EnergyRes 2008

Climate change and the need for a real

Energy Revolution

Nikos Charalambides

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IEA 2004
reference senario

ENERGY REVOLUTION

Commissioned by EREC – Greenpeace
from the Department of Systems Analysis
and Technology Assessment at the
German Aerospace Centre

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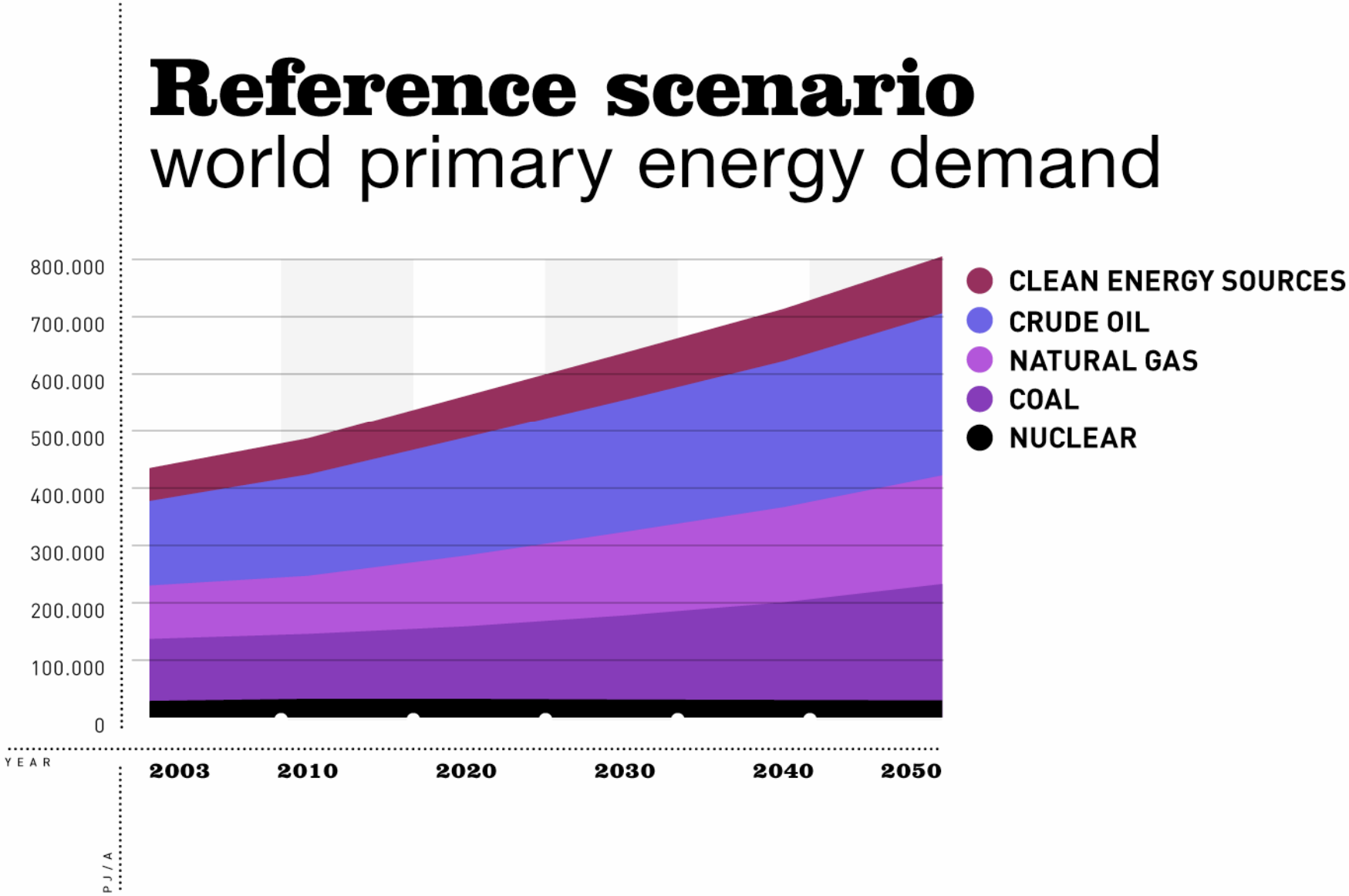
Energy supply scenarios adopted in the ER report calculated using

