CEBC Webinar on "The Impact of COVID-19 on the Energy Efficiency Market"

12 May 2020, 1:00 pm GST

CEBC organized this webinar, in partnership with the International Energy Agency (IEA) and Enterprise Ireland, to talk about the impact of COVID-19 on the energy efficiency market from global, regional and location perspectives.

Webinar speakers include:

- Dr. Brian Motherway, Head of Energy Efficiency at the International Energy Agency (IEA)
- Graeme Sims, Executive Director of Dubai Regulatory & Supervisory Bureau (Dubai RSB)
- Firas Obeido, Chief Technology Officer at Smart Automation Energy (Smart AE) and
- Moderated by Roisin White-Barret, International Market Advisor at Enterprise Ireland MENA

The key takeaways from the webinar discussions are summarized below.

<u>From a global perspective</u>

The COVID-19 pandemic represents the biggest shock to the global energy system in more than seven decades. The shock to energy demand in 2020 is set to be the largest in 70 years. According to IEA estimate, global energy demand declined by 6%, a fall that is seven times greater than the 2009 financial crisis and developed economies are expected to see the biggest decline.

The energy sector is also severely affected by this crisis, which has slowed transport, trade and economic activity across the globe. IEA latest analysis of daily data through mid-April, published in their Global Energy Review 2020 shows that countries in full lockdown are experiencing an average 25% decline in energy demand per week and countries in partial lockdown an average 18% decline. The impact of the crisis on energy demand is heavily dependent on the duration and stringency of measures to curb the spread of the virus. China continues to be the largest share of the global ESCO market (57%). The rate of ESCO market growth has declined in recent years, from 10% in 2016 to 7% in 2018.

Coal is set for the largest decline since World War II, alongside sharp reductions for gas and oil. Renewables are set to be the only energy source that will grow in 2020.

Governments need to play a lead role; they should be deploying financial supports to help economic recovery. There are many sectors within energy efficiency that offer governments the opportunity to invest capital in a way that creates employment and economic stimulus quickly, but also promotes long term benefits in the form of reduced utility bills and lower carbon emissions.

We should bear in mind that there are roles for both public and private capital in the immediate future. Regarding the role of private capital in a post-pandemic world, efficiency as a financial investment is much more understood, it's more mature and there will be many types of capital that will be interested in what energy efficiency projects have to offer.

One main factor emerging from this pandemic is that there will be a relatively greater focus on wellbeing and measures which are about enhancing physical health, improving wellness and about

making us more resilient to future outbreaks. These are measures, the majority of which can be achieved through the implementation of sound energy efficiency management within buildings that not only deliver lower energy use but also improve the quality of buildings. There is an obvious and clear link between energy efficiency and good health and wellbeing.

There is a general consensus from the panel speakers that, going forward, people will be less tolerant of the kinds of pollution that we have seen decrease greatly over the course of the last few weeks (most significantly air and water pollution). At government level, we may reassess what constitutes progress, other than simply GDP, governments need to take into account health and wellbeing measures as a critical factor in quality of life.

From a local perspective

Initial feedback from ESCO's in the Middle East indicates that many companies foresee, or at least are optimistic of a fairly rapid recovery.

As a direct effect of the pandemic and social distancing measures, we are seeing a significant reduction in the consumption of energy in a general sense which is having a large effect on the Demand Side Management (DSM). COVID-19 has a huge operational and commercial impact on the UAE ESCO business (up to 90%). 65% of the respondents anticipate a reduction of expected revenue of 20% and more. There will be increased opportunities for companies who are offering smart sensor and smart monitoring solutions to reduce the risk of infection transmission and in turn reduce routine maintenance.

From a technical perspective

There are three possible modes of virus transmission: Airborne, droplets and contact. Among all three modes, airborne transmission can be eliminated through the ventilation. Fresh air/ventilation in buildings – there will be a knee-jerk reaction that will take place out of fear where people will try to put buildings on full fresh air, the challenge with this is not knowing whether the quality of full fresh air is actually better than that within the building. One solution to this is by installing Particulate Matter (PM) sensors to understand what effect fresh air is having on the building in real time and depending on occupancy, determine what percentage of fresh air is actually required it may be that 50% or even less is perfectly sufficient.

