THE GLOBAL ESCO NETWORK

UN environment programme | copenhagen climate centre

Regulatory Barriers for Energy Service Companies

3rd Edition

Perspectives Based on Feedback from National ESCO Associations

2024

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List of Abbreviations:

AMENEER	Mexican National Association of Energy Efficiency Companies
ANESE	Spanish Association of Energy Service Companies
ANESCO	Chilean National Association of Energy Service Companies
APES	Czech Association of Energy Services Providers
APESE	Portuguese Association of Energy Service Companies
BELESCO	Belgian ESCO Association
CAPEX	Capital expenditure
CEF	The Carbon & Energy Fund (U.K of Great Britain & Northern Ireland)
CO_2	Carbon dioxide
DBOO	Design, Build, Own and Operate
DENEFF EDL_HUB	German Business Initiative Energy Efficiency
EEAU	Energy Efficiency Association Uganda
EERF	Energy-efficiency revolving funds
EPC	Energy Performance Contract
ESCO	Energy Service Company
ESTA	Energy Services and Technology Association
ETL	Essentia Trading Ltd. (U.K of Great Britain & Northern Ireland)
FEDENE	French Federation of Energy and Environment Services
Federesco	Italian National Federation of ESCOs
GDP	Gross Domestic Product
GHG	Greenhouse gas
GWh/yr	Gigawatt-hour per year
IEA	International Energy Agency
IFIs	International financial institutions
IFRS16	International Financial Reporting Standard
IASB	International Accounting Standards Board
JAESCO	Japan Association of Energy Service Companies
JKR	Malaysian Public Works Department
KAESCO	Korea Association of ESCO
kWh	kilowatt hours
M&V	Measurement and Verification
MAESCO	Malaysia Association of Energy Service Companies
MDV	Malaysian Debt Ventures
MJ	Megajoule
MW	Megawatt
NDC	Nationally Determined Contribution
NDEE	Non-domestic energy efficiency framework (Scotland)
P2E	Philippine Energy Efficiency Alliance
RE:FIT	Retrofit Accelerator (UK)
ROC	Republic of China
SME	Small and medium-sized enterprises
Swissesco	Swiss Association of Energy Service Companies
TESA	Taiwan Energy Service Association
ThaiESCO	Thai ESCO Association
Toe	Tonnes of oil equivalent
TWh	Terawatt-hours
UK	United Kingdom
USD	United States Dollars

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Spain - Florian Wehde, Unsplash

Introduction - ESCOs and the Climate Change Agenda

Chapter 1

Since the launch of the climate change agenda, the emissions reduction focus has been on reducing the energy sector's dependence on fossil fuel resources. But there is another agenda that actually had a head start. The energy efficiency agenda was born out of the energy crises of the 1970s and has led to several energy efficiency programmes such as the American Energy Star programme dating from the 1980s.

The Energy Service Company (ESCO) concept emerged at the same time, when there was little if any awareness of climate change, but the greatest awareness of the cost of energy. It developed a business model that finances the replacement of outdated and inefficient technology with new and efficient alternatives and repays it with the value of the saved energy. ESCOs thrived in the US in the 1980s, and the concept has taken root in other regions since then, particularly in China, and now increasingly in Europe as well.

It is natural to assume, then, that the climate change agenda that arrived in the 1990s would provide a new impetus to the evolving ESCO industry. Mysteriously, it did not. While the climate change mitigation agenda was clearly focused on the energy sector, and the renewable energy alternatives were far away on the horizon, the terms 'first fuel' and 'Negawatt' became new names for energy efficiency as the main means of reducing emissions from the energy sector. But not the ESCO.

In the meantime, whereas renewable energy has become mainstream, ESCOs have faced barriers to their obvious business model: to pay for the investment in energy efficiency with the value of the saved energy. It is time to mainstream the ESCO!

The backdrop to the timeliness of accelerating ESCO business is unfortunate. Particularly in Europe, the war in Ukraine has caused shortages of energy supply not seen since the energy crises in the 1970s. The strategic deficiencies of energy dependency have been brought to the forefront of our attention, as have the answers to such dependency that were seen almost fifty years ago.

This backdrop does not diminish the validity of the long-standing drivers, not least the excellent returns on energy efficiency investment; rather, it reinforces them. Unused energy reduces the gap between supply and demand. Had Europe had an energy-efficient economy, there wouldn't have been much of a gap at all. Unused energy reduces the strain on over-burdened transmission and distribution networks, as well as the demand for additional generating capacity. At the same time, unused energy reduces the pressure on energy prices, not only in Europe, but also the spill-over effects on energy prices outside the region. And unused energy, given that emission-free capacity is must-run capacity, reduces emissions from fossil-fuel combustion and thus makes a disproportionately important contribution to reducing climate change.

Given the failure of the energy efficiency agenda to capitalize on the climate change emergency, it may be unwise to stress the climate-change mitigation contribution too much. Maybe emissions reduction should be regarded as what happens to you while you're busy making other plans, such as working to secure your energy supply. But that said, energy efficiency contributes to the climate change agenda on so many fronts that it is hard to overlook. Not only does it help to accommodate the necessary zero-emission generating capacity of the grid. Through modal shifts from gas to electricity, it also reduces the demand for a fuel in short supply and directly replaces fossil-fuel combustion. Supply-side energy efficiency further reduces fuel combustion,

and in a reverse modal shift the utilization of waste heat may, through district heating and cooling systems, replace electricity for these purposes, freeing up zero-energy generation for other purposes.

In all aspects of such energy transitions to a more efficient supply-and-demand system, the ESCO is the obvious response. If the more than 85% of the countries that have mentioned energy efficiency in their Nationally Determined Contributions (NDCs) under the Paris Agreement would also adopt clear implementation models to achieve their energy efficiency goals, tremendous headway could be made on the energy security and climate- change agendas alike. And the ESCOs would play a vital role.

In Europe, following the wording of the revised Energy Efficiency Directive and the Buildings Directive, it is already obvious that the increased focus on energy efficiency is intended to succeed through the increased use of ESCOs. It is the natural choice. It is where the energy efficiency expertise and capacity exist. Without the directions provided by these directives, the chances are that little will be accomplished.

But there is also a danger that inscribing the compulsory consideration of ESCOs into such directives will be regarded as not only the necessary but also the sufficient means to ensure their usage. This may not be the case. National circumstances and framework conditions may still hamper the engagement of ESCO knowledge and expertise. For that reason, in the present report, the Global ESCO Network is publishing its mapping of regulatory barriers for ESCOs. This is partly because the ESCO is not a magic wand that makes all the challenges to energy efficiency implementation go away. There is an entire ecosystem around ESCOs and energy efficiency that need to be put in place, including building trust in the ESCO industry, actively creating a demand for ESCO services, financing ESCOs, and model Energy Performance Contracts that are financeable and clarify taxation treatment. But most importantly, policymakers need to remove the regulatory barriers that hinder ESCOs from doing their business, stop discriminating against ESCOs in their energy efficiency programmes, and put in place regulatory instruments that foster a push for energy efficiency investments in the market.

In the short term, the demand for ESCO services may be driven by the renewed focus on energy security. This concern is hopefully very temporary. The climate change agenda, on the other hand, will remain for decades. It is to be hoped that, as the climate change agenda rapidly tightens, it will be realized that we can no longer afford to leave the immense emissions reduction options in energy efficiency untouched and continue setting energy efficiency goals that consistently fail to be achieved. However, such shifts in approach requires professionalism. The required expertise rests with the ESCOs.

In this third edition of "Regulatory Barriers for ESCOs", 25 ESCO associations have provided comprehensive answers to 15 questions that illuminate different aspects of regulatory barriers for ESCOs. The formulation of the questions was informed and inspired by interviews that were conducted in 2021 for the first edition of this publication, where focused interviews with 10 ESCO associations served as the basis for the analysis. The renewed analysis has been performed from March to May 2023 and again in March-April 2024, following through on the ambition to expand the analysis to other countries based on the typology that was established in the first edition.

The focus here is on regulatory barriers because these are what policy makers can help address and alleviate. Regulation can obviously also be used actively as instruments in pursuit of emissions reduction objectives through the reduced use of energy. As such, this publication similarly presents itself as a simple guidebook for policymakers to identify which interventions they could easily turn to in order to activate the ESCOs in support of energy efficiency strategies and policies.

The growing urgency of decisive responses to a rapidly changing climate, and the inherent ESCO promise of delivering profitable investments to the same effect, mandate a prominent role for the ESCO community in the global climate-change agenda.

Switzerland - Rico Reutimann, Unsplash

What ESCOs could achieve in a barrier-free world

Chapter 2

Let's be frank about it: energy efficiency is not cool. It ticks the box as a saving measure, and who really wants to save if we don't have to? Instead, abundance and consumption appeal to us, and we'd rather buy an extravagant new piece of equipment, sparing no expense, than look for savings in our current environment.

Or not so anymore? It depends on whom you ask. To many, saving implies that you are poor, so from that perspective alone, selling the energy efficiency agenda can be hard. To others, the idea of replacing a perfectly functioning piece of equipment with a better and more efficient model seems wasteful – unless it's a new smartphone, of course. 'Don't fix it if it ain't broke.' Well, maybe it is broke – from the perspective that its continued use is harmful to the planet and the environment that surrounds us all. But maybe so is the production of a new unit to replace the old one? Clearly the latter perspective complicates the picture, but fortunately there are professionals in the energy efficiency market that can and do make those considerations – because they are the ones who put their hands on the stove and guarantee the energy savings, and consequently also the emissions reduction outcomes – namely the Energy Service Companies.

Of course, these days putting your hand on the stove is no longer so risky, because the energy-efficient stove is an induction stove which only heats up precisely what you need, not your hand.

Because we are not inclined to save, the world is wasteful. The energy efficiency potentials are immense, – so immense that in theory, exploiting them all would mean that there would be no climate crisis. We are that wasteful. Looking at an energy system from start to finish, what ultimately trickles down to run your laptop's functions may well be less than 20% of the energy content in the fuel if the electricity source is the coal-fired power plant down the road. Most energy is lost as waste heat at the plant, then as transmission and distribution losses in transformers and the grid, then as heat in the transformer you need to connect your laptop to power, then as battery efficiency loss and finally as heat in the laptop that needs to be cooled with the built-in ventilator. Similar considerations are relevant for most other pieces of energy-consuming equipment.

Efficiency gains are nonetheless possible in practically every stage of energy production, conversion, transportation and usage. And to exploit these potentials, at every stage there are barriers – and not only the psychological disinclination to save if we do not have to. The cost of the wasted energy is passed along through the value chain to be paid, ultimately, by the consumer.

These barriers are rarely technical. There are technical solutions to most energy efficiency demands, but the lack of knowledge about the available technologies is a common barrier. It is even a barrier at universities that are training engineers in using outdated technologies. And de-learning is often much more difficult than learning in the first place. 'You can ask me, I'm a doctor.' Well, sometimes you may have to ask somebody else. Technical solutions are bound in tradition, not only in technological advances. There is inertia in adopting new solutions, new principles and new technologies which stand in the way of rapid transfer and the diffusion of more efficient ways to produce, transport and use energy. In the 1990s, in Japan, it was the conventional business view that the existing energy efficiency of the economy compared to a 'wrung-out towel', in contrast with the

inefficient 'dripping wet towel' of the United States.[1] If there wasn't an American and a Japanese way of doing things, then such differences would not exist.

There are also philosophies standing in the way, particularly in the utilization of waste heat from power plants and large-scale industrial installations. Until recently, the common technological option for utilizing waste heat has been to use the low-temperature cooling water for district heating and, still less so, district cooling. But the business model for such utilization requires the compulsory connection to large, common heating and cooling facilities. Such solutions face barriers all the way around, from power producers that have no interest in becoming heat suppliers to homeowners that do not want to be compelled to use a particular source of heating or cooling and policymakers that do not want to compel them. The continued inefficiency of power production is thus commonly a matter of principle. Globally, less than 5% of the power sector's waste heat is utilized. The rest is simply lost. See Figure 1, where this loss is represented by all areas above the black line. If you were to point to one single cause of the current climate emergency, it is the failure to utilize the power sectors' waste heat.

Often, energy efficiency gains do not benefit those who invest in them. That is a particular concern in the built environment, which is responsible for somewhere between 30 and 40% of all the energy we consume. Hence, it is no small issue if the main driver for energy efficiency – the cost saved on energy – does not work because the investor in the building is not the one paying the energy bill. The solution to this challenge is performance-based building codes, but these are not common, and even they do not address the way buildings are ultimately used once they are built. It's a hotel guest phenomenon: 'I paid for this room, so I can soak myself in luxury' – or not, but the price is the same. For that reason, we need to put our key card in a slot to switch on the light, because otherwise hotel guests would leave their rooms without switching anything off. Those who built the hotel don't mind either, because they rent it out to a hotel chain, which pays the energy bill. These split incentives are commonplace. In the public sector, it is usually not the user of a building who pays the energy bill. In the private sector, it is usually not the investor who pays the energy bill. Aligning all interests to make energy efficiency investments happen has been a challenge for decades, and there are few solutions unless we rethink our owner-tenant models. If hotel guests actually paid for their consumption separately, they probably wouldn't soak themselves in more luxury than they do at home.

