ERGEG PUBLIC CONSULTATION PAPER

DRAFT GUIDELINES OF GOOD PRACTICE ON REGULATORY ASPECTS OF SMART METERING FOR ELECTRICITY AND GAS

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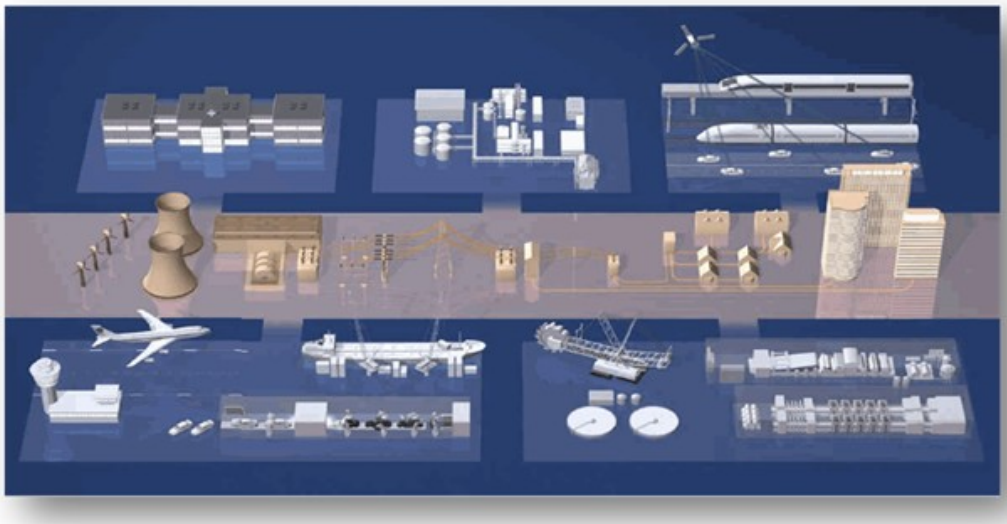
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Presentation of Sia Partners

1. Summary "Energy as the backbone of modern life"



Sia Partners specializes in **Business & Management consulting** throughout the **entire value chain of the energy sector**. Covering all aspects of the business value chain and support functions, Sia Partners assists private companies and public organizations in transforming their business and improving performance of daily operations. Sia Partners' consultants help managing entire projects and offer specific functional and operational expertise as well as assistance in strategy and design. Our consultants have built up a deep expertise in relevant processes and systems within the energy industry through broad projects and operational experiences.

As **expert in Smart Metering**, Sia Partners has for example assisted:

- EDF in the development of new services associated to smart metering;
- ERDF in implementing and managing the 'Linky' program (smart meters);
- Bouygues by studying strategic opportunities linked to smart meters; and
- GrDF in delivering a benchmark on gas smart meters.

2. Key Facts



Founded in 1999, Sia Partners proposes to bring the most valuable experts in the sectors of Energy and Utilities, Finance, Telecom, Logistics and Manufacturing.

Sia Partners is an independent consulting firm working always in the best interest of its clients disregarding partnerships with IT or audit companies.

Today, through its brand Sia Partners, the group works all around Western Europe with more than 260 collaborators specialized by sector of activities. Over 90 consultants are business experts in the energy sector.

3. Core Business

Sia Partners is a trusted partner which evolves in the core businesses of the energy actors by defining the best and most relevant solutions regarding major challenges in:

Power, Gas, Oil, …	Energy Demand Response
Transport	Management of the Infrastructure
Market Mechanisms and Regulation	Market Trends

Sia Partners intervenes as a partner providing:

Business Expert	Orientation and Business Development Plan
Project Leader	Studies and recommendations
Mediator in complex and political project	Operational Management of Key Program

4. Clients

Sia Partners is involved in many projects led by the main energy actors of the electricity and gas value chain:



5. Publications

Sia Partners' policy of research and publications is proactive on crucial current topics as well as background strategic stakes. It includes market insights, opinion columns, benchmarks and marketing studies.

More than 150 press articles in 2009, opinion columns and strategic studies are often quoted in business oriented –as well as mainstream– press and TV. Sia Partners also feeds news agencies (AFP, Reuters) on hot topics.

