

**Task A: Feasibility Study for Kosovo – Albania 400
kV Transmission Interconnection Project**

Report of Second Phase

Volume 3

**Interconnection Agreements, Operation & Maintenance
rules Transmission Tariff Model and Cross-Border Trade**

Annexes A1-A3

July 2005

Annex 1 Agreement of mutual cooperation during implementation of project

SAMPLE version of the first Agreement

AGREEMENT ON MUTUAL COOPERATION FOR CONSTRUCTION OF 400 KV LINE BETWEEN ALBANIA (KASHAR) AND KOSOVO (TPP B SUBSTATION)

Concluded between

KESH, a government controlled company under Albanian law, in the following referred to as KESH, having its seat in Tirana, (*address*), represented by Mr. _____ in the capacity of Executive Officer, duly authorized to act on the company's behalf for the present agreement

And

KEK, Kosovian power Utility in the following referred to as KEK, having its seat in (*address*), represented by Mr. _____, Executive Officer, duly authorized to act on the company's behalf for the present agreement,

Hereinafter individually or jointly referred to as the "Party" or the "Parties"

Preamble

KESH and **KEK** have decided to investigate the conditions for the creation of a new interconnection with a voltage of 400 kV, between Kashar (Albania) and Kosovo B Thermal Power Plan (Kosovo, SCG) (hereinafter also referred to as "the line").

The Parties had agreed in the first instance to organise their relationships during the development phase in which the conditions for the fulfilment of the aforementioned line had to be studied, by means of a FEASIBILITY STUDY for Kashar (Albania) – TPP Kosovo B (Kosovo), ESTAP II/1, Grant no. H048 financed by World Bank.

Article 1 – Purpose of the Agreement

By signing this Agreement, the Parties agrees to define conditions for mutual collaboration in order to carry out and finalize the technical, economic, legal and financial studies necessary to assess the feasibility of the prospected line, in order to allow its commercial operation by (*date where parties wish to finalize project*) at the latest.

By signing this Agreement, the Parties commit themselves to do their best efforts in order to obtain the issuance of the authorizations, licenses and permitting, from the competent authorities, necessary for the realization of the line.

Article 2 - Exchange of information

The Parties commit themselves to exchange all technical information and the high voltage networks data -, which are required to design the equipment of the line. With regard to this the Parties will realise a close co-operation among the competent technicians through meetings, visits, data and

information exchanges in order to solve the problems concerning planning, the environmental impact assessment developed according to the national laws, environmental and technical analysis to identify the optimal line corridor, the preparation of application documents to be submitted to the administrative authorities.

Each Party will designate at this purpose a Contact Person:

On the Albanian side: _____

On the Kosovian side: _____

Article 3 – Steering Committee

For the whole period of validity of this Agreement the Parties agree to set up a specific organisational structure with no corporate status according to the following conditions.

Institution of a decision making body, hereafter referred to as the “Steering Committee”, composed of **six** (*or other number decided by parties*) members of which three are appointed by KESH and three by KEK.

The Steering Committee takes all necessary decisions for the advancement of the Project, coordinates the activity of the Parties and more generally has the task of establishing directions for the development of the Project.

The members of the Steering Committee meet whenever necessary at the request of one of the two Parties. In such a case, the requesting Party communicates the date, place and subject of the meeting to the other Party by any means of its choice provided that it gives notice of one calendar week as from the date of issuing the request unless there is an emergency requiring that the members of the group meet as soon as possible.

The members of the Steering Committee rule by unanimous agreement of all members present; moreover, and in order for a meeting to be valid, it is necessary that at least one representative of each Party be present.

The Parties have to confirm the specific organization of the Steering Committee at their first meeting.

Each Party has the possibility, in the course of execution of the Agreement, of changing the identity of all or part of the its members of the Steering Committee or of the Leading Group provided that the other Party is notified in writing.

Article 4 - Costs and expenses

Each Party shall bear all of its own cost incurred in implementing the project of the line and in submitting the administrative authorizations.

Any taxes, duties or fees charged because of the conclusion of this Agreement have to be paid by the Parties themselves according to the laws and regulation in force in each Country.

Article 5 – Confidentiality

Information, in whatever form (oral or written) or medium (including but not limited to any written message, note, copy, document, file, letter, model, listing, program, diskette, specification, number,

drawing, graph, photo, audio or visual recording or pictorial reproduction) exchanged between the Parties for carrying out the Agreement shall be considered as confidential.

Consequently, to the receiving Party is forbidden:

- to use the information transmitted by the communicating Party outside the framework of the Agreement;
- to disclose to a third Party, unless with the prior and express agreement of the other party, the information transmitted by the communicating Party.

The information may be communicated only and exclusively be communicated to those employees and representatives of the Parties needing with a need to know such information in order to exercise their functions in relation to fulfilment of the Project.

The Parties will make sure that the aforementioned persons respect the principle of confidentiality of the information received by taking all necessary measures for this purpose and each Party will be deemed responsible in case of violation of this confidentiality duty of their respective employees and representatives.

All confidential information communicated and copied within the framework of the Project after the date of signature of the Agreement is and will remain the property of the communicating Party.

Article 6 – Duration and Validity of the Agreement

This Agreement comes into force on the date of its signature. The Parties intend this Agreement to be binding on the Parties until one of the following events arises:

- a) Joint decision of the Parties to abandon the Project; in this case each Party bears its own expenses in accordance with the stipulations of article 5 to with the exclusion of any other compensation that might be justified on either side, including eventual damages.
- b) If, before end of Feasibility study, one Party wishes to withdraw from the Project, at its own discretion for its own reasons and independently of from the results of the studies that Party must notify the other Party of its decision by registered letter with notification of receipt. In such a case, the Agreement is terminated as of the date of reception of the aforementioned letter.
- c) Arrival of a third party in the Project by joint agreement of both Parties. In this case, the Parties will jointly draft a new protocol intended to organise their legal relationships with the third party.
- d) Once passing of 18 months from the signature of the Agreement have occurred.

The Parties may, if needed, decide on the formal renewal of the Agreement within at least minimum of one month preceding its expiry date.

In case of termination provided for by in this article 9, each Party shall bear its own expenses in accordance with the stipulations of article 5 with the exclusion of any other compensation that might be justified on either side.

Article 7 – Termination

In addition to the abovementioned hypotheses in the event of serious and/or repeated failure of one of the Parties to fulfil its obligations, the Agreement may be *de iure* terminated as of right at upon the request of the other Party according to the terms and conditions defined in the present article.

The requesting Party shall give official formal notice, by registered letter with notification of receipt, to the Party failing to fulfil its obligations as defined in the conditions of the Agreement.

If at 30 days following its receipt the notice has remained without fruitful response, the requesting Party will notify the defaulting Party, by registered letter with notification of receipt, of the termination of the Agreement.

The date of termination of the Agreement will be the date of reception of the aforementioned registered letter.

Article 8 - Language of the Agreement

The language of the Agreement is Albanian with English copy. Similarly, the Parties have agreed that all exchange of information, of documents – whatever their nature – and more generally all communication between the Parties is to be carried out in Albanian and English.

Article 9 - Choice of legislation, disputes and Arbitration

This Agreement shall be construed and interpreted in accordance with Austrian substantive law except for Austrian conflict-in-laws rules.

The Parties will endeavor to solve any difference in opinion or any dispute that may arise between the Parties in connection with this contract in a friendly way. Any disputes arising from this contract that the parties fail to solve by reconciliation within 30 days, shall be resolved with final validity in accordance with arbitration rules of the Arbitration Court of the Federal Chamber of Trade and Commerce in Vienna by 3 arbitrators. The language of procedure shall be English.

Article 10 – Modifications of the Agreement

This Agreement may be amended, and any provision waived, only in writing. Any modifications made to the obligations assumed by each Party to the Agreement will be the subject of an amendment signed by both Parties.

Article 112 - Assignment

Each Party undertakes to assign all the benefits and obligations resulting from this Agreement to its possible legal successor by notifying the other Party. Otherwise this Agreement shall not be assignable by the Parties without the written consent of the other Party.

Two originals signed, the Parties receiving one each.

Place:

Date:

for **KEK**

for **KESH**

Annex 2 Agreement of mutual cooperation during implementation of project

**SAMPLE of
INTERCONNECTION AGREEMENT
On operation and maintenance rules**

For interconnection

400 kV Kashar – TPP Kosovo B (new)

And

220 kV Fierze – Prizren (existing)

Concluded between

**KEK
Kosovian Power Company**

(in the following referred to as "KEK")

And

**KESH.
Albanian Power Company**

(in the following referred to as "KESH").

