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## ETSO proposal for 2003 CBT Mechanism

### Introduction

The “Conclusions of the 8<sup>th</sup> Regulators forum in Florence” (February 2002) contains in chapter III “Cross-border tarification”, the following paragraphs:

*“3. The CEER and the Commission restated and clarified the principles for the inter-TSO compensation mechanism to enter into force in 2003. These principles were previously discussed with TSOs and network users and received the support of the Forum:*

- *costs and benefits from cross-border flows, covering in principle losses, new investments, and appropriate levels of existing investments, will be compensated via an inter TSO mechanism based on physical flows;*
- *the inter TSO mechanism includes all EU countries plus Norway. Switzerland will be included on the basis of agreed TPA principles;*
- *the incorporation of accession countries into the mechanism needs to be envisaged in the near future. Consideration also needs to be given to other countries participating in the UCTE organisation;*
- *cost calculations should be standardised, transparent and based on real flows;*
- *the net costs or incomes for TSOs from the compensation mechanism should be transferred to the domestic transmission tariffs;*
- *cross-border congestion costs are in principle not included in transmission tariffs.*

*The CEER presented a possible detailed algorithm to deal with the first two issues mentioned under point 2. An alternative approach was presented on behalf of the Belgian Regulator and the Swiss Federal Office. Both algorithms seek to accurately establish the amount of and responsibilities for transit flows on the basis of actual physical flows, established on the basis of real network models.*

*The Forum underlined that a more precise estimate of the extent to which different generators and loads are likely to generate transit flows – on the basis of real network models - is necessary in order to come closer to cost-reflectiveness and to the right locational signals. The transmission system operators were furthermore invited to collect and exchange relevant data for the purpose of better calculation of compensations in order to improve the efficiency and fairness of the inter-TSO mechanism.*

*The Forum invited ETSO, in collaboration with the CEER, the Commission and other stakeholders, to further analyse, on the basis of real network flows available algorithms, and to make this analysis, as well as the relevant data used for this analysis, available and to put forward, by 1st September 2002, a concrete proposal for the implementation of the new mechanism to be put into effect on 1st January 2003. The new mechanism needs to take an appropriate balance between simplicity and cost-reflectiveness. The Forum underlined the importance of providing adequate perspectives for the rapid participation of accession countries in the 2003 mechanism.*

4. *The Forum recognised that as a complement to the inter-TSO payment mechanism further work has to be done on network tariffication structures. The Forum invited the CEER, in close collaboration with the Commission, Member States, Switzerland, ETSO and other relevant stakeholders, to continue this work on the basis of the following principles:*

- *transmission tariffs shall consist of input and exit charges (G and L) and shall be independent of commercial transactions;*
- *there shall be no extra tariffs for import, export or transit, providing that appropriate and efficient locational signals are in place;*
- *tariff harmonisation should be pursued, including with regard to G and L charges in national tariffication systems (tariff structure).*

*The CEER was invited to put forward further detailed work in this respect by 1 September with the aim of putting it into effect on 1 January 2003.*

ETSO proposes the mechanism described below to compensate the use of national transmission systems by cross-border trade (CBT-mechanism) for 2003. This mechanism improves the present system as it clarifies the cost claim process by the TSOs and answers some of the criticisms made of the existing mechanism. This proposal for 2003 is in accordance with the ETSO vision of a step-by-step approach rather than a new “final” mechanism that still requires further development.

This evolution also allows other TSOs, including possibly those from the accession countries, to participate in the inter-TSO mechanism in 2003. Slovenia and Greece have already stated their wish to join the new system together with the present CBT signatories at the outset. CENTREL countries have also stated their willingness to take part but for different technical reasons this might not be possible from 1/1/03 but they may join during 2003. NORDEL and the UK TSOs have welcomed the improvements to the mechanism but will probably not join in 2003, yet.

To that end ETSO favours a solution that:

- applies a uniform model and criteria for the identification of the horizontal network of each country, and
- harmonizes the costing scheme for the relevant horizontal network.

The following proposal for 2003 has been adopted unanimously by the members of ETSO. It takes into account, to the extent possible, the concerns of all TSOs as well as those of their national Regulatory authorities. To be implemented, this proposal will of course need the agreement from the different national Regulatory authorities and the European Commission.

The proposal relates the fair compensation for the use of national transmission networks by cross-border trade (transits). More particularly, the proposal does not affect or grant access to national networks (covered by EU directive and national legislations) nor does it cover capacity allocation and congestion management issues for which dedicated solutions are required.

