GENERATOR USAGE DURING THE COVID-19 LOCKDOWN IN LAGOS & ABUJA

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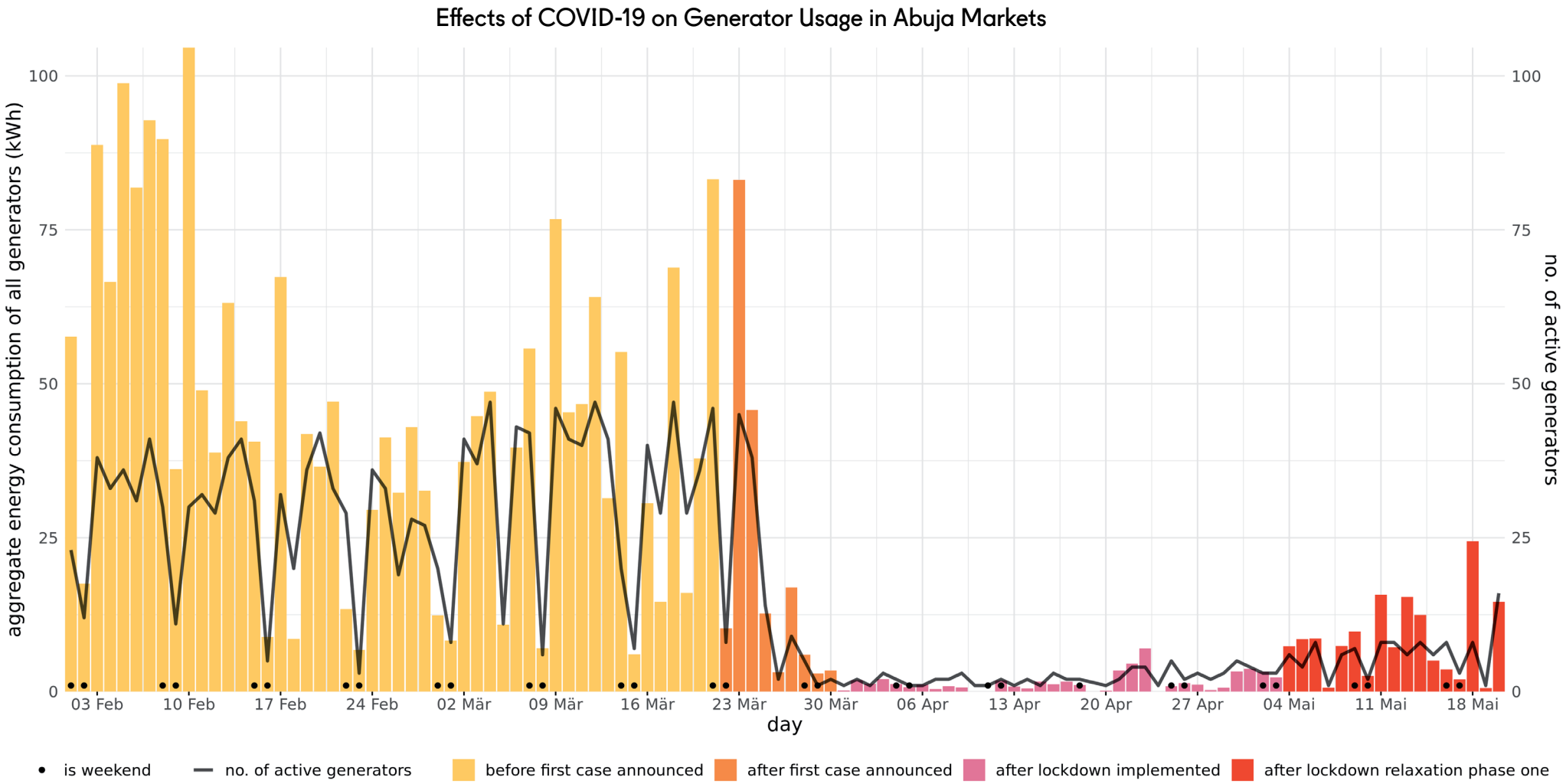
Following the rising fears of the spread of the novel coronavirus in Nigeria, on March 30th, the Nigerian government imposed a lockdown in the country's largest city, Lagos, neighboring Ogun state and the capital, Abuja. Most businesses (except supermarkets and fruit & vegetable markets for limited hours) were to close and people required to stay indoors (except for essential journeys). On May 4th, Nigeria started easing the coronavirus lockdown.