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ABBREVIATIONS (used in this sample document)

KESH

TSO/NCC	Transmission System Operator/National Control Centre, KESH
DD/STOP	Dispatching Division/ Short-Term Operational Planning Unit, KESH
DD/COU	Dispatching Division/ Co-Ordination Unit, KESH
KESH/RURMG	Regional Unit responsible for maintaining the Grid

KEK

TSO/KTCC	Transmission System Operator/Kosovian Transmission Control Centre
DD/STOP	Dispatching Division/ Short-Term Operational Planning Unit, KEK
DD/COU	Dispatching Division/ Co-Ordination Unit, KEK
KEK/RMG	Kosovian Unit responsible for maintaining the Grid

OHL	Overhead Line
S/S	Substation

1. DEFINITION OF OPERATING RULES

These Rules govern the roles and operational responsibilities of the Contracting Parties in the utilisation, operation and maintenance of the lines between the power grids of Albania and Kosovo, 400 kV Kashar – Kosovo B Line and 220 kV Fierza - Prizren Line.

2. CONTRACTING PARTIES

The Parties to these Rules are the following entities of KESH -TSO and KEK - TSO.

(These entities are defined in Energy Acts of each system. In the case of a different organizational framework of KESH and KEK it should be changed)

FOR ALBANIA:

KESH

TSO/NCC Albanian Transmission system Operater/National Control Centre loacted in Tirana

KESH / RURMG Unit Responsible for Maintenance of Grid Elements of Tirana

FOR KOSOVO:

KEK

TSO/KTCC Kosovian Transmission Operator/Kosovian Transmission Control centre located in Pristina

KEK/RMG Kosovian unit responsible for maintenance of Grid located in Pristina

3. OPERATION OF GRID ELEMENTS

3.1 NORMAL OPERATION CONDITIONS

Under normal operation conditions, the 400 kV Kashar (Albania) – Kosovo B (Kosovo) and 220 kV Fierza (Albania) – Prizren (Kosovo) lines shall always remain in operation, ensuring the interconnection between the Albania and Kosovo transmission grids.

Grid switching shall be carried out:

- in Kosovo, by the Shift Personnel of the Kosovo B substation under instructions given by TSO/KTCC Pristina;
- in Albania, by the Control Room Personnel of substation Kashar under instructions given by KESH TSO/NCC by Tirana.

The aforementioned Shift Personnel shall carry out switching for maintenance in compliance with KESH and KEK rules.

3.2 SPECIAL OPERATION CONDITIONS

Where the operation of the interconnected grid needs to be modified with respect to normal operating conditions (due to problems of power flows, voltage levels, etc.), any modification shall be requested by NCC Tirana for KESH and/or by KTCC Pristina for KEK and carried out after appropriate arrangements between personnel located at substations Kashar and Kosovo B.

Both after the tripping of circuit breakers at the line ends and after maintenance, the lines shall usually be re-energised according to the following switching sequence:

400 kV Line (*this should be agreed by parties; the opposite solution is also possible*)

- Kosovo B energises the line to Kashar;
- Kashar synchronises and closes the interconnection.

220 kV Line

- Prizren energises the line to Fierza;
- Fierza synchronises and closes the interconnection.

In case of final tripping at the line ends, re-energisation shall be attempted within the shortest possible time according to the sequences detailed above.

Where needed and on an exceptional basis, Kashar and dispatchers at Kosovo B may agree on a different re-energisation sequence.

Where the lines trip again, Tirana shall notify Kashar thereof; Tirana shall make arrangements with Pristine KTCC for the inspection of the line sections falling under the respective responsibility. Any securing switching which may be necessary shall be carried out in compliance with paragraph 5 below.

Kashar shall request re-energisation of the lines after obtaining authorisation from Tirana.

In case of tripping of a line circuit-breaker:

-
- The personnel of Kosovo B S/S first checks for return voltage and synchronisation conditions and then closes the line after obtaining authorisation from Pristina KTCC.
 - The personnel of Kashar first checks for return voltage and synchronisation conditions and then closes the line after obtaining authorisation from Tirana NCC.

4. MAINTENANCE PLANNING

4.1 GENERAL

The following provisions apply in case of maintenance of a line, a line section or a line end element, to be carried out by a single Company or, at the same time, by KESH and KEK.

For each international transmission line, KESH and KEK jointly identify a Supervisory Master of Operation. This person shall be called:

- “Coordinator for network manipulation or Co-ordination unit” at KEK;
- “Co-ordination unit or similar” at KESH.

The owner of the grid element first requesting maintenance shall propose/confirm the “**Supervisory Master of Operation**”.

The Company owning each of the lines, to which the “*Supervisory Master of Operation*” does not belong, shall appoint a “**Supervisory Attendant of Operation**” as the sole counterpart of the “*Supervisory Master of Operation*” for carrying out switching for maintenance and for hand-over of the grid elements which have to undergo maintenance.

The “*Supervisory Master of Operation*” and the “*Supervisory Attendant of Operation*” shall be persons in charge of the shift at KTCC Pristina and NCC Tirana.

4.2 OUTAGE PLANNING

To ensure the efficiency of their grid elements, KESH and KEK carry out scheduled and/or on-event maintenance works. Before the end of year “N-1”, the entities in charge of scheduling outages on the transmission grid (NCC Tirana for KESH, KTCC for KEK and in the case that new line will be merchant transmission line it could be done by owner) prepare the list of grid element outages, related to the following year “N”, which are necessary for carrying out maintenance works on the lines covered by these Rules.

This outage schedule, agreed between the Contracting Parties, shall be approved by the Transmission System Operators participating in the interconnection, under the current rules applied within UCTE, and issued at the beginning of year “N”. Any further amendment thereto shall be notified to the involved parties in a timely manner.

Any further amendment thereto shall be notified to the involved parties within the shortest possible time.

At least ten (10) days before the start of maintenance, except in more urgent cases, the personnel in charge of short-term scheduling of maintenance (KESH/RURMG for KESH and KEK/RMG for KEK) shall agree on:

- the list of grid elements (lines or line end equipment) to be taken out of operation owing to maintenance or interference (i.e. to allow maintenance on another element);
- the list of works to be performed;
- the date and time when the grid elements are to be taken out of operation and the expected duration of the works;
- the time required for putting the grid elements back into operation, where needed;
- the Company to which the “*Supervisory Master of Operation*” belongs.

At least four days before the start of maintenance, KESH and KEK shall identify the “**Unit Requesting the Work**”, i.e. the operational unit in charge of preparing the works, of issuing the “**Maintenance Schedule**” and of circulating the switching order for works (Annex no. 19).

4.3. SEQUENCE OF ACTIONS PRIOR TO THE START OF MAINTENANCE

4.3.1. The Transmission System Operator (KESH/TSO or KEK/TSO), to which the “*Supervisory Master of Operation*” belongs, shall co-ordinate grid switching for removing from operation the line, which has to undergo maintenance.

After completing the grid switching, RURMG Tirana and RMG Pristine shall confirm - by telephone - to each other that the above switching has been performed. After receiving the above confirmation from its own Company, the “*Supervisory Master of Operation*” may initiate the actions falling under his responsibility, as set out in paragraphs 4.3.2 - 4.3.4. Any notification mentioned herein between the “*Supervisory Master of Operation*” and the “*Supervisory Attendant of Operation*” shall be given through the exchange of appropriate bilingual forms; such forms shall be filled in and sent by fax or e-mail to the addresses shown in Annexes no. 15 and no. 16.

Each notification shall quote:

- Name and surname of the “*Supervisory Master of Operation*” and of the “*Supervisory Attendant of Operation*”;
- Date;
- Time of transmission;
- Transmission identification number;
- Receipt identification number.

4.3.2. The “*Supervisory Master of Operation*” shall, directly or through his representative, open the isolators or check whether they are still open, immobilise them or give instructions for their immobilisation, and request the “*Supervisory Attendant of Operation*”, by using form A1, to open and immobilise the isolators and to earth the grid elements falling under the responsibility of the same “*Supervisory Attendant of Operation*”, by closing the earthing isolators or by using mobile equipment.

4.3.3. After completing (or giving instructions to complete) the switching referred to in paragraph 4.3.2 above, the “*Supervisory Attendant of Operation*” shall confirm completion of the above switching to the “*Supervisory Master of Operation*” by using form A2.

4.3.4. After receiving confirmation of the completion of all the switching, the “*Supervisory Master of Operation*” shall earth (or give instructions to earth) the grid elements falling under his responsibility, by closing and immobilising the earthing isolators or by using mobile equipment. Then, by using form B1, the “*Supervisory Master of Operation*” shall hand over the line, which has to undergo maintenance to the “*Supervisory Attendant of Operation*”. At the end of the exchange of notifications, procedures shall be initiated for the hand-over of the line to the Person Responsible for the Grid Element in compliance with the rules of his own Company.

4.4. SEQUENCE OF ACTIONS AFTER THE END OF MAINTENANCE

4.4.1. At the end of maintenance, the “*Supervisory Attendant of Operation*” and the persons in charge of maintenance, of the Company to which the “*Supervisory Master of Operation*” belongs, shall declare to the latter that maintenance has been completed and that the grid element is available for operation. The “*Supervisory Attendant of Operation*” shall use form B2, whereas the Person Responsible for the Grid Element shall comply with the rules of his own Company.

