ECONOMY AND CLIMATE JUSTICE

A GLOBAL PERSPECTIVE TO UNDERSTAND ENERGY CONSUMPTION IN POLAND

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I

JUSTICE AND FAIRNESS

“

Each will defend a conception of justice that puts him in the right and his opponent in the wrong [...]

This imperfection of any system of justice, the inevitable element of arbitrary that it contains, should always be present to the mind of the man who applies the system's extreme consequence

Perelman C., 1963, *The idea of justice and the problem of argument*, Routledge & Kegan Paul, London, p. 6 & 60.

JUSTICE AND FAIRNESS

Justice (formal justice) – an obligation to consistently comply with particular rules.

Formal justice doesn't provide any reason for the obligation resulted from the rule.

It acts similarly to the conception of rationality in economics: it assumes the consistency of behaviour (i.e. judgment).

Injustice (formal injustice) – inconsistency.

Sullivan, D., 1975, *Rules, fairness, and formal justice*, ,,Ethics", 85(4), pp. 327-328.

JUSTICE AND FAIRNESS

Fairness – an obligation to follow particular rules, which stand for the categories and the explanation of the accepted model of society, which postulates the rules.

The rules vary in the terms of specific conditions accepted by a social system.

Unfairness – an immoral behaviour.

Fairness rules are historically depend and they change conforming to new value systems or socio-economic and ecological conditions. Moreover, they can vary in the same point of time in different areas of social activities (i. e. social and economic) or in different social systems.

Sullivan, D., 1975, *Rules, fairness, and formal justice*, ,,Ethics", 85(4), pp. 327-328.

II

FAIRNESS AND SOCIETY MODELS

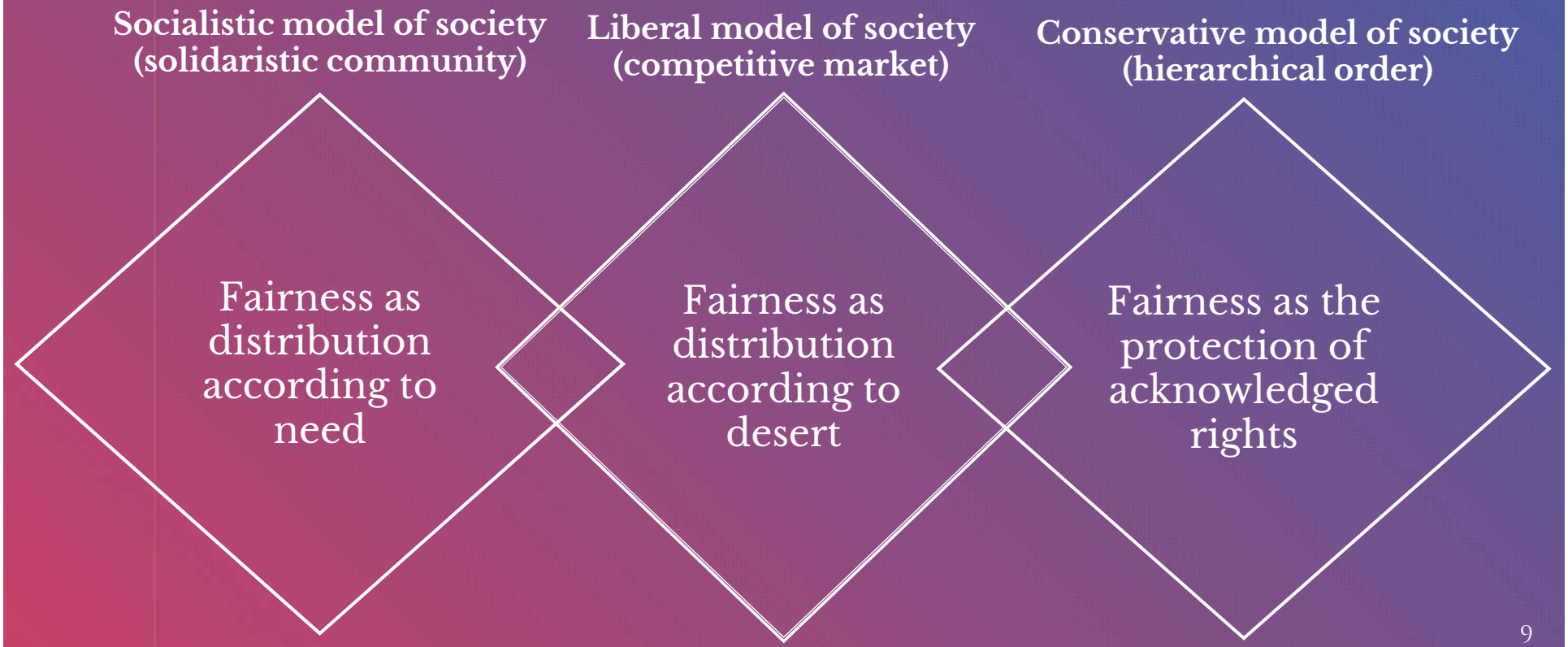
Each basic conception is linked to a different model of society, and no model of society is so widely accepted that disputes about justice can be resolved

To shed further light on the concept of justice, it would first be necessary to investigate in greater detail what factors influence people to adopt one model of society rather than another;

and second to consider whether any of the models offered can be given a rational justification

Miller, D., 1974, *The ideological backgrounds to conceptions of social justice*, „Political Studies", 22(4), s. 399.

FAIRNESS AND THE MODELS OF SOCIETY



Miller, D., 1974, *The ideological backgrounds to conceptions of social justice*, ,,Political Studies", 22(4), s. 399.

FAIRNESS AND THE MODELS OF SOCIETY

CONSERVATIVE MODEL OF SOCIETY (HIERARCHICAL ORDER) FAIRNESS AS THE PROTECTION OF ACKNOWLEDGED RIGHTS

- society is naturally divided into ranks in a defined order – the social order constraints human anti-social and selfish desires,
- the rules preserve the established distribution of rights and goods to protect the social order from disruption,
- the key idea can be expressed in the following statement based on D. Hume's works: "*it is better to cultivate the qualities that are appropriate to your present social position than to seek for a better one on the basis of natural ability*".

Miller, D., 1974, *The ideological backgrounds to conceptions of social justice*, „Political Studies", 22(4), s. 393.

FAIRNESS AND THE MODELS OF SOCIETY

LIBERAL MODEL OF SOCIETY (COMPETITIVE MARKET)
FAIRNESS AS DISTRIBUTION ACCORDING TO DESERT

- an individual should personally merit whatever benefits she/he receives,
- no fixed structure of society, a voluntary association of individuals,
- the private pursuit of individual gain will generate benefits for society as a whole,
- the key idea can be expressed in the following statement based on D. Spencer's works: "*with the establishment of contract as the universal relation under which efforts are combined for mutual advantage, social organization loses its rigidity. No longer determined by the principle of inheritance, places and occupation are now determined by the principle of efficiency* [...] *acquired the functions for which they have proved themselves most fit*"

Miller, D., 1974, *The ideological backgrounds to conceptions of social justice*, „Political Studies", 22(4), s. 394.

FAIRNESS AND THE MODELS OF SOCIETY

SOCIALISTIC MODEL OF SOCIETY (SOLIDARISTIC COMMUNITY)
FAIRNESS AS DISTRIBUTION ACCORDING TO NEED

- society is a large co-operative entity deliberately arranged to promote the good of the whole,
- the structure characterises the individuals equality of status and collective, democratic governance,
- individuals are social creatures, which enjoy close, communal relationships with others,
- the key idea can be expressed in the following statement based on P. Kropotkin's works: "*under pain of death, human societies are forced to return to first principles: the means or production being the collective work of humanity, the product should be the collective property of the race* [...] *All belongs to all. All things are for all men, since all men have need of them*"

Miller, D., 1974, *The ideological backgrounds to conceptions of social justice*, „Political Studies", 22(4), s. 396.

FAIRNESS AND THE MODELS OF SOCIETY

The basic models of society and distribution of resources are '**just**' in the terms of formal justice.

At the same time, none of these models is free of flaws and potential threats to social stability.

Finally, the preferences toward the models are determined by the cultural, socio-economic and ecological conditions.

The present debates are dominated by the idea of sustainable development and the global threats caused by climate changes.

FAIRNESS AND SUSTAINABLE DEVELOPMENT

The concept of fairness in the mainstream economics is dominated by the competitive market model of society and individuals' desert.

The concept of fairness presented in the postulates of sustainable development emphasises solidarity and equal rights to natural resources for all human beings including future generations:

"*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains two key concepts:*

- *the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and*
- *the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs*".

Our Common Future, 1987, Oxford: Oxford University Press, pp. 43.

III

FAIRNESS AND GLOBAL ECONOMY

Humanity is part of a vast evolving universe. Earth, our home, is alive with a unique community of life [...]

We are at once citizens of different nations and of one world in which the local and global are linked. Everyone shares responsibility for the present and future well-being of the human family and the larger living world

The spirit of human solidarity and kinship with all life is strengthened when we live with reverence for the mystery of being, gratitude for the gift of life, and humility regarding the human place in nature

SUSTAINABLE DEVELOPMENT AND CLIMATE CHANGE

Is there a socio-economic model which meets the postulates of efficiency related to the competitive market fairness and the postulates of sustainability at the same time?

ENERGY CONSUMPTION FROM THE PERSPECTIVE OF SUSTANABLE DEVELOPMENT FAIRNESS

Micro-allocation – the market mechanism based on the maximisation of individuals' private utility and competitive fairness.

Macro-allocation – a social/collective mechanism based on the social preferences which include the present and future generations and other species.

The social preferences result from political negotiations such as Kyoto Protocol or Paris Agreement at the international level.

Costanza R., Daly H. E., 1992, *Natural capital and sustainable development*, Conservation Biology, 6, s. 41.

ENERGY CONSUMPTION FROM THE PERSPECTIVE OF SUSTANABLE DEVELOPMENT FAIRNESS

THE CONCEPT OF A REFERENCE POINT

Micro-allocation – the market allocation of energy within a country/community (due to the specific market institutions of each country/community).

The country/community-specific energy policy, consumption policy as well as the style of life (system of values) will the key determinants of the benefits of the country/community.

Index: for example, *energy intensity* (energy efficiency of a national economy measured in units of energy per unit of GDP) and the *share of renewables in energy use*.

Macro-allocation – the input of energy evenly allocated due to political agreements.

Index: for example, *energy use per capita.*

Pieńkowski, D., 2013. *Sprawiedliwość dystrybutywna w świetle Optimum Pareto i idei zrównoważonego rozwoju.* Białystok: Wydawnictwo Uniwersytetu w Białymstoku.

ENERGY CONSUMPTION FROM THE PERSPECTIVE OF SUSTANABLE DEVELOPMENT FAIRNESS

THE CONCEPT OF A REFERENCE POINT

Energy use - refers to use of primary energy before transformation to other end-use fuels, which is equal to indigenous production plus imports and stock changes, minus exports and fuels supplied to ships and aircraft engaged in international transport.

kg of oil equivalent (kgoe) - equivalent to the approximate amount of energy that can be extracted from one kilogram of crude oil - a standardized unit, assigned a net calorific value of 41 868 kilojoules/kg.

ton of oil equivalent (toe) - a standardized unit, assigned a net calorific value of 41.87 gigajoules/kg.

PANORAMA OF ENERGY CONSUMPTION

THE CONCEPT OF A REFERENCE POINT

Energy use per capita [kg of oil equivalent] – energy inputted to an economy per capita in 2014
Energy intensity - energy use per $1,000 GDP (constant 2011 PPP) in 2014:

$$\frac{\textit{Energy use}}{\textit{GDP *1000}} = \textit{Energy intensity}$$

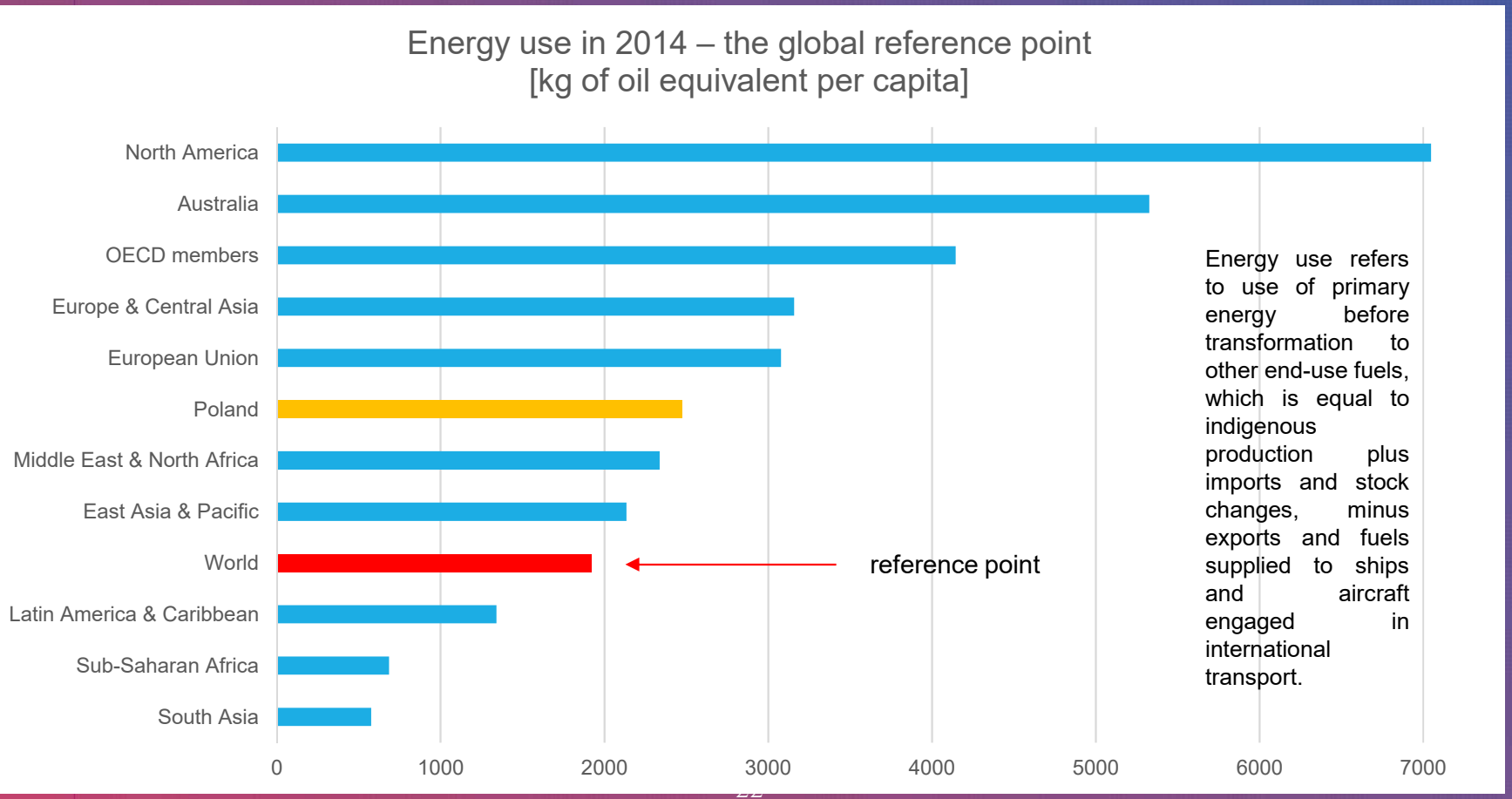
GDP per 1 kgoe of energy use [constant 2011 PPP $ per 1 kgoe]:

$$\frac{\$1{,}000}{\textit{Energy intensity}} = \textit{GDP per 1 kgoe of energy use}$$

GDP per energy use per capita in 2014:

*GDP per 1 kgoe of energy use * Energy use per capita = GDP per energy use per capita*

PANORAMA OF ENERGY CONSUMPTION



World Bank, https://data.worldbank.org/indicator/eg.use.pcap.kg.oe [28.09.2018].