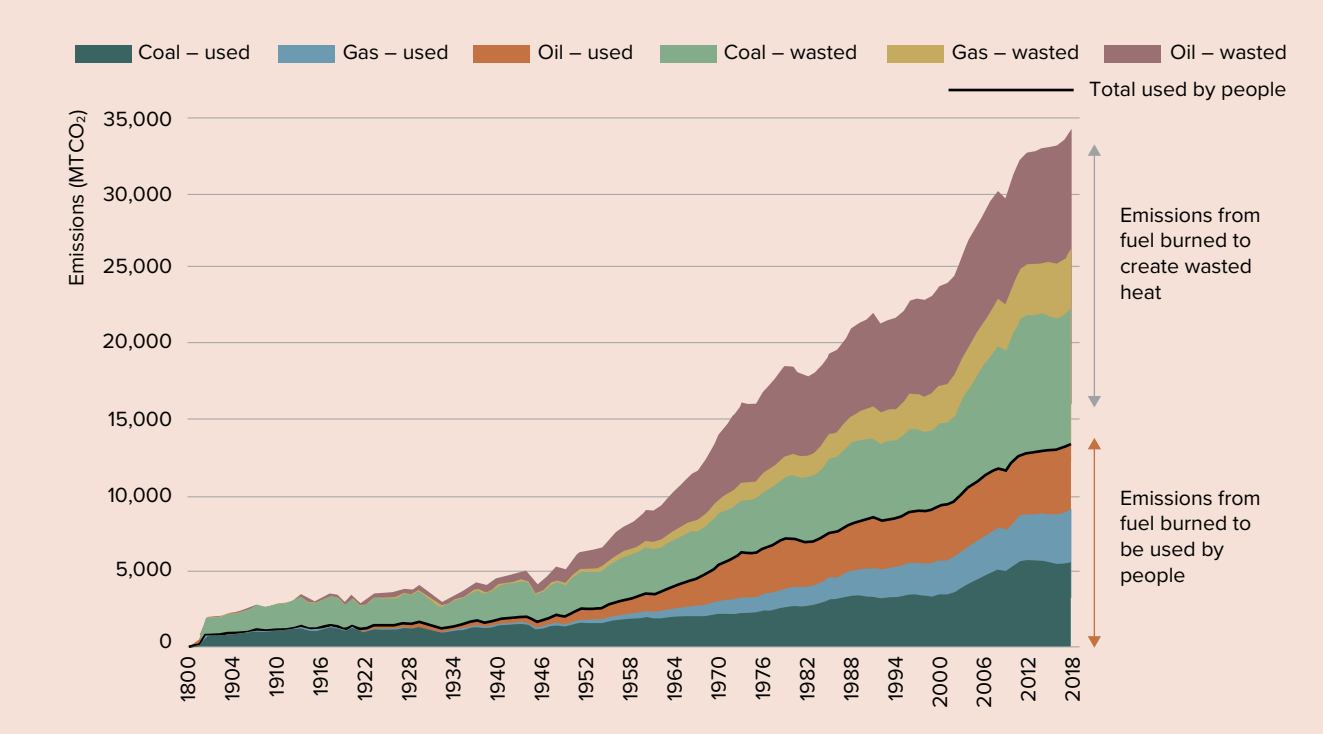
But even when interests are aligned – when the owner of the building also lives in it, uses it and pays the utility bills – there may not be sufficient motivation to invest in energy efficiency because the energy is just too cheap. Energy is the most subsidized commodity on the planet, surpassing agriculture (which attracts about 540 billion USD annually) by a factor of 10 (IMF, 2021). Every dollar spent on subsidies erodes the foundation for energy efficiency investments, as it reduces the value of the savings. Eliminating subsidies may be the single most impactful intervention to drive energy efficiency investments forward, possibly followed by introducing energy and carbon taxes. It may also be the single most impactful measure for governments to improve their government finances, creating a fiscal space that might well be utilized for the further uptake of profitable energy efficiency investments.

A further barrier to energy efficiency investments, paradoxically, is that they are difficult to finance. While these investments provide probably the best returns on any investment made in the service of CO_2 emissions reduction, they are also the most cumbersome to devise a viable financing model for. The most obvious reason for this, of course, is the split incentives mentioned above. If the investor achieves no return on an investment in energy efficiency, how should a bank consider the investment proposition as anything other than a lousy business? At a minimum, alternative collateral will have to be provided. In those cases where the investor directly profits from the investment, collateralization may still be problematic, because the typical energy efficiency investment is integrated into a building or a line of manufacture and would be difficult to take back if a loan turns sour. It may be almost as expensive to take the new windows in a building out as it was to put them in in the first place.

The reason why energy efficiency investments still do happen despite these barriers is that in some places, energy prices are high, in other places building standards impose energy-efficient construction, and yet other places the owners of energy-inefficient assets are able to finance the investments themselves. It may also be because governments

1 Referred in 'A Strategic Assessment of the Kyoto-Marrakech, System Synthesis Report. Michael Grubb, Tom Brewer, Benito Müller, John Drexhage, Kirsty Hamilton, Taishi Sugiyama and Takao Aiba. The Royal Institute of International Affairs, June 2003, Briefing Paper no. 6.

Figure 1. The production and waste of fossil fuel energy



Source: (Joshi, 2023)

do run programmes that support investments in energy efficiency. Such programmes are commonplace and thus of course cannot be considered a barrier. The barrier that nevertheless is linked to these programmes is that they are expensive for governments and therefore are both temporary and limited in scope, rarely reaching their full potential. Nor do they deliver any return on the investment to the government – except, of course, delivering a return in the form of CO_2 emissions reduction. And nor do they make the best returns on investments a decisive decision parameter, because the subsidy reduces the importance of returns and rather benefits those who are able to finance the remainder of the investment themselves, – who may not be the owners of the least efficient technology.

2.1 Enter the ESCO

While the above are fundamental barriers that stand in the way of energy efficiency actions in general, there are also some remedial measures available. One of these is fertilizing the establishment of an Energy Service Company ecosystem. ESCOs are neither a quick-fix or a one-size-fits-all solution. In fact, they come with an additional set of barriers that also need addressing if they are to become the answer to the perils of investing in energy efficiency.

ESCOs are professionals in energy efficiency. They can stand up to conventional, but outdated wisdom on how things were done in the past. Their business is to be at the forefront of the application of technology that represents the best compromise between novelty, efficiency and dependability because their business depends on the optimization of these parameters. They should have no vested interests in a particular technical or technology solution, acknowledging that some certainly do as they are fundamentally selling their own equipment on an energy performance contracting basis. Sometimes this may be the necessary price to pay to get the investment going. Most ESCOs, however, are independent technicians who design systems-based approaches to optimize the entirety of a consumption source, making the cherries pay for the pie.

Although ESCOs may represent the essence of expertise in energy efficiency, their business model is in fact mostly based on financing. Generally offering to renew their client's installations without even asking them for a down payment, they purchase the hardware in their own name and install it at their clients' premises, receiving their contractual remuneration from the value of the energy saved. It is comparable to leasing, and in some instances leasing models are used, rendering the ESCO a financing tool just as much as a provider of expertise. In practice, they operate as investors on behalf of their clients, transforming as their own core business what their clients consider peripheral.

And exactly because energy efficiency generally has the status of a 'non-core-business', it is challenging to have clients even entering the dialogue. 'Not only are you trying to sell something I have never considered; you also propose technology that our plant manager has never heard of, and you offer it to me at no cost. You need a reality check!'. There are too few initiatives around to sharpen the focus of potential clients. 'Nothing so focuses the mind as the prospect of a mandatory regulation.' Well, that is probably taking a Mark Twain analogy too far, but mandatory energy audits are gaining ground and reveal tremendous energy efficiency potentials to those corporations that have to have them made, commonly by energy efficiency experts. Surprisingly, even tremendous efficiency potentials remain unexploited. The mandatory implementation of documented potentials in energy efficiency is probably the only possible, but rarely attempted approach to force companies into making these highly profitable investments – or at least let ESCOs make the investments for them.

But here is a paradox. Companies generally do not want to devote capital to making these investments, – but they will not allow ESCOs to do them either, because they want to retain ownership of their assets. It is a Catch-22 situation – or more precisely one where 'you cannot have the cake, and you cannot eat it either' – regardless of how many cherries there are. 'Compulsory' just doesn't sound good in any language.

The absence of regulation is not the only barrier that ESCOs face. It may not even qualify as a real barrier – who wouldn't wish for new regulations that could boost your own market? Much more commonly, ESCOs suffer from a number of regulatory barriers that are either intended, but more usually are only accidentally standing in the way of the ESCO business model. It is a collateral damage that few take notice of – except the ESCOs.

IEA analysis in Perspectives for the Energy Transition: The Role of Energy Efficiency demonstrates that on top of a wide range of benefits including cleaner air, energy security, productivity and trade balance improvements, there is a compelling economic case for energy efficiency. But, without further policy efforts, these benefits are unlikely to be realized as less than a third of global final energy demand is covered by efficiency standards today.

It is symptomatic that there are no estimates on the size of energy efficiency investments that could be made with a minimum return on investment of say 10 or 15%, such returns in any case being circumstantial and not least dependent on energy subsidies and carbon taxes. There are only generic estimates by the IEA that 1.7 trillion USD a year should be invested on the demand side alone if the 35% energy efficiency potential is to be reached by 2050. It is likely that at least half of these investments can be made with such returns. At best, however, such numbers are only of academic interest. In practice they reveal little of what an ESCO ecosystem might be able to achieve if the barriers to energy efficiency investments were broken down. The returns also vary significantly from sector to sector and from country to country, complicating the mapping of the ESCO business potentials in a world free of regulatory barriers.

But it is still possible to make estimates of the impact that such energy efficiency investments could have on global carbon emissions. The wastefulness of the global economy was already highlighted at the outset. Not only are we wasting up to 80% of the energy we produce; we are also wasting trillions of dollars in subsidies supporting the wastefulness. Figure 1 is as simple as it is disturbing, illustrating the magnitude of emissions affiliated with the energy that we do not use, – although the figure does not provide the full picture. What is above the black line are supply-side inefficiencies, that is, the waste heat that in many places are considered a necessary evil, as discussed above. As fossil fuels are phased out, these losses will, naturally, also be phased out, but waste heat will remain from biomass-based power generation and thus remains a valid target for efficiency gains. These, however, are rarely the target of ESCOs, who are focused on demand-side efficiencies.

Demand-side energy efficiency potentials are smaller by nature than the simple logic that only 40% of the emissions stem from energy that is actually being put to use, more or less efficiently. If IEAs' 35% efficiency gains are included in this figure, there would be an emissions reduction potential of about 5 Gigatonnes of CO_2e that could be avoided if ESCOs were allowed barrier-free access to do their business. This is not too far from the annual net emissions of the United States.

Obviously, this is a theoretical value, and as described above, there are several barriers to scale if these potentials are to be exploited even partially, many of which are not of a regulatory nature. Why then this focus on regulation and regulatory barriers in particular? Because most other barriers are affiliated to the ESCO business model and are mostly for the ESCOs to remedy themselves. As with most other business, either they find the formula or the person that can sell their product, or they go bankrupt. If the bank believes that a particular business model or product is risky or unconventional, it will probably not finance it. Such barriers are not specific to ESCOs. But there is no reason to make it harder than it has to be, particularly not when ESCOs are fundamentally delivering on the agenda that national governments claim to be pursuing when they state that energy efficiency is a priority for them in their emissions reduction plans. By not eliminating the barriers that governments are causing themselves, they are standing in the way for a solution to their own self-imposed challenges. And in that context, even the absence of regulation can constitute a barrier.

A simple example of such a barrier in the absence of regulation is the failure to establish the accreditation of ESCOs. Most countries have energy auditors, and energy auditors commonly come with certification. For ESCOs, on the other hand, there is frequently no accreditation, even if they are delivering a comparable service. Moreover, a contractual relationship often including financing, which would seem to call for at least a similar concern for the quality and credibility of the services provided. Without it, the industry faces competition from companies that are not really ESCOs or operators but that through their substandard work give the industry a bad name. As ESCOs are also frequent suppliers to public-sector entities, it is an obvious opportunity to institute a public or publicly endorsed accreditation system for ESCOs.

The reason to focus on regulatory barriers is also the lack of awareness. Even if the sector is sometimes disliked for making a profit from replacing other peoples' functioning assets – which is the fundamental commercial strategy for a lot of business (and particularly so for smartphones) – the reasoning for the regulatory barriers is normally based on regulators' lack of understanding rather than their discrimination. And even where the sector is understood and there is awareness of it, the regulations that stand in the way serve other purposes and are therefore not always straightforward to eliminate. It may then become a question of instituting a particular regulatory framework for ESCOs, which is a much more cumbersome affair.

How much the ESCO industry can achieve comes down to case-by-case national assessments, which should not establish an artificial differentiation between energy efficiency potentials and ESCO potentials. If energy efficiency is the 'what', the ESCO is the 'how'. And even with that distinction, the ESCO is not always the only 'how'. With the analysis presented here, the vote is out on how much more the ESCOs can achieve if countries start eliminating the regulatory barriers that prevent them from delivering their services.

Kampala, Uganda - Keith Kasaija, Unsplash

A survey of the regulatory barriers to ESCOs

Chapter 3

Regulation makes or breaks markets, and even if liberal thought shuns regulation, it does not oppose the idea that there must be a regulatory framework within which competition can thrive. In fact, it is regulatory *changes* that are most often opposed rather than regulation itself because incumbents thrive on the way things are organized. In other situations, activities grow even in unfertile soil, but that doesn't mean it wouldn't grow better with a bit of fertilizer. In many countries, that is what characterizes the ESCO business.

This 3rd edition of *Regulatory Barriers for Energy Service Companies* includes survey responses from 24 ESCO associations and 1 academic institution[2] covering a total of 24 countries, including the two largest markets for ESCO services: China and the US. Table 1 provides an overview of respondents.

2 For Poland, the Public Administration Research Unit of the Faculty of Law and Administration at the University of Warsaw has contributed with information on regulatory barriers, as there is no ESCO association in Poland yet.

Table 1. Overview of surveyed ESCO associations and institutions

Region	Country	ESCO association / institution	
Europe	Belgium	BELESCO	Belgian ESCO Association
	Bulgaria		
	Czechia	APES	Czech Association of Energy Services Providers
	France	Fedene	French Federation of Energy and Environment Services
	Germany	DENEFF EDL_HUB	German Business Initiative Energy Efficiency
	Hungary	MVOSZ	Hungarian National Association of Enterprise Developers
	Italy	federesco	Italian National ESCO Federation
	Poland	University of Warsaw	Public Administration Research Unit of the Faculty of Law and Administration
	Portugal	APESE	Portuguese Association of Energy Service Companies
	Spain	APESE	Spanish National Association of Energy Service Companies
	Switzerland	swissesco	Swiss ESCO association
	United Kingdom*	ESTA	Energy Services and Technology Association
Asia	China	EESIA	ZGC Energy & Environment Service Industry Alliance
	China	EMCA	ESCO Committee of China Energy Conservation Association
	Japan	JAESCO	Japan Association of Energy Service Companies
	Republic of Korea	KAESCO	Korea Association of ESCO
	Malaysia	MAESCO	Malaysia Association of Energy Service Companies
	Philippines	PE2	Philippine Energy Efficiency Alliance
	Taiwan (ROC)	TESA	Taiwan Energy Service Association
	Thailand	ThaiESCO	Thai ESCO Association
	Türkiye	EYODER	Energy Efficiency and Management Association
Latin America	Chile	ANESCO	Chilean National Association of Energy Service Companies
	Mexico	AMENEER	Mexican National Association of Energy Efficiency Companies
	United States of America	NAESCO	National Association of Energy Service Companies
Africa	South Africa	EASA	ESCO Association of South Africa
	Uganda	EEAU	Energy Efficiency Association of Uganda

* U.K of Great Britain & Northern Ireland

The decision to survey the regulatory conditions for ESCOs is directly linked to the role that regulation generally plays in relation to the global climate change agenda and its focus on emissions reduction. The regulatory environments that allow climate change to accelerate so dramatically are unlikely to be able to counter it suddenly and on their own. Therefore, changing market conditions through regulation is widely thought to be one of the most important avenues forward. Obviously, in that context soft regulation that allows and promotes feels less intrusive than hard regulation that forbids, prevents and compels. For example, a preferred regulatory instrument among economy experts is to promote emissions reductions through the introduction of carbon taxes. This promotes emissions-free conduct, but it does not prevent the opposite. Carbon taxes are likely to promote the ESCO business, as long as energy production is based on fossil fuels. But ESCO promotion was never a direct purpose of carbon taxes; it is a positive spill-over.

