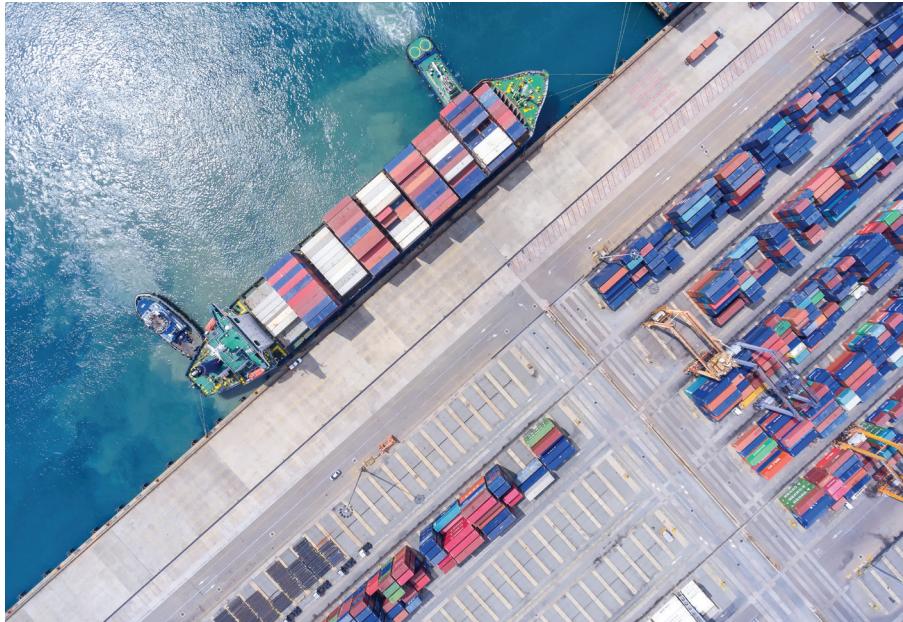




Achieving 2xEP through leadership and ingenuity





ACKNOWLEDGEMENTS

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The 2xEP program has also relied on the resources of A2EP including financial and in-kind contributions from our members over the period 2014 to 2017: AGL Energy, Envzi, Energetics, Enwave, ICANZ, Institute for Sustainable Futures, Knauf Insulation, LendLease Living Utilities, OPower, Sydney Water, Veolia, Visy.

The views expressed in this document are those of A2EP and do not necessarily represent the position of our funders, collaborators and supporters.

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2XEP, STATE OF PLAY – APRIL 2017

In the three years since our Energy Productivity Forum, the focus on lifting Australia's languishing energy productivity has gained considerable momentum. Energy productivity (EP), the value we gain from each unit of energy, puts a focus on the value created by using energy effectively - economic outcomes - as well as on technical performance to optimise energy use.

Our aim is doing more, using less. EP actions include reducing energy waste, adopting more efficient technologies and practices, as well as managing the timing of energy demand and installing on-site energy generation where it delivers benefits. The 2xEP program – aiming to double EP between 2010 and 2030 – has brought together a strong coalition of business (associations and individual companies), governments, researchers, and not for profit organisations to achieve this objective. This is a summary of the state of play.

We are close to achieving consensus on the need for EP action

We have cross-party agreement on the need to drive increased energy productivity and are working towards consensus around the need for a nationally agreed target of 2xEP. 2xEP is the current policy of Labor and the Greens. The Coalition Government and the COAG Energy Council currently have a policy of increasing EP 40% by 2030 from 2015. But this is not a great deal above business as usual, not adequate to restore our energy competitiveness, and will not be enough to achieve our Paris climate obligations (and this will likely become clear through the Government's imminent climate policy review).

EP can win the trifecta and resolve the trilemma

– if we do the commonsense stuff first. Prime Minister Malcolm Turnbull: “we are facing an energy crisis in Australia”. He also said “what you need to do is deliver an outcome. What Australians want is a result. They want energy security, energy that is affordable, and we need to meet what we agreed to in Paris”. Energy productivity improvements meet all three simultaneously, and can be deployed rapidly enough to address challenges in both electricity and gas supply. Some further investment in supply may be required, but far less if EP is addressed first. EP is compatible with all supply options.

