



ENVIRONMENTAL PERFORMANCE REVIEW OF CHILE

Simon Upton
Director – OECD Environment Directorate
Santiago, 20-21 July 2016

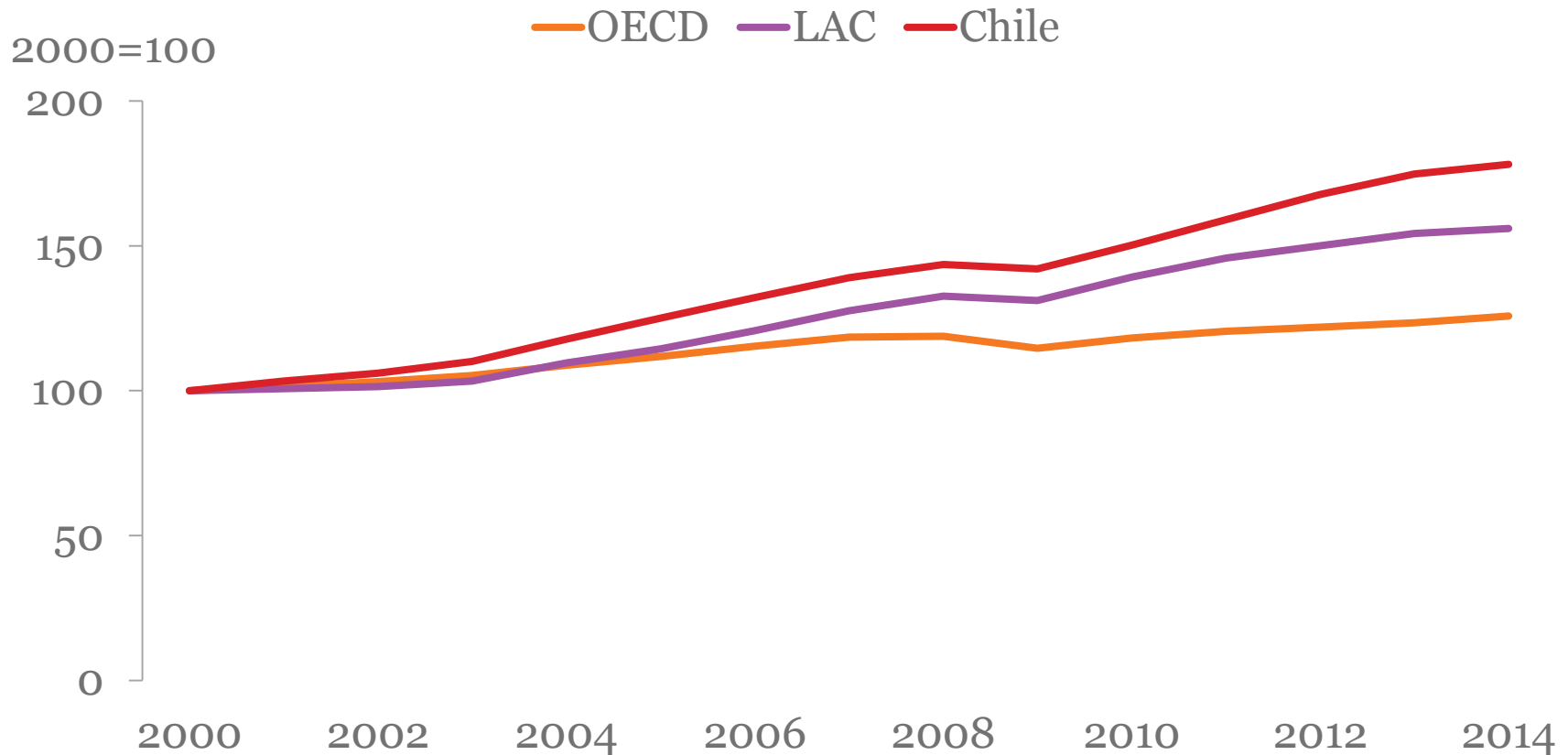


CHILE: AN ECONOMY BASED ON NATURAL RESOURCES



Chile's economy grew faster than the OECD average...

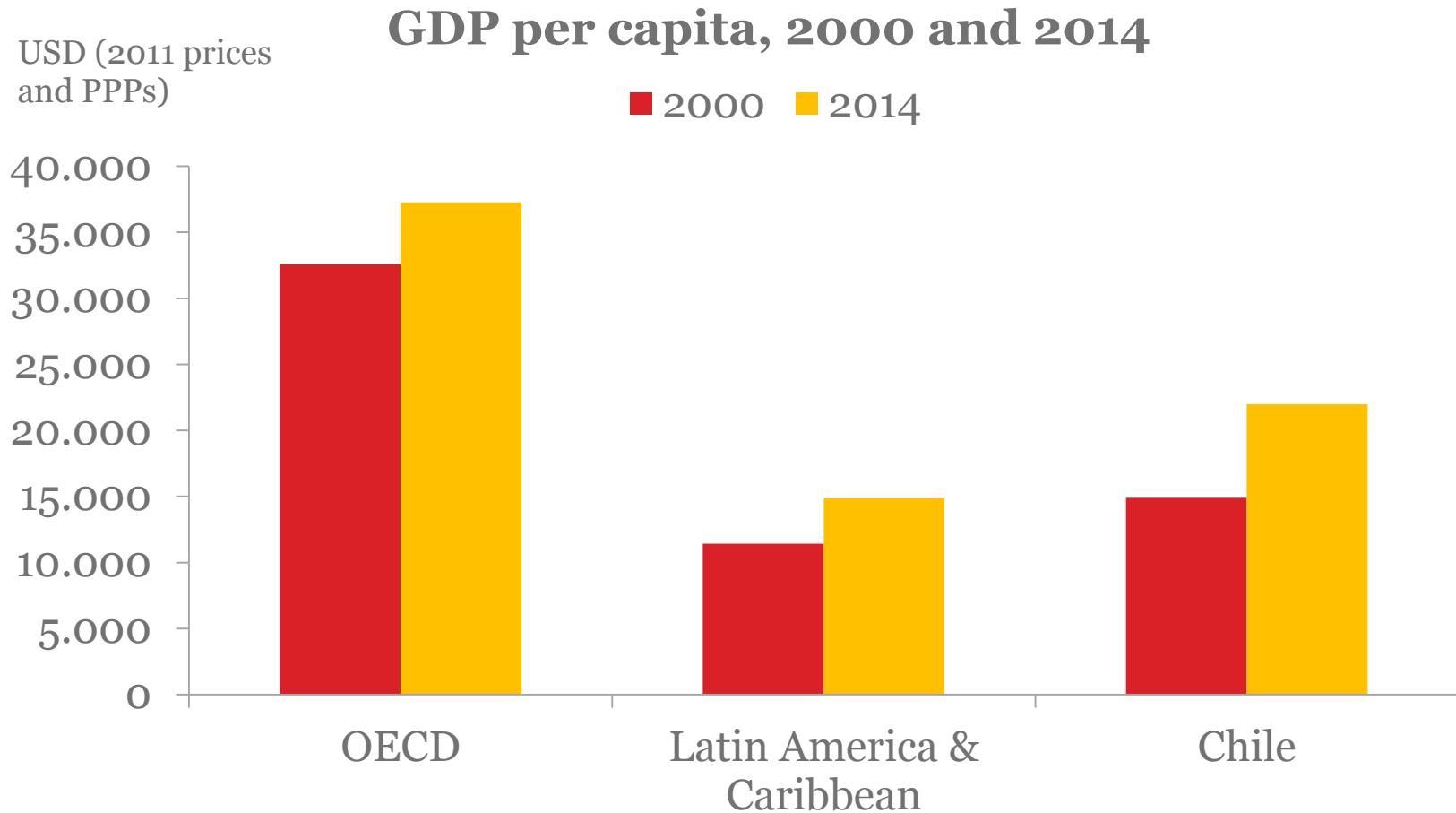
Trends in real GDP, 2000-14



Source: CEPAL (2015), *CEPALSTAT* (database); OECD (2015), *OECD National Accounts Statistics* (database).



... but the income gap between Chile and the OECD average remains significant

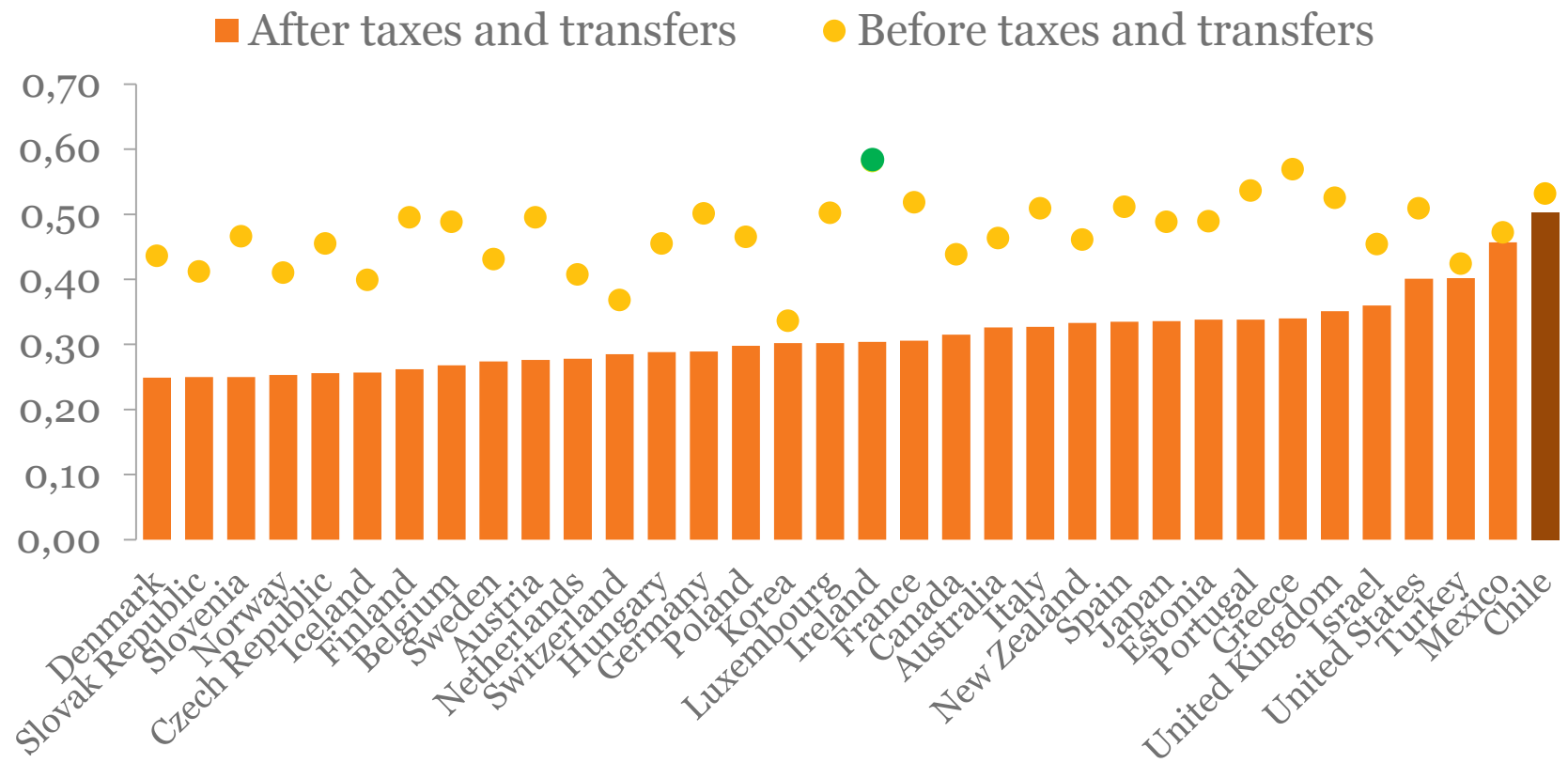


Source: OECD (2015), *OECD National Accounts Statistics* (database); World Bank (2015), *World Development Indicators* (database).



Chile remains a highly unequal society

Gini coefficient, 2013 or latest available year

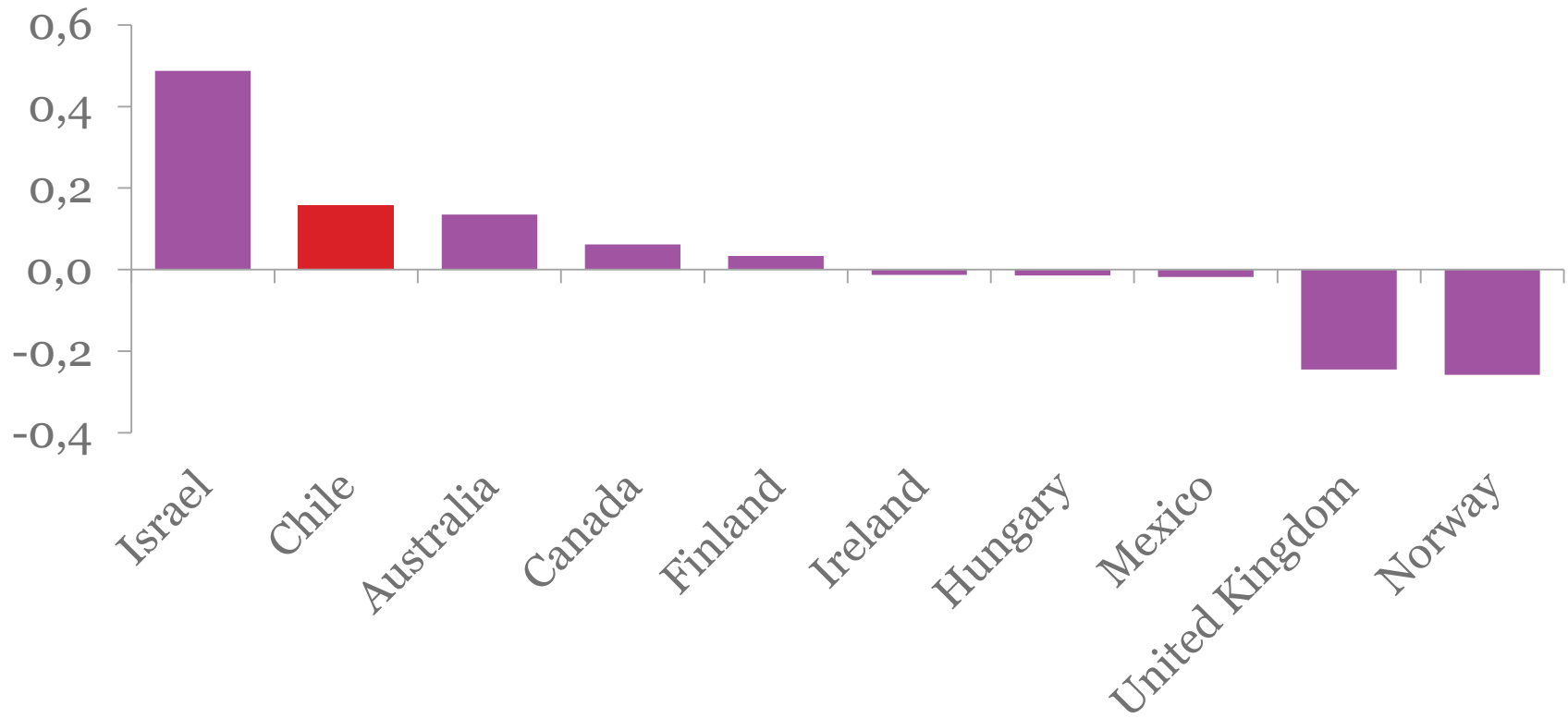


Source: OECD (2015), "Income Distribution", *OECD Social and Welfare Statistics* (database).



