

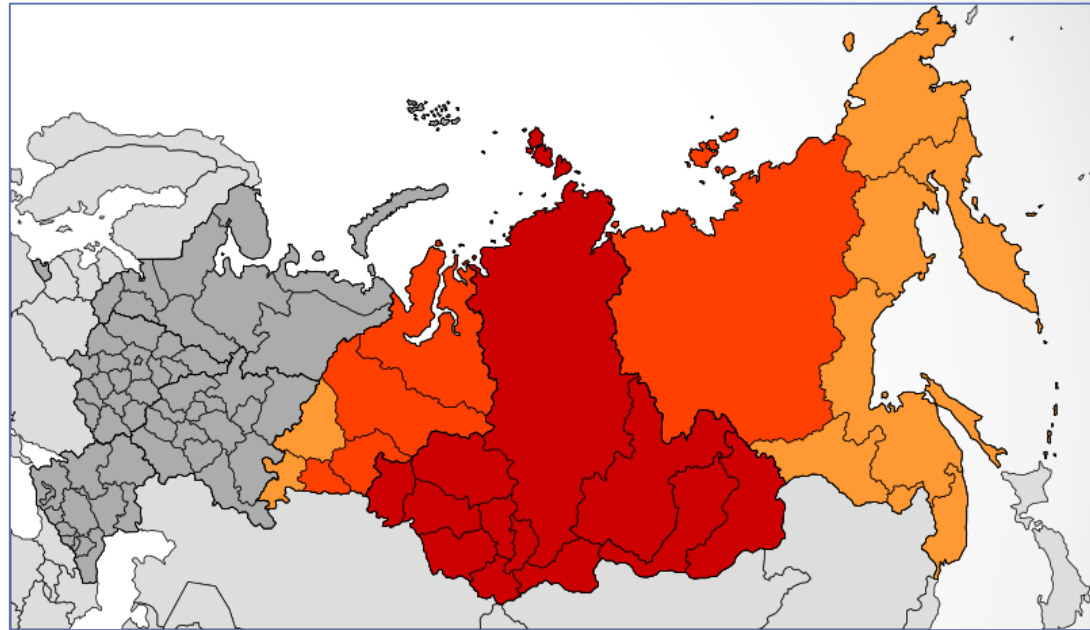
# PHOTOVOLTAIC SYSTEM CONCEPT ADAPTED TO THE SPECIFIC INSOLATION AND CLIMATIC CONDITIONS IN SIBERIA

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# SIBERIA

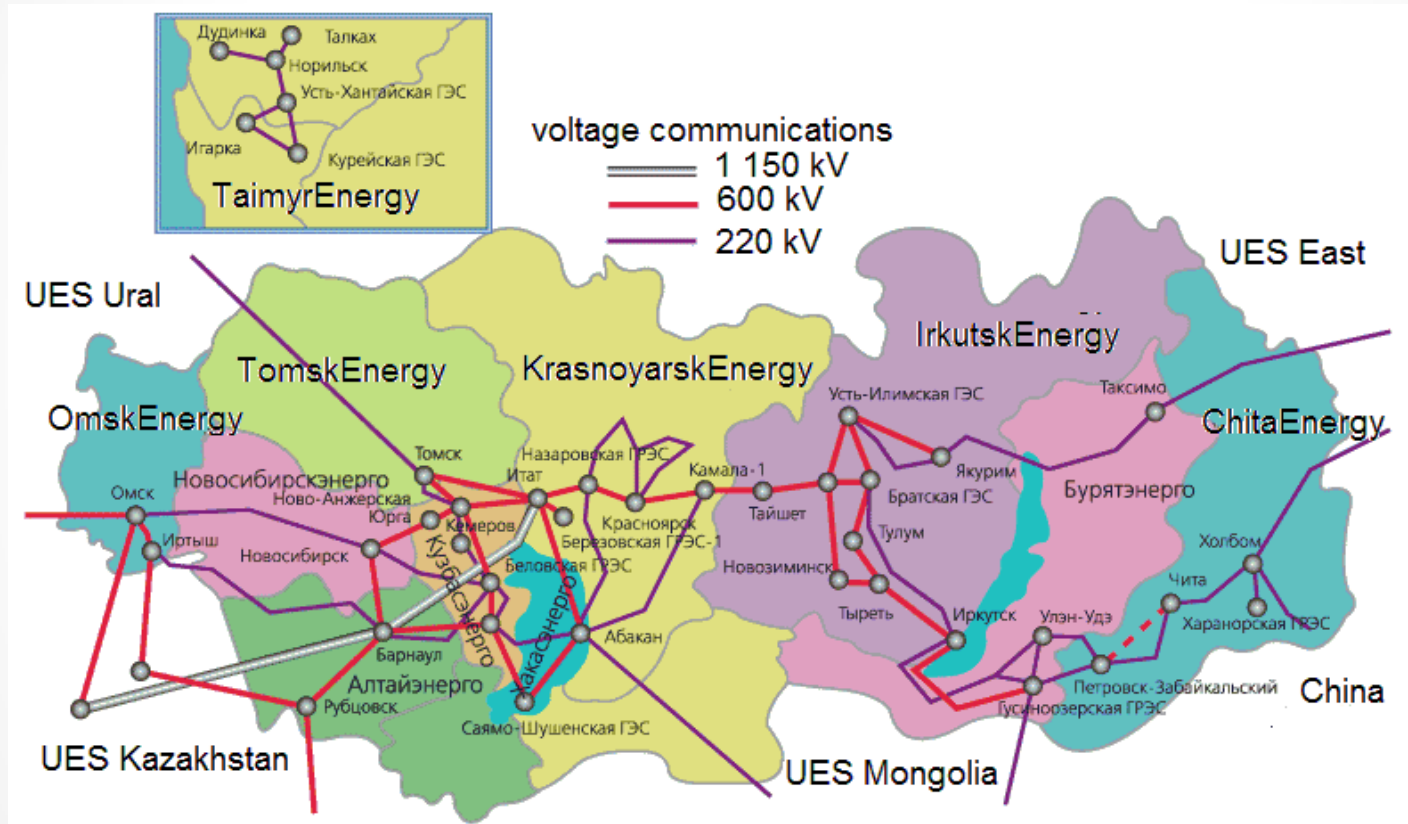
- 13.1 million square kilometers
- 20 millions people
- ~ 10% of Earth's land surface