Disappointingly, many politicians continue to focus solely on expensive supply options to meet the need for energy services at the expense of consumers, the economy and the environment.

We have a Plan

– it needs to be delivered. The National Energy Productivity Plan (NEPP) was a good start towards a national policy framework for EP, but it needs to be implemented with a sense of urgency. The NEPP is not specifically funded in forward budgets. Australia's EP improvement in 2014-15 of 1.5% was actually lower than the average of the last 15 years (1.7%), let alone the annual average improvement of 2.3% needed to reach the NEPP 2030 target or the 3.5% annual improvement required to achieve 2xEP. According to COAG Energy Council: ‘this shows that NEPP measures, while progressing well in early stages, must make a substantive impact in coming years if the target is to be achieved’. Meanwhile, some states are making much more substantial progress, led by New South Wales where an

ambitious program is soon to be launched, and hopefully followed shortly by major announcements from Victoria.

Transport

remains the orphan of energy productivity in Australia. Although transport is the largest energy-using sector (passenger + freight), energy productivity in transport is largely neglected by federal and state energy policy and programs. Action is needed to address transport for reasons of economic efficiency, carbon mitigation and fuel security. It is imperative that we understand, anticipate and respond to major business model changes including increasing electrification.

We can achieve 2xEP.

We are more confident than ever that 2xEP across the economy is achievable even though in some sectors the target will be hard to hit. In mining, for example, significant modernisation and reinvestment will be required to reverse the historical fall in EP as ore quality declines. Our confidence has been bolstered by our leading work on EP innovation. Our evaluation of two value chains (food and shelter) demonstrated significant potential for increasing EP through the application of system-wide initiatives. We are now convinced that the capacity is well and truly there through combinations of existing technologies in a range of applications. Further technical breakthroughs are not required. But leadership and ingenuity are essential.

8-POINT PLAN FOR A MORE ENERGY PRODUCTIVE ECONOMY

3. Expedite technology transfer and innovation

Support accelerated transfer and uptake through ARENA and a new EP Centre; fast-track evaluation of major EP opportunities across the economy.

6. Resolve the gas crisis using EP

Provide incentives for gas sub-metering and investment incentives for equipment upgrades and transfer to alternative energy forms; public campaign to encourage gas savings

1. Establish EP as the number one priority in energy policy, and set 2xEP by 2030 as the long-term consensus target.

Assert leadership and a sense of urgency in implementing this target; allocate responsibility for achievement, monitoring, reporting.

2. Accelerate investment in energy productive buildings, processes, plant and equipment, and infrastructure

Enhance access to finance; harmonise market based state efficiency schemes; implement tax incentives for investment; lead through government procurement.

4. Deliver transport energy productivity

Establish inter-governmental accountability for outcomes; exploit communications technologies and data; regulate light vehicle efficiency to international standards; integrate energy/fuel policy with economic and geographical planning

5. Encourage flexible energy demand to match flexible supply

Transform energy market regulation; reform tariffs to support customer control; promote demand-side management as the priority measure to meet variable supply

7. Inform, train and build capacity, and improve consumer information

Communicate and engage; develop workforces of the future; improve the knowledge base and accessibility

8. Protect consumers with minimum energy performance standards

Strengthen mandatory appliance/equipment efficiency and voluntary building performance disclosure; provide resources for compliance monitoring and reporting

OUR PLAN FOR 2017

2xEP has developed initial plans for the manufacturing, transport (passenger and freight), built environment, agriculture and mining sectors, and we have started a major program to systematically define the potential for major energy productivity improvements from innovation – new approaches and business models that result from combining a range of technologies. In 2017 we will develop an integrated plan for achieving 2xEP across the economy by bringing together sector plans and results from work on the potential for innovation to deliver energy productivity improvement in value chains.