Natural resources were a key driver of growth in 2000-12

Contribution of domestic natural capital to GDP growth (in percentage points), average 2000-12



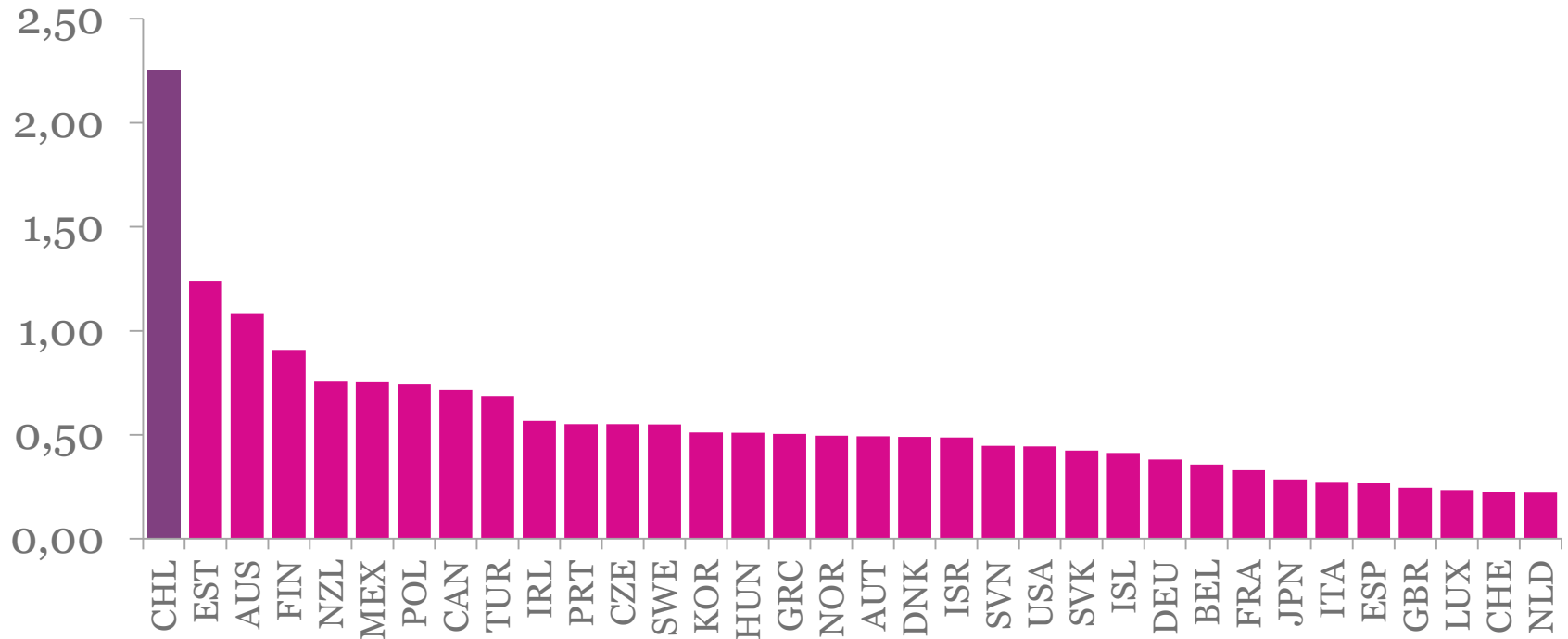
Source: OECD (2016), *Environmentally Adjusted Multifactor Productivity: methodology and empirical results for OECD and G20 countries* (forthcoming).



Chile's economy is the most resource intensive in the OECD

Domestic material consumption intensity, 2014

kg/USD
(2010 PPP)



Source: EUROSTAT (2015), Material flows and resource productivity (database);
OECD (2015), "Material resources", OECD Environment Statistics (database).

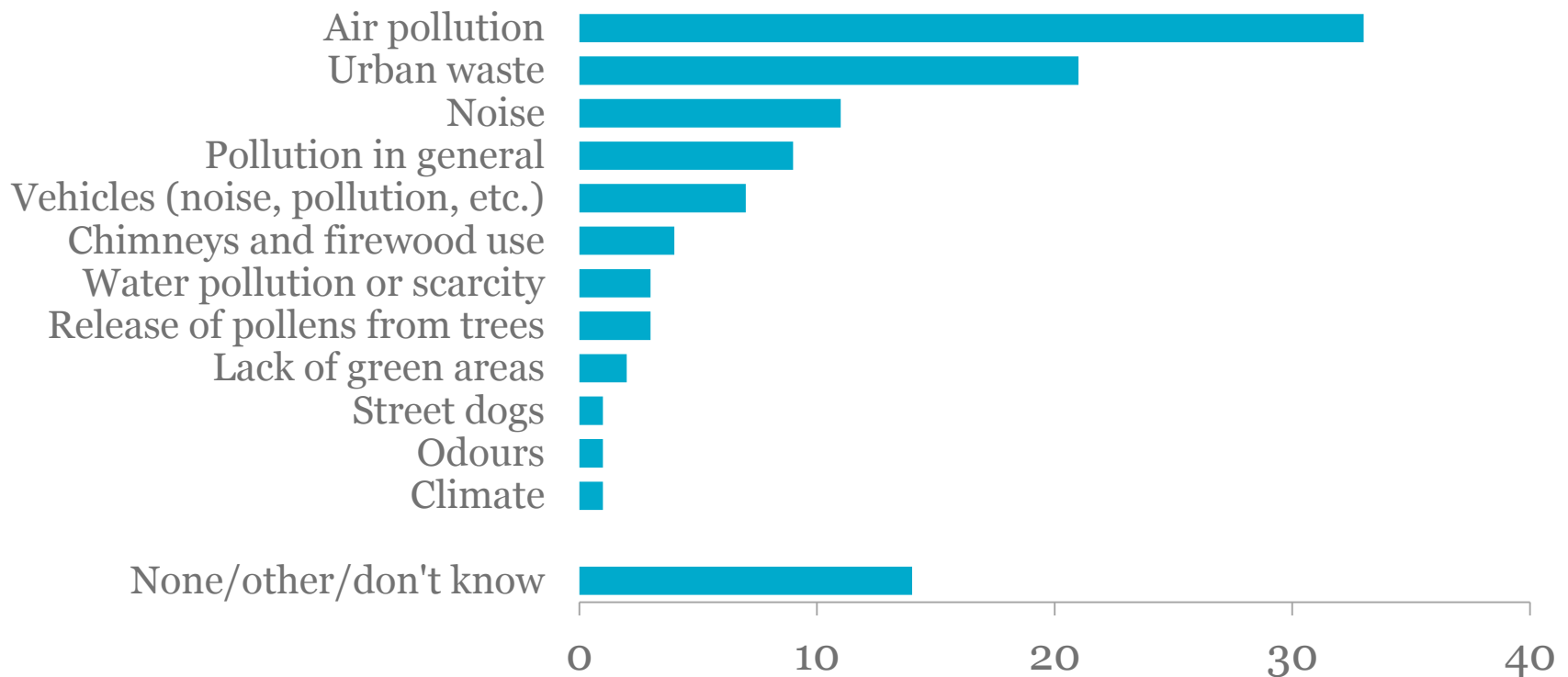


ENVIRONMENTAL OUTCOMES: A MIXED PICTURE



Rising concerns about the environment

Citizens' perception of the most severe environmental challenges

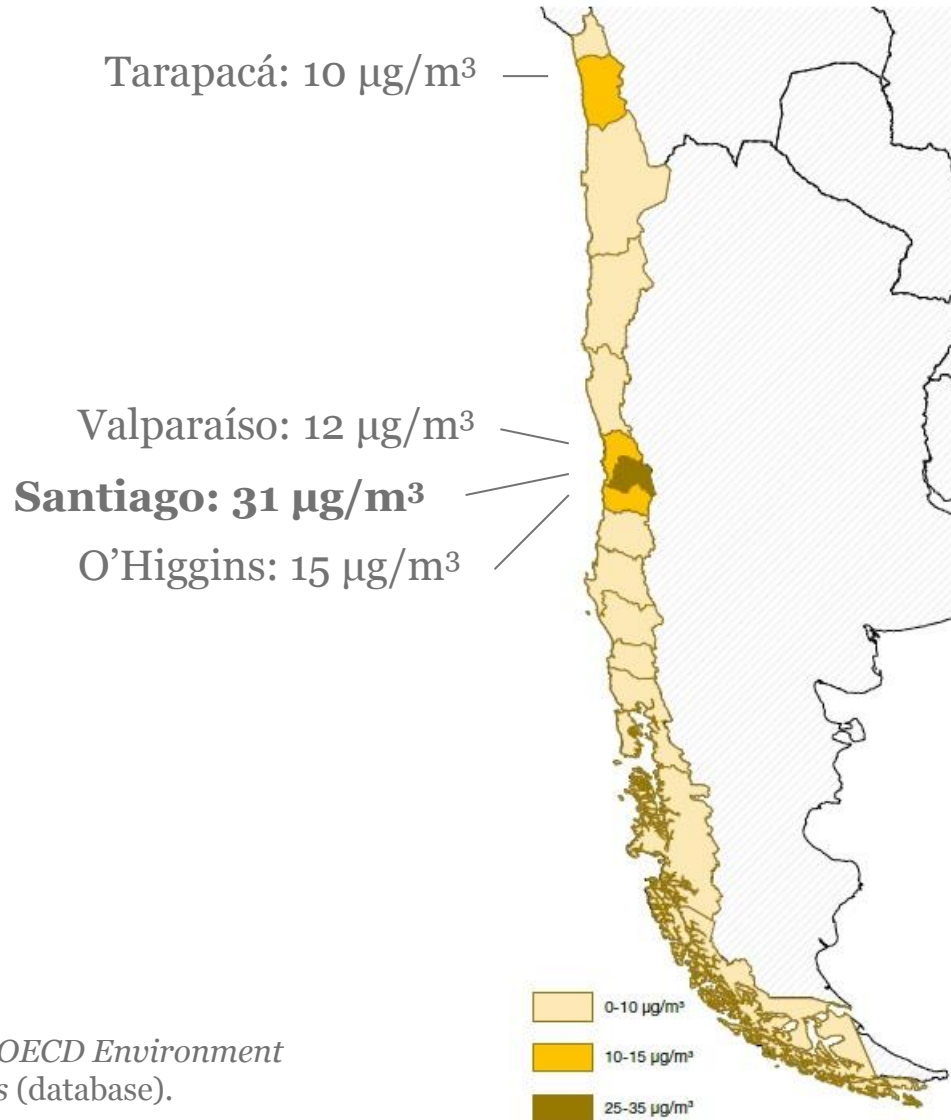


As the survey allowed for multiple answers, the total may exceed 100%.

Source: MMA (2015), *First National Survey on the Environment*.



Annual mean exposure to PM_{2.5} pollution is high in Santiago



Source: OECD Environment Statistics (database).



A large share of the population is exposed to severe PM_{2.5} pollution levels



Source: OECD (2016), *OECD Environment Statistics*(database).

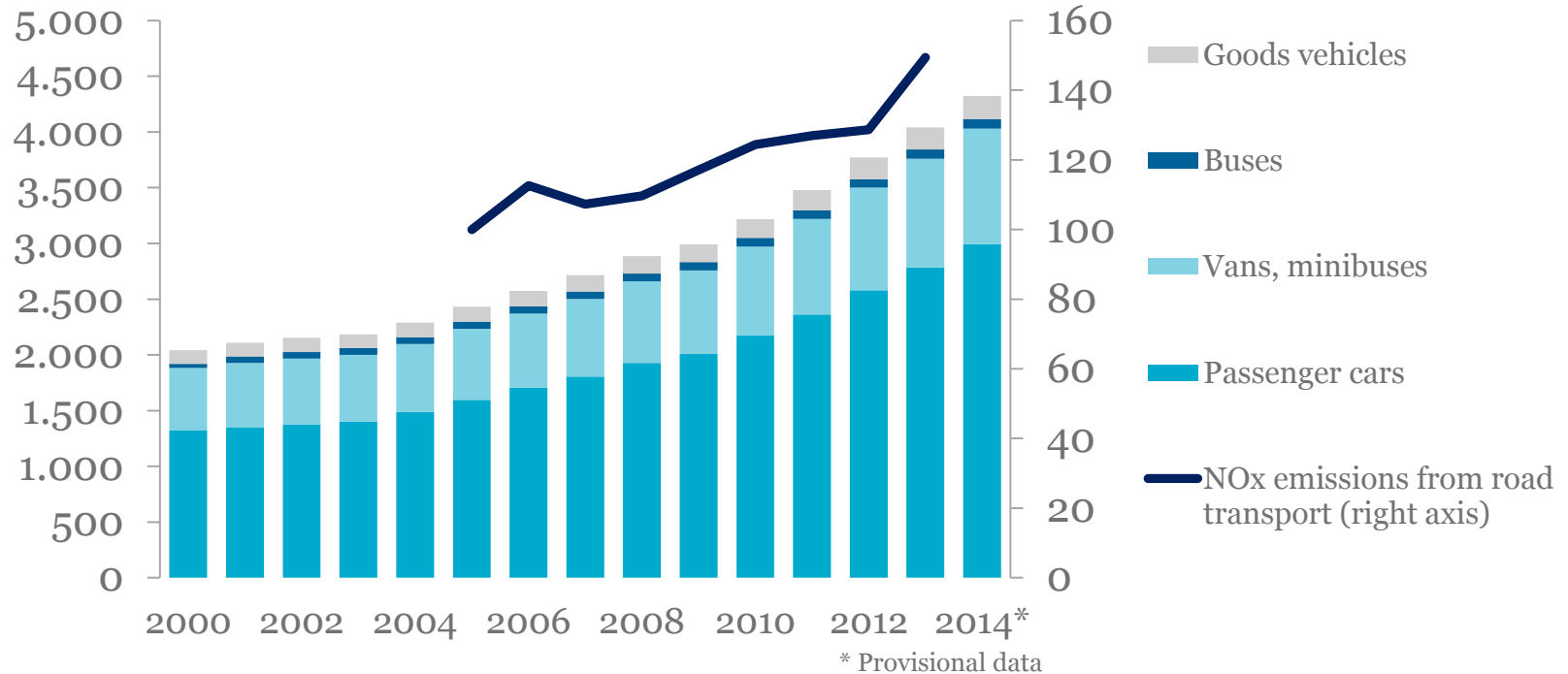


The vehicle fleet has doubled since 2000, increasing air pollution

Vehicle fleet and transport-related NO_x emissions, 2000-14

Thousands vehicles

2005=100

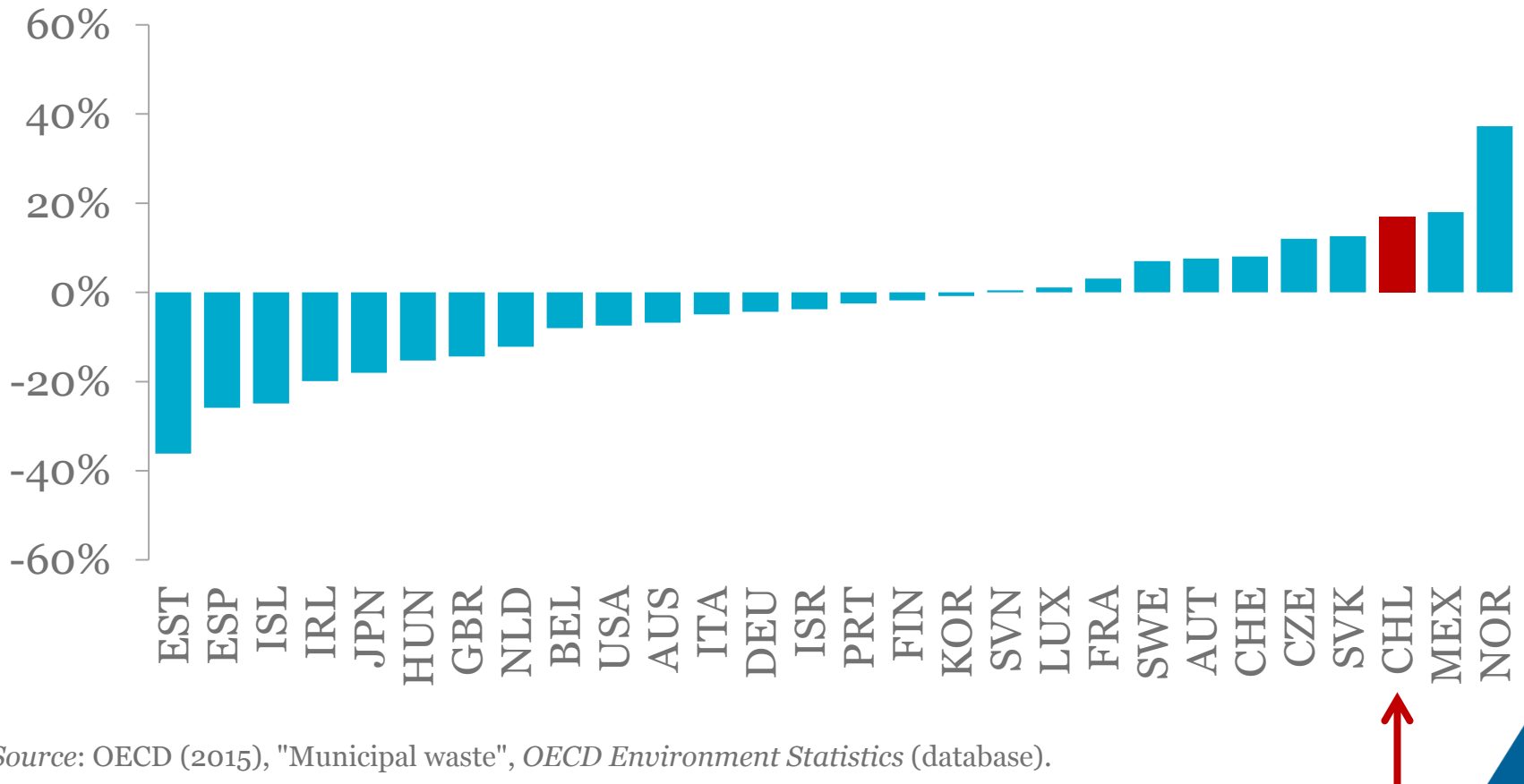


Source: INE (2015), *Anuarios parque de vehiculos en circulacion*; OECD (2015), *OECD Environment Statistics* (database).



