



ANALYSIS OF THE FRENCH MARKET OF ENERGY EFFICIENCY SERVICES

SYNTHESIS

ADEME



Agence de l'Environnement
et de la Maîtrise de l'Énergie

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GALLILEO
Business Consulting

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1. Context et objectives

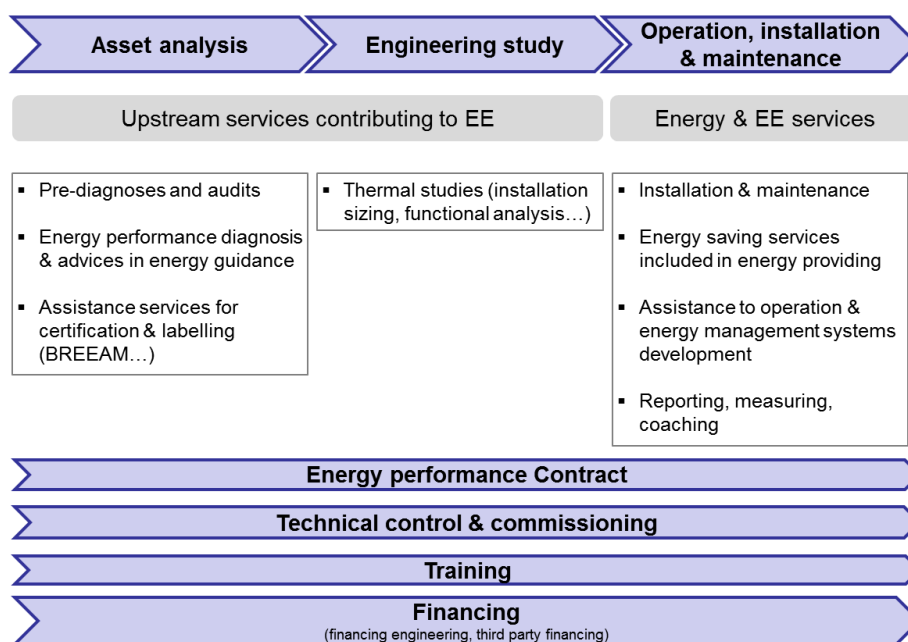
The Energy Efficiency Directive (2012/27/EU) requires each State Member to report on implemented energy efficiency measures every three years through the National Energy Efficiency Action Plan (NEEAP), and provide a qualitative review of current and future development of the energy efficiency services (EES) market.

Following the study carried out by the firm CODA Stratégies to feed the France's NEEAP 2014, ADEME, in cooperation with the French Ministry of Environment and Energy, mandated mid 2016 the firm GALLILEO Business Consulting to carry out an update of the analysis of the energy services market to feed the NEEAP 2017 of France. This analysis includes:

- A quantitative inventory of the French market;
- An analysis of demand (residential, tertiary, industry, agriculture) and supply (actors and services) to identify development dynamics, as well as the main barriers and levers;
- The listing of recommendations to promote quality development of energy efficiency services.

2. Scope and methodology

The scope of this study encompasses different components of the value chain of energy services such as asset analysis, study and engineering, operation, installation and maintenance of equipment, and financing.



Value chain for energy services

Source: GALLILEO according to CODA Stratégies and feedback from the steering committee

The analysis was structured according to the different steps:

- A bibliographic review;
- 45 qualitative interviews of key stakeholders from different segments of demand (residential, service, industry, agriculture) and supply;
- A quantitative survey involving 75 companies offering energy and energy efficiency services in France complemented by data (public and non-public studies, activity reports of firms, national statistics data including ESANE, corporate databases such as DIANE and ORBIS, Infogreffe...);
- A benchmark of five countries (United States, United Kingdom, Netherlands, Germany and Ireland);
- 2 interactive workshops to draw up recommendations for the development of the market for energy efficiency services.



