Japan's Growth Based on International Sustainable Development

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ESRI International Conference 2015:
"To Ensure Japan's Economic Growth"

Asian Development Bank Institute
Tokyo, July 31, 2015

Broad Overview of
Japan's Economic Growth and Prospects

Major Structural Characteristics:

Very high performance in human capital: education, health

Very high performance in science, technology, innovation

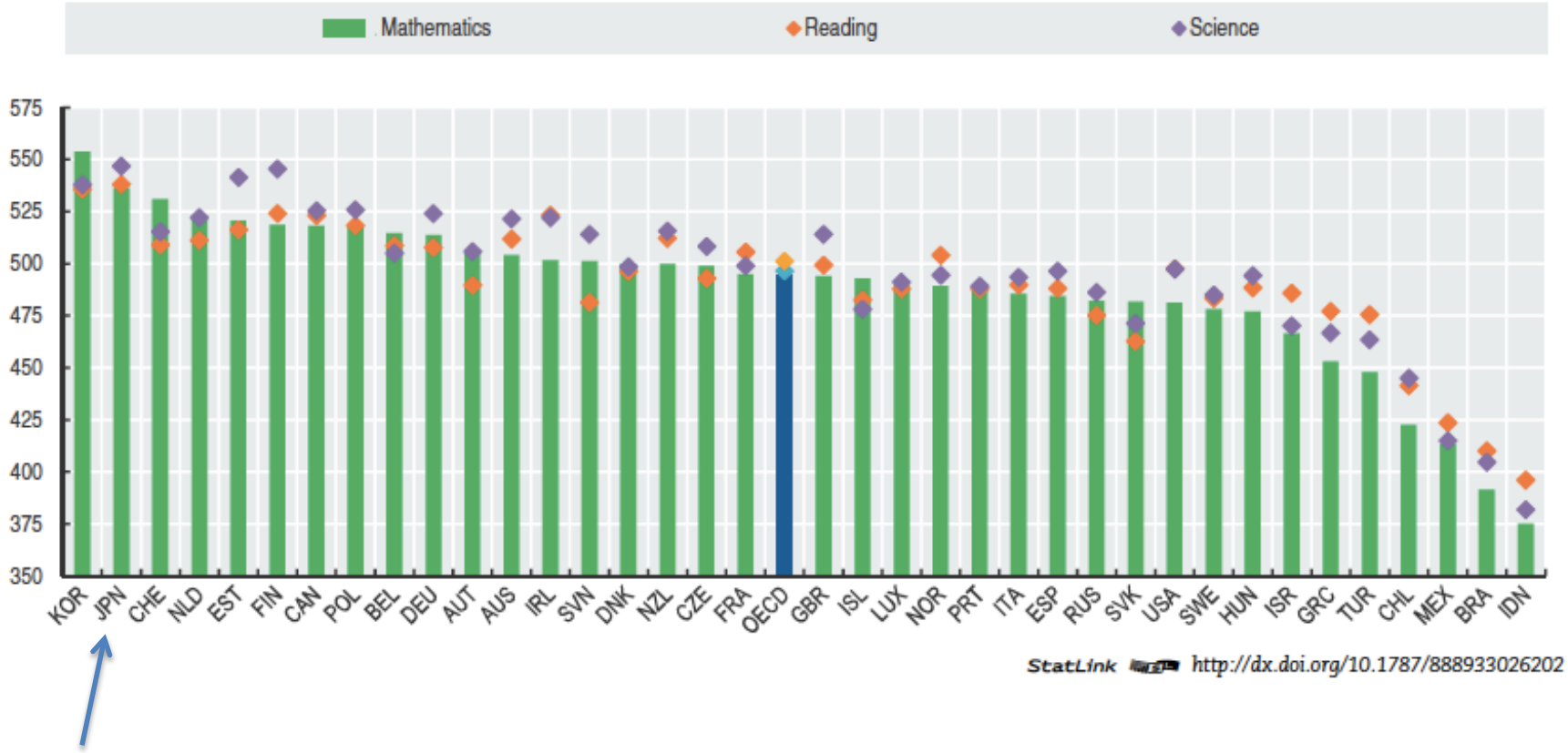
Still a surprisingly closed economy

Surprisingly modest productivity, probably linked to relatively closed structures

EDUCATION

Performance in mathematics, reading and science, PISA 2012

Mean score



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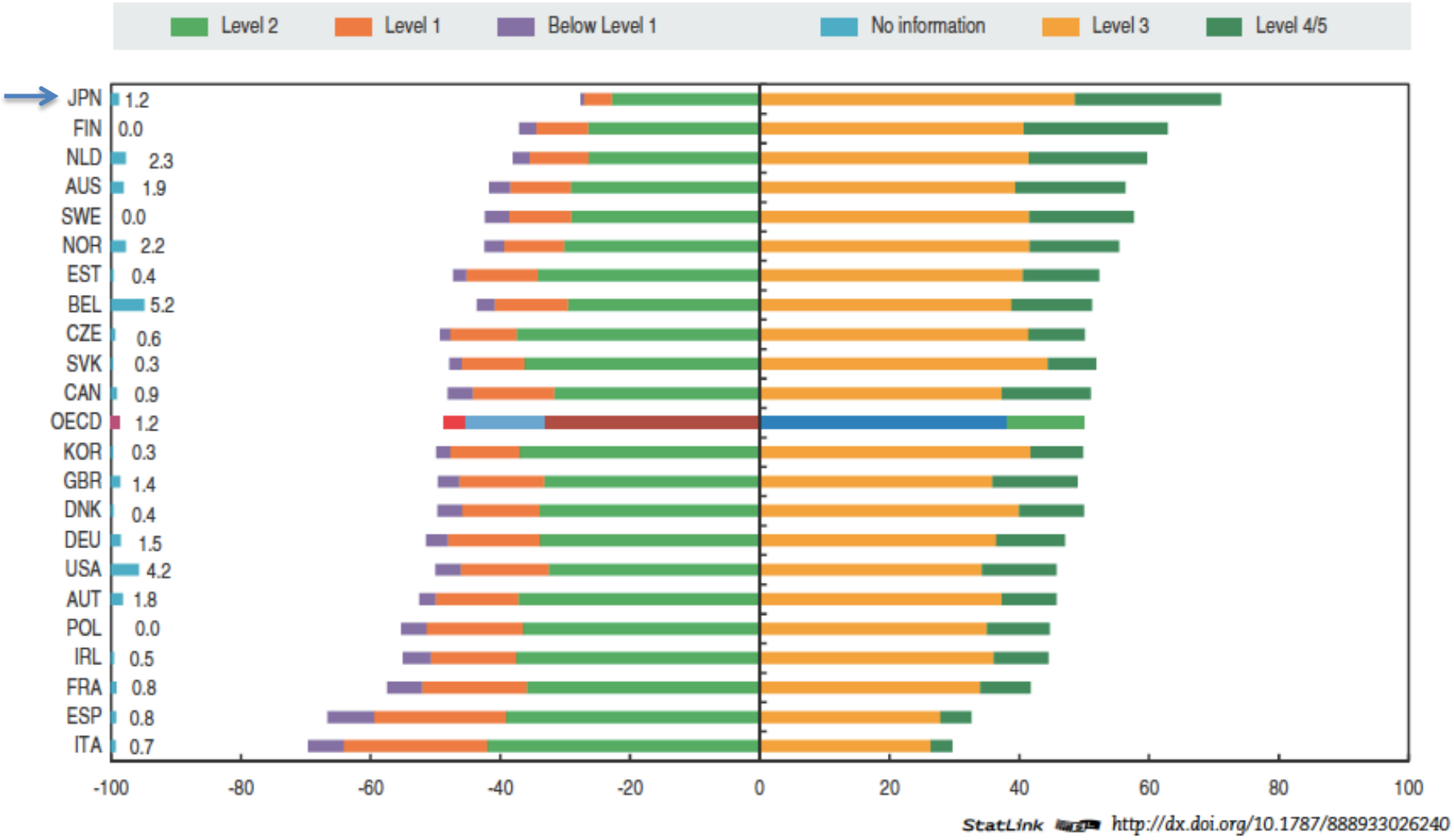
Literacy proficiency among 16-65 year-olds

Percentage of adults scoring at each proficiency level in literacy



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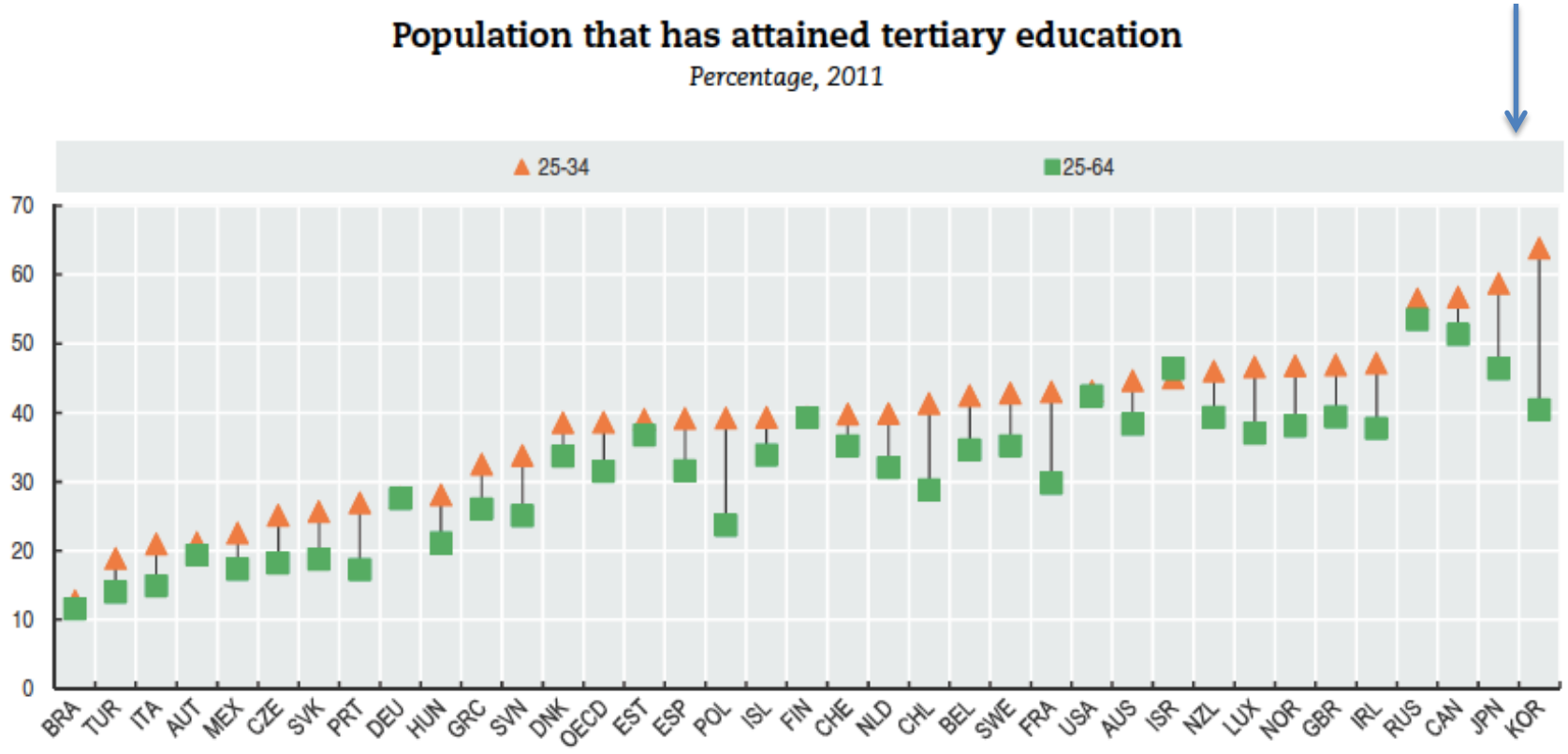
Population that has attained tertiary education