Municipal waste generation per capita is on the rise...

Change in municipal waste generation per capita, 2000-13

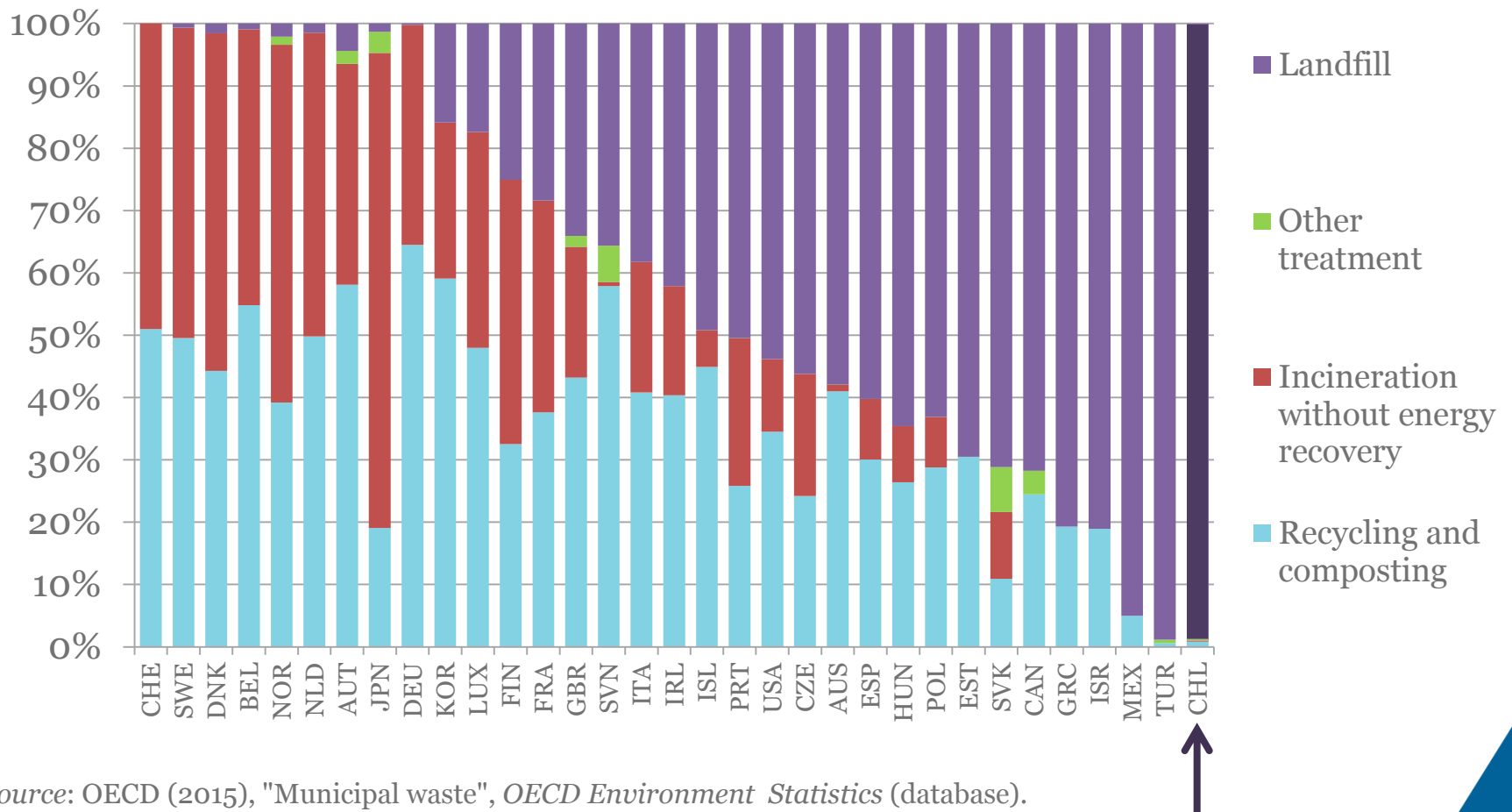


Source: OECD (2015), "Municipal waste", *OECD Environment Statistics* (database).



...and mostly disposed of in landfills

Municipal waste by type of treatment, 2013



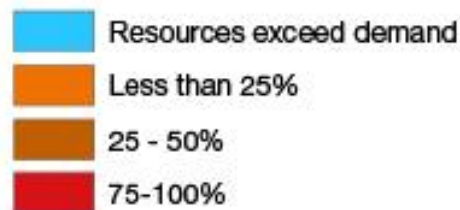
Source: OECD (2015), "Municipal waste", *OECD Environment Statistics* (database).



Water demand exceeds supply in northern and central Chile



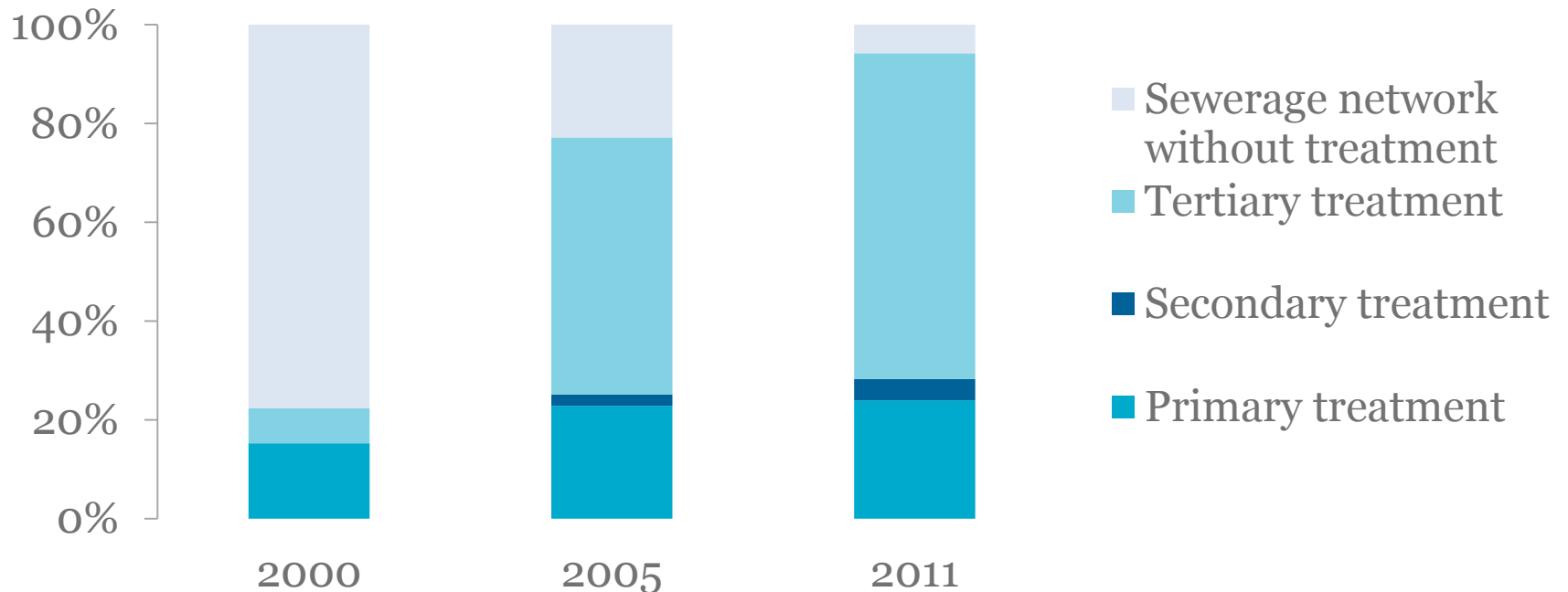
Percentage of water demand
not met by available resources





Wastewater treatment services increased considerably...

Percentage of urban population connected to sewerage and wastewater treatment plants

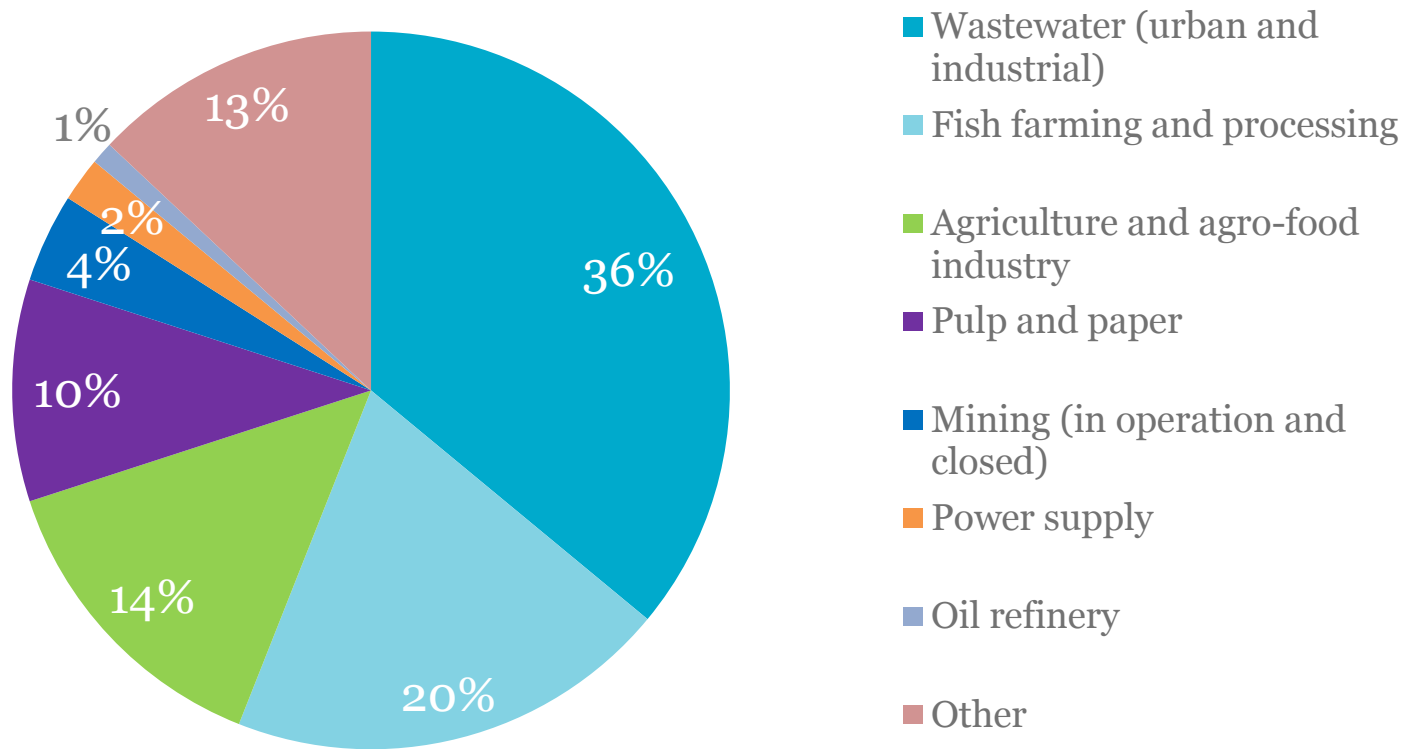


Source: OECD (2015), "Water: Wastewater treatment", OECD Environment Statistics (database); SINIA (2015), Indicadores y Estadísticas Ambientales (database).



Sewage, agricultural runoff and fish farming are major sources of water pollution

Wastewater discharges to surface waters by industrial sector, % of total discharges, 2009



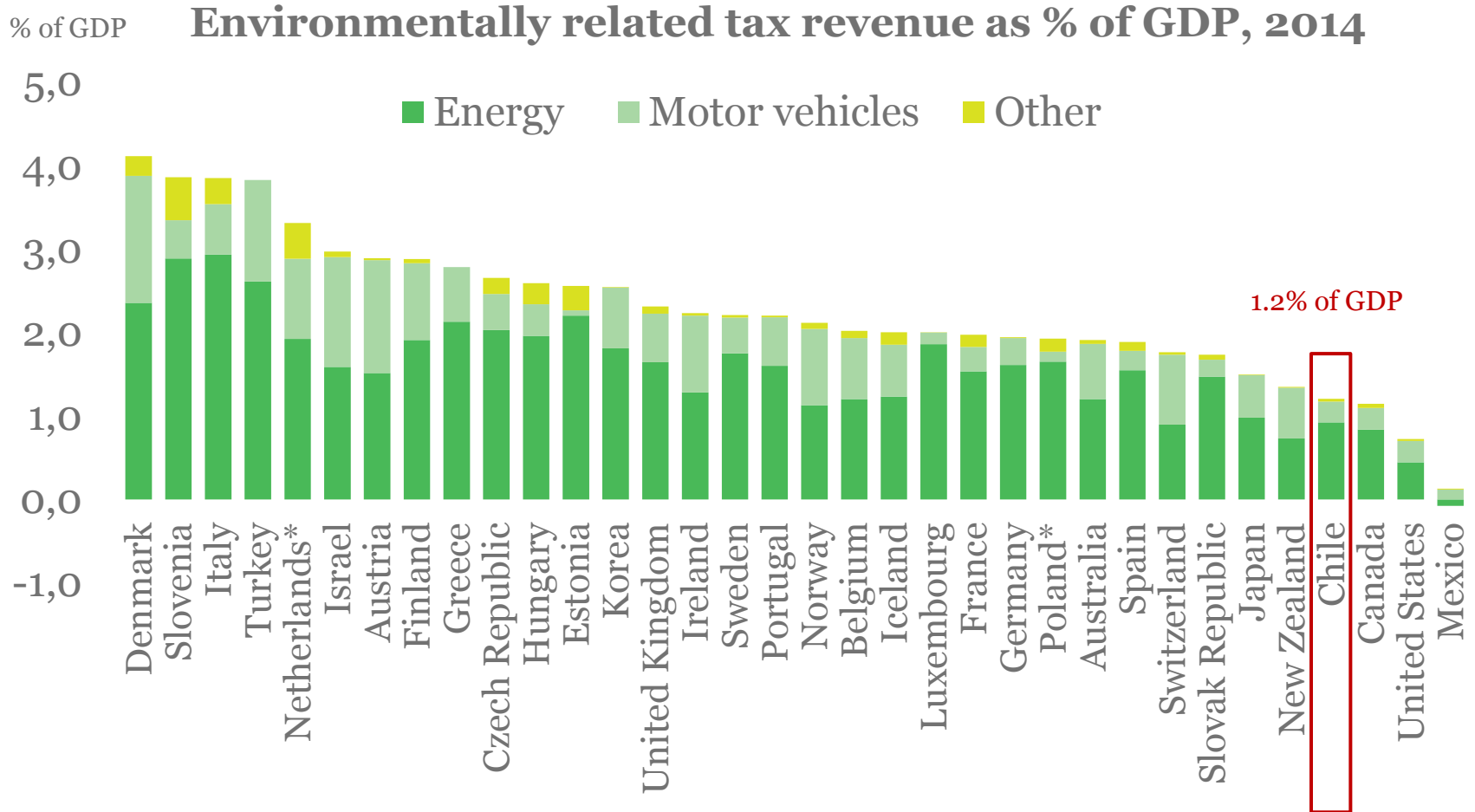
Source: MMA (2012), *Official Environment Status Report 2011*.