The ETSO proposal maintains the principles of an inter-TSO compensation that is function of the transit hosted by each country as measured from the flows on the interconnections with the adjacent control blocks. The proposal allows for subsidiarity in design of details.

### **The principles of ETSO proposal for the CBT mechanism of 2003**

For defining the new CBT-Mechanism, three steps have been followed:

- i) Definition of the Horizontal Network (HN),
- ii) Definition of the costs of the Horizontal Network used for transits, i.e. the mechanism for the calculation of the CBT-fund and the inter-TSO compensation,
- iii) Definition on how the fund is financed.

#### **a) Definition of the HN**

***The HN is defined by applying the Allocation of Transit Flow (ATF)-approach, i.e. define for each network element if it is allocated to the HN or not by a technical auditable approach.***

The ATF-approach identifies the horizontal network by calculating the participation of each network element due to transit by comparison with a situation without transit. Ideally, this comparison could be performed based on a complete real network situations observed during the year 2002. A good approximation can also be obtained with a reduced set of network situations which are considered as sufficiently representative. In this case, the criteria that defines this set of situations need to be agreed by all participating TSOs (and their regulatory bodies).

The practical problem is that real flow data is not available to establish a sufficient number of harmonised recorder network situations. Only two scenarios are presently available for a given year for the UCTE area. ETSO has decided to start collection of hourly data from 1 Jan 2003 onwards, so that a more advanced method could be applied in the future.

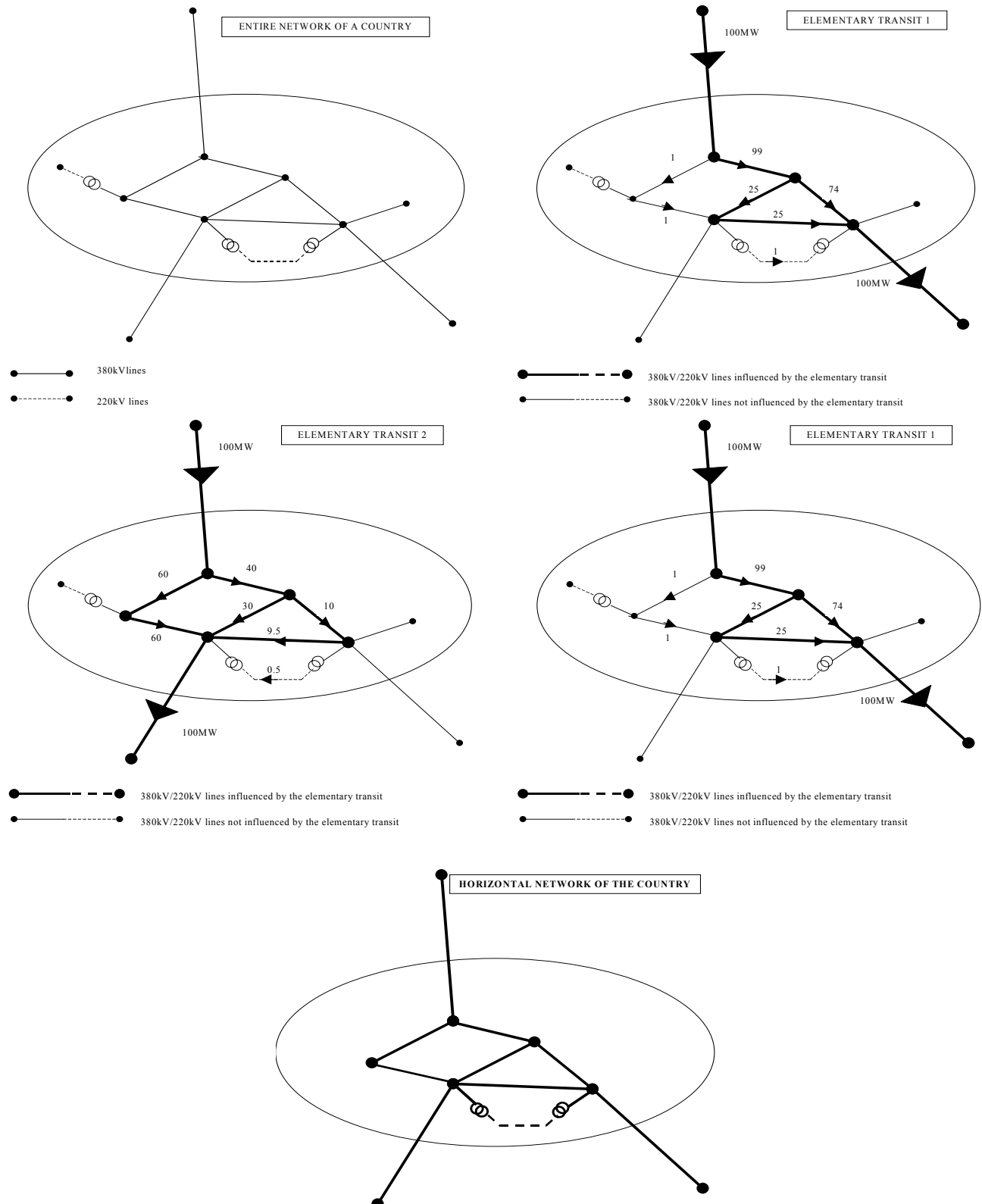
However, for the next year the ATF model will be used by comparing an empty network with superimposed transits between a pair of interconnectors with the other adjacent countries/TSOs.