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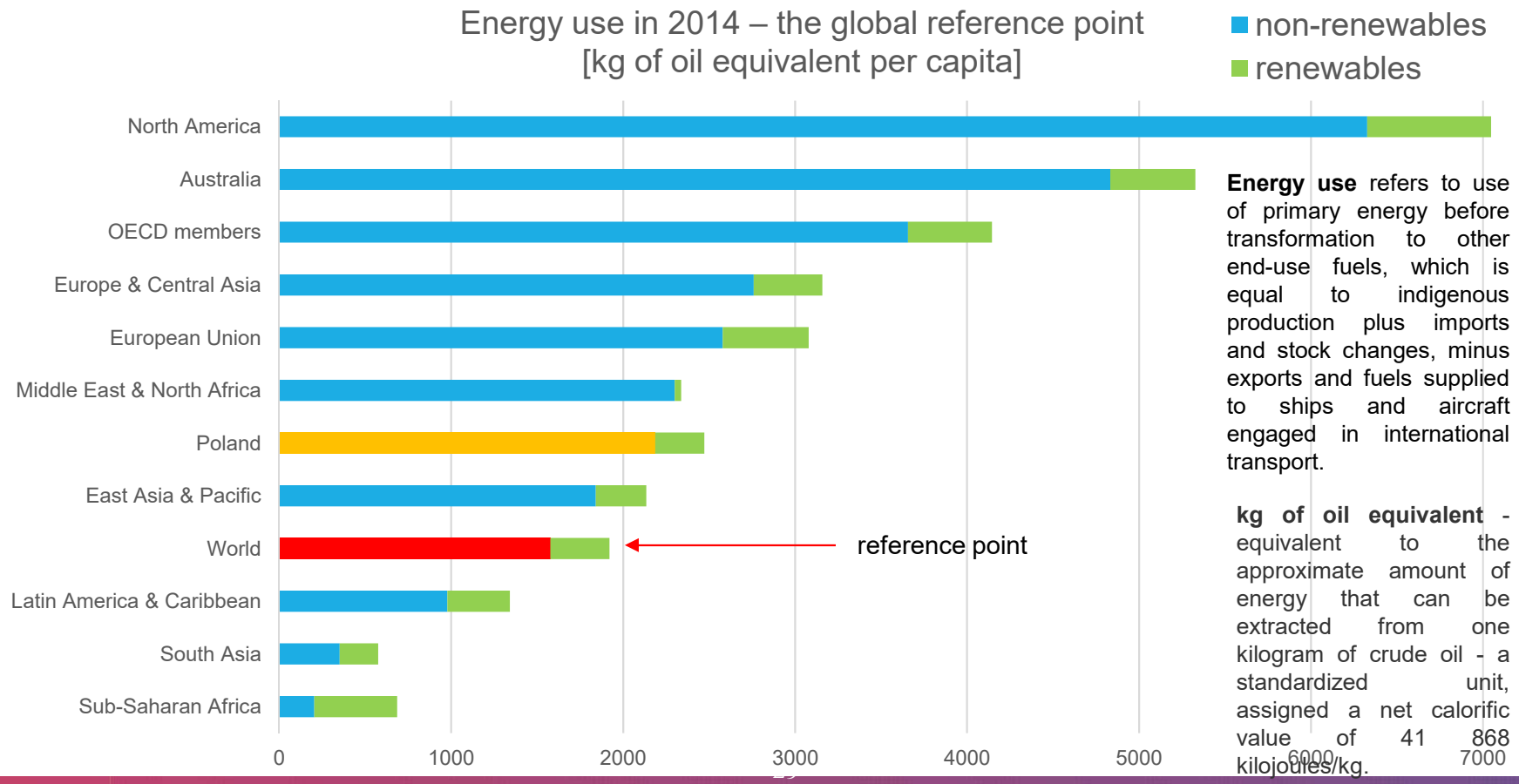

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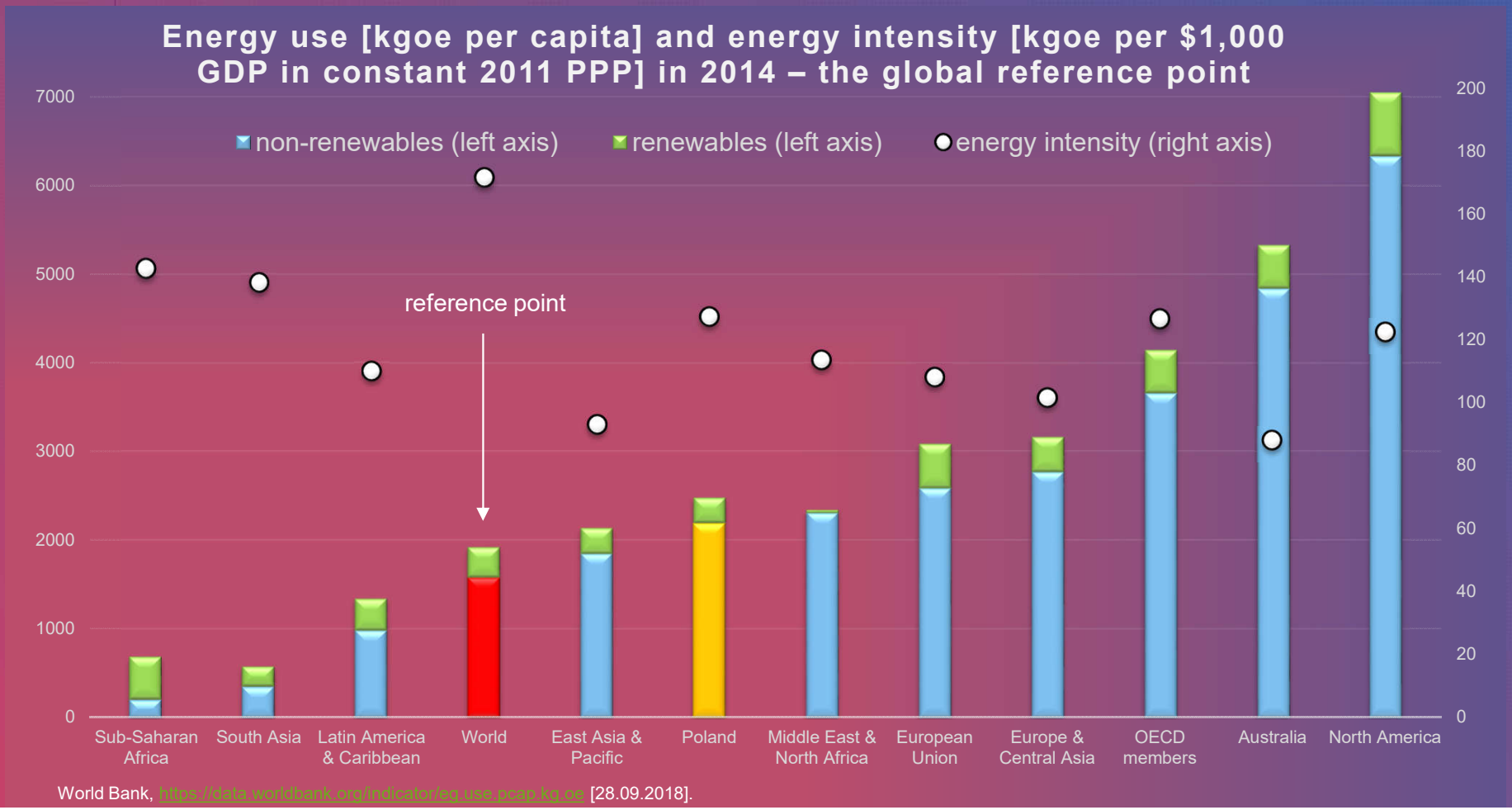

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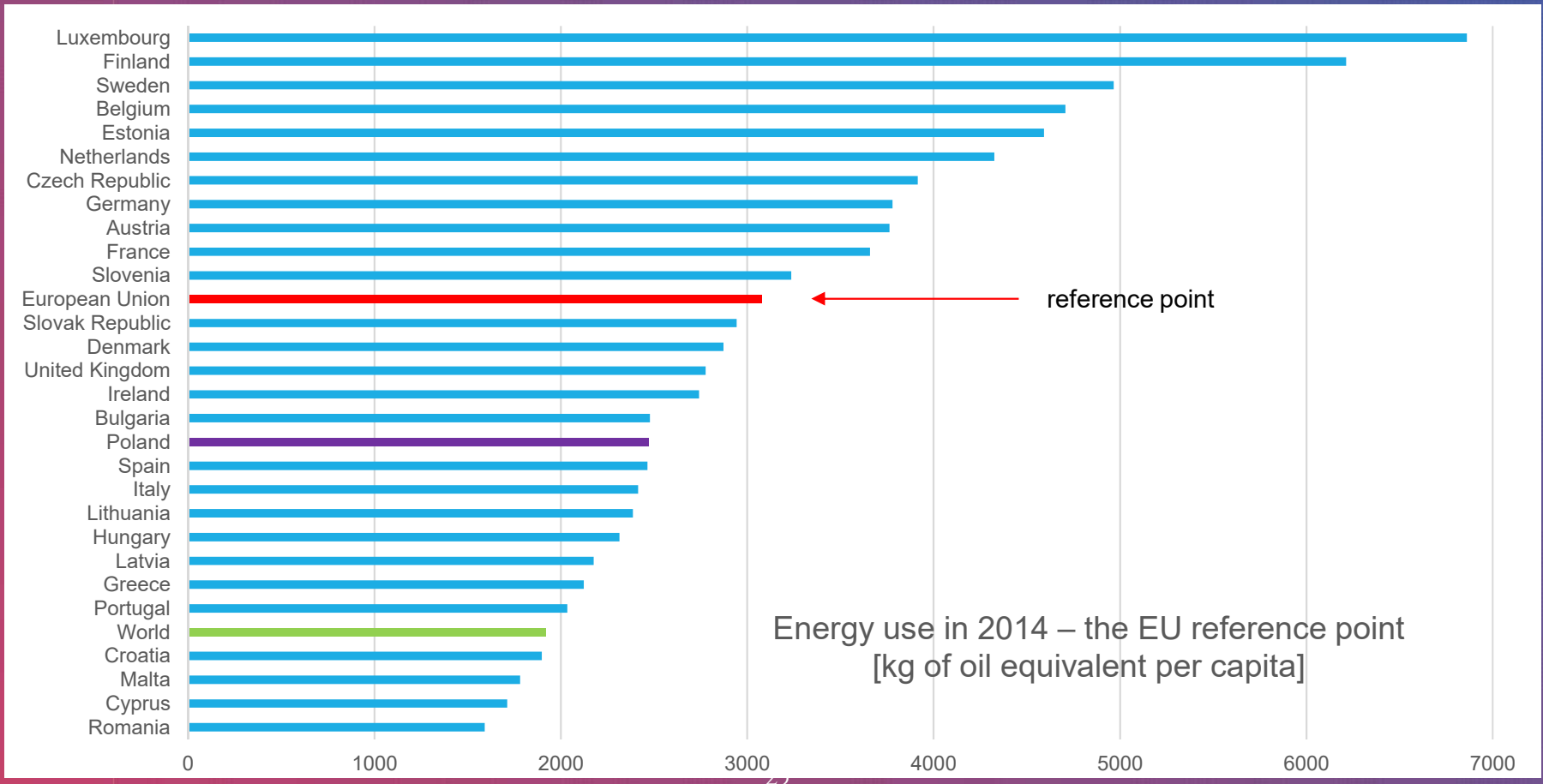