GREENING THE ECONOMY



Revenue from green taxes was low in 2014



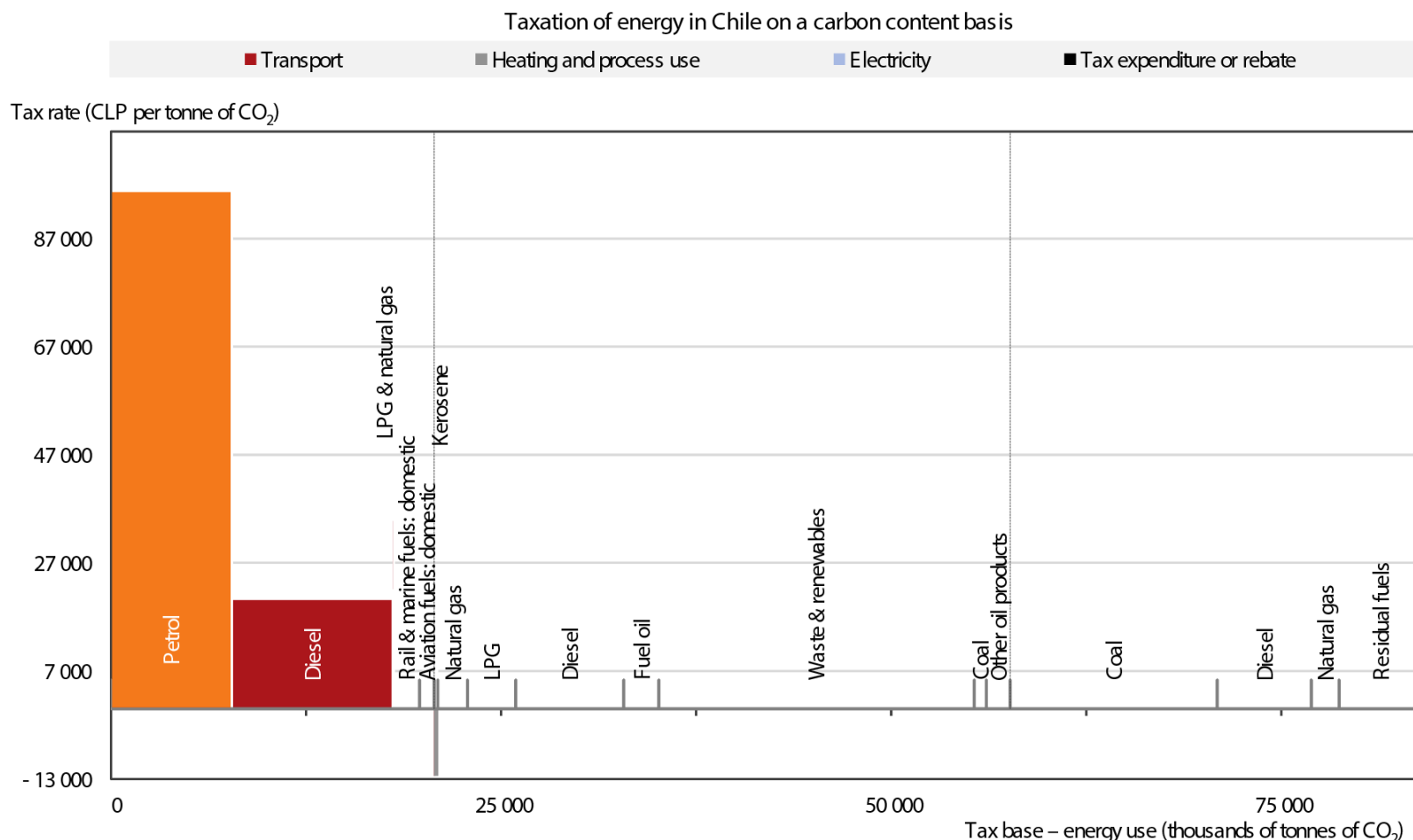
• 2013 data

Note: Chilean data excludes revenues from the specific tax on mining.

Source: OECD (2015), *OECD Database on Instruments Used for Environmental Policy and Natural Resources Management*.



Only petrol and diesel are now taxed in Chile, with a wide gap



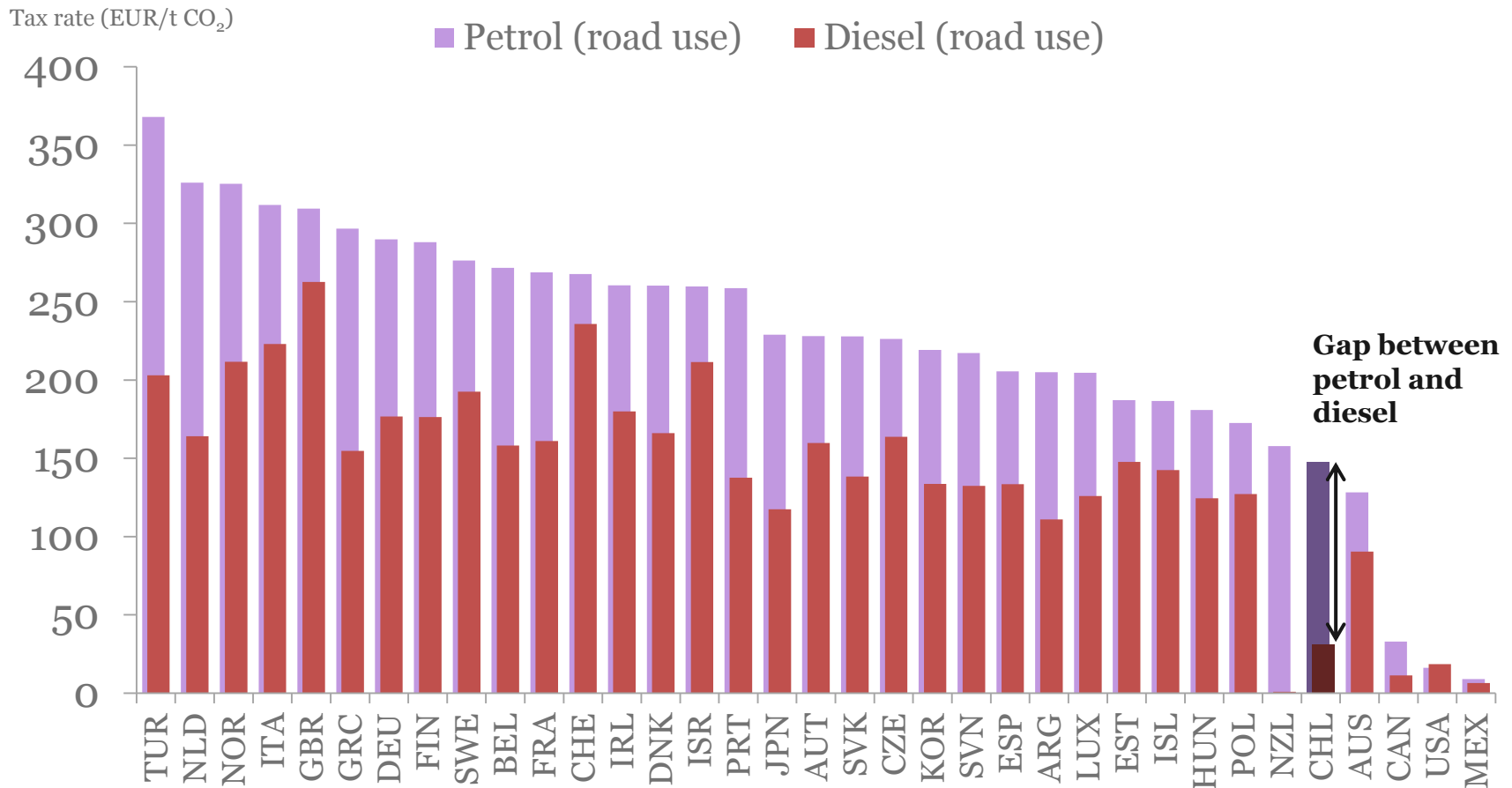
Note: Tax rates as of May 2012; energy use as of 2009.

Abbreviations: Res. = residential; comm. = commercial; ind. = industrial; ag. = agricultural; fish. = fishery; energy transf. = energy transformation; heat = merchant heat.

Source: OECD (2013), Taxing Energy Use: A Graphical Analysis.



Petrol and diesel taxes are low and the gap between the two is larger than elsewhere



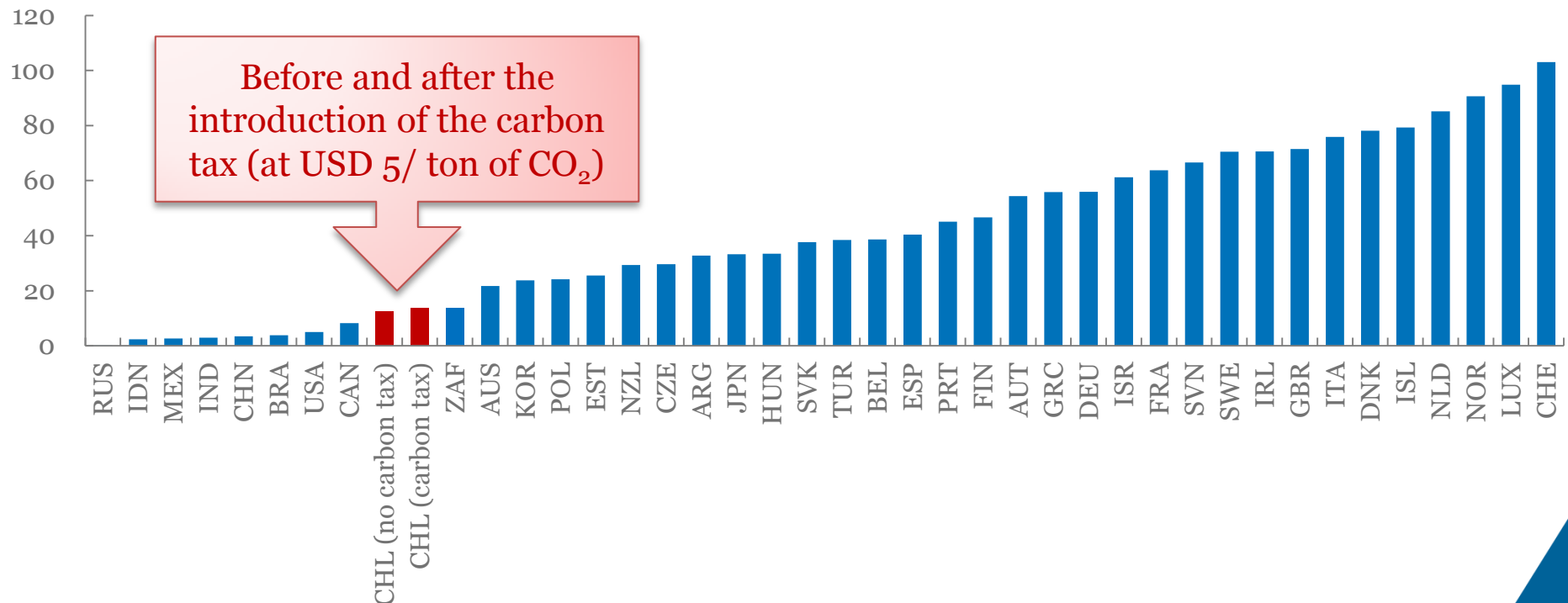
Source: Adapted from OECD (2015), *Taxing Energy Use 2015: OECD and Selected Partner Economies*.



Among the lowest effective carbon tax rates

Economy-wide average effective tax rate on CO₂ emissions from energy

Tax rate
(EUR per tonne CO₂)

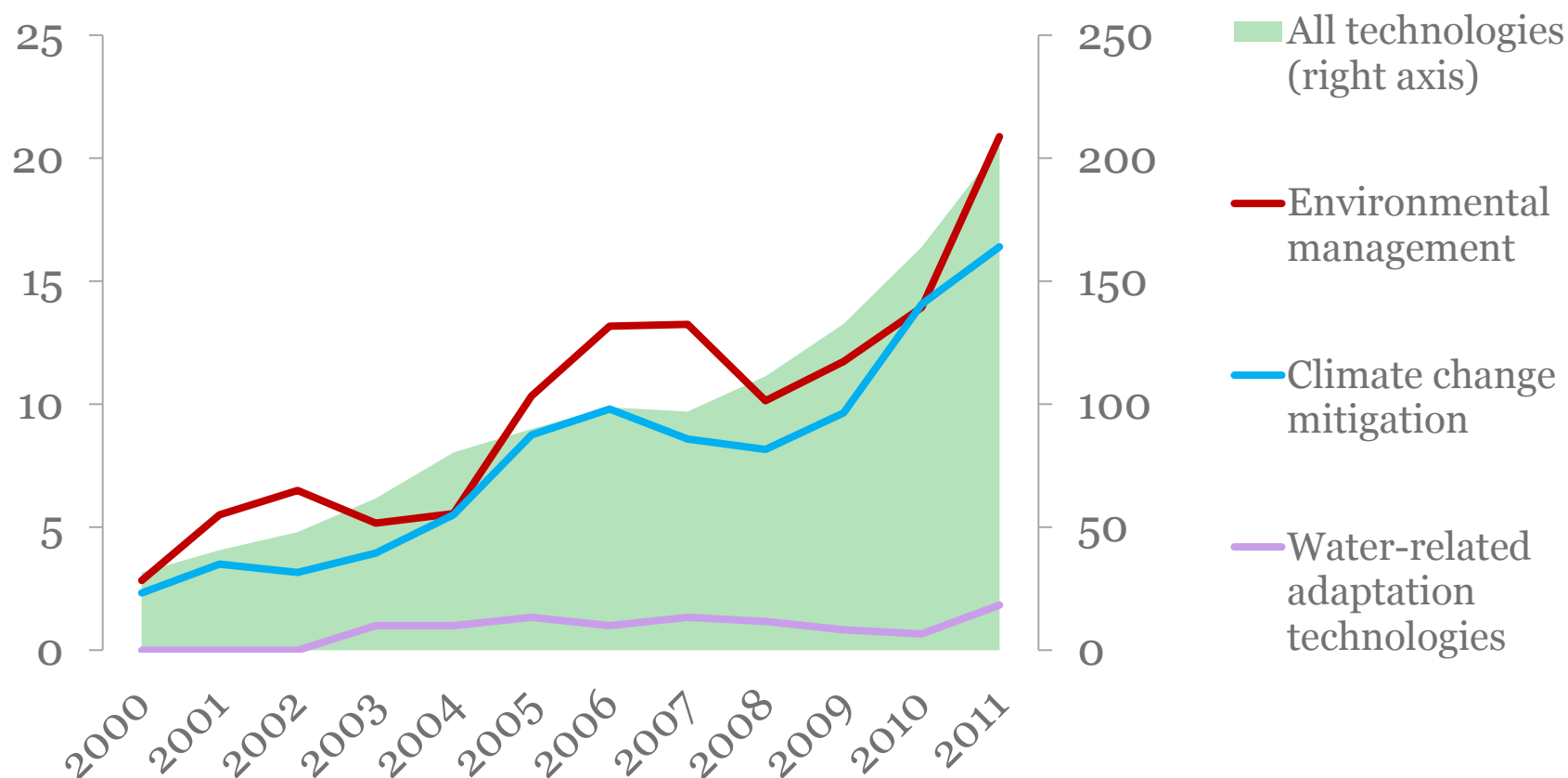


Source: rough calculations based on OECD (2015), *Taxing Energy Use 2015: OECD and Selected Partner Economies*.