In particular, the proposal is based on the concept of a “standard transit” instead of real transits so that we ensure that horizontal networks in all countries (respectively TSOs) will be defined on the same basis. The more or less transited situation of a country will not affect the determination of its horizontal network, but only directly through the transit key.

To ensure coherency within Europe, transits taken into account in the determination of horizontal networks must be standardised in terms of magnitude and in terms of pattern (by pattern, we mean the way a transit of given magnitude enters and exits through the different tie-lines of the country/TSO).

Therefore, it is proposed to use a standardised transit magnitude of 100MW. Then standardised transit patterns must reflect the diversity of possible transits, with various influences on the transmission grid. This is why it is proposed to consider all possible “one-to-one” transit patterns: transit patterns with an entering flow in one tie-line (100MW) and an exiting flow in another tie-line (100MW), and zero flows in all other tie-lines. For a country/TSO with  $N$  tie-lines, there are  $N(N-1)$  such “one-to-one” transit patterns.

It can easily be shown that any real transit can be decomposed as the superposition of several one-to-one transits. Therefore, using one-to-one transits will yield very relevant horizontal networks.



In order to decide whether a given grid element must be included in the horizontal network of a country/TSO or not, the method identifies which elements bear a flow - caused by applying the standard transit applied between two tie-lines – that is greater or equal to 1 MW. Elements with transit flows that are lower than the threshold value are removed. The calculations are undertaken country by country, TSO by TSO and CBT party by CBT party respectively.

**b) The share of transits or cost claim of each country: transit key**

**The *share of transits* in the HN is defined by using the transit key, i.e. the same way as in the present 2002 mechanism.**

This solution gives a result that is a share of the overall amount of the infrastructure costs identified by the ATF-approach. It uses the present methodology and would facilitate continuity of the Data Administrators' work. It can be combined with the harmonised definition of HN thus applying an established method on a HN defined with more transparency.

The transit key is defined as the minimum of import and export flows measured hour by hour at the interconnection lines between countries. It is not related to peak capacity but to the average use of the network.

$$\xi_{kM} = \frac{\sum_{m=1}^M T_{km}}{\sum_{m=1}^M T_{km} + \sum_{m=1}^M L_{km} \times 1000}$$

*k (country)*  
*M (months)*

In future, a more sophisticated approach can be applied as sufficient set of real flow network situations becomes available (see point a) above). Following this, the share of transit cost can be calculated based on real transit flows element-by-element.

**c) The costs of the HN**

**The *costs of the HN* are defined using the regulated costs of the entire HN identified as described above.**

Each TSO will use its "regulatory asset" base agreed by the respective regulators and published.

As regards losses, calculations performed on two network situations on the UCTE network show that losses remain fairly stable with and without transits (using the ATF model).

Therefore, the cost claim for CBT mechanism for 2003 will not include a cost claim for losses induced by transits.

The treatment of losses is therefore a quasi zero-sum result for the sum of all countries, but different countries are affected differently in terms of losses. In some countries losses increase and in some others decrease due to transit. ETSO will therefore establish an additional regime where countries that benefit from reduced losses shall compensate countries that incur increased losses. To this aim, a separate multilateral contract will be made between the countries that participate to the 2003 mechanism.

#### **d) The amount of the ETSO compensation fund**

The amount of the ETSO compensation fund has to be the result of technical justifiable and transparent criterion. The improvements of the CBT mechanism for 2003 proposed by ETSO ensure this principle. On the basis of all the above points and if only the participating countries in the 2002 system would take part in the 2003 mechanism, the fund is likely to be lower than 200M€. The final figure for the new fund will only be known when the necessary calculations have been undertaken from all countries that finally decide to participate in the new system next year. The participation of new countries will necessarily increase the fund.