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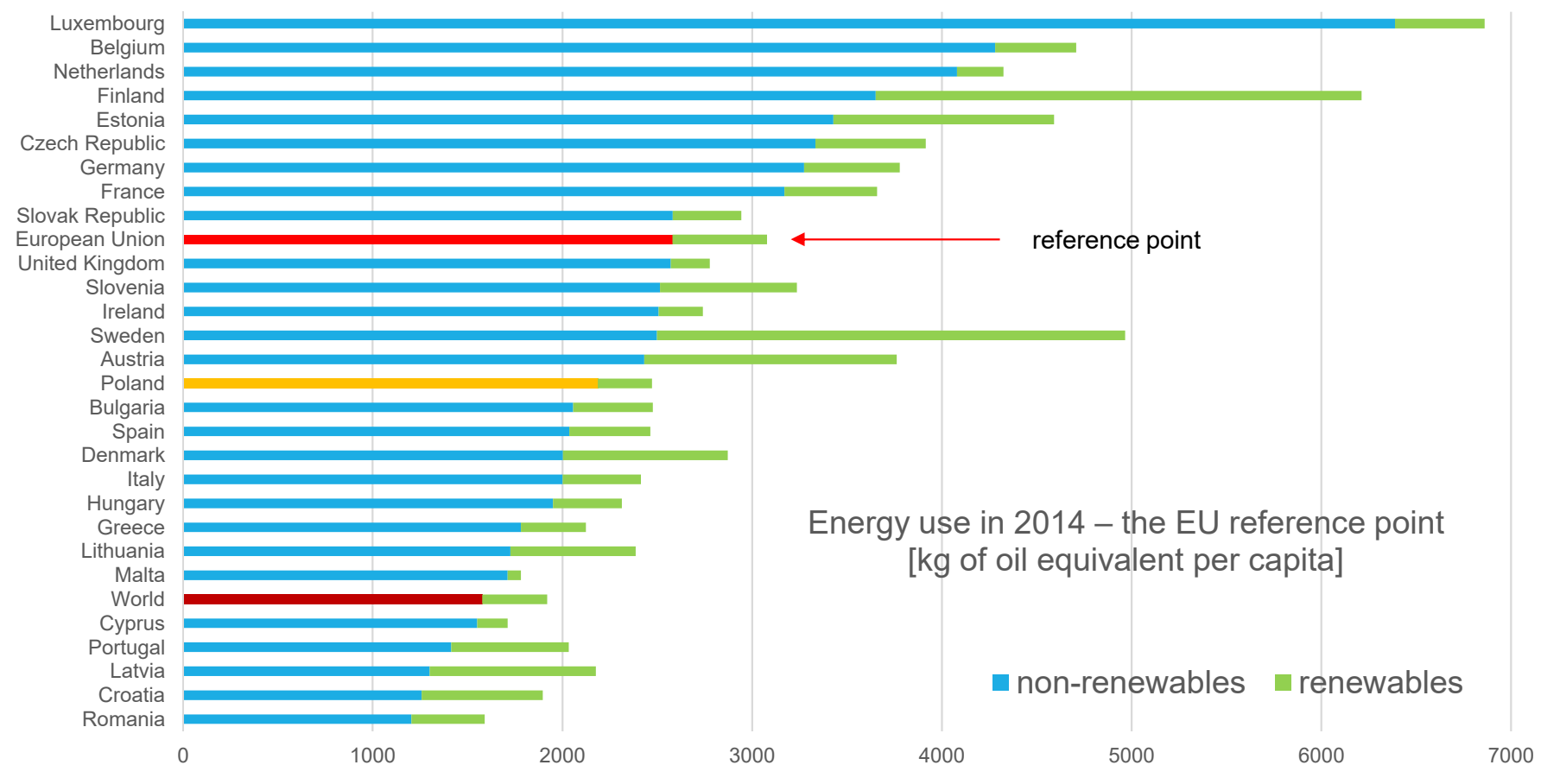

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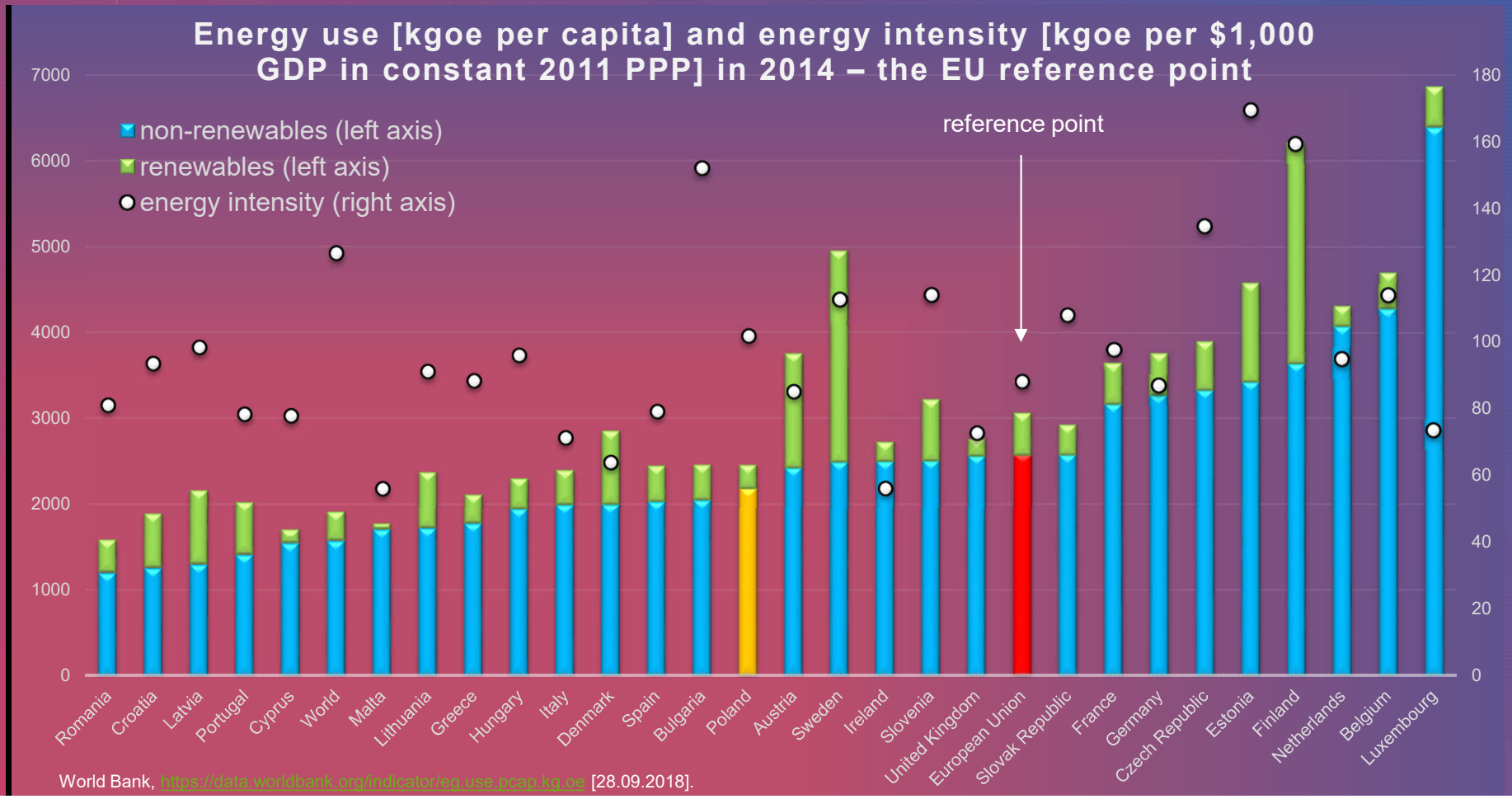

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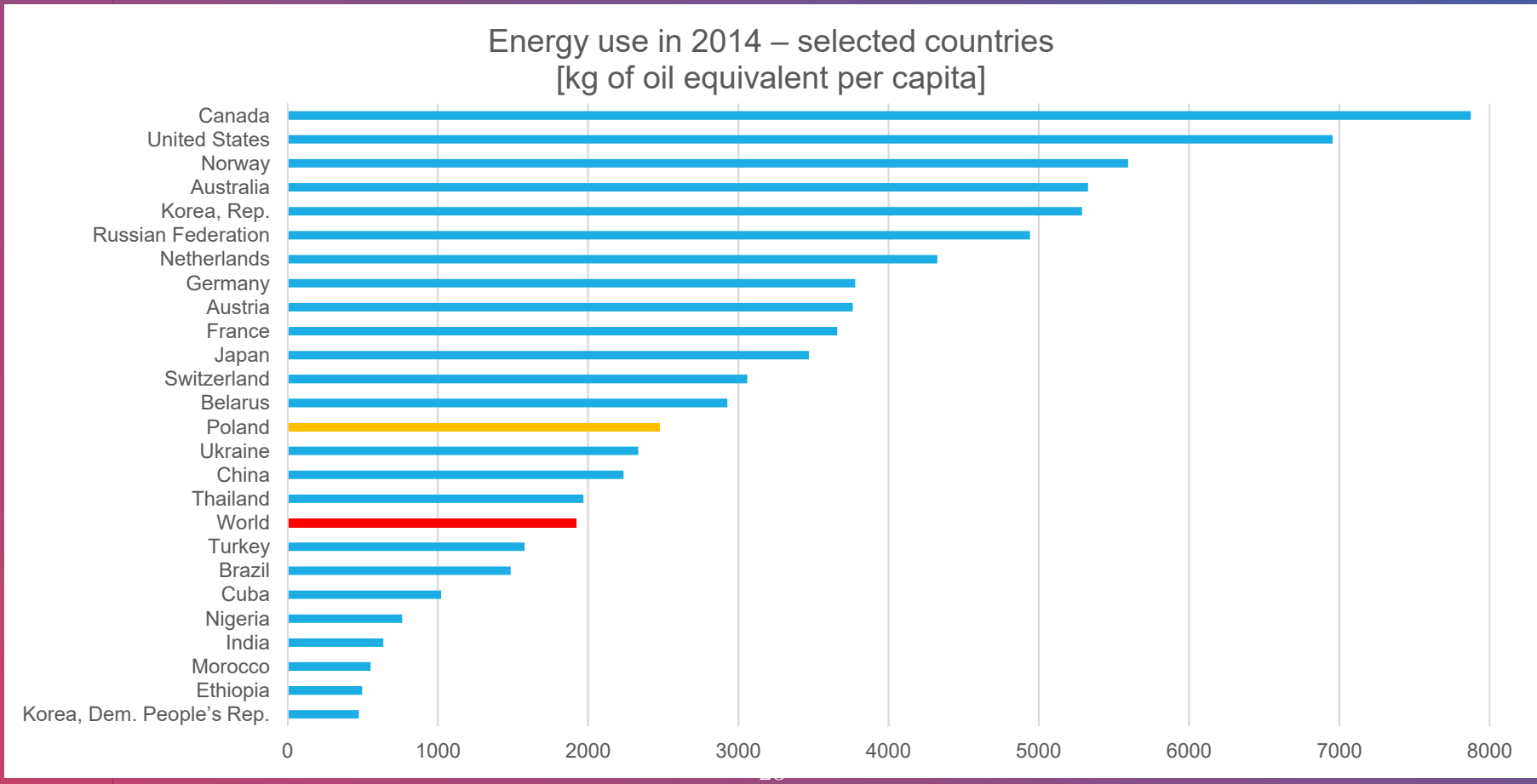

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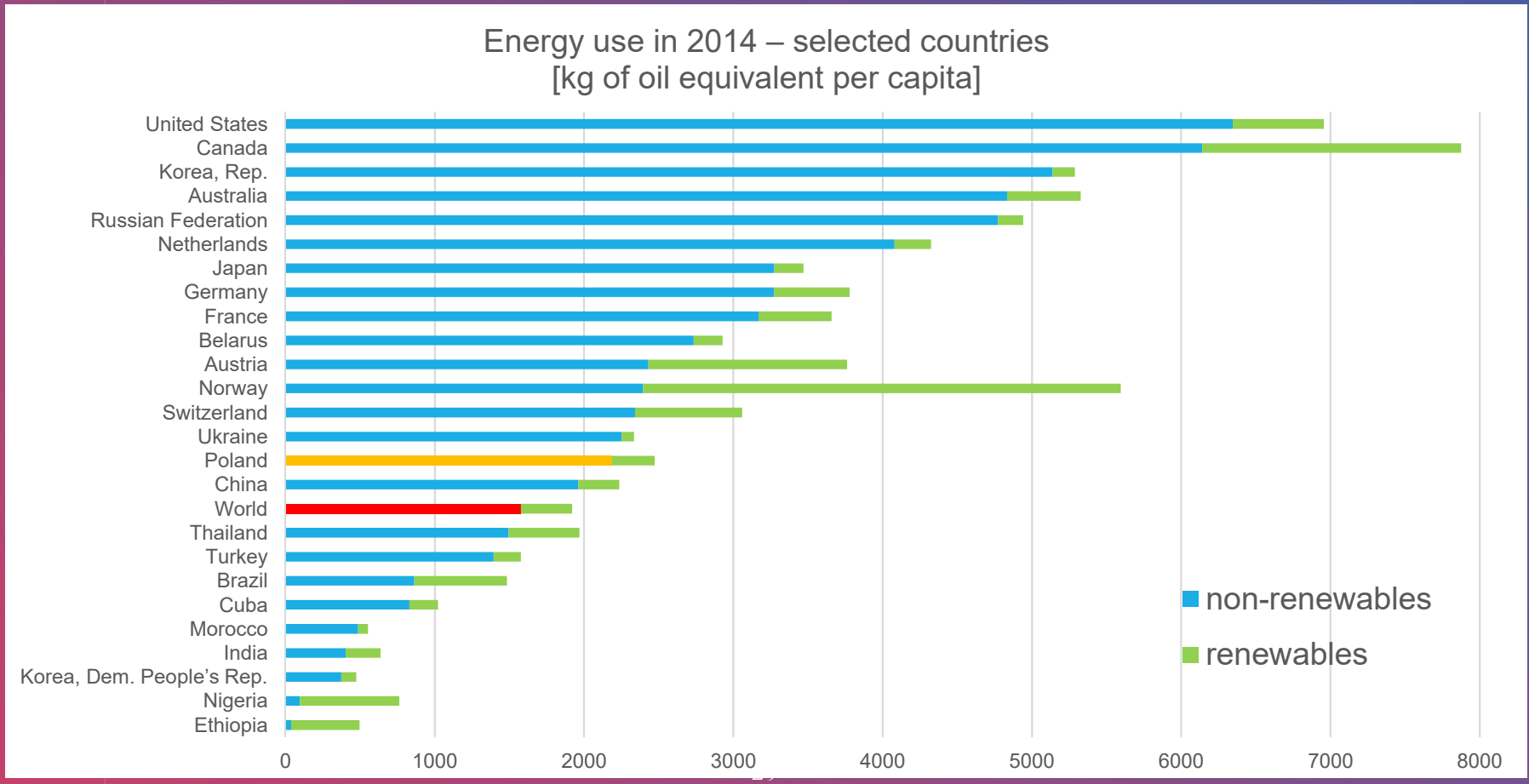