Fast growth of environment-related patent applications

Patent applications in selected environment- and climate- related technologies, 1999-2012

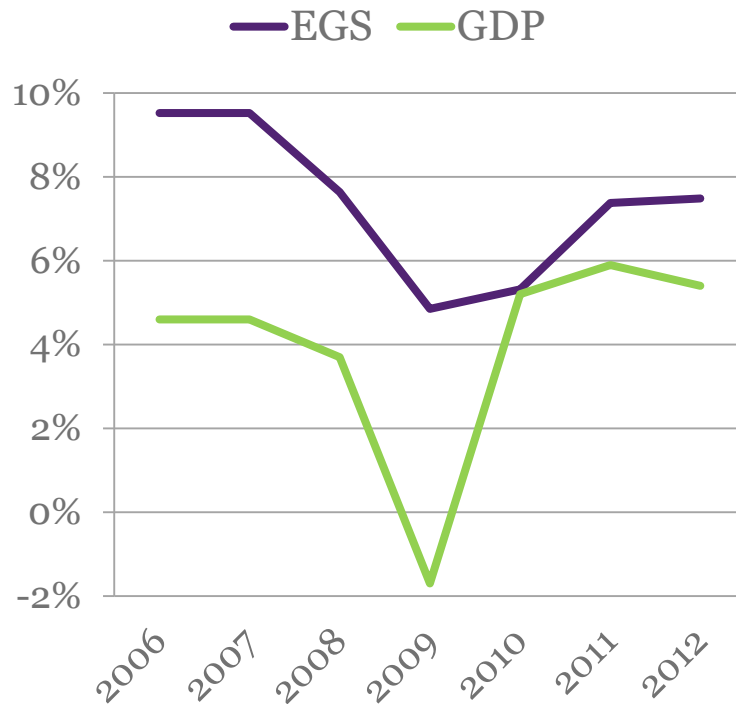


Source: OECD (2015), "Patents in environment-related technologies: Technology development by inventor country", OECD Environment Statistics (database).

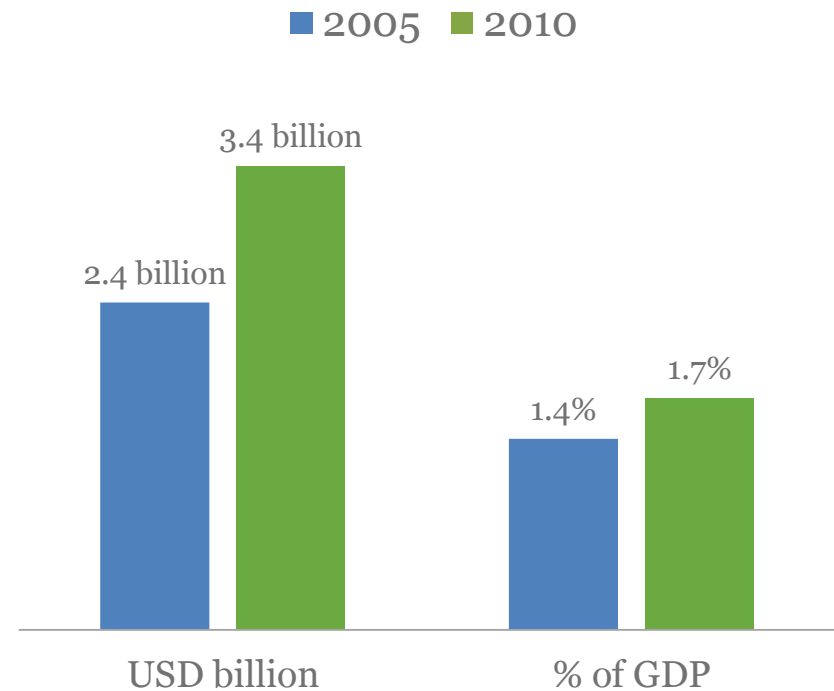


EGS outperformed the overall economy

Annual growth, 2006-12



EGS, 2005 and 2010



Note: Data on EGS based on 2010 estimates. Data excludes renewables and other potentially relevant market segments.

Source: Based on USAID and APEC (2011), Chile Environmental Industry 2010.



Key laws and institutions are there, it is now time for implementation

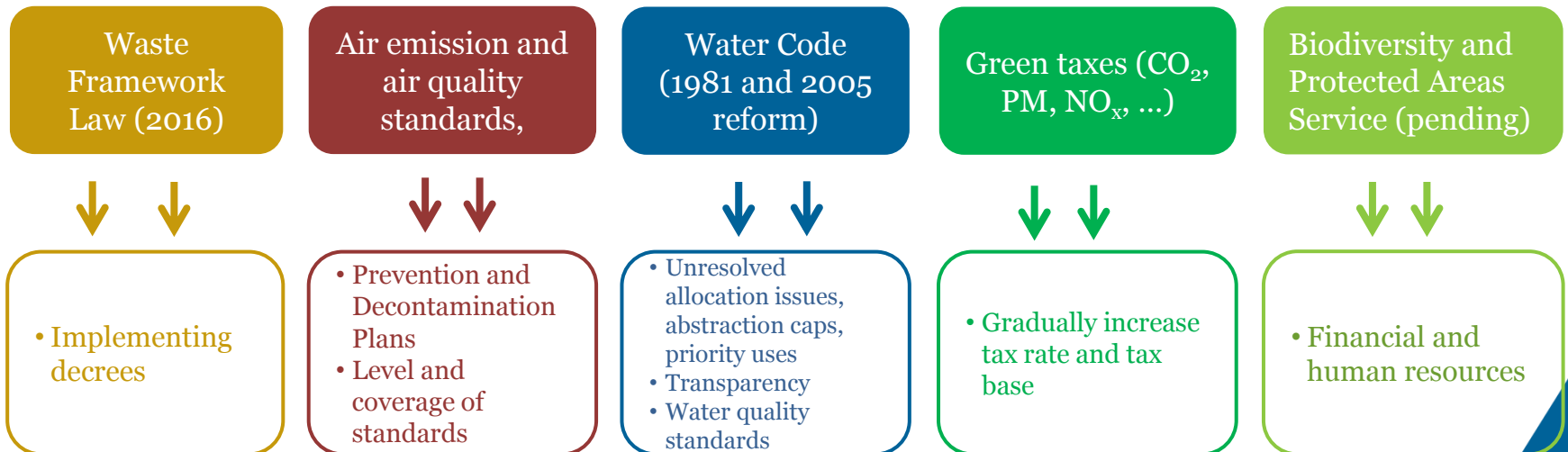
Policy design, and enforcement



Access to env. justice & conflict resolution



Implementation



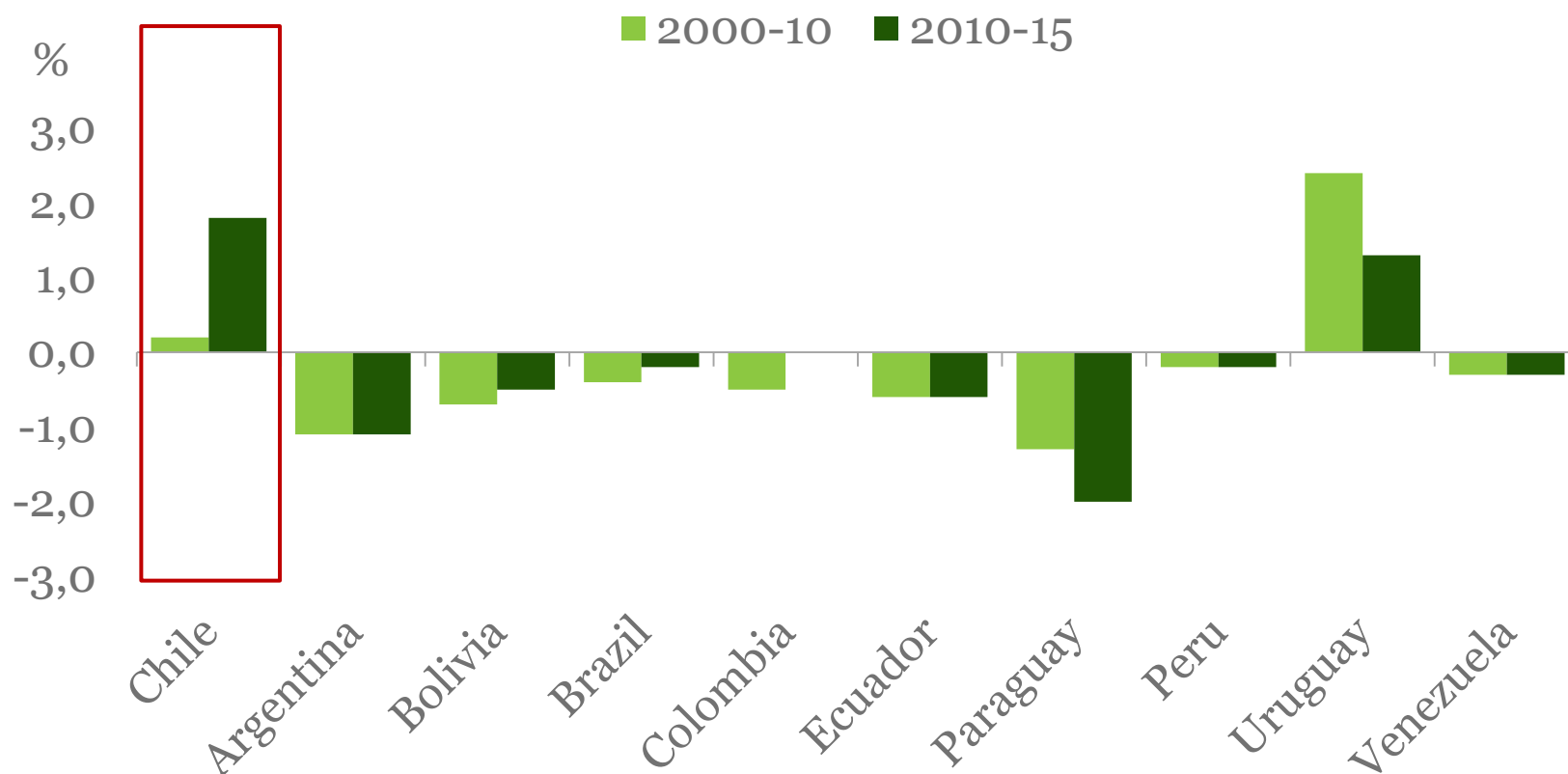


BIODIVERSITY



The fastest growth rate in forest areas in South America

Annual percentage change in forest areas in selected South American countries



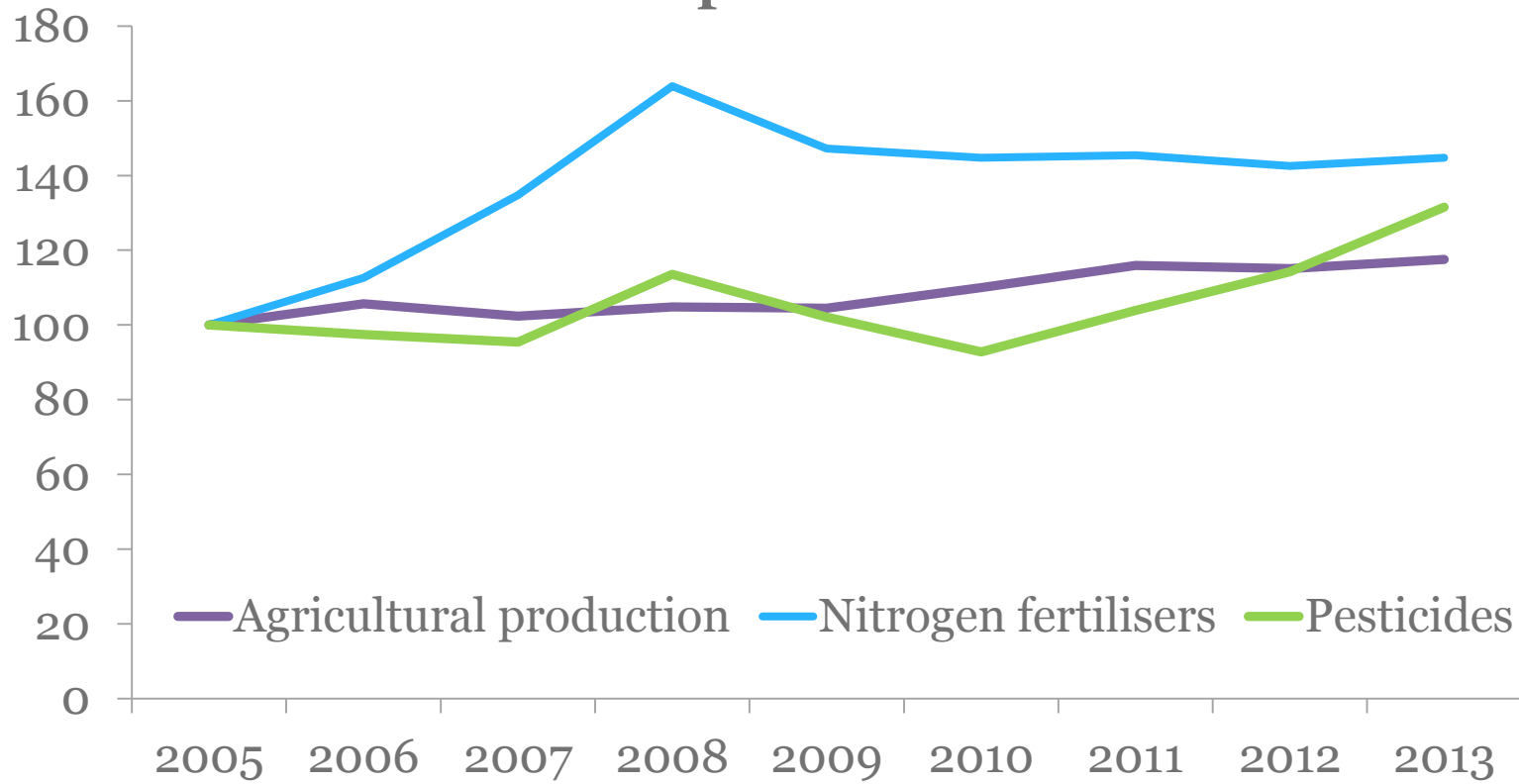
Source: FAO (2015), *Global Forest Resources Assessment 2015*.