The 2xEP program is shifting focus from research, development and advocacy to facilitating the delivery of outcomes.

1. Innovation – accelerate the introduction of high EP technologies and business models. We will continue to identify EP innovation opportunities across the economy. We will facilitate proof of concept and pilot projects. We will communicate successes from here and overseas.
2. Integration – demonstrate the potential of Integrated Clean Energy (ICE), the deployment of on-site renewables, storage and EP measures. We will promote and pilot the benefits of integrating on-site renewables with demand management,

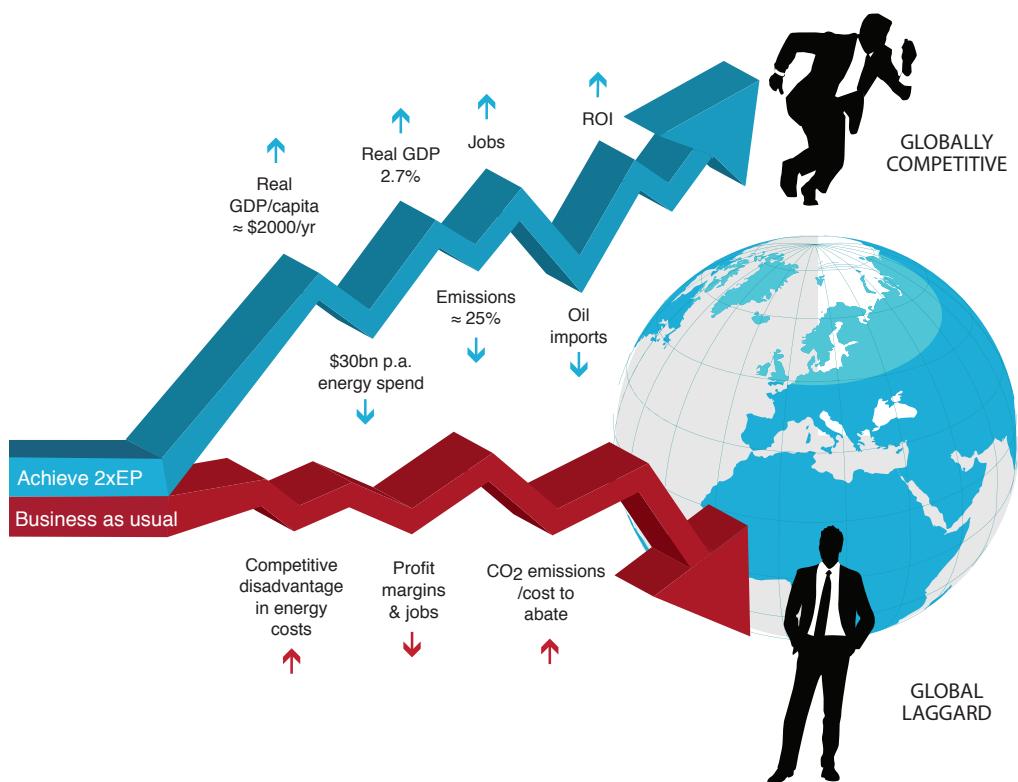
energy efficiency and energy storage so that consumers are able to optimise their interactions with the grid. Control over use and flexibility in demand offer savings on bills and smooth the inevitable roll-out of renewables.

3. Implementation – facilitate private sector leadership in delivering 2xEP in real businesses. We aim to facilitate the practical implementation of 2xEP through, for example, establishing a voluntary 2xEP Challenge program that acknowledges and rewards commitments and achievements.

WHAT WE WILL GAIN FROM 2XEP?

Note that this is based on preliminary information and that subject to availability of resources we will model scenarios to provide a more accurate measure of benefits.

This graphic was developed in 2015. We could now add to this diagram the need for EP to address energy supply security issues relating to electricity and gas (and we would argue also oil, though this has not become a recognised ‘crisis’ yet). EP is also the best first response to addressing these energy services supply challenges as well.