Sia Partners also actively participates to public consultations within the energy sector (e.g. ENTSO-E R&D plan Eurogrid 2020).



Consultation: Our position and comments on the ERGEG paper

1. Abstract

Sia Partners brings in this section its point of view on the '*Draft GGP on Regulatory Aspects of Smart Metering for Electricity and Gas*'. As requested by ERGEG in its document, Sia Partners orients its answer in order to give a view to ERGEG regarding:

- Whether any recommendations should be left out of ERGEG final GGP;
- Whether any insightful recommendations are not present; and
- Whether any recommendations should be completed or changed in any other way.

These recommendations pursue the three following objectives:

- Define the **level of customer service** is required so that smart metering will assist the **active participation of retail customers** in the development of electricity/gas smart meters in a **safe and secure manner**;
- Define parameters for which ERGEG has a leverage power for a **cost benefit analysis** in order to assess cost-efficiency of smart metering; and
- Define parameters for which ERGEG has a leverage power for a **smart meters roll-out** in order to optimize this smart meters expansion wave.

Because of these objectives, Sia Partners bases the structure of the section 0 of this review in three corresponding sub-sections: Services for Smart Meters, Cost and Benefits analysis (CBA), and Roll-out of Smart Meters.

In addition to the recommendations' review, ERGEG expects an opinion on five specific questions that are related to the services for smart meters. Sia Partners exposes its answers in the section 2.1.4. These questions concern the two following topics:

- Interval metering time periods for electricity and gas; and
- Further services for customers to allow them to be aware and active actors in smart grid (electricity only).

2. Sia Partners' point of view

In order to deliver a pertinent point of view, the team of Sia Partners was made up of consultants with experience and knowledge in the Smart Metering domain:

- Cristina MORERE, Business Consultant at Sia Partners Belgium;
- Jean TRZCINSKI, Business Consultant at Sia Partners Belgium;
- Bernard NOBELS, Business Consultant at Sia Partners Belgium;
- Agnes MALVEZIN, Business Consultant at Sia Conseil Paris; and
- Olivier KYC, Business Consultant at Sia Conseil Paris.

Sia Partners gives in this section its opinion on three axes related to smart meters: Services for Smart Meters, Cost and Benefit Analysis (CBA) and Roll-out of Smart Meters.

2.1. Services for Smart Meters

2.1.1. Opinion on electricity and gas services recommended by ERGEG

In this section Sia Partners gives its opinion on **all the customer services** (22 services) recommended by the ERGEG (*agrees, partially agrees or disagrees*) with its argumentation.