MESAP/PlaNet simulation model

further developed by the Ecofys consultancy

Reference scenario
world primary energy demand



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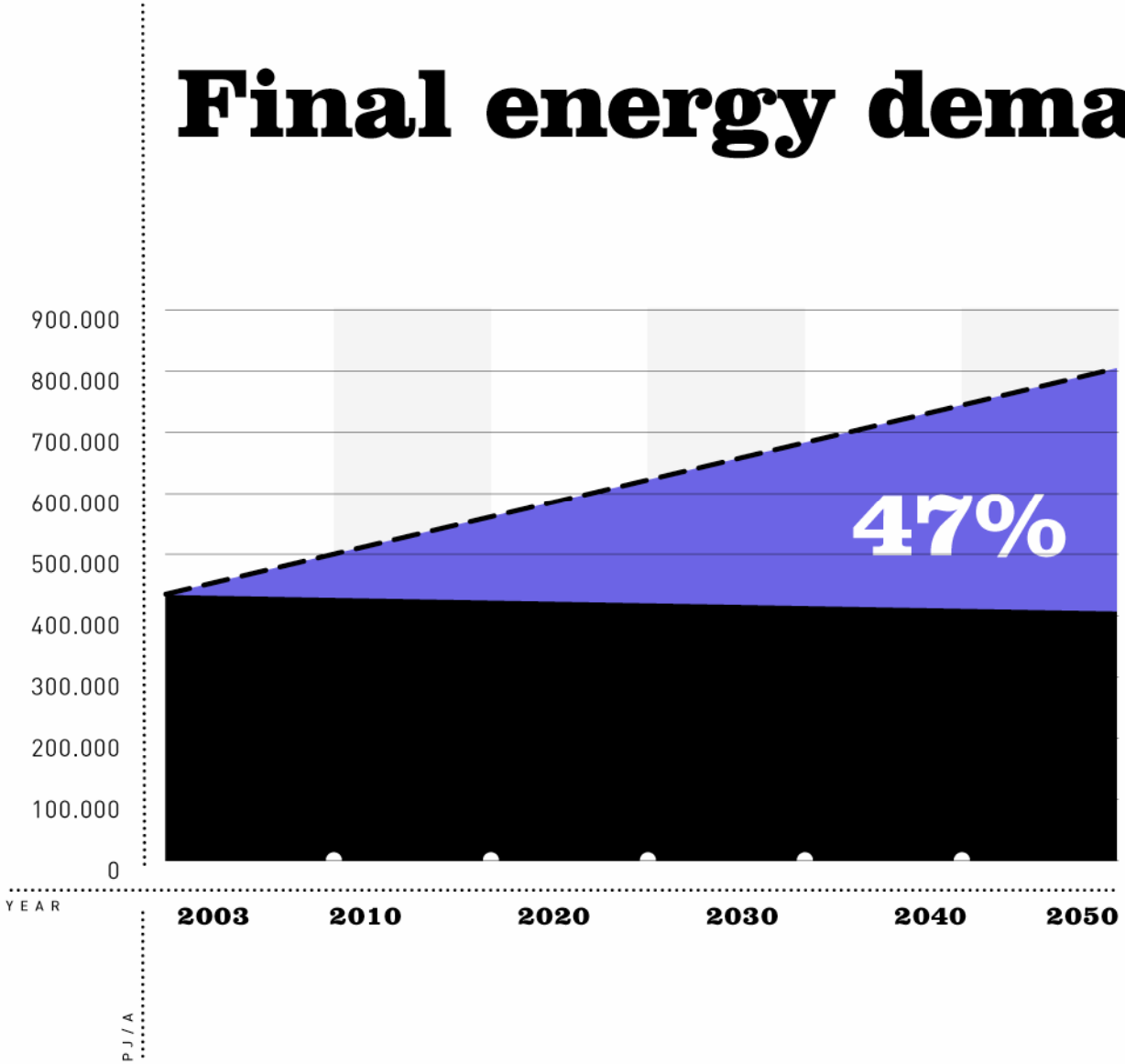
Final energy demand



