Ensure access to affordable, reliable, sustainable and modern energy for all

THE GLOBAL GOALS
For Sustainable Development

7 AFFORDABLE AND CLEAN ENERGY

Target
By 2030, increase substantially the share of renewable energy in the global energy mix.

Indicator
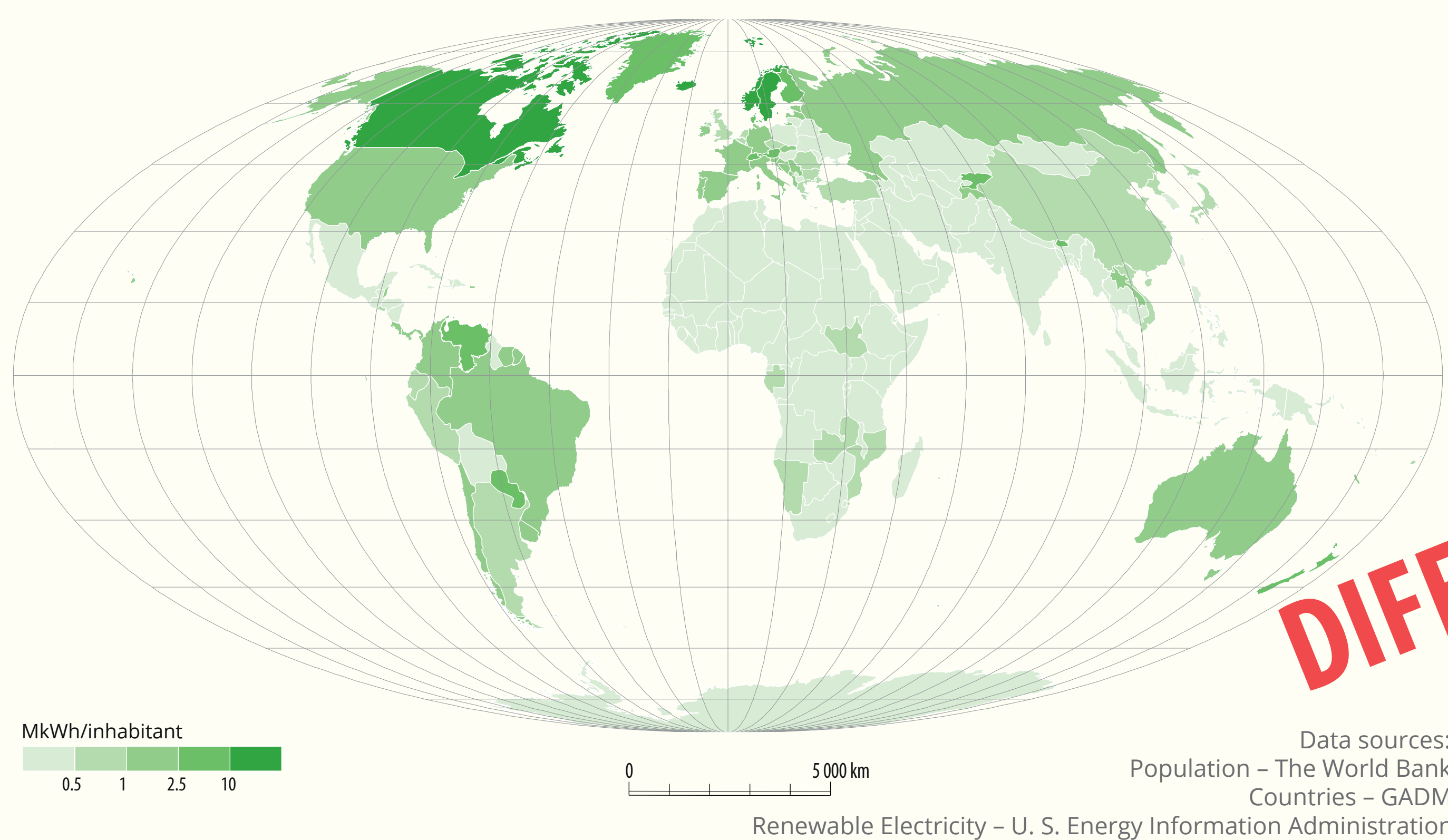Renewable energy share in the total energy final energy consumption (%).