	ERGEG's services recommendations ELECTRICITY	Sia Partners' opinion			
		Agrees	Partially agrees	Disagrees	Argumentation
1	Information on actual consumption, on a monthly basis		☑		Sia Partners agrees with the service that provides actual consumption to the customer. However Sia Partners does not recommend setting up a specific time frame (being a day, a week or a month). Indeed the customer should be capable of requesting 'on demand' its actual consumption at any time disregarding any billing frequency (i.e.: monthly).
2	Accurate metering data to relevant market actors when switching supplier or moving		☑		Sia Partners agrees that more actual consumption data will generate more accurate metering data in the bills. As the billing is also one of the major causes of complaints, smart meters might significantly reduce the number of complaints. However Sia Partners does not agree that offering accurate metering data should be a service that customer chooses or not. Indeed when switching or moving, the metering data should be accurate and the accuracy should not optional and above all not free.
3	Bills based on actual consumption	☑			Sia Partners agrees with this service because it improves customer satisfaction by reducing wrong billing complaints and avoiding paying in advance energy that will never be consumed (prepayments). This service could be pushed further by giving to the customer the choice for the level of detail (yearly, monthly, daily…) to appear on its bill.
4	Offers reflecting actual consumption patterns		☑		Today pricing for electricity tend to be flat rate or at best dual rate and does not reflect either generation constraints or consumption impacts. Sia Partners agrees with a service that proposes innovative pricing formulas reflecting actual consumption because it would better reflect customer consumption/generation profiles. However Sia Partners wants to warn the regulators that this type of offers must not be designed against customer welfare. In any case the offers should not be more expensive than the current ones.
5	Power capacity reduction/increase		☑		Sia Partners partially agrees with this service because it can be offered to retail customers only if it can provide direct advantages to them (e.g. reflecting this power capacity reduction/increase in the customer's price formula or contract clauses or allowing the remote management on home appliances). Otherwise this service would be attractive enough for a retail customer. As stated by ERGEG, other stakeholders than customers are mainly targeted by this service.
6	Activation and de-activation of supply		☑		As for recommendation #5, Sia Partners partially agrees with this service because it can be offered to retail customers only if it has been proven that the price of the service is inferior to the annual fixed fees associated to not de-activate the supply when the consumption is null or extremely low. Sia Partners adds that the customer or its contract clauses should be the single trigger to activate or de-activate the supply. In no case, it should be the DSO that owns this responsibility.
7	Only one meter for those that both generate and consume electricity	☑			Sia Partners agrees with this service because it allows the customer that produces and consumes energy to avoid double installation costs. What also should go with this service is displaying on a website or on the smart meter itself separately the amount of produced and consumed energy separately.
8	Access on customer demand to information on consumption	☑			As explained in recommendation #1 Sia Partners highly recommends giving access on customer demand to consumption/production data in order to optimize customers' participation.
9	Alert in case of a non-notified interruption	☑			Sia Partners agrees with this service but adds that it is not because the customer receives a notification that it does minimize the extent of the damage resulting from the outage when the customer is away from home. Thus this service does not withdraw DSO's responsibility regarding security of supply for customers.
10	Alert in case of high energy consumption			☑	Sia Partners does not agree that alerts on consumption should be communicated to the customer. Sia Partners believes that alerts on the costs of the consumption (threshold on prices, threshold on the budget limits…) or alerts on the level of C02 emissions are better drivers for end customers.
11	Interface with the home		☑		Sia Partners agrees that a home interface should be a service proposed to the customers. However, Sia Partners would like to remind that the access to the services should be non-discriminatory. On the contrary, the home automation technology is more easily accessible to a specific segment of customers (rich and technology-oriented).
12	Information on voltage quality			☑	Sia Partners disagrees that voltage quality should be monitored and communicated to the customers. Although the principle is applicable for industrial customers and their sensitive appliances, it seems less applicable for the residential customers. Note that this does not withdraw the responsibility from the grid operators to provide quality of services toward their customers.
13	Information on continuity of supply		☑		Sia Partners agrees on the fact that smart meters will be ease the empirical measure of interruptions (in contrary to the current statistical methods). However Sia Partners believes that the arrival of smart meters should be accompanied by strong policies combining both penalties and incentives as it has been proven to be of great value in Britain and Italy.

	ERGEG's services recommendations GAS	Sia Partners' opinion			
		Agrees	Partialy agrees	Disagrees	Argumentation
17	Information on actual consumption, on a monthly basis		☑		Sia Partners agrees with the service provide actual consumption to the customer. However Sia Partners does not recommed to communicate actual consumption on a specific time frame. The information should be transmitted via appropriate communication channels whenever the customer requests it.
18	Accurate metering data to relevant market actors when switching supplier or moving		☑		Sia Partners agrees that more actual consumption data will generate more accurate metering data in the bills. However Sia Partners does not advise to offer the data accuracy as a service to the customer. It should be free of charge.
19	Bills based on actual consumption	☑			Sia Partners agrees with this service because it improves customer satisfaction by reducing wrong billing complaints and avoiding paying in advance energy that will never be consumed (prepayments). This service could be pushed further by giving to the customer the choice for the level of detail (yearly, monthly, daily…) to appear on its bill.
20	Offers reflecting actual consumption patterns		☑		Innovative pricing formulas reflecting actual consumption would increase customer's satisfaction in respect of to what a supplier can offer him. However Sia Partners partially agrees with this service because it is important that this type of offers must not be designed against customer welfare. For example the communication around the offer should not reflect expected bill figures that are irrealistic (even if it can be possible).
21	Access on customer demand to information on consumption data	☑			As explained in recommendation #17 Sia Partners highly recommends giving access on customer demand to consumption data in order to optimize customers' participation..
22	Hourly flow capacity reduction/increase		☑		Sia Partners does not agree that the reduction/increase of gas flows is applicable to residential customers. Although it makes completely sense to consider the services for industrials, the need for the residential customer is less obvious as the benefits are relatively small in comparison to the necessary modifications on gas networks.
23	Enabling activation and de-activation of supply		☑		As for recommendation #6 Sia Partners partially agrees with this service because it can be offered to retail customers only if it has been proven that the price of the service is inferior to the annual fixed fees associated to not de-activate the supply when the consumption is null or extremely low. Sia Partners adds that the customer or its contract clauses should be the single trigger to activate or de-activate the supply. In no case, it should be the DSO that owns this responsibility.
24	Alert in case of high energy consumption			☑	Sia Partners agrees that activation/deactivation of supply should be done remotely. However Sia Partners would like to remind that the service should be cheaper than the cost for annual fees without consumption. In other worlds, activation/deactivation of supply should be lucrative for the customers.
25	Interface with the home		☑		Sia Partners agrees that home interfaces will serve to develop the active participation of the customers. However Sia Partners would like to kindly remind that the services associated to home automation can be sometimes expensive and can therefore only be accessible to a particular segment of the population (rich and technology-oriented).