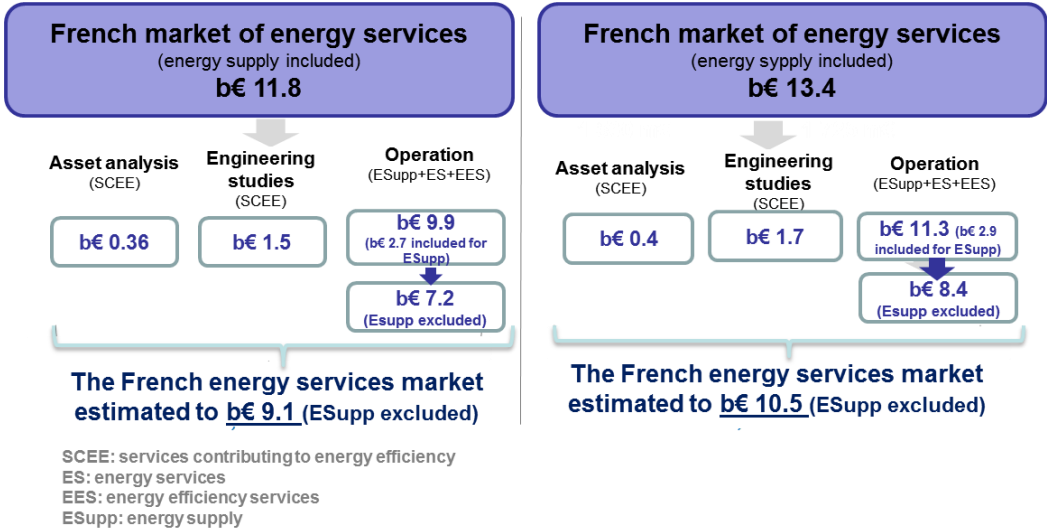
In total more than 120 stakeholders of the energy efficiency services market have involved between May and December 2016.

3. Estimation of the French market

The French market of EES has been estimated to b€ 10.5 in 2015 (energy supply excluded), and to b€ 13.4 by including energy supply services, and could be split in 3 main segments:

- b€ 0.4 generated through asset analysis services
- b€ 1.7 generated thanks to engineering studies;
- and b€ 11.3 through operation, installation and maintenance.

It has increased of 14.4% (energy supply included) compared to 2013.



The distribution of this market per sub-segment is given in the following table:

SERVICES	CATEGORY**	VALUE 2013	VALUE 2015
ASSET ANALYSIS		M€ 362	M€ 403
Energy performance diagnosis	SCEE	M€ 129 corr.* (M€ 130 according to the previous study from CODA Strategies)	M€ 138
Advices in energy guidance	SCEE	M€ 40	M€ 36-44
Pre diagnosis and audits	SCEE	M€ 183	M€ 212
<i>in industrial sector</i>		<i>M€ 40</i>	<i>M€ 50</i>
<i>in tertiary sector</i>		<i>M€ 80</i>	<i>M€ 82</i>
<i>in residential sector</i>		<i>M€ 60</i>	<i>M€ 78</i>
<i>in agricultural sector</i>		<i>M€ 3</i>	<i>M€ 1,8</i>
Assistance to certification and labelling	SCEE	9 M€	13 M€
ENGINEERING STUDIES		M€ 1,530	M€ 1,748
EE oriented thermal & engineering studies	SCEE	M€ 1,450	M€ 1,637
Technical Control	SCEE	M€ 74	M€ 104
Commissioning	SCEE	M€ 6	M€ 7
OPERATION, INSTALLATION AND MAINTENANCE		M€ 9,887 (ESupp incl.) M€ 7,226 (ESupp excl.)	M€ 11,303 (ESupp incl.) M€ 8,442 (ESupp excl.)
Collectives boiler rooms		M€ 3,990	M€ 5,091
<i>Energy supply</i>	ESupp	<i>M€ 979 M€</i>	<i>M€ 1,273</i>
<i>Energy services</i>	ES	<i>M€ 2,582 M€</i>	<i>M€ 2,800</i>
<i>Energy efficiency services</i>	SEE	<i>M€ 429 M€</i>	<i>M€ 1,018</i>
District heating network		M€ 1,875	M€ 2,118
<i>Cost of energy input</i>	ESupp	<i>M€ 1,000</i>	<i>M€ 1,123</i>
<i>Operation cost (boiler room + grid)</i>	ES	<i>M€ 875</i>	<i>M€ 995</i>
Industrial cogeneration		M€ 917	M€ 623
<i>Coût approvisionnement combustible</i>	ESupp	<i>M€ 682</i>	<i>M€ 465</i>
<i>Valeur ajoutée sur approvisionnement combustible</i>	ES	<i>M€ 235</i>	<i>M€ 158</i>
Energy Performance Contracts	EES	M€ 133	M€ 146
Maintenance of individual heating	ES	M€ 1088	M€ 1 245
Maintenance and piloting of building management systems	EES	53 M€ corr.* (50 M€ selon CODA)	M€ 59
Operation of public lighting		M€ 461	M€ 477
<i>Maintenance (maintenance services of PPP & EPC are excluded)</i>	ES	<i>M€ 405</i>	<i>M€ 417</i>
<i>PPP – CPE for public lighting</i>	EES	<i>M€ 56</i>	<i>M€ 60</i>
Maintenance of electrical infrastructures with impact on energy	ES	M€ 1,200	M€ 1,270
Project ownership assistance	ES	M€ 25	M€ 29
Assistance to the implementation of an energy management system	ES	M€ 1,6 corr.* (M€ 2 according to the previous study from CODA Strategies)	M€ 13
Metering, supervision & coaching		M€ 146	M€ 232
<i>Metering in residential</i>	EES	<i>M€ 105</i>	<i>M€ 185</i>
<i>Metering in tertiary & industry</i>	EES	<i>M€ 39</i>	<i>M€ 47</i>
<i>Coaching</i>	EES	<i>M€ 2 M€</i>	<i>(coaching included in metering)</i>
CROSS-SECTORAL			
Training	SCEE	No estimated	No estimated
Financing	SCEE	No estimated	No estimated
TOTAL (ESupp included)		M€ 11,779	M€ 13,454
Asset analysis + Engineering studies + Exploitation			
TOTAL (ESupp excluded)		M€ 9,118	M€ 10,593
Asset analysis + Engineering studies + Exploitation			