4.4.2. When all the notifications of hand-over mentioned in paragraph 4.4.1 above have been returned (in compliance with the rules of the relevant Company and by using form B2), the “*Supervisory Master of Operation*” shall open (or give instructions to open) the earthing isolators on the grid element falling under his responsibility and then request the “*Supervisory Attendant of Operation*”, by using form C1,

- to open the earthing disconnectors and/or to remove the mobile equipment;
- to unlock the isolators and prepare them for closure.

4.4.3. After performing (or giving instructions to perform) the switching mentioned in para. 4.4.2 above, the “*Supervisory Attendant of Operation*” shall confirm the completion of the above-mentioned actions to the “*Supervisory Master of Operation*”, by using form C2.

4.4.4. After receiving confirmation of the completion of all the switching, the “*Supervisory Master of Operation*” shall give instructions to unlock the isolators and prepare them for closure on the grid elements falling under his responsibility.

Only then shall the “*Supervisory Master of Operation*” declare to his Transmission System Operator that maintenance has been completed and that the grid element is available for re-energisation.

4.4.5. The Transmission System Operator of the “*Supervisory Master of Operation*” shall, jointly with the other Transmission System Operator, co-ordinate service restoration on the line having undergone maintenance.

4.4.6. Where, for system operation necessities, maintenance has to be interrupted, the Albanian and Kosovian Transmission System Operators may agree to give the order to interrupt maintenance. The Transmission System Operator of the “*Supervisory Master of Operation*” shall - by telephone - request the same “*Supervisory Master of Operation*” to give instructions for interrupting maintenance and restoring service on the lines within the time specified in

paragraph 4.2 above. Then, the “*Supervisory Master of Operation*” shall transmit the required orders to the “*Supervisory Attendant of Operation*” (form D) and to the persons of his own Company that are in charge of maintenance.

Nobody can re-energise the circuits under maintenance before the Person Responsible for the Grid Element has explicitly notified to the “*Supervisory Attendant of Operation*” that, as far as he is concerned, the above re-energisation can be carried out.

All the above shall be notified to the “*Supervisory Master of Operation*”, who will subsequently take the measures referred to in paragraphs 4.4.1 - 4.4.4 above.

5. MAINTENANCE OF GRID ELEMENTS

5.1 RESPONSIBILITIES

KEK and KESH maintain the grid elements falling under their responsibility. For the towers located on the Albania/Kosovian border, both KEK and KESH personnel shall be present on site for the exchange of authorisations, because the conductors of the cross-border span are owned by (*??? state company who is owner of this conductors*).

5.2 INFORMATION EXCHANGE

The persons in charge of operation and maintenance of both lines shall, in a timely manner, notify the respective entities of any abnormal condition, which may arise on the lines, with particular reference to situations arising from each incident (diagnostics by protection devices, equipment faults, presence of fires near the line, faulted or damaged conductors, etc.).

The incident analysis shall be made by KESH and KEK, which undertake to exchange all information as may be required to determine the behaviour of protection systems.

The parties agree on the need for pursuing the exchange of working experience related to operation and maintenance, including live maintenance, of grid elements, in accordance with European standards and with applicable national rules on security. With this aim, periodical meetings between KEK and KESH specialists should be promoted as well.

5.3 ACTIONS IN CASE OF UNAVAILABILITY DUE TO FAULTS OR HAZARDS

Where one of the parties detects a fault or hazard to people and/or property, it shall notify its Transmission System Operator thereof. Said Transmission System Operator shall, jointly with the other Transmission System Operator and as early as possible, take measures in order to take out of operation the involved grid element. Switching for securing the grid element shall be carried out as follows.

The “*Supervisory Master of Operation*”, belonging to the Company, which has detected and reported the fault, shall give instructions for switching as set forth in paragraphs 4.3 and 4.4 above.

The information required by the “*Supervisory Master of Operation*” and by the “*Supervisory Attendant of Operation*” shall be exchanged by fax or e-mail, between KEK/RMG and KESH/RURMG.

In case of impending hazard, in particular to the safety of its own people or to third parties, and where the lines need to be de-energised, the duly authorised operators of RURMG and of KEK/RMG shall make direct contact in order to perform switching without advance notice.

In such instance, after the end of the hazardous condition, RURMG shall exchange communications with NCC Tirana via e-mail or fax, reporting the reasons for and the expected duration of the unavailability.

At any rate, service restoration shall always take place under the co-ordination of NCC Tirana and KTCC Pristina.

6. LIVE MAINTENANCE

6.1 GENERAL

Live maintenance shall be carried out in strict compliance with national rules.

If the rules for live maintenance exist in any of interconnected countries, consultant will add this paragraph in accordance with existing rules of KEK or KESH.

7. FINAL CONSIDERATIONS

7.1 LIABILITY

With regard to the liability arising from the operation of their grid elements, KESH and KEK shall, at their own expense, provide their installations with suitable protection devices in compliance with the applicable technical and accident prevention standards and shall keep them efficient.

In particular, KESH and KEK shall be held liable for damages to people or property resulting from the operation of the grid elements and components falling under the respective responsibility.

7.2 CONFIDENTIALITY

Each of the parties undertakes to keep all information not falling under its own responsibility as strictly confidential.

These Rules have been written in 2 (two) originals and delivered to:

KEK – TSO Pristina, Kosovo

KESH - TSO Tirana, Albania

Where the originals shall be kept.

These Rules enter into force on (dd mm yyyy)

Any amendment hereto shall be pre-agreed by the both parties.

The parties undertake to timely notify any and all variations in technical parameters or in any other information reported in the annexes.

Where one of the paragraphs hereof is no longer legally valid, the Parties agree that the other paragraphs shall remain valid. Where needed, the Parties agree to replace the invalid paragraph with another paragraph equally valid for the Parties.

These Rules shall supersede the “Operating Rules for the the 220 kV Fierza - Prizren” Line agreed between KEK and KESH (*if it already exist, please state a date and location of signed document*)

Pristine,

KEK
Transmission

The Manager

KESH
Transmission

The Manager

8. LIST OF ANNEXES

- Annex N. 1: List of protective equipment and their settings in Kosovo B and Prizren substations
- Annex N. 2: List of protective equipment and their settings in Fierza and Kashar substations
- Annex N. 3: Electrical and mechanical parameters of the transmission lines
a) Fierza – Prizren 220 kV line
b) Kashar – Kosovo B 400 kV line
- Annex N. 4: Metering and recording devices in Prizren and Kosovo B substations
- Annex N. 5: Metering and recording devices in Kashar and Fierza substations
- Annex N. 6: Diagram of 400/220 kV Kosovo B substation
- Annex N. 7: Diagram of 220/110 kV Prizren substation
- Annex N. 8: Diagram of 400/220 kV Kashar substation
- Annex N. 9: Diagram of 220/110 kV Fierza substation
- Annex N. 10: National Transmission grid 380/220 diagram of Albania
- Annex N. 11: National Transmission grid 380/220 diagram of Kosovo
- Annex N. 12: Diagram of Interconnection between Albania and Kosovo
- Annex N. 13: Duties of “Supervisory Master of Operation”
- Annex N. 14: Duties of del “Supervisory Attendant of Operation”.
- Annex N. 15: Addresses and telephone numbers of competent KESH/TSO
- Annex N. 16: Addresses and telephone numbers of competent KEK/TSO
- Annex N. 17: List of workers having the role “Supervisory Master of Operation” or “Supervisory Attendant of Operation” in KEK/RMG
- Annex N. 18: List of workers having the role “Supervisory Master of Operation” or “Supervisory Attendant of Operation” in KESH/RURMG
- Annex N. 19: Switching Order for Works
- Annex N. 20: Standard Form interchanged between “Supervisory Master of Operation” and “Supervisory Attendant of Operation” KESH and KEK

**LIST OF PROTECTIVE EQUIPMENT AND THEIR SETTINGS
 PRIZREN SUBSTATION**

Prizren substation Busbar connection of 220 kV line Fierza equipped with:

- Current transformer (CT) ratio of xxx/1 A (max overload XX %)
- Voltage transformer (VT) ratio of xxx/0,1 kV
- Distance protection terminal with the following setting parameters:
 - * 1st zone : xx Ω - time delay = 0 sec
 - * 2nd zone : xx Ω - time delay = xx sec
 - * 3rd zone : xx Ω - time delay = xx sec
 - * 4th directional zone : xx Ω - time delay = xx sec
 - * 5th nondirectional zone : xx Ω - time delay = xx sec
 - * Starting relay with:
 - Single-phase fault X = xx Ω/phase; -X = xx Ω/phase; R = xx Ω/phase
 - Bi-phase fault X = xx Ω/phase; -X = xx Ω/phase; R = xx Ω/phase
- Over-current time protection with the following settings:
 - * Alert current value threshold: xx A - time delay = xx sec
 - * Tripping current value threshold: xx A - time delay = xx min
- Automatic reclosure device,
- Fault locator
- Disturbance Recorder
- SMS Data Transmission System
- Pilot Protection Device
- Pole Discordance Relay
- Tripping Circuits Monitoring Relay
- Disturbance Recorder
- Event Recorder;