TOTAL SAVINGS

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primary energy demand
energy revolution

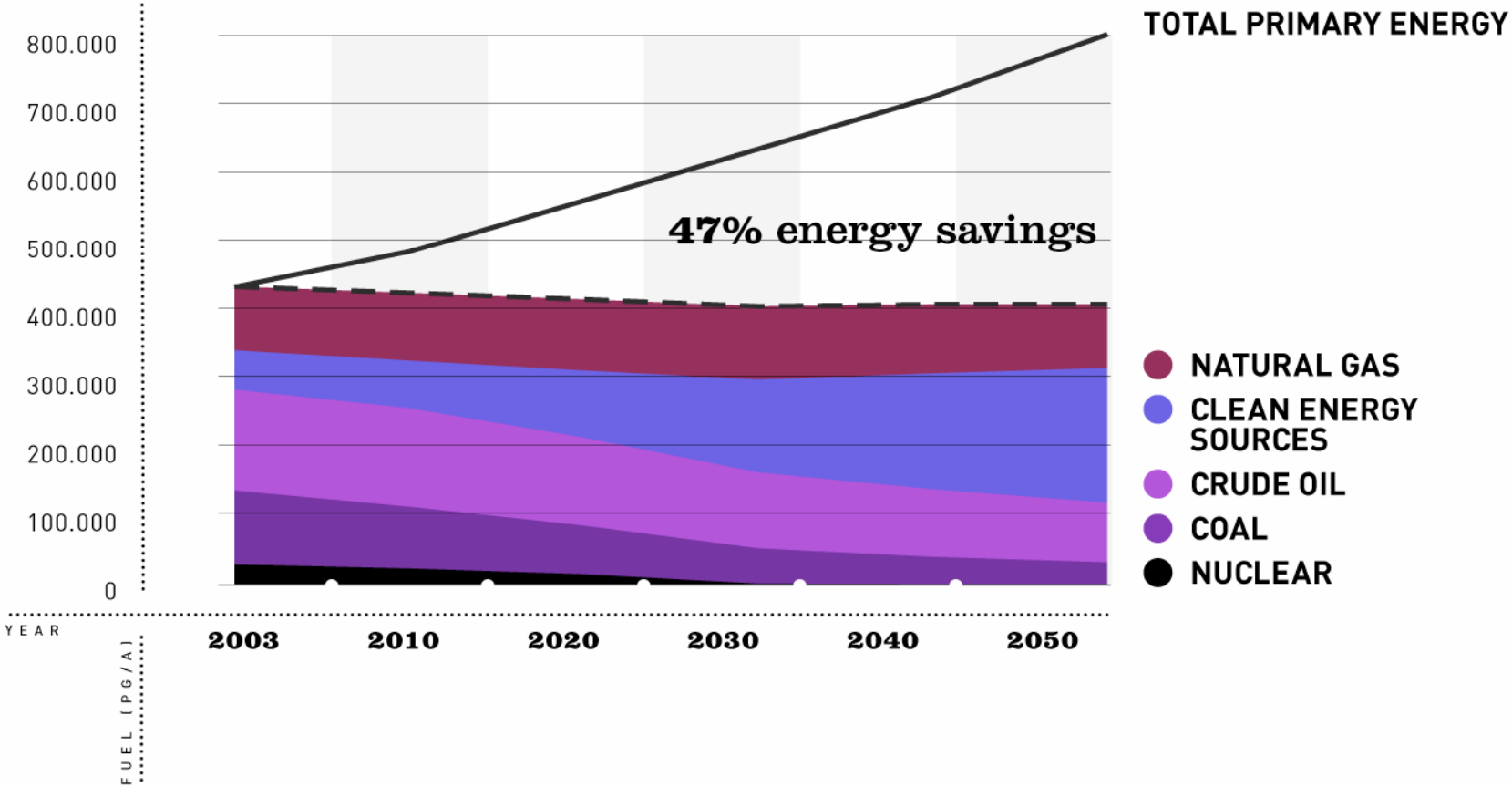

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figure 30: energy resources of the world

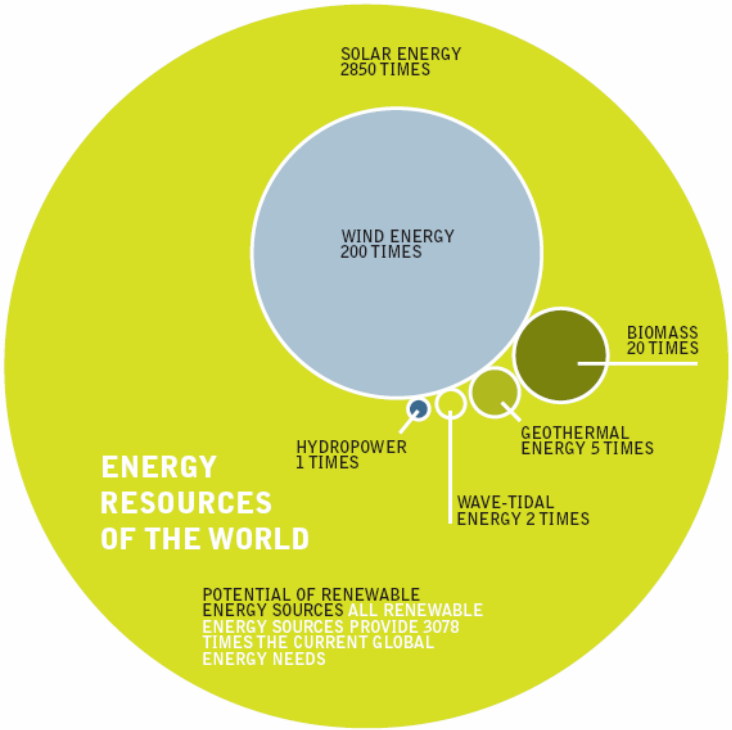

table 12: technically accessible today

THE AMOUNT OF ENERGY THAT CAN BE ACCESSED WITH CURRENT TECHNOLOGIES SUPPLIES A TOTAL OF 5.9 TIMES THE GLOBAL DEMAND FOR ENERGY.

Sun	3.8 times
Geothermal heat	1 time
Wind	0.5 times
Biomass	0.4 times
Hydrodynamic power	0.15 times
Ocean power	0.05 times

source DR. JOACHIM NITSCH

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figure 1: development of primary energy consumption under the energy [r]evolution scenario

('EFFICIENCY' = REDUCTION COMPARED TO THE REFERENCE SCENARIO)