*corr : corrected value from data available in 2016

** Categories:

SCEE - services contributing to energy efficiency

ES - energy services

EES - energy efficiency services

ESupp - energy supply



Services related to asset analysis

This segment is estimated to M€ 403 in 2015 (in progress of 11% compared to 2013). This **dynamic is mainly due to the progression of the pre-diagnosis and audit market** (16% boosted by the audit obligation for large enterprises and condominiums of more than 50 lots). The **market evolution of assistance to certification and labelling** must be underlined: this segment is estimated to M€ 13 in 2015 (in progression of 44% compared to 2013). Certifications (NF HQE, BREEAM, LEED...) and labelling (EFFINERGIE+, BEPOS EFFINERGIE...) became a necessary step to promote construction performance and renovation operations, and make them more objective. The improvement in companies and professionals qualification (especially RGE¹) reflects the will to improve the quality of services, and to make it more visible.

Services related to engineering studies

This segment is estimated to M€ 1,748 in 2015, in progress of 14 % compared to 2013 and in line with the global dynamic of the market. The huge progression of control services (41%) confirmed by the interviewed players of the supply side must be underlined, and the increasing number of control offices in the energy efficiency field.

Services related to installation, operation and maintenance

This market, estimated to M€ 8, 442 M€ for the year 2015 (energy supply excluded), has increased of 17% over the period 2013-2015. The markets of the collective boilers operating, of assistance to energy management system setting up and the market of energy performance contracts (EPC) must be underlined: the market of collective boilers exploitation has increased of 28% (M€ 5,091 in 2015 with energy supply and M€ 3,818M€ without). It represents 45% of the market of installation, operation and maintenance, and is therefore the most important one.

Estimated to M€ 13M€ in 2015, the segment of assistance to energy management system setting up shows the biggest growth: it has been multiplied by 8 since 2013. The exemption of mandatory audit and the white certificates bonus (no more into force) for enterprises ISO 50001 certified have clearly boosted the development of the ISO 50001 standard. The very positive collected feedbacks of this structuring scheme are also very encouraging and offer favorable perspective for the development of this sub-segment.