We wanted to find out how the lockdown affected generator usage and people's energy consumption patterns - and prepared and analyzed the data we gathered from our smart meters installed on generators in Abuja and in Lagos.

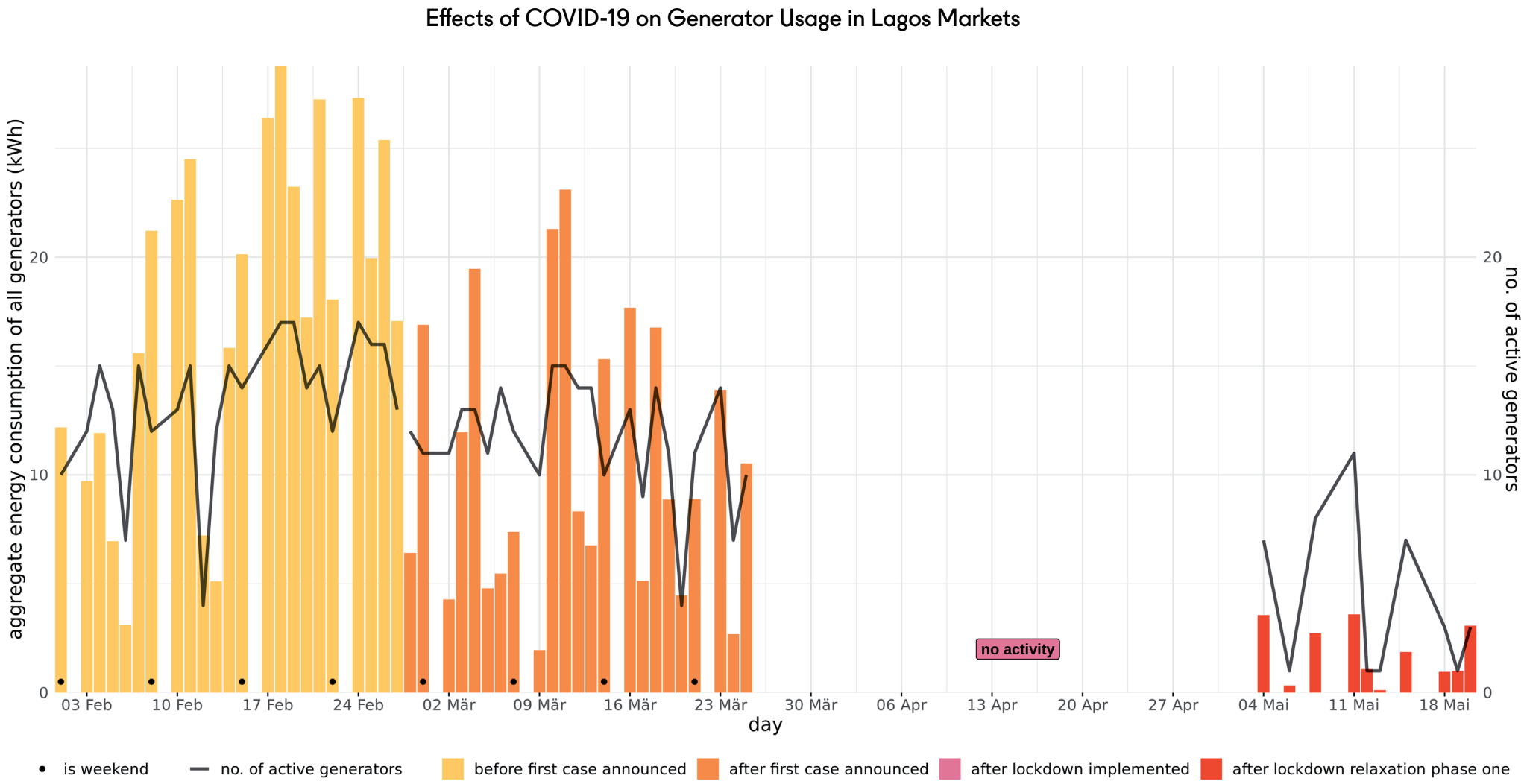
We invite other individuals and entities in the sector to discuss this interesting topic and these particular results with us. We particularly encourage sharing any additional observations and measurements of energy demand during COVID times from other parts of the world.

Over the course of just a short period surrounding lockdown, we see the number of daily active generators in Abuja reduce by as much as 95% (from 43 generators about one week before lockdown down to 2 generators at the start of lockdown), and down to 0 in Lagos. The collective daily energy consumed also drops drastically: in Abuja, what was 80 kWh one day is down to only 2 kWh after lockdown enforcement about a week later.

