



***Public consultation for the design of the TERRE  
(Trans European Replacement Reserves Exchange)***

**23<sup>rd</sup> of June 2016 (Project Answers)**

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## 0 Impact Assessment from TERRE project

In this document project TERRE share their consideration of feedback received from stakeholders who responded to the consultation.

TERRE project is sharing in this document their answers to the feedbacks of Stakeholders to TERRE consultation.

These various and constructive feedbacks are very much appreciated and allowed to confirm project orientations on some features whereas some others were challenged and thus may have an impact on TERRE project's design. All feedback from stakeholders have been taken into account and TERRE project's position towards them is given in this document. The following chapters are assessing each question raised in the consultation document. A summary of TERRE project's understanding of stakeholders' feedback is given in beginning of each question.

Please note that similar feedback raised by Stakeholders in different questions may have been gathered into a single answer in the most relevant chapter.

### 1 Introduction

#### 1.1 Q 1.1 Do you have specific comments regarding Chapter 1 content? (Please indicate sub-chapter reference when possible)

***How will the existing TSO-BSP contracts be managed after TERRE implementation: e.g. between two countries (like for example Germany and France) when the TSO on one side of the border uses RR and the TSO on the other side does not?***

TERRE cooperation is based on a TSO-TSO model. The TSOs which are not using RR for their internal balancing markets are allowed to be involved to the cooperation TERRE in order to allow the participation of their connecting BSPs.

BSPs are invited to discuss this topic with their connecting TSO.

***What would be the implications when a NRA does not approve the common NRA position paper?***

The NRAs covering the geographical scope of TERRE cooperation have been following the improvement of the project since beginning of 2015. TSOs are confident so far about the support of the NRAs on this project. However, they will give recommendations in the event that there is a disagreement between one or several NRAs regarding the approval of TERRE design.

***Will TERRE replace local products (and when)? And how will TSOs I decide between local and TERRE products?***

TERRE product will be a "RR Standard Balancing Product". The activation of RR product for balancing the systems will be based on TERRE cooperation.

The decision of using a RR or other product for balancing purpose is under the responsibility of TSO.

***What are the requirements for future TSO participation in TERRE (e.g. ADMIE)?***

This topic will be treated when the final Governance structure of the project is established

## **2 Overview of different manual reserves balancing markets in TERRE**

It's important to state that with the application of the GL EB, the TSOs will give the priority to the standard balancing products for satisfying their imbalances. This is why the BSPs will be incentivized to submit a standard balancing product. For the RR market, the Marginal Pricing procedure will be applied.

**2.1 Q 2.1 Do you have any specific comments regarding Chapter 2 content?  
(Please indicate sub-chapter reference when possible)**

***To what extent does the need for market harmonization for the RR CoBA apply to the TERRE project? In particular, will the harmonization issues be dealt with before TERRE implementation? And would it be possible to have a timeline for harmonization?***

This topic is directly linked to the implementation of CoBA RR which will start from Q2 2016. As foreseen today, the target date of the RR CoBA implementation is the same as a pilot project Go-Live. Throughout 2016 and 2017, the TSOs and NRAs will work on the implementation of the CoBA with the support of the stakeholders.

***Could TSOs provide an assessment as to the viability of the project without harmonized settlement rules, as well as an assessment of the impact of harmonized and non-harmonized settlement rules on the efficiency of the common RR procurement?***

The main aim of a pilot project is to implement a common TSO-TSO exchange of RR balancing energy. Even if the TSO-BSP settlement rules are not harmonized for the Go-Live of the project, there is no risk on the validity of the project. However, in order to achieve optimum efficiency, it has been concluded that the TSOs and the respective NRAs will harmonize at least the most important procedures such as the settlement procedure.

***Do BSPs need a kind of a qualification to participate to the centralized platform and share offers over the TSO - TSO model in other countries?***

The aim of the project is to share RR product. The product/offer will be submitted by the TSO.

The question of prequalification of an RR product is under the responsibility of the connecting TSO and will depend on how the TSO will introduce RR standard product.

However, it's important to note that the TSOs will also have to be compliant with the Electricity Transmission System Operation Guidelines.

**Stakeholders strongly agree with the proposed principle of not "overlapping" with the Intra Day (ID) market**

TERRE project welcomes this feedback

### 3 Product & Imbalance Need

#### 3.1 Q 3.1 Which format of balancing energy offers are most attractive to stakeholders?

**For almost all stakeholders, the proposed formats of balancing energy offers cover their needs. The need for multi-part offers is not unanimously recognized: one stakeholder highly requested the need for multi-part offers, whereas others do not see the advantage of using it. Only one stakeholder requested an additional format**

TERRE TSOs have considered the comments of the stakeholders and noted that there are different opinions on the necessity of using all types of proposed formats at the first stage of TERRE implementation. However, since several stakeholders explicitly expressed the need to implement all proposed formats, all presented formats of balancing energy offers are to be used at the first stage of TERRE.

**Would it be possible to have more details on the complex formats proposed? Stakeholders suggested to be aware of the complexity of formats used for TERRE, especially regarding calculation time and price formation.**

**Stakeholders did not suggest a maximum number of block bids, however they are willing to favor an efficient/quick algorithm process: the number of bids should not decrease the calculation performance.**

TERRE TSOs aim to investigate how the different bid formats will impact the marginal price. TSOs will be transparent towards the stakeholders but at the moment, no detailed information can be provided on this topic.

Regarding the computation times, the current studies, using the number of historical offers of 2013 (around ~1000), show that the computation times are far less than the security margin of 10 minutes and are not expected to create problems. However, further studies with a higher number of bids are necessary in order to obtain safe conclusions. It is expected that based on the results of these studies and the expected size of the TERRE market, a maximum number of allowed block offers and of exclusive sub-offers per BSP will be defined.

**One Stakeholder requested that TERRE allow portfolio bidding**

TERRE TSOs have considered the comments of some stakeholders that portfolio bidding has to be allowed in all regions. However, this is under the local responsibility of the local balancing rules thus it is not a TERRE pre-condition.

### **3.2 Q 3.2 Do stakeholders agree with the definition and features of the TERRE cross border product?**

**Full Activation Time (FAT): some stakeholders mentioned that FAT should be 30min at minimum.**

At current state of TERRE project, TERRE results are foreseen to be communicated at H-30. If clearing covers only 15' in the future, this will have to be reconsidered.

**"Preparation" and "ramping" periods: some stakeholders requested the deletion of the "preparation" and "ramping" periods.**

The requirement for the BSPs is to fully deliver the requested power after FAT. The ramping and preparation period are under the responsibility of the TSO-BSPs framework and will not be used by the TERRE platform.

**Algorithm resolution: some stakeholders requested to change the resolution from 0.1MW (too excessive) to 1MW**

According to table 3.1, the resolution of the algorithm is expressed as 0.1 MW for divisible offers. In relation to the proposed resolution, some stakeholders have questioned the need to have such a lower value (0.1), suggesting instead a resolution of 1MW. First of all, the resolution of the algorithm being 0,1MW does not mean that the minimum bid size should be this 0.1, but 1 MW (as explained in the table).