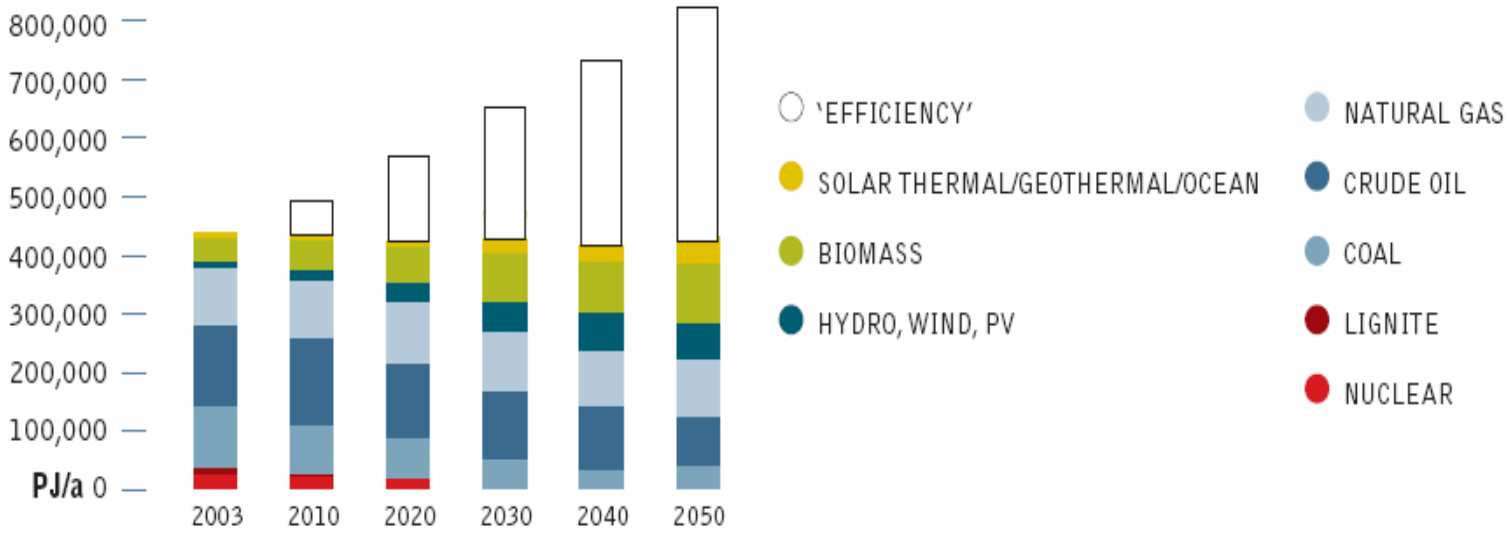

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figure 22: OECD europe: growth of final renewable electricity supply under the energy [r]evolution scenario, by source

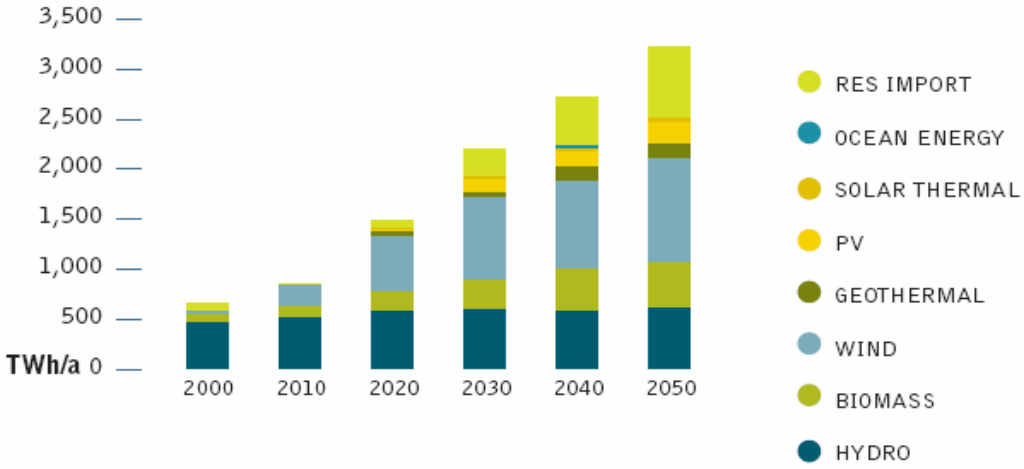

table 7: OECD europe: projection of final renewable electricity generation capacity under the energy [r]evolution scenario