Kosovo B substation Busbar connection of 400 kV line Kashar (AL) equipped with:

- Current transformer (CT) ratio: xx/ A (max overload xxx%)
- Voltage transformer (VT) ratio: xx kV;
- distance protection terminal with the following setting parameters:
 - * 1st zone : xx Ω - time delay = xx sec
 - * 2nd zone : xx Ω - time delay = xx sec
 - * 3rd zone : xx Ω - time delay = xx sec
 - * transfer trip mode
- Starting relay with:
 - * Single-phase fault X = xx Ω/phase; -X = xx Ω/phase; R = xx Ω/phase
 - * Bi-phase fault X = xx Ω/phase; -X = xx Ω/phase; R = xx Ω/phase
- Power Swing detection function with X=xx Ω; R/X = 0,5; checking time = xx ms;
- Over-current time protection with the following settings:
 - * Alert current value threshold: xx A - time delay = 20 sec
 - * Tripping current value threshold:xxx A - time delay = 20 min
 - * Tripping current value threshold:xxx A - time delay = 20 sec
- Automatic Reclosure Device, activated by single-phase faults, with an interruption time of $t_1=1,0$ sec and a blocking time for manual closure of $t_2= 5$ sec
- Pole Discordance Relay
- Pilot Protection Device
- Tripping Circuits Monitoring Relay
- Disturbance Recorder
- Event Recorder
- Automatic Coupler – Synchronous Check
 - * Difference in voltage: xx%
 - * Difference in phase angle: xx°
- Automatic Coupler – Asynchronous Check
 - * Difference in voltage: xx%
 - * Difference in frequency: xx mHz

**LIST OF PROTECTIVE EQUIPMENT AND THEIR SETTINGS
 FIERZA AND KASHAR SUBSTATIONS**

FIERZA Substation Busbar connection of 220 kV line Prizren equipped with:

- Current Transformer (CT) ratio: xx A (max overload xx A);
- Voltage Transformer (VT) ratio: xx kV;
- 1-Distance protection, set as it follows (primary impedance):
 - * 1st zone xx Ω/phase – time delay = 0 sec
 - * 1st zone xx Ω/phase - time delay = 0 sec
 - * 2nd zone xx Ω/phase - time delay = xx sec
 - * 3rd zone xx Ω/phase - time delay = xx sec
 - * 4th directional zone - time delay = xx sec
 - * 5th non-directional zone - time delay = xx sec
 - * Starting relay with:
 - Single-phase fault $X = xx \Omega/\text{phase}$; $-X = xx \Omega/\text{phase}$; $R = xx \Omega/\text{phase}$
 - Bi-phase fault $X = xx \Omega/\text{phase}$; $-X = xx \Omega/\text{phase}$; $R = xx \Omega/\text{phase}$
 - * Power Swing Detection Function:
- 2-Distance protection, set as it follows (primary impedance):
 - (Same as above)
- Automatic Reclosure Device, activated by single-phase faults, with delay time set at 1 sec, action time set at 0,2 sec and a blocked on manual closure for 5 sec;
- Pilot Protection Device;
- Busbar differential protection;
- Breaker Failure Protection with $t = xx$ sec;
- Disturbance Recorder;
- Event Recorder;
- Relay1 –
- Relay 2 -
- Pole Discordance Relay with time $t = xx$ sec;
- Coupler Device:
 - * Manual closure with Asynchronous Check
 - * Manual closure with Synchronous Check
 - * Automatic closure with Synchronous Check

KASHAR Substation Busbar connection of 400 kV line Kosovo B equipped with:

- Current Transformer (CT) ratio: xx A (max overload xxx A);
- Voltage Transformer (VT) ratio: xx kV;
- Distance Protection, set as it follows (primary impedance):
 - * 1st zone – time delay = 0 sec
 - * 1st zone extended - time delay = 0 sec
 - * 2nd zone - time delay =
 - * 3rd zone - time delay =
 - * 4th directional zone - time delay =
 - * 5th non-directional zone - time delay =
 - * Starting Overcurrent relay: setting I =
 - Starting Min-impedance relay set
- Automatic Reclosure Device,
- Pilot Protection Device
- Busbar Differential Protection
- Breaker failure protection
- Disturbance Recorder;
- Event Recorder;
- Pole Discordance Relay
- Coupler Device:
 - * Manual closure with Asynchronous Check
 - * Manual closure with Synchronous Check

ANNEX N. 3

ELECTRICAL AND MECHANICAL PARAMETERS OF THE TRANSMISSION LINES

a) Fierza - Prizren 220 kV line

			Albania	Kosovo	Total
Length of Line	l	km			
Material and Cross-Sction of phase conductor	A	mm ²			
Material and Cross-Sction of shield wire	A	mm ²			
Ground resistance	ρ	Ωm			
Zero sequence resistance	R_0	Ω			
Zero sequence reactance	X_0	Ω			
Zero sequence impedance	Z_0	Ω			
Zero sequence capacity	C_0	nF			
Operating resistance	R_1	Ω			
Operating reactance	X_1	Ω			
Operating impedance	Z_1	Ω			
Operating capacity	C_q	nF			
Allowable continuous current summery	I_{th}	A			
Allowable continuous current wintery	I_{th}	A			

b) Kashar – Kosovo B 400 kV line

			Albania	Kosovo	Total
Length of Line	l	km			
Material and Cross-Sction of phase conductor	A	mm ²			
Material and Cross-Sction of shield wire	A	mm ²			
Ground resistance	ρ	Ωm			
Zero sequence resistance	R_0	Ω			
Zero sequence reactance	X_0	Ω			
Zero sequence impedance	Z_0	Ω			
Zero sequence capacity	C_0	nF			
Operating resistance	R_1	Ω			
Operating reactance	X_1	Ω			
Operating impedance	Z_1	Ω			
Operating capacity	C_q	nF			
Allowable continuous current summery	I_{th}	A			
Allowable continuous current wintery	I_{th}	A			

ANNEX N. 4

METERING AND RECORDING DEVICES IN Kosovo B and Prizren SUBSTATION

➤ **Kosovo B substation Busbar connection of 400 kV line Kashar (AL) equipped with “officially measure”:**

- xxxxxxxx active and reactive energy meter;
- xxxxxxxx active and reactive energy check meter;
- xxxxxxxx active and reactive energy recorder;
- xxxxxxxx active power digital converter.

Active energy measurements will be transmitted by tele counting to:

- Pristina control centre and than transmitted to SEE supervising centre.
- Tirana control centre and than transmitted to SEE supervising centre.

➤ **Prizren substation Busbar connection of 220 kV line Fierza (AL) equipped with “officially measure”:**

- xxxxxxxx active energy meter;
- xxxxxxxx active and reactive energy check meter;
- xxxxxxxx Measurements active and reactive energy recorder;
- xxxxxxxx active power digital converter.

Active power measurements in **Kosovo B and Prizren** substations will be transmitted to Pristina KTCC and used in the national F/P regulator, than sent to SEE supervising control centre.

ANNEX N. 5

METERING AND RECORDING DEVICES IN Kashar AND Fierza SUBSTATIONS

➤ **Kashar substation busbar connection of 400 kV line Kosovo B equipped with:**

- active energy meters;
- reactive energy meters;
- active energy check meter;
- active and reactive power recorder;
- Power and energy analog/digital transmission converter.

Active power measurements in Kashar substation will be transmitted to Tirana control centre and then sent to SEE supervising control centre.

➤ **Fierza substation - Busbar connection of 220 kV line Prizren equipped with:**

- active energy meters
- reactive energy meters
- active and reactive power recorder
- recorder devices
- Power and energy analog/digital transmission converter

Active energy measurements will be transmitted by tele-counting to:

- Prishtina regional control centre and then transmitted to Laufenburg
- Tirana control centre and then transmitted to Laufenburg

Active power measurements in Kashar substation will be transmitted to Tirana control centre and then sent to SEE supervising control centre.