There are several reasons why this resolution has been proposed:

- 1) The resolution of DA MRC is 0.1 MW. Thus, cross border exchanges in DA can have decimals. In order to ensure maximal/efficient use of remaining XB capacity, it seems logical to have the same resolution than in previous timeframes.
- 2) In some countries, BSPs can be asked to offer remaining capacity in the form of balancing bids. If the result of DA MRC is a schedule with one decimal, the same resolution is desired/needed for the balancing offers.
- 3) Applying a resolution of 0.1 MW does not negatively affect the computation time in a significant way.

**Validity period: some stakeholders requested to increase the max validity period (>1h). They would like to have to possibility to "keep" their bids without updating it hour by hour.**

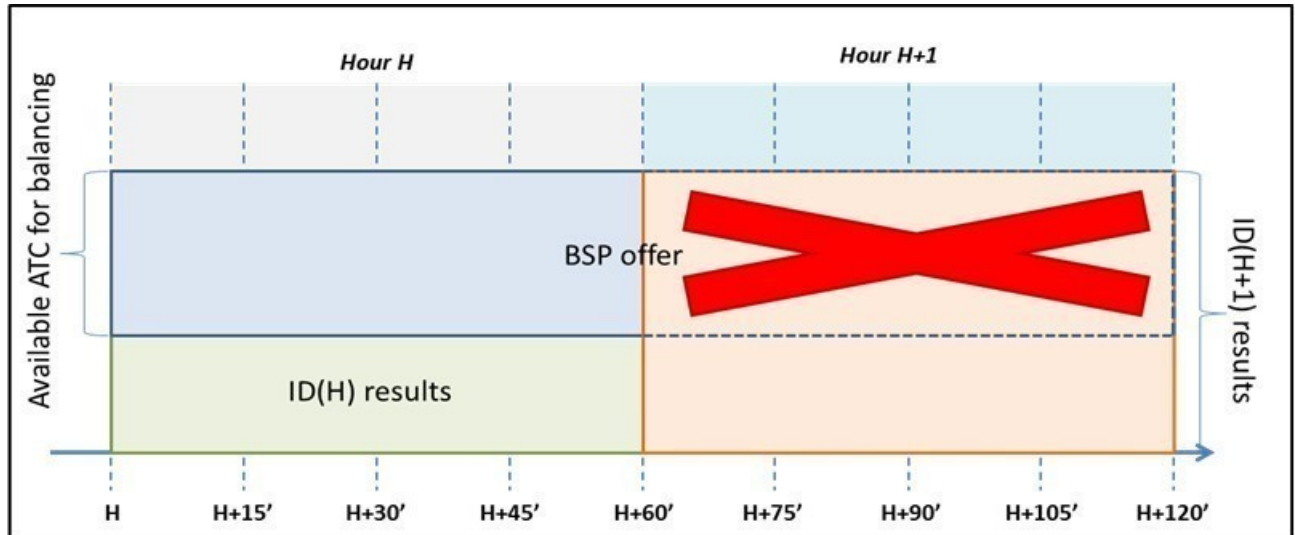
In many markets this submission of information from BSPs to TSOs is allowed for more than 1 hour (several time periods). This will be determined in the local implementation of TERRE and is likely to be possible even if TSOs are only forwarding firm offers for each delivery hour post Balancing GCT.



**Max delivery period: stakeholders requested the definition of the max time to be activated. Furthermore, can BSPs link the bids of different hours?**

The Maximum Delivery Period cannot exceed one hour. An offer with a Maximum Delivery Period that is more than one hour will interfere with the results of the Intraday Market (XBID market) of the following hour and couldn't be activated by any TSO.

Example:



BSP Offer: Validity Period is from H to H+120' (Hour H and H+1 – Not Allowed)

In this situation, after the Intraday results of H+1 there won't be enough ATC to keep the offer activated.

**Max offer size: stakeholders requested to harmonize the max offer size in order to avoid discrimination. Some also request not to define a max at all.**

**Caps & Floors: many stakeholders (almost all) requested to remove local Caps & Floors for Indivisible Offers.**

The cap for indivisible bids was introduced in some systems in order to avoid the possibility of market concentration in case of low liquidity of the balancing market and big indivisible offers submitted by one (or more) BSP. If TSOs define a unique cap, some start-up offers will be excluded, so at least in the first phase TERRE TSOs have concluded to keep the national caps for indivisible offers.

In any case many (almost all) stakeholders pointed out that removing caps and floors is essential to ensure the same playing field to all BSPs.

TERRE TSOs have considered the comments of the stakeholders regarding the maximum volume of block offers. TSOs are planning on assessing the impact of having different allowed maximum offer volumes among the different participating countries. However, please note that it is under the responsibility of the NRAs with the support of TSOs to harmonize such rules in the TERRE region.

**15 min Time Resolution: stakeholders do not really have a consensus on Time Resolution.**

The resolution of the delivery period is defined on 15min resolution. The product could have a delivery period of 15, 30, 45 or 60min. The exact concern will be discussed with the stakeholders during the next TERRE stakeholder meeting.

***Would it be possible to elaborate on the firmness regime of inserted and accepted orders?***

At this stage of the TERRE project, the TSO is responsible for delivering energy at its border. This point is under discussion and will be decided when defining the RR CoBA.

**3.3 Q 3.3 What are the stakeholder's views on BRP-TSO & BSP-TSO rules & requirements?**

***Is another consultation phase foreseen to involve stakeholders in the design of the "items that will be defined at a later stage of the project"?***

No additional consultation is foreseen on design options. The involvement of stakeholders will however be increased during the next phase of TERRE project (e.g. additional workshops as well as the already foreseen Stakeholders Meetings). More details are given in the "Governance" chapter.

For the RR CoBA implementation, the stakeholders will be consulted.

***One Stakeholder requested details on specific bidding requirements imposed on BSPs, including technical details.***

The IT Working Group are currently working on the technical characteristics of bidding requirements. This information will be communicated when finalised.

**3.4 Q 3.4 Does the TERRE product allow for the participation of all types of balancing service providers (e.g. RES, Thermal, and DSR)? And if not, what changes in the features will allow greater participation in the TERRE project?**

***Stakeholders raised the concern that some power units may not be able to participate to TERRE due to current product attributes (e.g. FAT of 30 min for some thermal units)***

The product represents the flexibility that is required for the Replacement Reserve process. If the product does not meet these requirements, it cannot participate to TERRE. A product with a FAT of 30 min represents the maximum time available whilst avoiding interactions with the ID market.