The **metering, sites supervision and coaching market** is estimated to M€ 232, and has **progressed of 59%** over the residential, tertiary and industrial sectors (compared to 2013). This confirms the estimation carried out by CODA Stratégies in 2014.

Regarding the **EPC market, the progression is less important** as expected especially in private sector. The importance of preparatory works added to legal complexities for their implementation appear to be important constraints. Nevertheless, the decree regarding energy performance improvement in existing tertiary building should increase activity.

Last but not least, the **development of innovative financing services** (no estimated in this study) must also be stressed: the **emergence of turnkey offers** integrating both work planning & supervision, monitoring and financing.

4. Strategical analysis of the demand: challenges and dynamics

This study sheds light on the different segments of the demand in order to better identify the priorities of the actors, the place of energy efficiency in these priorities, as well as the barriers and levers to the dynamics of actions. The study provides an overview by macro-segment, useful for guiding public action and supply actors.

Industrial sector

The industrial sector encompasses a diversity of sub-segments for which the **energy efficiency challenges are variable** and depend on several factors such as the size of the sites, their energy consumption (and their share in the overall costs), the potential of energy savings... In addition, in the industrial sector, energy efficiency can concern **different components of the value chain** (utility,

¹ RGE stands for *Reconnu Garant de l'Environnement*, and refers to the label launched in 2011 by the French State to guarantee the quality of energy performance building works and studies carried out by professionals.



process, building ...) **involving persons at different levels & positions** in a same site or company (general means, legal and financial support ...) that do not necessarily have the same objectives and levels of information.

Interviewed on their priorities in order to ensure their activity, industrialists evoke **above all the continuity of production and profitability**, considered as imperative to the proper functioning of their activity. Image and customer satisfaction, regulatory constraints adaptation, and sites integration into their environment are also areas of concern. In these priorities, energy is an increasingly important issue for industrial players. **Energy efficiency is first and foremost seen as a lever for reducing energy costs and improving economic performance**. It is also part of continuous improvement efforts and is a response to the objectives set at the corporate level of industrial groups.

If energy efficiency may be a mean to reach objectives, it is not yet considered as a real “engine of investment”. **Energy efficiency gains are generally not sufficient to motivate equipment changes or changes in production processes that are often perceived as too risky**: it is only when it is necessary to change equipment that the efficiency criterion may be taken into account.

The agricultural sector

This sector encompasses a variety of branches whose energy issues are variable. While the overall energy consumption of the agricultural sector is low, **machinery, hogsheads, poultry and pig production are concentrating significant energy issues**.

The interviewed farm operators express **priorities for securing and optimizing agricultural production**: preventing and anticipating any risk that could jeopardize production and ensuring the best possible production conditions (according to technical, economic and product quality criterion). **Final customer satisfaction and income optimization are also at the heart of the concerns**. Energy and energy efficiency issues are attracting growing interest from farmers who are strongly committed to these issues: energy efficiency is increasingly seen as a lever for action to serve their priorities. Moreover, there is a real concern to **anticipate the evolution of the energy context, and to reduce the dependence of farmers on the price of energy**. These findings form a “fertile ground” for the development of energy efficiency services within the agricultural sector.

The tertiary sector

This sector also encompasses various type of sites (offices, shopping centers, public administrations, hospitals, hotels, etc.) with varying needs.

Regarding tertiary buildings hosting public structures, the interviewed local authorities highlighted the **challenge of building maintenance and asset valorization**, as well as concerns about the **comfort of users of buildings and equipment**, and their **safety**. The authority exemplary in terms of asset management (especially from the environmental point of view) **is also frequently mentioned**, and is often part of political commitments. Energy efficiency is a growing challenge: it is a **lever for reducing bills in a constrained budgetary context**, a response to political commitments made at the local level and a lever for assets valorization.

The interviewed **offices and real estates companies express strong priorities on the rental performance** (and on asset profitability), and quality maintaining or improvement. The main challenge is to avoid any deficiency or rental vacancy, maintaining assets as attractive as possible and optimizing their use value. In this situation, energy efficiency is still rarely a subject of demand or interest from future tenants of offices (except for tenants companies who have undertaken specific CSR commitments), but it contributes to the overall performance of the asset for the lessor. Since energy efficiency is still very rarely at the heart of commercialization discussions, **performance commitments by managers of tertiary sites could help to strengthen the place taken by this topic in decision making processus, and contribute to justify higher rental price**.