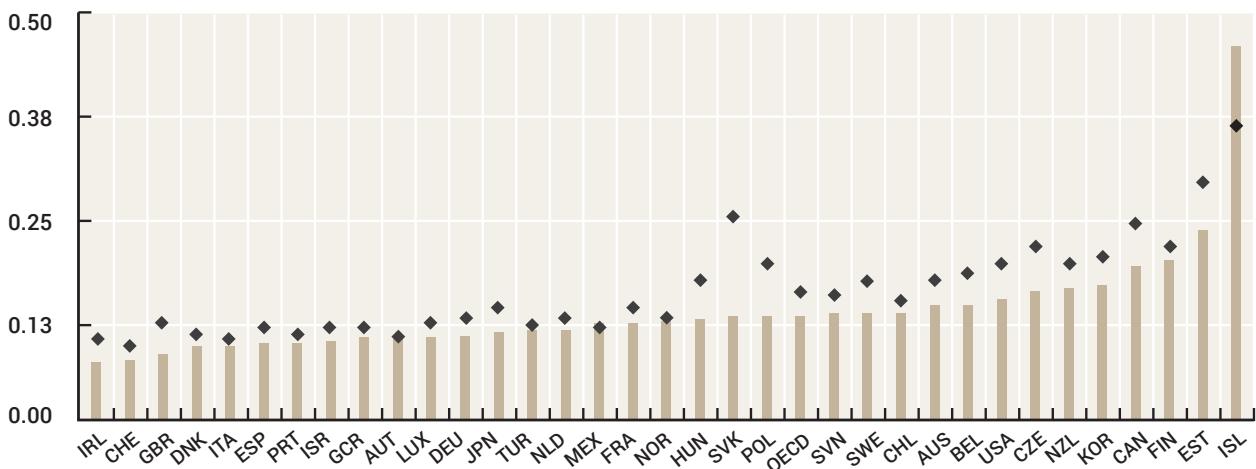


ENERGY PRODUCTIVITY: INTERNATIONAL COMPARISONS

Total primary energy supply per unit of GDP

Tonnes of oil equivalent (toe) per thousand 2005 US dollars of GDP calculated using PPPs

◆ 2000 ■ 2014



Source: *OECD Factbook 2015-16 - Economic, Environmental and Social Statistics*

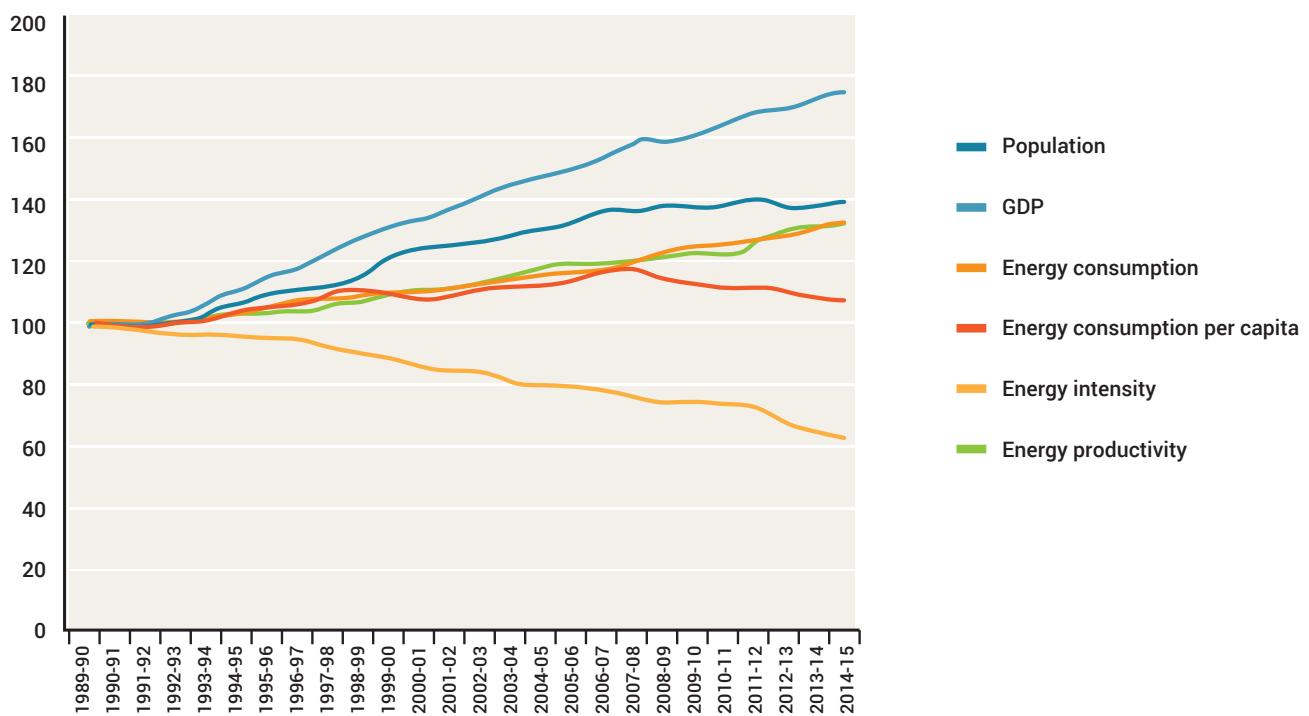
OECD (2016), *OECD Factbook 2015-2016: Economic, Environmental and Social Statistics*, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/factbook-2015-en>



