending application for a WBIF |
| Basta (RS) | | | | Investment grant |
| - Section IV: AC OHL 400kV Bajina Basta (RS) - Visegrad | | | | Section IV: preparation of the technical |
| (BA)-Pljevlja (ME) | | | | documentation (2019-2021) |
| Serbia, Montenegro, Bosnia and Herzegovina | | | | |
| PECI- Transbalkan corridor | Permit granting | Relevant Competent Authorities | 2017-2019 | Construction expected to start Q3/2020 |
| - Section II: OHL 400 kV Kragujevac - Kraljevo | Construction start date | Elektromreža Srbije (RS) | 2020-2021 | |
| Serbia | Commissioning | Elektromreža Srbije (RS) | 2021 | |
| | | | | |
| PECI - Transbalkan corridor | Construction | CGES (ME) | 2014-2022 | 2019: Section Lastva-Čevo completed |
| | Construction Commissioning | CGES (ME) | 2014-2022 2022 | 2019: Section Lastva-Cevo completed Section Čevo- Pljevlja under construction |

| Electricity Interconnections Hungary — Slovakia | | | | |
|---|--------------------------|---|--------------|--------------------------------------|
| Project / CESEC sides | Action | Responsible entities | Timing | Challenges / Comments |
| PCI 3.16.1 Interconnection Gabčikovo (SK) - Gönyű (HU) - Veľký Ďur (SK) | Permitting end date | Slovakia: Ministry of Economy Hungary: Hungarian Energy and Public Utility Regulatory Authority | 08/2019 | Under construction |
| Hungary, Slovakia | Construction completion | MAVIR (HU), SEPS (SK) | 12/2020 | |
| PCI 3.17 Interconnection Sajóvánka (HU) - Rimavská Sobota | Permitting end date | SK Ministry of Economy HU Energy and Public Utility Regul. Auth. | 08/2019 | Under construction |
| (SK) | Construction completion | MAVIR (HU), SEPS (SK) | 12/2020 | |
| Hungary, Slovakia | Commissioning | MAVIR (HU), SEPS (SK) | 12/2020 | |
| Electricity Interconnection Croatia — Hungary — Slovenia | | | | |
| PCI 3.9.1 | Permit granting process | SI: Ministry of Infrastructure | 2017-2020 | Permitting not completed |
| Double AC OHL 400 kV Interconnection Žerjavinec | Construction completion | ELES d.o.o. (SI) | 12/2021 | 2019: SS Cirkovce under construction |
| (HR)/Hévíz (HU) -Cirkovce (SI) | Commissioning | ELES d.o.o. (SI) | 12/2021 | 2020: line Cirkovce-Pince under |
| Slovenia, Croatia, Hungary | | | | construction |
| Infrastructures support | ing the integration of l | Jkraine and Moldova power systems into | European ele | ectricity market |
| PMI | Permit granting process | SK Ministry of Economy / UA authority | 06/2020 | 02/2020: Feasibility study |
| OHL rehabilitation Mukacheve (UA) - V.Kapusany (SK) | Construction | SEPS (SK) / Ukrernergo (UA) | 2021-tbd | Final solution still not agreed |
| Ukraine, Slovakia | Commissioning | SEPS (SK) / Ukrernergo (UA) | N.A. | UA Permit granting expected 06/2020 |
| PMI ² | Feasibility | IS Moldelectrica (MD) | 09/2017 | 12/2017: Loan agreement EBRD-EIB |
| Interconnection Isaccea (RO) - Vulcanesti (MD) | Regulatory approval | Relevant Competent Authority | 2018 | 09/2019: Loan agreement World Bank |
| OHL 400kV Vulcanesti (MD)- Chisinau (MD) | Commissioning | IS Moldelectrica (MD) | 2022 | Bid will be launched in QI/2020 |
| Romania, Republic of Moldova | | | | |
| Slovenia – Croatia Smart Grids Project | | | | |
| PCI 10.3 SINCRO.GRID | Permit granting process | SI: Ministry of Infrastructure | 2018-2020 | Under construction |
| Solving network voltage, frequency control and | | HR: Ministry of environment and energy | | |
| congestion issues | Construction completion | ELES (SI), HOPS (HR) | 06/2021 | |
| Slovenia, Croatia | Commissioning | ELES (SI), HOPS (HR) | 11/2021 | |

² This project was not resubmitted by project promoters under PECI/PMI 2020 call. Nevertheless, its completion remains a priority to ensure Moldova power systems integration into European electricity market.