ANNEX N. 6

DIAGRAM OF 400/220 kV Kosovo B SUBSTATION

(Drawings have to be add)

ANNEX N. 7

DIAGRAM OF 220/110 kV PRIZREN SUBSTATION

(Drawings have to be add)

ANNEX N. 8

DIAGRAM OF 400/220 kV KASHAR SUBSTATION

(Drawings have to be add)

ANNEX N. 9

DIAGRAM OF 220/110 kV FIERZA SUBSTATION

(Drawings have to be add)

ANNEX N. 10

FIGURE OF ALBANIAN NATIONAL TRANSMISSION GRID 400/220 KV

(Drawings have to be add)

ANNEX N. 11

FIGURE OF KOSOVIAN TRANSMISSION GRID 400/220 KV

(Drawings have to be add)

ANNEX N. 12

DIAGRAM OF INTERCONNECTIONS BETWEEN ALBANIA AND KOSOVO

(Drawings have to be add)

ANNEX N. 13

DUTIES OF “SUPERVISORY MASTER OF OPERATION ”

1. Receives the components of the system, removed from operation, made available by the control centre of their own unit (paragraph 4.3.1).
2. Confirms that the components of the system made available are those indicated on the list of the components of the plant involved in the work.
3. Executes (or arranges for the execution of) the manoeuvres decided before the start of the work (paragraphs 4.3.2 - 4.3.4).
4. Delivers to the “Supervisory Attendant of Operations” and to those responsible for the execution of the work of his own unit the components of the system made available for the work (paragraph 4.3.4).
5. At the end of the work, receives, ready for operation, the components of the system previously released by the “Supervisory Attendant of Operations” and by those responsible for the work of his own unit (paragraph 4.4.1).
6. Executes (or arranges for the execution of) the manoeuvres decided after the end of the work (paragraphs 4.4.2 - 4.4.4).
7. Finally, returns to the control centre of his/her own unit the components of the system involved in the work, in a condition which makes it possible to restore them in service (paragraph 4.4.4).

ANNEX N. 14

DUTIES OF “SUPERVISORY ATTENDANT OF OPERATIONS”

1. Executes (or arranges for the execution of) the manoeuvres requested by the “Supervisory Master of Operations” with **A1** form (paragraph 4.3.2).
2. After the execution of these manoeuvres, confirms that they have been executed by sending the **A2** form to the “Supervisory Master of Operations” (paragraph 4.3.3).
3. Receives from the “Supervisory Master of Operations”, by means of the **B1** form, the components of the system made available for the work (paragraph 4.3.4).
4. Issues to those responsible for the execution of the work of his own unit, having been delegated by the “Supervisory Master of Operations”, the components of the system, which are to be returned at the end of the work (paragraph 4.3.4).
5. By using **B2** form declares to the “Supervisory Master of Operations” that the work is finished and that the system is available for operation (paragraph 4.4.1).
6. Executes (or arranges for the execution of) the manoeuvres requested by means of **C1** form by the “Supervisory Master of Operations” (paragraph 4.4.2).
7. After the execution of these manoeuvres, confirms that they have been executed by sending the **C2** form to the “Supervisory Master of Operations” (paragraph 4.4.3).

ANNEX N. 15

ADDRESSES AND TELEPHONE NUMBERS OF COMPETENT KESH -TSO

KESH -TSO DISPATCHING DIVISION Address: Tirana, ALBANIA				
<i>Function</i>	<u>Qualification</u>	<i>Telephone number</i>	<i>Fax number</i>	<i>E-Mail</i>
Control Room	Continuous shift			
Co-ordination unit				
Grid planning				
Protective equipments				

ANNEX N. 16

ADDRESSES AND TELEPHONE NUMBERS OF COMPETENT KEK-TSO

KEK -TSO DISPATCHING DIVISION Address: Pristine, KOSOVO				
<i>Function</i>	<u>Qualification</u>	<i>Telephone number</i>	<i>Fax number</i>	<i>E-Mail</i>
Control Room	Continuous shift			
Co-ordination unit				
Grid planning				
Protective equipments				

ANNEX N. 19

SWITCHING ORDER FOR WORKS

ORDER for works /

No. /

Edited by

Data /

Overhead line			
Manipulation	Switch off o	Switch off and disconnection o	Switch off, disconnection, Earthing o
Duration from - to			
Needed time for re-witching Location Purpose of work			
Centro di Ripartizione /			
Centro di comando /	“responsabile manovre capofila” /		
	“ responsabile manovre incaricato” /		
Osservazioni			
Notice			
Per conoscenza a /			

**STANDARD FORM INTERCHANGED BETWEEN
“Supervisory master of operation”
AND “Supervisory attendant of operation” for KESH and KEK**

A: MESSAGES FOR SWITCHING - PRIOR THE START OF MAINTENANCE

- **Form A1:** Request of execution grid switching (before the start of maintenance)
- **Form A2:** Declaration of execution grid switching (before the start of maintenance)

B: MESSAGES FOR EMISSION AND RESTITUTION TO THE “DECLARATION OF HAND-OVER”

- **Form B1:** Declaration of hand-over (before the start of maintenance)
- **Form B2:** Restitution of hand-over (after the end of maintenance)

C: MESSAGES FOR SWITCHING - AFTER THE END OF MAINTENANCE

- **Form C1:** Request of execution grid switching (after the end of maintenance)
- **Form C2:** Declaration of execution grid switching (after the end of maintenance)

D: MESSAGES FOR INTERRUPTION OF MAINTENANCE CO-ORDINATED BY THE TRANSMISSION SYSTEM OPERATORS

- **Form D:** Request of interruption

B: MESSAGES FOR EMISSION AND RESTITUTION TO THE “DECLARATION OF HAND-OVER”

Form B1: Declaration of hand-over (before the start of maintenance):

B1

DECLARATION OF HAND-OVER	
from “ responsible of switching operation ” /	
-	
o KESH / <i>or</i> o KEK	
(signature)	
Message n. /	
((sender)	(recipient)
Date hour	
To Mr	
“responsible of switching operation”	
KESH or KEK	
Hand-over	
To Mr.	
“responsible of switching operation”	
KESH or KEK	
The line	
To start the maintenance.	
The line is switched on both terminls and grounded through earth-switches	
.....	
(signature)	

Form C2: Declaration of execution grid switching (after the end of maintenance):

C2

DECLARATION OF EXECUTION GRID SWITCHING	
from “ responsible of switching operation ” /	
-	
o KESH / <i>or</i> o KEK	
(signature)	
Message n. /	(sender) (recipient)
Date hour	
To Mr	
“responsible of switching operation”	
KESH or KEK	
declares	
To Mr.	
“responsible of switching operation”	
KESH or KEK	
che conformemente al messaggio n.	
of hour..... :	
<ul style="list-style-type: none">• the earthing switches are open /• and the disconnectors of the line are unlocked /	
Linein Substation of.....	
.....	
(signature)	

Cost calculation scheme

position	source	amount
cost of materials	income statement	0,00
raw material, supplies		
outside services		
+ personnel cost	income statement	0,00
wages and salaries		
social levies, charges for pensions and financial support		
+ interest cost	income statement	0,00
outside capital		
+ other cost	income statement	0,00
rents, leases		
charges, fees, contributions		
insurances		
office-, mailing-, travel-expenses		
business and representation allowance		
inspections and consulting		
banking fees		
expenses and remuneration for supervisory board		
deficits from disposal of fixed and floating assets		
+ taxes	income statement	0,00
operating taxes (land tax, tax on motor vehicles, ...)		
trade tax on earnings		
taxes on paper profit		
- cost reducing revenue and income	income statement	0,00
subsidiary activities (only if directly related to network service)		
internally produced and capitalised asset		
liquidation of building subsidies		
interest income		
income from subsidiaries		
income from other services (street lighting, ...)		
income from liquidation of reserves		
income from asset disposal		
income from rental and leasing activities		
other subsidies		
+ calculatory depreciation of fixed assets	cost accounting	0,00
straight-line depreciation on basis of original cash outlays for the calculatory share of outside-capital		
straight-line depreciation on basis of current market value for the calculatory share of equity-capital		
+ calculatory return on equity capital	cost accounting	0,00
calculatory return equivalent to fixed interest security (10-years-average)		
additional risk margin		
= total cost for partial network service		0,00

Operating lifetime

Type	bandwidth / years
universal facilities	
sites	0
roads	25 - 35
operation buildings	50 - 60
administration buildings	60 - 70
railway tracks, wagons	23 - 27
business equipment (without IT, tools, technical equipment)	8 - 10
tools, technical equipment	14 - 18
stock-room equipment	14 - 25
IT-equipment	
hardware	4 - 8
software	3 - 5
motor vehicles	
normal	5
heavy duty	8
generation facilities	
steam power station facilities	20 - 25
nuclear power station facilities	20 - 25
hydro power station facilities	
river reservoirs	50 - 70
dams	40 - 50
roads	30 - 35
machines, generators	20 - 25
network facilities	20 - 25
other hydraulic facilities	25 - 30
back-up-units	13 - 17
other generation facilities	20 - 25
additional installations for environmental protection	10 - 15
network facilities	
transmission networks	
lines	
overhead lines 110-380 kV	40 - 50
cables 220 kV	40 - 50
cables 110 kV	40 - 50
stations, transformers, switchgears, auxiliary facilities	35 - 45
measurement-, protection- and control facilities	25 - 30
others	20 - 30
distribution networks	
medium-voltage-networks	
cables	40 - 45
overhead lines	30 - 40
low-voltage-networks	
cables	40 - 45
overhead lines	30 - 40
stations	
main distribution stations	25 - 35
MV/LV-stations	30 - 40
buildings	30 - 50
stationary jacks and elevators, lighting	25 - 30
switchgears	30 - 35
protection- and control facilities	20 - 25
customer connections	
cables	35 - 45
overhead lines	30 - 35
MV/LV-transformers	30 - 35
cable distribution cabinets	30 - 35
measurement-facilities	20 - 25
telephone lines	30 - 40
mobile back-up-units	15 - 25