This characterizes one type of regulatory barriers that ESCOs encounter in some markets - regulations that are not targeted at ESCOs at all but happen to stand in the way of their business model as a negative spill-over – or, in the case of carbon taxes, a positive spill-over. Such regulatory conditions are the hardest to address from a policy perspective because their purpose goes far beyond their side effects.

The above example also shows that more nuance is needed when defining barriers. Not only may there be spill-over from regulatory initiatives and approaches in other sectors or with other purposes; there is also ESCO-specific regulation that fails to deliver on its purpose. Having a positive regulation in place doesn't guarantee its functionality, and for that reason respondents have been trying to assess whether such regulation is 'fit-for-purpose'. A good example of such regulation is the issuing of a model contract to be used by public entities when entering energy performance agreements with ESCOs. A model contract is generally called for to reduce uncertainty in the market, and the existence of such a contract is therefore considered positive. But if the contract is not fit-for-purpose – if its complexity exceeds the benefits of standardization – it becomes a barrier instead.

Thus, regulation not only forbids and prevents; it also promotes. The latter is particularly relevant to the private sector, where ESCOs report few if any regulatory barriers preventing their work. Here, regulatory barriers are mainly conspicuous by their absence. Private-sector entities are commonly allowed to be as wasteful in their consumption of energy as they please, the absence of regulation making this one of the most obvious unused energy efficiency potentials. Carbon taxes, where they exist, do make a difference and help increase the cost of energy, but for big energy consumers exemption from carbon taxes is not uncommon. Therefore, in this context, the failure to transform, through fit-for-purpose regulation, the energy efficiency potential of industry into a market for ESCOs should be considered a regulatory barrier.

These two examples show that there is a measure of subjectivity in the definition of regulatory barriers. In principle, allowing the absence of regulation to constitute a barrier means that every absent regulation that by its absence fails to create a market for ESCOs is a regulatory barrier. This, obviously, would be a biased approach. Therefore, in this context any existing 'positive regulation' in any given country becomes the benchmark for considering the absence of this particular regulation in other countries a regulatory barrier in those countries. Hence, only where examples exist of such positive regulation that eliminates a market barrier in a given national market are their absence in other markets considered a barrier.

Another and probably even larger barrier that penetrates the ESCO market in the public sector are structural barriers, or barriers that are more related to 'the way things are commonly done'. Split incentives that often exist among public-sector bodies in the form of owner-tenant conflicts of interest is a typical and widespread hindrance to energy performance contracting, but it is difficult to consider the entire ownership structure of public buildings in a country a regulatory barrier. The barrier in this case is not the structure itself, but rather the absence of a solution to work around it. Few examples of this have been identified, and the question regarding split incentives has been used instead to shed light on the general market focus of ESCOs.

The regulatory barriers that are identified through the analysis remain divided in three groups, although their categorization has been modified into the following:

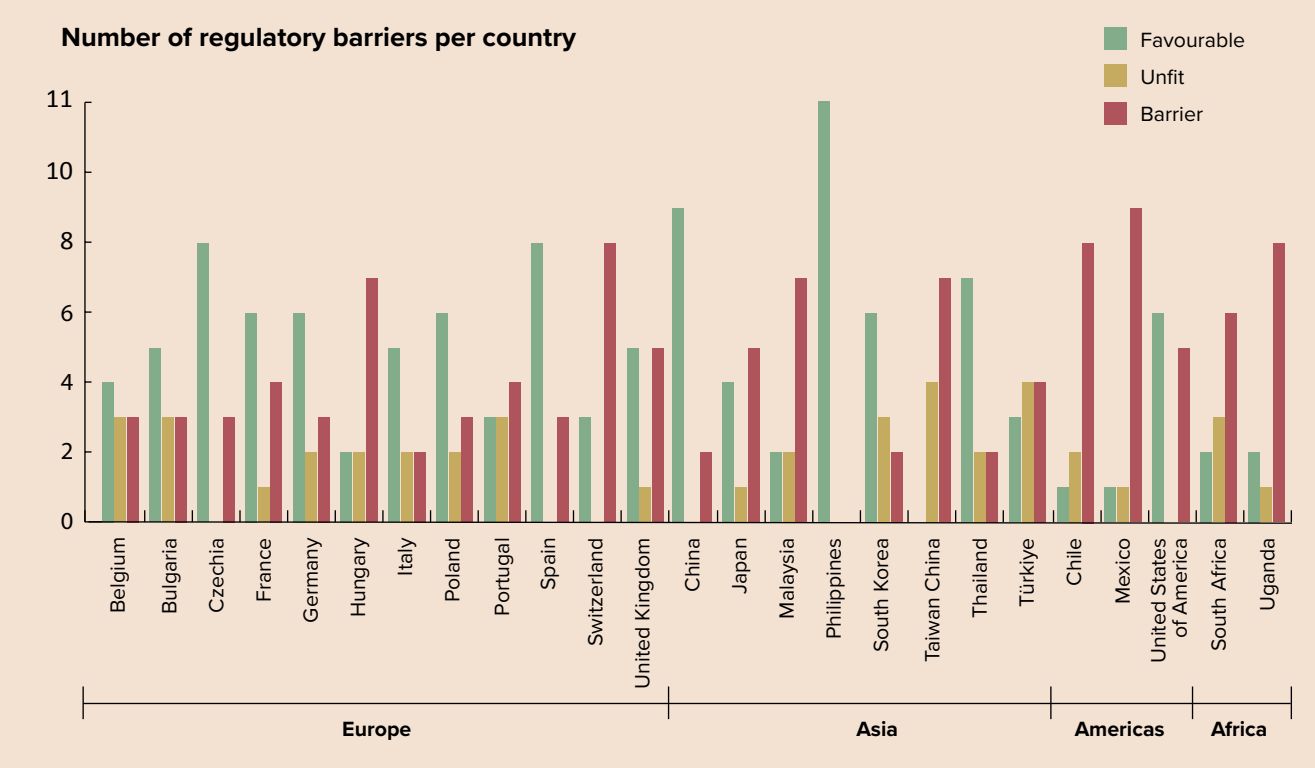
1) Barriers related to ESCO-specific regulation,
2) Barriers related to non-ESCO-specific regulation,
3) Barriers related to frameworks inhibiting ESCO investments.

An addition to the barrier analysis is an evaluation of the ability of any existing ESCO-relevant regulation to achieve its

purpose, thought to illustrate the general understanding – or lack of the same - of the ESCO business among regulators. Out of 156 cases where regulation relevant for ESCOs exist, 41 of these regulations, or 26%, are evaluated as unfit-for-purpose. This does not take into consideration any relative importance of these regulations or to what extent the regulations directly disadvantages ESCOs or just have omitted any consideration of ESCOs, but it signifies that ESCOs and their business model are frequently overlooked or misunderstood. (see Figure 2, where the answers are colour-coded to illustrate the existence of favourable conditions (green), sub-optimal conditions (orange), or direct obstacles for ESCOs (red)).

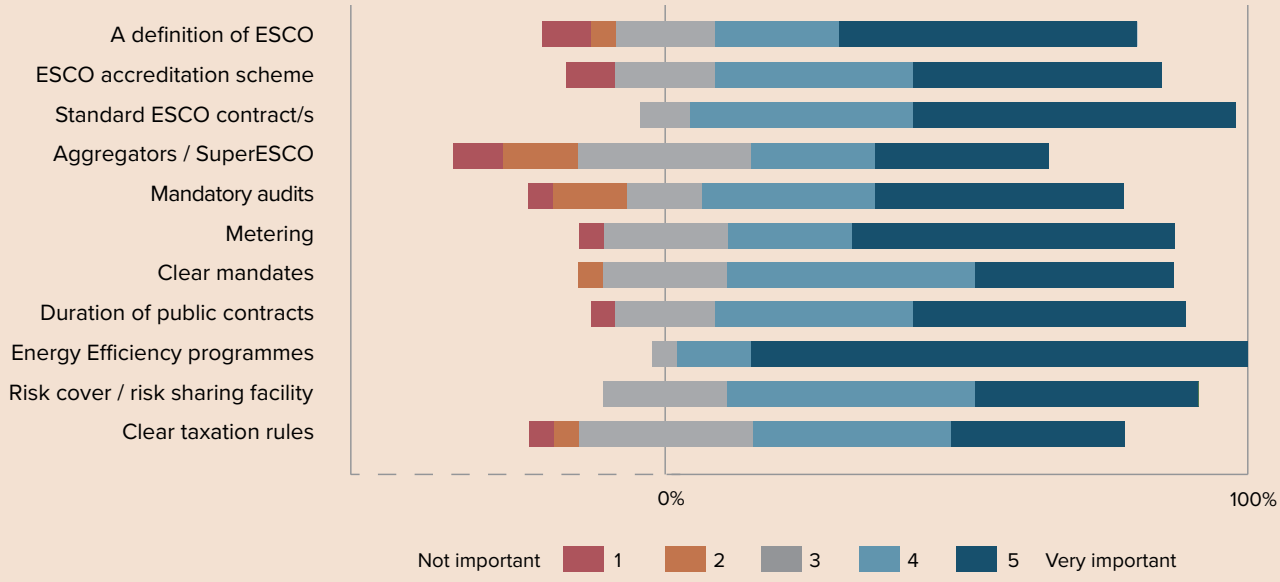
ESCOs encounter development barriers in every country where they are present, but the conditions vary widely. Also in this year's analysis, European and Asian markets are particularly well represented, and while it seems that ESCOs generally face fewer barriers in Europe, the best conditions are those found in the Philippines. Also China, the world's largest market for ESCOs, scores well and ranks second overall on positive conditions.

Figure 2. Prevalence of ESCO favourable conditions and barriers in surveyed countries



ESCO associations have also rated the relative importance of the regulatory barriers, as illustrated by Figure 3, revealing a general agreement on government led energy efficiency programmes, the existence of standard ESCO contracts, and energy metering and charges based on energy consumption as being the most important framework conditions for ESCOs. Particularly in Asia, mandatory audits with implementation arrangements are considered important.

Figure 3. The relative importance of specific ESCO conditions as assessed by ESCO associations



Each barrier analysed has been provided with a score adjusted to each ESCO association own assessment of the relative importance of the regulatory condition in question. This has allowed the analysis to arrive at a country specific score of ESCO favourable conditions taking into consideration the relevance of different framework conditions deemed important in each specific country.

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Favourable conditions in European countries vary between 72% of total statements in Spain and the Czechia, to 18% in Hungary, whereas in Asia the corresponding figures are 100% in the Philippines and 0% in Taiwan (ROC). 48% of statements in Europe are positive, compared to 38% negative statements. In Asian countries 48% of statements are positive, a significant improvement over the 2023 analysis mainly due to the positive evaluation in the Chinese market, while 33% are negative. The least favourable conditions in this year's analysis are those found in Mexico, unchanged from 2023, while the US comes out as significantly more favourable than other markets in the Americas.

In the following three chapters, the barriers are described further, as are the tabulations regarding the observed regulatory barriers. The structure of the chapters follows the overall barrier categorization above.

The results of the weighted scoring illustrated in Figure 4 show that overall framework conditions seem to be more similar between European countries, compared to Asian countries, which is to be expected given the high degree of regulatory integration provided by the European Union. Germany is the country in Europe with the best ESCO regulatory framework conditions. The best conditions amongst all analysed countries can be found in the Philippines, indicating the existence of a well-built regulatory environment taking into consideration and promoting ESCO models for implementation of energy efficiency measures, while ensuring ESCOs are not intentionally or unintentionally hindered by regulation, to which the national ESCO association also played a central role.

In the following three chapters, the barriers are described further, as are the tabulations regarding the observed regulatory barriers. The structure of the chapters follows the overall barrier categorization above.

Italy - Spencer Davis, Unsplash

ESCO-specific frameworks

Chapter 4

The existence of a regulation that is specifically targeted at ESCOs in itself indicates that ESCOs have penetrated the market for energy efficiency and are a factor to be reckoned with. The extent to which this is the case is illustrated in Figures 4. In this positive interpretation, only two of the analysed countries have no regulation in place that recognizes the existence of ESCOs, thus indicating that in the large majority of countries where ESCO associations exist, policymakers are aware of them and their business model. It is equally positive that in most cases, adopted regulations serve the intended purpose. In an overall count, 37 pieces of regulation hit their target, whereas only 16 miss it. In five countries, Bulgaria, Portugal, Malaysia, Turkey and Taiwan (ROC), as reported by their respective ESCO associations.

National ESCO associations exist in 35 countries, and many are recognized as industry associations where membership is considered a sign of status and recognition, implicitly helping to establish trust in the market. In some instances, like India, membership is a requirement when bidding on public contracts. Some are recognized dialogue partners of government offices, like for instance Chile; others are not.

There is a clear correlation between having introduced ESCO-specific regulation, particularly a definition of ESCOs, and the relative absence of barriers to ESCOs in all categories, possibly indicating the engagement of the national ESCO association in dialogues with the government. If so, this is a clear reason for both sides to seek representation of ESCO associations in the national policy development of energy efficiency actions.

It is equally obvious, however, that most countries do not even have an ESCO association to start with. Such associations emerge when a critical mass of ESCOs are delivering their services in a market and either realize a demand for self-qualification, possibly in the absence of a publicly recognized definition of an ESCO, and/or desire to raise common views of the sector, or simply as a wish to share experience. From there, it may be a long way to achieving official recognition and for the public sector to realize the value of collaborating with a professional body with insights into the commercial development of energy efficiency projects. These delays are unnecessary, and potentially they also lead to missed opportunities and ill-informed regulation.

Table 2. Summary of ESCO associations' responses on ESCO-specific regulatory frameworks

Region	Country	ESCO definition	ESCO accreditation	Standard ESCO contracts	ESCO aggregator
Europe	Belgium	No	No	Yes	Yes
	Bulgaria	Yes, unfit	Yes, unfit	Yes	No
	Czechia	Yes	No	Yes	No
	France	No	No	Yes	Yes
	Germany	Yes	No	Yes, unfit	No
	Hungary	No	No	No	No
	Italy	Yes	Yes	Yes, unfit	No
	Poland	Yes	Yes, unfit	Yes	No
	Portugal	Yes	Yes, unfit	Yes, unfit	No
	Spain	Yes	Yes	Yes	No
	Switzerland	No	No	Yes	No
	UK*	No	No	Yes	No
Asia	China	Yes	Yes	Yes	Yes
	Japan	Yes	No	No	No
	Malaysia	Yes, unfit	Yes, unfit	No	No
	Philippines	Yes	Yes	Yes	Yes
	Taiwan (China)	Yes, unfit	No	Yes, unfit	No
	Thailand	Yes	Yes	Yes, unfit	No
	Türkiye	Yes, unfit	Yes, unfit	Yes, unfit	No
Latin America	Chile	Yes, unfit	No	No	Yes, unfit
	Mexico	No	No	No	No
	United States of America	No	Yes	Yes	No
Africa	South Africa	Yes	Yes	No	No
	Uganda	No	No	No	No

* U.K of Great Britain & Northern Ireland

Among the four pieces of regulation that are specifically directed towards ESCOs, a positive response to the existence of a model contract (13 of 24), although this is also the most common case of unfit frameworks. Seven countries with an ESCO association remain without an official definition of an ESCO.