Map design is influenced by the map's target groups and use circumstances

Renewable sources of electricity have grown significantly within the global power sector during the past decade. Total installed renewable electricity capacity increased from 800 Gigawatts (GW) in 2004 to 1,560 GW by the end of 2013, and renewable energy sources now supply 22.1% of global electricity demand of which 5.8% is from sources other than large hydro.
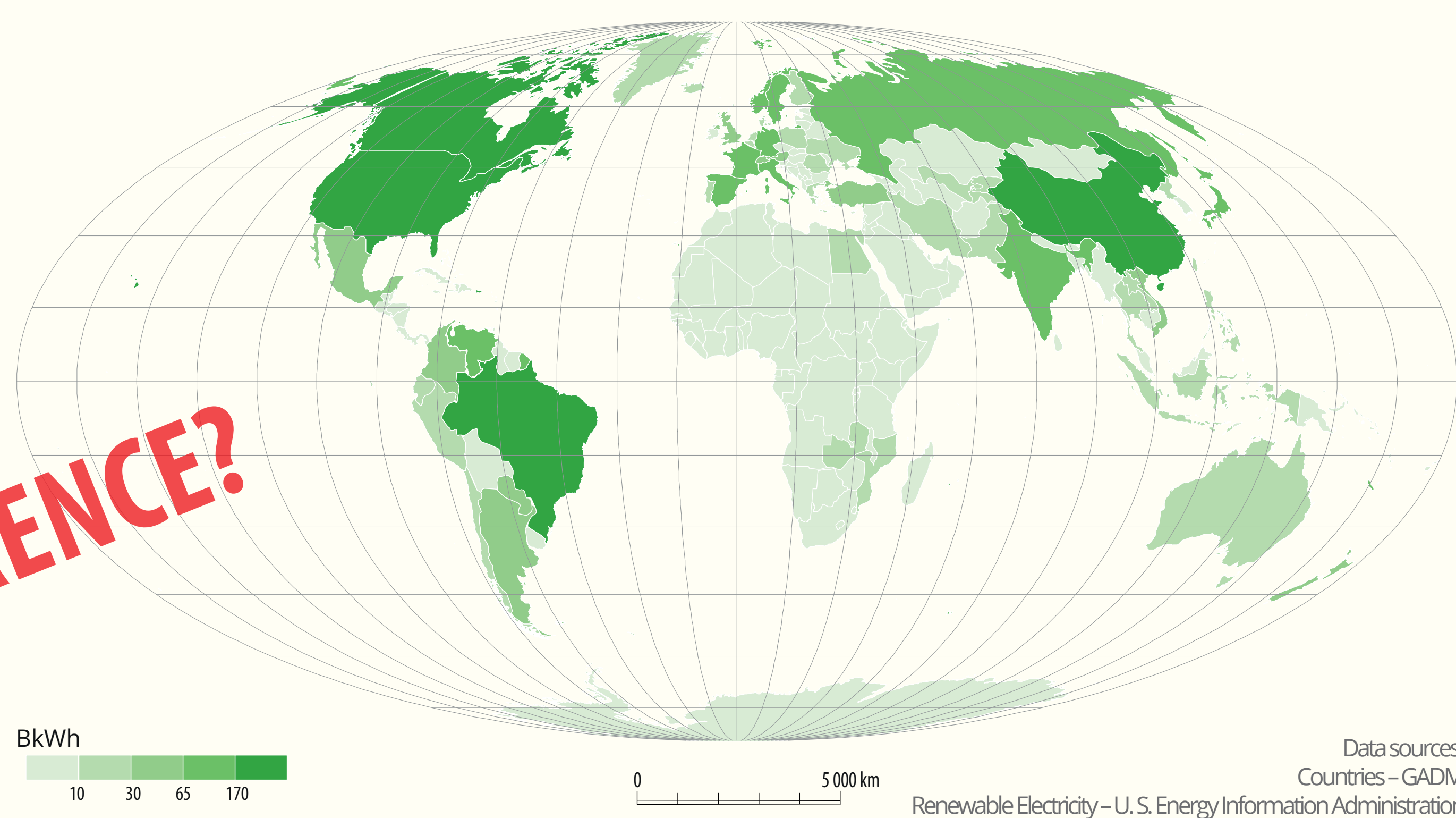
Renewable energy market growth has been driven by a combination of factors, including government policy, rising energy prices, and rapidly declining renewable energy costs. By 2013, 144 countries around the world had adopted specific targets for renewable energy development, up from only 48 countries in 2004.

RENEWABLE ELECTRICITY NET GENERATION
PER INHABITANT IN 2012

MkWh/inhabitant
0.5   1   2.5   10

0   5 000 km

Data sources:
Population – The World Bank
Countries – GADM
Renewable Electricity – U. S. Energy Information Administration

TOTAL RENEWABLE ELECTRICITY NET GENERATION
IN 2012

BkWh
10   30   65   170

0   5 000 km

Data sources:
Countries – GADM
Renewable Electricity – U. S. Energy Information Administration

DIFFERENCE?

