

A2EP comments on the National Energy Productivity Plan - Annual Report 2017

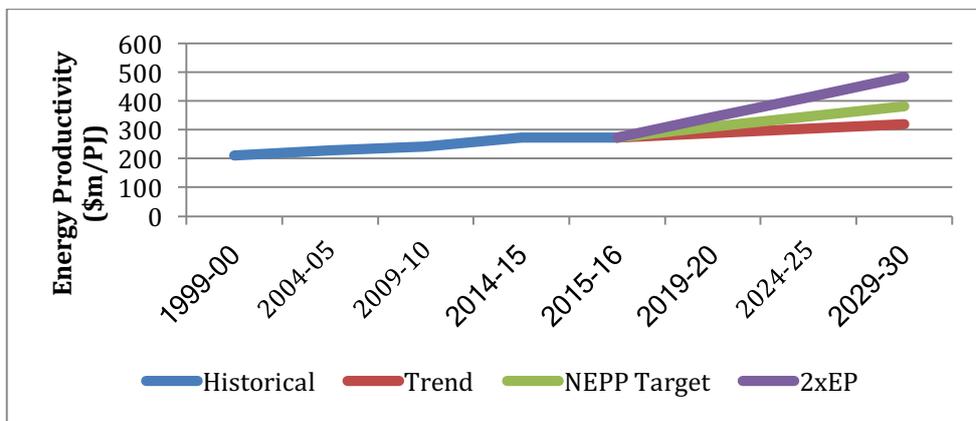
Slowing progress over the last two years increases the challenge of meeting energy productivity and climate targets

Summary:

Rapidly improving energy productivity is the most cost effective and immediate way to meet the acute energy challenges facing Australia – affordability and competitiveness, ensuring reliable supply, and reducing carbon emissions.

But, it is very clear from the trends below that our rate of energy productivity improvement has actually stalled in the past two years after promising acceleration in improvement for three consecutive years. A further continuation of the recent trend will make it very difficult to meet even the modest NEPP target.

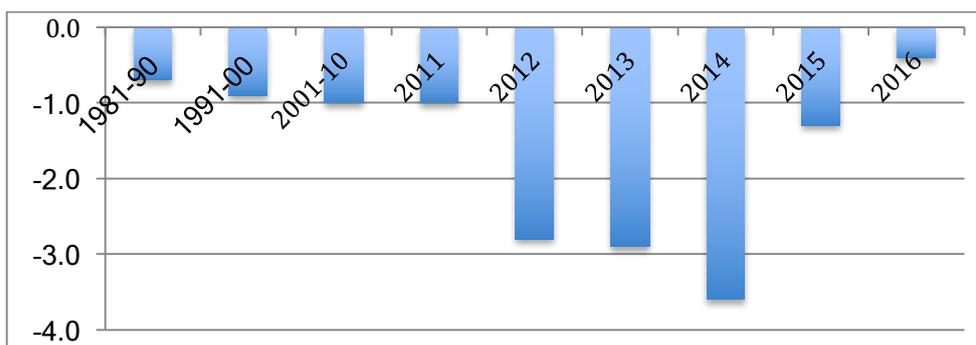
Australian trend energy productivity vs targets. \$million/PJ, 1999-00 to 2029-30



Source: A2EP analysis of data from *Australian Energy Statistics 2017*

* 40% improvement on 2014-15. ** 100% improvement on 2009-10

Annual changes in Australian primary energy intensity, 1981-2016



Source: A2EP analysis of data from *Australian Energy Statistics 2017*

A2EP believes that the following measures need to be undertaken with urgency to deliver the important outcomes needed by the Australian economy from improved energy productivity:

1. Adequately fund and resource the implementation of existing NEPP measures now.
2. Implement immediate additional energy productivity measures to reduce cost pressures on business and consumers. For example, investment incentives for businesses implementing projects to reduce their energy use.
3. Upgrade the NEPP by adding further measures to improve energy productivity in manufacturing (called out for action by the last Annual Report, but apparently not implemented), and for transport (particularly freight), which are not adequately addressed in the NEPP.
4. Provide funding support for accelerating energy productivity innovation, through changing the ARENA mandate to include transformative energy productivity measures.