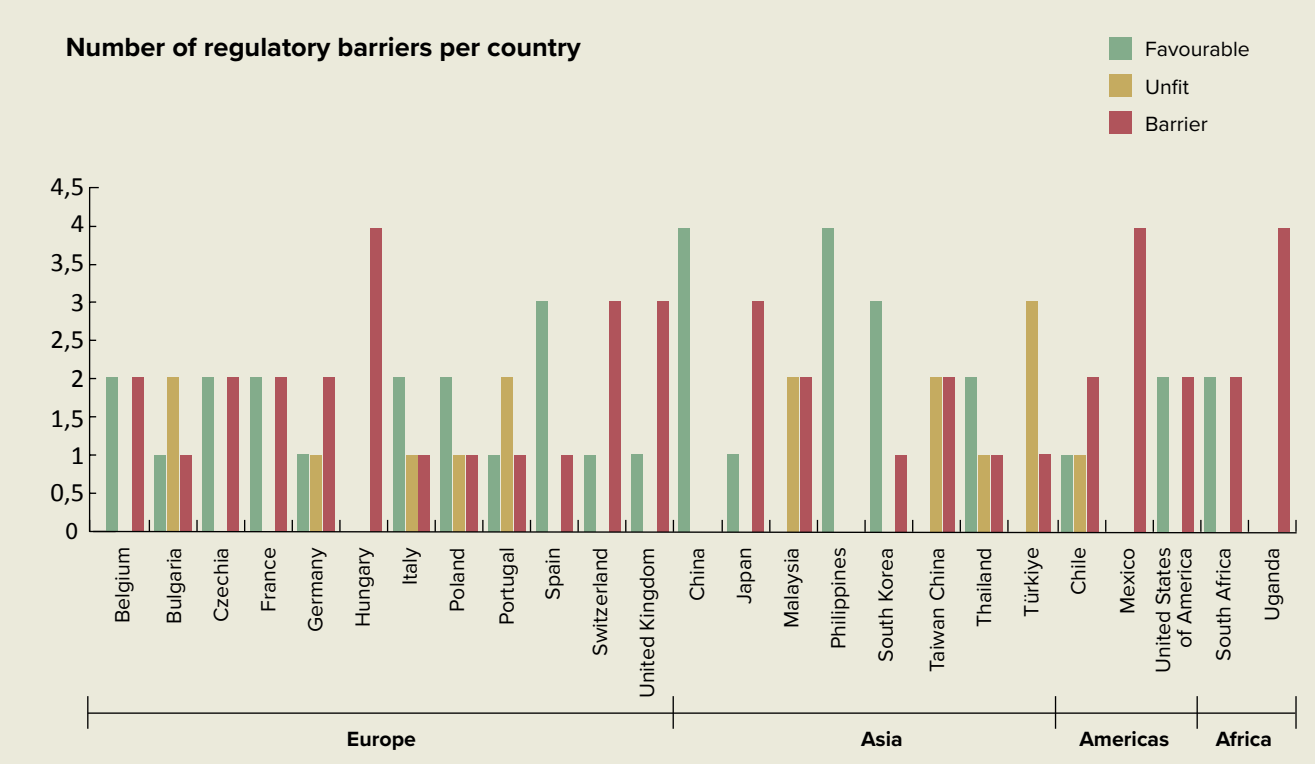
Public sector intervention in the establishment of an ESCO association may be considered a 'self-help' initiative to develop a professional and dependable delivery system of ESCO services. It would start with the definition of a number of requirements that an ESCO must live up to, including a clear definition of an ESCO. It would equally require ESCOs to deliver a track record, which may be a challenge in

an embryonic market, but a two-three year build-up period of track records followed by a peer review of installation projects and contracts could be a way to start.

Obviously, if membership of an ESCO association is a requirement for participating in public tenders for ESCO services, an association will likely emerge at the initiative of market participants, who will complete the institutional set-up on the basis of the fundamental requirements established by the public regulator. In this way, the public sector would have established a professional collaboration partner for the development of a regulatory framework and the provision of advice on the incorporation of ESCO services in public sector-driven energy efficiency efforts.

Figure 4 illustrates the responses from ESCO associations listed in Table 2 visualizing ESCO specific favourable conditions, unfit regulatory frameworks and barriers for ESCO market development.

Figure 4. Prevalence of ESCO-specific favourable conditions and barriers in surveyed countries



Each ESCO specific condition is further analysed and described in the following sections in this chapter.

4.1 ESCO definition

'Energy Service Company' is not a protected term, nor is it well-defined. In principle, therefore, any company providing components or services related to energy generation and consumption could, and often does, call itself an 'ESCO'. The absence of a clear definition or the use of unfit definitions stems not least from the complications of the principles underpinning the ESCO model, and the confusion among clients when market operators do not share the same perception or adhere to a uniform definition. Obviously, if two companies that both claim to be ESCOs deliver widely differing services, it becomes difficult for clients to make an informed choice.

What differentiates an ESCO from a normal service-provider is related to the sharing of risk. A common service-provider might install a new heat pump, but the client bears the risk that it achieves a reasonable reduction in energy consumption. An ESCO, on the other hand, bears the risk that it performs as calculated, as it is remunerated on that basis. The negative outcomes of this lack of a clear definition are multiple:

- Uncertainty is created around what constitutes ESCOs, creating insecurity in the concept and making potential customers reluctant to engage with them.

- Energy efficiency measures can lean towards simple component-based interventions (e.g. replacement of one type of equipment like air-conditioners) without considering a systemic approach (e.g. a whole-building approach, including building envelope, water heaters, electric components and possibly including renewables).

- The lack of a requirement to provide energy savings guarantees for ESCO services can lead towards an over-estimate of the saving potentials and use of sub-optimal equipment. In some cases, the use of equipment that does not comply with its stated energy performance has also been reported.

- Energy savings potentials are not fully achieved.

Setting a standard for what can be expected from an ESCO is therefore necessary to underpin the credibility of the sector. It may also help educate the client on what to expect as a minimum when considering recruiting ESCOs in delivering energy efficiency services.

Most countries included in this year's analysis have established an official definition that is fit for purpose, clearly outlining that the performance risk of an installation falls on the ESCO. In the surveyed Asian countries, all have established an official ESCO definition. However, in Turkey, Taiwan and Malaysia, the ESCO associations point out that the official ESCO definition includes companies that don't offer the full set of services and risk-sharing that should be expected by ESCOs.

4.1.1 Towards a fit-for-purpose ESCO definition

ESCOs should ideally aim at optimizing energy systems. This commonly requires several interventions and components, each of which have different payback times in terms of savings per amount invested. ESCOS should therefore ideally not only be providers of one type of technology or component without a system optimization in mind, but rather apply systems approaches to the greatest possible extent.

In principle the performance risk of an installation should fall on the ESCO. To assume this risk, the ESCO typically designs and installs the systems as the main contractor, sharing the performance risk with its technology suppliers. It may or may not engage in maintenance or operational optimization, and it may or may not arrange the financing of the installation. But ESCOs should be able to assist their clients in identifying financially viable options leading to the largest savings in energy and resources, given the whole spectrum of the user's facility, premises and/or operations.

Finally, the foundations of the ESCO business model are the expected achieved savings, which will ultimately finance the efficiency measures. Securing financing therefore requires that all involved parties are confident that the savings will be achieved and documented, and that such documentation also follows a commonly agreed standard.

It is the view of the Global ESCO Network that companies that do not operate in accordance with the above principles should not be referred to as Energy Service Companies or ESCOs. In nascent markets, however, the development of a full-scale ESCO sector may benefit from a more graduation of ESCOs according to their ability to offer the full set of services.

The following ESCO definition is adopted as part of the policy advice provided by the Global ESCO Network:

An Energy service company (ESCO) is a legal entity that delivers energy services and energy efficiency improvement measures in a user's facility, premises and operations and accepts some degree of financial risk in so doing. The implemented services and improvement measures are based upon a holistic analysis of the users' energy and resource demand, against financially and technically viable alternative energy and resource efficient low-carbon technologies, and/or energy management systems. The payment for the services delivered is based (either wholly or in part) on the measured and verified achievement of energy efficiency improvements and of any other agreed performance criteria.

4.2 ESCO accreditation system assuring that ESCOs have the required capacities

A clear ESCO definition is also a prerequisite for an effective ESCO accreditation system. For its part, a trustworthy ESCO accreditation scheme can then be an effective tool for enhancing ESCO professionalism and quality of services. Even where the concept of ESCOs is clearly understood and an official ESCO definition exists, clients will need reassurance that the ESCO selected for a given task has the necessary capacities to properly implement the project. Such assurance can be provided through the establishment of a third-party ESCO accreditation system and an official registry listing accredited ESCOs.

An official accreditation system is missing in more than half the countries surveyed, while another four countries, including Poland, Portugal and Malaysia, operate a system deemed unfit for purpose. In this regard, a prevalence of favourable conditions is observed in Asian countries compared to Europe but overall, in this regard, Asia is not a stronghold of suitable regulatory initiatives. But it is also a regulatory instrument that requires a constant input of resources if it is to serve its purpose efficiently. In Malaysia, for example, although there is an ESCO accreditation system, the Malaysia Association of Energy Service Companies (MAESCO) considers the requirements for ESCO Registration insufficient to support competent ESCO services.

Several countries require official ESCO accreditation for a company to be able to bid on public ESCO contracts. In these cases, it can be observed that ESCOs will ensure their compliance with the accreditation system's requirements in order not to miss out on project opportunities. In some countries where there is no official accreditation, ESCO associations try to fill the gap by providing the certification themselves. Such certification can provide some reassurance that the ESCO has the technical capacities to deliver certain ESCO-related services, e.g. M&V, energy management or other, but it is not as effective as an official accreditation system addressing a complete set of business, financial and technical criteria.

Ideally, the ESCO accreditation system should include a registry where clients can access the relevant information, as well as provide feedback on the performance of different ESCOs. This might weed out non-performing ESCOs which can ultimately gravely damage the reputation of the ESCO model and halt the ESCO market, an issue highlighted by the Thai ESCO Association ThaiESCO, where there are no penalties for non-performing ESCOs. It is important, though, that such platforms do not become public complaints systems. Mechanisms must therefore be put in place to ensure that the concerned ESCOs are heard, and resolutions attempted.

4.2.1 Establishing effective ESCO accreditation systems and registries

The accreditation of ESCOs should be structured in a way that gives potential clients assurance that the accredited ESCO have qualified personnel, the necessary financial resources and a satisfactory track record in delivering ESCO projects. The accreditation scheme should cater for different classes or levels of ESCO accreditation based on ESCOs' capacities to accommodate different project types and sizes, which could be based on their compliance with a variety of thresholds within a set of criteria. The following lists a set of criteria that can be applied to ESCO accreditation.

Table 3. Criteria for ESCO accreditation

Business criteria	
Longevity	Length of time that the ESCO business has been in operation
Project completion and investment amount	Total amount of projects in monetary value that have been completed
Staff capacities	Staff experience, competency, capacity and organizational structure
Insurance verification	General liability insurance on construction and business maintenance
References	References from clients to evaluate the perceptions of performance
Ethics agreement	Signature of ESCO Code of Ethics of the accrediting organization
Legal action description	Monitoring point of ESCO performance and issues with project fulfilment
Certifications	Potential certification requirements e.g. ISO9000 on quality management systems
Financial criteria	
Financial strength	Documentation of ESCO's profitability and evaluation of debts, timely payments, capital availability, general bookkeeping practices
Financial statements	Review of audited financial statements
Technical criteria	
Number of projects	The competency of the ESCO to deliver projects
Ability	The ability of the ESCO (staff) to perform certain aspects of project delivery e.g. minimum amount of staff being certified energy auditors or other
Audit equipment ownership	Availability of energy audit equipment for the staff to use in project development phases
Safety requirements	Conforming with governments safety requirements for workers
Measurement and Verification Demonstration	Competence to guarantee project's performance as predicted in detailed energy audit

Source: Inspired by (Langlois & Unruh, 2020)

The official registry should contain the following overall publicly available information:

- Information about the process to become accredited, including on:
  - Different types or classes of accreditation
  - Documentation requirements for the different types or classes
  - Steps and timelines in the accreditation process
  - Duration of accreditation before renewal is needed
- An official list of accredited ESCOs including:
  - The specific attained accreditation type/class
  - Date of accreditation
  - Contact information
- The Code of Ethics that the ESCOs have agreed to adhere to
- Reviewed and approved client feedback on ESCO performance
- A description of a process on how concerns and disputes are addressed
- Contact information for the registry itself for:
  - Becoming accredited
  - Communicating concerns and addressing disputes

The Philippines' accreditation system formalizes ESCO qualification requirements, while facilitating the access of new ESCO market entrants for public sector projects

In the Philippines ESCOs can apply for two different modalities to the Department of Energy: (1) 'Registered ESCO' for ESCOs that meet the minimum of requirements on legal and technical capacity, but seeking accreditation for the first time, and (2) 'Certified ESCO' for ESCOs with proven performance or results-based projects savings experience and with proven customer experiences, in addition to meeting the requirements of a Registered ESCO. The validity of the Certificate of Certified ESCO is five years, and three years for Registered ESCOs. .

ESCO accreditation could in theory fall under the aegis of either governmental or non-governmental entities, such as a Ministry of Energy, a National Energy Agency, a national super ESCO or any other public entity with the relevant mandate. In the absence of such anchoring, a national or regional trade or ESCO association, industry confederation or other impartial third-party entity could be an alternative.

Finally, the ESCO accreditation system should not exclude companies with no prior experience in energy performance contracting, but rather accommodate different classes of accreditation.

4.3 ESCO model contracts

The principle of an Energy Performance Contract is simple – a contract that allows the buyer to pay for installed energy-efficient equipment through the value of the achieved energy savings. Nonetheless ESCO projects, implementation modalities and the relationship between the ESCO, client, assets and renumeration can be more complex than in many other business transactions. Therefore, ESCO contracts have a tendency to become more complex as well. In some cases, the lack of experience and understanding of the ESCO model leads to the use of contract templates sourced from prior non-ESCO-related procurement for, e.g., traditional energy consultants or contractors, which might be unfit for ESCO purposes.

The model contract is supposed to alleviate the barriers pertaining to the cumbersome process of drafting and negotiating new contracts for each project, especially with clients that are unfamiliar with the ESCO concept. It prevents starting from scratch every time another administrative body or corporate entity embarks on Energy Performance Contracting and therefore is a source of considerable resource savings. At the same time, it also eliminates the contract as a competition parameter, except for those parts that refer to the performance of the installed technology. Most of all, it is suited to creating trust among the parties.