Electricity markets: trading and coupling

(TSO: Transmission system operator, PX: Power exchange, NRA: National regulatory authorities)

| CESEC sides | Main Milestones & Status/Timing |
|---|--|
| Project | (<i>d</i> -Done / <i>og</i> -on going / <i>tc</i> -to come) |
| Italy - Greece Day-ahead MC | • IPTO (TSO) and HEnEx (PX) request for IT-EL border go live approved by Italian Borders Working Table (IBWT) (d-05/2019) |
| Responsible parties | Expected Local Technical Readiness for the start of the integration tests (og-04/2020) |
| Italy: Terna (TSO) / GME (PX) Greece: IPTO (TSO) / HEnEx (PX) | → Go-live of Day-ahead MC (tc-Q4/2020) |
| Greece - Bulgaria Day-ahead MC | Approval of EL and BG NRAs to include EL-BG border into IBWT day ahead MC project (d-02/2019) |
| Responsible parties Greece: IPTO (TSO) / HEnEx (PX) Bulgaria: ESO (TSO) / IBEX (PX) | IBWT NRAs Decision to approve BG parties adherence to the IBWT Day-Ahead Operations Agreement (d-12/2019) BG parties completed accession process to the IBWT Day-Ahead Operations Agreement (d-03/2020) Preparation of EL-BG day ahead MC project High level Business Process (d-03/2020) → Go-live of Day ahead MC (tc-Q1/2021) |
| Bulgaria - Romania Day-ahead MC Responsible parties Romania: Transelectrica (TSO) / OPCOM (PX) Bulgaria: ESO (TSO) / IBEX (PX) | Involved NRAs approval for Day-ahead MC received by RO and BG parties (d-11/2019) ToR approval between the responsible parties (d-01/2020) Preparation of BG-RO MC Project detailed roadmap (og-03/2020) and High Level Market Design (og-03/2020) Change Request for the inclusion of the BG-RO border in the SDAC (d-03/2020) → Go live of Day-ahead MC (tc-12/2020) |

EU member states/Energy Community contracting parties market coupling pilot projects

| CESEC sides | Main Milestones & Status/Timing | | |
|---|---|--|--|
| Project | (<i>d</i> -Done / <i>og</i> -on going / <i>tc</i> -to come) | | |
| Albania - Italy - Montenegro - Serbia (AIMS) | AIMS Working Group: | | |
| Day-ahead MC | - ToR adoption (d-01.2018) and non-Disclosure Agreement (d-09/2018) | | |
| Responsible parties Albania: OST (TSO) APEX* (PX) Italy: Terna (TSO) / GME (PX) Montenegro: CGES (TSO) / BELEN (PX) Serbia: EMS (TSO) / SEEPEX (PX) | Feasibility analysis approval (og-Q2/2020) Project implementation plan completion (tc-Q4/2020) Establish framework (legal/contractual) for EU/non-EU MC (tc-Q4/2020) AIMS NRAs to run voluntary National Electricity Market Operator designation process (tc-Q4 2020) Establishment of APEX (PX) in AL (og-Q4/2020) Entry into operation of PX in ME (og-Q4/2020) and AL (og-Q2/2021) VAT law changes in AL and ME (tc-Q4/2020) | | |
| * Not yet established | • Cooperation agreements for the Design Phase signature (tc- Q1/2021) | | |

| CESEC sides | Main Milestones & Status/Timing (d-Done / og-on going / tc-to come) | | |
|--|--|--|--|
| Project | | | |
| Bulgaria – North Macedonia Day ahead and intraday electricity MC Responsible parties Bulgaria: ESO (TSO) / IBEX (PX) North Macedonia: MEPSO (TSO) / MEMO (PX) | Project Framework: Ministerial MoU (d-05/2018) / Stakeholders MoU (d-04/2018) signed and WGs established and operational (d-07/2018) Implementation of MC (Technical assistance under WB6 MoU): Designation of Nominated Electricity Market Operators (og-04/2020) Selection of service provider for Macedonian PX (tc-06 2020) Establish framework (legal/contractual) for EU/non EU MC (tc-Q4/2020) → Go live of Day-ahead MC (tc-Q3/2021) | | |
| Croatia-Serbia-Bulgaria Day-ahead MC Responsible parties Croatia: HOPS (TSO) / CROPEX (PX) Serbia: EMS (TSO) / SEEPEX (PX) Bulgaria: ESO (TSO) / IBEX (PX) | Kick off meeting (d-02/2019) all 3 TSOs and PXs sent joint letter to all 3 NRAs requesting NRS support for HR-RS-BG day-ahead MC (d-03/2019) Preliminary Feasibility Analysis for formal establishment and start of MC project (d-06/2019) National Electricity Market Operator designation by RS NRA (tc-date unknown) Establish framework (legal/contractual) for EU/non EU MC (tc-Q4/2020) | | |
| Croatia, Bosnia and Herzegovina Day ahead and intraday MC Responsible parties Croatia: HOPS (TSO) / CROPEX (PX) Bosnia and Herzegovina: NOSBiH (TSO) | Establishment of PX in BiH: Technical assistance under WB6 MoU (d- proposal and roadmap for the establishment of a day-ahead market in BiH delivered) Adoption of a new energy law allowing for PX establishment (tc-date unknown) Establishment of day-ahead MC: CROPEX expressed interest in receiving technical assistance under WB6 MoU (d-02/2018) HOPS sent to NOSBiH a Letter of intent (proposal to introduce "export-import zone" organised by CROPEX (d-07/2018) Agreement of BiH Ministry and stakeholders on initiating MC (tc-date unknown) Mutual recognition of trade licenses (tc-date unknown) National Electricity Market Operator designation by BiH NRA (tc-date unknown) Establish framework (legal/contractual) for EU/non EU MC (tc-Q4/2020) | | |