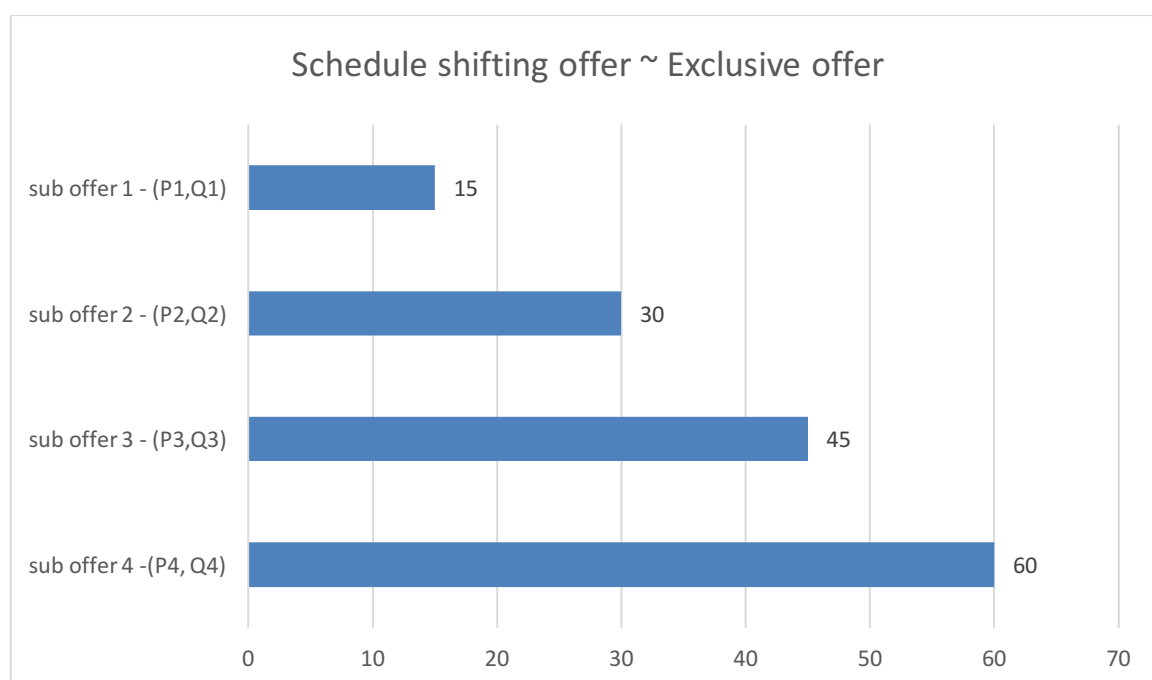
**3.5 Q 3.5 What are your views on the application of the local features of the TERRE cross border product (e.g. Harmonization of price cap and floors or Maximum Bid Sizes for Indivisible Offers)?**

See chapter on Harmonization issues.

**3.6 Q 3.6** The number of bid formats (Divisible, Block, Exclusive, Linking Offers) which may be used by BSP represents a trade-off between the flexibility offered to BSP (with several types of offers) and the simplicity to offer bids and to run the algorithm (e.g., with only one standard type of offer). What are your views on this trade-off? Would you advocate for keeping all types of bids offered by TSOs or to reduce the number of possible offers?

***One Stakeholder requested an additional format: the "Conditional Offer" which is not included the proposed formats.***

TERRE TSOs have considered the request of one stakeholder to include an additional bid format, called conditional bid, in order to model schedule shifting offers. Such offers could however be modelled as an exclusive offer as follows:



The 4 presented sub-offers 1, 2, 3 and 4 are mutually exclusive. Therefore, the second part of an offer (e.g. 15 min – 30min) is available only if its first part is. If our understanding of a conditional offer was not correct, we would ask the respective stakeholder to provide further details of their proposition.

**3.7 Q 3.7** Do you agree with the proposed design of the TSO imbalance need?

***"Max size" of the imbalance need: The definition is not always well understood. And some stakeholders requested not to define a max size for the imbalance need.***

The concern of TSOs is the security of supply.

The main objective of balancing is to guarantee the operational security. For doing so, it must be guaranteed that there are enough resources to keep the balance between generation and demand. Translated into market terms, theoretically this means that there should be enough balancing offers to cover the balancing needs.

In this aspect, the draft EB GL defines in Article 43 that each TSO is able to request to the balancing platform up to a Total Volume based on the volume of offers submitted to the platform (among others). TERRE TSOs are thinking about solutions to guarantee that the operational security of all the systems is guaranteed due to the participation in TERRE. TSOs are considering the comment and will discuss with NRAs how to combine the market participant's request with TSOs security of supply.

### **3.8 Q 3.8 Do you agree with the possibility for inelastic and elastic imbalance needs?**

***Elasticity of the imbalance need: The majority of stakeholders requested not to have need elasticity. (4 stakeholders for and 10 stakeholders against elastic need).***

The TERRE TSOs acknowledge that the capability to put a price on the need (elastic need) is a new concept that has raised several questions from stakeholders. The TERRE TSOs would like to explain the reasons for this option chosen and are open to discuss more in detail this aspect with stakeholders and NRAs if required.

First of all, the objective of the balancing market is to guarantee the security of supply. This is the responsibility of the TSO and the TSO will take all the necessary measures to this end. Then, the second objective of the balancing market, reflected in the EB Guideline, is to achieve an efficient market. This means that, whilst guaranteeing the first goal (security of supply), TSOs must aim to reduce the cost of balancing. In this sense, the Framework Guidelines describe that *"TSOs balance the system in a coordinated way in order to use the most efficient balancing resources taking into account operational security limits"* and that *"The Network Code on Electricity Balancing shall foresee that the activation of frequency restoration reserves (in particular when manually activated) and replacement reserves is coordinated in order to allow efficient utilization and arbitrage between these balancing resources across markets."*

The simple objective of allowing elastic need is to allow the TSOs to co-optimize across all the resources at their disposal with the aim of balancing the system at the lowest expected cost.

With regard to the RR process in TERRE, the TSOs will need to send the expected need 45 minutes before real time based on their best forecast. Depending on several factors (forecast tool accuracy, load curve, integration of RES, etc.) the TSO could be more or less sure about the expected RR need for the next period.