It is obvious, then, that the absence of a model contract can be a barrier to business development. In most cases, not only may a single contract be preferable, but also a suite of contracts adapted to the preferred business model, e.g. either 'shared savings' or 'guaranteed savings', and/or to sub-national jurisdictions.

Model contracts work best for public tendering because government and public institutions often need a standardized approach, particularly in the context of programs, but they can also be an effective tool to alleviate transaction costs and risk perceptions in the private sector. E.g. if the banking sector has access to an approved and endorsed set of ESCO contracts, it should be easier for ESCOs to finance their activities using these preapproved contracts. Clients could also feel assured that they are entering into a reasonable risk-sharing agreement.

Establishing a standard contract is a necessary effort to create a level playing field between supply and demand. However, developing a fit-for-purpose model contract is not straightforward if the experience base is either uneven or limited on both sides. Trust in the contract is as important as the contract itself. In the absence of experience and of a lack of trust in the legal format, contractual monsters may emerge that cater to every detail, relevant and irrelevant

alike. Finally, the effectiveness of contract standardization in lowering the transaction costs is dependent on achieving simplicity in the contract, as well as ensuring that both parties are comfortable with their risk exposure.

The existence of standard contracts is more prevalent in Europe compared to Asia. All the surveyed European countries except Hungary have ESCO contracts available, although in Portugal the very complexity of the contract is an issue, as it is deemed not to effectively lower transaction costs. In Italy, the standard contract available only accommodates a limited set of ESCO-related activities, whereas the French ESCO association Fedene aims to go beyond the provision of a contract for public-sector interventions and develop a standard contract for private collective housing and private tertiary entities.

In the surveyed Asian jurisdictions, JAESCO in Japan and MAESCO in Malaysia report that there are no standard contracts available, while in Taiwan, TESA reports that the available standard contract is deemed to put excessive risk on the ESCO. In Thailand work is ongoing to revise the available contracts to make them fit for purpose.

4.3.1 Making dedicated and suitable ESCO contracts available

Lengthy and cumbersome contracts are not in either party's interest. In fact, the complexity can become disproportionate to the legal task at hand and ultimately evolve into a barrier in itself. ESCOs need contracts that are tailored to their activities, devoid of undue reservations and exemptions, and with a focus on ease of implementation and management. The art is to find a balance between the necessary and the practical – and to trust the compromise.

In those markets where no standard ESCO contract exists, the typical approach is to adapt an existing contract format. In the United Kingdom, although there is in fact a model contract for ESCOs, adaptations of contracts under different government schemes (the public sector frameworks – RE:FIT, CEF, NDEE and ETL) are more widely used and have been the basis for a strong growth in public-sector energy performance contracting. These contracts are already focused on energy renovation and thus may be more fit for purpose than other, more generic engineering contract models. Ultimately a case-by-case revision of an existing contract format is likely to end up not only more cumbersome, but also entails the risk of ultimately not serving the purpose of creating trust among the parties.

Standard ESCO contracts should be developed through a consultative process between the national ESCO association – or in its absence national ESCOs and private-sector associations like the chamber of commerce – and the relevant public institutions, and it should be written with the following goals in mind:

- to provide tools for quality, transparency and effectiveness in Energy Performance Improvement Actions
- to adopt a contractual framework for ESCO that provides a clear and transparent risk allocation and guaranteed energy efficiency improvements and any other agreed energy-performance criteria
- to have a reference contractual framework between user and ESCO that clearly specifies value generation (including the multiple benefits or co-benefits of energy efficiency improvements) and risk allocation
- to help assess the value of the asset in relation to its energy efficiency and sustainability performance over the project's lifetime.

In terms of risk sharing, the fact that ESCOs normally take on most of the risk in energy efficiency projects must be acknowledged, and efforts should be made to minimize their risk wherever possible. On the other hand, as ESCOs (or delivery partners) are responsible for the design, installation and maintenance of the technologies, the client shouldn't carry any risk related to the performance of the equipment and potential damage caused by the technologies and their management, unless there is a clear indication that the client is misusing the installations.

In cases where an existing regulation supersedes contractual arrangements, a longer-term revision of the current regulatory framework might be needed. In the interim, a balanced approach to the shared risk between the ESCO and the contracting entity should be the aim.

The Global ESCO Network offers a number of examples and links to standard ESCO contracts and standard ESCO public procurement procedures in its library

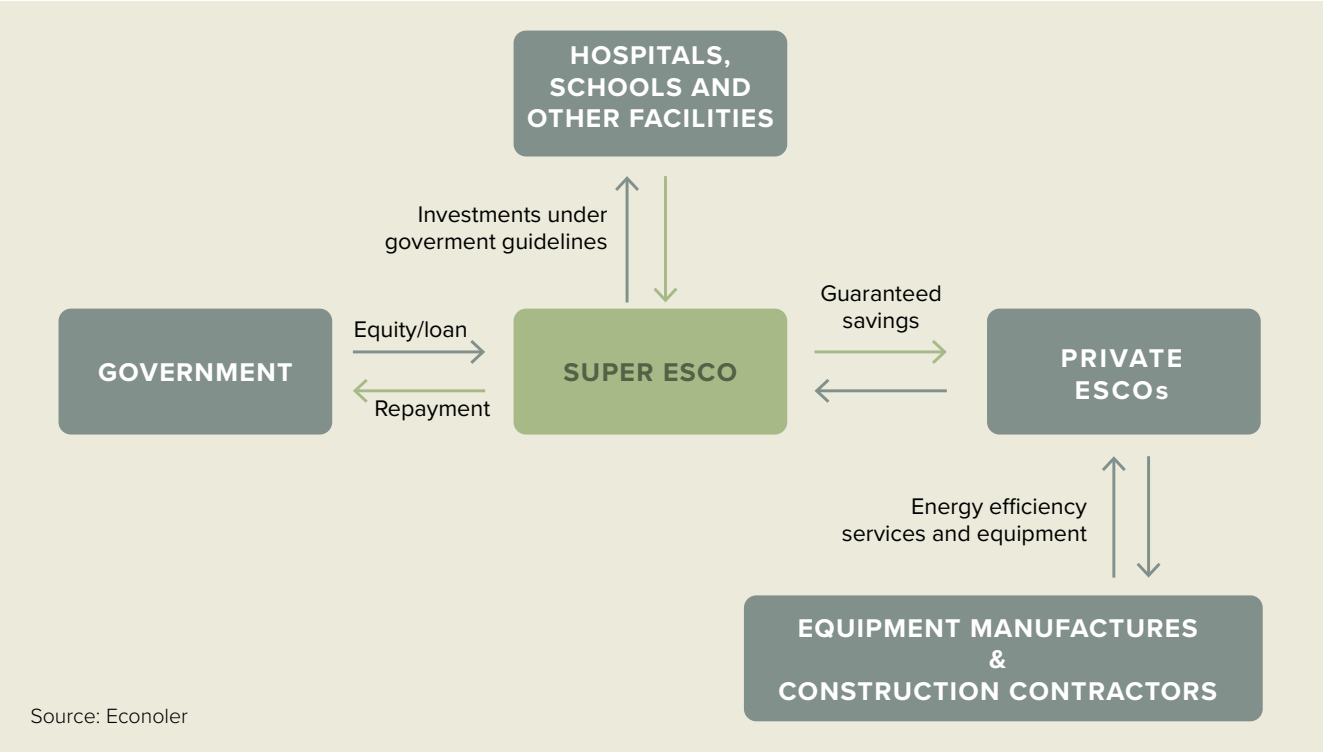
The ESCO Contracts Library provides a list of ESCO standard contracts and supporting documents provided by a variety of countries and organisations. In some cases the resources also provide a wider set of documents related to public procurement of ESCO services, including the provision of standard contracts for a variety of different types of interventions and ESCO contract modality.

4.4 ESCO aggregator schemes (Super ESCO)

The traditional challenges for energy efficiency interventions are that they are relatively small, diverse and complex. There are also many at many different locations. Fragmentation is the essence of energy efficiency investments and therefore creates a complicated asset class to finance. While the ESCO model might provide an effective implementation framework, aggregators may help to reduce the fragmentation, either by simply identifying, structuring and initiating ESCO, or by initiating larger energy efficiency programmes with many interventions included under one contract. Such aggregators, often called Super ESCO, can be effective not only to address the fragmentation, but also to organize the financing, as well as acting as a window for private-sector ESCOs through which they can deliver their services.

Super ESCOs have been created in a limited number of countries following the idea that ideally a state-owned ESCO could assist in coordinating, promoting, financing and overseeing ESCO industry development. When well-designed Super ESCOs function effectively, they stimulate the growth of ESCO markets, basically coordinating and connecting private ESCOs to projects (e.g. in hospitals, schools and other public-sector facilities), and also channelling finance and energy efficiency incentives for public projects to be implemented by ESCOs.

Figure 5. Conceptual Model of a Super ESCO



Source: Econoler

Super ESCOs can be both public and private sector led, and target both public- and private-sector ESCO project pipelines. Public-based Super ESCOs would ideally target the largely untapped energy efficiency market within the public sector, potentially host the ESCO accreditation system, build ESCO capacities and create a competitive private market for ESCO services, while investing in energy efficiency. Private sector based Super ESCOs can play a leading role in developing and implementing projects in the private sector, acting as a financier for ESCOs, while also acting as ESCOs themselves, given their credibility and financial capacity, and potentially buying contracts from existing ESCOs once performance is demonstrated.

The mandate and tasks of Super ESCOs vary from country to country, from being solely a gatekeeper of tenders and the public procurement of ESCO services to itself acting as an ESCO and implementing projects in both the public and private sector. National Super ESCOs should ideally support the development of a national ESCO market, rather than competing with private ESCOs. Otherwise, ESCO companies in the country may suffer from the actions of the very entity that was created to support them.

Super ESCOs or aggregators are still not prevalent in the surveyed countries. Only Belgium, the Philippines and China report to have established aggregator entities. At the same time, it is also considered the least important regulatory framework for the promotion of ESCOs according to Figure 5. In Belgium, Fedesco was created in 2005 as a public ESCO to study and implement energy efficiency projects in 1800 Belgian federal public buildings. Fedesco is the oldest still existing Super ESCO and is 100% publicly owned. In the Philippines, Climargy is a private-sector initiative and thus a commercial Super ESCO based on private-sector capital (see text box). In France, the development of an 'Operateur Ensemblier' is underway and a subsidiary of the Canadian private sector vehicle SOFIAC has been established in 2024.

4.4.1 Establishing ESCO project aggregators

From a mere count, it is apparent that Super ESCOs or aggregators are not a common feature in markets for ESCO services. Establishing such entities and operationalizing them are complex and lengthy processes which need to take into account the existing private sector ESCOs as well. It is essential that a Super ESCO does not adopt approaches that could also serve as a challenge to incumbent service suppliers. The purpose of establishing a Super ESCO, as for instance the case of Fedesco, is commonly to overcome the challenges to getting energy efficiency investments in the public sector off the ground. It is designed to overcome barriers in contracting and builds on recognition of the ESCO contracting model, which suggests the approach has understanding and approval in government offices.

For a publicly funded Super ESCO to serve its purpose and avoid conflicts of interest, its mandate must be defined with a focus on the development of the national ESCO market, rather than incentivizing its own growth through its implementation of projects. It is likely to be structured as a separate entity anchored with either the administrative entity responsible for national energy efficiency or with the authority responsible for the targeted sector, most likely public sector buildings.

A privately initiated Super ESCO like Climargy in the Philippines or the Canadian SOFIAC is likely to originate within the ESCO industry itself. SOFIAC and Climargy do not compete with ESCOs but instead act like a base for projects identified by themselves and by ESCOs alike. SOFIAC organizes bidding for the projects based on qualified bidders lists that it maintains for this purpose.

The Super ESCO community is still small, and it is relatively easy to seek out the relevant experience for establishing such aggregation structures for ESCOs.

Climargy's unique and pioneering portfolio aggregation model for ESCO projects in the Philippines

Climargy was incorporated in the Philippines in 2020, building on a pilot from 2015-2019, becoming one of the pioneer private super-ESCO aggregators of ESCO project assets. Climargy was established to address the market gap in energy efficiency project aggregators and fund-like or super-ESCO equity providers of project capital. Its aggregation model is designed to address the gross market failure to scale-up energy efficiency portfolio finance, caused by the common financial barrier for ESCOs in most Asian markets accessing suitable bank lending or debt finance to pursue their long-term pipeline of ESCO-financed performance contracts. Portfolio aggregation allows Climargy to pool several small (less than USD 5 million) ESCO projects to attract corporate equity from major energy developers, now recognizing energy efficiency as a distinct investment asset class for the first time.

In December 2021, Climargy entered into a joint development partnership with Pi Energy of the Lopez Group's First Philippine Holdings Corp to combine their knowledge and capital resources to pursue a robust investment portfolio of energy efficiency projects in the Philippines, targeting no less than 1 terawatt-hours of energy savings in the commercial and Industrial sector. Climargy is on the pathway to raise USD 108 million for the initial investment tranche. Once the underlying ESCO project assets are starting to deliver energy and climate impacts, this initial tranche is estimated to avoid up to 3 TWh in generation (energy savings at source) by 2040, displace up to 300 GWh/yr in annual avoided generation by 2031 (equivalent to 55 MW coal-fired plant), reduce GHG emissions by up to 2 GtCO2e by 2040 and create 2,100-3,900 green jobs.

In May 2022, Climargy partnered with the UNOPS Southeast Asia Energy Transition Partnership to mobilize grant funding to subsidize and de-risk otherwise expensive upfront (Level III) investment-grade energy audits of target host commercial and Industrial sector entities in its investment pipeline.

Thailand - Paul Szewczyk, Unsplash

Conditions due to regulation not specific to ESCOs

Chapter 5

Regulatory frameworks are put in place by public-sector regulators to allow, promote or require certain social activities to happen, as well as to establish the limitations on such activities. The previous chapter considered such ESCO-specific regulations, but as ESCOs operate in a multitude of sectors like energy, building, manufacturing etc. which are subject to their own regulations, they may experience the impact of some of them, intentionally or unintentionally. This chapter concerns these regulations. As in the previous chapter, some of these regulatory parameters may constitute barriers not because they exist, but through their absence. For instance, in this context the absence of mandatory audit schemes is considered a barrier from the perspective that such audit schemes exist in some of the analysed countries.

ESCOs also have specific implementation modalities, where public-sector structures or procurement rules might impact the sphere in which they operate. That means that the barrier may not only affect the ESCOs directly, but potentially also some of the entities, services, and opportunities that ESCOs need to thrive. These barriers are often linked to antiquated legislation tailored to different business models, but they are also encountered in countries where ESCOs have developed a substantial activity and have achieved some modicum of recognition by regulatory bodies.