The “small” owner-occupiers (e.g. VSEs and SMEs owning their own offices) take priority over asset value but also over employee comfort. Therefore energy efficiency can be an interesting lever to meet these priorities, but is often not appropriate by an uninitiated public who rarely benefit from dedicated energy referents

Regarding hospitals, the continuity of operation in the best conditions of safety and comfort is, without great surprise, one of the main concerns. Nevertheless, interest in **energy efficiency is increasing because of the high-energy bill and budget constraint** in certain structures (especially



in public sector). It therefore offers a lever for reducing energy costs. The collected testimonies highlighted a real difficulty in gaining support within hospitals community, as well as in changing behaviors in a collective and sustainable way.

Residential sector

The residential sector also covers a variety of actors (social landlords, owner-occupiers and co-owners...) and situations for which motivations, decision-making mechanisms and energy efficiency issues differ. **For landlords and housing managers, the identified priorities concern the maintenance of buildings, in a logic of asset valorization and rental performance improvement.** Energy efficiency can then be a lever for valuing housing, as well as a means of ensuring minimum and controlled loads for the occupants

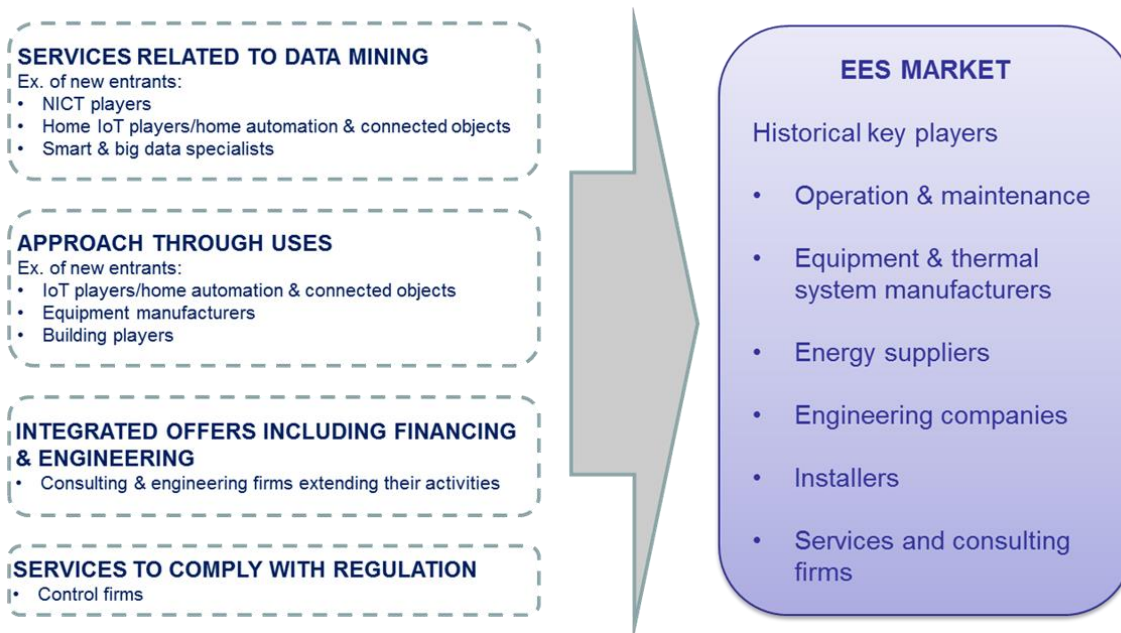
For occupants the main concern is to keep costs at the lowest level while respecting comfort. Concerning the implementation of actions to improve energy efficiency, reluctance is often expressed because these actions are **perceived costly and lack of incentive**, sometimes even contrary to the overall comfort of users. This perception can limit the implementation of certain actions such as regulatory compliance. It should also be noted that the **heterogeneity of profiles** (homeowners or tenants, aged or younger, social level, etc.) **complicates decision-making processus** particularly in collective dwellings.