<http://en.wikipedia.org/wiki/Siberia>

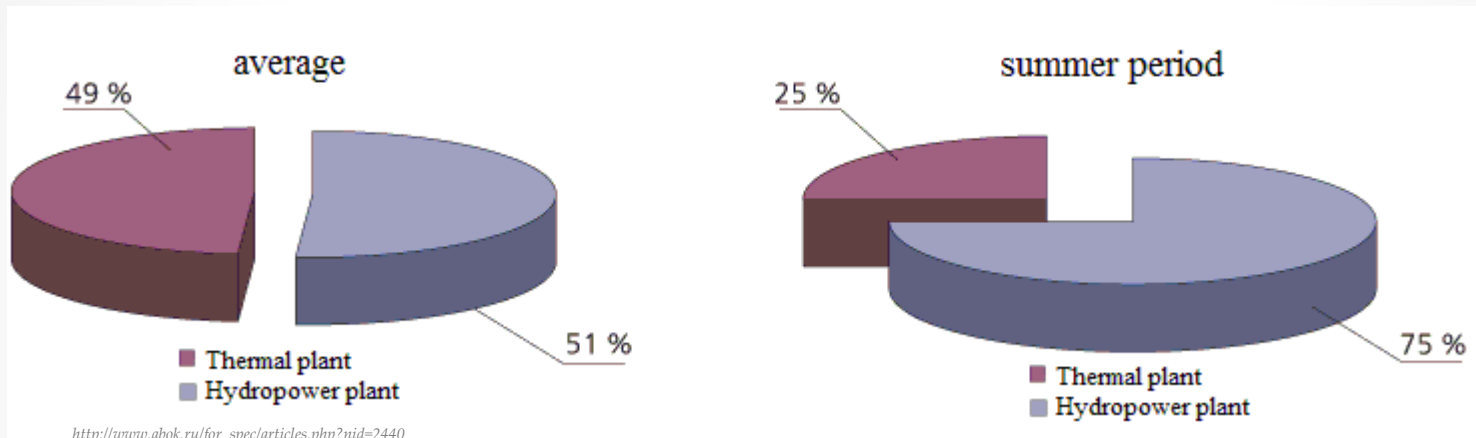
- Siberian Federal District
- Geographic Russian Siberia
- Historical Siberia

# POWER SUPPLY IN SIBERIA



[http://www.abok.ru/for\\_spec/articles.php?mid=2440](http://www.abok.ru/for_spec/articles.php?mid=2440)

# POWER SUPPLY IN SIBERIA



The largest plant:

- Sayano–Shushenskaya HPP – 6 400 MW;
- Bratsk HPP – 4 500 MW;
- Ust-Ilimsk HPP – 3 840 MW;
- Kharanorsk SDPP - 430 MW;
- Gusinoozersk SDPP – 1 100 MW.

# HYDROPOWER PLANT

- Summer period → maximum loading;
- Winter period → determined by the terms of freeze-up and the availability of summer accumulated water resources.