Network cost: Examples from German companies (in numbers)

Network-Charges:

Customer type		LV	MV - 1MW	MV - 5 MW	HV - 5 MW	HV - 25 MW	EHV - 25 MW	EHV - 100 MW
Peak demand	MW	0,005	1	5	5	25	25	100
Utilisation	h/a	600	2500	4000	4000	6000	6000	8000
Connection to		LV	MV	MV	HV	HV	EHV	EHV
RWE Energie	use-of-system-charge	€/kWa	3,00	47,96	47,96	30,10	30,10	17,86
		ct/kWh	5,63	0,40	0,40	0,25	0,25	0,15
	incl. turnover taxes	€/kWa	3,48	55,63	55,63	34,92	34,92	20,72
		ct/kWh	6,53	0,46	0,46	0,29	0,29	0,17
	total	k€/a	0	67	371	233	1308	779
average	ct/kWh	7,111	2,689	1,855	1,163	0,872	0,519	0,433
VEW Energie	use-of-system-charge	€/kWa	0,00	10,86	71,08	30,90	30,90	17,93
		ct/kWh	6,13	2,63	0,44	0,19	0,19	0,11
	incl. turnover taxes	€/kWa	0,00	12,60	82,45	35,84	35,84	20,80
		ct/kWh	7,11	3,05	0,51	0,22	0,22	0,13
	total	k€/a	0	89	514	223	1225	715
average	ct/kWh	7,105	3,558	2,571	1,115	0,817	0,477	0,390
EnBW	use-of-system-charge	€/kWa	0,00	58,75	58,75	36,61	36,61	18,18
		ct/kWh	5,98	0,32	0,32	0,19	0,19	0,10
	incl. turnover taxes	€/kWa	0,00	68,15	68,15	42,47	42,47	21,09
		ct/kWh	6,94	0,37	0,37	0,23	0,23	0,11
	total	k€/a	0	77	414	257	1399	696
average	ct/kWh	6,939	3,094	2,071	1,287	0,933	0,464	0,376
PreussenElektr	use-of-system-charge	€/kWa	0,00	0,00	0,00	16,70	47,43	21,25
		ct/kWh	0,00	0,00	0,00	0,71	0,09	0,08
	incl. turnover taxes	€/kWa	0,00	0,00	0,00	19,37	55,02	24,65
		ct/kWh	0,00	0,00	0,00	0,82	0,11	0,09
	total	k€/a	0	0	0	261	1539	747
average	ct/kWh	0,000	0,000	0,000	1,307	1,026	0,498	0,395
Bayernwerk	use-of-system-charge	€/kWa	4,91	11,10	60,36	37,52	37,52	24,97
		ct/kWh	5,50	2,22	0,58	0,19	0,19	0,03
	incl. turnover taxes	€/kWa	5,70	12,88	70,02	43,53	43,53	28,97
		ct/kWh	6,38	2,57	0,67	0,22	0,22	0,04
	total	k€/a	0	77	484	262	1417	778
average	ct/kWh	7,332	3,089	2,421	1,308	0,945	0,518	0,398
VEAG	use-of-system-charge	€/kWa	0,00	0,00	0,00	0,00	40,90	40,90
		ct/kWh	0,00	0,00	0,00	0,00	0,00	0,00
	incl. turnover taxes	€/kWa	0,00	0,00	0,00	0,00	47,44	47,44
		ct/kWh	0,00	0,00	0,00	0,00	0,00	0,00
	total	k€/a	0	0	0	0	1186	4744
average	ct/kWh	0,000	0,000	0,000	0,000	0,000	0,791	0,593
HEW	use-of-system-charge	€/kWa	0,00	13,35	48,96	17,48	17,48	0,00
		ct/kWh	5,37	2,21	0,79	0,43	0,43	0,00
	incl. turnover taxes	€/kWa	0,00	15,48	56,79	20,28	20,28	0,00
		ct/kWh	6,23	2,57	0,91	0,50	0,50	0,00
	total	k€/a	0	80	467	201	1253	0
average	ct/kWh	6,228	3,187	2,333	1,005	0,836	0,000	0,000
Ø	total	k€/a	0	78	450	239	1357	817
average	ct/kWh	6,943	3,124	2,250	1,197	0,905	0,544	0,431

Service - Charges:

Network		with turnover tax				
		LV	MV	HV	EHV	
RWE Energie	metering					
	remote, 1/4 h	€/a	1670,40	2185,44	4955,52	5247,84
	annual	€/a	28,40			
	reactive power					
		ct/kVAh	1,07	1,07	on request	on request
	network capacity for reserve power					
	0 h/a - 200 h/a	€/kWa	42,92	24,07	15,08	8,99
	200 h/a - 400 h/a	€/kWa	51,50	28,88	18,10	10,79
	400 h/a - 600 h/a	€/kWa	60,09	33,70	21,11	12,59
	emergency reserve					
	< 1 month	€/kWm	17,40	17,40	17,40	17,40
		ct/kWh	3,56	3,56	3,56	3,56
	> 1 month	€/kWm	34,80	34,80	34,80	34,80
		ct/kWh	7,12	7,12	7,12	7,12
	balance power costs					
	per day	€/kWd	2,32	2,32	2,32	2,32
	max. per month	€/kWm	17,40	17,40	17,40	17,40
		ct/kWh	3,56	3,56	3,56	3,56
	refund					
		ct/kWh	0,87	0,87	0,87	0,87
secondary reserve						
< 1/4 h and <= 2/m	€/kWm	0,00	0,00	0,00	0,00	
< 1 h and <= 2/m	€/kWm	0,58	0,58	0,58	0,58	
max. if > 2/m	€/kWm	17,40	17,40	17,40	17,40	
	ct/kWh	3,56	3,56	3,56	3,56	
VEW Energie	metering					
	remote, 1/4 h	€/a	626,40	1467,40	on request	on request
	annual	€/a	29,19			
	reactive power					
		ct/kVAh	1,07	1,07	1,07	1,07
	network capacity for reserve power					
	0 h/a - 200 h/a	€/kWa	79,26	31,78	13,77	8,06
	200 h/a - 400 h/a	€/kWa	95,12	38,14	16,53	9,67
	400 h/a - 600 h/a	€/kWa	110,97	44,50	19,28	11,28
	emergency reserve					
		ct/kWh	23,72	23,72	23,72	23,72
	balance power costs					
	per day	€/kWd	2,38	2,38	2,38	2,38
	max. per month	€/kWm	17,79	17,79	17,79	17,79
	high tariff	ct/kWh	4,15	4,15	4,15	4,15
	low tariff	ct/kWh	2,97	2,97	2,97	2,97
	average	ct/kWh	3,56	3,56	3,56	3,56
	refund					
	high tariff	ct/kWh	0,89	0,89	0,89	0,89
	low tariff	ct/kWh	0,59	0,59	0,59	0,59
average	ct/kWh	0,74	0,74	0,74	0,74	

Network			with turnover tax			
			LV	MV	HV	EHV
EnBW	metering					
	remote, 1/4 h	€/a	1305,00	1838,60	on request	on request
	annual	€/a	27,28			
	network capacity for reserve power					
	0 h/a - 200 h/a	€/kWa	36,54	25,06	15,63	7,77
	200 h/a - 400 h/a	€/kWa	43,84	30,07	18,75	9,31
	400 h/a - 600 h/a	€/kWa	51,12	35,08	21,85	10,86
	balance power costs					
		€/kWm	10,88	10,88	10,88	10,88
		ct/kWh	3,91	3,91	3,91	3,91
refund						
	ct/kWh	0,89	0,89	0,89	0,89	
secondary reserve < 1 h						
	€/kWm	5,93	5,93	5,93	5,93	
PreussenElektra	metering					
	remote, 1/4 h	€/a	on request	on request	on request	on request
	annual	€/a	on request			
	reactive power					
	0,9...0,95	ct/kVAh	0,12	0,12	0,12	0,12
	<0,9	ct/kVAh	1,04	1,04	1,04	1,04
	balance power costs					
		€/kWm	15,08	15,08	15,08	15,08
	high tariff	ct/kWh	3,83	3,83	3,83	3,83
	low tariff	ct/kWh	2,32	2,32	2,32	2,32
	average	ct/kWh	3,07	3,07	3,07	3,07
	refund					
	high tariff (in tol.)	ct/kWh	1,16	1,16	1,16	1,16
	low tariff (in tol.)	ct/kWh	0,58	0,58	0,58	0,58
	high tariff (out tol.)	ct/kWh	0,58	0,58	0,58	0,58
low tariff (out tol.)	ct/kWh	0,35	0,35	0,35	0,35	
average	ct/kWh	0,67	0,67	0,67	0,67	