Instead of increasing the ventilation and fresh air to the maximum to remove the airborne. unLike Demand Controlled Ventilation (DCV) that is based on CO2, DCV can be implemented based on PM by adding PM sensors in the zones.

Adaptive Energy Modeling/ Advanced Building analytics through intelligent, and adaptive/predictive control and through machine learning and powerful data driven models, buildings will be future ready to dynamically respond to similar future incidents.

The COVID-19 pandemic has drastically increased the need to resolve sick building syndrome (SBS), so building retrofits for the purpose of energy efficiency helps resolve SBS, increases comfort conditions as well as heathenness, Indoor Air Quality (IAQ) and well-being.

Questions and Answers

Questions to Dr. Brian Motherway, Head of Energy Efficiency at IEA

Answers to questions addressed to Dr. Brian can be found on the IEA website under COVID-19 Analysis Hub: https://www.iea.org/topics/covid-19

Questions to Graeme Sims, Executive Director of Dubai RSB

1. With cheap energy prices, and business under stress, is it not easier for organizations to postpone energy efficiency decisions to a later date?
   Answer: *This is a risk. Though energy prices may not follow the reduction in oil and gas prices in regulated markets, such as the UAE.*

2. Does the lockdown because of the COVID-19 impact the ESCO work and already impact their financial performance?
   Answer: *Our survey suggests they are already impacted and expect a significant overall reduction in revenue in 2020.*

3. Because of the COVID-19 crisis and the shutdown of many oil and gas production programs, don't you think the energy efficiency should be promoted as an alternative to cover the market intermittency?
   Answer: *Not sure I accept the premise of the question. It's not clear fossil fuel production has yet shut down. Though the pandemic may hasten trends we could already observe.*

4. International High-Voltage Network for all countries, can guide to super-high energy efficiency, what you think about?
   Answer: *Large scale intermittent renewables do seem to be leading to accelerated interest in interconnectors.*

5. Despite the drop in oil prices, the actual drop in fuels such as gasoline and diesel are not yet sharp. So, could this still make financial sense in energy efficiency projects?
   Answer: *I agree. It depends on the market structure the extent to which commodity prices feed into end-user prices for energy.*

6. What if governments as part of the businesses stimulus packages direct that towards energy saving projects?
   Answer: *Agree. I think there will be a push to direct stimulus in a way that addresses our other major global challenge – climate change. Particularly given that air pollution seems to be implicated in COVID-19's lethality.*

7. Before COVID-19, we were always looking forward to stopping emissions and to reduce the pollution from factories and transportation and so on it was like a wish for us, so now it is happening! So how we can take advantage of it? and how we can keep the positive impacts even after COVID-19?
   Answer: *We've all seen the tangible benefits of lower pollution – enhancing its desirability. I expect traffic and travel of all types will be slow to return to the pre-pandemic level, buying time for more enduring solutions compatible with people's need and desire to travel for business and leisure.*

8. How renewable energy can enter into the energy efficiency? If it can, which sources do have the best potential? Solar, wind, hydro?
   Answer: *All are promising, depending on the location, albeit new hydro faces substantial environmental challenges in many locations.*

9. In light of the need of social distancing, how this will affect the energy saving indicators like Energy unit cost / guest?
   Answer: *In the short term, these measures seem certain to rise. Challenge is to adapt buildings and systems to recognize this challenge. Sensors, for instance, have a role to play.*

10. We see that some of the companies in the facility management industry tends not to take IAQ importance seriously even before COVID-19, especially that turning off the ventilation system would save energy. How local authorities should enforce IAQ measures and the importance of well-being of building occupants into building Codes and standards in a way that don't contradict with the energy efficiency plans for projects?
    Answer: *I agree IAQ needs to have greater prominence going forward. As for the RSB we are looking at accrediting FM Co's for their energy management expertise. Management of IAQ would be integral to that.*