Good governance principles stipulate that stakeholders are consulted in the development process to ensure that the provisions of a regulation do not have unintended effects in spheres that are not targeted. Where stakeholders in the ESCO industry are not taken on board when regulation is designed, it is likely that the regulation may not be fit for purpose. However, as the regulation described in this chapter is not targeted at ESCOs in the first place, is it not meant to serve an ESCO purpose. Describing it as not fit for purpose is therefore misleading: it may well fit its primary purpose. Therefore, in this context, the label indicates rather whether if in its existence it is helpful for the ESCO business.

There is the same balance between 'barrier' and 'no barrier' as compared to regulation directly targeted at ESCOs, practically 50/50. But there is a significant difference between Europe and Asia regarding these parameters. Whereas only 20% of the parameters are considered barriers in Europe, that is the case for 50% of the parameters in Asia.

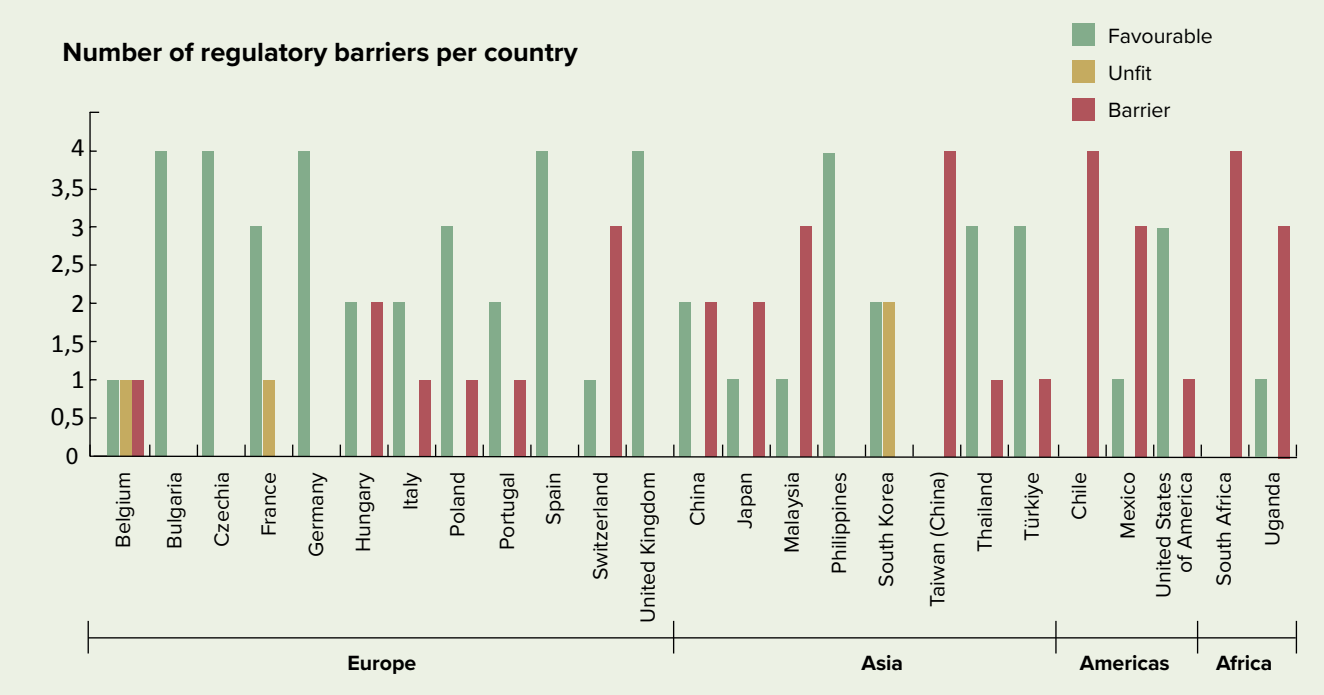
Table 4. Summary of ESCO associations' responses on regulatory frameworks not specific to ESCOs

Region	Country	Energy audit schemes	Metering based on consumption	Clear mandates and responsibilities	Contract duration
Europe	Belgium	Yes, unfit	Yes	No	No answer
	Bulgaria	Yes	Yes	Yes	Yes
	Czechia	Yes	Yes	Yes	Yes
	France	Yes	Yes, unfit	Yes	Yes
	Germany	Yes	Yes	Yes	Yes
	Hungary	Yes	No	Yes	No
	Italy	Yes	Yes	No answer	No
	Poland	No	Yes	Yes	Yes
	Portugal	Yes	Yes	No	No answer
	Spain	Yes	Yes	Yes	Yes
	Switzerland	No	Yes	No	No
	UK*	Yes	Yes	Yes	Yes
Asia	China	Yes	Yes	No	No
	Japan	No	No answer	No	Yes
	Malaysia	No	Yes	No	No
	Philippines	Yes	Yes	Yes	Yes
	South Korea	Yes, unfit	Yes	Yes, unfit	Yes
	Taiwan (China)	No	No	No	No
	Thailand	Yes	Yes	No	Yes
	Türkiye	Yes	Yes	No	Yes
Latin America	Chile	No	No	No	No
	Mexico	No	No	Yes	No
	USA*	No	No	Yes	No
Africa	South Africa	No	No	No	No
	Uganda	No	Yes	No	No

* U.K of Great Britain & Northern Ireland
* United States of America

Figure 6 illustrates the responses from ESCO associations listed in Table 4 above, in order to make visualization and comparison between countries of their respective non-ESCO specific regulatory frameworks conditions easier.

Figure 6. Prevalence of favourable conditions and barriers not specific to ESCOs in surveyed countries



Each ESCO specific condition is further analysed and described in the following sections in this chapter.

5.1 Energy audits requirements

Most energy consumption is invisible, especially in large buildings or plants, apart from lighting. In addition, most energy bills are invisible to those consuming the energy, directly or indirectly, except in individual households. Overall, few have an overview of how much energy they use on what, how it is generated and how much it costs. Being the single most important source of carbon emissions, that can seem peculiar, but the probable reason is that in most economies it is a political priority precisely to ensure that few need to worry about such an essential public good.

The public sector could still fulfil its contract with consumers, even if it required the conscious use of energy. However, as indicated above, most consumption seems to be unconscious, which is unhelpful to an energy efficiency agenda. Disclosure is an efficient driver for action. Such disclosures can be made through a mandatory audit scheme which reveals the main sources of energy consumption on the macro- as well as micro-scale. It generates the currently unavailable data and allows informed decisions about improvements to energy efficiency.

Although an audit commonly reveals several profitable energy efficiency investment options, the disclosure may not always lead to implementation. The reasons may be many. Financing may not be available or prioritized for other purposes. Professionals to implement the recommendations may be in short supply, and the audited entity may not have the knowledge to carry through the renovation process. Or a corporate entity may not wish to risk a disruption to a functioning production line. Hence, although an audit may provide compelling evidence of significant savings, they often lead to no action at all. This may also be because audits are usually completed by an (accredited) energy auditor, who does not offer an implementation model. Mandatory audit regulation thus commonly, and paradoxically, imposes the cost of the audit, but refrains from imposing the profits from the savings, which are the real objective of the audits.

For this reason, mandatory audit schemes are the least successful in this section of the analysis. Twelve of the nineteen countries have mandatory energy audits, all of which are considered unfit for purpose. In this context it means that this does not lead to the increased use of ESCOs, but it is a straightforward extrapolation of this assessment that they do not achieve the energy efficiency objectives intended. Mexico, Taiwan, Switzerland, Japan and Malaysia do not have mandatory audit schemes.

Additionally, in several countries, energy audits are mandatory only above a certain energy consumption threshold, which only targets large industrial energy-consumers or solely public buildings. This means limiting mandated disclosure and the consequent demand for energy efficiency measures to a restricted number of potential clients. In Italy, for example, there is a mandatory audit scheme, but the audit is only mandatory for all industrial sites exceeding 10,000 tonnes of oil equivalent (toe) of consumption and for all tertiary sites with consumption exceeding 1,000 toe. In France, there are several mandatory audit schemes for large companies, but without the mandatory implementation of recommendations, although there is an obligation in tertiary > 1000m² to reduce the energy consumption to 40%. In the Philippines, only establishments with annual consumption exceeding 500,000 kWh are subject to mandatory audits once every three years.

5.1.1 Mandating audits and implementation

Most energy efficiency markets would benefit from mandatory energy audits, and they do serve as an instrument for disclosure, which ESCOs may exploit in support of their business. However, the audits fail to address the main obstacles to investment in energy efficiency, one of which is that the relative gains compared to other operational costs, even at significant returns on investment, are too small to be considered worth the effort. A push to make such investments happen is probably needed. In the Philippines, establishments that undertake energy audits following the above-mentioned rules are also required to set up annual targets and plans for energy efficiency improvements.

While mandatory audits have gained ground, mandating the implementation of the recommended efficiency investments seems to be met with regulatory reluctance. Audit schemes require trained auditors and thus cannot be established overnight. An authorisation programme must be established to underpin the mandatory audit scheme. There are many such programmes to learn from, commonly providing training to professionals with prior experience. Mandatory implementation requires a similar build-up of a resource base and supply system in the form of ESCOs that can ensure the professional implementation of measures.

Among the fourteen countries with audit schemes in this years' analysis, only the Philippines have a semi-mandatory implementation of efficiency measures. Mandatory implementation of financially viable recommendations may be a solution to improving the efficiency of mandatory audits if there is a sufficient supply of expertise and financing options available.

Obviously, mandatory implementation will commonly be affiliated with (much) higher investment costs than that of the audit, and in some instances system down-time in industry is a crucial issue. The involvement of professional energy services from ESCOs that include a financing model is an obvious way forward to remedy such concerns. Also, flexibility in implementation requirements, timewise and technology-wise, are commonly added, and compromises may be achieved by applying adequate thresholds to both the different sorts of energy consumers size-wise to which the mandatory energy audits apply, and the kind of energy efficiency measures recommended by the audits that should be mandatory to implement.

5.2 Energy charges based on consumption

The provision of energy services is commonly charged according to actual consumption, for which purpose charging systems are diverse, not only in terms of what is charged for, but also who is collecting the charges. Often, the charging system is a main risk factor when ESCOs are establishing performance-based contracts.

The starting point, however, is the measurement itself. In some cases, the charges do not reflect consumption at all, for instance, when space heating is paid for on a square-meter basis, rather than based on heat consumption, and occupants therefore are charged the same regardless of whether the heat is consumed efficiently or not, depriving them of any motivation to improve efficiency. In Taiwan, Mexico and Chile, there is no metering of energy consumption in place for end-consumers. Fortunately, in this year's analysis, metered consumption is common is most countries, sixteen out of nineteen.

The charges are commonly a combination of fixed charges and consumption charges, ensuring that the supplier is remunerated for the fixed costs pertaining to the delivery. In the longer term, this means that the efficient use of energy

can ultimately challenge the metering system simply because the fixed costs of the energy-transport system exceed the cost of the energy being transported. Energy subsidies have the same effect, shifting the weight towards fixed charges and thus making the final charge less dependent on consumption. Energy subsidies are already a challenge for ESCOs and energy efficiency investments.

5.2.1 Ensuring costs are based on consumption

The lack of metering is the least significant barrier for ESCO services in the analysed countries. The sample countries may of course not be representative of the way energy consumption is charged globally, but it is encouraging that it is not only European countries that practice metering; it is almost equally common in Asia. Neither of the two Latin American countries, however, practice metering, but the sample is too small to be conclusive. This does highlight, though, that metering remains a basic recommendation for the pursuit of energy efficiency in order to create cost-driven demand and underpin access to data.

5.3 Clear delineation of mandates avoiding split incentives

Having a clear delineation of mandates in the public sector is not what first comes to mind when thinking about ESCO market development. Nevertheless, the public sector and its buildings and infrastructure are often one of the main driving forces behind ESCO market development, and an unclear delineation of mandates, or split incentives caused by unhelpful delineation, can prevent the relevant institutions from taking action.

Split incentives are commonplace in the built environment, also known as the owner-tenant conflict of interest. Here, owners lack the incentive to invest in energy efficiency measures, such as highly efficient appliances which often represent a higher up-front investment, because the savings only benefit the tenant paying the energy bill. The tenant, on the other hand, has little incentive to invest in energy efficiency measures because the installation can outlive the tenancy and the investment therefore benefits the owner or the successor rather than the existing tenant as the buyer. The same is the case for highly efficient appliances, or water-saving equipment in rental properties.

Owner-tenant conflicts of interest are not necessarily a result of regulation. It is in the nature of the contract between the two parties, and it fundamentally penetrates the entire construction market from the beginning of the design of buildings. This conflict is especially relevant in the instances where public entities rent office space, and therefore have limited freedom to replace capital equipment in the leased premises, as reported by the Philippine Energy Efficiency Alliance.

Where regulation nevertheless plays a role is in the public sector, where different public-sector entities act as owners and tenants. This refers to a situation where the entity with the mandate to commission, for instance, an ESCO intervention is not the one that benefits from the subsequent energy savings. This set up is common in public buildings, where an entity is the formal owner of government buildings and therefore also responsible for their renovation, while the buildings are used by other public entities that also pay the energy bills. The actual payment is sometimes even the responsibility of a third public entity.

In some cases, the issue might be more structural, as is reported by the Energy Efficiency Association Uganda (EEAU), the Thai ESCO association and the Portuguese ESCO association APESE, where the entity with the mandate for energy efficiency is not responsible for public buildings, and responsibility for the implementation of measures is unclear. The Belgian ESCO association BELESCO, the Japanese association JAESCO, the Chilean association ANESE, the Malaysia Association of Energy Service Companies (MAESCO) and the Chinese ESCO association report that the entity responsible for public buildings has no control over the budget and payment of energy bills, while the entity paying the energy bills has no mandate to implement energy efficiency measures, which is also the case in Czechia.

Even in cases where mandates are aligned, and a public entity is responsible for energy efficiency investments as well as paying the energy bills, the cost savings on the energy bill oftentimes only leads to the allocation of less budget, thus countering the fundamental driver for energy efficiency investments and eliminating the basis for ESCO contracting

5.3.1 Avoiding split incentives and inaction due to uncertainties over mandates

Addressing split incentives and mandates is far from simple. In the public sector, it stems from a certain organization of public powers, which is commonly beyond regulatory remediation. It is not a solution to reorganize the public ownership structures of government buildings. The ESCO model may be an effective tool to overcome the challenge if the relevant regulation allows the occupants of public-sector buildings to initiate energy efficiency measures with third-party financing. Issues remain, however, in the enti-

ty's control over the length of the lease and the treatment of energy-performance contracts if a public tenant is required to relocate before its termination by government decree.

A possible solution is to institute a mandatory energy-audit regulation as described earlier, and to impose the implementation of interventions identified beyond a given threshold. This means either not minding the split incentives or allowing the investments to be reflected in increased rental charges. Such revisions also interfere with budgetary regulations, which in many cases restrict which costs can be carried forward as rental increases. In some cases, a possible way forward may be that a mandatory energy-audit regulation requires the owners to implement audit recommendations, while at the same time compelling the users to contribute financially through the achieved energy savings, as long as the intervention doesn't negatively impact their overall annual energy expenses. In Switzerland, Swissesco reports that in recent years, there has been a provision for sharing the costs of energy-performance contracting between building owners and tenants, which has proved successful in overcoming some of the challenge of the split incentive.