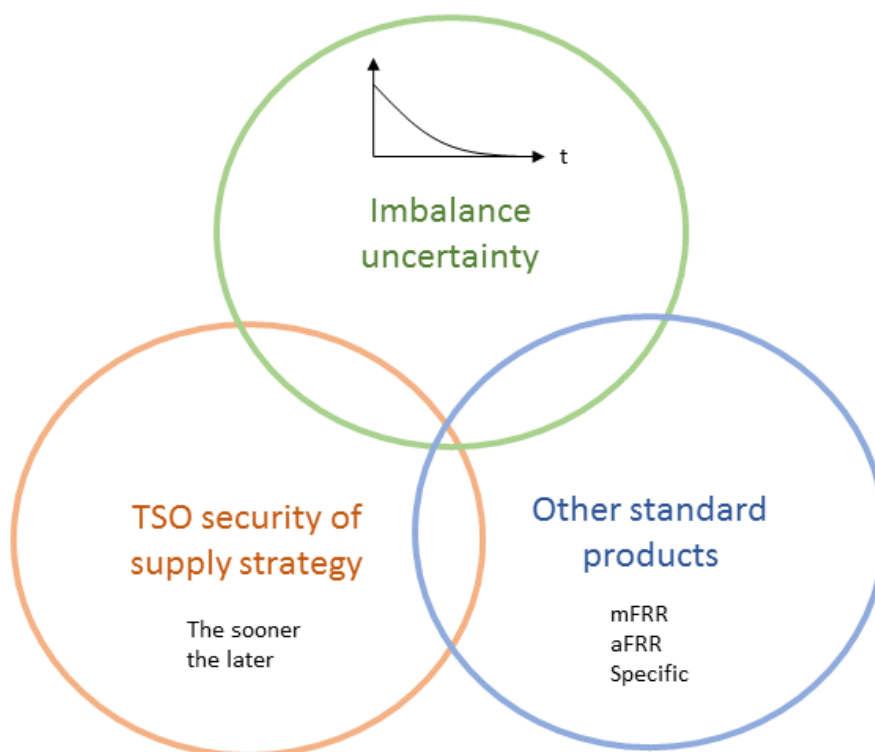
Usually, as it happens today, the imbalance that is "sure" for the TSO could be submitted as an inelastic need for RR, as the "best price" for solving this imbalance is expected in TERRE. But, in some cases, there could be volatility associated to (at least part) of the imbalance. For this part, the TSO has several options: 1) to wait for faster products (mFRR, aFRR) or local products (e.g. specific RR), or 2) to submit an elastic need. Elastic Need helps the TSO to try to satisfy the need in an efficient way, while keeping available mFRR and aFRR resources for unexpected imbalances near to real time.

Of course, this does not mean that the TSO will always put a price on the need, but at least will have the option. The methodology to send the need (i.e. conditions to put a price on the need), and the pricing methodology for putting a price will be regulated at a national level.

In any case, the TSOs will be transparent. As explained in 4.1, the price could be based on possible alternative measures to solve the imbalance (e.g. forecasted price of mFRR or aFRR, etc.).

The TSOs are convinced that this option will not interfere in the market, but will help to balance the system in a more efficient way.

The high level principles of Imbalance Need definition (volume and price) will be published.



**3.9 Q 3.9 Do you have specific comments regarding chapter 3 content?  
(Please indicate sub-chapter reference when possible)**

***What is TSO's necessity for Unshared Bids? Will BSPs be compensated for their Unshared Bids? Will Stakeholders be informed (live?) when their bids are marked Unshared? Stakeholders requested further details on the topic.***

Article 41 of the Guide Lines for Electricity Balancing sets out the right of TSOs to submit a proposal for the methodology for the calculation of unshared bids. The volume of unshared bids for Replacement Reserves shall not be higher than the volume of Reserve Capacity for Replacement Reserves (a). As well as this, the code states that unshared bids shall be the most expensive bids available (d).

Therefore, all TERRE bids that are unshared by the TSOs will comply with these rules. TSOs will be submitting methodologies on how they will calculate the level of unshared bids to their respective NRAs on an individual basis. *This work has not been completed on a TERRE project level, and will be undertaken by individual TSOs in the national design process of TERRE.*

Article 41(g) also states that unshared bids will be shared on Common Merit Order Lists, but marked as unavailable for activation by other TSOs. The TERRE project will be compliant with this and so all unshared and restricted bids will be forwarded to the CMO in order for them to be published.

In order to provide further clarity on unshared and restricted bids and why they are a necessary functionality for the TSO, please see the below examples:

### **Restricted Bids**

As mentioned in 3.1.4.1 (p.20) of the consultation, restricted bids will be used by the TSO in order to maintain system security when there are active internal congestions on the network or for example for keeping enough mFRR resources in the system. For example, if a certain circuit is at maximum capacity, and TERRE bid gets activated behind this circuit, then the circuit would be operating outside of national security limits and would be threatening safety and security of the system. TSOs require a mechanism to prevent this from happening, and so when a TERRE bid is submitted which will cause a breach of operating limits such as this, TSOs shall have the ability to restrict it.

### **Unshared Bids**

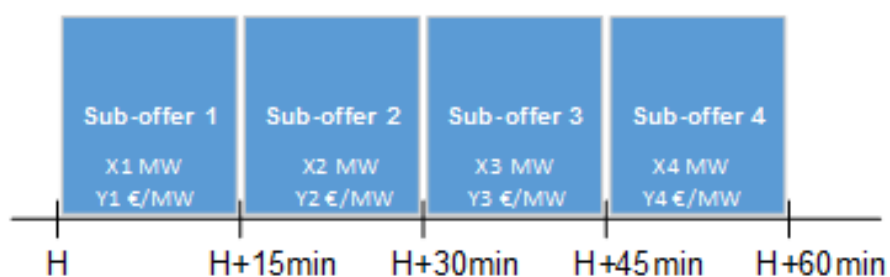
The ability to unshare bids from the TERRE platform will be used when the TSO has a requirement to keep some replacement reserves for their own use. This possibility is also offered in the GL EB. Nevertheless, a local consultation, in each Market Balancing Area, on this topic will be organized and the validation of NRA will be necessary on some features (e.g. Maximum volume of unshared bids, etc.)

### **Compensation for unshared/ restricted offers.**

This topic is described under the Network Codes requirements and is under TSO responsibility. However, TSOs would like to stress that the proposed design will be compliant with the Network Codes and conditioned to regulatory approval.

### ***Would it be possible to illustrate exclusive and multi-part offers with examples?***

The consultation paper did not include any example of exclusive offers in time. In the following figure, we illustrate an exclusive offer in time, consisting of 4 sub-offers. The sub-offers may have different volumes and prices, and only one of them can be accepted. Please note that the sub-offers may be divisible or block offers.



Regarding the multi-part offers, the example presented in the consultation paper consists of increasing prices in volume, i.e., for higher submitted volumes the price is higher too. No prerequisite of having only increasing prices is foreseen; this was only an example of how a multi-part offer could look. Multi-part offers can be used for depicting startup costs and in

this case, it is expected that price decreases with increasing volumes, but they can also be used for depicting increasing variable costs, and in this case the price increases with increasing volumes.

***How will the pricing of bids coming from Central Dispatch Systems (CDS) be tackled? It is important for stakeholders that bids coming from a CDS are not only correctly translated from local balancing resources in technical parameters, but that the pricing of such bids also allow for correct comparison of bids coming from a self-dispatch system.***

For Central Dispatch Systems a process is required before submitting bids to the TERRE platform in order to take into account the results of the ISP, as well as technical characteristics of BSPs, reserve capacity already allocated and internal congestions. The above process can adjust the quantity of RR Balancing Energy bids offered by the BSPs. The prices of the bids cannot be changed by this process.