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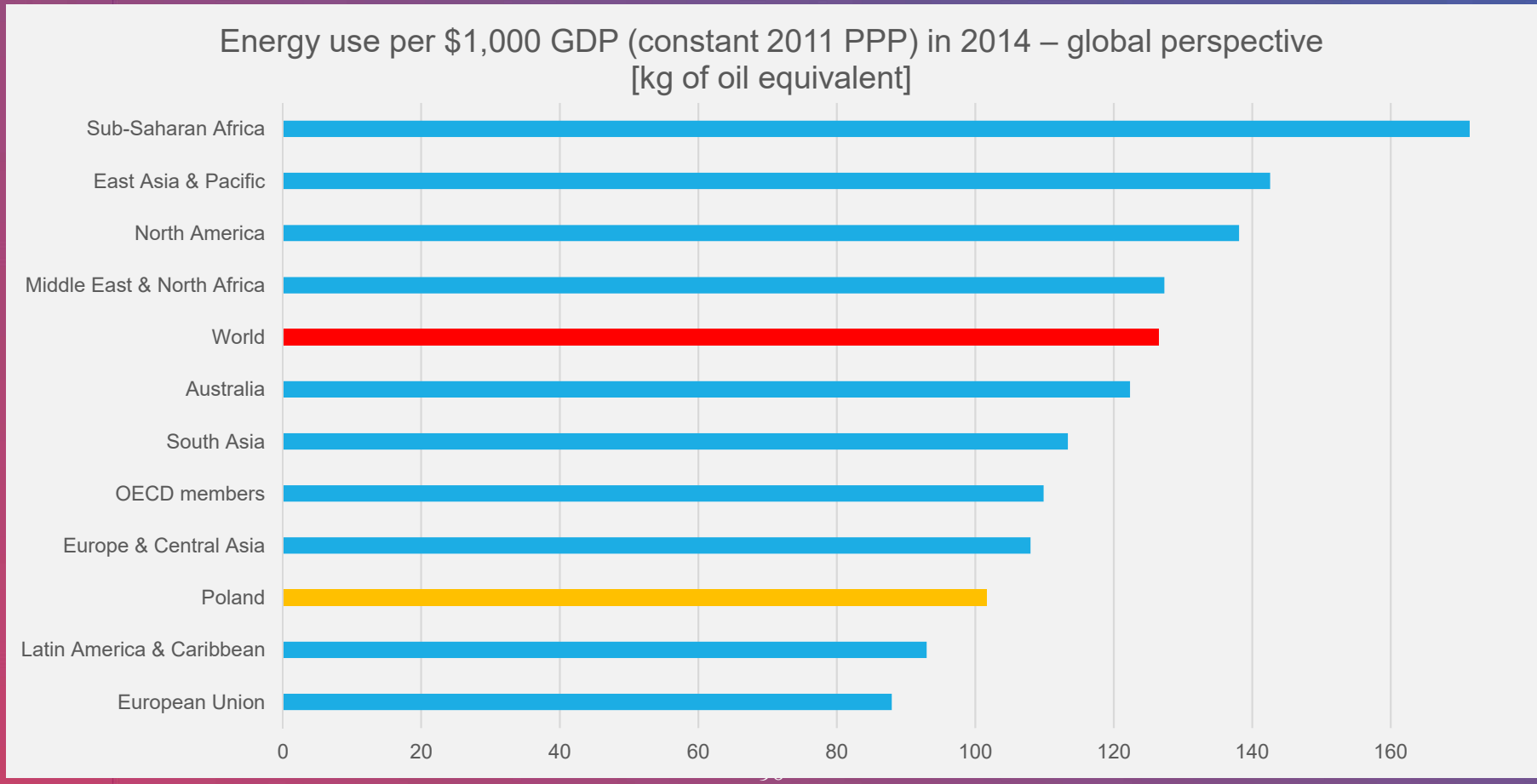

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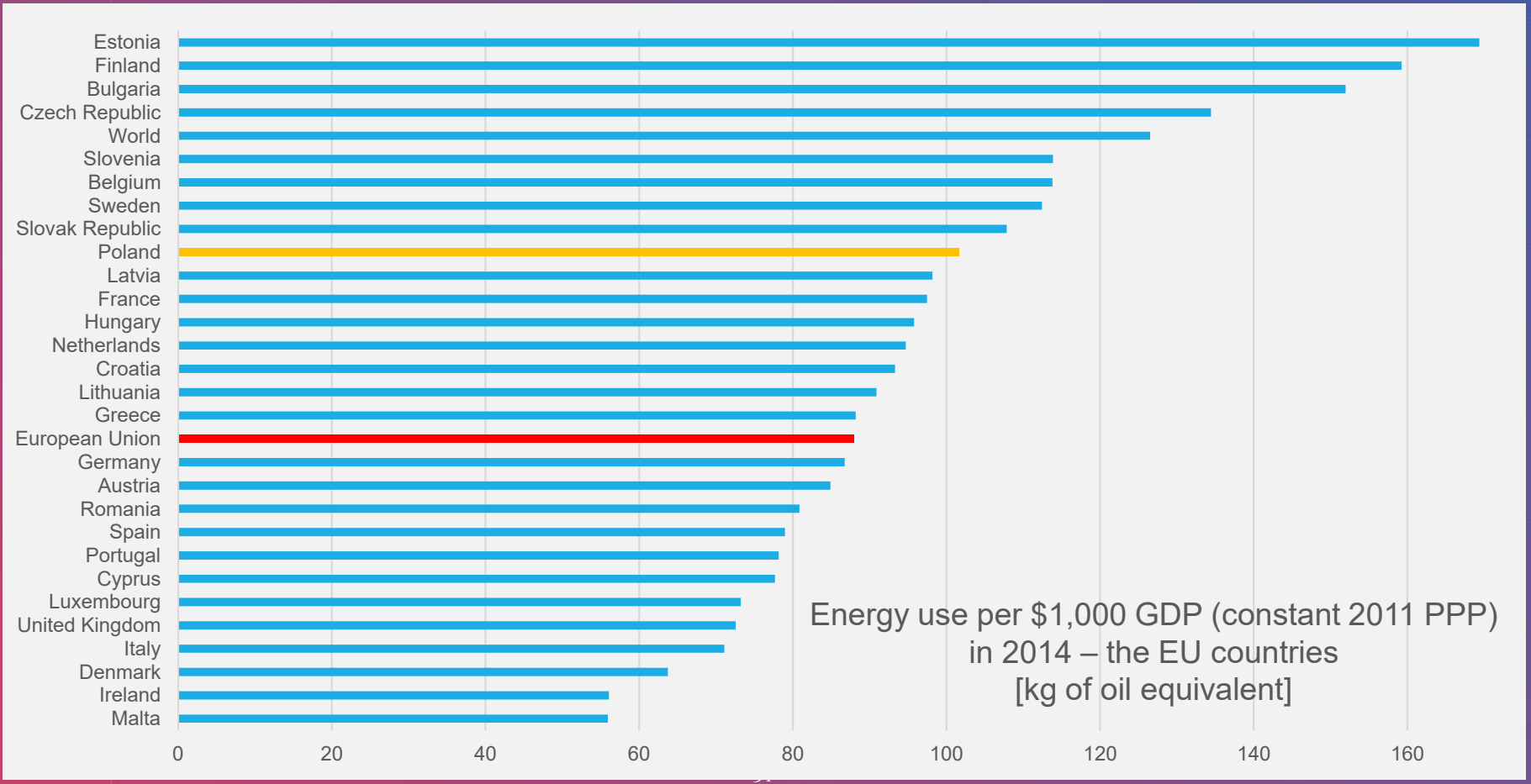

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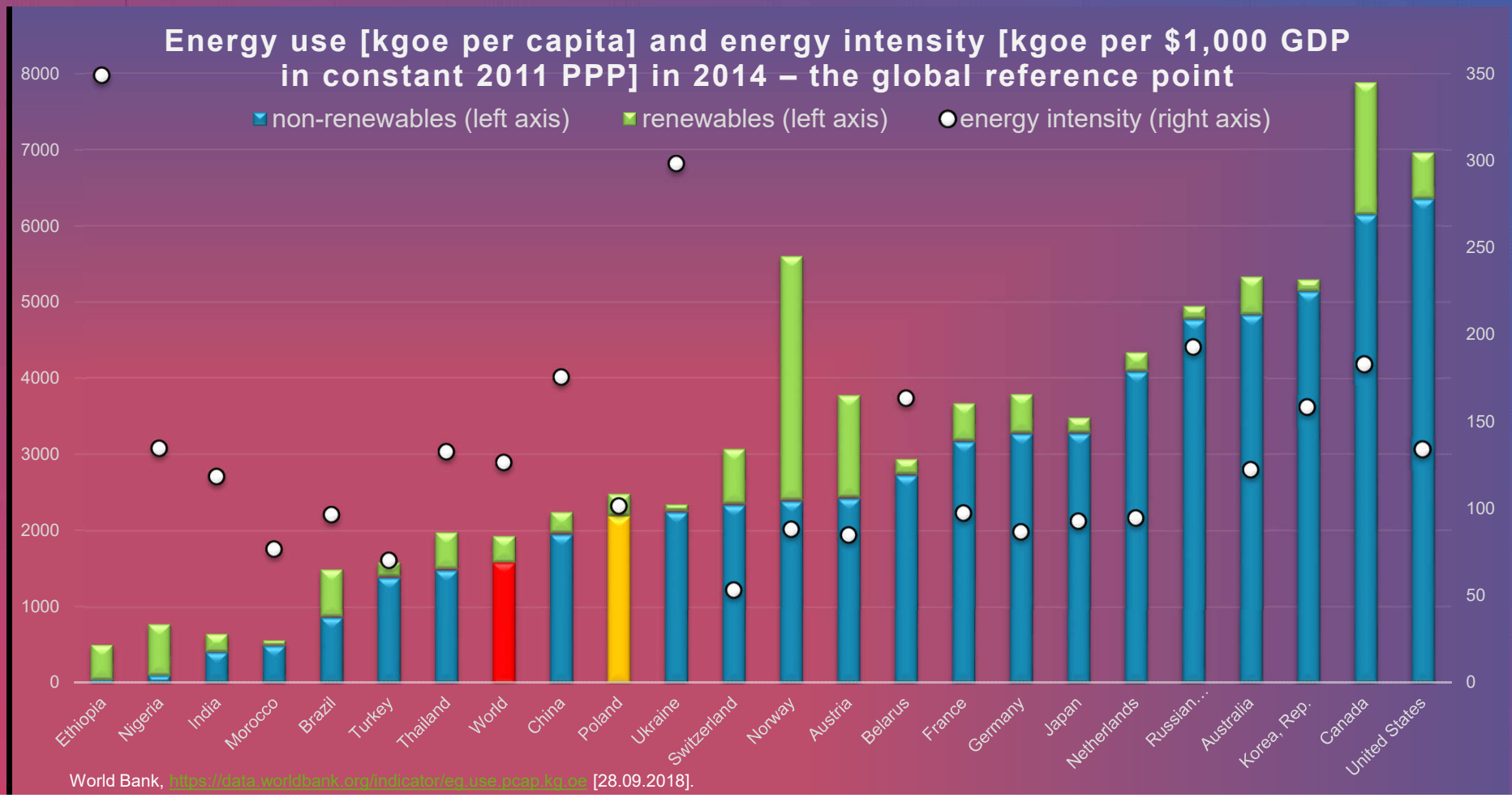

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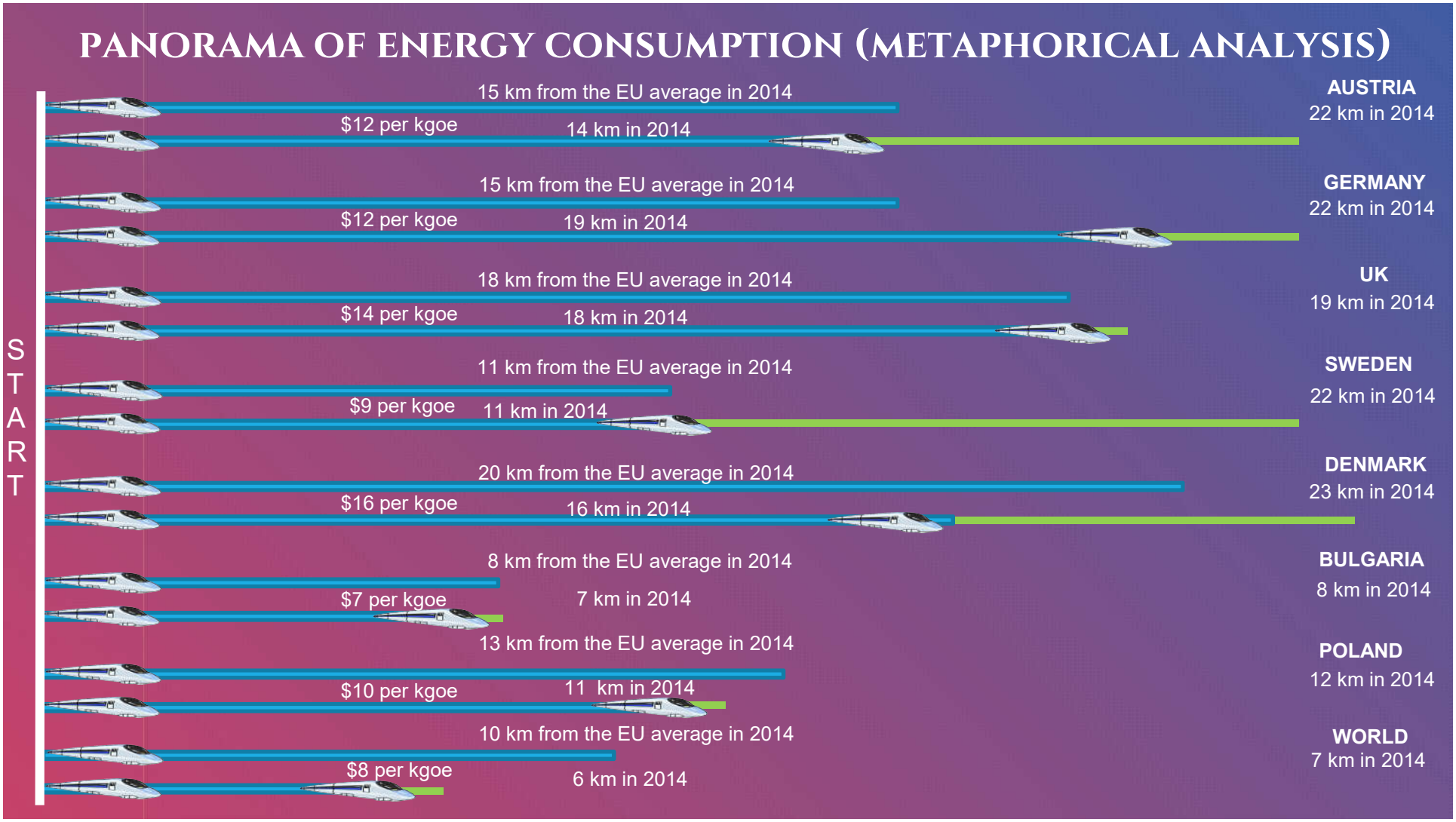
PANORAMA OF ENERGY CONSUMPTION