2.1.2. ANSWERS TO THE FIVE SPECIFIC QUESTIONS OF ERGEG

Question 1: When interval metering is applied, which interval should be used for customers and those that both generate and consume electricity? Please specify timeframes and explain.

1. Less than half an hour
2. Half an hour
3. One hour
4. More than one hour

Sia Partners advises to select less than half an hour as interval metering. The interval metering for consumption/injection should be at the lowest granularity that responds to the needs of all involved parties. This means that the granularity chosen must correspond to:

- **Customers** that need to have a granularity that would allow them to adjust their consumption/injection volumes to achieve an optimal energy savings amount. Moreover by offering a very low granularity enabling the customer to choose the level of details he wants to see on its bill or on its smart meter.
- **Suppliers** that would need a granularity aligned with the pricing products they offer. For example if they offer pricing formulas that are recalculated each ¼ hour, then a ¼ hourly granularity is required as interval.
- **Power plants** that need a granularity that allow them to adjust produced volumes. For instance, the asset optimization is done on a 10 minutes basis in some countries.
- **Grid operators** that need the best granularity to manage e.g. the balancing on their network.

It is also important to underline that the selected interval metering should be ideally standardized among the European countries in order to stimulate European synergies.

Also by defining the lowest granularity level for interval metering it provides more flexibility regarding the level of detail of the actual consumption data that a customer wants to see. For example, if the interval is 5 minutes, some customers can choose to see their actual consumption with a 5 minutes granularity or a 10 minutes granularity.

However it is important to keep in mind that the lowest granularity chosen must not result in too large metering data volumes that could negatively impact the related information systems and operational tasks.

Question 2: When Time-of-use (ToU) registers are applied for customers and those that both generate and consume electricity, what would be an appropriate number of registers? (Comment: In this case, registers are equivalent to prices).

With smart metering the definition of the number of ToU registers becomes the number of different price formulas that are sold to a customer. If the customer has the advantage of a price formula that reflects its consumption (cf. Recommendations #4 and #2), then the number of register must follow the applied logic. For example, if the customer opted for an offer where its price formula is applied each hour in function of its metered consumption, this means that the number of registers must be equal to 24 (24 hours in one day).

Question 3: What further services should be envisaged in order to allow consumers and those that both generate and consume electricity to be aware and active actors in smart grids?

The way consumers and producers can be active in smart grids is by injecting or consuming energy when it is the best moment for the grid in other words by participating to the global balancing management for the grid. Sia Partners believes that a good customer service would be to inform the customer when it is the best moment to inject or consume energy (cf. new service #3 on page 10 for more details).

Question 4: When interval metering is applied, which interval should be used for customers? Please specify and explain.
- One hour
- One day
- One week
- Other

Sia Partners advises to select one hour as general common standard. As for electricity, the interval metering for gas consumption should be at the lowest granularity that responds to the needs of all involved parties (cf. Question 1 for details). Moreover for gas, having less than an hour as interval metering makes no sense because it is impossible to optimize the balancing in less than one hour.

Question 5: When Time-of-use (ToU) registers are applied for customers and those that both generate and consume electricity, what would be an appropriate number of registers? (Comment: In this case, registers are equivalent to prices).