Percentage, 2011



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HEALTH

Life expectancy at birth

Number of years

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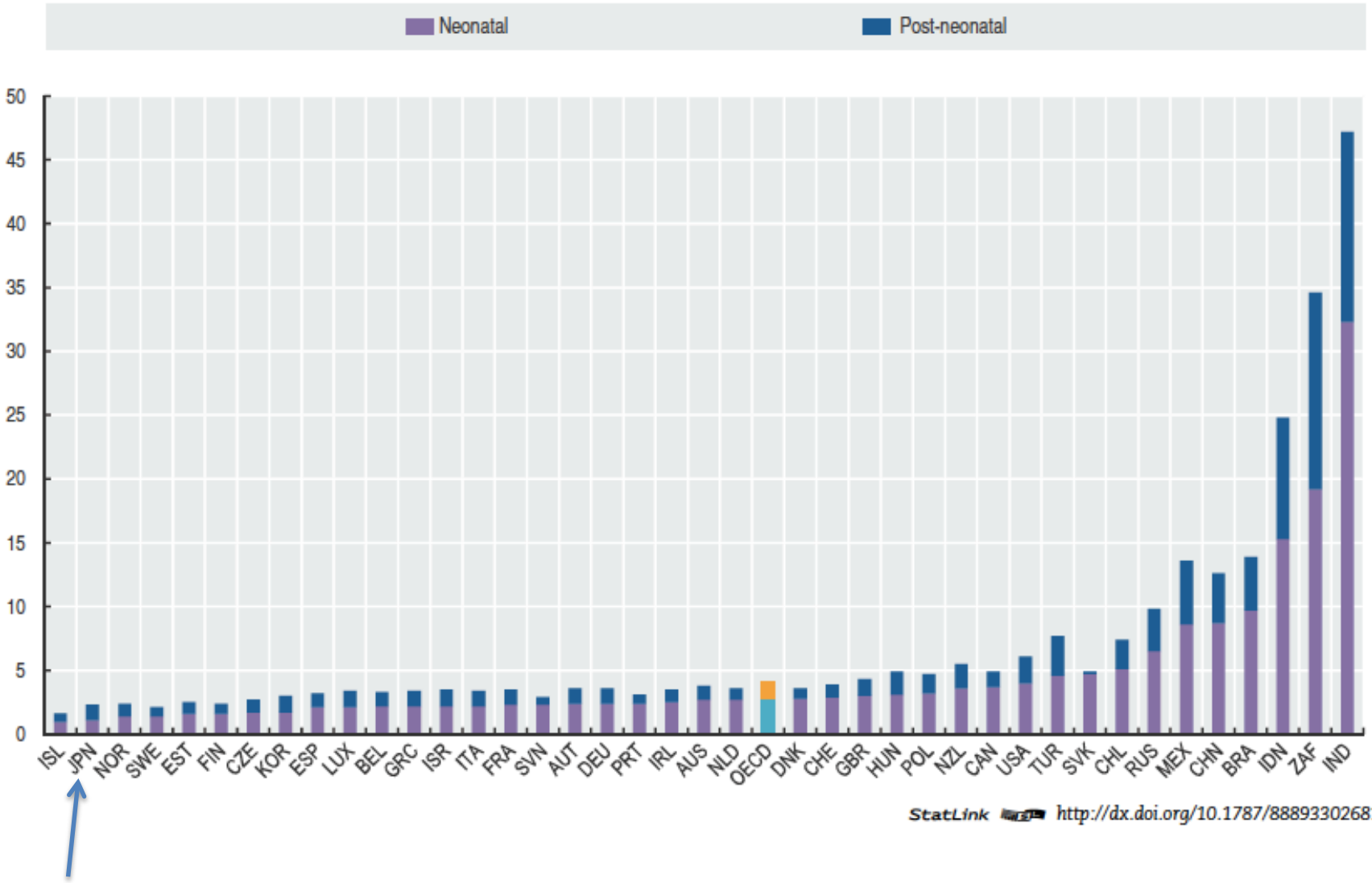
Infant mortality rates

Deaths per 1 000 live births, 2011 or latest available year



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Increasing obesity rates among the adult population

Percentage of population aged 15 and over

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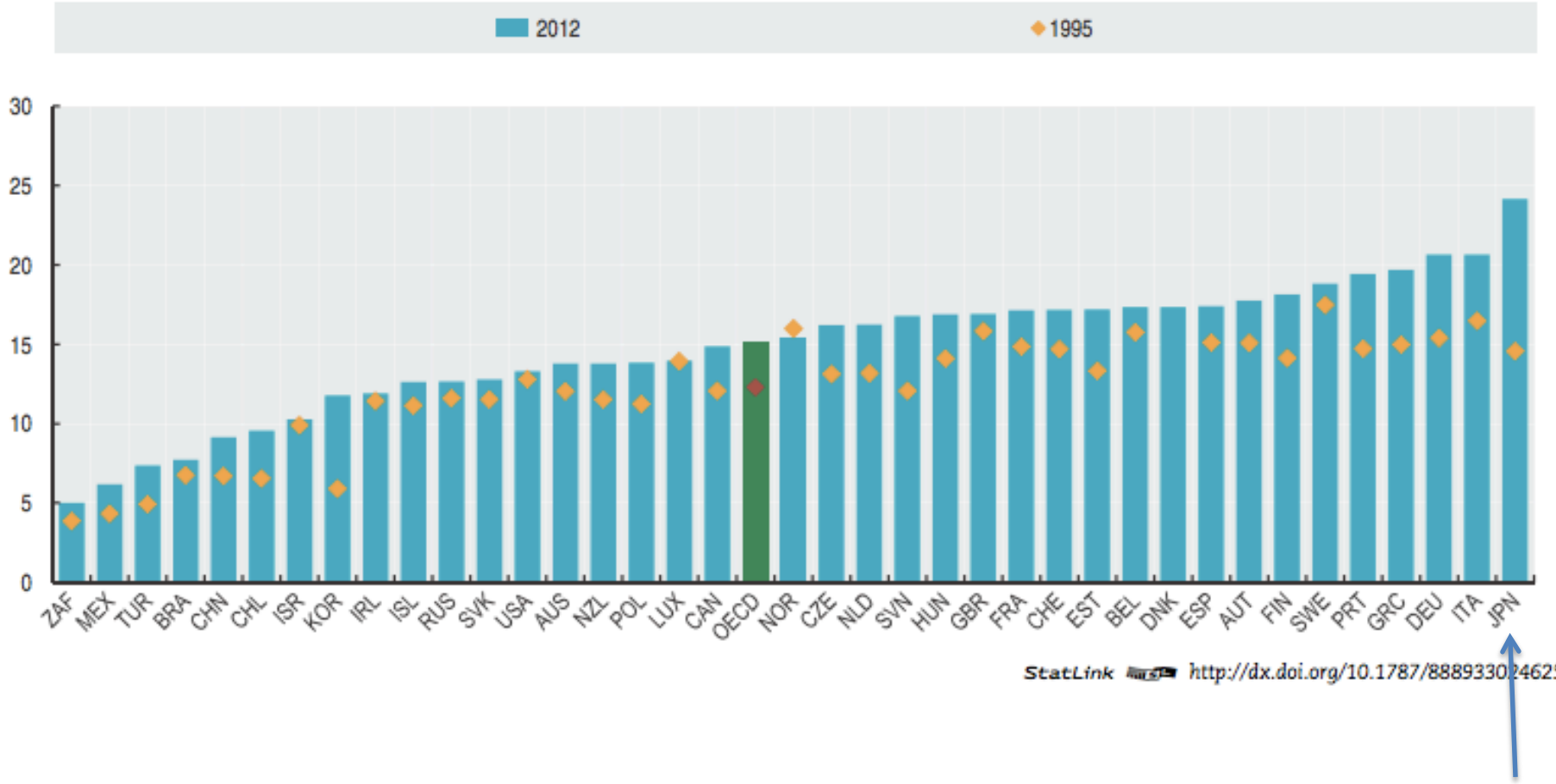
Elderly population

As a percentage of total population



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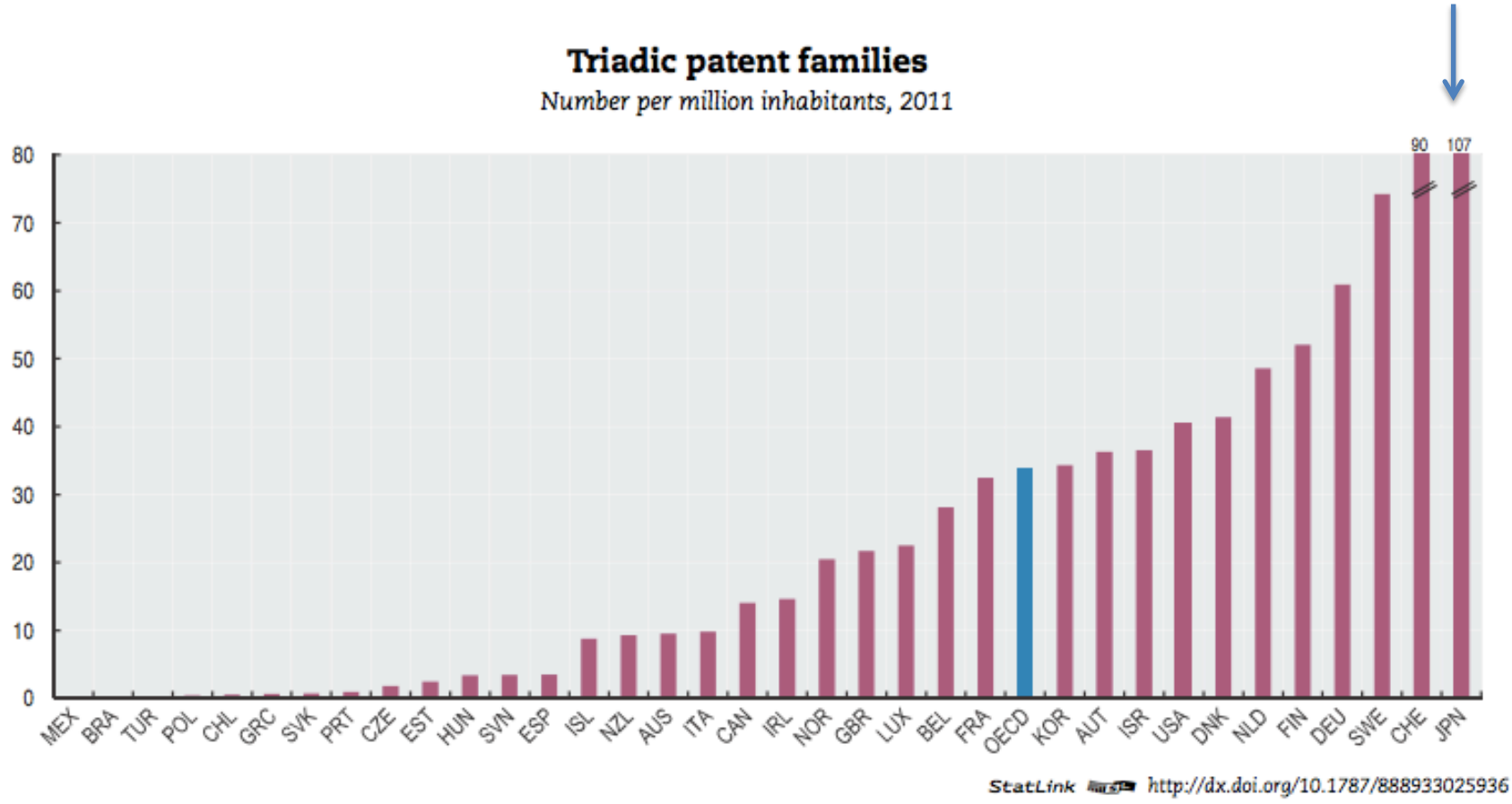
SCIENCE AND TECHNOLGY