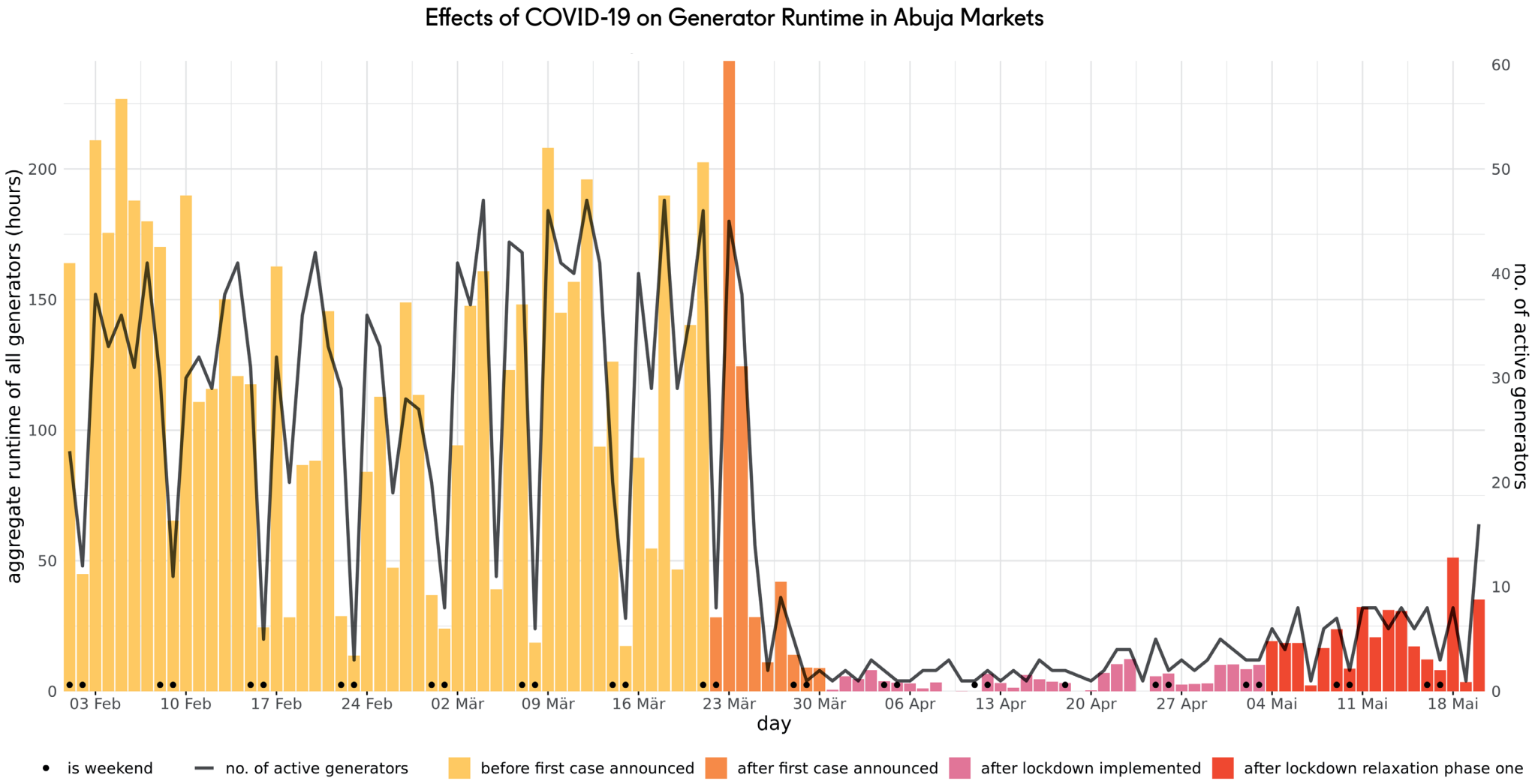
In Lagos, the number again goes down to 0 for the duration of lockdown. Once phase one of the lockdown relaxation is announced, we see a very gradual return to previous activity, which is still a long way off from normal levels. Also take note of the regular pattern of reduced weekend behaviour. In the case of Lagos, we see a complete absence of Sunday activity, and after lockdown lift, no weekend activity whatsoever.