Cf. question 2.

2.1.3. ADDITIONAL SERVICES PROPOSED BY SIA PARTNERS

Besides the services recommended by ERGEG, Sia Partners is convinced that additional services could motivate customers to participate actively to the smart metering development:

NEW SERVICE # 1 – DISPLAY EUROS ON SMART METER

One of the main driving factors behind the active participation of customers to any economic or social happening is the one that affects their wallet. Therefore, Sia Partners thinks that displaying the Euros that are going in or out of a customer's wallet could be an interesting service inciting a customer's interest in smart metering (for both electricity and gas). Compared to a displaying of the energy in kWh, displaying the energy in Euros is a univocal and non-discriminatory way for customers to understand and to participate to the smart metering development. Sometimes it would not be possible to inform instantaneously the customer of the exact Euros spent because some price formulas are based on ex-post indexes (Ne/Nc for example). In this case, the simulated Euros could be communicated as an alternative.

This service could be offered in a complementary way to the actual consumption (cf. recommendations #8 and #21). This information should be available on the smart meter itself giving "live" information on the appropriate communication means.

Furthermore the smart meter should display when the customer that both consume and generate energy is financially independent from the grid. This means that the customer wants to know when its own production responds to its own energy needs (no Euros spent) and vice-versa (Euros spent).

NEW SERVICE # 2 – DISPLAY CO_2 EMISSIONS LEVEL ON SMART METER

In the line of the recommendation above (new service #1), another driving factor behind active customer participation might be the genuine interest of a customer to what extent he or she contributes to a better environment. In this way another service that can be offered is to display the CO_2 emission level.

This service could be offered in addition of recommendation # 1 (actual consumption information) and recommendation #4 (Offers reflecting actual consumption patterns). Indeed, in function of the sensitivity of a customer's interest in the CO_2 emission level, alternative offerings (coming together with alternative consumption patterns) could be proposed to a customer.

NEW SERVICE # 3 – ALERT TO INFORM WHEN IT IS THE BEST MOMENT TO CONSUME OR INJECT ENERGY
Smart grid implies managing the grid in a smarter way. This service allows the consumers and producers to know when it is a smarter moment in terms of Euros (as price signal) to consume or inject energy on the network. For example, it would be very useful for the consumer that owns an electric car to know when it is the cheapest moment to charge its car batteries. Even more in the coming years this could also be used to know when the owner of car has to inject energy on the grid (the period that brings more money to the producers) when cars with vehicle-to-grid technology (V2G) will be available on the market. Sia Partners adds that this service must be free for consumers and producers since it is essentially the DSO/TSO that benefit from its results.

NEW SERVICE # 4 – GIVE A GRAPHICAL COMPARISON OF ACTUAL CONSUMPTION AGAINST CHOSEN OFFER
In the line of recommendation # 1 (actual consumption information) and recommendation #4 (offers reflecting actual consumption patterns) a service could be offered to the customer enabling to switch to alternative offers which reflects better its consumption pattern within the contract validity. This will incite the customer to monitor its behavior even between contract periods.

2.1.4. ADDITIONAL PROPOSALS FOR SMART METERING SERVICES

Proposal 1. ADOPT A MULTI-COMMODITY APPROACH FOR SMART METERING SERVICES

Sia Partners recommends investigating the multi-commodity approach (gas, power, heat, and water) when thinking of smart metering services. This allows to identify from the beginning the potential synergies (both technical and in terms of services) between the different commodities.

This approach makes even more sense if a unique smart meter for the basic commodities (gas, power, heat and water) is chosen for the roll-out of smart meters. In line with the *Open Meter Project* explained in the Annex 2 of the ERGEG document, Sia Partners recommends thinking about the technical synergies and the synergies in term of services linked to a unique smart meter:

All along the life cycle of the meters, **technical synergies** can be found as for instance:

Device	▪ Some elements of the meters are redundant and a unique meter can be designed at cheaper cost (e.g. one battery, one display…). It will also reduce the environmental impact.
Installation	▪ The installation can reach 60% of the total implementation cost of a meter disregarding the commodities without taking into consideration the decrease in nuisance for the customer.
Communication	▪ A unique communication infrastructure can be installed.
Disposal	▪ Looking 40 or 50 years ahead it will represent a disposal of 260 millions of meters against 750 millions. The equation is quickly done.