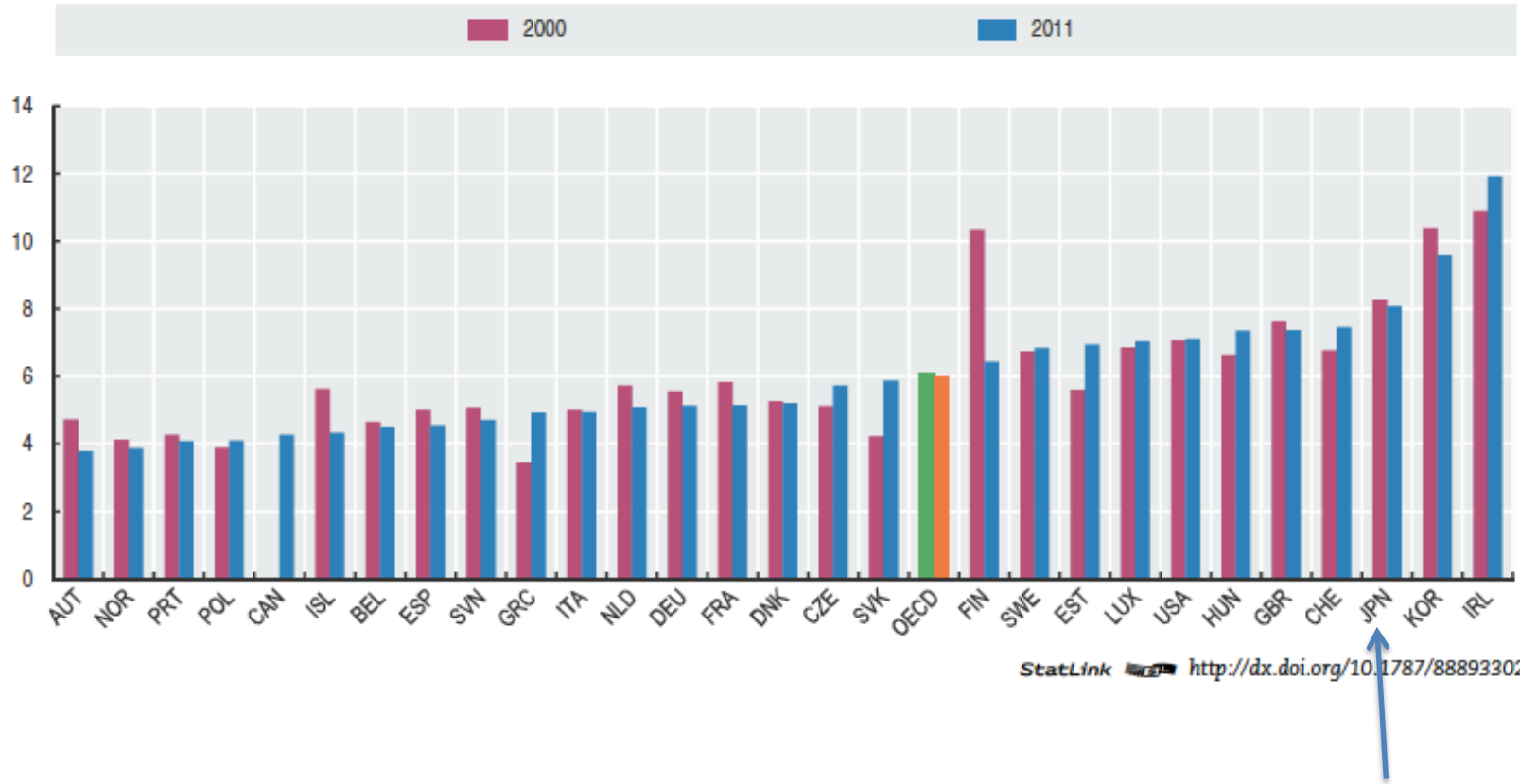
Gross domestic expenditure on R&D

As a percentage of GDP


Triadic patent families
Number per million inhabitants, 2011
80
70
60
50
40
30
20
10
0
90
107
MEX
BRA
TUR
POL
CHL
GRC
SVK
PRT
CZE
EST
HUN
SVN
ESP
ISL
NZL
AUS
ITA
CAN
IRL
NOR
GBR
LUX
BEL
FRA
OECD
KOR
AUT
ISR
USA
DNK
NLD
FIN
DEU
SWE
CHE
JPN
StatLink
http://dx.doi.org/10.1787/888933025936

Share of ICT in value added

As a percentage of total value added



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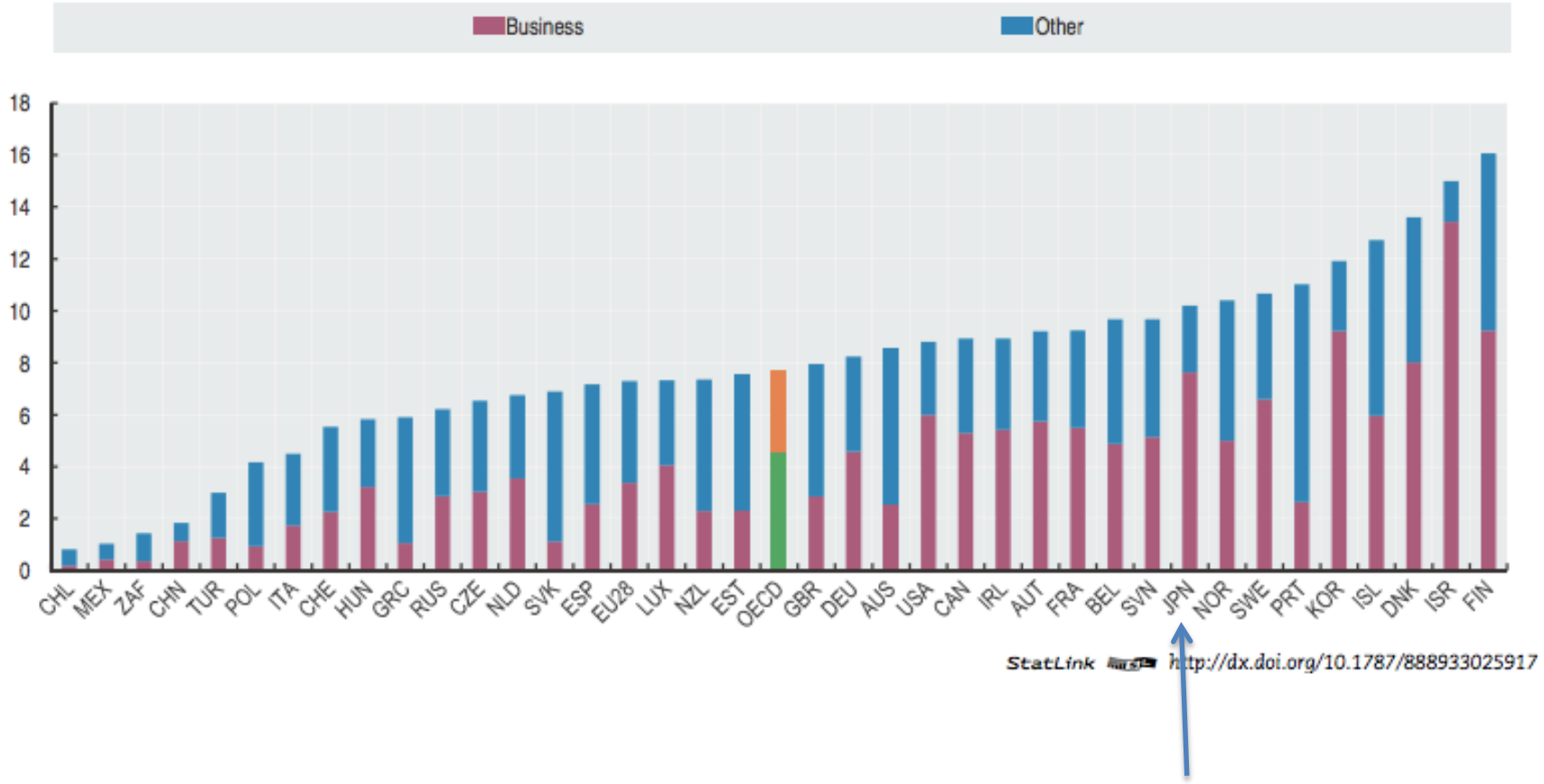
Researchers

Per thousand employed, full-time equivalent, 2012 or latest available year



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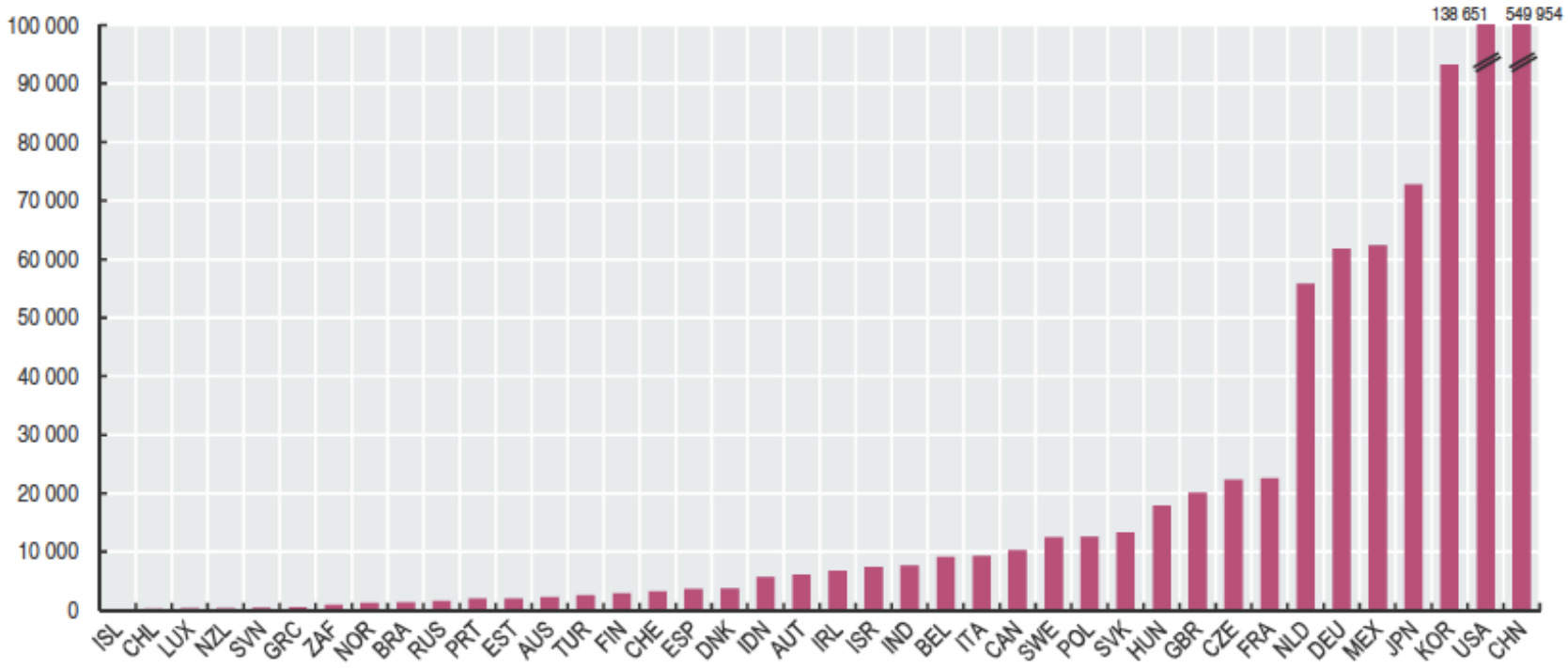
Exports of ICT goods

