5G'S ROLE IN REDUCING CARBON EMISSIONS – OVER 1.6B TONNES BY 2030

Webinar Q&A

November 2020

Questions and Answers from the webinar

Responses below are from our panellists on the webinar:

Charles Bradshaw-Smith, Co-CEO & Operations – SmartKlub

Phil Steele, Future Technologies Evangelist – Octopus Energy

Ian Mash, Director – Huawei, Carrier Business Group

Matt Bamforth, Consultant – STL Partners

Q+A

- If any of you had a magic wand, what would be the first immediate action (5G related or not) would you like consumers to do in order to decarbonise our society? Same question, but regarding an action from the government?

    - Charles**:** Consumers: move to heat pumps; Govt: create a true carbon price that reflected its real cost

    - Phil**:** Replace all gas heating with ASHP. Replace all vehicles with full EV. Stop all promotion of PHEVs and their misleading "self-charging" nonsense. Upgrade all homes to Passive House standards. A very powerful magic wand…

    - Ian**:** 1) I think from a consumer aspect, the real issue is for every person to take some personal responsibility for decarbonisation. That means not travelling when its not necessary, turning lights off and heating down a notch, not sitting in car parks with the engine running because you're too hot or too cold. I don't think technology alone can fix the issue. 2) From a govt perspective and from a 5G perspective, I think the Govt needs to consider ways to facilitate the roll out of 5G including freeing up spectrum without trying to pursue massive prices, making sure that local govt helps to allow use of street furniture easily, and help operators roll out competitive services targeted at value to the industries using those services. The government needs to look at the reports from the industry and from other industries which point to the massive potential upsides from a swift roll out of 5G from a GDP perspective.

    - Matt: I think consumers need to become more active in reducing carbon emissions by switching to green energy suppliers. It makes financial sense as well as being good for the environment. Regarding the government, they need to begin to consider energy policy hand-in-hand with technology. This means ensuring 5G coverage targets include renewable energy generators rather than purely pursuing population-driven targets. They must continue to subsidise clean energy while also investing in research into new technologies such as improved batteries.

- Have you assessed the energy consumption required for powering the 5G network?

  - Matt**:** 5G networks are more efficient than 4G networks on a like for like basis (I.e. to support the same amount of data traffic). The question is how much will data volumes increase as a result of 5G's capabilities over 4G? In previous STL Partners work we examined how 5G can help mitigate the energy costs associated with increased data traffic ('Curtailing carbon emissions – Can 5G help?').

  - Ian**:** If there is growth in consumer related data services and/or additional requirements for Wireless technologies to transform industries, then you need to deploy the most efficient technology to service this demand – and 5G is significantly more efficient than 2/3/4G

- How does 5G reduce the high fixed costs in energy sector?

  - Charles**:** If there is a device and tariff that means 5G mobility enables an IoT at affordable costs, then this would enable smart power usage across diverse society. Diversity is valuable in any system optimisation, so desperately needed.

  - Ian**:** 5G is a communications technology and of itself can't fix the fixed cost issue. However, as the report shows, by offering the chances of efficiencies in the industry it can certainly help a lot. In addition, by the industry vertical working with operators I believe that new business models and tariffs could be developed which offer the opportunity to put costs into the variable bucket. Having said that my experience is that when costs are fixed, the demand is for variable and when that is offered the demand then goes back to fixed. The real answer is for a range of tariffs and models which offer the right solution for the right need.

- How much additional energy is required by the 5g network roll out? And how much of that extra energy might be saved if we simply focussed on properly making 4g ubiquitous?

  - Charles**:** Not qualified to answer this but there must be a net gain in energy efficiency.

  - Ian**:** 5G, as STL highlighted in last year's reports, is in fact more energy efficient like for like than 4G. The energy load – the average amount of energy required to transmit data (e.g. kWh/GB, GWh/EB, Joule/bit) - of a 5G cell site is 8-15% that of a like-for-like 4G cell site. With mmWave, this has the potential to fall to 1-2% of a 4G macro site. Additionally, Huawei has technology that reduces the energy needs of the network when it is not required. Our vision is Zero traffic, Zero Watts. What is clear is that the continued massive demand for bandwidth in all walks of life will require the new networks to be much denser (eg no-one wants to lose connectivity in the autonomous car), which in itself will lead to higher power consumption, so 5G is necessary to keep power requirements from increasing at the same rate.

- Do you believe these use cases require end-to-end 5G comms (i.e. direct to utility)? Smart meters are unlikely to be upgraded to 5G anytime soon - do you envisage a multi-network approach (maybe where smart meters connect to a data aggregation system over 3g/ 4g/ LPWA and then this is fed to the utility via 5g?

- Charles**:** Yes certainly. Smart meters do not need the speed and reliability of energy services. Meters do not need to work in live time and already have asynchronous comms and catch up built in should comms be lost for a period.

- Phil**:** Many paths are being used and will keep being used. It will be several years before 5G has much share. No opinion on 5G backhaul if that's the idea of aggregation.

- Ian**:** We know, broadly, that close monitoring of anything increases its efficiency, by closely matching the supply to the demand. We believe that this fact will require all monitoring to be using much smaller time intervals and as a result the amount of network traffic will increase. 5G's ability to manage massive amounts of sensors per square kilometre, and it's very quick call set up time will be required to match the needs of the industry overall. I think we will quickly see smart meters needing 5G. SMART Meters are just the beginning - Internet of Things and connected society to support intelligent management of the energy consumed at home and in work will require the performance characteristics that 5G is able to offer.

- Matt: For the moment is it unrealistic to have 5G end-to-end. However, 5G gateway can be used to aggregate devices and enhance use cases by allowing them to create genuine value above iterations connected via 4G or Wi-Fi. You can connect more devices and have real time data and it is with 5G when we will begin to see the use cases make real impact.

Get in touch with our panellists to learn more
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