THE CONCEPT OF A REFERENCE POINT

GDP per energy use per capita [$]			
Energy	1 kgoe	non-renewables	renewables
Austria	12	28634	15687
Belgium	9	37607	3753
Bulgaria	7	13536	2766
Croatia	11	13492	6842
Cyprus	13	19973	2063
Czech Rep.	7	24801	4319
Denmark	16	31418	13640
Estonia	6	20247	6867
EU (reference)	11	29330	5678
Finland	6	22929	16089
France	10	32515	5008
Germany	12	37733	5828
Greece	11	20208	3874
Hungary	10	20374	3787
Ireland	18	44732	4166

GDP per energy use per capita [$]			
Energy	1 kgoe	non-renewables	renewables
Italy	14	28144	5801
Latvia	10	13251	8921
Lithuania	11	18983	7275
Luxembourg	14	87209	6447
Malta	18	30595	1252
Netherlands	11	43084	2585
Poland	10	21530	2817
Portugal	13	18098	7926
Romania	12	14890	4788
Slovak Rep.	9	23945	3340
Slovenia	9	22080	6337
Spain	13	25782	5413
Sweden	9	22219	21948
UK	14	35423	2829
World	8	12465	2712

*Value [$] per 1 kgoe * Energy use* [kg of oil equivalent per capita] in 2014
Energy intensity - energy use per $1,000 GDP (constant 2011 PPP) in 2014

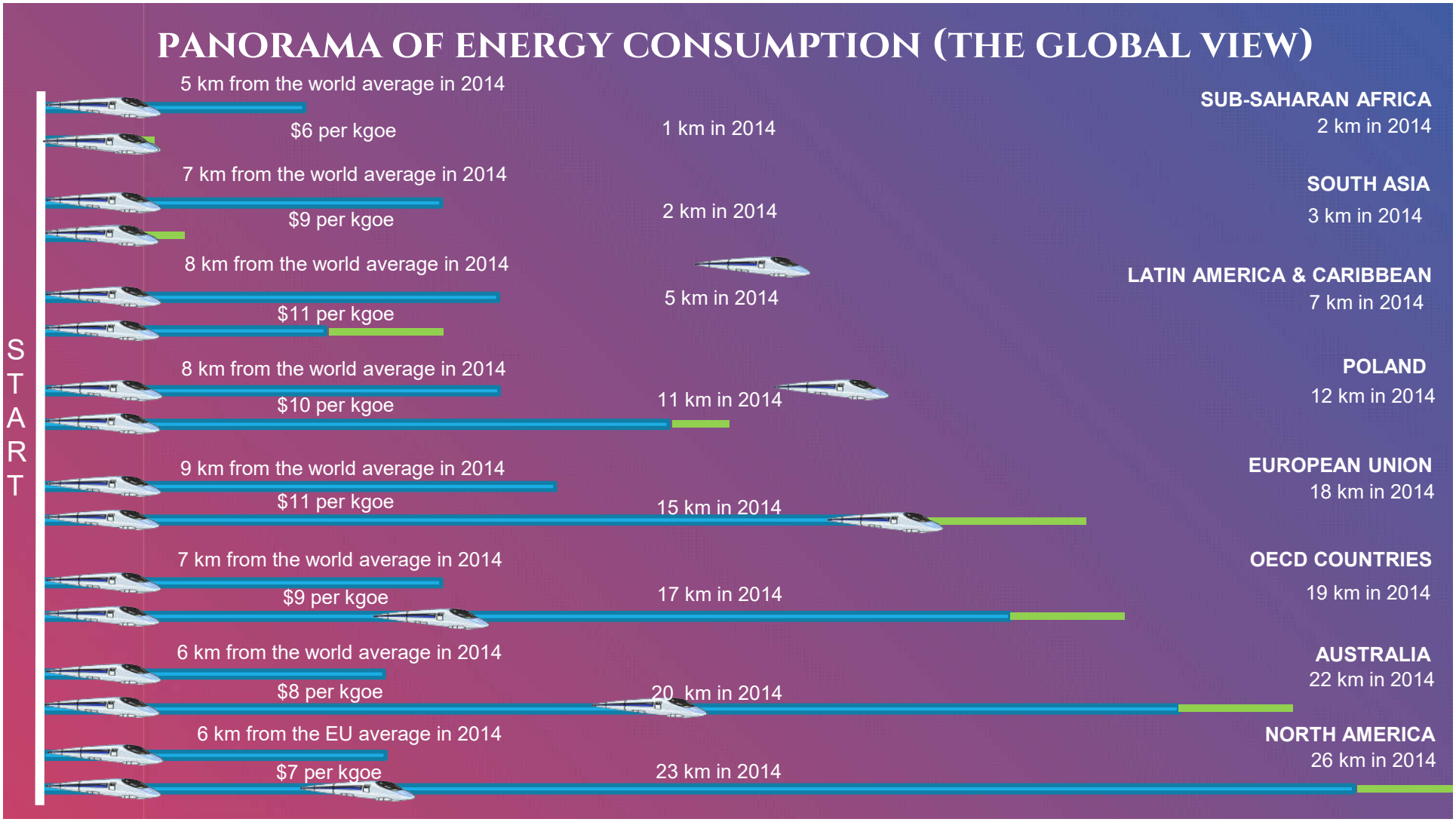

PANORAMA OF ENERGY CONSUMPTION (METAPHORICAL ANALYSIS)
START
15 km from the EU average in 2014
$12 per kgoe
14 km in 2014
AUSTRIA
22 km in 2014
15 km from the EU average in 2014
$12 per kgoe
19 km in 2014
GERMANY
22 km in 2014
18 km from the EU average in 2014
$14 per kgoe
18 km in 2014
UK
19 km in 2014
11 km from the EU average in 2014
$9 per kgoe
11 km in 2014
SWEDEN
22 km in 2014
20 km from the EU average in 2014
$16 per kgoe
16 km in 2014
DENMARK
23 km in 2014
8 km from the EU average in 2014
$7 per kgoe
7 km in 2014
BULGARIA
8 km in 2014
13 km from the EU average in 2014
$10 per kgoe
11 km in 2014
POLAND
12 km in 2014
10 km from the EU average in 2014
$8 per kgoe
6 km in 2014
WORLD
7 km in 2014

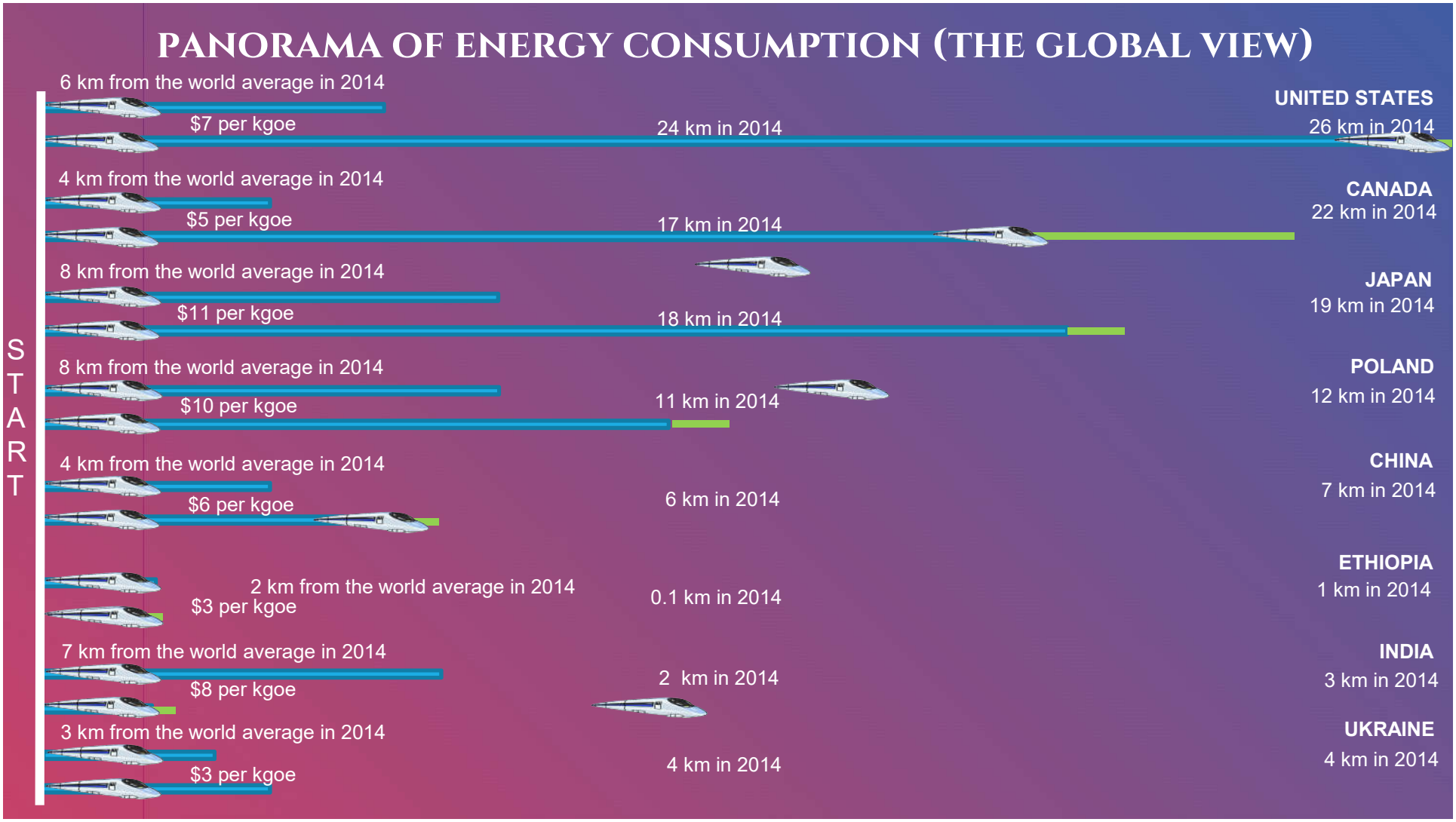
PANORAMA OF ENERGY CONSUMPTION

THE CONCEPT OF A REFERENCE POINT (THE GLOBAL VIEW)

Value of energy inputted to economy [$]			
Energy	1 kgoe	non-renewables	renewables
United States	7	47376	4545
Canada	5	33591	9488
Japan	11	35237	2100
Poland	10	21530	2816
China	6	11199	1559
Ethiopia	3	112	1311
India	8	3411	1973
Ukraine	3	7555	274

Value of energy inputted to economy [$]			
Energy	1 kgoe	non-renewables	renewables
Australia	8	39507	4040
East Asia & Pacific	7	12917	2060
Europe & Central Asia	9	25560	3691
European Union	11	29330	5678
Latin America & Caribbean	11	10519	3907
Middle East & North Africa	8	18066	294
North America	7	45819	5216
OECD members	9	33280	4443
Poland	10	21530	2817
South Asia	9	3099	1981
Sub-Saharan Africa	6	1189	2813
World	8	12465	2712


PANORAMA OF ENERGY CONSUMPTION (THE GLOBAL VIEW)
START
5 km from the world average in 2014
$6 per kgoe
1 km in 2014
SUB-SAHARAN AFRICA
2 km in 2014
7 km from the world average in 2014
$9 per kgoe
2 km in 2014
SOUTH ASIA
3 km in 2014
8 km from the world average in 2014
$11 per kgoe
5 km in 2014
LATIN AMERICA & CARIBBEAN
7 km in 2014
8 km from the world average in 2014
$10 per kgoe
11 km in 2014
POLAND
12 km in 2014
9 km from the world average in 2014
$11 per kgoe
15 km in 2014
EUROPEAN UNION
18 km in 2014
7 km from the world average in 2014
$9 per kgoe
17 km in 2014
OECD COUNTRIES
19 km in 2014
6 km from the world average in 2014
$8 per kgoe
20 km in 2014
AUSTRALIA
22 km in 2014
6 km from the EU average in 2014
$7 per kgoe
23 km in 2014
NORTH AMERICA
26 km in 2014


PANORAMA OF ENERGY CONSUMPTION (THE GLOBAL VIEW)
START
6 km from the world average in 2014
$7 per kgoe
24 km in 2014
UNITED STATES
26 km in 2014
4 km from the world average in 2014
$5 per kgoe
17 km in 2014
CANADA
22 km in 2014
8 km from the world average in 2014
$11 per kgoe
18 km in 2014
JAPAN
19 km in 2014
8 km from the world average in 2014
$10 per kgoe
11 km in 2014
POLAND
12 km in 2014
4 km from the world average in 2014
$6 per kgoe
6 km in 2014
CHINA
7 km in 2014
2 km from the world average in 2014
$3 per kgoe
0.1 km in 2014
ETHIOPIA
1 km in 2014
7 km from the world average in 2014
$8 per kgoe
2 km in 2014
INDIA
3 km in 2014
3 km from the world average in 2014
$3 per kgoe
4 km in 2014
UKRAINE
4 km in 2014