Million US dollars, 2012



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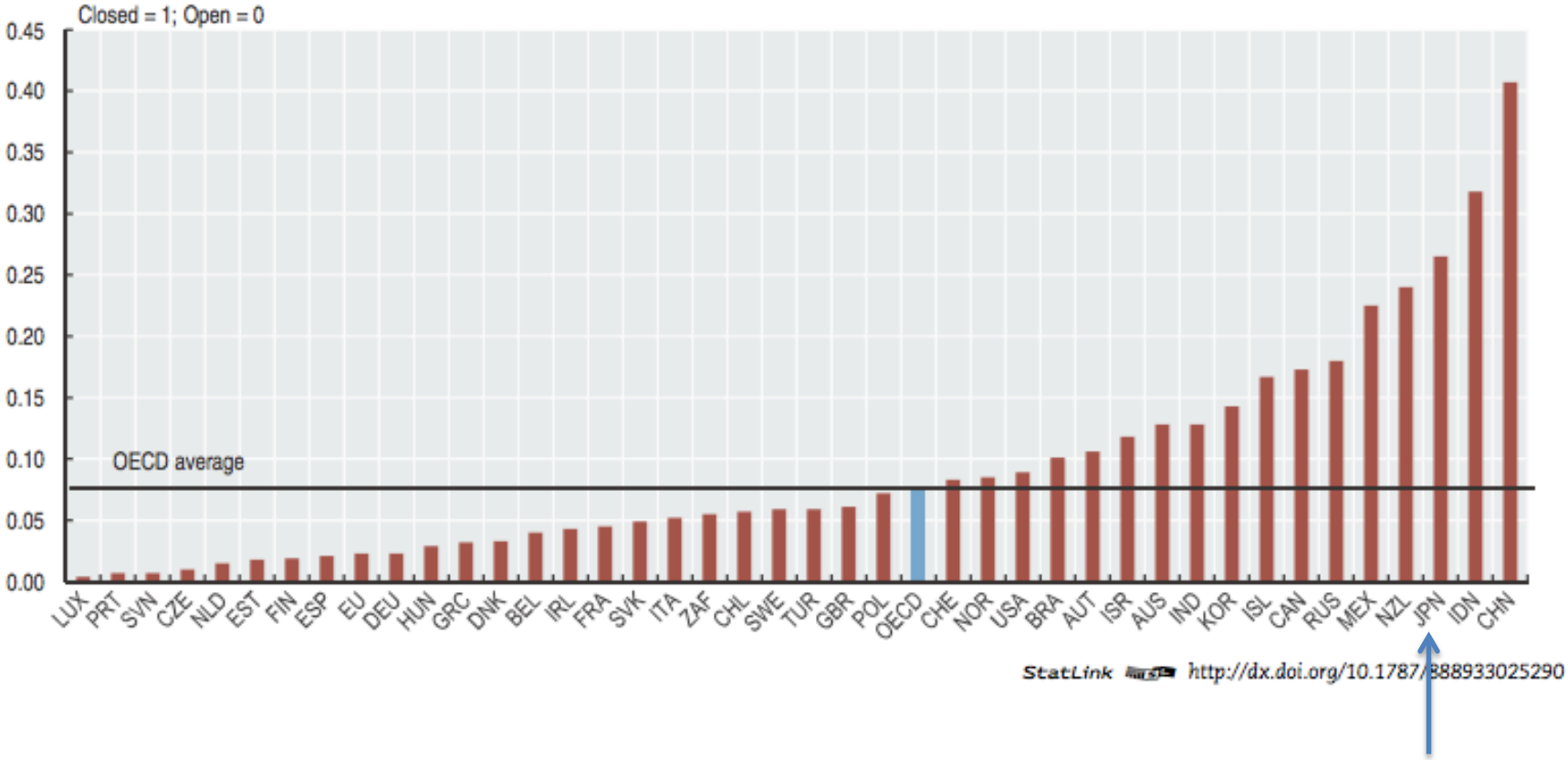
JAPANESE LEADERSHIP IN INDUSTRIAL ROBOTICS: ROUGHLY HALF OF WORLD MARKET

Relative Lack of Openness

FDI regulatory restrictiveness index

2012



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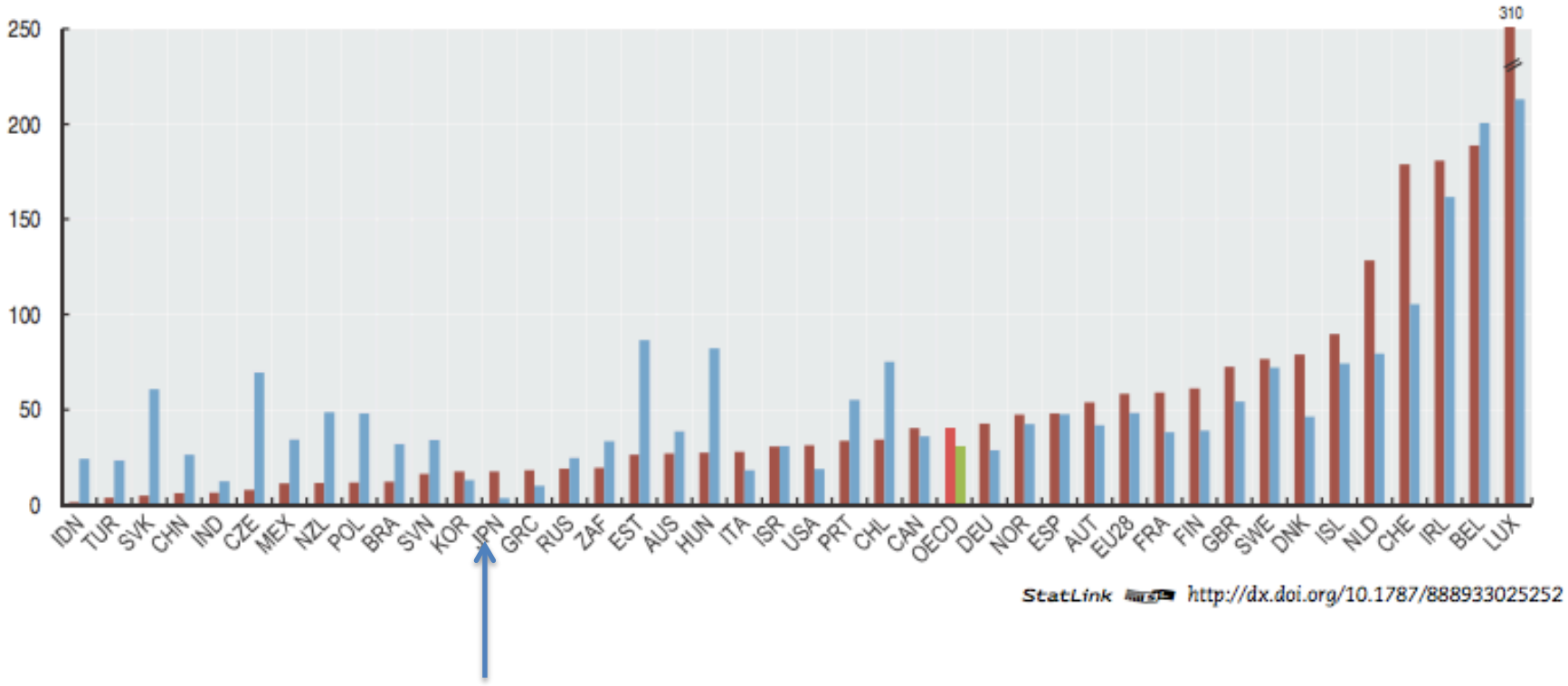
FDI stocks

As a percentage of GDP, 2012 or latest available year



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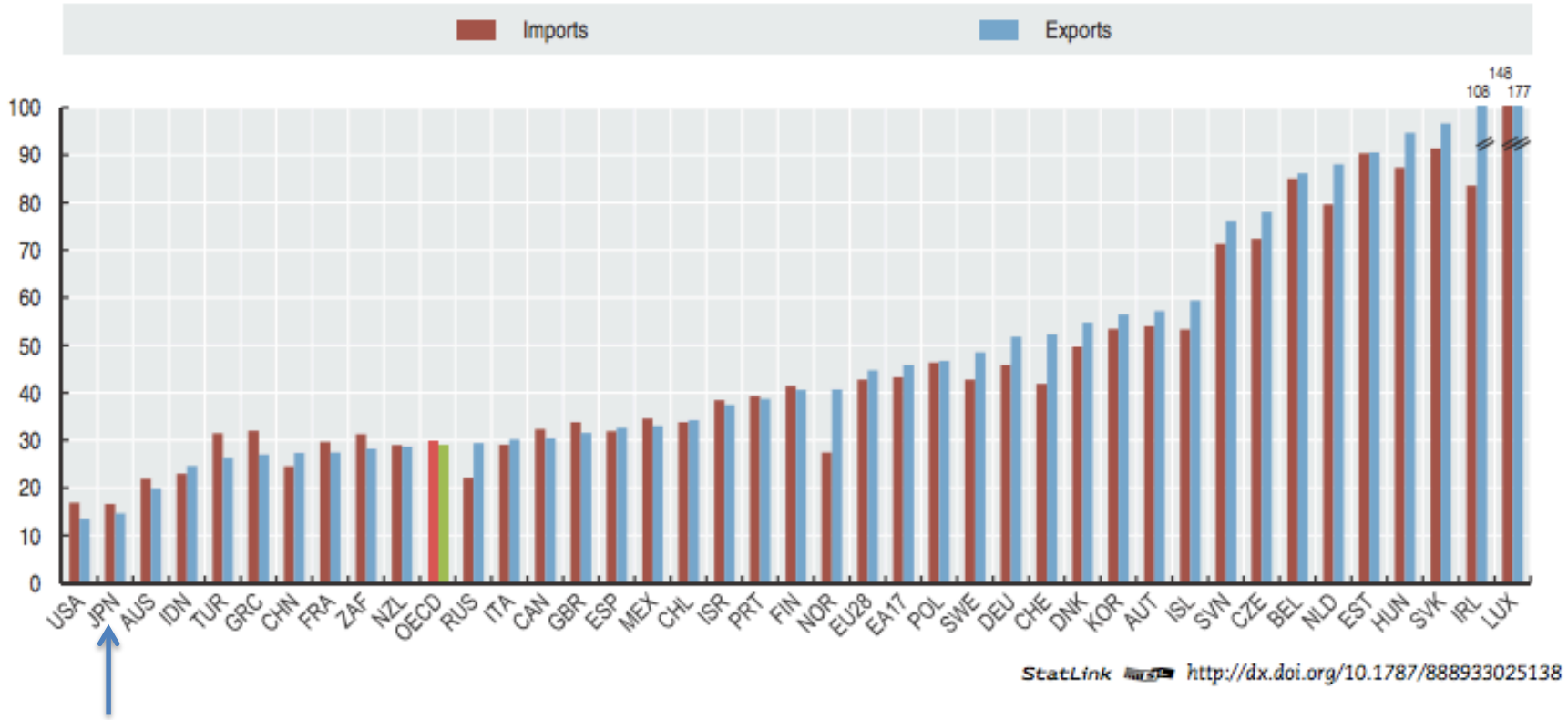
International imports and exports in goods and services