Network		with turnover tax			
		LV	MV	HV	EHV
Bayernwerk	metering				
	remote, 1/4 h	€/a	on request	on request	on request
	annual	€/a	on request		
	reactive power				
		ct/kVAh	1,48	1,48	1,48
	network capacity for reserve power				
	0 h/a - 200 h/a	€/kWa		32,19	15,64
	200 h/a - 400 h/a	€/kWa		38,63	18,77
	400 h/a - 600 h/a	€/kWa		45,07	21,89
	emergency reserve				
	with 1/4-h-metering	€/kWm	17,79	17,79	17,79
	high tariff	ct/kWh	4,15	4,15	4,15
	low tariff	ct/kWh	2,97	2,97	2,97
	average	ct/kWh	3,56	3,56	3,56
	without	€/kWm	0,00	0,00	0,00
		ct/kWh	8,90	8,90	0,00
	balance power costs				
		€/kWm	17,79	17,79	17,79
	high tariff	ct/kWh	4,15	4,15	4,15
	low tariff	ct/kWh	2,97	2,97	2,97
	average	ct/kWh	3,56	3,56	3,56
	refund				
	high tariff (in tol.)	ct/kWh	1,18	1,18	1,18
low tariff (in tol.)	ct/kWh	0,59	0,59	0,59	
high tariff (out tol.)	ct/kWh	0,59	0,59	0,59	
low tariff (out tol.)	ct/kWh	0,00	0,00	0,00	
average	ct/kWh	0,59	0,59	0,59	
secondary reserve					
< 1 h and <= 5/a	ct/kWh	4,15	4,15	4,15	
< 1 h and > 5/a	ct/kWh	2,97	2,97	2,97	

3. Annex 3 Methodology of Cross-Border Trade

Table A 3.1 Annual Cost of Horizontal network of the transmission lines

Country		Circuits		Year 2005	Year 2010		Year 2015		Year 2020	
					Reference Case	New 400 kV line	Reference Case	New 400 kV line	Reference Case	New 400 kV line
Albania	400 kV	Overall Network	km	124	296	483	296	483	296	483
		Horizontal Network	km	124	296	483	296	483	296	483
			%	100	100	100	100	100	100	100
	220 kV	Overall Network	km	940	1,000	1,000	1,004	1,004	1,024	1,024
		Horizontal Network	km	940	1,000	1,000	1,004	1,004	1,024	1,024
			%	100	100	100	100	100	100	100
	110 kV	Overall Network	km	1166	1,350	1,350	1,414	1,414	1,485	1,485
		Horizontal Network	km	0	0	0	0	0	0	0
			%	0	0	0	0	0	0	0
Kosovo	400 kV	Overall Network	km	181	181	232	189	240	189	240
		Horizontal Network	km	181	181	232	189	240	189	240
			%	100	100	100	100	100	100	100
	220 kV	Overall Network	km	311	353	353	353	353	353	353
		Horizontal Network	km	311	353	353	353	353	353	353
			%	100	100	100	100	100	100	100
	110 kV	Overall Network	km	625	678	678	772	772	849	849
		Horizontal Network	km	0	0	0	0	0	0	0
			%	0	0	0	0	0	0	0

Table A 3.2 Annual Cost of Horizontal network of the transformers

Transformers 400/220 kV	Year 2005		Year 2010		Year 2015		Year 2020	
	Total Overall Network	Horizontal Network	Total Overall Network	Horizontal Network	Total Overall Network	Horizontal Network	Total Overall Network	Horizontal Network
	M€	M€	M€	M€	M€	M€	M€	M€
Albania	0.437	0.437	0.875	0.875	0.875	0.875	1.094	1.094
Kosovo	0.810	0.810	0.810	0.810	1.080	1.080	1.350	1.350

Table A 3.3 Expected Electricity Transits in Kosovo & Albania

Electricity Transits	Year 2010			Year 2015			Year 2020		
	Reference Case	New 400 kV line	Incremental	Reference Case	New 400 kV line	Incremental	Reference Case	New 400 kV line	Incremental
	GWh/year	GWh/year	GWh/year	GWh/year	GWh/year	GWh/year	GWh/year	GWh/year	GWh/year
Albania	1,774	2,159	385	481	1,042	562	609	762	153
Kosovo	3,511	3,172	-339	2,599	3,071	471	3,548	3,679	131
TOTAL	5,284	5,331	46	3,080	4,113	1,033	4,157	4,441	284

Table A 3.4 Expected Cost Claim for Kosovo & Albania from Cross-Border Trade

		Year 2010					Year 2015					Year 2020				
		Dema nd	Transit	"Transit key"	HN Annual Cost	Expected Cost claim	Demand	Transit	"Transit key"	HN Annual Cost	Expected Cost claim	Demand	Transit	"Transit key"	HN Annual Cost	Expected Cost claim
		GWh	GWh	%	M€	M€	GWh	GWh	%	M€	M€	GWh	GWh	%	M€	M€
ALBANIA	New Line	7,379	2,159	22.6	21.04	4.7618	9,126	1,042	10.3	21.08	2.1612	12,072	762	5.9	21.53	1.2783
	No new Line	7,379	1,774	19.4	17.59	3.4082	9,126	481	5.0	17.63	0.8820	12,072	609	4.8	18.08	0.8685
KOSOVO	New Line	5,546	3,172	36.4	9.06	3.2968	6,620	3,071	31.7	9.48	3.0035	6,964	3,679	34.6	9.75	3.3700
	No new Line	5,546	3,511	38.8	8.12	3.1478	6,620	2,599	28.2	8.54	2.4073	6,964	3,548	33.8	8.81	2.9729

Table A 3.5 SEE Horizontal Network of the transmission lines

Country	TSO / Company	Circuits 400 kV			Circuits 220 kV			Circuits 150 kV			Circuits 110 kV		
		Overall Network	Horizontal Network		Overall Network	Horizontal Network		Overall Network	Horizontal Network		Overall Network	Horizontal Network	
			km	km		%	km		km	%		km	km
Bosnia and Herzegovina II	ERS	144	22	15	219	201	92	0	0		1,475	195	13
Bulgaria	NEK	2,263	2,239	99	2,693	2,420	90	0	0		9,678	5,640	58
FYR of Macedonia	EMS	389	389	100	170	170	100	23	23	100	1,648	1,518	92
Montenegro	EPCG	263	263	100	410	410	100	0	0		575	575	100
Romania	TEL	3,899	3,834	98	4,876	4,159	85	0	0		18,182	7,121	39
Serbia	EPS	1,494	1,475	99	2,264	2,192	97	0	0		4,087	4,010	98

Table A 3.6 SEE Horizontal Network of the transformers

Country	TSO	Transformers 400/220 kV					Transformers 400/110 kV					Transformers 220/110 kV					Transformers 150/110 kV					
		Total	Horizontal Network				Total	Horizontal Network				Total Overall Network		Horizontal Network				Total	Horizontal Network			
			Total	Nr	Unit			Total	Nr	Unit		Total	Nr	Total	Nr	Unit			Total	Nr	Unit	
			MVA	MVA		MVA		%	MVA	MVA		MVA	%	MVA		MVA			MVA	%	MVA	MVA
B & H	ERS	800	800	2	400	100	1,200	300	1	300	25	150		150	1	150	100	1,475	195			13
Bulgaria	NEK	4,474	4,474	3	800	100	4,150	4,150	1	400	100	7,340	34	6,160	29	200	84					
				2	722				15	250			3		2	180						
FYR of Macedon	EMS						1,800	1,800	6	300	100	450		450	3	150	100	100	100	2	50	100
Monteneg	EPCG	800	800	2	400	100	600	600	2	300	100	700		700	3	150	100					
Romania	TEL	8,000	7,600	19	400	95	4,500	2,500	10	250	56	13,02	7,925	39	200	61						
												5		5	1		125	1	125			
Serbia	EPS	4,000	4,000	10	400	100	3,150	2,250	7	300	71	4,050	1	3,900	1	200	96					
									1	150			25		1	150		1	100			