<http://www.so-cdu.ru/index.php?id=1402>

Ust-Ilimsk HPP



<http://www.so-cdu.ru/index.php?id=1403>

Bratsk HPP



<http://www.so-cdu.ru/index.php?id=1405>

Sayano-Shushenskaya HPP

# THERMAL POWER PLANT

Fossil:

- Brown coal;
- Nature gas;
- Fuel oil (masut).



[http://www.so-cdu.ru/index.php?id=odu\\_siberia](http://www.so-cdu.ru/index.php?id=odu_siberia)

Berezovsk SDPP



[http://www.so-cdu.ru/index.php?id=odu\\_siberia](http://www.so-cdu.ru/index.php?id=odu_siberia)

Biysk TPP-2



<http://www.so-cdu.ru/index.php?id=1399>

Krasnoyarsk SDPP-2



# SOLAR RADIATION

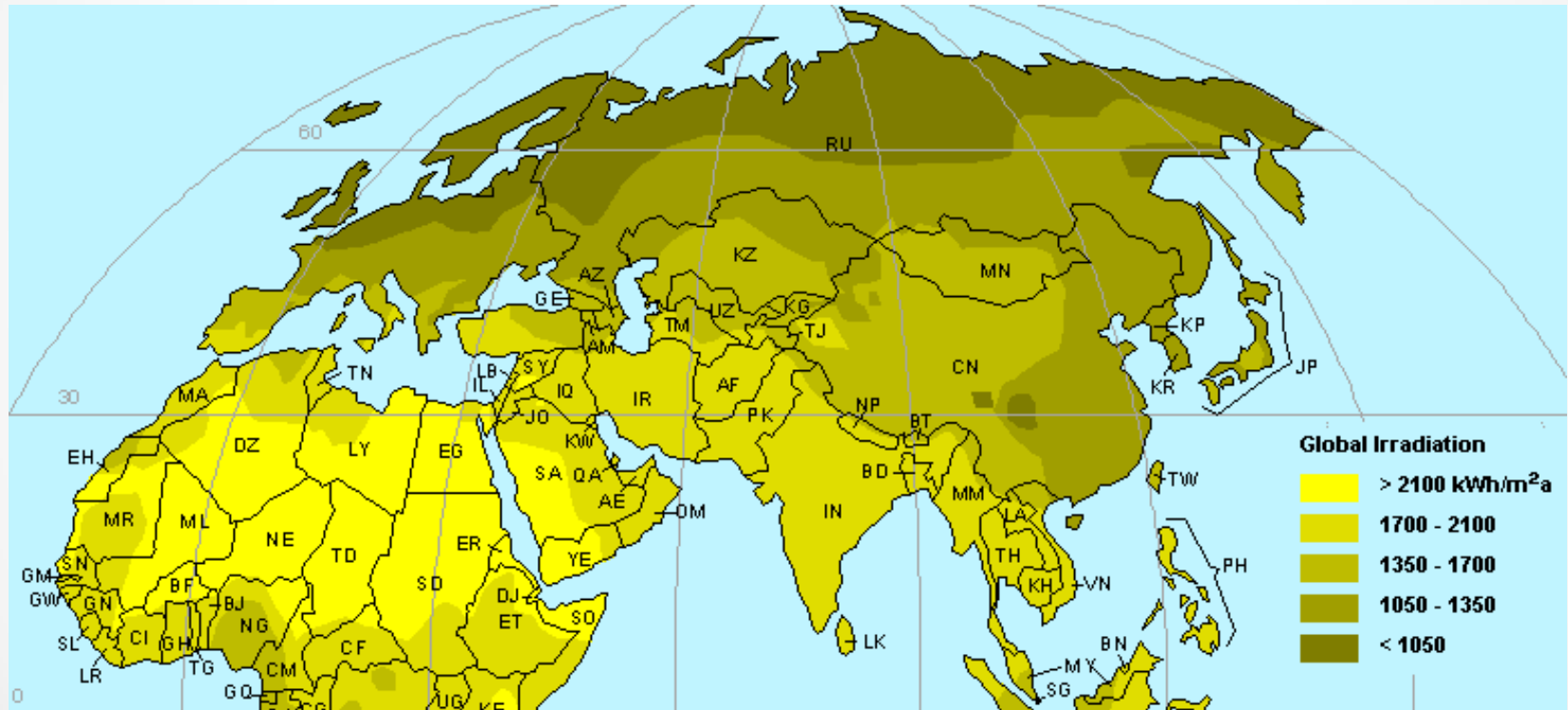


<http://gis-vie.ru/index.php>

Potential Sibirien Regions:

- Altay;
- Buraty;
- Chita.