As percentage of GDP, 2012 or latest available year



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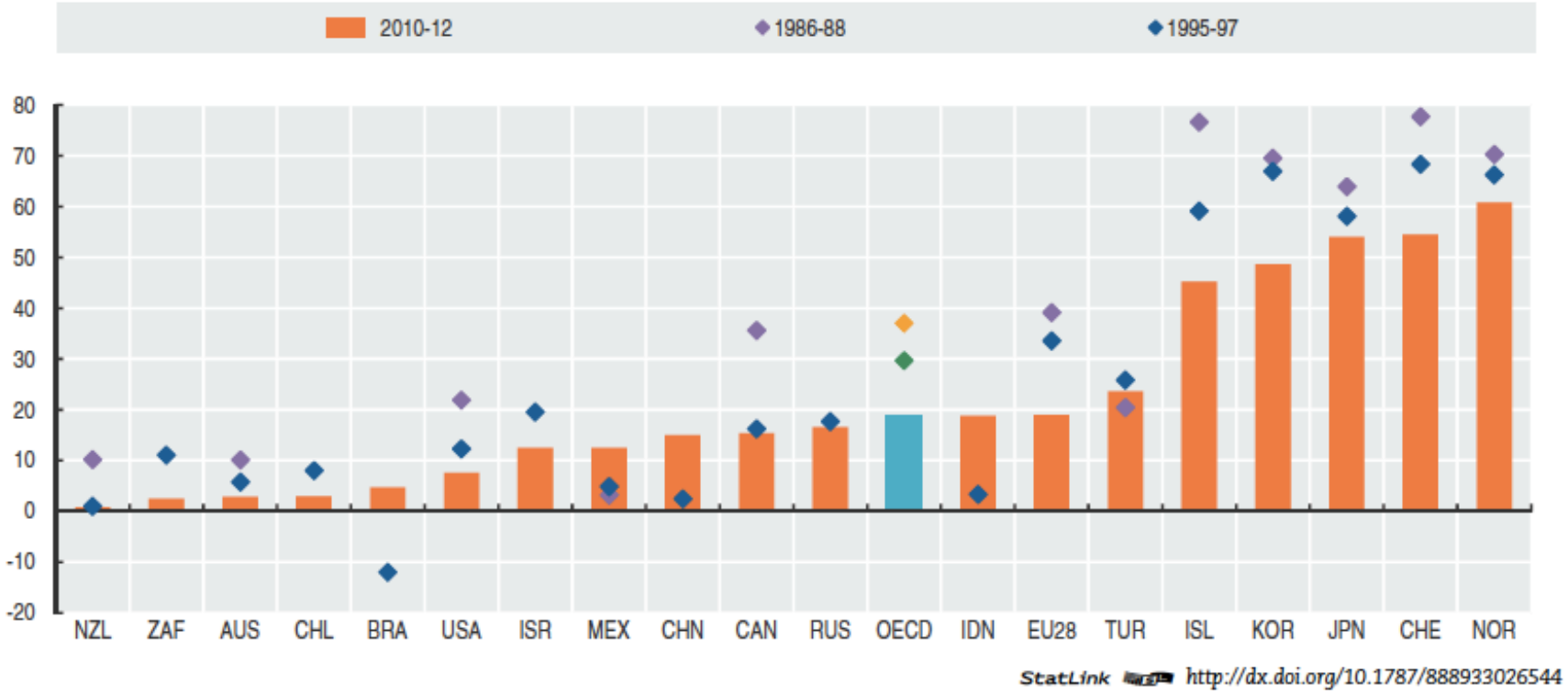
Agricultural producer support estimate by country

As a percentage of gross farm receipts



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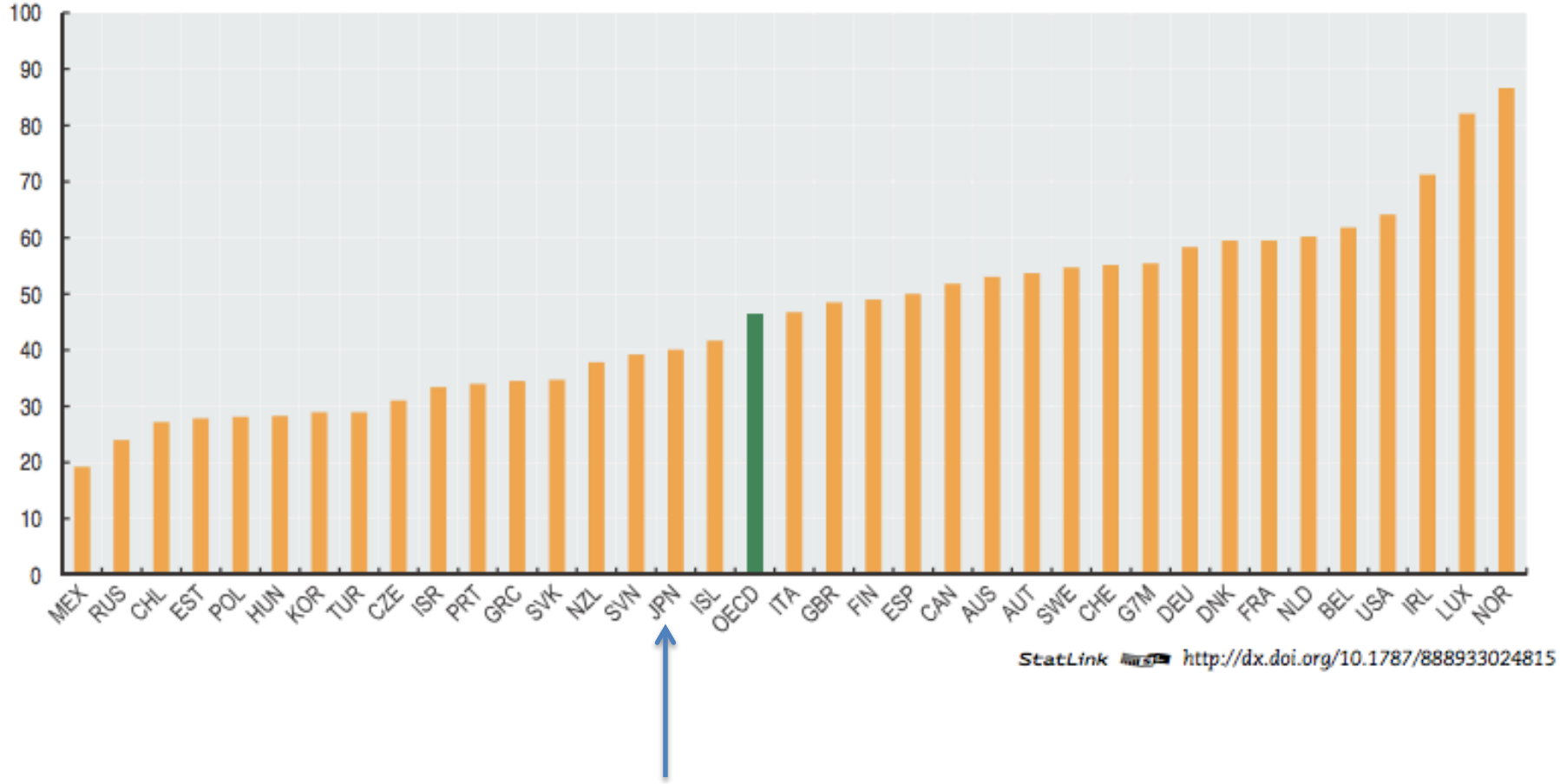
JAPAN’S PRODUCTIVITY AND GROWTH ARE NOT COMMENSURATE WITH ITS TECHNOLOGICAL EXCELLENCE

GDP per hour worked

US dollars, current prices and PPPs, 2012



SOME WEAKNESSES IN DEPLOYING JAPANESE ADVANCED TECHNOLOGIES:

