

THE REQUIRED ENERGY

Sébastien Balibar – It must be my fifteenth Ventoux, at least, but... OK, go! Courage! If I go at 9 km/h, it means what? Let's see, it's 2.5 m/s and if it's 10%... yes, 25 cm, I climb 25 cm per second. A staircase, a little steep. But 2 hours ... So, 25 cm/s, I weigh 80 kg plus my bike, my helmet, my can, let's say 100 kg. Gravity is 9.81, let's say 10, makes it ... 10 times 100 times 25 cm... yes, 250 watts! My legs power is 250 watts. Yeah... Not great! But it's well known, the power of one man is not that great, 3 bulbs. Long ago, people had slaves, about 100W average power... But today we have oil, nuclear electricity, lots of great things, so that, well, an average Frenchman uses what? 5 kW! For Americans and Australians it's 11 kW. In the average, every day. But they waste, it's terrible! It means that, if we didn't have all these sources of energy, we would need 50 slaves to maintain the lifestyle of an average European...

So that, I know, people, after Fukushima, they are terrified, some feeling that all that will explode in their face, but if they wish to replace nuclear reactors by windmills, really... For example the new Flamanville reactor, it's 1.6 Gigawatt... To replace that, let's see, for one giant windmill it's 2 megawatt, a big one. But with too much wind it takes off, not enough it stops... In fact it produces only 500 kW... Let's see, one would need 3200 giant windmills to replace Flamanville. With one every km, 3200 km of windmills! So, if we put them along the Cotentin coast, 150 km long, we need rows up to 20 km thick. Moreover, when they stop, one needs to switch on something else. The Germans or the Danes, when the windmills stop, they have coal power stations... And then, the CO₂, it's awful! That's why the Germans and the Danes, they emit twice as much CO₂ as French or Swedish people, who have nuclear reactors! So that, well, OK, but the global warming, it's really serious. If all the glaciers melt, the continental glaciers, a country like Bengal, for example, will be entirely flooded, and, in addition, there will be no freshwater. So, it's serious. I believe that, unfortunately, the problem is so difficult that, without nuclear reactors, we won't make it. One needs to improve their safety, even more, there is no choice! At least, if one builds something else, one should require that it should be without coal, without oil, without greenhouse gas emission... It's essential... Go on, courage...

4min 45sec