The 2000-Watt society

The world population is increasing and is predicted to reach 8 billion in about 10 years [1]. In line with this rise, the energy production is also in a continuing augmentation.
To estimate the impact of energy production, one could always discuss and analyse the nature of the production and its different impact on the environment in the near and far future [2]. Although it is totally valuable, the subject of this text is neither about the different types of energy production (nuclear power plant, dam, solar panel, coal, etc.) nor it's variety (heat, electricity, magnetic, etc.) but of the efficiency in its production, transport, and consumption.
If you have recently read around on the net some articles or blogs about energy efficiency, you would have probably heard about the concept of a negawatt. A negawatt, as explained in [3] is "in essence a negative megawatt, in that it is a megawatt of power that was not required to be produced or expended". In other words, a negawatt tends to focus the attention of people not only on the production of energy but strongly on where and how it has been produced and even more on the efficiency in its use.
In the beginning of this century, the Board of the Swiss Institutes of Technology initiated the concept of the 2000 Watt per capita concept also called "the 2000-Watt society". This idea is described in the article from F. Marechal et al. [4] in this way: the world energy demand is likely to increase in line with its population and the energy and material efficiency will therefore have to play a major role for sustainable development; the challenge concerns not only the technologies at the conversion and useful energy level, but also the energy management and infrastructures.
To have a better idea of the actual consumption of energy in the world, consumption per capita of different countries for the year 2010 are shown in the graph below (figure from the United Nations statistics division given in GJ/yearcapita then transformed into Wattyear/yearcapita [5]).

Country	Consumption per capita (Watt/capita) in 2010 [5]
World	2251
Africa	*888*
America, North	6405
US	9006
Canada	9513
America, South	*1776*
Europe	4471
UK	4281

Switzerland	3678
Spain	3425
Asia	*1649*
Qatar	26192
China	2093
Saudi Arabia	8942
Singapore	6722
Republic of Korea	5137
India	*793*
Oceania	5454
Australia	7737

(In blue the country or area for which consumption is under 2000 W/capita, in red when the consumption reaches 3 times 2000W/capita).

As we see on the table above, the consumption is, as expected, very disparate. The obvious reasoning that poorer countries, having access to far more less technologies, consume less per inhabitant is confirmed by this table. However in richer countries, great differences can be observed within the same standard of life range. Canada, Republic of Korea, and Switzerland have indeed a very similar quality of life (human development index of respectively 0.909, 0.905, and 0.912 for 2010 [6]), their consumption per capita in 2010 was really different, respectively 9513, 5137, and 3678.

These differences would take too long to explain and are not necessary to be able to reach a conclusion: the technologies and knowledge exist to reduce the energy consumption for the majority of the developed countries but as Kalle Huebner said “the difficulty in enforcing these standards has nothing to do with technologies.”[7]. National policies about regulations on building insulation, electronic device consumption, and petrol and electricity prices are a few examples above others which can be used to decrease energy loss in a country.

A lot of negative environmental impacts of the population in western countries come from the increasing need for energy, if these countries would spend more time, people, and money on the efficiency of the use of this energy, a large amount of energy could be spared.

And what a better conclusion than this quotation of Eberhard Jochem:

“If a national programme for sending man to the moon or a joint international R&D effort for nuclear energy were feasible in the 1960s, why should the vision of a 2000 Watt per capita society not be possible in the future?”[8]

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