IN MW

	2003	2010	2020	2030	2050
Hydro	123,000	135,000	146,000	149,000	144,000
Biomass	18,000	30,000	47,000	57,000	89,000
Wind	21,000	84,000	230,000	339,000	386,000
Geothermal	1,000	1,000	3,000	7,000	25,000
PV	1,000	11,000	51,000	113,000	205,000
Solarthermal	0	0	2,000	7,000	9,000
Ocean energy	0	1,000	3,000	5,000	7,000
Total	**164,000**	**263,000**	**482,000**	**677,000**	**865,000**

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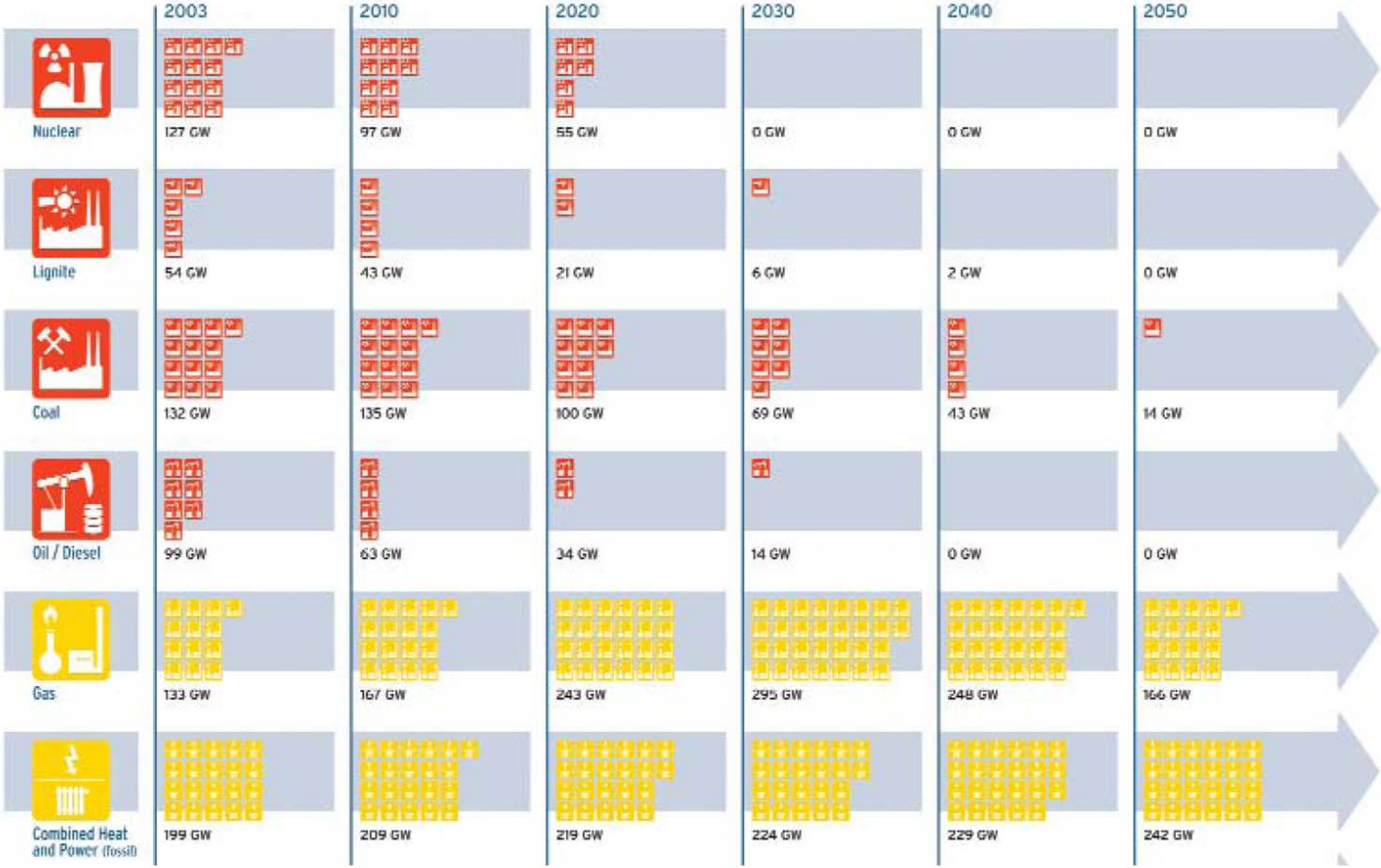