## **4 Balancing CMO & Algorithm**

### **4.1 Q 4.1 Do you have any specific comments on the Balancing CMO description?**

***Stakeholders agreed on the proposed features (1 stage clearing process, optimization of social welfare, etc.) for the Balancing CMO. However, they highlighted two main concerns:***

- ***The counter activations (this issue is tackled within this chapter)***
- ***The elasticity of the TSO Imbalance need (the TSO feedbacks are given in the last chapter)***

TERRE project welcomes this feedback

***When different solutions of the main function result in the same social welfare, would it be possible that the lowest volume is accepted (instead of the highest volume)?***

Chapter 4.2.2 states that if volume indeterminacies occur, the algorithm will choose the solution resulting in the highest accepted volume. Some stakeholders expressed concerns if this solution or the solution with the lowest accepted volume would be the most efficient. Note that the marginal price and the social welfare do not change if we accept the solution with the highest or the lowest accepted volume. However, the approach with the maximum accepted volume increases the chances of the BSPs to get activated and of the imbalance needs to be satisfied. In addition, the same approach is followed in the Day-Ahead Market Coupling.

**4.2 Q 4.2 What is your opinion on allowing internal and XB counter-activations?**

***Some stakeholders are concerned about a reduction of ID market liquidity due to TERRE (6 are for counter-activations, 7 are against).***

TERRE TSOs have considered the comments of the stakeholders regarding counter-activations. We have received different opinions, and we noticed that some stakeholders are concerned that the allowance of counter-activations in TERRE may reduce the liquidity of the Intraday market. TERRE TSOs aim at designing an efficient balancing market with a gate closure time not before the gate closure of the Intraday Market, as foreseen by the GL EB. Therefore, we stress that there will not be any interactions between TERRE and the Intraday Market, and we cannot consider this argument valid. On the other hand, other stakeholders were supportive of the idea of counter-activations in TERRE.

Counter-activations enhance the efficiency of TERRE balancing market, since they result in the highest social welfare, non-distorted price signals and the highest chances for BSPs to get activated, whereas they do not have any impact on system security. Moreover, restricting the counter-activations requires the addition of further constraints in the algorithm, implying a potential distortion of prices, and a decrease of the transparency of the process. Taking into consideration the above criteria, as well as the answers of the stakeholders to the consultation paper, TSOs support the allowance of counter-activations at a first stage of the TERRE design.

This topic is also tackled with NRAs. The number of occurrences and associated volumes will be monitored during the parallel run.

**4.3 Q 4.3 Do you agree with the proposed treatment of HVDC losses?**

***8 stakeholders agreed with the proposed approach of treatment of HVDC losses but they also requested more details on the topic.***

More details about how the HVDC losses will be treated in TERRE can be found under the EUPHEMIA public description:

<http://bit.ly/1U93ed7>

For more explanation about the mathematical modelling, please refer to page 39 of the following document:

[http://www.belpex.be/wp-content/uploads/NWE\\_Implementation-of-loss-factors\\_Study.pdf](http://www.belpex.be/wp-content/uploads/NWE_Implementation-of-loss-factors_Study.pdf)

**4.4 Q 4.4 Do you have specific comments regarding chapter 4 content?  
(Please indicate sub-chapter reference when possible)**

***Stakeholders requested more information on UAB / URB treatment before being able to express their view. A complete impact assessment of the introduction of UAB / URB would be appreciated, and would help to share a position on the topic.***

TERRE TSOs are currently discussing the URB/UAB acceptance in TERRE and will take into account the need for transparency related to this topic. However, this topic will be proposed to be debated and discussed with the NRAs and Stakeholders



**Regarding the Italian Imbalance Need, will it be a Zonal or global submission need for TERNA?**

Terna will submit only one value of Imbalance Need for the whole of Italy. The Imbalance Need will be defined at a "global" level, while for each Market zone, Terna will submit different ATC values and different offers to the TERRE platform.

## **5 Settlement**

**5.1 Q 5.1 Do you agree that the proposed settlement design is in line with the principles of the EB GL and the integration of balancing markets?**

**All stakeholders welcomed the "pay as cleared" methodology which is in line with the EB GL.**

The TERRE TSOs are thankful for the positive reaction from stakeholders regarding the application of pay as cleared in the TERRE XB product.

**5.2 Q 5.2 Do you agree with the application of cross border marginal pricing, settlement of the block and the proposed design for the definition of Marginal Price between TSOs at the XB level?**

**Imbalance settlement should be out of scope.**

TSOs agree, Imbalance Settlement should be out of scope of TERRE. Every reference is taken as example.

**Specific case for ISP > 15 min and Time Resolution = 15 min**

The example presented in 5.4 about the interaction between the marginal price and the imbalance settlement period has raised several questions about the option to be chosen for the establishment of the imbalance price in case of having ISP > 15 minutes.

In any case, as explained before, the imbalance price is out of the scope of TERRE project and will be defined in the framework of the terms and conditions to be applied in the CoBAs. The presented example is only to clarify that the current existence of different imbalance settlement periods does not create inconsistencies in TERRE, and the exposed option is not binding.

**5.3 Q 5.3 What is your perspective regarding the alignment of the TSO-TSO settlement procedure and the BSP-TSO settlement procedure?**

**Methodologies should be harmonized for TSO-TSO and TSO-BSP for the main attributes such as settlement of ramps, treatment of ramps as imbalances, TSO-BSP settlement, ISP, etc.**

For information: 9 stakeholders are in favor of only blocks (ramps internalized by the BSP/BSP), 3 stakeholders against.

The stakeholders have given their feedback regarding the settlement characteristics of the TERRE XB product (pay as cleared, settlement of the block). Although different opinions have been raised, the majority of stakeholders agree with these settlement characteristics. In this sense, TSOs suggest that the design features presented for the XB settlement of the product will not change.

Most of stakeholders request a harmonization/alignment between the settlement of the XB product and the local settlement of the product (TSO-BSP). In that respect, and taking into account the scope of TERRE, at this point only the TSO-TSO settlement will be tackled. The features of the local settlement (TSO-BSP, TSO-BRP) will be harmonized when the RR CoBA is established, as part of the framework of the terms and conditions related to balancing. Please note that this local settlement has a wider scope than the TERRE countries, and requires proper coordination between all the TSOs. In this sense, there are several ongoing works for the definition of products, pricing, algorithms (WGAS), definition of imbalance settlement, etc.

***How frequently and for what period does TERRE plan to bill and settle payments, e.g. GB currently operates with daily billing with payment approximately 28 days following the day in question.***

Local billing processes (TSO-BSPs) are out of scope of TERRE and RR CoBA. TSO-TSO billing process is in scope and will be defined during the next step of the project. In defining it, consideration will be paid to TSO-BSP billing process.

**5.4 Q 5.4 Do you have specific comments regarding chapter 5 content?  
(Please indicate sub-chapter reference when possible)**

***Would it be possible to redistribute the Congestion Rent to BRPs***

It is not possible. Please refer to "R 714-2009 article 16-6" regarding congestion.