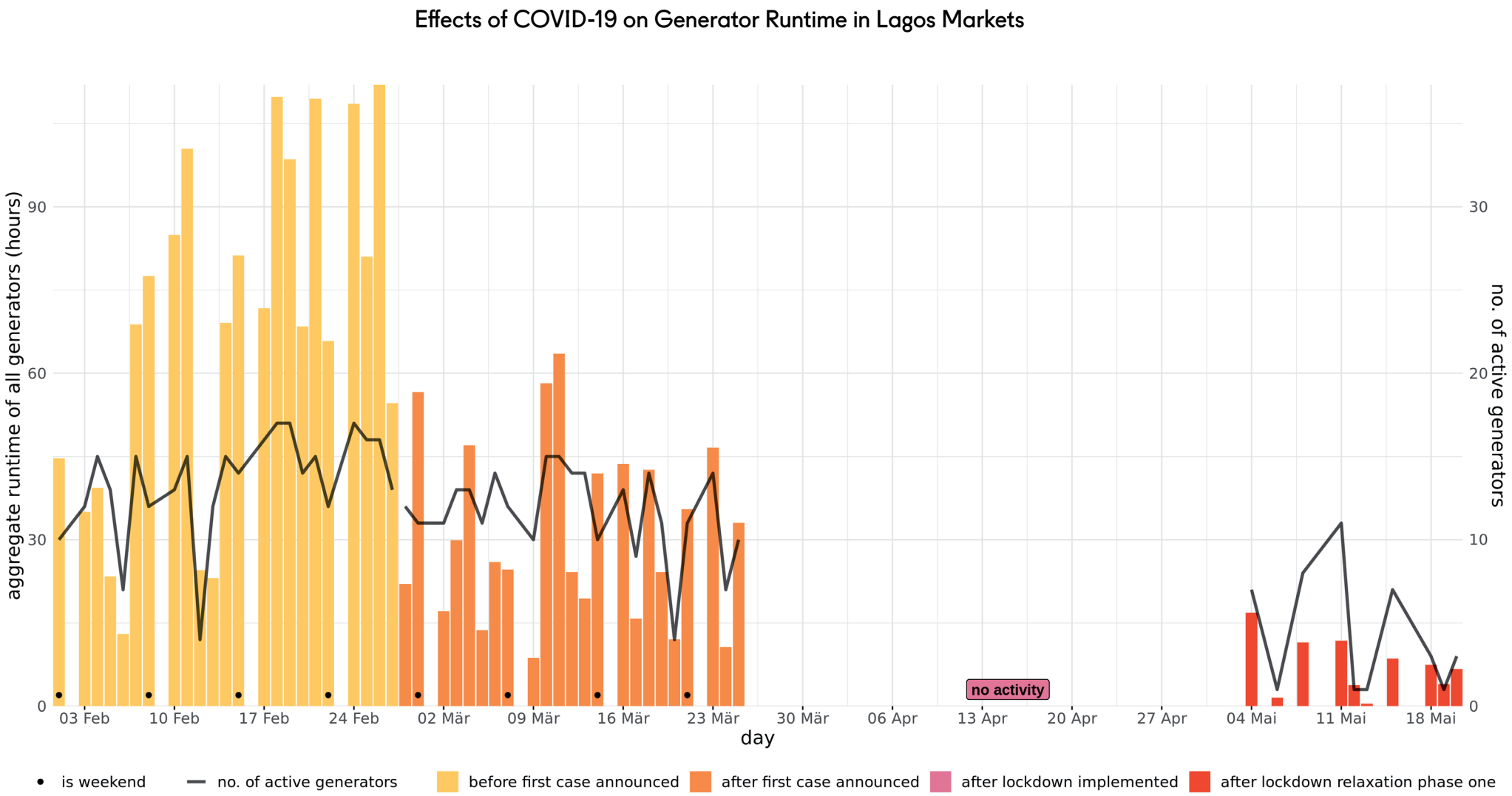


The decrease in generator usage in pre-lockdown Lagos could be due to the very beginning of the rainy season. March in Lagos sees an increase in rainfall as it ramps up towards rainy-season levels, and that means less heat, and in turn less energy needed for air conditioning.