The use of agricultural chemicals increased

Trends in agricultural inputs and agricultural production

2005=100

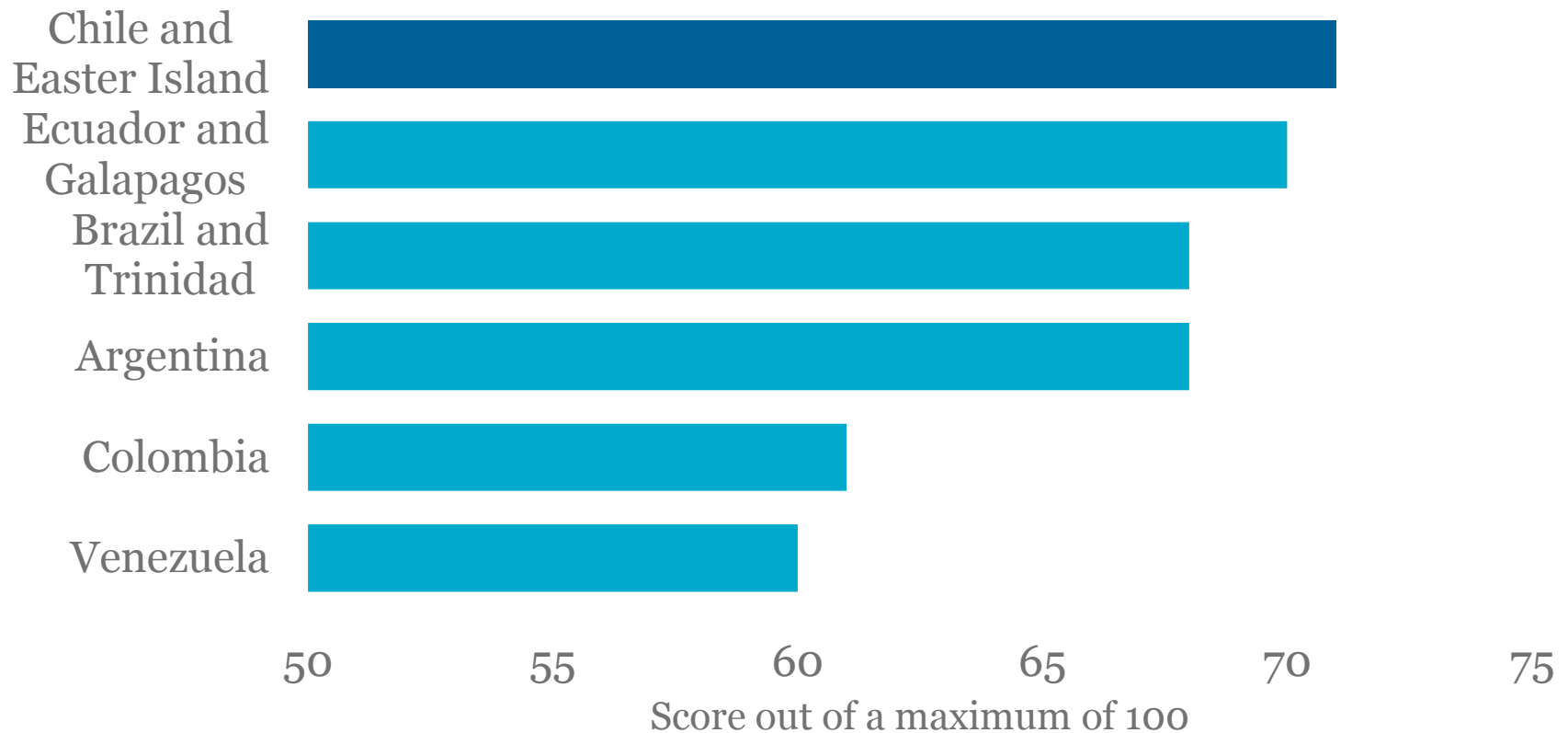


Source: FAO (2015), FAOSTAT (database).



A high Ocean Health Index score compared to other South American countries

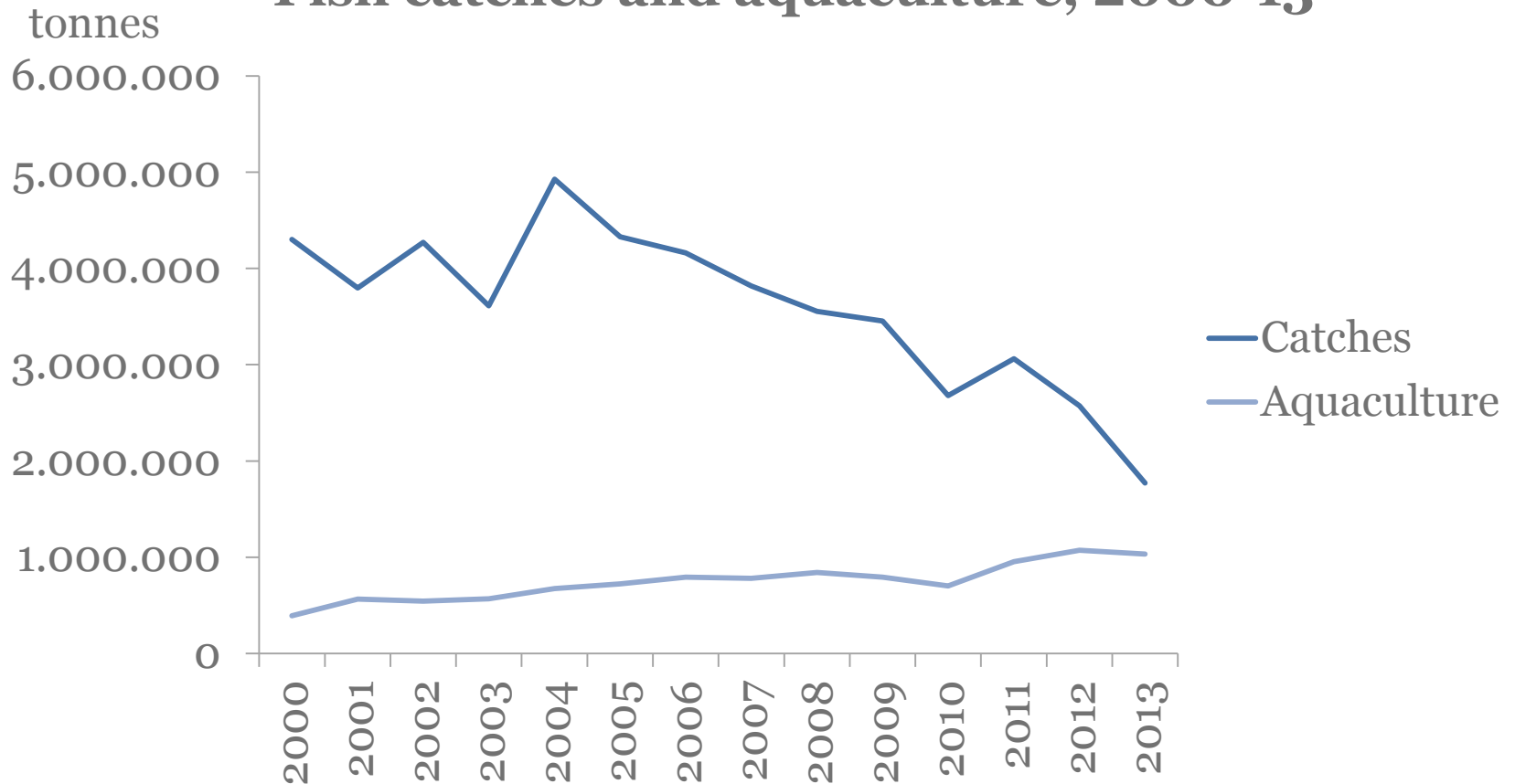
Ocean Health Index, 2015





Fish catches have declined, while aquaculture has expanded

Fish catches and aquaculture, 2000-13

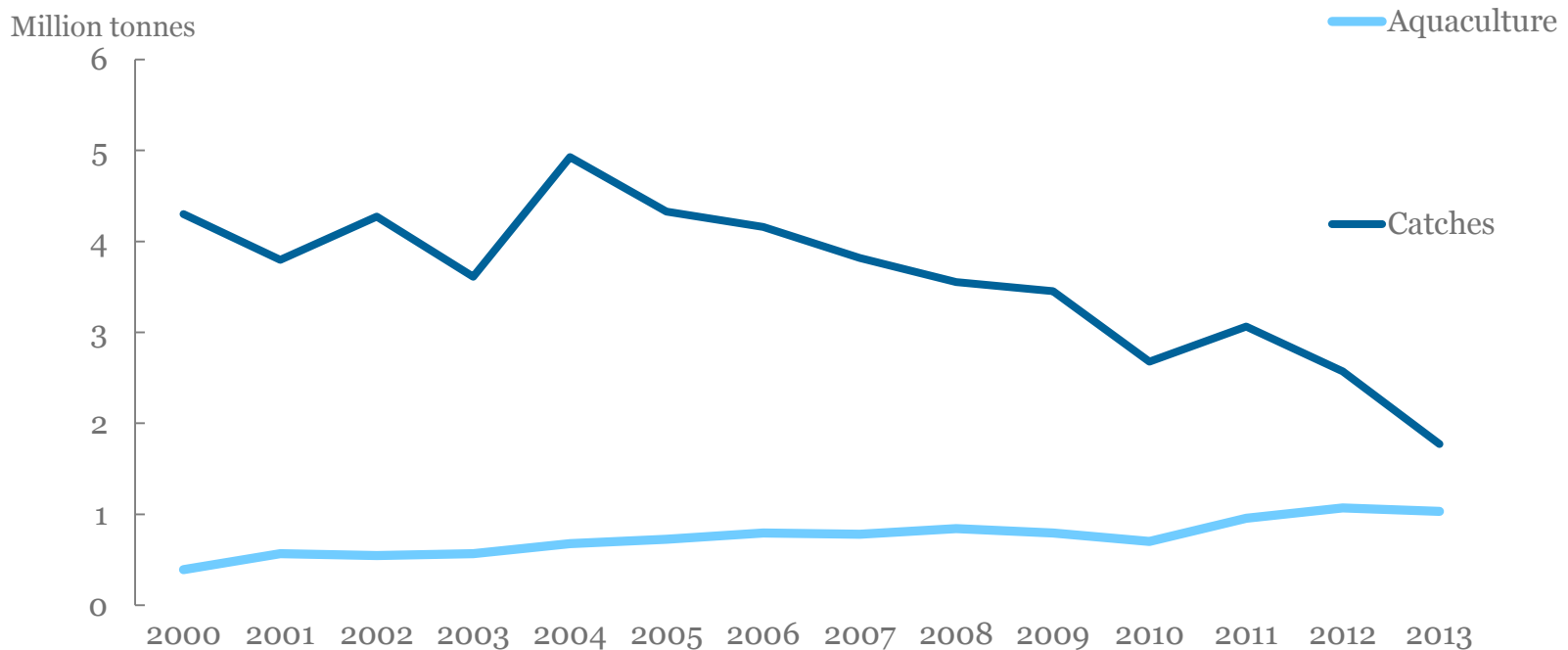


Source: FAO (2015), FAO Global Capture and Aquaculture Production (databases).



Fish catches have declined, while aquaculture has expanded

Fish catches and aquaculture, 2000-13

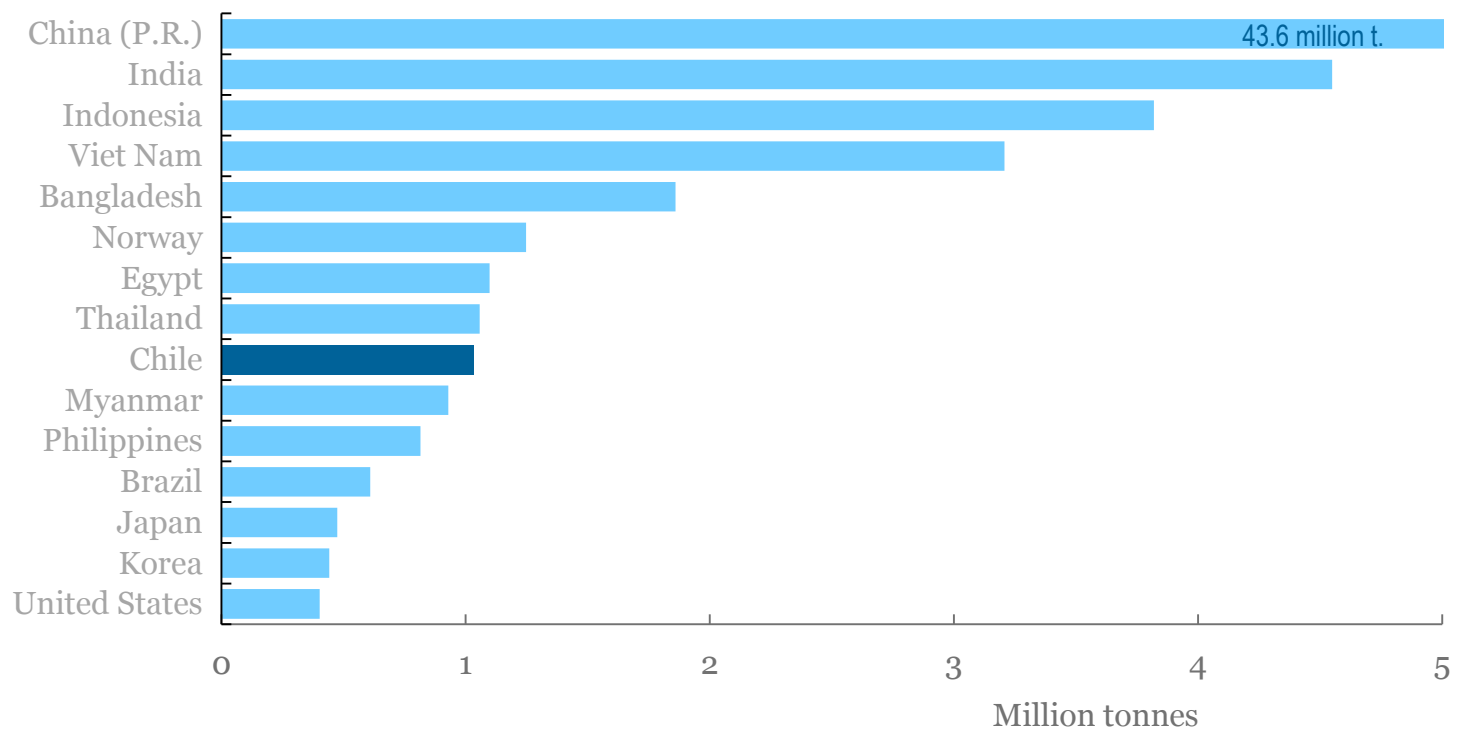


Source: FAO (2015), *FAO Global Capture and Aquaculture Production* (databases).



Fish catches have declined, while aquaculture has expanded

Aquaculture, major 15 producers, 2013



Source: FAO (2015), *FAO Global Capture and Aquaculture Production* (databases).



Many species are at risk and fish stock overexploited

Threatened species, late 2000s



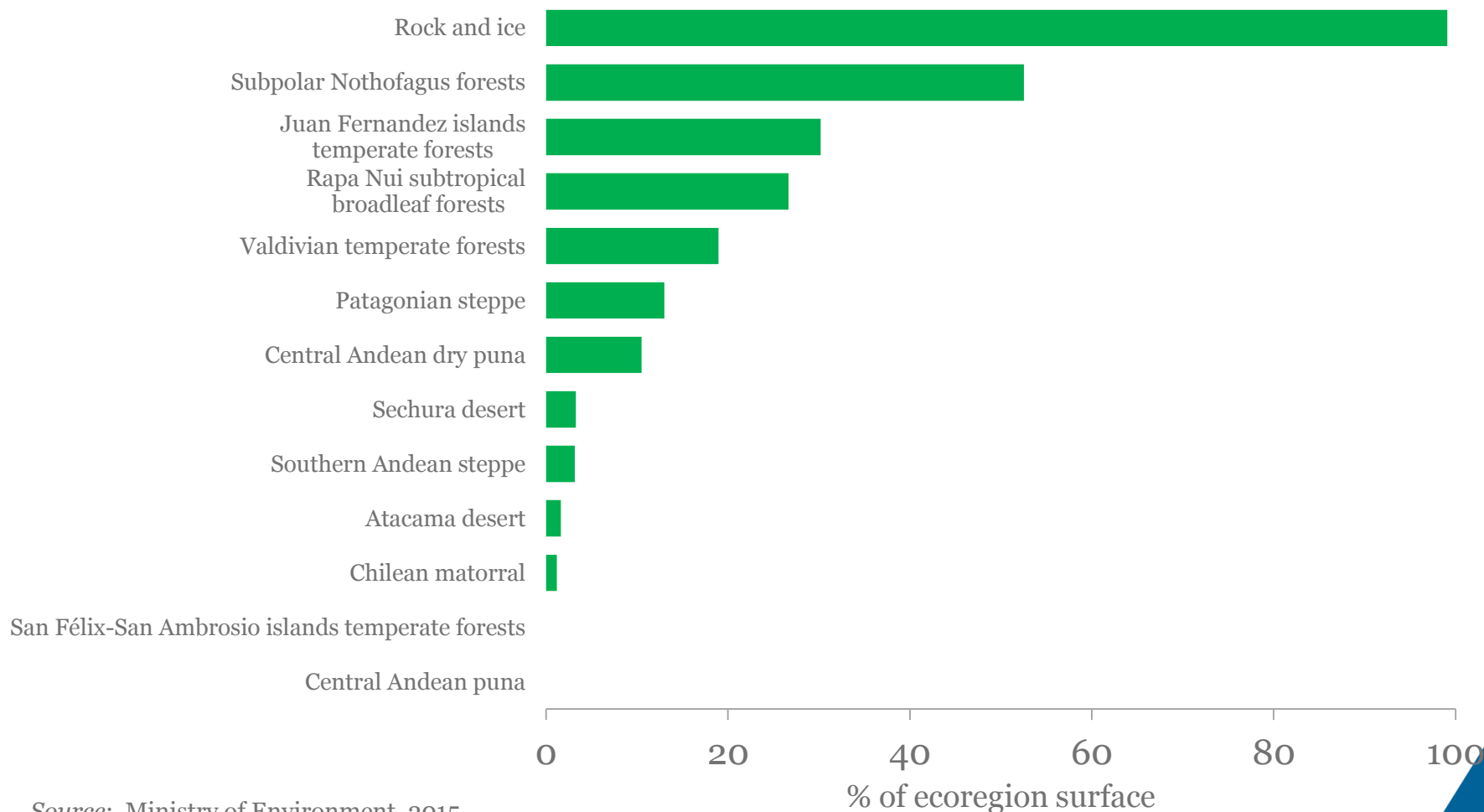
Only 3.5% of known species have been classified

Source: OECD (2015), "Threatened species", *OECD Environment Statistics* (database).