While we acknowledge that individual Australian states and territories are making better progress, there seems to be a lack of commitment and resources at Commonwealth level to implement key NEPP measures.

A2EP is of the view that concerted national effort is required to address the measures proposed by the NEPP. This will need to be supported by a significant boost in financial and people resources, from the start of 2018. There is a need for a specific, multi-year, budget allocation for the implementation of the NEPP, and we also propose that an independent energy productivity agency be established to drive the program's implementation.

How does Australia compare on energy productivity progress internationally?

Given the very high price rises in electricity and gas over the past five years, and the other competitive pressures facing businesses operating in Australia, it is important for Australia to be improving its energy productivity at a greater rate than competitors.

But in reality, Australia continues to lag behind other economies on reducing energy intensity and increasing energy efficiency. Even after adjustments for the contribution of energy-intensive sub-sectors Australia ranks third highest energy intensity amongst IEA members, as exhibited in the charts below.

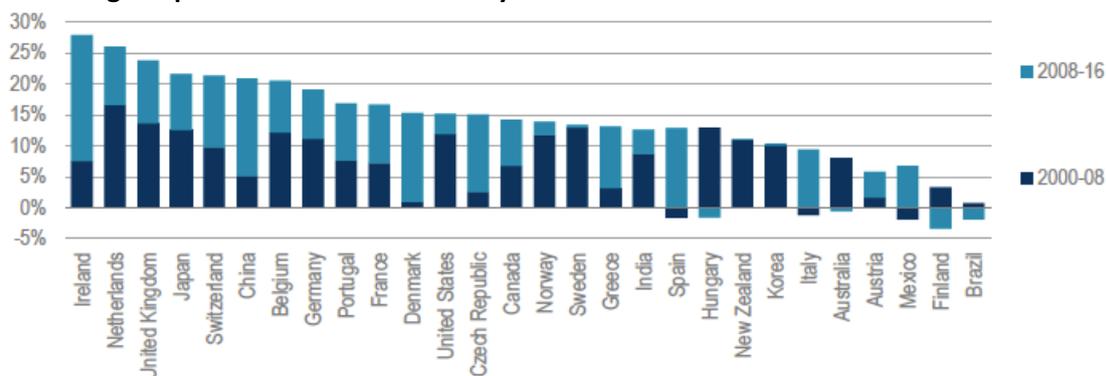
Annual changes in global primary energy intensity, 1981-2016



Note: Energy intensity is calculated as primary energy demand per USD 1 000 of GDP in 2016 prices at purchasing power parity.
 Sources: Adapted from IEA (2016a), *World Energy Outlook 2016*; and IEA (2017a), *World Energy Statistics and Balances 2017* (database), www.iea.org/statistics.

Source: International Energy Agency, *Energy Efficiency 2017*, p16

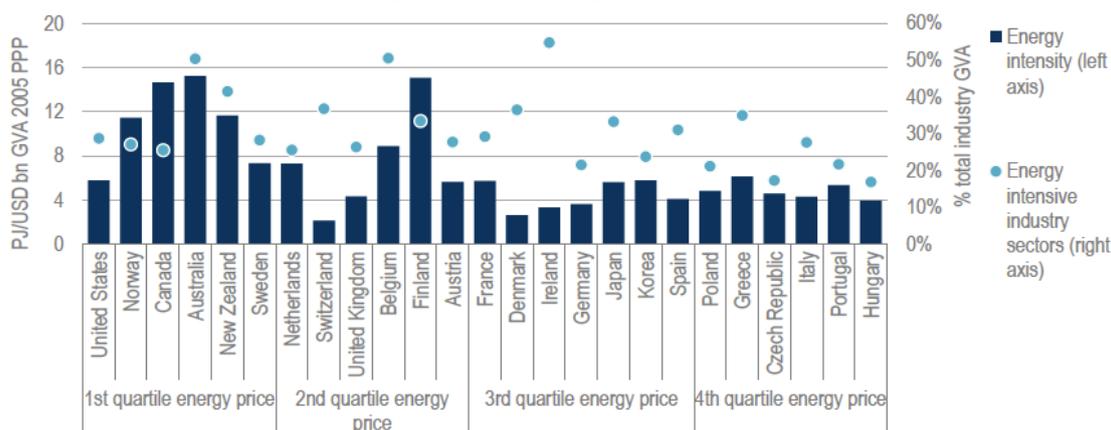
Percentage improvement in the efficiency effect for select countries 2000-16