As mentioned above, in some countries the savings achieved only lead to budgets being cut. To circumvent this restriction, some public agencies have proposed a new incremental budget to pay for ESCO services over and above the same annual energy budget, or on-bill charging of the ESCO services through energy utilities. While this remedy may work, it delays ESCO procurements and misaligns budgets with actual costs.

5.4 Public procurement and contract duration

In many countries, public-sector entities are the primary customers of ESCO services. In other countries, however, the budgeting of ESCO activities and the ability to engage ESCOs have been reported to be complicated for public-sector stakeholders. One of the barriers consists in the inability or unwillingness of public agencies or public officials to enter into multi-year contracts that exceed time-bound limits, even if legislation doesn't actually prohibit such contracts. Limits may nevertheless be set, for instance, based on the terms of elected officials ending, as reported by ANESCO in Chile and Federesco in Italy. This causes a fluctuating market which only works in short windows of time at the beginning of election periods. In other cases, limits are set by budgetary planning periods as reported by the Energy Efficiency Association Uganda (EEAU), the Energy Service Association in Taiwan, and the Mexican Association of Energy Efficiency Companies (AMENEER), where public entities are reluctant to enter into contracts beyond annual budgets. In other cases, a predefined maximum length of public contracts is given by regulation, for instance, two to eight years as reported by MAESCO in Malaysia; a maximum of ten years, as is the case in Japan according to JAESCO; or five years as reported by KAESCO in Korea, where longer term contracts of up to ten years must be approved by the local council.

This works counter to the purpose of the ESCO business, where energy efficiency measures are designed as more complex systemic measures that have a longer payback time, but where the overall energy-savings potential can be considerable. Some energy efficiency measures need performance contract terms of ten to fifteen years or longer for the upfront capital investments and O&M expenses to be fully recouped, beyond many of the restrictions identified above, and far beyond the typical four- to six-year elective cycles, public planning periods, or annual budgets.

Restrictions on contract durations are less of a challenge in Europe than in Asia, and in the US contract durations of up to 25 years is recorded.

5.4.1 Allowing for adequate multi-year contracting terms

There are no simple solutions to this, as the rules (official or structural) and regulations obstructing the provision of services to the public sector are not particular to ESCOs but pertain to all public contracting for services. Moreover, the barrier is often behavioural rather than regulatory and therefore a workaround through regulation, even one specifically for ESCO services, may not be a solution. Even if it were, the multitude of contract models used by ESCOs may well be an obstacle to such provision, not to mention that other lines of business may challenge any special treatment of energy services.

The most obvious potential solution to these challenges is the establishment of a public sector-owned vehicle, a Super ESCO such as that described in Section 4.4, which can provide a window through which private ESCOs can operate.

Poland - Kamilm Gliwinski, Unsplash

Frameworks facilitating ESCO investments

Chapter 6

One of the most significant barriers to the growth of the ESCO industry is the limited access to affordable, sustainable and low-risk financing. From a public-sector perspective, at times, whether intentionally or unintentionally, ESCOs are excluded from directly accessing finance and funding from government programmes, and in some cases experience barriers related to unclear or unfavourable taxation regulation, making their service compete on uneven terms with non-ESCO-based implementation. The financing of the ESCO industry is often hampered by limited knowledge and experience of typical ESCO business models in the financial sector. A perception of the high risks of ESCO projects and a reluctance to accept the project cash flows as collateral often disadvantage energy efficiency projects implemented by ESCOs compared to implementation by the owner of a given inefficient installation. This is a natural consequence of the collateralization of the owner's assets as compared to ESCOs collaterals in the form of a contract alone, which may result in higher interest payments and shorter maturities for ESCO-implemented projects.

It may be fair to regard such barriers as structural and as pertaining to the fundamental ESCO business model. In some mainly developed country markets, ESCOs are not involved in the financing of projects simply because the client has better financing options than the ESCO. That does not mean that the ESCO business model is less relevant; it only means that, in those markets, the ESCO may not be considered a financing model. In other markets, however, where the ESCO goes beyond its expertise to become a supplier of financing to cash-strapped clients as well, often in the public sector, the lack of attention to this structural challenge is considered a barrier to the expansion of ESCO business.

The answers provided in this section are illustrative of this difference. In Europe, there are few financing facilities that alleviate the risks related to the ESCO business model and none considered fit for purpose. In Asia, on the other hand, six out of eight countries have such facilities, although most of the host countries get it wrong. But China and Philippines are the only countries in the analysis that report facilities that are fit for purpose. In these countries, as well as in Africa, ESCOs are considered a financing model. A similar difference in paying attention to the financing needs of the ESCO industry may be read in the focus on taxation rules, where all Asian countries except the Republic of Korea have rules in place, while this is only the case for half the European respondents.

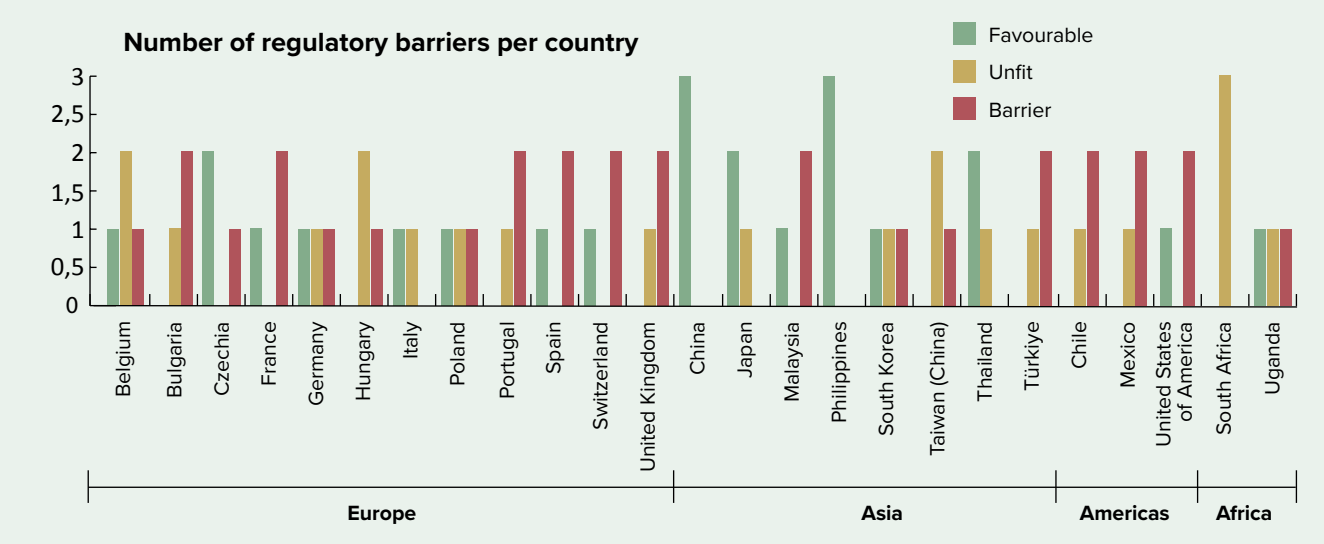
Table 5. Summary of ESCO associations' responses to regulatory frameworks facilitating investments

Region	Country	Government EE programmes	Financing facility to alleviate risks	Taxation rules and financing definitions
Europe	Belgium	Yes	Yes, unfit	Yes, unfit
	Bulgaria	No	Yes, unfit	No
	Czechia	Yes	No	Yes
	France	Yes	No	No
	Germany	Yes	Yes, unfit	No
	Hungary	Yes, unfit	No	Yes, unfit
	Italy	Yes	Yes, unfit	No answer
	Poland	Yes, unfit	No	Yes
	Portugal	Yes, unfit	No	No
	Spain	Yes	No	No
	Switzerland	Yes	No	No
	UK*	Yes, unfit	No	No
Asia	China	Yes	Yes	Yes
	Japan	Yes	Yes, unfit	Yes
	Malaysia	Yes	No	No
	Philippines	Yes	Yes	Yes
	South Korea	Yes	No	Yes, unfit
	Taiwan (China)	Yes, unfit	Yes, unfit	No
	Thailand	Yes	Yes, unfit	yes
	Türkiye	No	Yes, unfit	No
Latin America	Chile	Yes, unfit	No	No
	Mexico	Yes, unfit	No	No
	USA*	Yes	No	No
Africa	South Africa	Yes, unfit	Yes, unfit	Yes, unfit
	Uganda	No	Yes, unfit	Yes

* U.K of Great Britain & Northern Ireland

Figure 7 provides an overview and comparison of responses from the ESCO associations. Each specific condition is further analysed and described in the following sections in this chapter.

Figure 7. Prevalence of favourable conditions for and barriers to regulatory frameworks facilitating investments



Each ESCO specific condition is further analysed and described in the following sections in this chapter.

6.1 Access to government finance through energy efficiency programmes

Most countries include energy efficiency targets in their Nationally Determined Contributions, as described in Chapter 1. Few have specific implementation plans, but one of the most prevalent instruments when countries try to follow through on these ambitions is the introduction of grant programmes. With the exception of Bulgaria, Türkiye and Uganda, all the surveyed countries have such grant programmes in place (see Table 5).

The absence or existence of energy efficiency grant programmes is not a barrier for ESCOs in themselves, but the conditions surrounding them may be. There are at least four issues with such programmes:

1. The main characteristic of grant programmes is that they are not permanent and may be renewed with only short application windows, preventing any action without a grant, as consumers will simply wait for the next grant package if they missed the first. This is therefore seldom a basis for the stable development of a balance between supply and demand. This is commonly also linked to changing administrations and priorities, which lead to a discontinuity of financing and incentive schemes, creating a sort of stop-and-go effect. This may cause postponement and discontinuity of interventions by ESCOs, as well as other market participants.
2. Often, the programmes exclude professional energy efficiency expertise from the market, such as ESCOs, and are only accessible for the owner or user of the facilities. In Table 5, this is considered unfit for purpose, as it works counter to the ESCO business. It does, of course, promote energy efficiency, with the caveats listed here.
3. The programmes are often designed for single-tech solutions, typically targeting the cherries and leaving the pie untouched in the sense that the singling out of the most profitable piece of equipment and adding further support for it will render other energy efficiency investments relatively unprofitable. Europe-wide, grant programmes for heat pumps emerged as a result of the energy crisis in the winter of 2022, but these programmes offer no support for insulation or window upgrades, typically resulting in suboptimization. Professional ESCOs would refrain from such suboptimal installations.
4. Cherry-picking reflects well on policymakers because it produces excellent results. However, fundamentally these investments require no grant funding at all if they are implemented by ESCOs, whose business it is to make such installations on a commercial basis and to include the less cost-efficient technologies in the package, such as the insulation and windows mentioned above. These programmes therefore only look good because they are compared to the no-action baseline.

Other issues with such programmes are that they may be complex and part of a variety of incentives, as reported, for example, by Federesco in Italy, where the rules and access to these funds are thought to be too convoluted and the market is confused about their use and access. This hampers swift market responses to project design and tendering.

A final challenge may be that efficiency support and grant instruments have been around for decades. They are easy to apply, easy to budget, and the effect is easy to assess, at least superficially. Including third-party investors in the programmes might simply be considered an unnecessary complication, or more probably not be considered at all, as regulators are unaware of them.

6.1.1 Establishing ESCO-accessible financing incentives

The challenge in establishing financial support frameworks is mostly to get them right, as most countries consider them the prime instrument for promoting energy efficiency. The pitfalls are mentioned above.

In a barrier analysis focused on the ESCO industry, it is essential that ESCOs should have equal access so as not to distort the market in favour of non-ESCO activities. Grants should be specifically targeted towards interventions which are financially unattractive, but where there is a high energy efficiency potential. Furthermore, regulation around ESCO activities that are eligible for grants may be designed to reward systems approaches with longer payback times, as these refrain from cherry-picking and exploit the full energy efficiency potential. In such a grant model, the heat pump would not attract any grant financing, but the rest of the system would.

It is a fact, though, that grant programmes are particularly expensive for governments and hence a reason in itself for their temporary nature. They rarely do more than scratch the surface of the real energy efficiency potentials. There is a paradox here because energy efficiency investments provide some of the best returns on investment, so why do they need grant financing?

In principle, the same budgets might be channelled towards the ESCO business model, alleviating some of the financing challenges that the ESCO industry faces, while creating a more sustainable financial basis for the implementation of energy efficiency projects. If government financing for energy efficiency is finite, this may be the real barrier constituted by energy efficiency programmes in terms of bettering the ESCO business environment. The available government budget is simply allocated to an inefficient and expensive implementation model, which hinders the consideration of a more complex, but also more efficient implementation modality.

In addition to providing ESCOs with equal access to the support provided by established energy efficiency programmes, energy efficiency revolving funds (EERF) established by national, state, or local governments, in cooperation with international financial institutions (IFIs), can provide long-term, favourable financing for ESCO projects. Examples include the Bulgarian Energy Efficiency and Renewable Sources Fund, the Armenian R2E2 Fund, and Salix Finance in the UK. The funds provide loans to public agencies to cover the initial investment costs of energy efficiency projects, while the resulting energy savings are used to repay the loans. Alternatively, energy efficiency credit lines established by governments, multilateral or bilateral financial institu-

The Malaysia Association of Energy Service Companies (MAESCO) reports on positive developments on access to public funding

In 2017 the Malaysian government launched a 44 million USD EPC fund to support SME ESCOs in implementing energy efficiency projects in existing end-use energy-consuming facilities. The EPC Fund is provided by Malaysian Debt Ventures (MDV), a corporation under the Minister of Finance Inc. The fund is supported by a credit guarantee fund of about 3.4 million USD provided by the Ministry of Energy and Natural Resources, along with a 4.4 million USD contribution from the JKR Building Sector Energy Efficiency Project, funded by the Global Environment Facility and supported by the United Nations Development Programme. The Ministry further provides an interest rate subsidy of 1% per year. The fund provides credit financing to cover CAPEX/working capital up to 85% of project costs to SME ESCOs. MDV provides principal financing to the ESCOs while the government subsidises non-principal financing costs such as guarantee costs to ensure borrowers receive easier loans at a more competitive and reasonable cost. The EPC Fund also provides a credit guarantee to enhance the credit profile of financing applicants, facilitating access to finance from other financial institutions. Applicants must be an ESCO registered with the Energy Commission of Malaysia.

tions or international donor agencies can provide debt-financing for energy efficiency projects, such as EBRD's sustainable Energy Financing Facilities in many countries.

The Global ESCO Network recommends that government funding, whenever available, should be targeted at strengthening the commercial exploitation of profitable energy efficiency investments through ESCOs, instead of sending stop-go signals to the market through temporary schemes, or cherry-picking specific and already profitable solutions through subsidies and grants.