***Are the bidding zones supposed to be different from one day to another?***

This feedback is out of scope. For more details on the bidding zones and bidding zone review process, please refer to the official website:

- For general questions around bidding zones:  
<http://networkcodes.entsoe.eu/category/bidding-zones/?p=capacity-alloc-congestion-management>
- For information about the study:  
[https://www.entsoe.eu/fileadmin/user\\_upload/library/Market/140123\\_Technical\\_Report\\_-\\_Bidding\\_Zones\\_Review\\_Process.pdf](https://www.entsoe.eu/fileadmin/user_upload/library/Market/140123_Technical_Report_-_Bidding_Zones_Review_Process.pdf)

***If a bid is used for solving a congestion issue, would it be possible to apply a "pay as bid" methodology?***

TSOs acknowledge that the GL EB proposes this, in case it is for other purposes, it shall not SET the marginal price. TSOs are currently analysing these issues internally.

## 6 Cost Benefit Analysis

### 6.1 Q 6.1 What are your views on the methodology used and assumptions made in the Cost Benefit Analysis?

***The majority of stakeholders agree with the methodology, assumptions taken and transparency level. 2013 Data is nevertheless considered as a bit old and not necessary representative of the situation for TERRE Go Live.***

TERRE project welcomes this feedback.

#### ***What is the level of local harmonization taken into account for the CBA?***

Many stakeholders are questioning the simulation assumptions, and more specifically the assumptions made about local harmonization. Most of the general assumptions made for converting balancing data into comparable order book and national assumptions are summarized in Annex 5 of the consultation paper.

The choice was made to use similar market features where necessary for two simulations in order to have comparable results. Making one simulation where ATCs are equal to zero and another with 2013 values, those two simulations having some common rules allows us to measure the difference of the value of sharing RR offers among TERRE TSOs. Thus, we don't pollute the results, as much as possible, with the non-harmonization issues (as pay-as-cleared/pay-as-bid difference of methods among countries).

This is why we wanted to use common features for both simulations. We have assumed that a certain level of harmonization is reached locally when possible: for example, we apply marginal pricing (globally and locally), XB scheduling step of one hour (except for French-Switzerland border), and divisible, inelastic need, and identical cap and floor prices for need. However, for some features, the non-harmonization was already a bias in the data: for example, cap and floor prices for the offers are different among countries, and we couldn't remove this for simulations, as it would involve making assumptions about BSP behavior.

To the request for more details about French, British and Spanish assumptions, here are some additional elements:

For French data: the volume of offers and need seems pretty low compared to other TSOs. Indeed, this is due to the filtering of hydraulic pumped energy transfer stations (which represent a large percentage of offers in France) that would require a respect of energy constraints for the remainder of the day. As TERRE CMO doesn't include such constraint because it is optimizing over one hour only, that would lead to overestimate the use of such offers. We thus have decided to remove these volumes in a first step.

For Spanish data: deviation management data was not chosen because this market is not open 24 hours (it is only open under certain characteristics) and bids would be only in one direction (upwards or downwards) depending on the requirement. For this reason, tertiary

regulation bids were used as they were available 24 hours for both directions, upwards and downwards, in order to have more complete data.

***How have counter activations been taken into account in the CBA?***

Some stakeholders consider the way that counter-activations are included in the results of the CBA to be unclear. It must be noted that in the simulations performed for the CBA, counter-activations are allowed both in the counter-factual scenario and in the scenario with historical ATC values. In addition, counter-activations represent indeed a benefit for the BSPs, since more offers are activated; however they also represent a benefit for the TSOs since they increase the social welfare. We have developed an indicator that allows us to calculate an overall volume (cross border and internal) of counter activations in the process, but not the price associated to it. The relationship between the volume of internal (simulations with ATC equal to zero) and cross border (simulation with 2013 ATC values) counter-activations is complex.

**6.2 Q 6.2 What are your views on the results of the Cost Benefit Analysis?**

***Would it be possible to run additional simulations to better assess the results: 2014-2015 period, more involvement of stakeholders (e.g. bidding behavior), etc.***

Gathering relevant and suitable data for balancing took a considerable amount of time and effort in the project. Moreover, we think that there is more bias in the assumptions made (that were necessary for making explicit offers for some countries) than the values of dataset itself. This is why we don't think that getting 2014 or 2015 data would improve the results. It is also important to underline that it has been extremely time consuming establishing comparable and clean datasets given the heterogeneity of the current balancing systems. With the bias inherent in the data and the lack of knowledge of the future BSP behavior, we have tried to make the data as plausible as possible whereas we remain conscious of the large uncertainty of the results.

In order to have more accurate results and better take into account market participants' behavior, we plan to utilize the parallel run prior to the Go Live to further investigate. This real-time simulation with the industrial IT solution and actual BSP offers will give us more realistic indicators.

***Would it be possible to provide more detail on the local costs expected by TSOs?***

No more details will be given for now. Detailed information will be defined during the implementation phase. Due to the fact that local implementation of TERRE depends on interface specifications and further topics of harmonization, it is difficult at this stage to accurately assess local cost impact on TERRE. The general aim will be to minimise the overall local implementation costs as much as possible.

***Would it be possible to include foreseen stakeholders costs in the CBA?***

Due to the fact that local implementation of TERRE depends on interfaces specifications and further topics of harmonization, it is difficult at this stage to accurately assess stakeholders' cost impact on TERRE. While the general aim will be to minimise the overall local implementation costs as much as possible, we would welcome further inputs from stakeholders on their expected costs.

***To what extent has the value of security of supply been taken into account in the CBA?***

One stakeholder stated that under the CBA no results concerning the security of supply are presented. As mentioned in the assumptions of the CBA, all TSO needs were considered to be inelastic. In addition, all TSOs submitted needs with volumes less or equal to their submitted offer volumes. Therefore, the TSO needs are always fully satisfied.

**6.3 Q 6.3 Do you think the conclusions of the Cost Benefit Analysis are valid for the expected market in 2018?**

***Stakeholders raised doubts regarding the relevance of the CBA results for the expected go live date especially towards the qualitative assessment of TERRE in 2018 in the consultation document.***

Please refer to previous answer "additional simulations". This will be discussed with NRAs.

**6.4 Q 6.4 Do you have specific comments regarding chapter 6 content? (Please indicate sub-chapter reference when possible)**

***Numerous questions have been raised regarding CBA details*** TERRE project would like to stress that all other topics raised by stakeholders have been detailed in the consultation document or in Annex 5 of the consultation document.