#### **e) Financing of the ETSO compensation fund**

The ETSO compensation fund will be divided in three parts:

- ***A first part called “declared export” part of the fund:*** In order to raise this fund, each TSO charges 0.5€/MWh to all declared exports declaring different control blocks for the “source” and “sink”. The precise design of the charge recovery by individual TSOs is left to the decision of the individual TSO and its Regulating Authorities. Nevertheless, this charge recovery must be in the spirit of levying a fee on those market participants having the responsibility of export flows. This implies that in some countries it would be the traders while in others, the generators connected that are responsible for export flows.

- ***A second part called “net flow” part of the fund:*** “Net Flow” is defined as the country net flow in export and import directions (measured hour by hour). This part of the fund has also to take into account the contribution from the perimeter countries.

It is raised from:

- the contribution resulting from the part of the national tariffs included in the “L”;
  - the contribution from the perimeter countries: as in the present 2002 mechanism it remains at 1€/MWh<sup>1</sup> as an injection fee on the declared exports from exporters/traders of these countries to the area of the signatories of the new 2003 CBT mechanism. The perimeter countries could be (to be confirmed later): UK, Morocco, CENTREL (for 1/1/2003)<sup>2</sup> and NORDEL. Perimeter countries are entitled to charge a fee for declared exports coming from the continental ETSO area.
- ***A third part of the fund:*** In the eventuality that the sum of the two previous parts is less than the ETSO fund, the difference will be charged to the exporting countries. The way this amount will be charged in the network tariffs within each concerned country is left to subsidiarity.

#### **f) Clearing Process and Settlement of differences**

Settlement is required because each part of the contribution is estimated ex-ante, based on the historical data, while the actual contributions paid to the fund are based on the real data from 2003. As the effective income at the end of 2003 may be different from the expected ETSO fund, the settlement of differences is achieved as follows:

- Any under-recovery will be allocated according to the “Transit key”, calculated from the hourly measured flows in 2003, and the difference reported to the next year mechanism;
- any over-recovery will be capped to the value of the ETSO fund, the difference carried to the next year mechanism according to the “Transit key”, calculated from the hourly measured flows in 2003.

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<sup>1</sup> The 1€/MWh for perimeter countries remains unchanged since their use of the CBT signatory countries networks remains unchanged. They are free to decide on the collection of this fee in the way they prefer. For the CBT country signatories the decision has been to reduce the charge on exporters to 0.5€/MWh and increase the part that should be collected from loads through the national tariffs.

<sup>2</sup> CENTREL TSOs could decide to join during 2003.



ETSO will manage the compensation fund on the basis of the agreed principle in the last 8<sup>th</sup> Florence Forum meeting concerning TPA principles.

## **Conclusions**

ETSO proposes that the inter-TSO compensation mechanism for 2003 is developed from the one applied for 2002. In particular through a new procedure for the identification of the horizontal network since each country will use the same standardised method to determine its horizontal network: the first task is to calculate the flow in each grid element due to each standardised one-to-one transit, utilising a simulation model representing the real network of the country. Then, each grid element bearing a flow due to one (at least) standardised transit, larger than a given technical threshold, must be included in the horizontal network of the country.

A new approach for the calculation of the cost claims is also proposed as presented in the above points.

The issues concerning the financing of the ETSO-fund and the participating countries are also new compared to the present system.

DC links are treated the same way as in the 2002 system.

As this mechanism relies, for the compensation calculations between TSOs, on the procedures and software applied from March 1<sup>st</sup> 2002, ETSO will be able to apply this method from January 1<sup>st</sup> 2003 providing the endorsement by the concerned regulatory bodies and the European Commission in due time.

There is potential for further development of the mechanism in 2004 and beyond. Further improvement by ETSO could be:

- apply the ATF model using real network situations for the identification of the network elements that participate to transit flows;
- apply “standard costs” by TSO or country for each element of the network identified by the ATF model to determine the amount of the ETSO fund.
- apply the ATF model using real network situations to calculate the compensation between TSOs based on real physical flows.

Furthermore, the existing procedures and software used by ETSO will have to be modified since this future inter-TSO mechanism replaces the transit key model with the ATF model based on real network situations.

In order to achieve these objectives by 2004 at the latest and at the request of ETSO, the regional associations have agreed to initiate the collection of hourly network snapshots from January 1st 2003.