11. Once energy demand increases, will O&G prices recover to levels before the pandemic? With companies struggling financially, is it an opportunity for energy efficiency projects?
    Answer: *I believe so. Prices seem likely to rebound, though whether to the pre-pandemic level is unclear.*

12. As we started our Company as ESCO since 2004, we found that most of the building are suffering from Discomfort, means if we rectify the A/C System, Consumption will increase, so How to balance Comfort while working to reduce energy wastage?
    Answer: *This requires clear standards over IAQ, and tools such as building rating take account of it.*

13. How much the value of District Cooling to contribute in Energy Management? And how much the chance to achieve Dubai's goals to connect 40% of its building to DC Plant?
    Answer: *In the right place, with well managed operators and, at least for the time being, use of recycled water, rather than desalinated, DC has a role to play. 40% penetration would represent a doubling from today, so certainly a challenge.*

14. How DC Plant Justify their Penalty on CHW Low Delta-T, when their Primary side of PHX is perfect 9'C? on the other hand they are not helping to achieve comfort in the connected buildings?
    Answer: *Low delta T charges should clearly only be applied when the DC operator's supply is within the contractual specification.*

15. Among A/C System Types: DC, Chillers Plant and/or VRF, which can be consider the most efficient? And more reliable to recommend to clients?
    Answer: *Each has a role to play in different circumstances.*

16. Though we are seeing reduction in GHG emissions and energy consumption, but there will be contraction in GDP also, so the net impact on efficiency front will be negative. Is it better to view the indicators (energy, GHG) in isolation? and not linked with economic activity
    Answer: *You're right that short term energy intensity of GDP will rise. Though I believe most measures already look at overall GHG emissions.*

17. Will planned projects waiting for approval this year from regulatory bodies be able to go forward or not in UAE?
    Answer: I see no reason why regulatory approvals will hold things up. Financing might be more of a challenge.

18. Any disruption to the renewable market is likely to be a near term delay or a knee-jerk reaction rather than a fundamental downturn over the long term?
    Answer: I think so. Indeed, we can see coal and gas power generation being most squeezed.

19. New solutions/new technologies in clean energy and energy efficiency will have demand in the coming days after post covid ? or existing technologies need to be re-priced by suppliers
    Answer: *I foresee an emphasis on energy efficiency coupled with human health aspects.*

20. Do you expect more intensives programs and regulations to encourage the EE programs from the government as impact of COVID-19?
    Answer: *Yes, though just as after the GFC there will be real challenges with the public finances in all countries.*

Questions to Firas Obeido, Chief Technology Officer of Smart Automation Energy

1. With cheap energy prices, and business under stress, is it not easier for organizations to postpone energy efficiency decisions to a later date?
   Answer: *Yes. It is easier, but it is not the wise decision to take. We should look at long term effects of decisions we take, Energy Efficiency has economic, social & environmental positive impacts.*

2. Because of the COVID-19 crisis and the shutdown of many oil and gas production programs , don't you think the energy efficiency should be promoted as an alternative to cover the market intermittency?
   Answer: *Yes. That is a very good and valid option. Governments should take prompt action and enjoy the benefits as well on a national level.*

3. International High-Voltage Network for all countries can guide to super-high energy efficiency, what you think about?
   Answer: *Because of the COVID-19 crisis and the shutdown of many oil and gas production programs, don't you think the energy efficiency should be promoted as an alternative to cover the market intermittency?*

4. Despite the drop in oil prices, the actual drop in fuels such as gasoline and diesel are not yet sharp. So could this still make financial sense in energy efficiency projects?
   Answer: *This is a big challenge for energy efficiency projects feasibility.*

5. What about HEPA filters? Are they helpful against covid-19 airborne transmission?
   Answer: *Yes. they are very helpful. In theory all COVID-19 virions could be filtered and captured, assuming they can be brought into contact with a HEPA filter. The major challenge is the high cost of such filters which is only justifiable to have them in isolation rooms and cleanrooms applications.*

6. Before COVID-19, we were always looking forward to stop emissions and to reduce the pollution from factories and transportation and so on it was like a wish for us ,so now it is happening! so how we can take advantage of it ? and how we can keep the positive impacts even after Covid-19?
   Answer: *Correct. This is an important factor for the need of more Energy Efficiency projects. Outside Air Quality is being negatively affected by CO2 emissions as well as other VOC's as pollution from factories, transportation and others. This makes fresh air quality worse than indoor and can't be used to increase the indoor air quality.*

7. DCV and Heat recovery wheel ON should not suggest during COVID-19 Situation!! Maximum fresh Air will direct more Energy Consumption!!

