

## How Much Energy Will the 2014 World Cup Consume? 2014年ワールドカップのエネルギー消費量

Nick Cunningham

### Introduction by Andrew DeWit

*Nick Cunningham of Oil Price.com has written a timely article summarizing the World Cup's gargantuan energy consumption and carbon footprint. The World Cup soccer competition underway in Brazil is held quadrennially, and is apparently the most watched sporting event of all. This year's games are to culminate in the July 17 finale in Rio de Janeiro. The games appear likely to set both a viewing record as well as a record for energy consumption and carbon emissions. An estimated 900 million watched the opening ceremonies of London's 2012 Olympics. But the World Cup governing body FIFA's research suggests 909.6 million viewers watched at least a minute of the 2010 World Cup, and Cunningham tells us there may be as many as 3 billion viewers for this event in 2014. Moreover, broadcasting's technical innovations are proceeding apace. Ultra-high definition broadcasts (expected to become standard in 2017) are being used for three of this year's matches, taking advantage of the event's eyeball-dense economics (<http://in.reuters.com/article/2014/06/02/uk-soccer-world-fifa-television-idINKBN0ED1F820140602>). The official match ball is the Adidas Brazuca, one of which has its own twitter account and micro-cameras studding its surface ([http://www.youtube.com/watch?v=nnZF\\_HC-D28](http://www.youtube.com/watch?v=nnZF_HC-D28)).*

*Building on FIFA's own estimate of the carbon footprint of its broadcast operations, Cunningham shows us that the World Cup's*

*500,000-plus fans, officials, team-members and others will burn through the equivalent of roughly 7.3 million barrels of oil via their international flights and other energy-intensive activities. That amount of energy would fuel every American motor vehicle for a day. And the over 2.7 million tons of attributable CO2 emissions for several weeks of the World Cup is equal to what the 450,000 residents of Malta took an entire year to produce in 2012 (<http://www.maltatoday.com.mt/lifestyle/environment/27160/malta-has-highest-carbon-emissions-increase-in-2012-20130529#.U52mNhZRnqI>). The Maltese have since cut their emissions by 6.8% (<http://www.timesofmalta.com/articles/view/20140507/local/malta-saw-68-drop-in-carbon-dioxide-emissions-last-year.518047>). What are the prospects that FIFA keeps its eye on the ball, and follows up this unprecedentedly energy- and emissions-intensive World Cup with deep cuts that become a model for all international events? AD*

How Much Energy Will the 2014 World Cup Consume? (<http://oilprice.com/Energy/Energy-General/How-Much-Energy-Will-the-2014-World-Cup-Consume.html>)

Nick Cunningham

Along with 3 billion other viewers (<http://www.4rfv.com/3E430AA5F1XF/brazil-prepares-to-broadcast-fifa-world-cup-and-olympic-games.htm>) around the world, I plan to tune in for the month-long World Cup to see whether the 22-year old Neymar can withstand the colossal pressure

(<http://bleacherreport.com/articles/2087568-can-neymar-brazil-shrug-off-pressure-to-achieve-world-cup-greatness>) that has been put upon his shoulders to deliver a win for team Brazil.

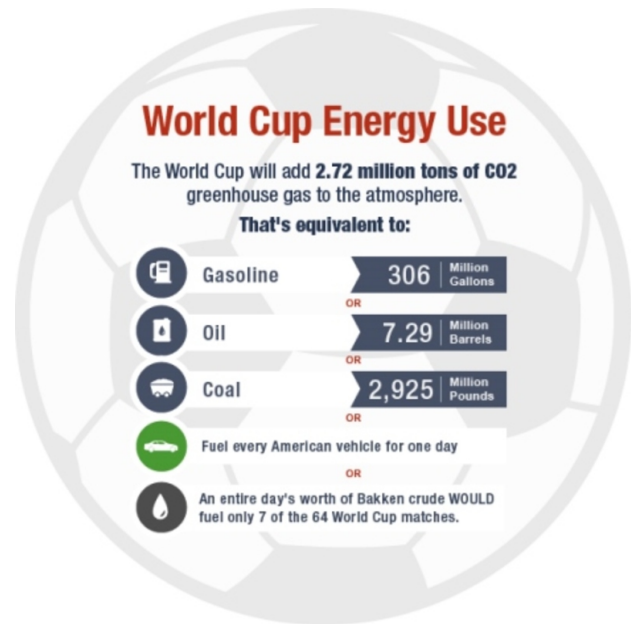
Every time I turn on my television set, I'm using World Cup-related energy. And that's just the start. Flying in teams, trainers, equipment, World Cup personnel and the estimated 500,000-plus fans will use enormous volumes of jet fuel.

Add to that powering the stadiums on game days, moving millions of spectators around host-country Brazil, and transmitting the event to billions of viewers worldwide, and you end up with millions of tons of carbon dioxide added to the atmosphere.