Coverage of protected areas varies widely across ecoregions

Protected areas by type of land-based vegetation formation, 2015

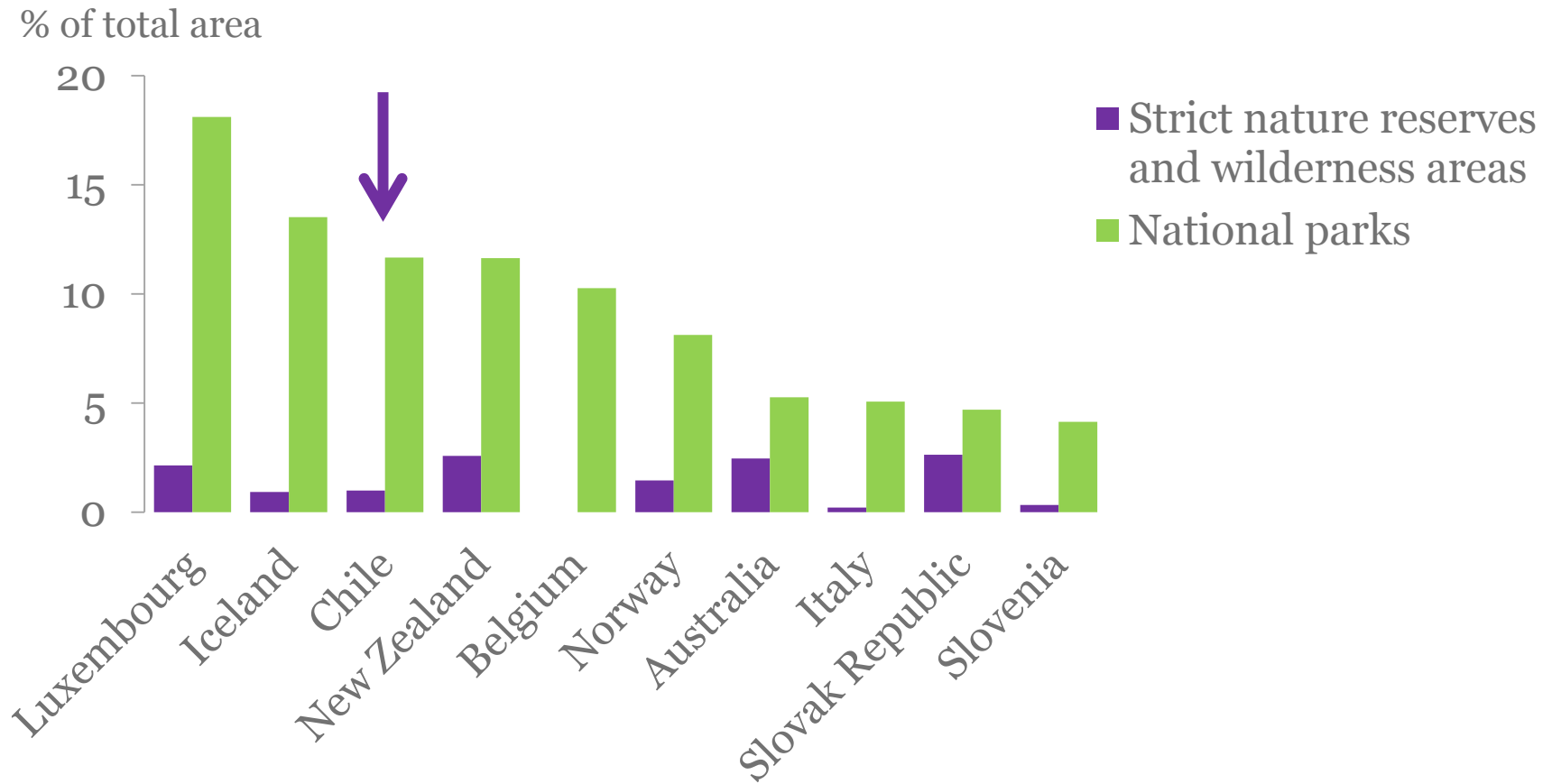


Source: Ministry of Environment, 2015.



Roughly 13% of protected areas are in the top IUCN protection categories

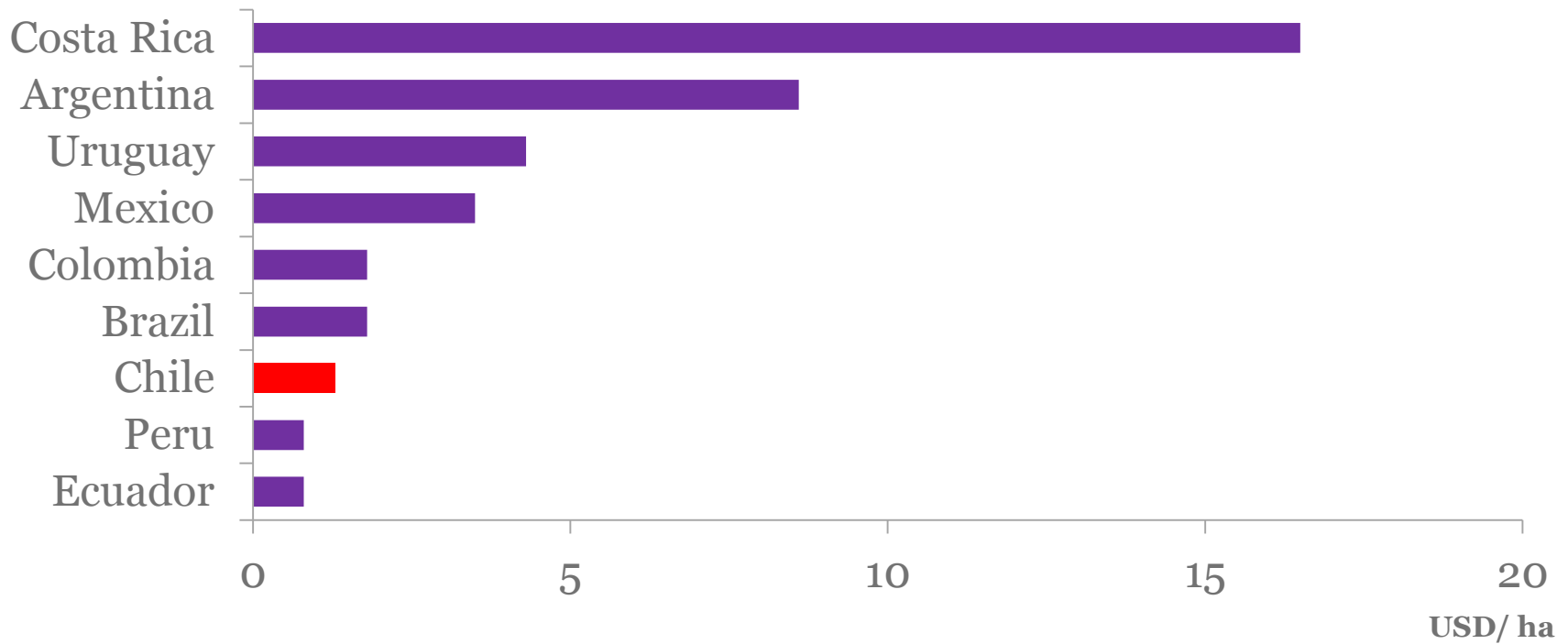
Terrestrial protected areas, top 10 OECD countries for national parks, 2013





Protected area funding is among the lowest in South America

Financing per ha of protected areas, selected Latin American countries



Source: Bovarnick, A. et al. (2010), *Financial Sustainability of Protected Areas in Latin America and the Caribbean: Investment Policy Guidance*; de Guevara, L. (2013), *Proposed 2015-2030 Financial Strategy for the Chile National Protected Areas System*; MMA, 2015.

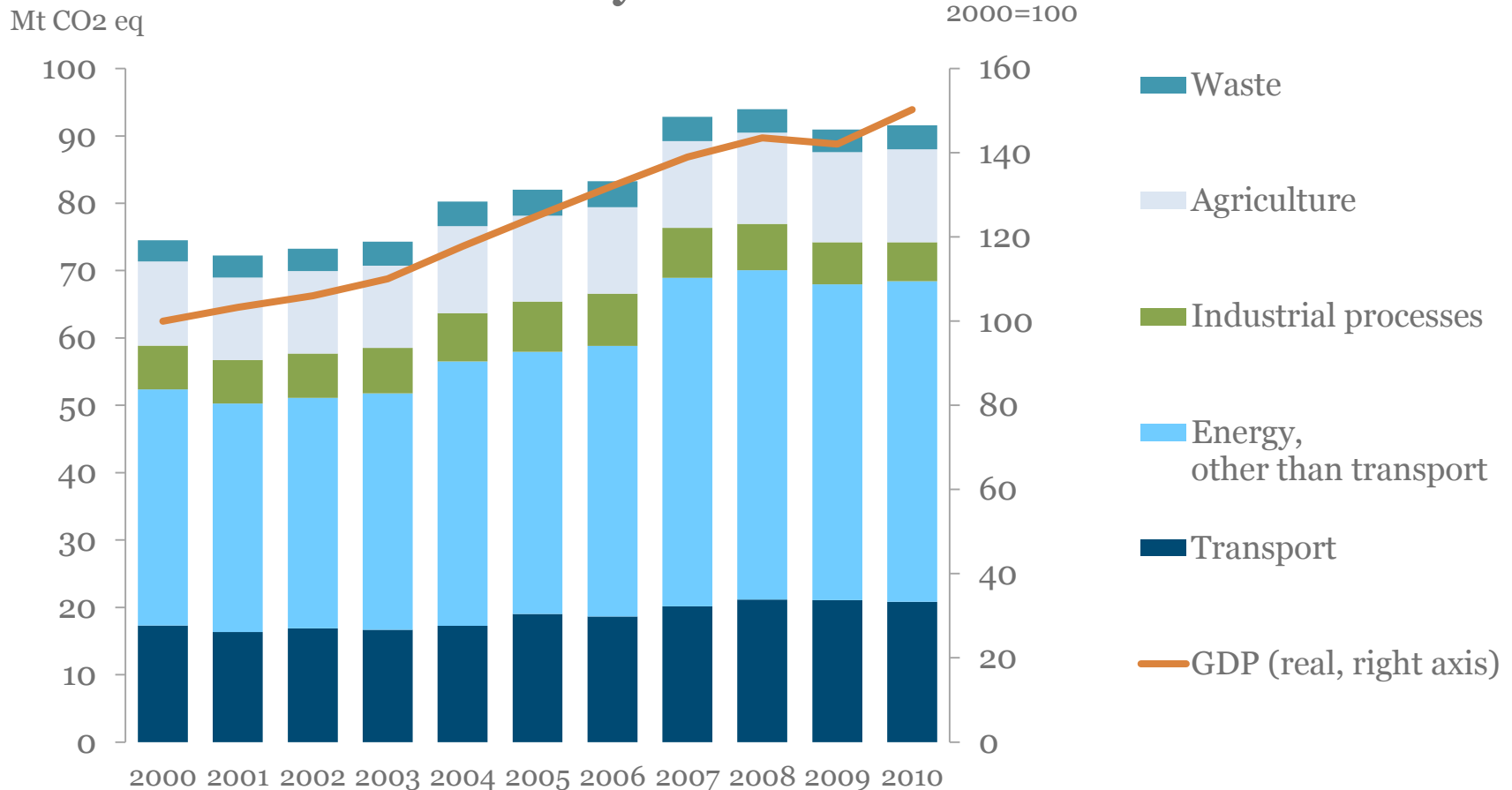


CLIMATE CHANGE



Greenhouse gas emissions increased with economic growth

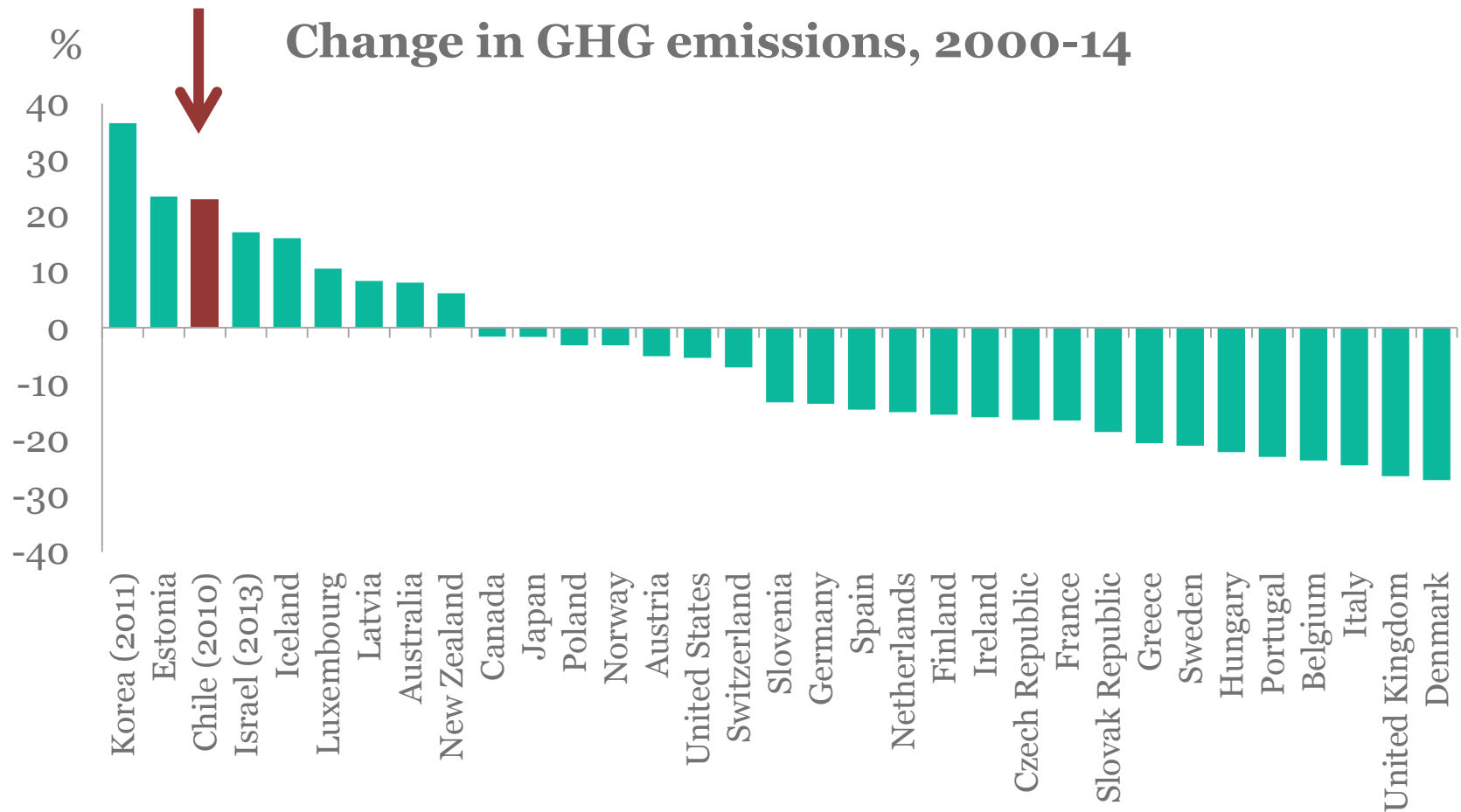
GHG emissions by sector



Source: OECD (2015), "Greenhouse gas emissions by source", *OECD Environment Statistics* (database).