***As TERRE project is – currently – only covering the exchange of balancing energy, one stakeholder does not agree with the interpretation that additional ATC could be available to the TERRE project by reserving cross-border transmission capacity.***

This point will be tackled in the qualitative assessment

## **7 Timing**

**7.1 Q 7.1 What are your views on the reduction of XB scheduling step for balancing?**

***The general feeling from stakeholders about the XB scheduling step reduction (to 15 min) is that it would be preferable and positive for TERRE. Some stakeholders are nevertheless in favor of progressing "step by step": begin with 1h XB scheduling step and reduce it once TERRE is secured.***

TERRE project welcomes this feedback.

**7.2 Q 7.2 What are your views on the interactions between the TERRE process and the XB intra-day market?**

***The main feedback is that stakeholders are in line with the clear separation of ID and TERRE GCT.***

**7.3 Q 7.3 What are your views on the frequency of the clearing (one single clearing per hour)?**

***One hour per clearing is fine for stakeholders, as long as it will be reduced if/when the XB scheduling step is also reduced***

Considering the feedback of the stakeholders regarding the frequency of the market clearings, TERRE TSOs agree to have only one clearing per hour, and to investigate the possibilities of including a second clearing when the cross border scheduling step is reduced.

**7.4 Q 7.4 Do you have specific comments regarding chapter 7 content? (Please indicate sub-chapter reference when possible)**

***What are the fallback solutions envisaged in terms of processes and tools for TERRE?***

The topic is still under discussion amongst TSOs.

Two situations could occur:

- Non availability of one TSO or communication infrastructure: the centralized platform/system will run with incomplete inputs. We will define business rules for the situation where need(s), bids or capacities data are missing for one or more TSO or borders.
- Failure on the centralized platform/system: the local arrangement and It tools will be used by each TSO. Use of current local tools is foreseen at the moment.

***Would it be possible to parallelize the input of Bids with the computation of Imbalance Needs and ATC in order to allow more time for BSPs to submit their offers?***

Considering the short timing between the ID GCT and the TERRE GCT, some stakeholders have proposed to parallelize some tasks of the pre-tendering phase and the tendering phase. This timing is needed in order to perform the security assessment. When the results of the XB ID market are made available to TSOs, some of them have to perform Security and Margin analyses and take action to resolve constraints arising from energy trading and the imbalances remaining at the end of trading. Actions taken by these TSOs to resolve these issues will normally use the balancing market. It is expected that the earlier balancing energy actions taken are more cost effective, and therefore they will be beneficial to consumers.

***Stakeholders requested various values of timing for updating their bids (from 5min to 30 min)***

The request from stakeholders to have as much as possible time to update their offers after the close of the Intraday market will be analysed during the implementation phase. A compromise needs to be found between the timings defined for the processes of the Continuous ID market, TERRE and the needed time to perform a security analysis from the TSOs.

***Stakeholders requested more information on the settlement resolution if one clearing cover four 15min time resolution***

As outlined in the settlement topic, there will be one price each 15 minutes. That means, for example, if you have a 30 minutes activated offer, you will receive half of the energy at price of the first 15 minutes, and half of the energy at the marginal price of the second 15 minutes.

## **8 TERRE Platform - High Level Functional Architecture**

**8.1 Q 8.1 Do you have specific comments regarding chapter 8 content?  
(Please indicate sub-chapter reference when possible)**

***Some stakeholders pointed out the missed information for a settlement post treatment and the publication of the results***

The TSOs are aware about this lack of information. This will be improved during the development of the project and the concerns of the stakeholders will be integrated.

## **9 Available Transmission Capacity**

**9.1 Q 9.1 Do you agree with the proposed methodology for the calculation of available transmission capacity used by TERRE solution for both AC and DC borders? If not, what would be your proposal?**

***In general, stakeholders that took part to this question agree with the proposed methodology (6 out of 10).***

TERRE project welcomes this feedback

***Some Stakeholders stressed to the project the need for having more information on the definition of ATC for DC link between synchronous area and the impact of a predefined ramp rate***

TSOs will update the stakeholders on this specific topic during the upcoming meetings.

***The flexibility of PSTs has to be considered for AC links***

One of the stakeholders stated that phase-shifters should be considered in calculating the ATC to be submitted to TERRE. This could be an option, i.e., having an NTC re-assessment

after ID market considering the grid conditions. However, TSOs do not see significant benefits and do not expect that this will lead to a material increase of the ATC, assuming that an NTC re-assessment will take place before ID market.

**9.2 Q 9.2 Do you have specific comments regarding chapter 9 content?  
(Please indicate sub-chapter reference when possible)**

***What is the methodology to calculate ATC near real time? What would be the issue when ATC do not correspond to the current physical flow on the grid? It has to be done in a way which avoids activating results that are not physically feasible.***

For AC links, as described in the consultation document, there are no difficulties, in normal situations, for corresponding the physical grid flows with the XB exchanges (as it is for the previous market timeframes). For DC link, as proposed we will explain the methodology in more detail during the upcoming meetings.

***How "Physical Feasibility" of DC links (IFA) will be applied in practice?***

More elements on the definition of Physical Feasibility concept will be proposed for discussions with the NRAs and stakeholders.

***How do borders like Italy, Spain or UK get nominated with TERRE? There is no existing capacity platform like Switzerland-France for those countries.***

The Centralized platform will include an ATC management Function. Please note that a more accurate term is "allocated" rather than "nominated". This ATC management Function and the algorithmic optimization will "allocate" the XB capacities.

## **10 Governance**

**10.1 Q 10.1 Do you have specific comments regarding chapter 10 content?  
(Please indicate sub-chapter reference when possible)**

***Stakeholders requested to be more involved in TERRE discussions, including design, and that this involvement is more structured (e.g. "user group", "Stakeholders committee", etc.).***

TSOs will consider this request and Stakeholder meetings will be organised during the implementation phase. It has to be noted that until now, the design work was in majority realised between TSO-TSOs, but during the implementation phase stakeholders will be more involved and will have further opportunity to present their concerns, requests, perspectives, etc. This framework will also be used to tackle the implementation of CoBA for RR.

***What is the expected governance for the operation of TERRE? And when will it be defined? How will this be connected to the local arrangements?***



TSOs are currently working on the governance of the implementation phase and once this implementation phase, as well as developments, begin they will focus more on the details of the centralised solution for the operational phase. These elements will be also tackled during the next consultation phase aimed at building the CoBA for RR.

## 11 Transparency

### 11.1 Q 11.1 Do you have specific comments regarding chapter 11 content?

**Stakeholders requested additional elements to be shared for transparency purposes:**

- ***On the design: methodology for elastic balancing need, for CDS bids conversion, optimization between bid formats and time required for algorithm.***
- ***On operations: Offers (submitted and accepted), Unavailable/Unshared bids, UAB/URB, limits on ramping rates for DC links, amount of counter-activations, occurrence of indeterminacies, availability and use of interconnections, timely publication of the activated volumes and prices, etc.***

TSOs will be as transparent as possible.

Legal requirements set out in the Transparency Guideline and the Network Code define the minimum transparency required of the TSOs. Additional requirements suggested by stakeholders in this consultation will be investigated by TSOs.