AUSTRALIA - POPULATION, PRODUCT AND ENERGY

The decoupling of economic growth from energy consumption has been happening for decades. Other major economies are well ahead of Australia in increasing energy productivity. Not only is the mean economic value per unit of energy consumed by the Group of 20 (G20) countries higher than for Australia, so too is the G20 mean improvement in energy productivity. Australia must act now to keep pace so that it avoids entrenching competitive disadvantage whilst G20 peers accelerate away.

Australia is coming from a relatively low productivity base, coupled with relatively high real energy prices, so the potential contribution of energy productivity improvement to Australia's overall economic productivity is now at an historic high. This means that energy, as a production input, now has a more material impact on the profitability of businesses and Australia's economic growth than ever before.



Notes: GDP data are chain volume measures, reference year 2012-13. Population data are for 30 June each year. Population data are from ABS cat. no. 3101.0 for 1980-81 onwards, cat. no. 3105.0 for 1960-61 to 1979-80; GDP data are from ABS cat. no. 5204.0, chain volume measures. Source: Department of Industry, Innovation and Science, Office of the Chief Economist, Energy, Australian Energy Statistics 2016, Table B1, Australia - population, GDP and energy consumption

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Tony Cooper, Chief Executive Officer, Energetics

Travis Hughes, Head of New Market Development, AGL Energy

Jonathan Jutsen, Chairman, Australian Alliance for Energy Productivity

Andrew Lamble, Co-Founder and Chief Operating Officer, Envizi

Brian Morris, Vice-President Energy and Sustainability Services, Schneider Electric

Rod Naylor, Executive General Manager (Growth), Veolia Australia and New Zealand

Laura Van Wie McGrory, Vice President International Policy, [US] Alliance to Save Energy

Stuart White, Director, Institute for Sustainable Futures, University of Technology Sydney

2XEP STEERING COMMITTEE

The 2xEP Steering Committee was inaugurated in July of 2015 and is tasked with guiding the program through development and completion. The Committee meets monthly to review progress, refine strategy, and provide leadership. Most Steering Group members are involved in one or more of the sector working groups.

Kenneth Baldwin, Director, Energy Change Institute, Australian National University

Matthew Brown, Environmental Manager, Pacific National

Graham Bryant, Deputy Chair, Energy Users Association of Australia

Tony Cooper, Chief Executive Officer, Energetics

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Oliver Yates, Chief Executive Officer, Clean Energy Finance Corporation

Stephen White, Energy for Buildings Manager, CSIRO

2xEP is supported by 10 working groups; one for each key end-use sector of the economy plus finance, innovation and metrics.



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