The answer is to end our reliance on carbon-based fuels... If we succeed, we create booming new industries, wealth, clean secure energy and maybe we prevent the greatest disaster so far in human history, saving millions of lives while improving billions more. If we fail, basically it's business as usual while things slowly get worse all around us...
*Al Gore*

SUITABILITY OF VISUALIZATION METHODS

To express spatial information there are lots of cartographic visualization methods. The choice of which type of map to use depends mainly on the map maker's purpose and objectives. There are fundamental **rules for cartographic design**. Compare the maps above. Do you see the difference? The situation for the map on the right looks much better, doesn't it? But your perception is influenced by the map maker choosing an inappropriate method of cartographic visualization. The data in the map on the right map are NOT **normalized** to the population of the different countries. In the map on the left the data are normalized per capita - and the situation now is not so rosy...

To select appropriate methods of cartographic visualization and appropriate parameters for each method, it is necessary to know the basics of cartographic design. Also it is important to perform **user testing**. Statistical evaluation of correctness and time performance can help us find efficient and effective designs.

USER TESTING

Maps are an important medium to communicate information with a spatial dimension. It is essential that this information is transferred as efficiently and effectively as possible. Therefore, the end products (maps) should be evaluated by the actual target users in order to verify whether an optimal communication has been achieved. The best results can be obtained if the users are already involved in early stages of the product's design so problems can be detected early on and corrected without too much cost. This is called the User-Centred-Design life cycle or approach.