5. Strategic analysis of the supply

The landscape of EES players

In 2014, the study of the EES French market had identified the main types of actors and stressed the plurality of involved forces: engineering companies and consulting firms, energy suppliers, power plants operators, equipment maintenance companies, electrical and thermal equipment installers and manufacturers, automation and building management systems manufacturers, control offices, energy services providers... This diversity is even more strengthened today with the progressive arrival of new typologies of actors.

NEW DYNAMICS ON THE EES MARKET LED BY NEW ENTRANTS & HISTORICAL PLAYERS



Source: GALLILEO

These new types of player entry the EES market thanks to different means:

- **Entry through datamining services**

The increasing importance of NICTs in the everyday life of the French people has **created development opportunities for digital actors around data management**, including those related to energy. The example of the purchase of the manufacturer of thermostats connected



NEST by GOOGLE, which has in particular entered into partnerships with the French energy suppliers ENGIE and DIRECT ENERGIE, illustrates this phenomenon. Entered into the market of energy efficiency services by their technological expertise, in particular with regard to the collection and processing of mass data (big data), more and more actors are now offering services combining new technologies and services such as monitoring and energy consumption optimization. It should also be noted that in addition to technological expertise, these players often benefit from significant financial resources and good reputation among the public. Moreover the development of renewable energies in particular self-consumption at home as well as the emergence of blockchain technologies, offer new perspectives to these players, as illustrated in particular by the alliance between the French real-estate developer BOUYGUES IMMOBILIER, MICROSOFT, ENERGISM and the start-up STRATUMN at the end of 2016 to develop a system to secure data exchanges between photovoltaic energy producers and consumer at the local level.

- **An incursion through uses**

This approach is especially under development in the IoT (Internet of Things) ecosystem whose actors develop and offer connected objects to improve the comfort, health or safety of users. The ALPHABET company (GOOGLE) is a good example of such approach with its connected thermostat that is first and foremost marketed as a tool at the service of comfort at home that can contribute to the realization of energy savings.

This approach through uses is also adopted by building actors who are increasingly mobilized around the challenges of developing the use & asset values of buildings. The design of buildings is no longer focused solely on technical performance but also on users in order to add value to buildings by promoting comfort, health of users, home care assistance, living & work environment quality.

- **An incursion through integrated offers**

The emergence of new energy uses and needs for integrated solutions have forced key players to develop new services upstream and downstream of their activities. This phenomenon has particularly affected energy providers who have had to rethink their services offers due to the arrival of new entrants. Some of them have for example launched **collaborative initiatives aiming at the emergence of innovative services** (organization of a hackathon by DALKIA, launch of a start-up incubator by the French energy supplier ENGIE, organization of the global competition Go Green in the City by the manufacturer Schneider Electric...).

This **phenomenon of activities integration and diversification** is also illustrated through the setting up of strategic partnerships and acquisitions. Created in 2009, GREENFLEX has for example gradually diversified its activities to cover various bricks of the EES value chain (sustainable development consulting, technical and financial engineering, leasing, etc.). Since its creation more than ten acquisitions have been completed, including three in 2016 with the acquisition of BELINKED (consulting firm in social strategy), HOPCUBE (environmental reporting software editor) and OKAVANGO (which before being bought by GREENFLEX had expanded its engineering and design business to the sale of supervising equipment through leasing).

Initiated a few years ago, this integrative logic is nevertheless **suffering from a demand that is not yet mature and needs support and "turnkey" solutions** integrating both diagnosis, support for the implementation of actions, and financing.

- **An incursion boosted by regulation**

Unsurprisingly, the regulation contributes to the development of energy efficiency services and the emergence of new activities. As mentioned above, the dynamic generated by the energy audit obligation for large companies has for example, enabled the arrival of new players in the market and the diversification of the activities of existing players such as control firms.

Analysis of the EES supply

Beyond the evolution of the players' landscape, SEE's offer can be analyzed from two angles: its relevancy to market needs on one hand, and its ability to encourage the initiation of quality-actions on the other hand.



For two-thirds of the interviewed people², the existing EES offer is perceived as sufficient to meet market demand. Nevertheless, it often **appears to be unclear and therefore not adapted to meet effectively needs**. A high degree of heterogeneity in the quality of services, mainly due to the development of low-cost offers (notably on energy audits), must also be a reason of such negative perception.