LAG IN RECOGNIZING GLOBAL APPLICATIONS

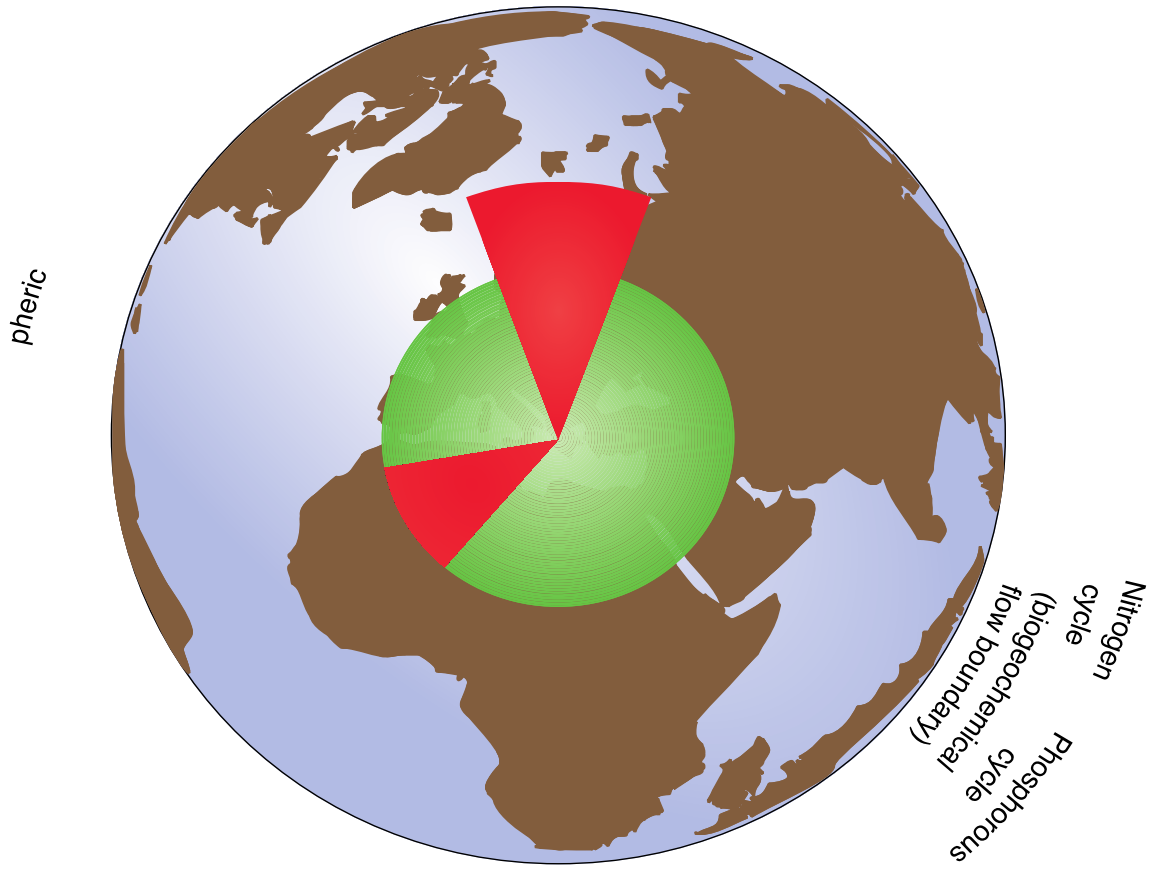
LACK OF GLOBAL REACH

HIGH-COST PRODUCTION

LACK OF NATIONAL LOW-CARBON STRATEGY IN ENERGY

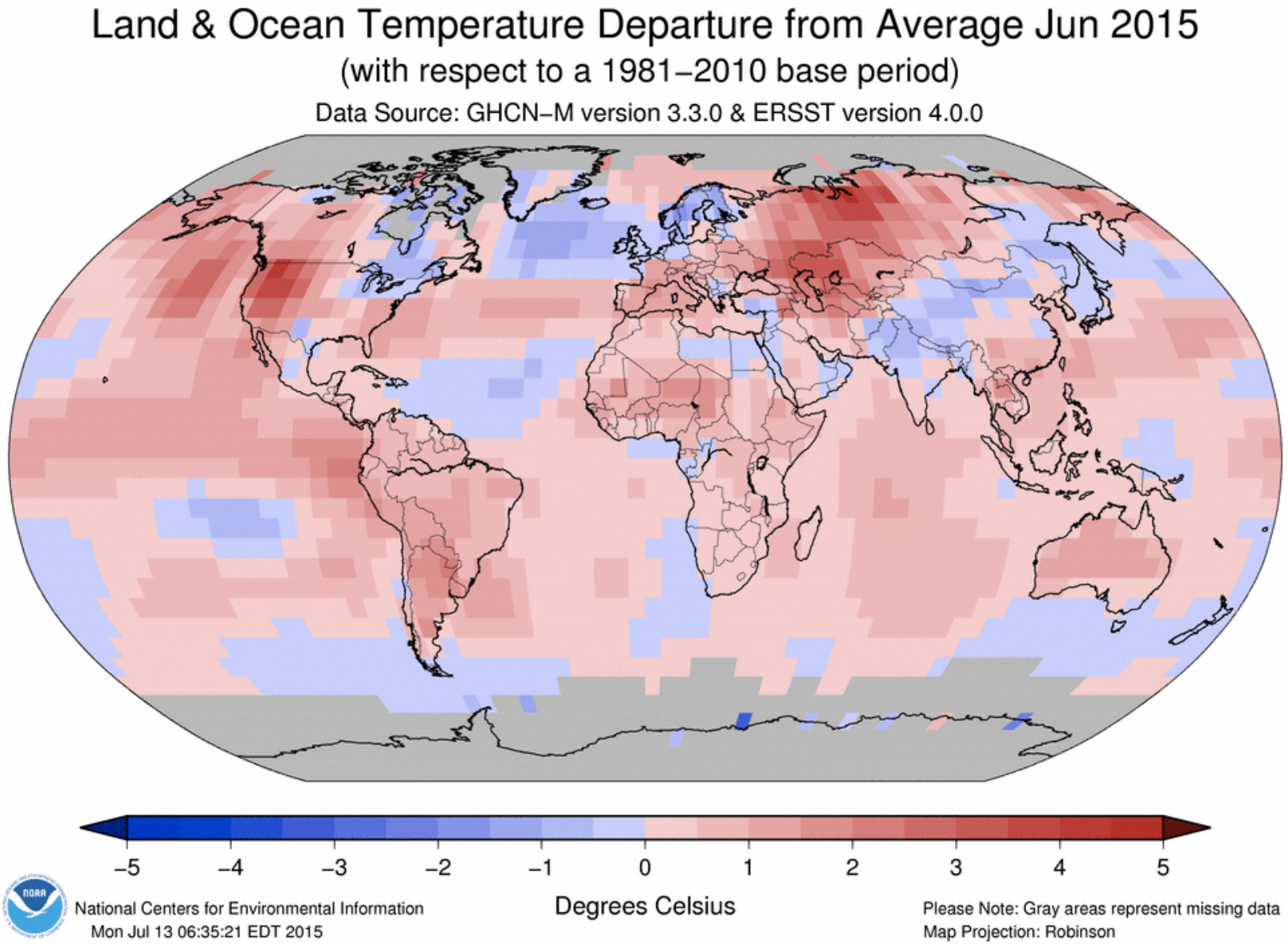
Sustainable Development as the New Driver of Global Growth

“PLANETARY BOUNDARIES”



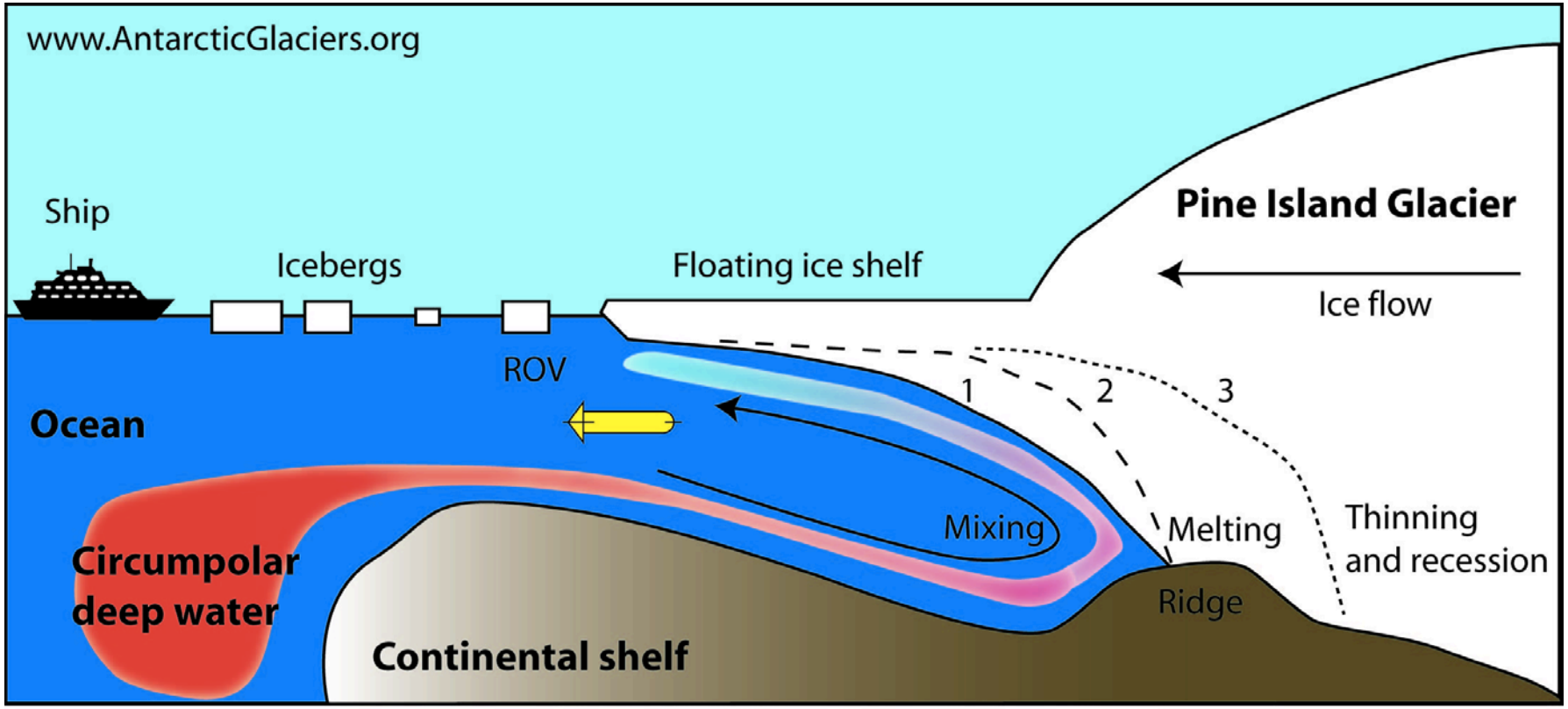
Source: Rockström et al 2009a)

JUNE 2015 WARMEST IN 136-YEAR RECORD



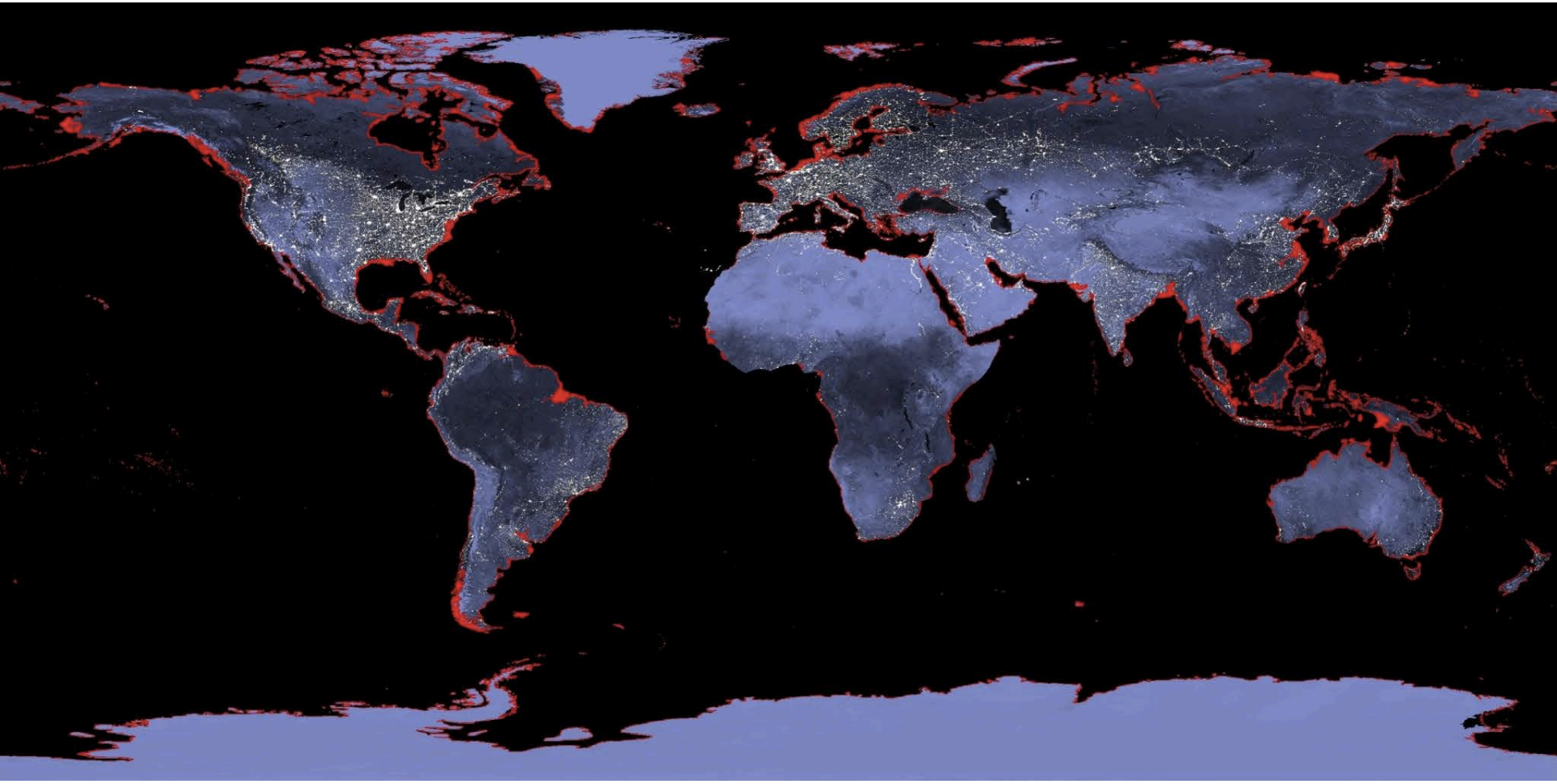
LOS ANGELES WATER RESERVOIR, APRIL 5, 2015