Sources: Adapted from IEA (2017e), *Energy Efficiency Indicators* (database), www.iea.org/statistics/topics/energyefficiency/; Timmer et al. (2015), *World Input Output Database* (database), www.wiod.org; IEA (2017c), *Mobility Model* (database), www.iea.org/etp/etpmodel/transport; IEA (2017d), *Energy Technology Perspectives 2017* (Residential Model); and IEA (2017a), *World Energy Statistics and Balances 2017* (database), www.iea.org/statistics.

Source: International Energy Agency, *Energy Efficiency 2017*, p22

Industry energy intensity and contribution to gross value added from energy-intensive sub-sectors by IEA member country, grouped by energy price 2015

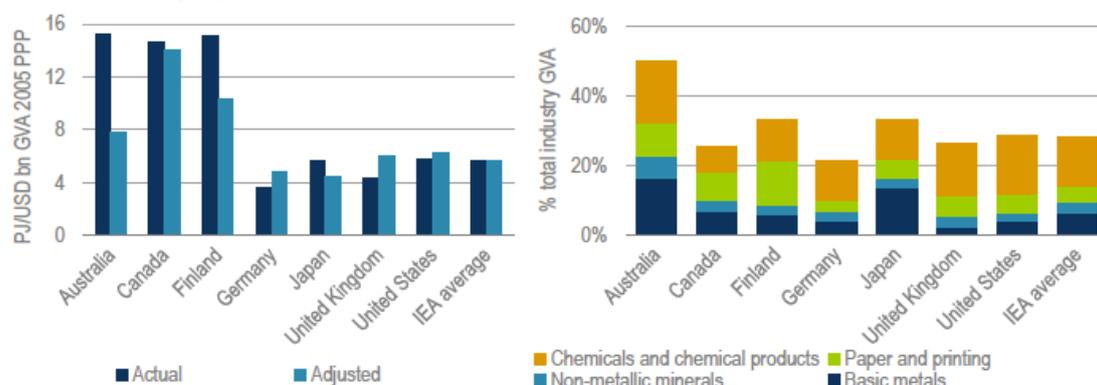


Note: Energy-intensive sub-sectors are basic metals manufacturing, non-metallic minerals manufacturing, paper and printing and chemicals and chemical products manufacturing.

Sources: Adapted from IEA (2017a), *Energy Efficiency Indicators* (database), www.iea.org/statistics/topics/energyefficiency/; IEA (2017b), *World Energy Balances*, www.iea.org/statistics; and IEA (2017c), *Energy Prices and Taxes, Q1*, (database), www.iea.org/statistics.

International Energy Agency, *Energy Efficiency 2017*, p70

Adjusted industry energy intensity (left) and contribution of energy-intensive sub-sectors to industry GVA (right) in selected IEA member countries, 2015



Source: Adapted from IEA (2017a), *Energy Efficiency Indicators* (database), www.iea.org/statistics/topics/energyefficiency/.