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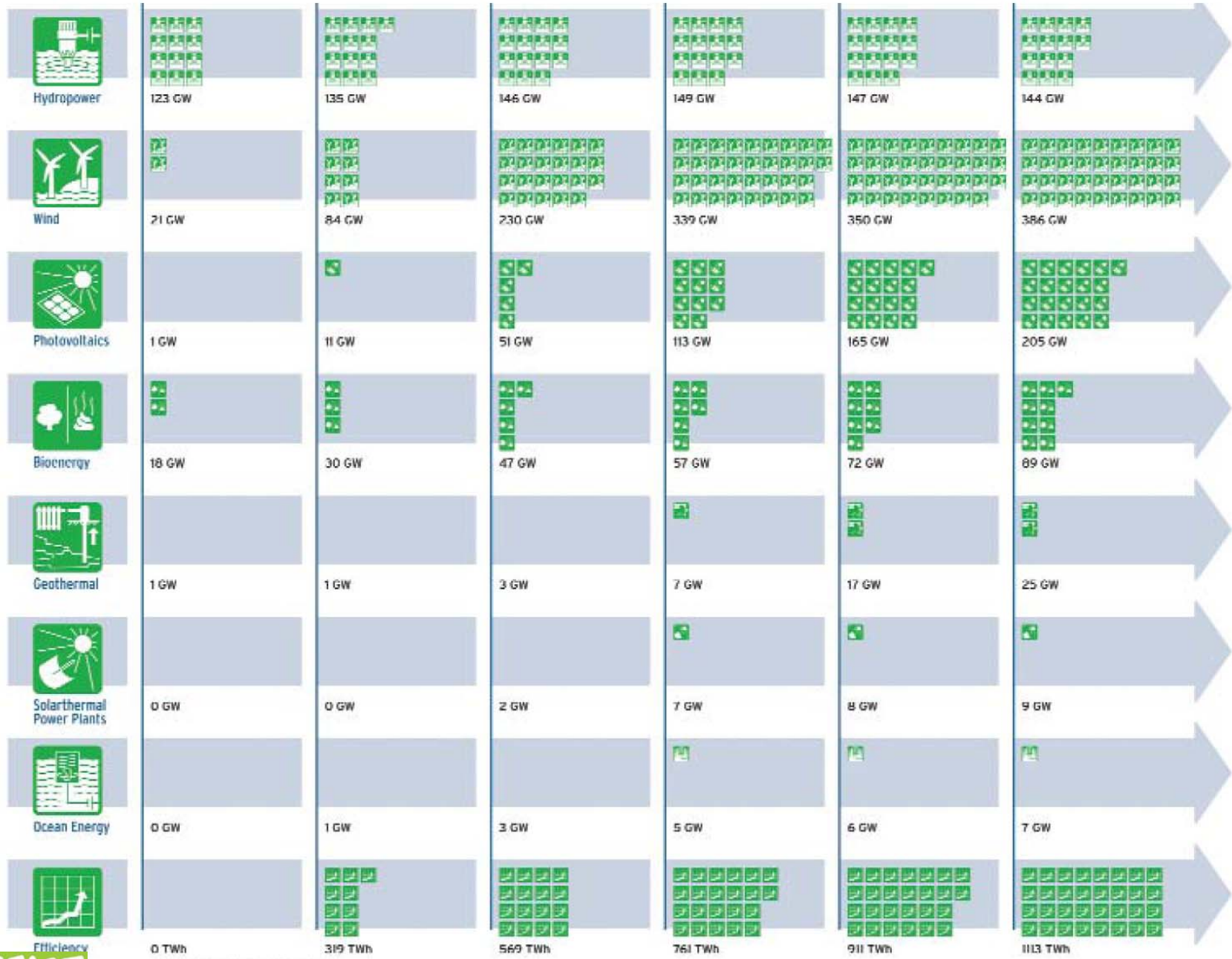

Note: All datas are rounded to the nearest thousand

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Nukes is the answer (or a part of it)?