Publishing the centralized platform results is under the responsibility of the local TSO.

***Is it foreseen that TERRE results will be published on local platforms, in addition of the Transparency Platform?***

Local publication of the centralized platform results is under the responsibility and rules of the TSO.

***What are the expected timeframes for transparency publication?***

Project TERRE acknowledge that this topic is an important one. It will be tackled for the next stages and discussed with stakeholders also. TSOs will be compliant with the European Transparency Regulations.

## 12 Harmonization Issues

All stakeholders expressed an interest in having visibility of the local features. TSOs have outlined their intentions in the table below.

Level	Topic	What?	When?	Who?	Level of Priority
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TSO-TSO	Platform	Current design	TERRE	RR centralized platform Go Live	All	1
	XB scheduling step	15min		End of 2018 or by the implementation date of mFRR CoBA	All	3
BSP-TSO	BSP-TSO settlement	TERRE marginal price		RR centralized platform Go Live or by the date of obligation of the codes (latest)	All	1
		Block Settlement				
	Caps and Floors	Removing caps and floors		RR centralized platform Go Live or by the date of obligation of the codes (latest)	All	1
	Balancing Energy RR GCT	To be defined		By the date of obligation of the codes	All	2
	Framework of the establishment of terms and conditions	To be defined		To be defined	To be defined	3
BRP-TSO	ALL	GL requirements		GL requirements	All	3

Of course, the details of the elements described in this table are subject to discussion under the scope of RR CoBA implementation.

**12.1 Q 12.1 Which features (if any) of local balancing market design needs to be harmonized for an efficient functioning of the TERRE project? If several, please rank the first three you consider the most important to harmonies.**

***Harmonization is mentioned as key challenge by the majority of stakeholders.***

This concern will also be tackled by TSOs and is one of the goals of the implementation of the CoBA for RR. The required level of harmonization will be discussed with the NRAs and stakeholders.

***The following elements have been requested as essential for harmonization (by order of priority according to general stakeholder's feedback):***

***First priority:***

- ***Pricing, including Caps & Floors, max sizes (also linked to product definition), negative prices***
- ***Settlement rules, (settlement of blocks / ramps, possible penalties (incl. default and late payments))***

***Second priority:***

- **XB product definition, including balancing offer formats (divisible, etc.), possibility of portfolio bidding, bidding structure**
- **Timings, including activation time, harmonization with ID market, balancing GCT in local systems**

**Other elements for future harmonization:**

- **Imbalance need (incl. elasticity), system/platform, transparency, regulatory issues**

TSOs appreciate this feedback and it will be taken into account as a key input for the future CoBA implementation.

**12.2 Q 12.2 Do you share the position from TERRE TSOs (i.e. the caps and floors in balancing energy markets should be removed by the entry into force of TERRE)?**

***14 stakeholders out of the 15 stakeholders who responded to this question agree to the removal of caps and floors in balancing energy markets before the entry into force of TERRE. Only one stakeholder mentioned that this should be a NRA decision, rather than at the discretion of pilot projects. Furthermore a rough estimate of the financial consequence of the local implementation of caps and floors has been requested.***

TSOs proposed the removal of Caps and Floors in balancing energy markets to NRAs and this topic is still under discussion within the Implementation Group framework. The possibility of such removal and the estimation of financial consequences will be discussed with NRAs.

**12.3 Q 12.3 In case this cannot be done before the entry into force of EB GL, do you agree on the transitional application of the solution through settlement? Or which is your view regarding a backup solution?**

***12 stakeholders out of 14 who took part to this question agree with the proposed interim solution although they would prefer complete harmonization. One stakeholder strongly disagreed with harmonization post TERRE Go Live.***

TERRE project welcomes this feedback. NRAs will give the final decision on this topic

**12.4 Q 12.4 What is the minimum amount of time that market participants need to update your RR balancing offers after receiving the results of the cross-border intra-day (XBID) process?**

See question Q 7.4

**12.5 Q 12.5 Do you consider there are other key issues that need to be harmonized to avoid significant distortions between BSP across TERRE Members States?**

***The possibility to migrate to TSO-BSP marginal settlement in countries with a pay as bid balancing market should be explored.***

The TSOs aim to apply a Marginal Pricing settlement methodology for TSO-TSO and TSO-BSP levels. The specific cases will be tackled under CoBA RR implementation framework

**12.6 Q 12.6 Do you have specific comments regarding chapter 12 content? (Please indicate sub-chapter reference when possible)**

No additional specific comment

## **13 Project Implementation Plan**

**13.1 Q 13.1 Do you have specific comments regarding chapter 13 content? (Please indicate sub-chapter reference when possible)**

From the TSOs perspective, from the validation of the TSO-TSO design, the implementation of the centralized solution will take approximately 2 and half years.

The most important step is the development of the centralized platform. This minimum 1 year duration is an indicative proposal based on the comparable software development experience.

However, this period and the activities which will be done during it will depend on the provider(s) project plan and design.

***Stakeholders foresee a risk regarding the adaptation / developments of local tools to be compliant with TERRE requirements as technical details (architecture, interfaces) may be shared too late.***

TERRE TSOs understand that there is risk involved for stakeholders in this area and are trying to progress developments as fast as possible. Regarding the communication channels, the current position of the project is to use the European standards for files exchanges.

***How will stakeholders be involved in the Parallel Run process? Especially in terms of tools and processes, they need more details on the expectations and requirements to be able to take part to this phase.***

At the next TERRE stakeholder meeting, the TSOs will give more information on the involvement of the BSPs to the parallel run phase.

***How will stakeholders be involved until and during next consultation/approval process?***

Stakeholders will be consulted during the next consultation phase foreseen in 2018, before submitting the results to NRA approval. Furthermore, they will be more involved in the implementation phase (see Q 10.1)

***Stakeholders considered that the allocated time to respond to the consultation was too short, especially considering the large amount of information and its complexity***

This feedback is noted for the next consultation phase focused on CoBA design.

## **14 Possible evolutions**

**14.1 Q 14.1 Do you have specific comments regarding chapter 14 content?  
(Please indicate sub-chapter reference when possible)**

***In order to be flexible enough for other products, the details on future evolution (e.g. timings, data content, processes, etc.) should be specified in the RFP for the provider(s)***

***How will local arrangements be taken into account? In particular how will it be ensured that the systems which interface with the TERRE platform have the required flexibility to adapt to TERRE platform evolutions?***

***A possible introduction of additional clearings, evolutions of Market Time Resolution or Intraday GGT must be carefully studied in order to avoid impact on Intraday Market***

TSOs will reconsider these propositions from stakeholders for the work on the next stages.

***It is important to expand the TERRE project to Replacement Reserve capacity.***

RR capacity is out of scope of this project. RR exchanges of energy are mandatory, exchanges of capacity are optional. The focus is to start with exchanges of energy. It must be noted that exchanges of capacity may require reservation of XB capacity. Hence, we will analyse this in the future