International Energy Agency, *Energy Efficiency 2017*, p71

International Energy Efficiency Programs Scorecard

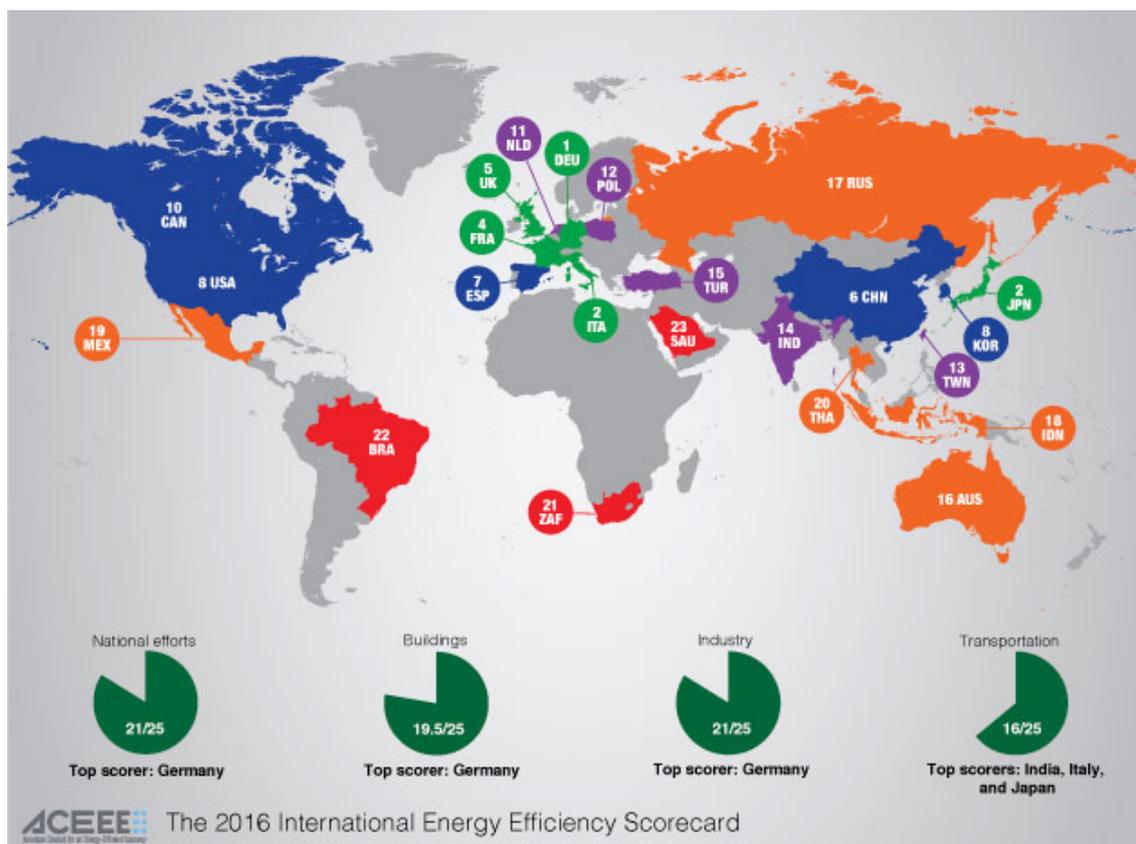
- American Council for and Energy Efficient Economy (ACEEE)

The *International Energy Efficiency Scorecard* ranks the world's largest energy-consuming economies on their energy efficiency policies and programs. The 2016 Scorecard examined the energy efficiency policies and performance of 23 of the world's top energy-consuming countries. Together these nations represent 75% of all the energy consumed on the planet and in 2013 accounted for over 80% of the world's gross domestic product.

Australia ranked 16th out of the 23

Thirty-five different energy efficiency indicators were analysed for each economy and ranked in the report. The rankings were determined by scoring out of 100 possible points.

Points can be earned in four different categories, including buildings, industry, transportation, and national effort, which measures overall or cross-cutting indicators of energy use at the national level.