The multi-commodity approach could also bring **synergies in terms of services** for the customers as for instance:

Moving	▪ Only one request could be done while moving in or moving out in order to switch on/off the delivery of commodities.
Monitoring	▪ Only one device will collect, transfer and publish all the consumption data.
Security of supply	▪ Only one device to guarantee a smarter consumption of the resources (e.g. power during peaks, water during drought) in the interest of the population and the environment.

The question which remains is why the European customer would need two, three or four meters to monitor the distribution and the consumption of commodities. The approach is worth the investigation as at the end, it will be the customers that will pay most for the meter(s). Why not then make them pay only one meter?

Proposal 2. PROPOSE SERVICES PACKAGES THAT MEET CUSTOMERS SEGMENTATION

Sia Partners thinks that the approach to treat every recommendation separately is good but that a more global representation of the services in groups can offer complementary thinking paths. As services are dedicated to end customers, Sia Partners believes it would be good for the analysis to start from the different customers' profiles and then to associate related services as responses to their specific needs. Sia Partners proposes the following high-level analysis:

Profile name	Profile Characteristics	Recommended services grouped by customer profile	
		#	Name
Price Sensitive	The customer who is particularly sensitive to the cost of the commodity and who pays particular attention to the monthly bills disregarding what and how he is consuming. Such customer will request services which will help him to decrease its bills and to monitor continuously its consumption in Euros. This type of customer will be particularly sensitive to the arrival of smart meters especially if the cost of smart metering implementation increases its bills.	1	Information on actual consumption, on a monthly basis
		2	Accurate metering data to relevant market actors when switching supplier or moving
		4	Offers reflecting actual consumption patterns
		8	Access on customer demand to information on consumption
		17	Information on actual consumption, on a monthly basis
		18	Accurate metering data to relevant market actors when switching supplier or moving
		20	Offers reflecting actual consumption patterns
		21	Access on customer demand to information on consumption data
		New 1	Display Euros on smart meter
		New 4	Give a graphical comparison of actual consumption against chosen offer
Environment Friendly	The customer who shows some dedication to the environment will probably request additional services such as measuring its impact on the climate change and monitoring its solar panels.	3	Bills based on actual consumption
		19	Bills based on actual consumption
		New 2	Display CO2 emissions level on smart meter
		New 3	Alert to inform when it is the best moment to consume or inject energy
Technology Minded	The customer who likes the innovation and new technologies. Those customers will request always more services and features which allow them to be proactive in their consumption by controlling appliances remotely. Those services can generate great revenues for the existing suppliers/distributors or allow third party player to enter the energy market.	5	Power capacity reduction/increase
		6	Activation and de-activation of supply
		7	Only one meter for those that both generate and consume electricity
		9	Alert in case of an non-notified interruption
		10	Alert in case of high energy consumption
		11	Interface with the home
		12	Information on voltage quality
		13	Information on continuity of supply
		22	Hourly flow capacity reduction/increase
		23	Enabling activation and de-activation of supply
		24	Alert in case of high energy consumption
		25	Interface with the home

A segmentation of customer and market analysis will provide the ERGEG with the number of European citizens assigned to each customer profile. It will also give a good view on the importance on each services and group of services (for example more customers are price sensitive; therefore the priority is set for the related services (see above)). An interesting finding is also that more services will be necessary to convince environmental friendly citizen.

2.2. Cost and Benefit Analysis (CBA)

Globally, Sia Partners is aligned with the potential benefits to be included in the CBA of a smart metering roll-out. However some of them could necessitate additional clarifications:

- **Reduction of peak load.** The reduction of the overall peak load is not exactly the most important benefit. Reducing the peaks during the critical periods is the essential element (critical imbalance without reserves, use of highly expensive power plants or use of highly polluting power plants). The smart meters must be able to control the consumption not only during the peaks but for all critical periods.
- **Better frequency and quality of billing data.** In addition to the added value for the customer, the most important benefit is the elimination of the highly expensive processes of bill settlement for the suppliers, the distributors and the transmission system operators.
- **System Security.** The better knowledge of the overall infrastructure will also allow the optimization of the investment portfolio and more accurate interventions on the grid.