Chile had one of the highest increases in GHG in the OECD

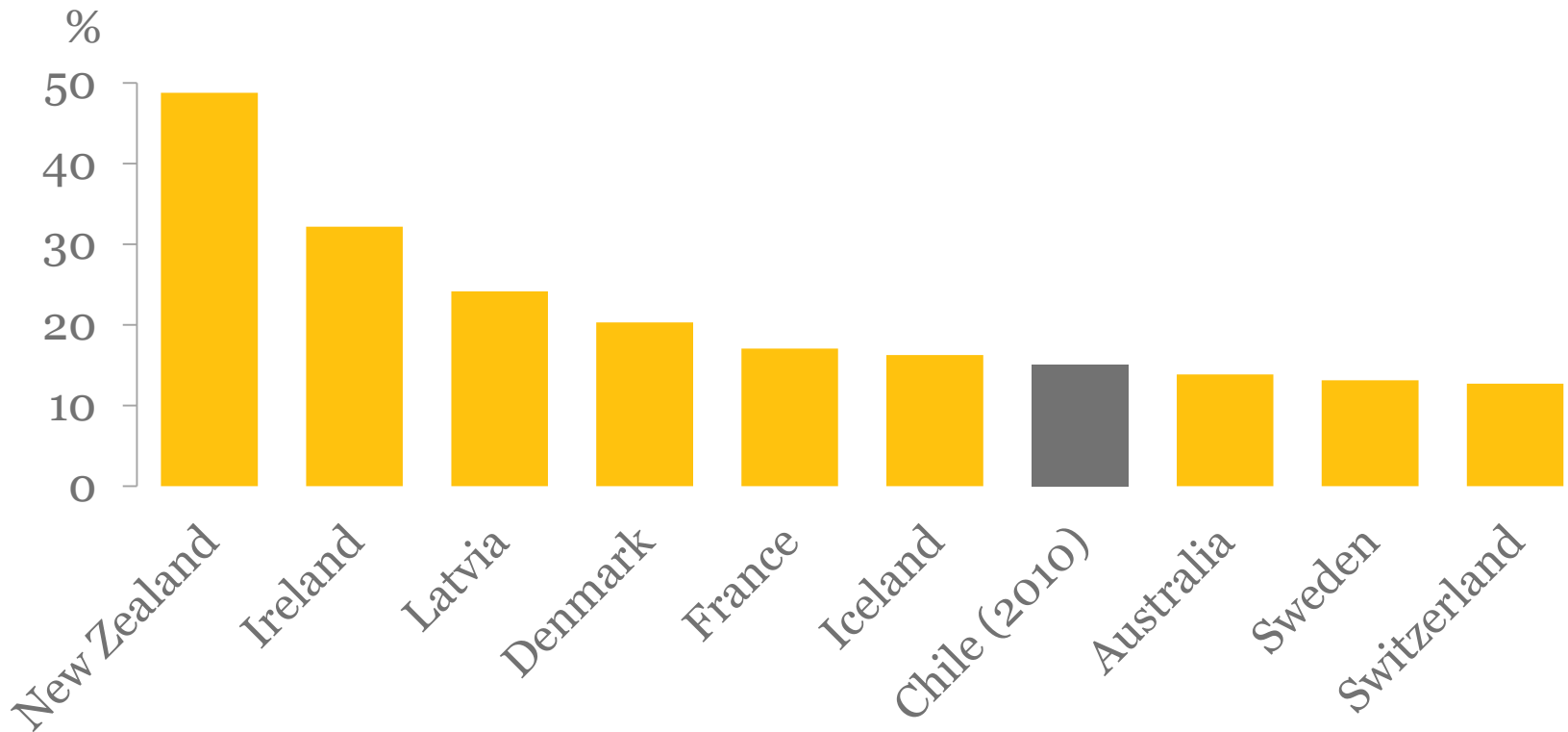


Source: OECD (2016), "Greenhouse gas emissions by source", *OECD Environment Statistics* (database).



Agriculture accounts for a large share of GHG emissions

Contribution of the agriculture sector to GHG emissions, top ten OECD countries, 2014

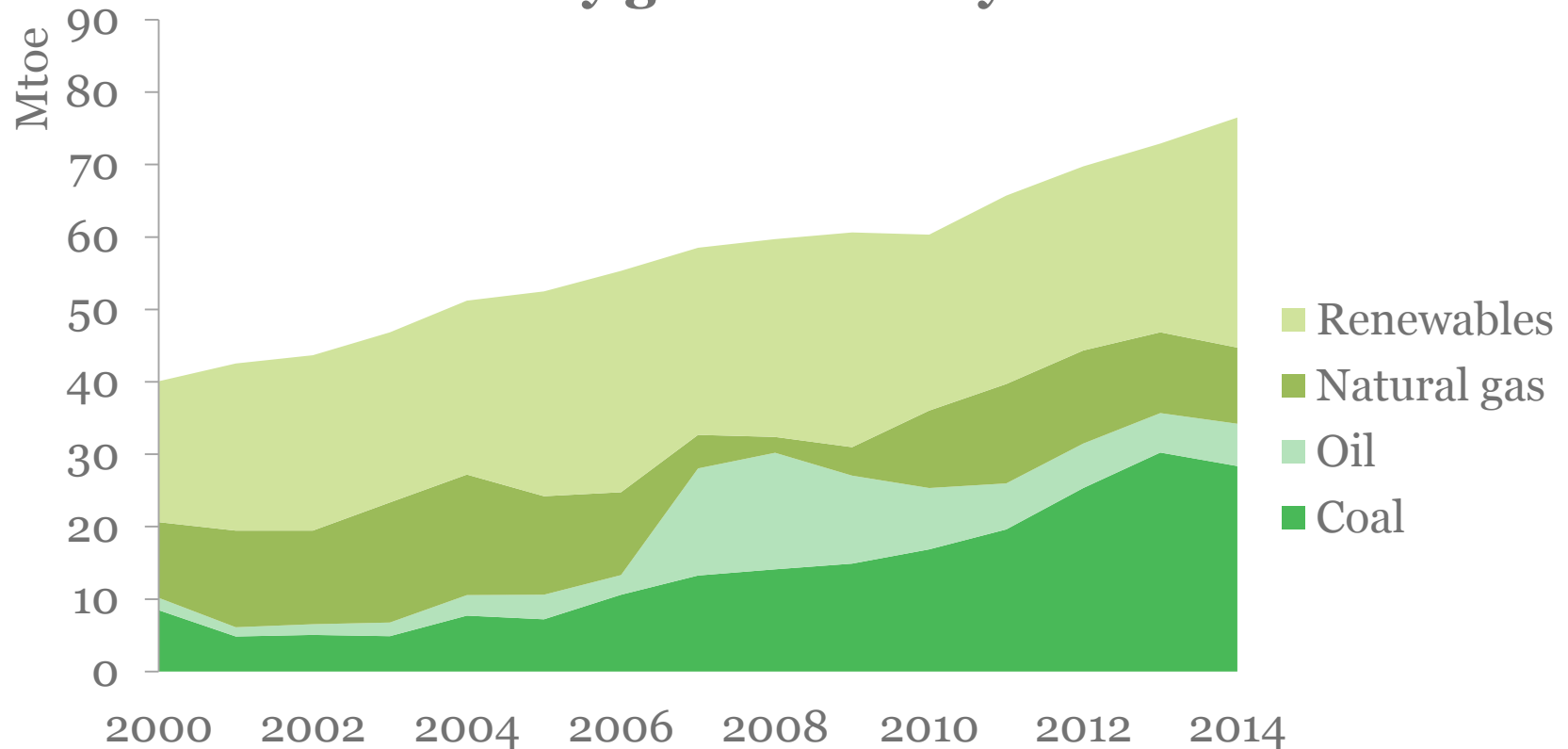


Source: OECD (2016), "Greenhouse gas emissions by source", *OECD Environment Statistics* (database).



Power production from fossil fuels increased twice as much as from renewables

Electricity generation by source



Source: IEA (2015), *IEA World Energy Statistics and Balances* (database).

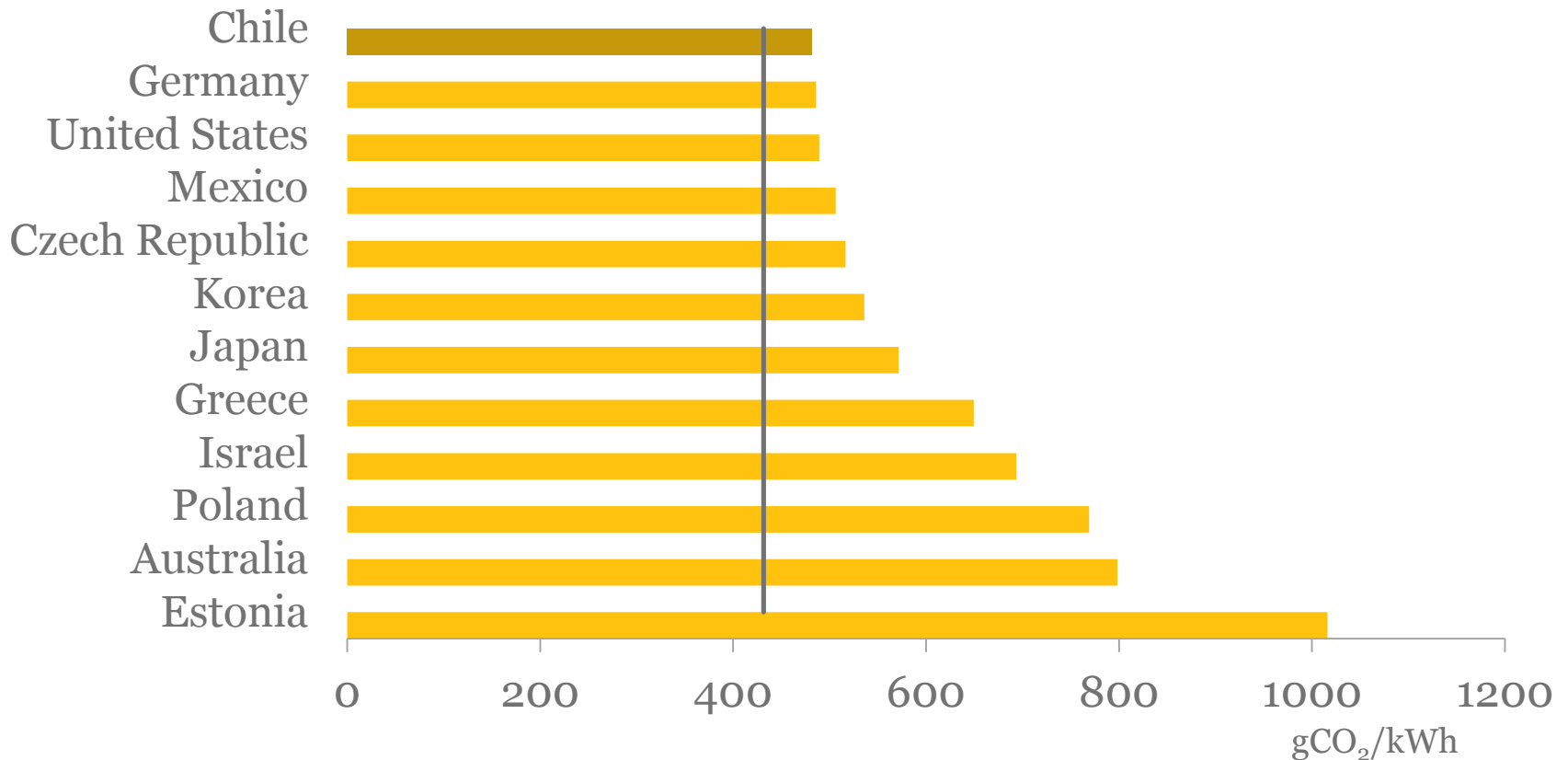


The carbon intensity of power generation is high

Carbon intensity of electricity production, 2014

Emissions of CO₂ per unit of electricity generated

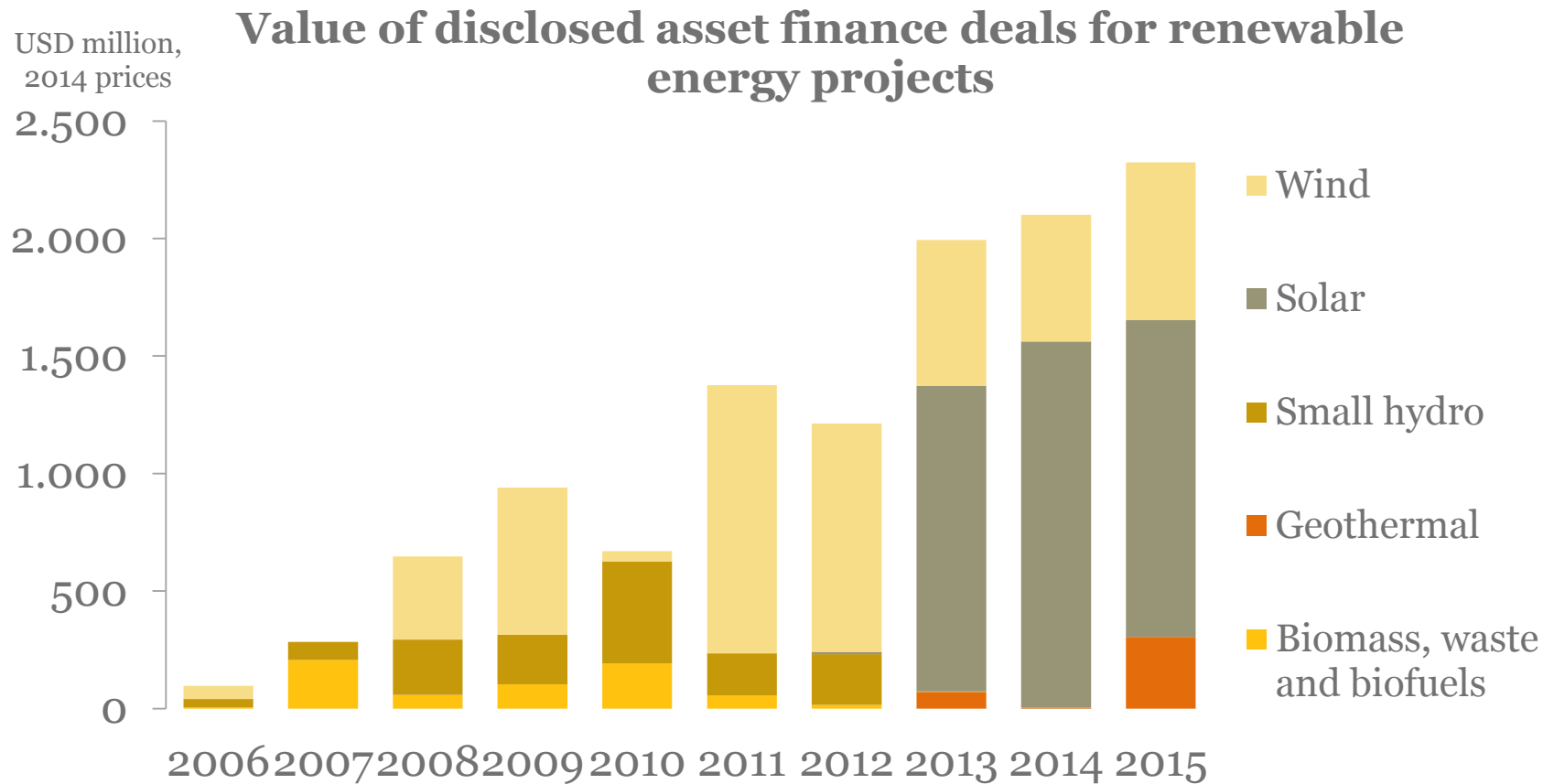
OECD



Source: IEA (2015), IEA World Energy Statistics and Balances (database).



Even though investment in non-conventional renewable energy sources has taken off



Source: Based on Bloomberg New Energy Finance (database) (accessed March 2016).