Regarding the capacity to promote virtuous dynamics and to engage targets in long terms trajectories for energy efficiency improvement, the study stresses the positive role of the regulatory energy audit to raise awareness and prepare energy efficiency actions. Nevertheless, feedback shows that regulatory energy audits are not always enough to trigger sustainable trajectories. Among **the key identified success keys, the high level of energy savings, the quality of audit services and the assistance post-audit appeared to be essential**.

The feedback collected from stakeholders who have implemented an energy management system or ISO 50001 certification are very encouraging. The white certificates bonus given to certified company (scheme no longer in force), the certification obligation to benefit from preferential electricity tariffs for electro-intensive actors and to be exempted of regulatory audit, and the "PRO-SME" program had clearly supported the emergence of the ISO 50001 certification in France. The **emulation created around energy issues within the company, the continuous improvement approach, and the positive effects on the image of the company** are positive impacts underlined many times despite the "cumbersome" associated with the implementation of this approach mentioned by some actors.

6. Recommendations

In view of the identified barriers and levers, various recommendations are proposed to create the conditions for long-term energy efficient actions and to ensure the development of a quality and readable offers. These recommendations were built in cooperation with the stakeholders involved in the study.

ACTIONS ON DEMAND

Promotion & involvement	
1.	Inform and sensitize a large audience to energy efficiency issues Ex: public awareness campaigns carried out by public authorities, actions to raise awareness at schools, actions targeted all functions within companies (technical, purchasing, legal, financial, etc.)
2.	Promote feedback & initiatives targeting energy efficiency Ex: examples capitalization & dissemination according to a sectoral approach
3.	Ease access to information related to energy consumption and promote benchmarks to ease comparison Ex: performance indicators & sectoral repository design elaborated through common methodologies & led by a neutral pilot
4.	Support the skills development of contracting authorities to encourage the emergence of quality projects and the development of EES
5.	Build and disseminate pitches per types of targets taking into specific needs and uses
6.	Promote pedagogy on the existing & future regulatory framework to ease its implementation and make it supported Ex: ease collaborative initiatives on regulatory intelligence per sector
Engaging decisions and actions	
7.	Give evidences on the effects of EE actions promoted to reduce reluctance Ex: Encouraging supply-side actors to commit themselves on results and give visibility on the expected gains
8.	Ease collective approaches and resources sharing Ex: support collective projects improving energy efficiency & ease human resources sharing
9.	Help project managers to be in touch with right EES suppliers

² Quantitative survey of 75 enterprises offering energy & energy efficiency services.



Animate and perpetrate

10. **Strengthen monitoring initiatives to measure results and consolidate knowledge**
11. **Ease changes in behavior and practices through long terms actions**
Ex: adopt collective and transversal approaches combining sociology and technology

ACTIONS ON SUPPLY

Ensure the development of a quality, readable and sustainable offer

12. **Let EES offer to structure naturally**
13. **Stabilize the regulatory framework to ease appropriation and to allow progressive skills development**
14. **Moving from a normative and negative speech perceived as constraining to a targeted, positive and incentive speech**
15. **Give long-term perspectives to EE supporting schemes**
16. **Identify and promote the most suitable solutions and technologies per type of use**
NB: This task is suggested to be led by ADEME which is perceived as a neutral and objective stakeholder
17. **Build a roadmap of ESS per need and target type to ease the building of virtuous trajectories/path**





ANALYSIS OF THE FRENCH MARKET OF ENERGY EFFICIENCY SERVICES (SYNTHESIS)

Summary

This analysis of the French energy and energy efficiency services market is an update of the 2014 study led to feed the National Action Plan for Energy Efficiency (NEEAP).

It benefited from more than 120 contributions from various stakeholders and encompasses:

- A quantitative analysis per sub-segment (market estimation in 2015: over € 13 billion, energy supply included);
- A qualitative analysis of demand and supply (identification of development dynamics, main barriers and levers);
- And a set of recommendations aimed at creating the conditions for effective and sustainable actions, and ensuring the development of quality and readable offers for all targets.

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