Furthermore, Sia Partners highlights in the sections below three important components of the CBA.

2.2.1. Integrate Telecommunication companies in the value chain scope

Sia Partners totally agrees with the Recommendation #14 of the ERGEG which stipulates that the entire value chain must be taken into the scope of a CBA. Even more it is important to mention that Telecom providers should also be included in this value chain because these companies determine the communication features that a smart meter is able to offer. Thus if further developments are required at Telecom companies' side in order to support properly advanced smart meters' features, then it is crucial that these companies are identified as part of the value chain in the CBA.

2.2.2. Add some smart meter costs per stakeholder

A lot of focus is put on the extensive benefits of smart metering. Sia Partners would like to recommend also mentioning the main costs that can be identified:

- Material costs
- Information system costs
- Maintenance costs
- Roll-out costs
- Transfer costs
- Data transmission costs
- New services development costs
- Etc.

As for benefits costs will be more or less important depending on the stakeholder (supplier, TSO, telecom provider…) and depending on the role that each of them occupy in the system (cf. below section).

2.2.3. Additional parameters to take into account in a CBA for smart metering

Sia Partners wants to add some important parameters that should be taken into account when doing a CBA. Scenarios should be built in order to take into account the different possibilities in ownership and deployment of the smart meters, and more important, the accompanying ownership of the metering data.

As the ownership of the meters and the data can differ from one model to another, also the costs and benefits will differ. Therefore Sia Partners considers it is necessary to track down the different possible scenarios and to outweigh the CBA conclusions of these scenarios.

In this exercise, not only measurable parameters should be taken into account but also other constraints should be included. One of these constraints, as also identified by ERGEG, could be the protection of a customer's privacy that goes together with the distribution or privatization of their metering data.

2.3. Roll-out of Smart Meters

Regarding the roll-out of smart meters Sia Partners wants to bring some corrections or details to the analysis done by the ERGEG in the document:

2.3.1. TRADE-OFF BETWEEN COST-DRIVEN AND QUALITATIVE PROJECTS

The ERGEG states in the document that "*A roll-out should be carried out in a cost-efficient way*".

Sia Partners experienced through some of its assignments that smart meter projects show a lack of quality for the IT software (observed on a smart meter project in France), problems in specifications of meters (observed on a smart meter project in Italy) or a roll-out process not being robust enough (observed on a smart meter project in Italy and France). This illustrates that stating that a roll-out must be carried out in a cost-efficient way is not sufficient: a trade-off between total costs of the project and quality is crucial.

2.3.2. INTEGRATE AN EXPERIMENTATION PHASE

Sia Partners advices to integrate in each roll-out a validation experimentation phase.

Indeed, the roll-out of big scale meters is not a daily operation for which operators have a lot of experience. It implicates new technology, new training for the installation and new systems of information. It is also a project with great investments and costs that must be verified between the theoretical business case and the full deployment.

The lessons learned must be collected for any proof-of-concept, experimentation phase or full-scale deployment. The regulators should be in charge of sharing them in order to avoid repeating the same mistakes twice in different regions of Europe. Indeed, those mistakes can have a direct impact on the cost a customer will have to pay.

2.3.3. NATIONAL REGULATORS REPRESENTS THE INTERESTS OF CUSTOMERS

Sia Partners would like to add that another important role that national regulators should endorse being the representation of the interest of customers by:

- Protecting the customer's privacy rights because the data must remain confidential.
  Example: An hourly consumption behavior of the customer must remain totally private as it could intrinsically provide information on the presence of the customer in its own house.
- Defining sufficient requirements against piracy because the systems must be protected.
  Example: As the meters are remotely managed, they have to be protected against any type of attacks (cyber or terrorist attacks) which could deactivate all the meters remotely.
- Communicating to the population the benefits of the replacement of the meter.
  Example: As there are always positive points in the business case, the regulators should prove not only prior to the deployment of smart meters but also a posteriori the benefits of the smart meters to the individual customer.
- Securing the scalability of the systems to anticipate future evolutions of the meter.
  Example: A typical life expectation for a smart meter will be from 20 to 40 years, the future market evolution should be managed without replacing the meters for a relatively long period.