Individual experiments are focused on specific aspects of cartographic visualization - the use of text labels and fonts, use of colours, the map content (information vs. graphic), various methods of cartographic visualization, etc.
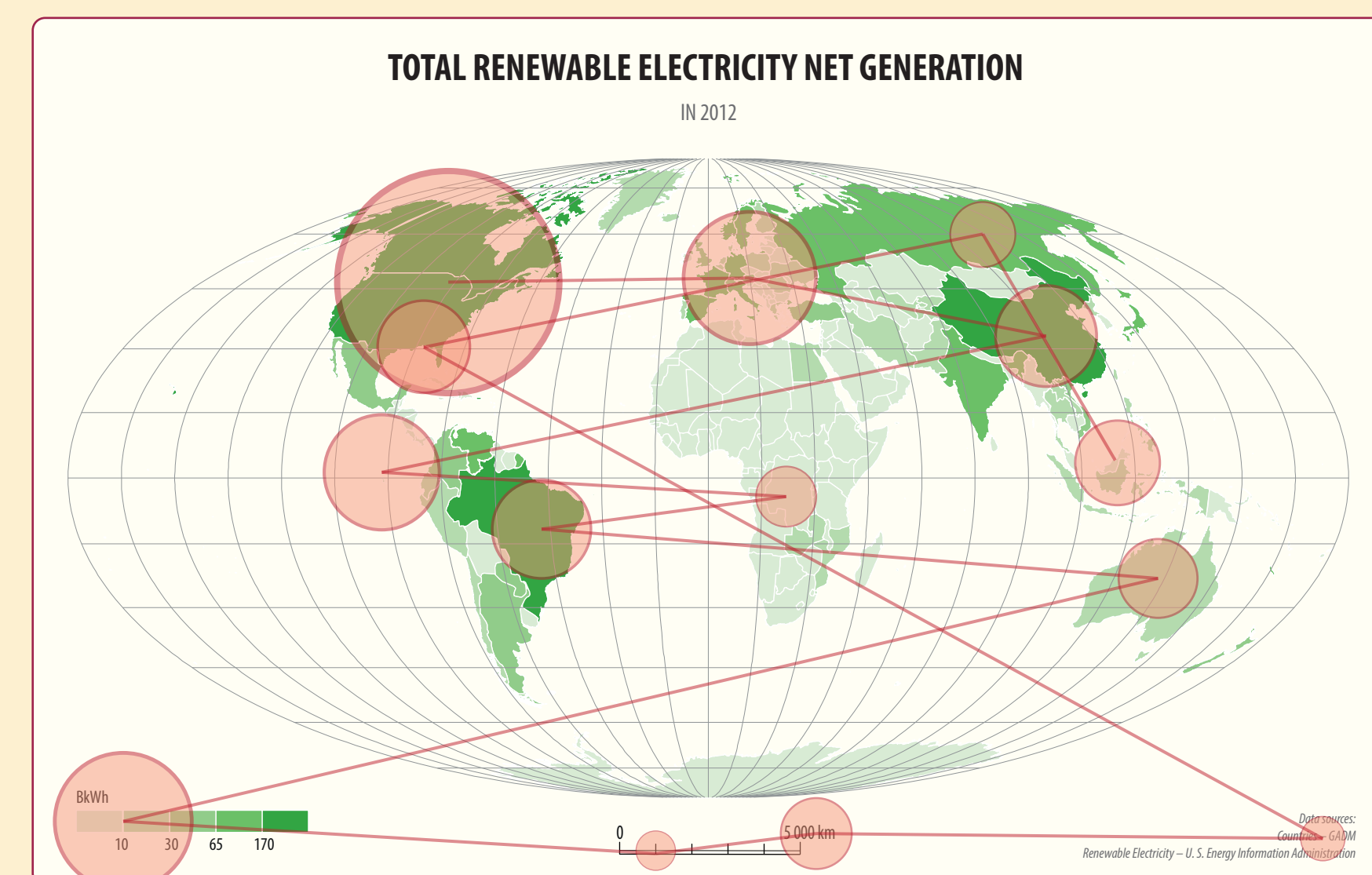
Example of eye-tracking that shows where people looked the longest. Larger circles indicate longer viewing times.
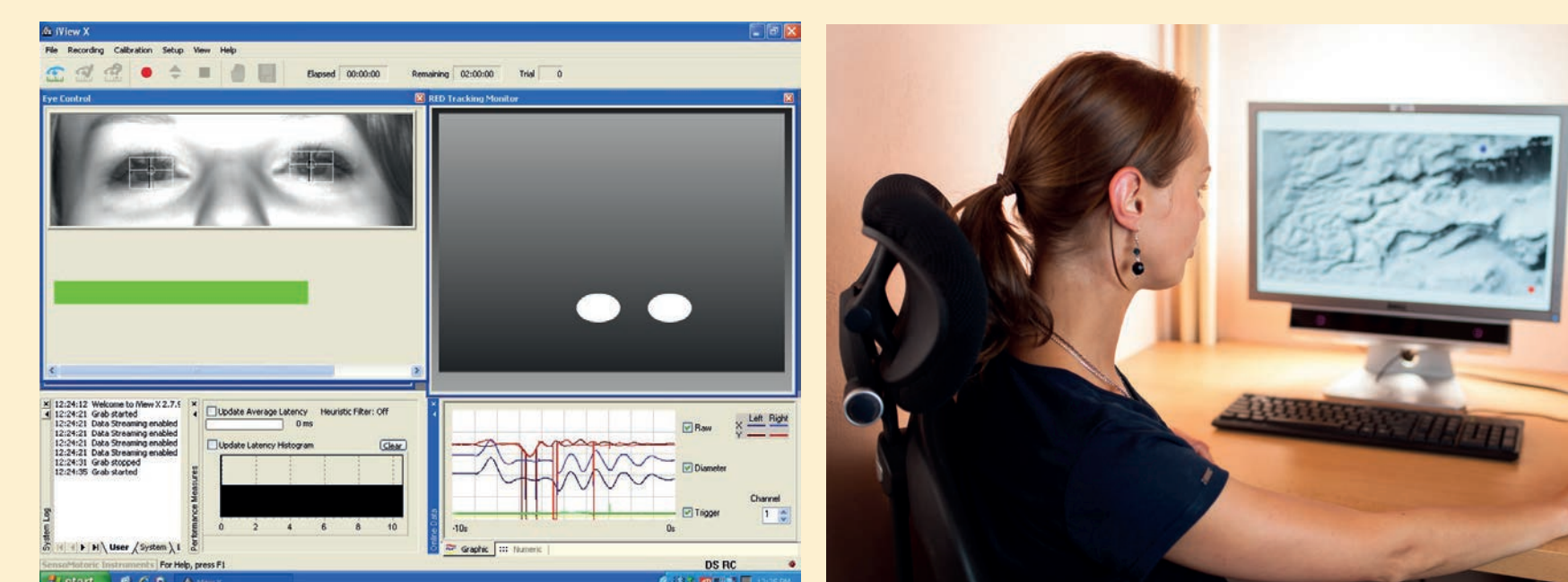
Photographs from eye-tracking experiment, software (left) and hardware (right).

Eye-tracking is one of the methods applied in usability studies and is considered to be an objective method because it is not influenced by the opinion of respondents like other methods (e.g. questionnaire).

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