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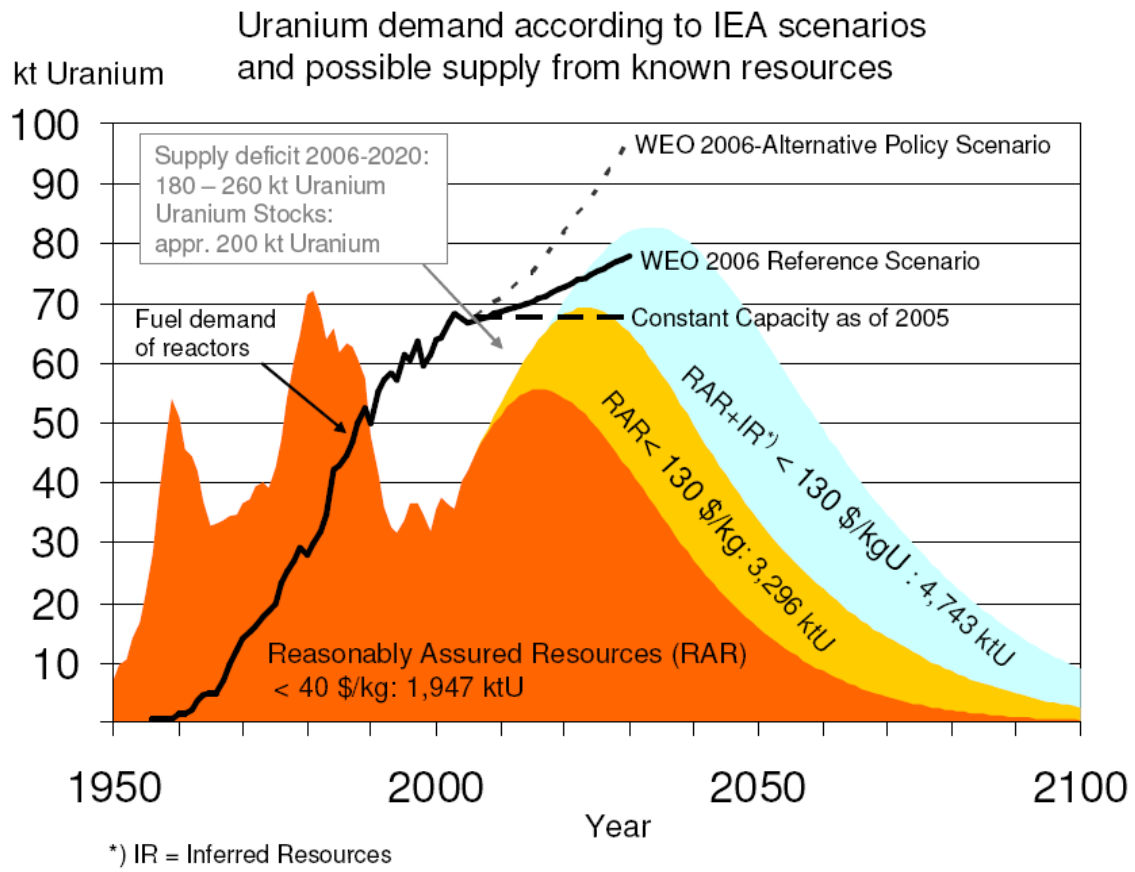
Figure: *Past and projected uranium production. Forecasts are based on reasonably assured resources below 40 $/kgU (red area), below 130 $/kgU (orange area) and additionally including inferred resources. The black line shows the fuel demand of reactors currently operating together with the latest scenarios in the World Energy Outlook (WEO 2006) of the International Energy Agency.*



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