6.2 Facilities alleviating payment and performance risk

The financing of energy efficiency investments is not equally important in all markets. In some markets, most contracting is based on guaranteed savings without the Energy Service Company financing the energy efficiency investment. In most markets, however, a dedicated financing model for ESCOs is likely to enhance investment in energy efficiency significantly.

Traditionally, the financing of energy efficiency investments has been challenging because the installations commonly consist of several components integrated into an existing building or facility. Banks are reluctant to accept such assets as collateral and rather require the borrower to put up alternative collateral. If the installer is also the owner of the facility in which the energy efficiency installation is made, this is not an issue. For ESCOs, on the other hand, this is a challenge because their core business is energy efficiency, and their only collateral is built into clients' buildings or installations.

The possible alternative is the securitization of future cash flows, which is a known model in non-recourse financing. Non-recourse financing, however, is mainly used for larger-scale infrastructural projects and not for smaller scale investments such as energy efficiency. This clear gap in the financing market can be filled by a government-supported guarantee programme targeted at securitizing the cash flows from energy efficiency investments.

Among the analysed countries, only China and the Philippines have a fit-for-purpose instrument in place. Ten countries have instruments that are considered not fit for ESCO purposes, while twelve do not have instruments at all. As an example, in Italy, financial risks in the case of Energy Performance Contracts are still borne by the ESCO, despite external guarantees. Generally, there are more instruments available in Asia than in Europe, but they need revision to serve the ESCO industry.

6.2.1 Establishing guarantee schemes

There are different approaches to establishing risk cover for ESCOs. Currently, few instruments are specifically dedicated to ESCO and their business model, and they use traditional instruments such as forfeiting. Such instruments can be structured with a specific focus on ESCOs, for example, through a fund for the securitization and purchase of ESCO cash flows. An example of forfeiting is the Bulgarian ESCO Fund established by the company Enemona, based on loan financing from EBRD, to buy receivables under energy-saving contracts signed by Enemona.

In most jurisdictions, a guarantee scheme targeting the payment risk, like forfeiting, is relatively secure as customers usually pay their energy bills, without which they face the ultimate possibility of a halt of supply. For a government putting such a model in place, the potential losses could be compared to the certainty of the costs of a common grant program for energy efficiency investments.

Guarantee schemes may be designed in different ways. They may be targeted at the individual transactions and contracts entered into between an ESCO and its client, or they may be directed towards the ESCOs themselves as a guarantee of a general loan that an ESCO uses to invest in equipment for installation at the clients' premises. Either way, the contracts will effectively constitute the collateral.

The provision of credit or risk guarantees to financing institutions is a mechanism that addresses the financing institutions' common 'high-risk' perception of ESCO projects. Such risk-sharing programs are designed to leverage commercial financing for energy efficiency projects, including performance-contracting projects by ESCOs. Examples include the World Bank's Partial Risk Sharing Facility in India and the IFC Commercializing Energy Efficiency Finance facility in central and eastern Europe.

A different approach is taken in the Philippines, where Climargy was established in June 2020 to be one of the world's pioneer private Super-ESCOs investing in ESCO project assets outside the balance sheets of the both the ESCO and the customer. In this way, Climargy also adopts the payment risk.

6.3 ESCO supportive accounting and taxation rules

In some markets, where ESCOs also provide the financing of assets, a particular barrier for successful market devel-

opment is that government-procurement regulations disallow procurement of these services because such off-balance sheet performance contracts are difficult to classify from the accounting and asset-management standpoints. ESCO performance contracts cannot be a "pure goods" procurement because the services associated with the guaranteed energy savings are not properly recognized and compensated for. Nor will ESCO contracts be classified as "pure services" procurements because the government agency anticipates a transfer of assets at the natural expiration of the contracts.

From a taxation perspective, the interaction between an ESCO and its client has implications for both sides of the contract. Often, the specific wording of the contract determines particularly how the assets are treated. A central issue in that regard is whether the assets are on- or off-balance sheet for the client – and vice-versa for the ESCO.

Also in this context, Asia seems to fare relatively better than Europe in the sense that all the Asian countries analysed, with the exception of the Republic of Korea, have taxation rules in place, and mostly they are fit-for-purpose. In Europe, less than half the respondents indicate that taxation rules are clear and in the Americas neither of the three analysed countries have clear rules. Africa fares surprisingly well in this comparison.

In Switzerland, it is unclear whether Energy Performance Contracts count as debt or not. Treatment of ESCO project-financing varies widely from location to location, meaning that in some communities they are treated as debt, in others they are not. In Spain, taxation rules disincentivize the ESCO model in the residential sector because there is a reduction of VAT in the energy supply to 5% but it remains at 21% in the service. The situation is similar in Portugal.

In Europe, Eurostat rules also play a role, as they are adopted in national regulations. In Poland, from the beginning of 2022, EPC contracts *may be* off the balance sheet if they meet specific requirements based on Eurostat rules. In Belgium, partial off-balance solutions are being worked on, but the solutions have not yet been approved by the national public accounts institute.

In addition to Eurostat rules, private off-balance solutions are also reported as becoming more difficult due to tightened IFRS accountancy rules. In the Republic of Korea and in Mexico, ESCO project finance must be on-balance sheet.

On the positive side, a special depreciation scheme exists in Japan. In Czechia, building owners using EPC projects (co-) financed by the national Operational Program Environment can obtain 3 to 8% more subsidies (depending on the type of measures and the amount of guaranteed savings). In Thailand, guaranteed savings contracts do not have tax incentives, but shared savings and 'utility sales' do. And in the Philippines, although a cumbersome process for small energy efficiency projects, income-tax holidays and duty-free imports are now granted by the Bureau of Imports for energy efficiency projects after the Department of Energy issues a project endorsement.

6.3.1 Clarifying accounting and taxation rules

Taxation rules are important for ESCOs, and in most cases, before potentially moving to supportive taxation models, a basic clarification of rules applicable for each of the relevant energy performance contracts is necessary. Such clarifications must be established with the national tax authorities, preventing a case-by-case determination with uncertain outcomes. In this regard, a standard contract is of essence (see section 4.3) designed specifically to clarify such taxation issues and to highlight which clauses are critical for maintaining the clarity of taxation rules.

In most jurisdictions, such clarifications and national guidance will also take into consideration the IFRS16 guidance (International Financial Reporting Standard promulgated by the International Accounting Standards Board (IASB)). IFRS16 'establishes principles for the recognition, measurement, presentation and disclosure of leases, with the objective of ensuring that lessees and lessors provide relevant information that faithfully represents those transactions.' The current evaluation of these rules is that it has become challenging to structure an EPC transaction as off- balance sheet for the client, which is not a positive development for the industry. For this reason alone, the engagement of accounting, fiscal and tax experts with particular knowledge of ESCOs and Energy Performance Contracts to (re-)establish this benefit of energy-performance contracting is key.

It is essential that the clarification of accounting, fiscal and tax-treatment issues is both dynamic, accommodating new market and contract trends, and non-retroactive, i.e. it does not reclassify already existing contracts. Due to the increased complexity caused particularly by IFRS16, the development of standardized contract models as described in Chapter 4.3 may even be more appropriate, specifically incorporating clauses that are critical in optimizing its treatment.

Czechia - Wojtek Witkowski, Unsplash

Conclusion - a drive for ESCO-focused regulatory review

Chapter 7

Although the ESCO business model is simple in theory, it emerges as complicated in practice. Or maybe this is only a question of perception. However, there are many moving parts that need to fit together, and the absence of only a few may mean that the market doesn't take off. Certainly, the idea that it is a private-sector business model and therefore it needs no interference from the public sector is not supported by evidence, in the same way that energy efficiency investments in general do not materialize on their own account. For better or for worse, it is a business model that is intricately linked to public-sector initiative, or its absence.

At the same time, it is a delivery system for energy efficiency that may deliver immense efficiency gains if all the moving parts are in place. That is why it is justifiable to consider it an 'ESCO ecosystem'. The ESCO ecosystem consists of both ESCO-specific and non-ESCO=specific elements that need to be in place, and it would greatly benefit from a constructive dialogue between the public authorities and the ESCO sector. According to the experiences of the ESCO associations surveyed here, the public sector is not likely to consider itself a driver of ESCO market development. This is, however, a role that needs to be brought to the forefront of the dialogues on energy efficiency implementation. In these dialogues, the ESCO sector itself, and ESCO associations, can play a leading role in cases of a lack of public-sector initiative by ensuring the following conditions are put in place:

- A fit-for-purpose definition of ESCO.
  Differentiating ESCOs from regular service-providers, by stating ESCOs acceptance of performance and financial risks, a systemic approach, and payment of services based on measured and verified energy improvements (or other performance criteria).

- An ESCO accreditation system.
  Establishing an independent third-party entity that assesses, accredits and registers ESCOs that meet a predefined set of criteria, thus ensuring transparency to potential clients on the ESCOs' capacities and creating trust that ESCOs can deliver the requested services.

- An ESCO model contract.
  Making available standard templates of ESCO contracts based on a variety of implementation arrangements and types of intervention to alleviate the transaction costs of contract development and negotiation for each project. The contracts should be vetted and approved by the ESCO and public sector, and ideally also by financial institutions or financiers and relevant interest associations, e.g. building owner/tenant associations, confederations of industries etc. In the design of model contracts for public-sector interventions, due to the complexity caused particularly by IFRS16, standardized contract models should specifically incorporate clauses addressing taxation and accounting rules.

- ESCO aggregator schemes.
  Aggregator schemes or SuperESCOs can build a pipeline of projects, achieve economies of scale by clustering multiple smaller interventions, e.g. buildings, and provide financing options to ESCOs for implementation. The aggregator can be both public and private sector led. The ideal situation would be having both types of

aggregators cover both public- and private-sector interventions. It is important that the Super ESCO is mainly responsible for coordination and does not implement projects in competition with private-sector ESCOs.

The public sector plays a central role especially concerning regulations that are not specific to ESCOs. This is where the public sector can introduce regulations to increase the demand for energy efficiency interventions and incorporate the services of ESCOs, ensuring a level playing field in accessing finance between ESCOs and other service-providers or facility-owners.

- Energy audit requirements.
  Energy audits are an effective tool for identifying financially viable energy efficiency measures, and the create a demand for ESCO services. It is important that the threshold for mandatory energy audits is ambitious enough to ensure that it covers a wide enough scope and range of facilities. In addition, introducing the mandatory implementation of energy efficiency plans stemming from the audits can ensure there is a demand for energy services, particularly if financing opportunities that also consider ESCOs to implement the interventions are established.

- Energy charges based on consumption.
  Beyond promoting energy conservation by the users of the facilities, this is a necessity for ESCO interventions. As ESCOs are renumerated based on the energy savings stemming from the interventions, the cost of energy must be correlated as much as possible with actual consumption. Consumption-based charges and metering also facilitate monitoring, which is an integral part of ESCO interventions.

- Clear delineation of mandates avoiding split incentives.
  A clear delineation of mandates between the various public institutions ensures clarity about who has the mandate and obligation to plan and implement public energy efficiency policies and interventions. Such delineation must also consider the avoidance of split incentives, or at least ensure that the benefit of the intervention goes to the entity paying the bills, and ideally ensuring that the savings achieved do not simply lead to budgets being cut.

- Public procurement and contract duration.
  Achieving national energy efficiency ambitions contributing to mid- and long-term climate strategies requires the ability to plan and implement beyond political terms and budget cycles as ESCO projects commonly have timelines beyond ten years. This requires the facilitation of multi-year contracting.

- Access to government finance through energy efficiency programmes.
  One benefit of using EPCs as an implementation model is off-balance sheet financing. Financing programmes, on the other hand, often disadvantage third-party financiers. Energy efficiency programmes and their financial instruments should therefore be made available for third parties on equal terms. Ideally, they should be specifically focused on ESCOs.

- Facilities alleviating payment and performance risk.
  The creation of risk-cover instruments dedicated to ESCOs is an effective tool for unlocking investments in energy efficiency. Risk-cover facilities can be designed through funds for forfeiting, the securitization and purchase of ESCO cash flows. They can also guarantee schemes targeting the clients' payment risk and/or ESCO dedicated credit or risk guarantees to financing institutions.

- ESCO-supportive taxation and accounting rules.
  Clarification of taxation rules can ensure a level playing field between ESCOs and other service-providers, as well as remove uncertainties in situations where regulation hasn't caught up yet with the "novelty" of the ESCO concept. This is especially relevant concerning budget limitations in the public sector, where off-balance sheet financing can be crucial

The 24 markets surveyed in this third edition of *Regulatory Barriers for Energy Service Companies* paint a relatively uniform picture of an ESCO industry that is generally struggling against bureaucratic obstacles posed by regulations that are either targeted at other purposes or are caused by a lack of understanding of the dynamics of the ESCO and energy efficiency markets.

The list of regulations or lack thereof that can get in the way of the ESCO business model is long. Common to all of them is that they are framework conditions that need to be considered by regulators and legislators – and only regulators and legislators in their respective roles as such. They can sometimes be circumvented or navigated by ESCOs, but even so they constitute disadvantages that are costly to the

sector and costly to society and thus ultimately are paid for in higher energy bills and higher emissions than necessary.

The most important point to make in this context is that remedying (most of) the regulatory barriers is (almost) cost-free. There are no losers, and from that perspective, addressing the misconceptions that underpin the regulatory obstacles facing ESCOs should be right up the alleyway of policymakers' agendas, which commonly seek win-win solutions.

From a positive perspective, it is obvious that the public sector is not foreign to the idea of regulating either the energy efficiency sphere, or more specifically the ESCO industry. The only misfortune is that if the ESCO industry is not consulted, the regulator is at great risk of getting it wrong. This can be excused, given the number of moving parts that need to work together to release the force of the ESCO industry in energy efficiency investment. This, however, should only be an encouragement to get it right. It is therefore strongly recommended that the relevant public-sector entities invite the ESCO industry to the table for an ESCO-focused regulatory review. Such a dialogue could be held with inspiration from this analysis.

The barrier of access to finance for the investments needed to realize the potentially long pipelines of EPC projects has been mentioned on several occasions, both in relation to regulation and as a general barrier. There is ample experience of innovative financing mechanisms that overcome the financing barriers. The Global ESCO Network recommends that governments and financing institutions come together to explore the feasibility and benefits of the various financing mechanisms that can facilitate the availability of affordable and sustainable financing, including the government policies or initiatives that can underpin it, and implement the most suitable mechanisms in their countries to help the scaling up of ESCO activities.

This analysis therefore ends with an invitation to any public-sector entity with responsibility for developing and issuing regulations related to the improvement of national or local energy efficiency to reach out to the Global ESCO Network, or any national ESCO association, to start – or continue – the dialogue on optimizing the regulatory frameworks for engaging ESCOs in a tangible acceleration of energy efficiency actions.

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