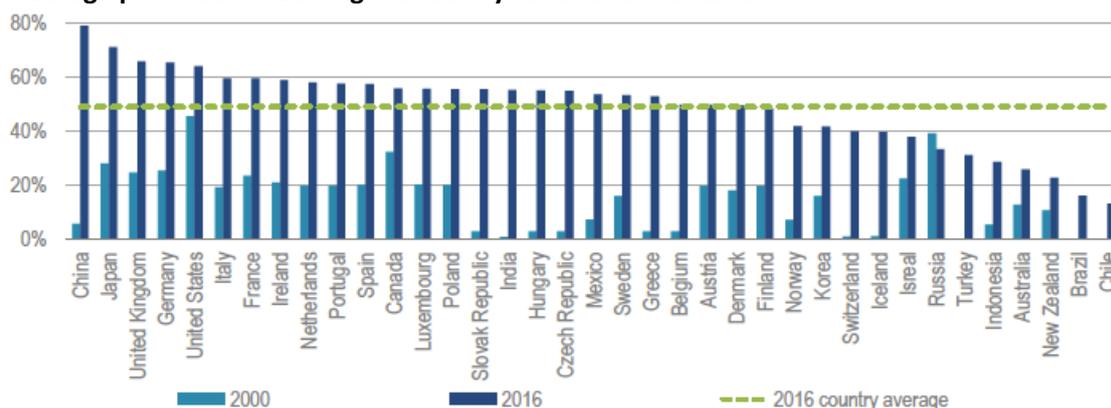


Source: American Council for and Energy Efficient Economy, The International Energy Efficiency Scorecard, July 2016 <http://aceee.org/portal/national-policy/international-scorecard>

International comparisons – Regulation and obligation

Australia continues to lag behind other IEA members with regard to coverage of policy, codes and standards. Australia does, however, perform relatively well in comparisons of the effectiveness of utility obligations.

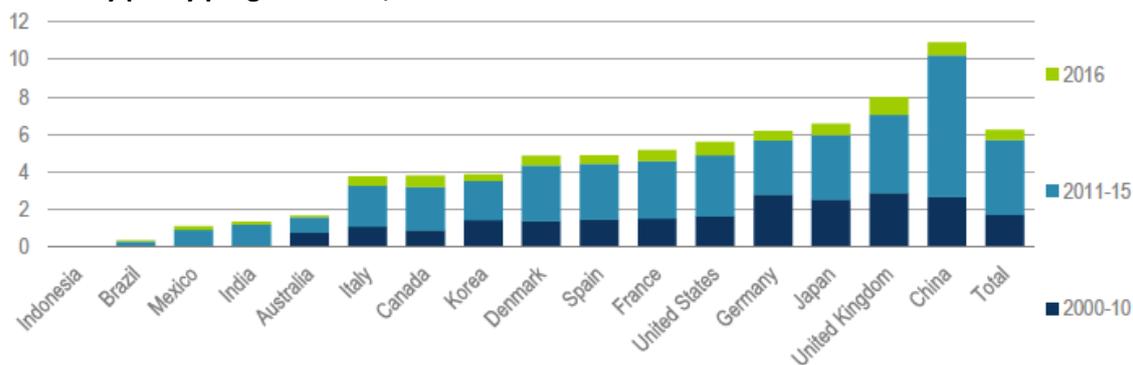
Coverage potential of existing mandatory codes and standards



Note: The dotted green line in the chart is the arithmetic (unweighted) country average (mean) of coverage potential across the 37 countries.

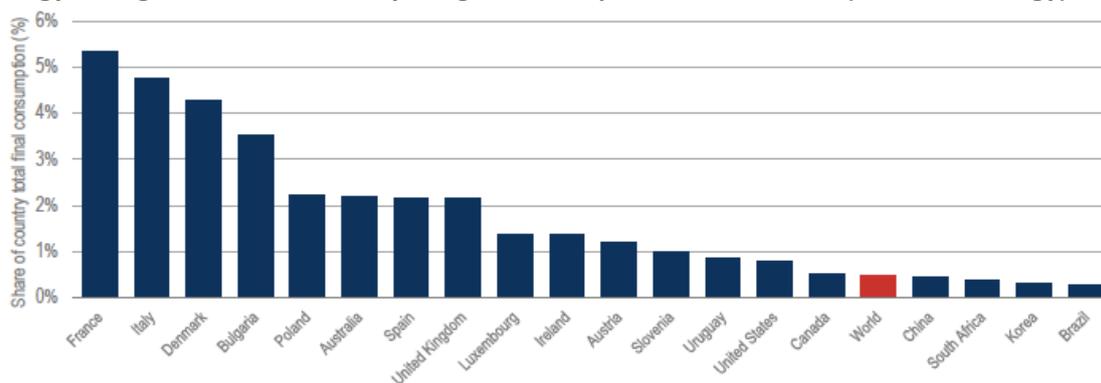
Source: International Energy Agency, *Energy Efficiency 2017*, p40