ENERGY CONSUMPTION FROM THE PERSPECTIVE OF SUSTANABLE DEVELOPMENT FAIRNESS

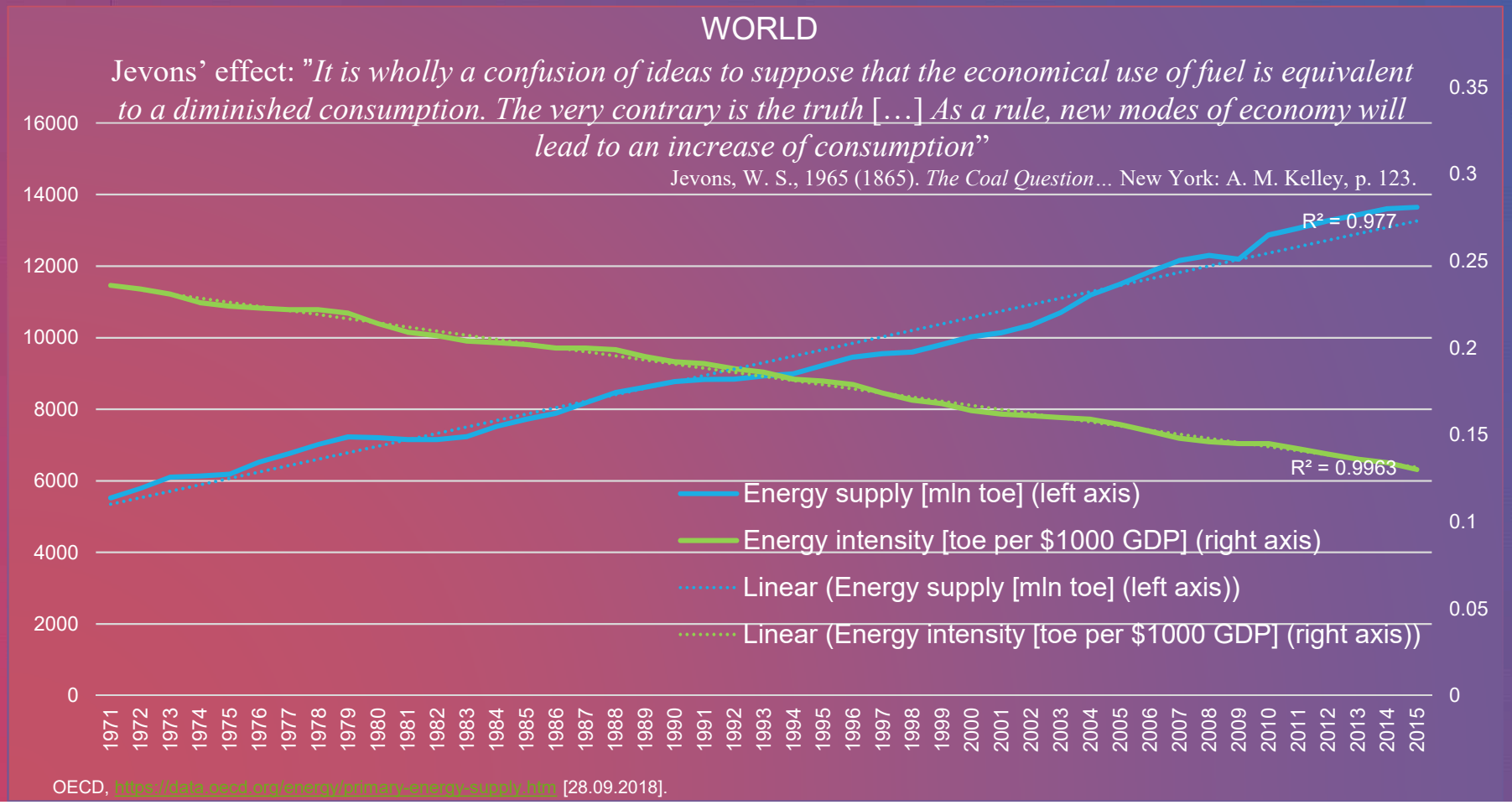
THE CONCEPT OF A REFERENCE POINT

The rationale behind the concept is as follows:

- the micro-allocation mechanism based on market allocation provides motivation for the increase of efficiency at the local/regional/national level according to individuals' deserts: style of life, technology, socio-economic institutions shapes energy behaviour and the benefits provided by a unit of energy – quality of life,
- the macro-allocation mechanism based on political agreements ensures resources according to social/community needs with the respects of ecological conditions from the global perspective.

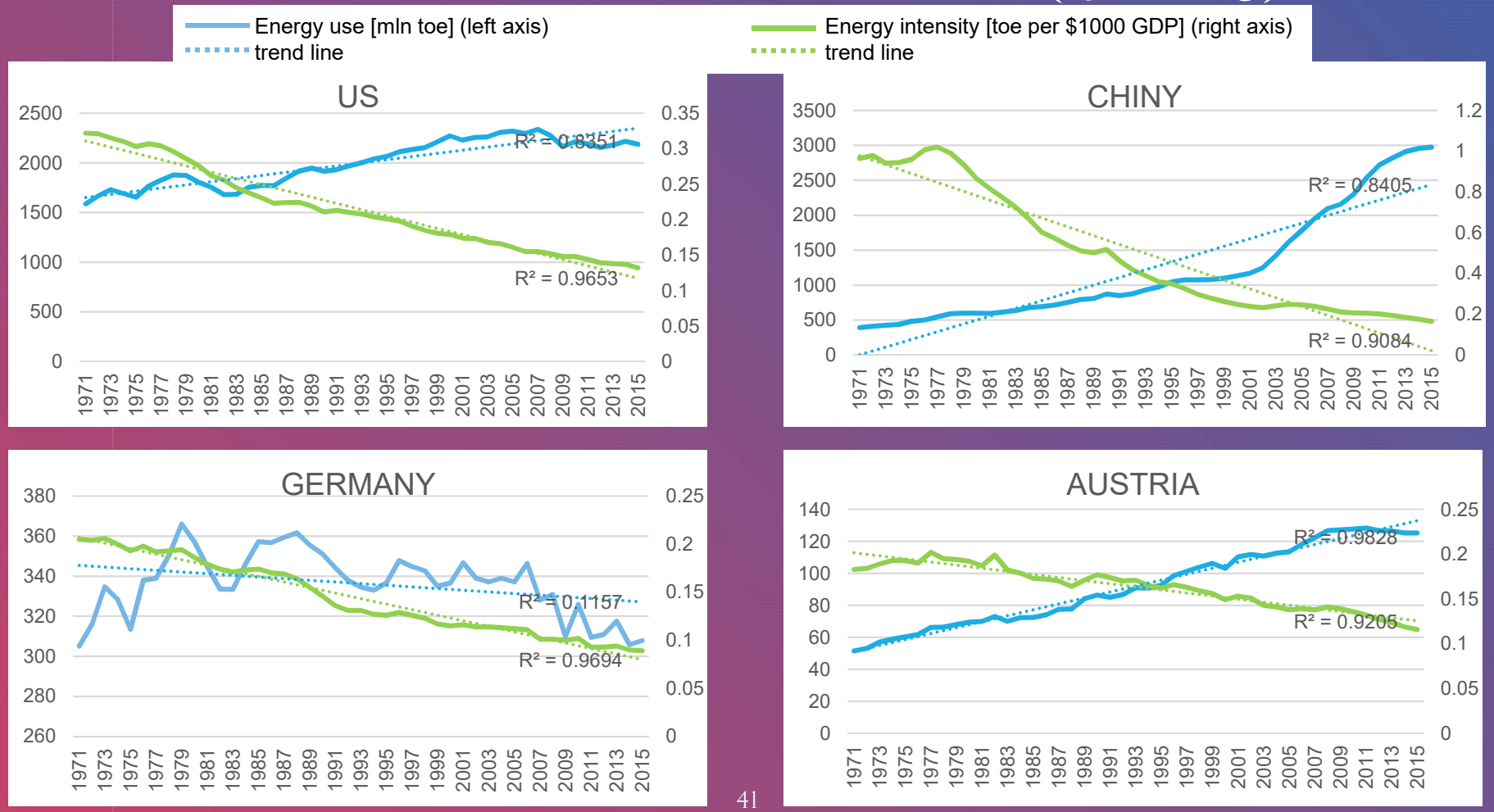
Pieńkowski, D., 2013. *Sprawiedliwość dystrybutywna w świetle Optimum Pareto i idei zrównoważonego rozwoju.* Białystok: Wydawnictwo Uniwersytetu w Białymstoku.

PANORAMA OF ENERGY CONSUMPTION



OECD, https://data.oecd.org/energy/primary-energy-supply.htm [28.09.2018].

PANORAMA OF ENERGY CONSUMPTION (1971-2015)



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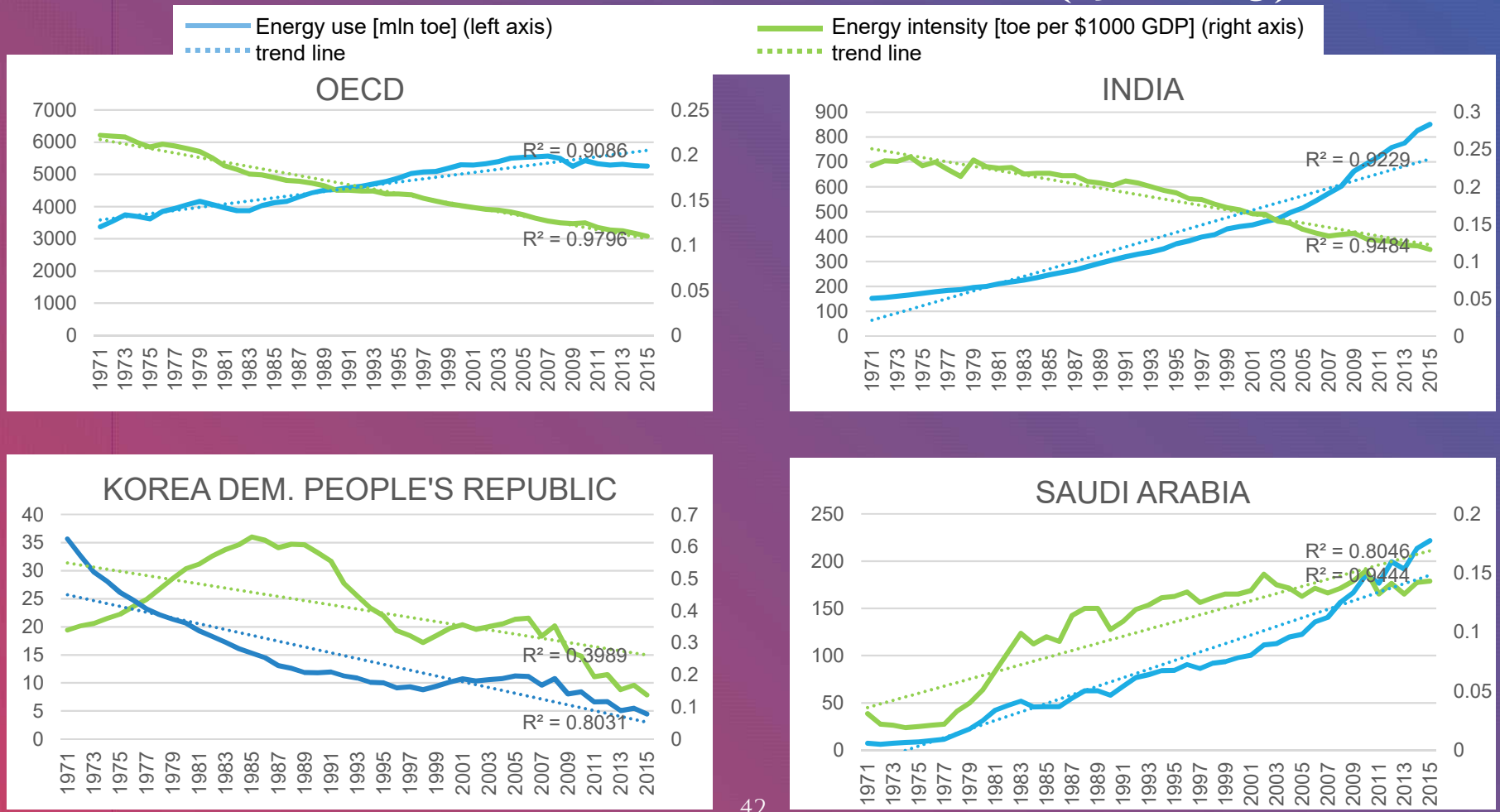