LOSS OF WEST ANTARCTICA ICE SHEET



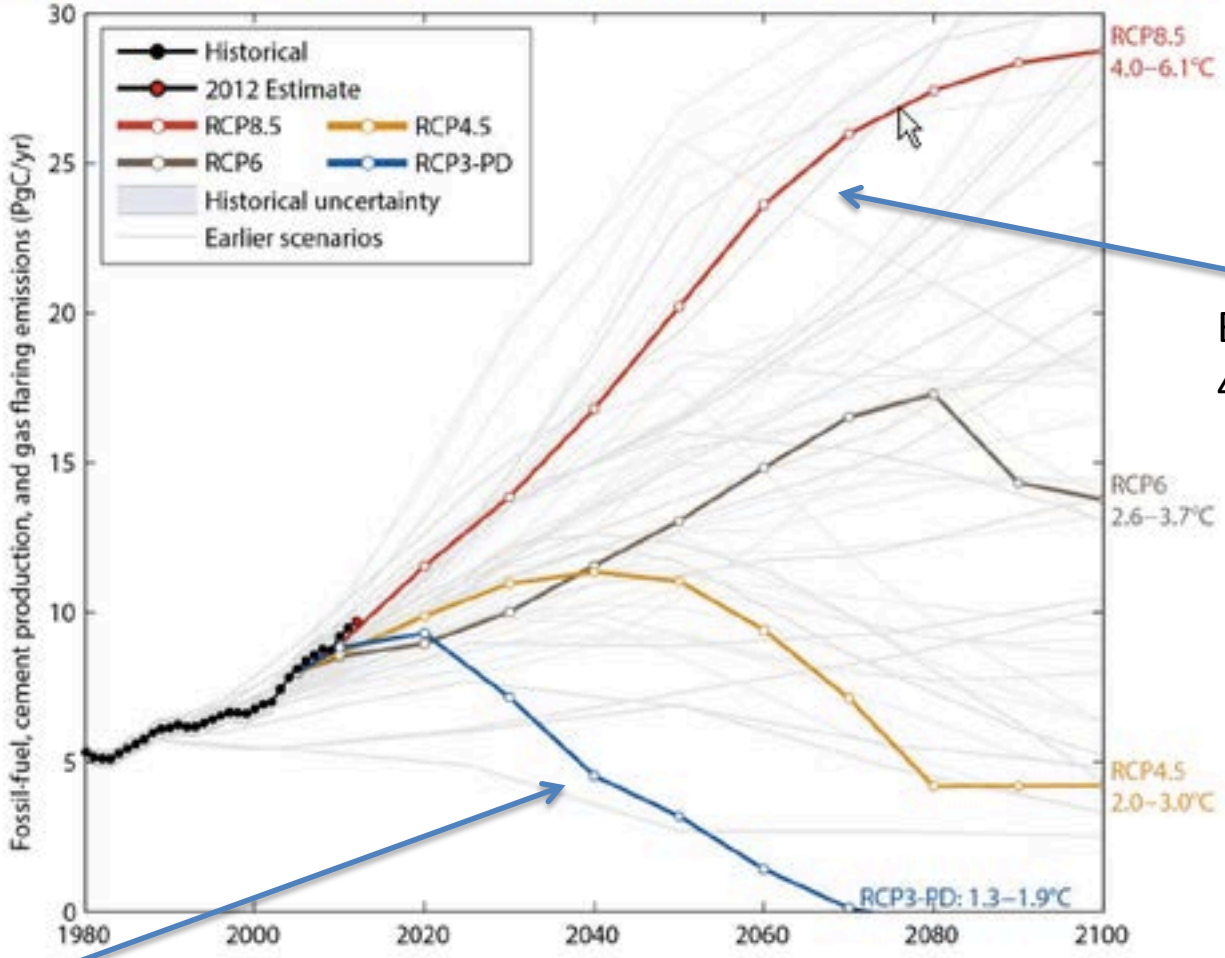
1. Early 1970s. Pine Island Glacier is grounded at a bedrock ridge.
2. Warm, inflowing Circumpolar Deep Water melts the base of the glacier. The glacier steepens and accelerates.
3. Present day, observed by a remotely operated vehicle (ROV). Glacier is thinning and receding.

Land Lost to 6M Sea Level Rise, NASA



THE SUSTAINABLE DEVELOPMENT GOALS WILL BE ADOPTED ON SEPTEMBER 25

Emissions are heading to a 4.0-6.1°C "likely" increase in temperature
Large and sustained mitigation is required to keep below 2°C



BAU:
4-6 degree C

Linear interpolation is used between individual datapoints

2-degree C

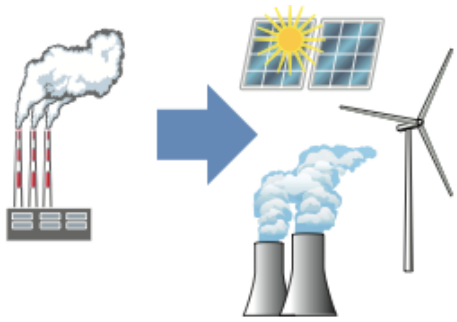
Source: Peters et al. 2012a; Global Carbon Project 2012;

Main Decarbonization Strategies

Strategy

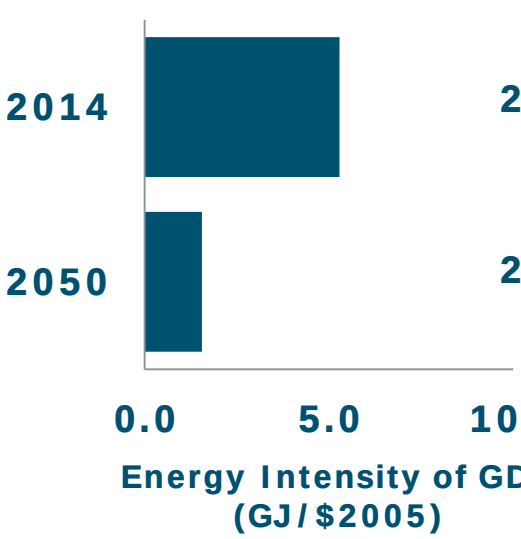
Energy Efficiency

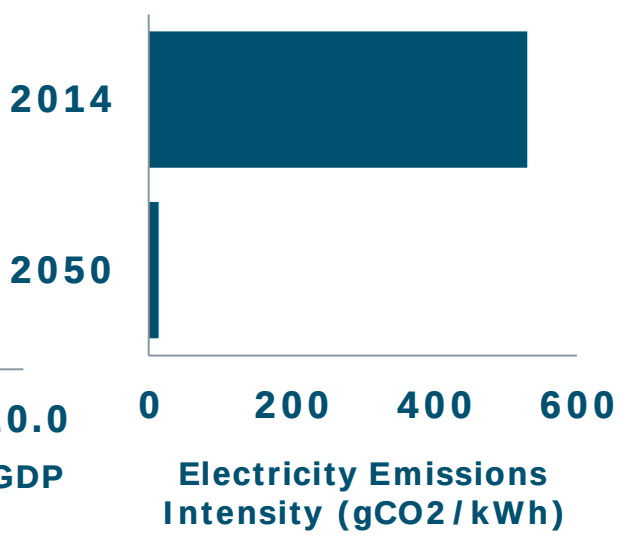
Decarbonization of Electricity

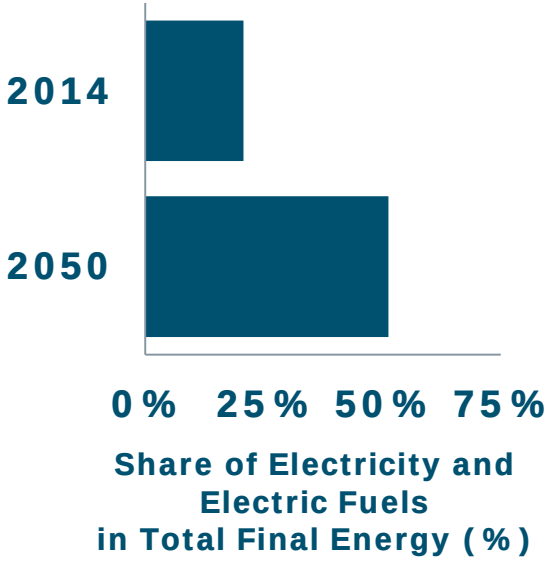


End Use Fuel Switching to Electric Sources

Key Metric of Transformation

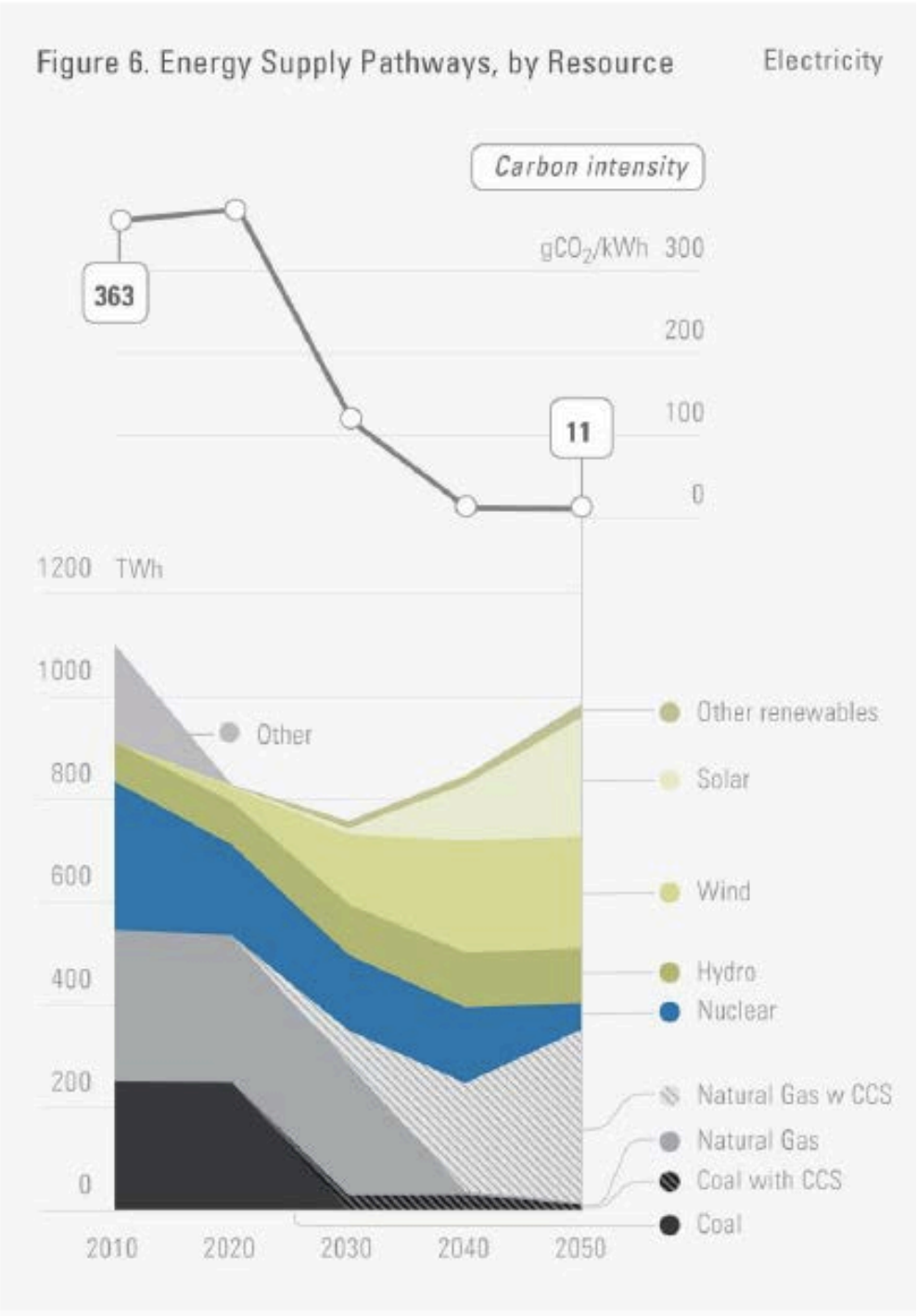






LARGE-SCALE LOW-CARBON ENERGY POTENTIAL IN:

WIND (ESPECIALLY OFFSHORE)
GEOTHERMAL
PV SOLAR
NUCLEAR (E.G. INTEGRAL FAST REACTOR AND OTHER ADVANCED TECHNOLOGIES)
ZERO-EMISSION VEHICLES (EVs/FCVs)
CARBON CAPTURE AND STORAGE



AN ILLUSTRATIVE DEEP DECARBONIZATION PATHWAY FOR JAPAN BASED ON SOLAR, WIND, AND CCS

THE WORLD WILL NEED TO STRAND OIL, GAS, AND COAL RESERVES

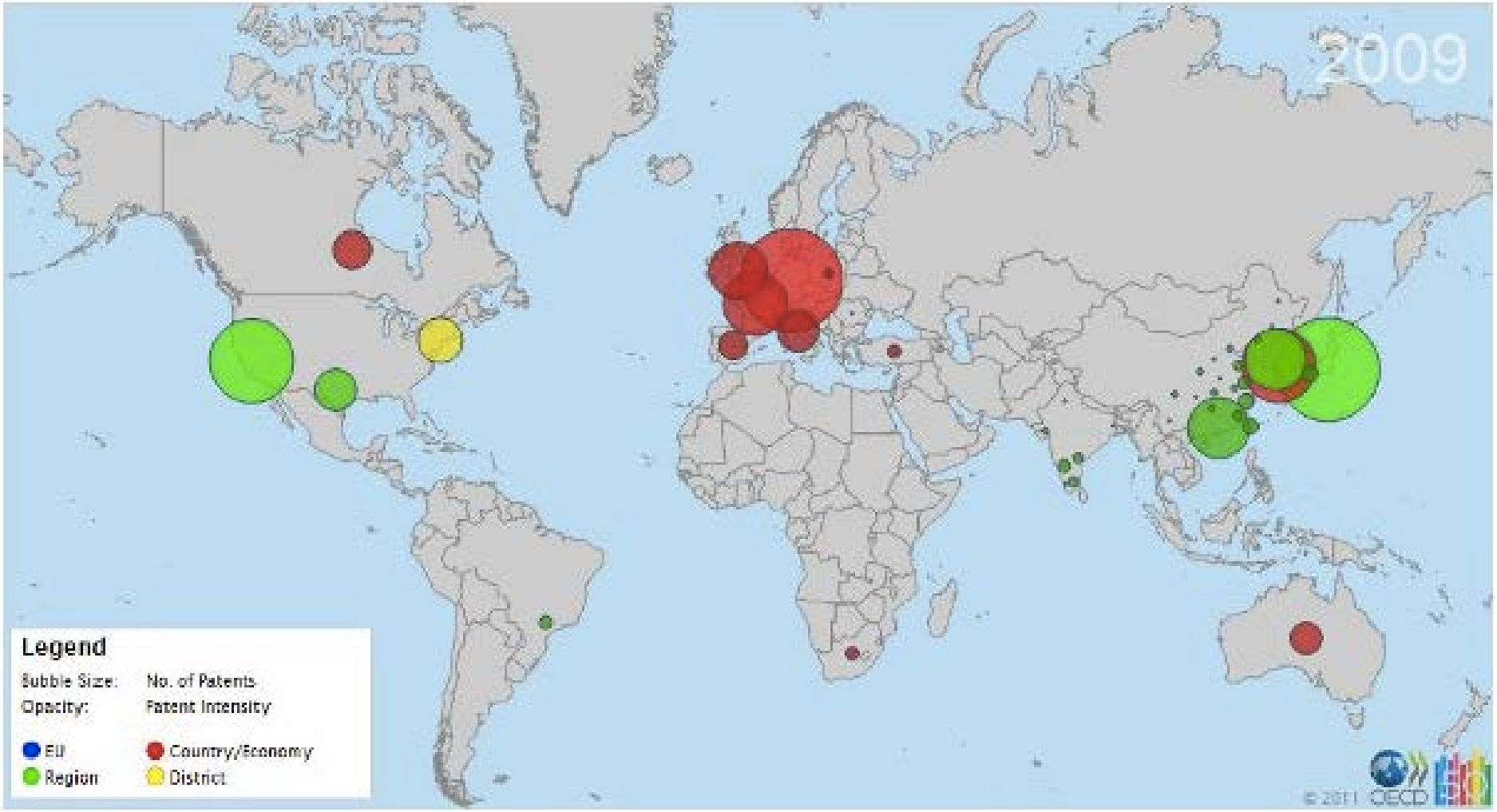
Table 1 | Regional distribution of reserves unburnable before 2050 for the 2 °C

	2 °C with CCS					
	Oil		Gas		Coal	
Country or region	Billions of barrels	%	Trillions of cubic metres	%	Gt	%
Africa	23	21%	4.4	33%	28	85%
Canada	39	74%	0.3	24%	5.0	75%
China and India	9	25%	2.9	63%	180	66%
FSU	27	18%	31	50%	203	94%
CSA	58	39%	4.8	53%	8	51%
Europe	5.0	20%	0.6	11%	65	78%
Middle East	263	38%	46	61%	3.4	99%
OECD Pacific	2.1	37%	2.2	56%	83	93%
ODA	2.0	9%	2.2	24%	10	34%
United States of America	2.8	6%	0.3	4%	235	92%
Global	431	33%	95	49%	819	82%

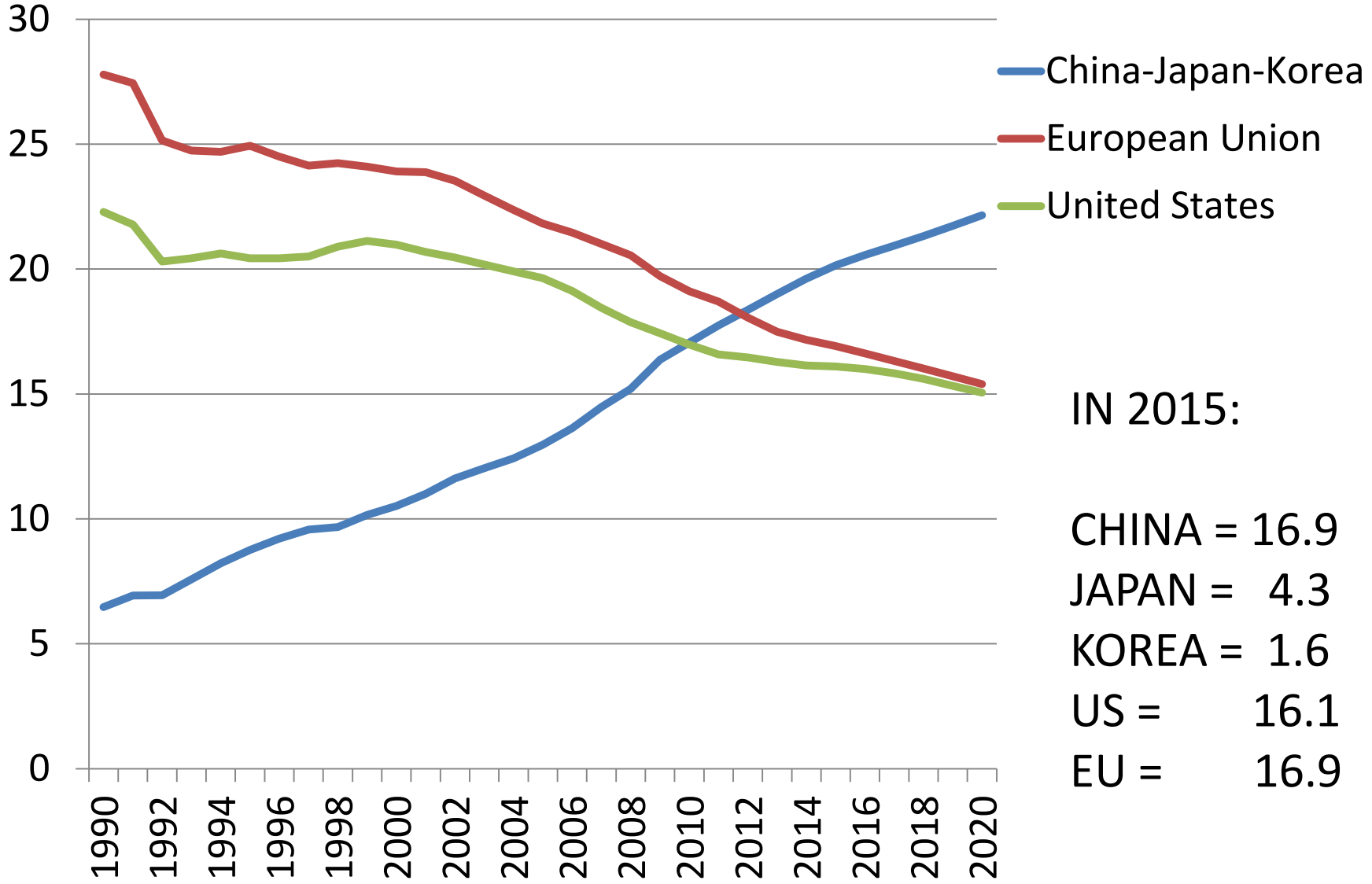
FROM McGLADE AND EKINS, NATURE MAGAZINE, JANUARY 8, 2015

A Sustainable Development Growth Strategy for Japan

STEP 1. CLOSER INTEGRATION WITH CHINA AND KOREA: FDI, JOINT RESEARCH, JOINT PRODUCTION



SHIFTING GEO-ECONOMICS: SHARES OF WORLD GDP



IN 2015:

CHINA = 16.9
JAPAN = 4.3
KOREA = 1.6
US = 16.1
EU = 16.9

STEP 2. FOCUS ON KEY SUSTAINABLE DEVELOPMENT CHALLENGES

JAPANESE LEADERSHIP IN:

DEEP DECARBONIZATION PATHWAY (DDPP)
ENERGY EFFICIENCY AND LOW-CARBON ENERGY
ROBOTICS AND INFORMATION TECHNOLOGY
URBAN DESIGN (SDSN SDG URBAN ALLIANCE)
NANOTECHNOLOGY AND BIOTECHNOLOGY (GREEN CHEMISTRY)
CHALLENGES OF AGING AND WELLBEING

FOSTER A SUSTAINABLE DEVELOPMENT VENTURE CAPITAL INDUSTRY, BUILDING ON:

(1) TOP UNIVERSITIES AND THINK TANKS
(2) INCREASED FOREIGN INVESTMENTS, BOTH INWARD AND OUTWARD
(3) REGIONAL PRODUCTION STRUCTURES
(4) NATIONAL RENEWABLE ENERGY AND SMART CITIES
(5) NEW GLOBAL MARKETS (AFRICA, ASIA)