Efficiency policy progress index, 2000-16



Source: International Energy Agency, *Energy Efficiency 2017*, p45

Energy savings in 2016 from utility obligations in operation since 2005 (% of final energy)



Sources: IEA (2017d), *Market Based Instruments for Energy Efficiency*, www.iea.org/publications/insights/insightpublications/MarketBased_Instruments_for_Energy_Efficiency.pdf; ATEE (2017), *Snapshot of Energy Efficiency Obligation Schemes in Europe: 2017 Update*, http://atee.fr/sites/default/files/part_6_2017_snapshot_of_eeos_in_europe.pdf; ACEEE (2016b), *State and Local Policy Database*, <http://database.aceee.org/state-scorecard-rank>; US EIA (2017), *State Profiles and Energy Estimates*, www.eia.gov/state/seds/; DOIS Australia (2016), *Energy in Australia*, <http://industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Energy-in-Australia.aspx>; Ontario Energy Board and IESO (2017), *Ontario Energy Report*, http://www.ontarioenergyreport.ca/pdfs/5806_IESO_OntarioEnergyReportQ42016_Electricity_EN_FA.pdf.

Source: International Energy Agency, *Energy Efficiency 2017*, p45

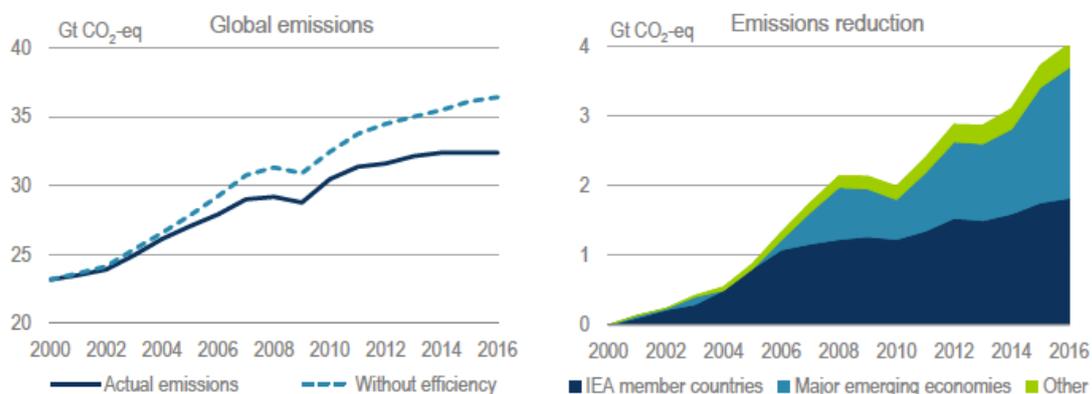
Energy efficiency and climate change

Along with the uptake of renewable energy, and the displacement of emissions-producing sources of energy; energy efficiency is an essential contributor to the abatement task.

The NEPP “expected to contribute more than a quarter of the savings required to meet Australia’s 2030 greenhouse gas emissions reduction target”. [Analysis done by Energetics for A2EP would indicate that doubling energy productivity could deliver 50-60% of the additional savings required to meet the 2030 target].

The lack of progress over the last two years steepens the task over the period to 2030 and will likely steepen the cost of achieving emissions targets.

Avoided global GHG emissions from energy efficiency improvements



Note: Energy savings for countries other than IEA members and the major emerging economies are estimated by applying the ratio of efficiency improvements to intensity gains observed in emerging economies to the gains in intensity observed in these other countries.
 Sources: Adapted from IEA (2017e), *Energy Efficiency Indicators* (database), www.iea.org/statistics/topics/energyefficiency/; Timmer et al. (2015), *World Input Output Database*, www.wiod.org; IEA (2017c), *Mobility Model* (database), www.iea.org/etp/etpmodel/transport; IEA (2017d), *Energy Technology Perspectives 2017* (Residential Model); IEA (2017a), *World Energy Statistics and Balances 2017* (database), www.iea.org/statistics; and IEA (2017b) *CO₂ Emissions from Fuel Combustion* (database), www.iea.org/statistics.

Source: International Energy Agency, *Energy Efficiency 2017*, p27