Answer: *DCV is recommended. But heat recovery wheel operation is NOT recommended as cross contamination will occur and possible spread of virus collected from the zones and transferred by air movement in the return/extract duct is high.*

8. What is the most critical part in HVAC systems to retrofit in order to prevent COVID-19 infections?
   Answer: *Actually, there is no one single critical part in HVAC to retrofit. But the best and most effective action is maximizing ventilation and air changes to remove all small airborne from the zones to the outside.*
9. How renewable energy can enter into the energy efficiency? If it can, which sources do have the best potential? Solar, wind, hydro?
   Answer: *When we talk about building retrofits, solar PV is the best option.*

10. What are the strong points to convince and justify the owners to adapt the energy saving projects in the light of the fact that energy price is going down ?
    Answer: *Maybe with post COVID-19, is the strong relation and positive impact of improving indoor air quality and solving Sick Building Syndrome as a byproduct to energy efficiency. If there are no incentives and prices of electricity drops, then it will not be easy to convince owners in going ahead with Energy efficiency projects.*

11. Do you think Virtual Energy Audit and solutions will be a better option than conventional audit post COVID-19 for clients?
    Answer: *From the point of view of virus spread, it is a good option. Main challenges of virtual energy audits are that accuracy of the results, since no real measurements are in place and we heavily depend on creating an energy model. Compared to physically taking measurements and assessing equipment performance.*

12. We see that some of the companies in the facility management industry tends not to take IAQ importance seriously even before COVID-19, especially that turning off the ventilation system would save energy. How local Authorities should enforce IAQ measures and the importance of well-being of building occupants into building Codes and standards in a way that don't contradict with the energy efficiency plans for projects?
    Answer: *To my knowledge that Dubai Municipality has created an incentive for buildings that comply to its IAQ limits, but there should be continuous inspections or may be ask building owners for a prof of an IAQ test every one year and submit the results as a pre-requisite for Tracheas. or else pay penalties if report is not submitted.*

13. Any suggestions for specific types of filters to be introduced to ventilation systems, without compromising the overall power consumption for the system?
    Answer: *No options with increasing the power consumption. Only effective filters are HEPA that are costly for residential/commercial buildings and will create a huge amount of pressure drop.*

14. Where do you suggest the PM sensors should be located and how many sensors to be installed?
    Answer: *This is still something new. I recommend at least one sensor in the return duct and another in each open zone/closed zone.*

15. How are you adjusting for occupancy in your M&V?
    Answer*: For the case study mentioned, the energy model adjusts for that. As predictions before are known.*

16. What is the ESCO action to prevent the Spread of COVID-19 by HVAC system?
    Answer: *Focus on DCV using PM sensors, insuring positive building pressure & air balancing*.

17. As we started our Company as ESCO since 2004, we found that most of the building are suffering from Discomfort, means if we rectify the A/C System, Consumption will increase, so How to balance comfort while working to reduce energy wastage?
    Answer: *This has always been a challenge and it is even now a bigger challenge. You have to mention in your audit report any discomfort and consider fixing such issues that might increase consumption as static factors. At the end it is the client decision to go ahead with the suggestions or not.*

18. Can you explain how you maintain the Delta-T while ensure pumping to farthest AHU?
    Answer: *We monitor complaints and based on that we keep resetting the pump flow until no complaints are present. This is dynamically changed based on outside temperature.*

19. There are several other solutions for energy savings, while IAQ is maintained at high level
    Answer: *Since COVID-19 info is still being updated on a continuous basis, I believe that other solutions/technologies will evolve quickly that would compensate for increase of energy consumption due to improved IAQ.*

For more information about the Clean Energy Business Council and how to join, please email us at: ahmed@cebcmena.com