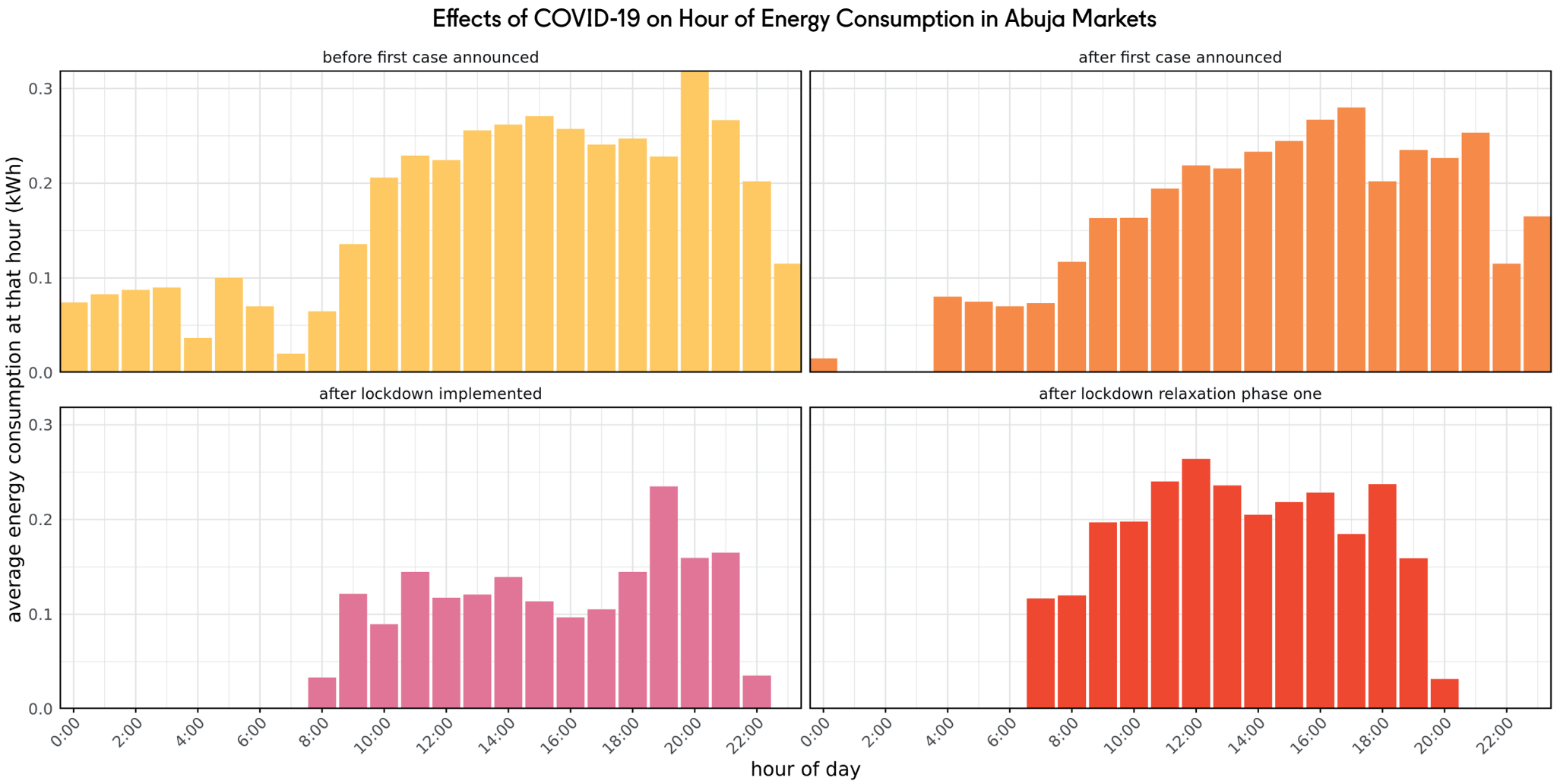


We see the same correlation between lockdown measures and collective generator runtime per day. With the decrease in aggregate energy consumption comes a related decrease in generator runtime.




Effects of COVID-19 on Generator Runtime in Lagos Markets
aggregate runtime of all generators (hours)
no. of active generators
0
30
60
90
0
10
20
30
03 Feb
10 Feb
17 Feb
24 Feb
02 Mär
09 Mär
16 Mär
23 Mär
30 Mär
06 Apr
13 Apr
20 Apr
27 Apr
04 Mai
11 Mai
18 Mai
day
no activity
is weekend
no. of active generators
before first case announced
after first case announced
after lockdown implemented
after lockdown relaxation phase one

Before COVID-19 lockdown in Abuja and Lagos, we see a typical average generator usage pattern, relatively normal in distribution and showing the majority of generator activity occurring roughly around a center of 15:00, with an additional spike around 20:00. After lockdown measures, what's left is a very few meters producing a fraction of the energy, running still around the same timeframe but with a significant narrowing of the distribution, showing a dropoff of early morning and late evening usage. Interestingly, in Abuja, all early-hour activity (0:00-7:00) drops off completely during lockdown.



Effects of COVID-19 on Hour of Energy Consumption in Lagos Markets