Table A 3.7 SEE Annual Cost of Horizontal network of the transmission lines

Line type	Country	TSO / Company	Standard Costs	Overall Network		Horizontal Network	
				Quantity	Annual Cost	Quantity	Annual Cost
				k€/km	km	M€	M€
(1)	(2)	(3)	(4)	(5)	(6)=9%*(4)*(5)	(7)	(8)=9%*(4)*(7)
400 kV	B&H	ERS		144	2.66	22	0.41
	Bulgaria	NEK		2,263	41.75	2,239	41.31
	Macedonia	EMS		389	7.18	389	7.18
	Montenegro	EPCG		263	4.85	263	4.85
	Romania	TEL		3,899	71.94	3,834	70.74
	Serbia	EPS		1,494	27.56	1,475	27.21
220 kV	B&H	ERS		219	2.46	201	2.26
	Bulgaria	NEK		2,693	30.30	2,420	27.23
	Macedonia	EMS		170	1.91	170	1.91
	Montenegro	EPCG		410	4.61	410	4.61
	Romania	TEL		4,876	54.86	4,159	46.79
	Serbia	EPS		2,264	25.47	2,192	24.66
150 kV	B&H	ERS		0	0.00	0	0.00
	Bulgaria	NEK		0	0.00	0	0.00
	Macedonia	EMS		23	0.17	23	0.17
	Montenegro	EPCG		0	0.00	0	0.00
	Romania	TEL		0	0.00	0	0.00
	Serbia	EPS		0	0.00	0	0.00
110 kV	B&H	ERS		1,475	9.29	195	1.23
	Bulgaria	NEK		9,678	60.97	5,640	35.53
	Macedonia	EMS		1,648	10.38	1,518	9.56
	Montenegro	EPCG		575	3.62	575	3.62
	Romania	TEL		18,182	114.55	7,121	44.86
	Serbia	EPS		4,087	25.75	4,010	25.26
TOTAL Quantity and Costs	B&H	ERS		1,838	14.41	418	3.90
	Bulgaria	NEK		14,634	133.02	10,299	104.07
	Macedonia	EMS		2,230	19.64	2,100	18.82
	Montenegro	EPCG		1,248	13.09	1,248	13.09
	Romania	TEL		26,957	241.34	15,114	162.39
	Serbia	EPS		7,845	78.78	7,677	77.14

Table A 3.8 SEE Annual Cost of Horizontal network of the transmission lines

Transformer type	Country	TSO / Company	Unit installed capacity	Standard Costs	Overall Network		Horizontal Network	
					Quantity	Annual Cost	Quantity	Annual Cost
					MVA	M€	MVA	M€
(1)	(2)	(3)	(4)	(5)	(6)	(7)=9%*(5)*(6)	(7)	(8)=9%*(4)*(7)
Transformers 400/220 kV	B&H	ERS	400	7.5	800	0.54	800	0.54
	Bulgaria	NEK	800	6.3	2,400	1.36	2,400	1.36
			630	6.7	630	0.38	630	0.38
			722	6.5	1,444	0.84	1,444	0.84
	Macedonia	EMS			0	0.00	0	0.00
	Montenegro	EPCG	400	7.5	800	0.54	800	0.54
	Romania	TEL	400	7.5	8,000	5.40	7,600	5.13
Serbia	EPS	400	7.5	4,000	2.70	4,000	2.70	
Transformers 400/110 kV	B&H	ERS	300	8.1	1,200	0.87	300	0.26
	Bulgaria	NEK	400	7.5	400	0.27	400	0.27
			250	8.4	3,750	2.84	3,750	2.84
	Macedonia	EMS	300	8.1	1,800	1.31	1,800	1.31
	Montenegro	EPCG	300	8.1	600	0.44	600	0.44
	Romania	TEL	250	8.4	4,500	3.40	2,500	1.89
	Serbia	EPS	300	8.1	3,000	2.19	2,100	1.53
150			9.6	150	0.13	150	0.13	
Transformers 220/110 kV	B&H	ERS	150	9.6	150	0.13	150	0.13
	Bulgaria	NEK	200	8.9	6,800	5.45	5,800	4.65
			180	9.2	540	0.45	360	0.30
	Macedonia	EMS	150	9.6	450	0.39	450	0.39
	Montenegro	EPCG	150	9.6	450	0.39	450	0.39
			125	10.0	250	0.23	250	0.23
	Romania	TEL	200	8.9	12,400	9.93	7,800	6.25
			125	10.0	625	0.56	125	0.11
	Serbia	EPS	200	8.9	200	0.16	200	0.16
150			9.6	3,750	3.24	3,600	3.11	
			100	10.6	100	0.10	100	0.09
Transformers 150/110 kV	B&H	ERS	0	0.0	0	0.00	0	0.00
	Bulgaria	NEK	0	0.0	0	0.00	0	0.00
	Macedonia	EMS	50	12.6	100	0.11	100	0.11
	Montenegro	EPCG	0	0.0	0	0.00	0	0.00
	Romania	TEL	0	0.0	0	0.00	0	0.00
	Serbia	EPS	0	0.0	0	0.00	0	0.00
TOTAL Quantity and Costs	B&H	ERS			2,150	1.54	1,250	0.93
	Bulgaria	NEK			15,964	11.58	14,784	10.63
	Macedonia	EMS			2,350	1.81	2,350	1.81
	Montenegro	EPCG			2,100	1.59	2,100	1.59
	Romania	TEL			25,525	19.30	18,025	13.38
	Serbia	EPS			11,200	8.51	10,150	7.72

Table A 3.9 SEE Transit key Year 2003

Country	TSO / Company	Consumption	Transits	"Transit key"
		GWh	MWh	%
Albania	ATSO/KESH	5,430.31	36,004	0.66
Bosnia and Herzegovina II	ERS	2,111.64	557,977	20.90
Bulgaria	NEK	28,946.00	2,041,028	6.59
Macedonia	EMS	6,406.00	856,849	11.80
Montenegro	EPCG	4,195.79	1,325,978	24.01
Romania	TE	47,590.00	420,585	0.88
Serbia	EPS	33,380.85	3,549,274	9.61
TOTAL		128,060.59	8,787,695	74.44

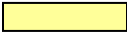

Table A 3.10 SEE Cost Claim Year 2003

Country	TSO / Company	"Transit key"	Annual Cost of the HN	Expected Cost claim
		%	M€	M€
Albania	ATSO/KESH	0.66	15.60	0.10
Bosnia and Herzegovina II	ERS	20.90	4.82	1.01
Bulgaria	NEK	6.59	114.70	7.55
Macedonia	EMS	11.80	20.63	2.43
Montenegro	EPCG	24.01	14.68	3.52
Romania	TE	0.88	175.77	1.54
Serbia	EPS	9.61	84.85	8.16
TOTAL			431.05	24.32

Table A 3.11 SEE Part of Compensation Fund Year 2003

Country	TSO / Company	Declared Export	Net Flow	Import from perimeter countries
		MWh	MWh	MWh
Albania	ATSO/KESH	604	2,260,443	631,226
B & H	ERS	2,028,841	2,040,861	0
Bulgaria	NEK	1,655,799	6,289,213	1,676
FYR of Macedonia	EMS	23,061	960,135	24,484
Montenegro	EPCG	1,080	2,078,034	0
Romania	TE	1,367,360	2,880,212	186,844
Serbia	EPS	92,054	3,353,925	1,950,537
TOTAL		5,168,799	19,862,823	2,794,767

Table A 3.12 SETSO Fund Estimation for CBT Year 2003

SETSO fund (total)	M€	24.32		Data of Dataset 2002, used as estimation for 2003
First Part of the fund	M€	2.58		Data of Dataset 2002, that are fixed for 2003 (used as ex-ante determination)
Second Part of the fund	M€	12.73		
Third Part of the fund	M€	9.01		

Country	Declared Exports (First part of the fund)		Net Flow (Second part of the fund)			Third part of the fund		Cost Claim			
	A	B	C	D	E	F	G	H	I	J	K
	Declared Exports	Expected amount from declared exports (*)	Expected amount from import from perimeter countries (**)	Net Flow	Expected amount from Net Flow(***)	Total expected Third Party Recovery Reference Amount	Pro Rata to the amounts of Declared Exports	Cost of the Horizontal Network	Internal Consumption	Expected Transit Flow	Expected Cost Reference Amount
	MWh	€	€	MWh	M€	M€	M€	M€	GWh	GWh	M€
Albania	604	302	631,226	2,260,443	1.13	1.76	0.00	15.60	5,430.31	36.00	0.10
Bosnia and Herzegovina II	2,028,841	1,014,421	0	2,040,861	1.02	2.03	3.54	4.82445	2,111.64	557.98	1.01
Bulgaria	1,655,799	827,900	1,676	6,289,213	3.14	3.97	2.89	114.69555	28,946.00	2,041.03	7.55
FYR of Macedonia	23,061	11,531	24,484	960,135	0.48	0.52	0.04	20.63295	6,406.00	856.85	2.43
Montenegro	1,080	540	0	2,078,034	1.04	1.04	0.00	14.67855	4,195.79	1,325.98	3.52
Romania	1,367,360	683,680	186,844	2,880,212	1.44	2.31	2.38	175.76865	47,590.00	420.59	1.54
Serbia	92,054	46,027	1,950,537	3,353,925	1.68	3.67	0.16	84.85425	33,380.85	3,549.27	8.16
TOTAL	5,168,799	2,584,400	2,794,767	19,862,823	9.93	15.31	9.01	431.0	128,060.6	8,787.7	24.32

Explanatory Notes:

(*) Applying a charge of 0.5 €/MWh

(**) Applying a charge of 1.0 €/MWh

(***) Net Flow fee of 0.5 €/MWh