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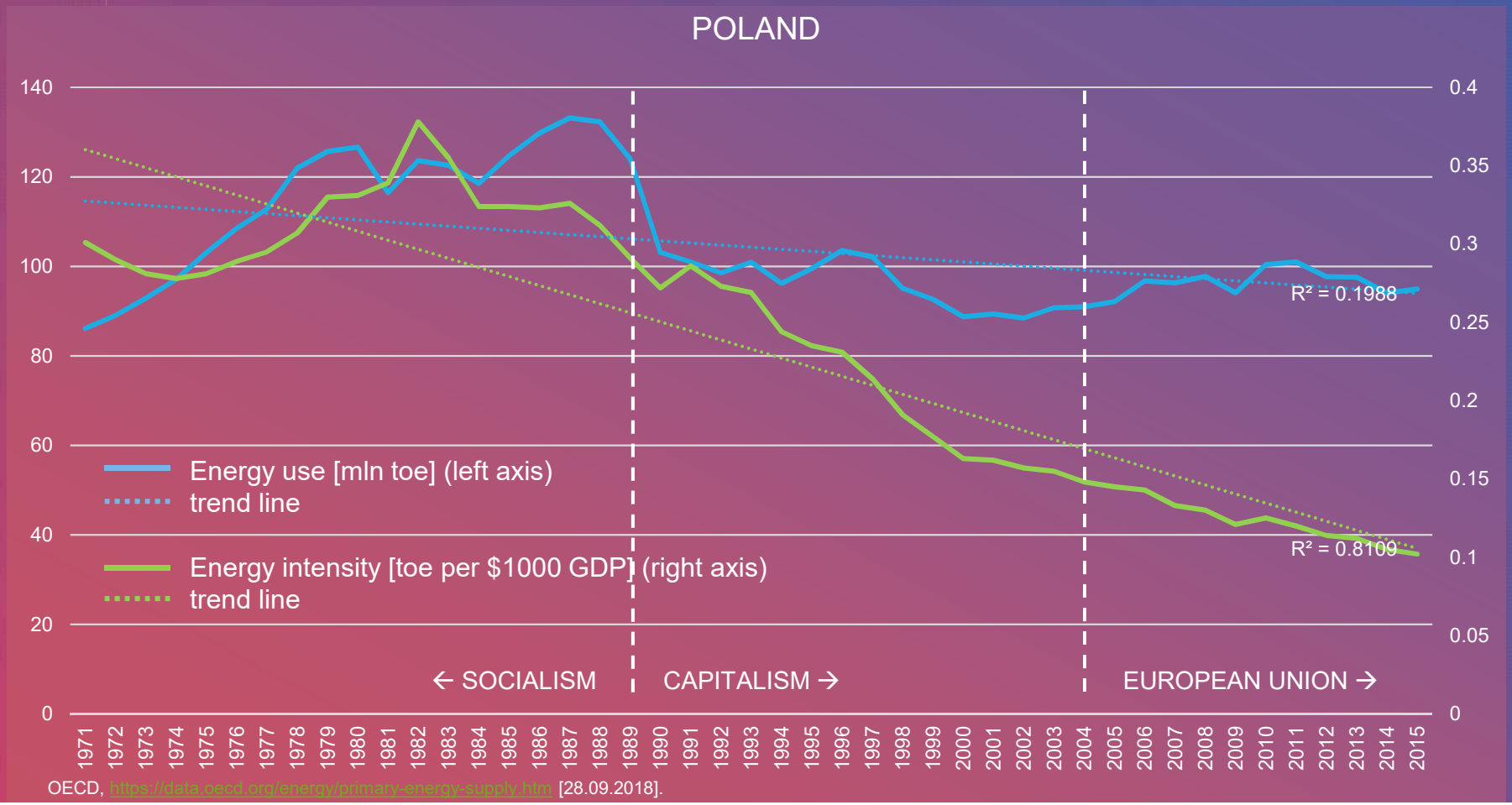

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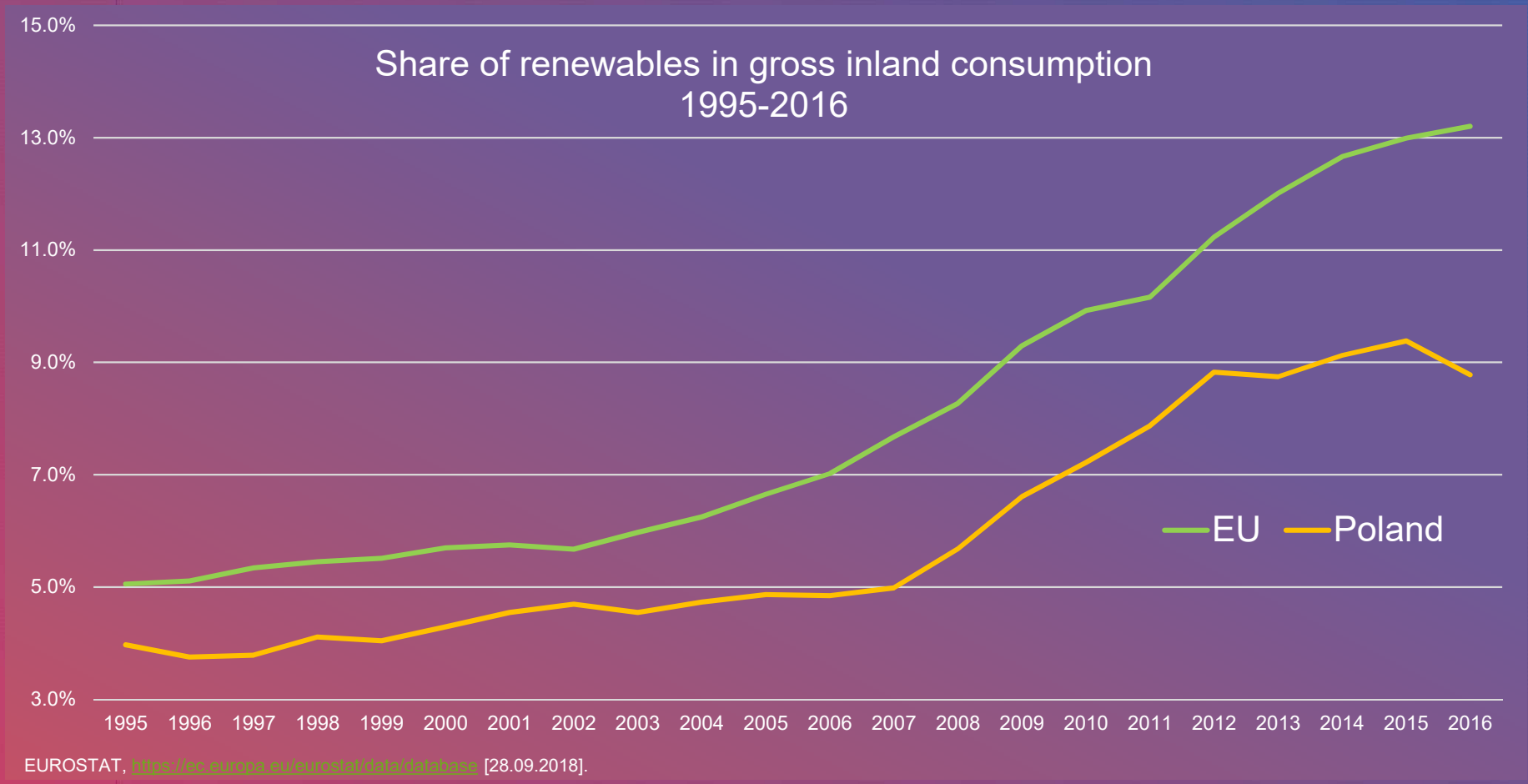


EUROSTAT, https://ec.europa.eu/eurostat/data/database [28.09.2018].

ENERGY CONSUMPTION FROM THE PERSPECTIVE OF SUSTANABLE DEVELOPMENT FAIRNESS

THE CONCEPT OF A REFERENCE POINT

The high level of energy efficiency and, at the same time, the high level of energy consumption is the real threat for the global ecosystem and climate change mitigation.

The concept of a reference point solves following problems:

- hamper the Jevons' effect,
- meet the moral and economic postulates of fair inter- and intragenerational allocation of natural resources,
- allows to plan and create resilient economies from the global perspective according to the ecological conditions of the Earth.

Pieńkowski, D., 2013. *Sprawiedliwość dystrybutywna w świetle Optimum Pareto i idei zrównoważonego rozwoju.* Białystok: Wydawnictwo Uniwersytetu w Białymstoku.

IV

FAIRNESS AND THE ENVIRONMENT

Efficiency is a comparative idea. It is a way of judging the merits of different ways of doing things. It has come to mean the ratio between input and output, effort and results, expenditure and income, or cost and resulting benefits...

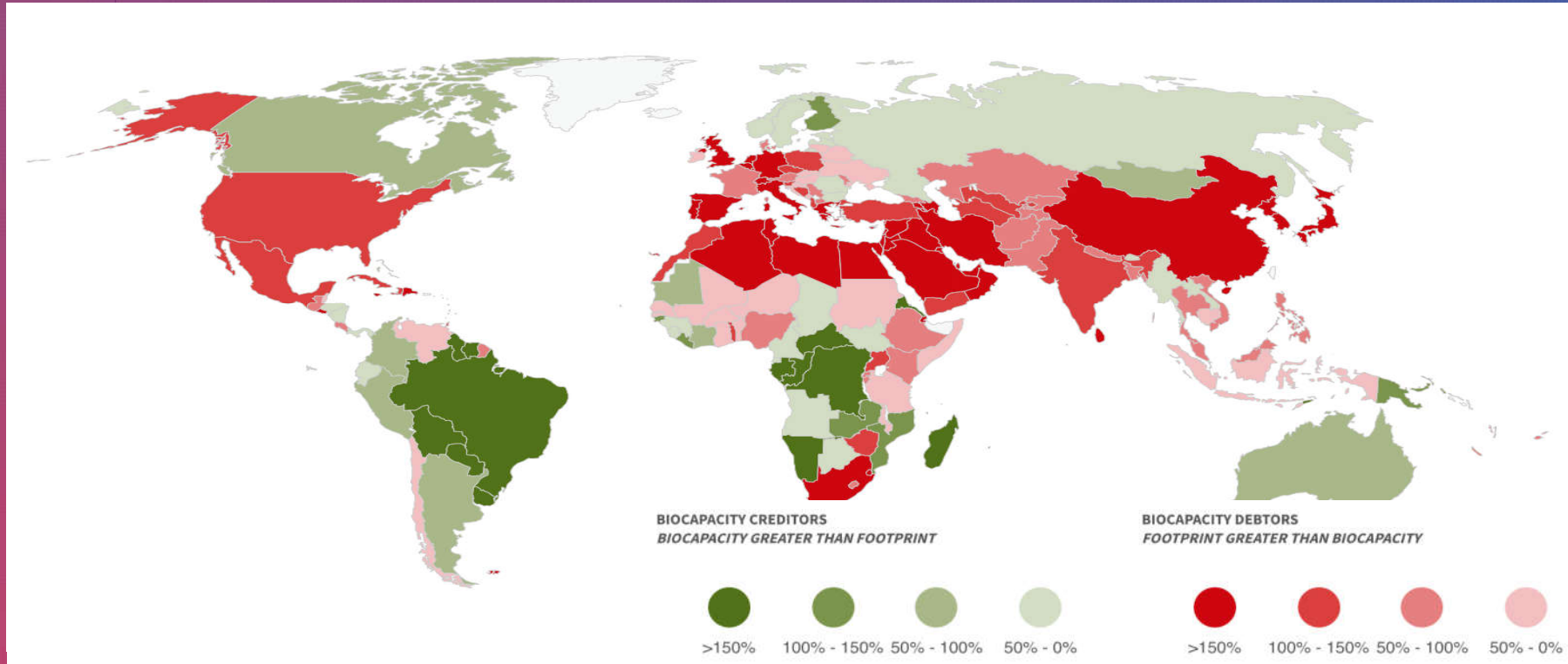
No one is opposed to efficiency any more than people are against equity…

Trying to measure efficiency is like trying to pull oneself out of quicksand without a rope. There is no firm ground. Objectives for public policy are forged in political conflict and are constantly changing, not handed down on a stone tablet...

There are no correct answers to these questions to be found outside the political process. The answers build into supposedly technical analyses of efficiency are nothing more than political claims...

Stone D. 2001, *Policy paradox: The art of political decision making, W. W. Norton & Company*, New York – London, pp. 61 &65.

ECONOMY AND THE ENVIRONMENT



- *ecological deficit* = Ecological Footprint of a population > biocapacity of the area available to that population
- *ecological reserve* = biocapacity of a region < Ecological Footprint of a population
- an ecological deficit means that the nation is importing biocapacity through trade, liquidating national ecological assets or emitting carbon dioxide waste into the atmosphere.

Global Footprint Network, http://data.footprintnetwork.org/#/ [28.09.2018].

ECONOMY AND THE ENVIRONMENT

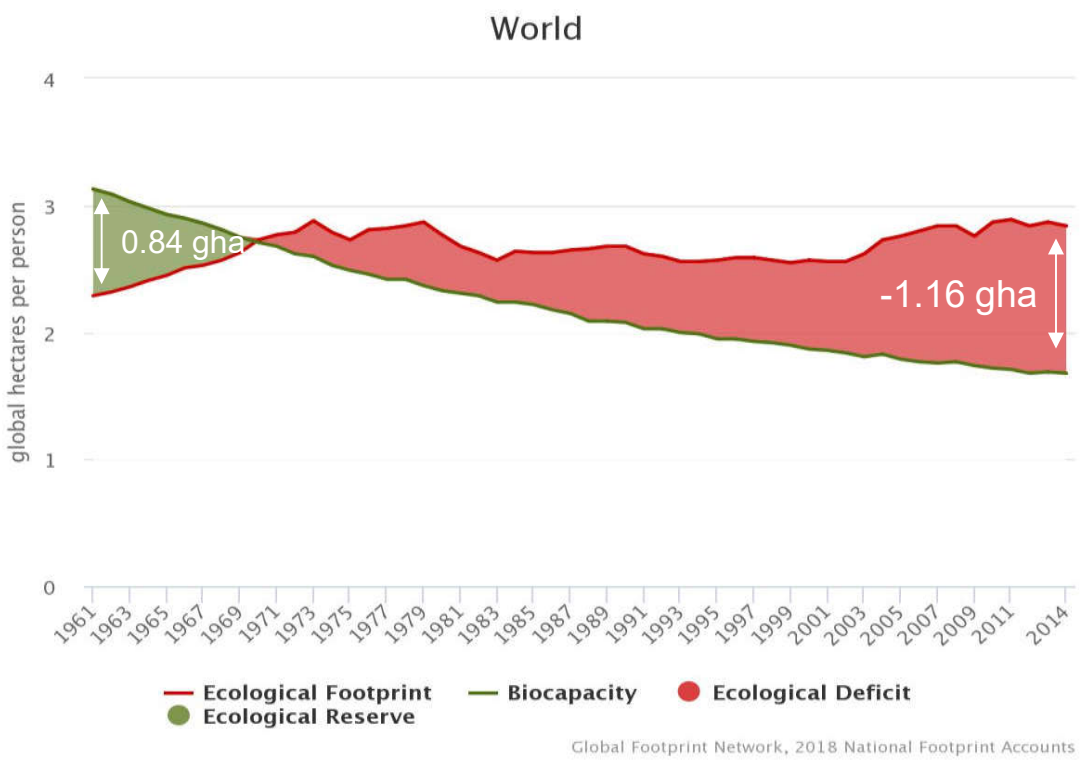
Ecological deficit *(ED) = Biocapacity – Ecological footprint*
A negative ED indicator denotes an *ecological deficit*.
A positive ED indicator denotes *ecological reserve*.