So while the 2014 World Cup (<http://www.fifa.com/worldcup/index.html>) is going to be bigger than ever -- it's shaping up to be the most watched, most lucrative and expensive (<http://www.usatoday.com/story/money/business/2014/05/22/record-world-cup-numbers-game-for-fifa-and-brazil/9458457/>) tournament in soccer history -- it's also going to be one of the biggest energy-consuming, greenhouse gas-spewing World Cups in history.

Think about this as the music blasts through the stadium and the fans cheer and scream and the players race up and down the field chasing the ball: The 2014 World Cup tournament will burn through enough energy before it's over to fuel almost every one of the 260 million cars and trucks in the United States for an entire day, or the equivalent of what 560,000 cars (<http://thinkprogress.org/climate/2013/12/10/3045221/world-cup-carbon-emissions/>) use in a year.

Estimating the total energy required to mount such a massive operation with any precision is a fool's errand, but let's take a look at some numbers to get a sense of scale.



*Image source: Oilprice.com (<http://oilprice.com/>)*

FIFA did its own fascinating study ([http://www.fifa.com/mm/document/fifaworldcup/generic/02/11/19/80/estimateofthecarbonfootprintoftvproductions\\_neutral.pdf](http://www.fifa.com/mm/document/fifaworldcup/generic/02/11/19/80/estimateofthecarbonfootprintoftvproductions_neutral.pdf)) of the carbon footprint that will be created by setting up and running its broadcast television operation. It found that the biggest contributor - 60 percent - is international flights for staff members. The other 40 percent comes from all the trucks needed to transport cables, cameras and furniture, and the energy required to operate all of the electronics.

All told, FIFA's TV operations will contribute 24,670 tons of CO2 to the atmosphere - the same impact of burning 2.8 million gallons of gas (<http://www.epa.gov/cleanenergy/energy-resources/refs.html>), or 13,250 tons of coal.

FIFA also tried to estimate its carbon footprint for staging the tournament's matches, which wraps in the electricity needed for stadiums, fan festivals, banquets, concession stands, training sites, travel for ticket holders, and team hotels. That number came to 2.72 million

tons of CO2 equivalent. That's like using up 306 million gallons of gasoline (<http://www.epa.gov/cleanenergy/energy-resources/refs.html>) or burning 1.46 million tons of coal.

What's the point of the study? FIFA says to figure out where it can do better next time. Just a 10 percent decline in international staff, for example, reduces the carbon footprint by 6 percent.

### TVs and Tea Kettles

None of these numbers include other sources of Cup-related energy use, like building new transportation infrastructure and stadiums.

And speaking of stadiums, while everyone would probably love to attend the final match in Rio de Janeiro's famous Maracana stadium, the vast majority of us will be watching at home. Which means we're contributing to the Cup's carbon footprint, too.

A spike in energy use is likely to occur in places when millions of people turn on their TVs at the same time to watch a match. For example, in the United Kingdom, the record for an energy surge during a TV program occurred during the 1990 World Cup, when England went to a shootout against West Germany in the semi-final. (Incidentally, West Germany prevailed and went on to win the trophy. West Germany's title run was led by Jurgen Klinsmann, who is now coaching the U.S. national team.)

During that match, the UK National Grid experienced a spike of 2,800 megawatts of demand, as people across England tuned in to watch the game's climax. Other significant power surges in the UK occurred during England's 2002 quarter-final match (<http://news.bbc.co.uk/1/hi/magazine/6981356.stm>) against Brazil (2,570 MW surge), and the 2011 royal wedding (<http://www.bbc.co.uk/news/uk-13248642>) of Prince William and Kate Middleton (2,400 MW

surge).

In fact, it's relatively common for the UK to experience a spike in power demand during big soccer matches. National Grid operators have become accustomed to forecasting higher electricity demand during games, according to its operations manager, Jon Fenn. Not only does electricity consumption spike from millions of TV sets, a surge is felt most acutely during halftime or just after the final whistle, when everyone heads to the kitchen to turn on electric tea kettles or grab a snack from the fridge.

"It must be one of the few jobs where watching World Cup matches is essential to your work rather than a distraction, because we need to know to the second when half time and full time occur to be ready for the surges in demand," Fenn told *The Telegraph* (<http://www.telegraph.co.uk/earth/energy/7819443/National-Grid-anticipates-power-surges-during-World-Cup.html>) in an interview before the 2010 World Cup.

The 2014 World Cup will be transmitted to every country in the world and could potentially be the most watched (<http://in.reuters.com/article/2014/06/02/uk-soccer-world-fifa-television-idINKBN0ED1F820140602>) sporting event in history.

Now we know it could set new records in terms of greenhouse gas emissions, too.

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