# GLOBAL IRRADIATION



<http://www.helpsavetheclimate.com/solar.html>

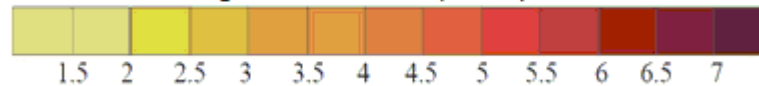


# SOLAR RADIATION



<http://gis-vie.ru/index.php>

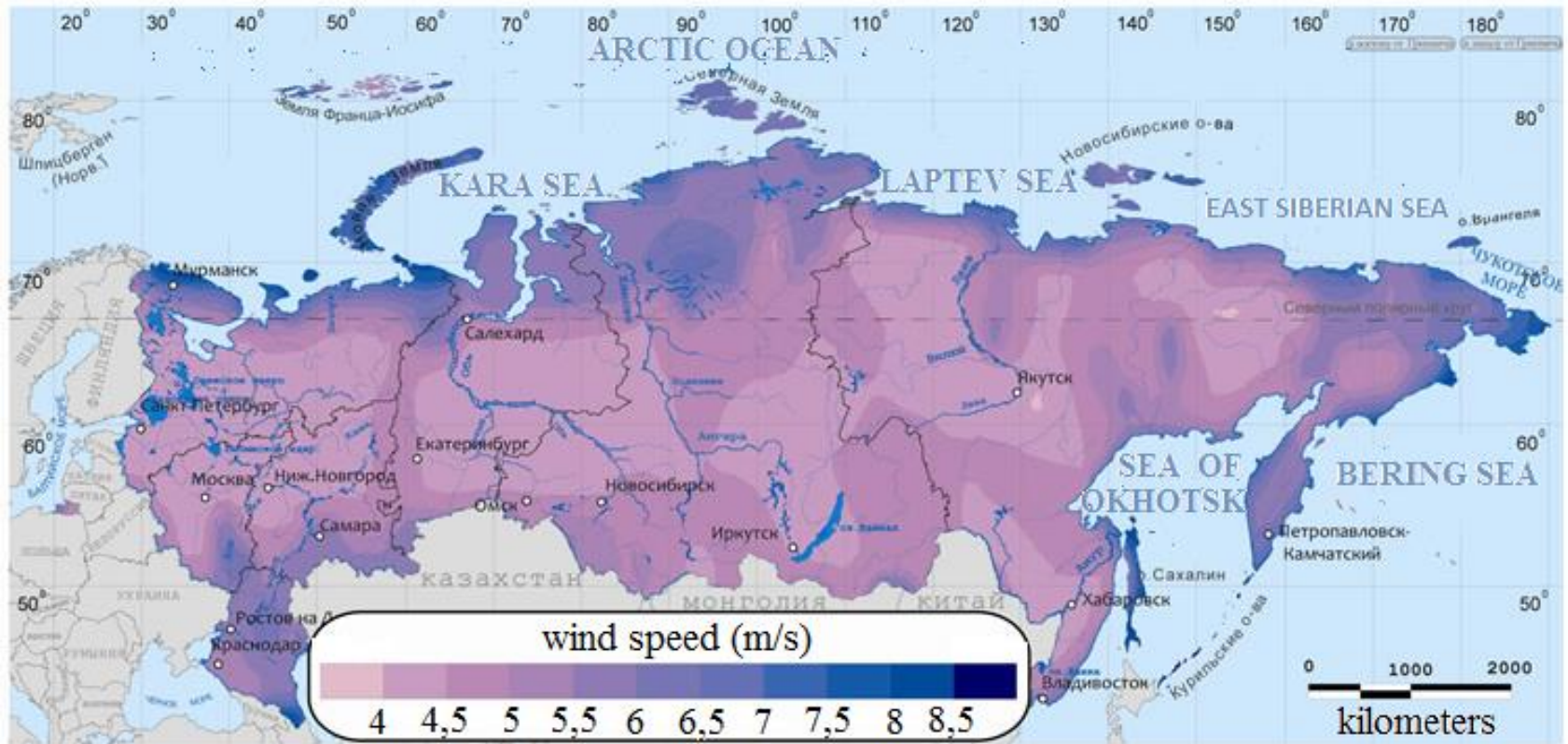
average solar radiation per day kW\*h/m2



- Horizontal Irradiation
- With Tracker

# WIND ENERGY

The average wind speed (m/s)



<http://gis-vie.ru/index.php>

Potential Sibirien Regions:

- Coastlines of the Arctic Ocean;
- Altay Mountains;
- Sayan Mountains.

# CONCLUSION

- The potential of alternative energy Siberia is very high.
- Renewable sources can produce up to a quarter of all energy requirements.
- Renewable systems are possible in remote and sparsely populated villages that are isolated from the power lines.

THANK YOU FOR YOUR  
ATTENTION