Ecological footprint - the demand of an economy for ecological assets per capita [gha per capita]

gha *(global hectar)* - standardised hectares with world average productivity

Biocapacity - the productivity of ecological assets

World Bank, https://data.worldbank.org/indicator/eg.use.pcap.kg.oe [28.09.2018].



ECONOMY AND THE ENVIRONMENT 1961-2014

Country	Reserve [gha]	
	2014	max
Canada	7.3	18.9 (1961)
Brazil	5.8	20.4 (1961)
Australia	6.2	21.7 (1961)
Argentina	3.0	7.0 (1963)
Zambia	1.0	6.2 (1964)
Cameroon	0.4	4.5 (1961)
Peru	1.5	8.2 (1961)

Country	Reserve	
	2014	max
Romania	0.1	-2.6 (1988)
Sweden	3.2	5.6 (1984)
Norway	1.4	-1.8 (1971)
Finland	6.8	8.4 (1993)
Estonia*	2.8	0.1 (2003)
Latvia*	2.5	0.9 (2006)
Bulgaria**	0.1	-1.8 (2007)

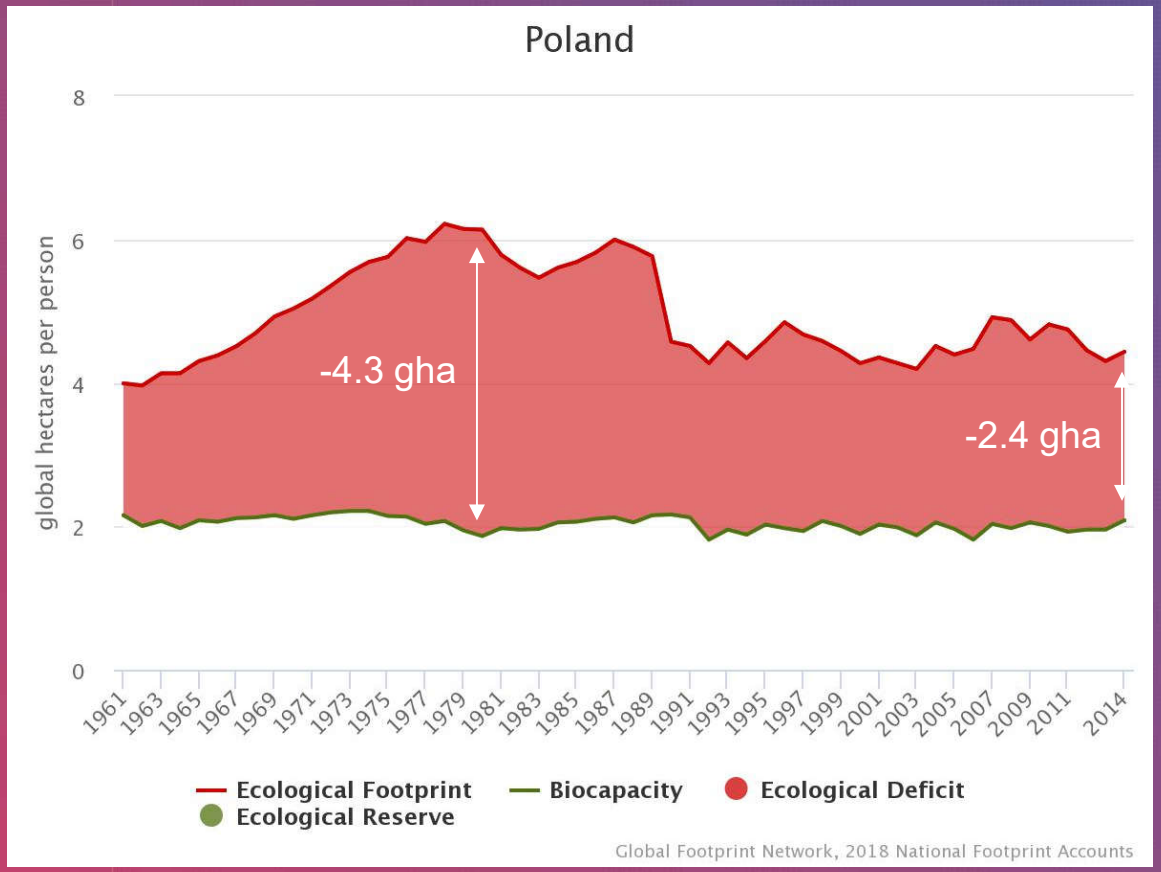
Country	Deficit	
	2014	max
China	-2.7	-2.7 (2014)
India	-0.6	-0.6 (2014)
United States	-4.8	-6.7 (2005)
Turkey	-1.7	1.1 (1963)
Japan	-4.2	-5.0 (1996)
Korea Dem. Peop. Rep.	-2.3	-2.8 (1985)
Egypt	-1.5	-1

Country	Deficit	
	2014	max
EU	-1.8 (2013)	-
Poland	-2.4	-4.3 (1979)
Germany	-3.2	-5.9 (1979)
Austria	-2.9	-3.3 (2007)
United Kingdom	-3.6	-5.9 (1969)
Denmark	-2.6	-5.2 (1977)
Netherlands	-5,0	-6.2 (2007)

*data available since 1992
**data available since 1997

Global Footprint Network, http://data.footprintnetwork.org/#/ [28.09.2018].

ECONOMY AND THE ENVIRONMENT



2014
Biocapacity – 2.8 gha per capita (80 166 059.46 gha)

2014
Ecological footprint - 4.44 gha per capita (171 573 971.21 gha)

1974
Maximum *biocapacity per capita* – 2.21 gha per capita

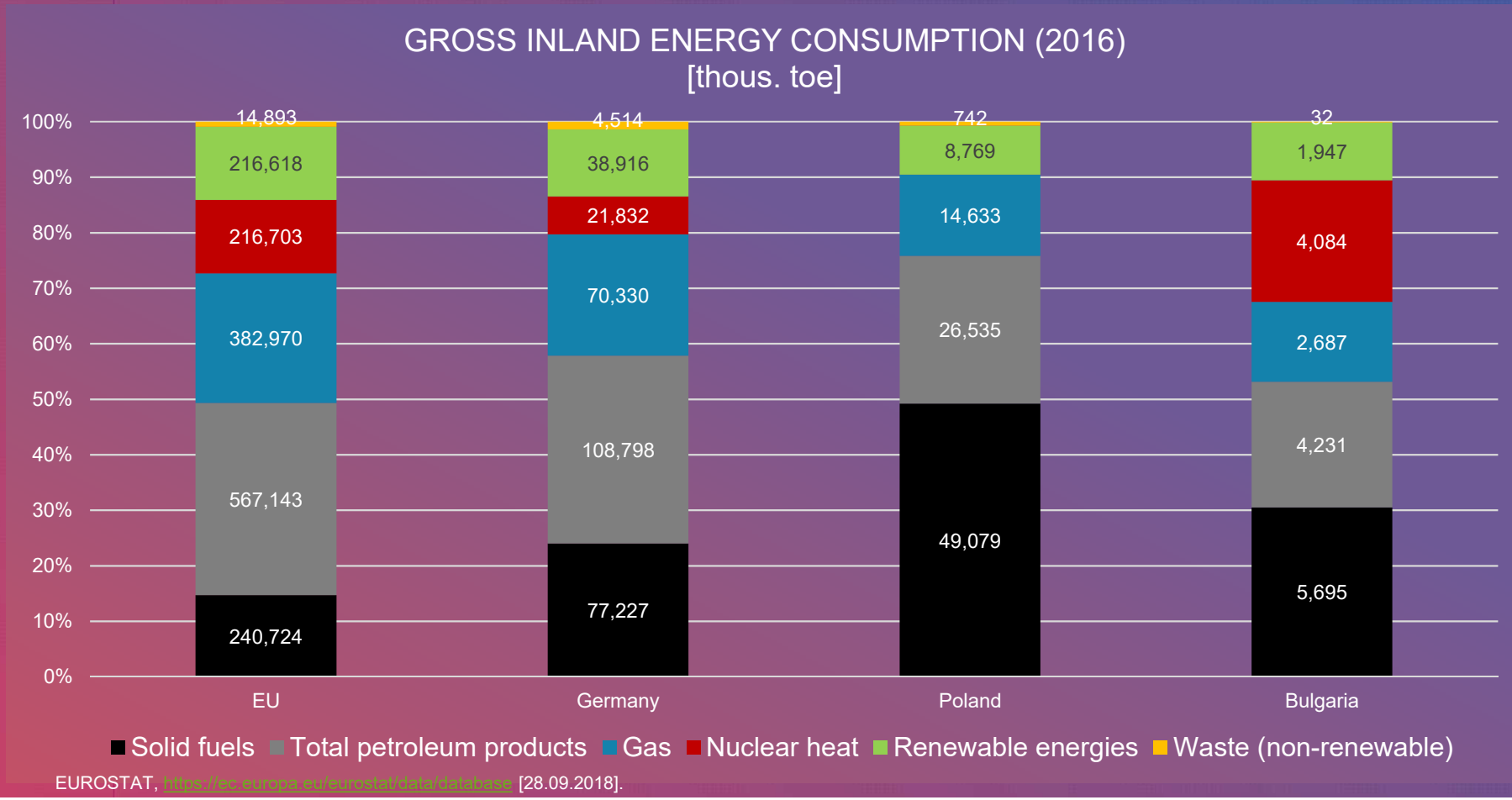
1978
Maximum *ecological footprint per capita* – 6.22 gha per capita

1987
Maximum *ecological footprint* – 227 256 619.54 gha

1990
Maximum *biocapacity* - 82 332 450.03 gha

World Bank, https://data.worldbank.org/indicator/eg.use.pcap.kg.oe [28.09.2018].

THE STRUCTURE OF ENERGY CONSUMPTION



EUROSTAT, https://ec.europa.eu/eurostat/data/database [28.09.2018].

V

CONLUSION FAIRNESS AND POLAND

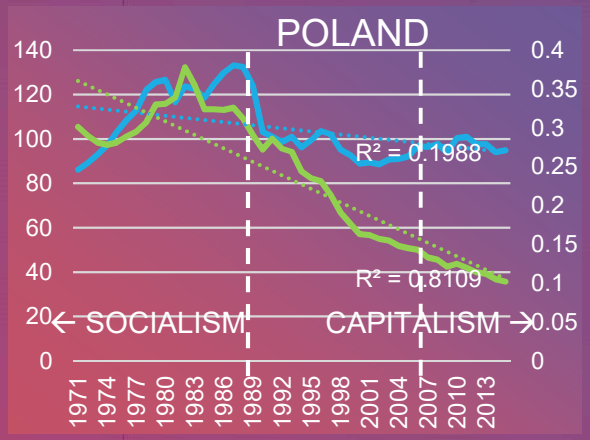
“

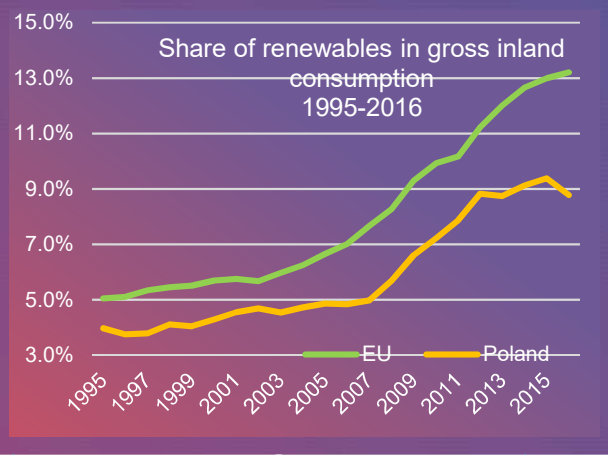
Art. 5

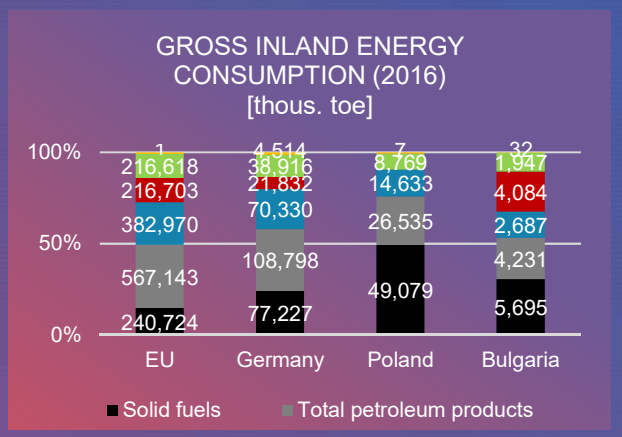
The Republic of Poland shall safeguard the independence and integrity of its territory and ensure the freedoms and rights of persons and citizens, the security of the citizens, safeguard the national heritage and shall ensure the protection of the natural environment pursuant to the principles of sustainable development

The Constitution of the Republic of Poland of 2nd April, 1997

1. The assessment of the situation in Poland is strongly determined by the reference point.
2. The increase of economic efficiency after the political transition in 1989 and then the participation in the European Union programmes and demographic changes resulted in the lower energy use by the Polish economy.
3. However, technological advances and new style of life increases the discrepancy between the growing level of energy use and increasing efficiency.
4. Moreover, the relatively lower energy consumption among the EU members is above the biocapacity of Polish ecosystem; and above both the EU and world averages.
5. Additionally, the upward trend of renewable energy use - parallel to the EU one - has been slowing down since last years increasing the gap between the share of renewables in Poland and the average share of renewables in the European Union; this is particularly unfavourable situation in the context of the strong position of solid energy fuels such as coal.







2014	POLAND PL	WORLD WL	GAP [%] PL/WL	EUROPEAN UNION EU	GAP [%] PL/EU
Renewables' use per capita [kgoe per capita]	286.16	343.21	83	499.50	57
Non-renewables' use per capita [kgoe per capita]	2187.25	1577.37	139	2579.99	85
Energy intensity [kgoe per $1,000 GDP in constant 2011 PPP]	127.34	171.43	74	87.97	145
Ecological deficit [gha per capita]	-2.4	-1.2	200	-1.8 (2013)	133

THANK YOU