

SUSTAINABILITY OF ENERGY SUPPLY AND RESOURCES IN NSW

Organisation: Public Health Association of Australia

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Public Health Association of Australia submission on sustainability of energy supply and resources in NSW

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Preamble

The Public Health Association of Australia

The Public Health Association of Australia (PHAA) is recognised as the principal non-government organisation for public health in Australia working to promote the health and well-being of all Australians. It is the pre-eminent voice for the public's health in Australia.

The PHAA works to ensure that the public's health is improved through sustained and determined efforts of the Board, the National Office, the State and Territory Branches, the Special Interest Groups and members.

The efforts of the PHAA are enhanced by our vision for a healthy Australia and by engaging with like-minded stakeholders in order to build coalitions of interest that influence public opinion, the media, political parties and governments.

Health is a human right, a vital resource for everyday life, and key factor in sustainability. Health equity and inequity do not exist in isolation from the conditions that underpin people's health. The health status of all people is impacted by the social, cultural, political, environmental and economic determinants of health. Specific focus on these determinants is necessary to reduce the unfair and unjust effects of conditions of living that cause poor health and disease. These determinants underpin the strategic direction of the Association.

All members of the Association are committed to better health outcomes based on these principles.

Vision for a healthy population

A healthy region, a healthy nation, healthy people: living in an equitable society underpinned by a well-functioning ecosystem and a healthy environment, improving and promoting health for all.

The reduction of social and health inequities should be an over-arching goal of national policy and recognised as a key measure of our progress as a society. All public health activities and related government policy should be directed towards reducing social and health inequity nationally and, where possible, internationally.

Mission for the Public Health Association of Australia

As the leading national peak body for public health representation and advocacy, to drive better health outcomes through increased knowledge, better access and equity, evidence informed policy and effective population-based practice in public health.



Introduction

PHAA welcomes the opportunity to provide input to the inquiry into the sustainability of energy supply and resources in NSW.

PHAA endorses a policy shift in NSW to support renewable energy supply and resources. Our position is based on the facts behind the need to address the global climate emergency. In a recent (July 2019) survey of our NSW members, taking action to address climate change was the issue raised most often. A PHAA member requested that the following statement be included in this submission, which succinctly covers our concerns and support for renewable energy supply and sources particularly for future generations:

“Many families are concerned about environmental changes and the impact on their children and young people’s future. Increasing economic opportunities of renewable energy and creative positive change are particularly important for today’s young to ensure future wellbeing, both in terms of health and employment options. This investment will give families a positive outlook about their current and future mental health and wellbeing.”

Our emphasis in this submission is for any future policy or procedure related to energy to include reference to beneficial and adverse impacts of the options on public health. Several realities underpin the fact that the inclusion of public health is essential for any policy approach to sustainable energy supply and resources.

First is that the determinants of health related to energy supply are primarily within the control of institutions – public and private at international, national, state and local levels – that choose to expose communities to polluting energy sources, with these exposures being both in localities and at a regional and global levels.

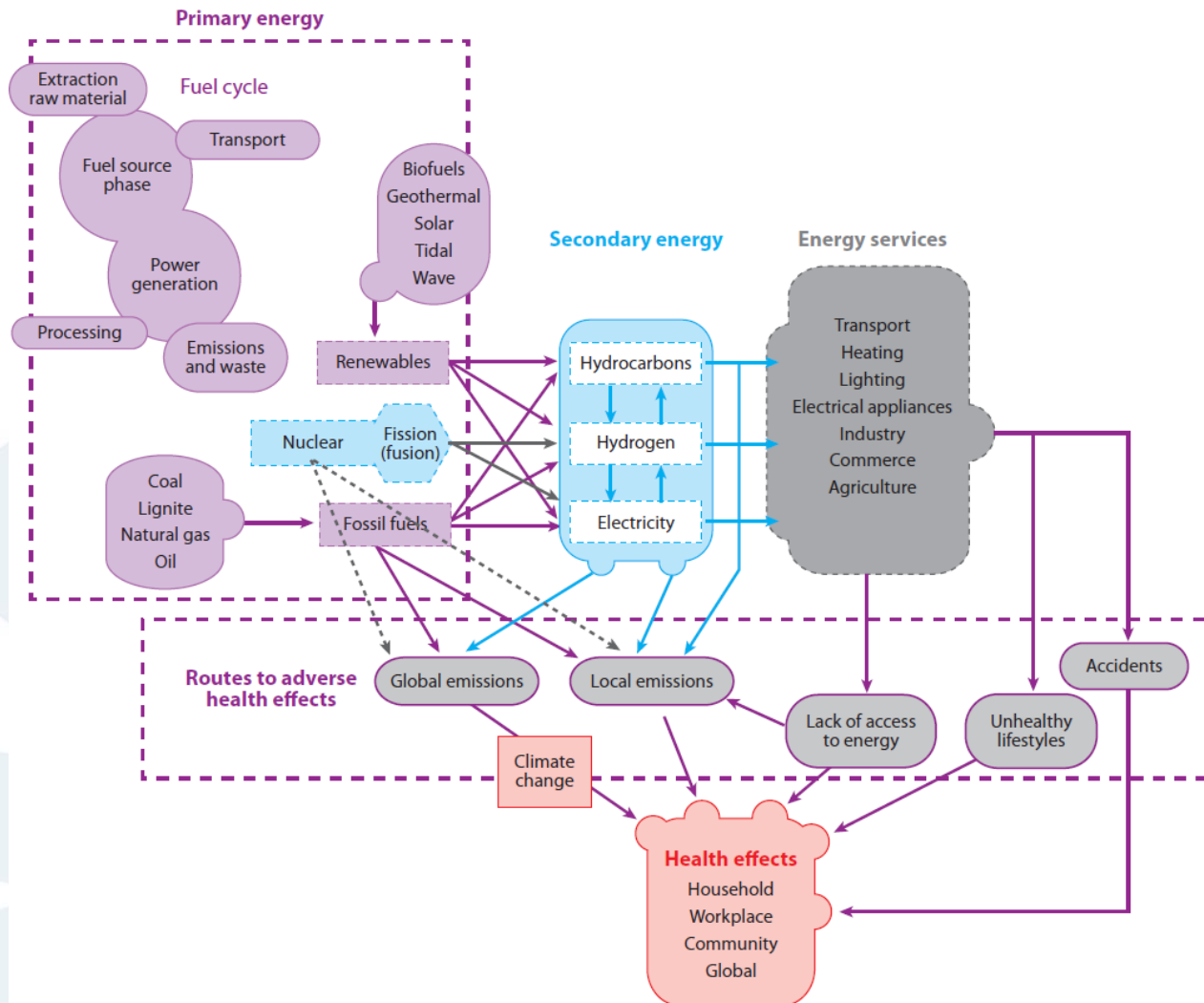
Second, we note that the shift to renewable sources of energy is due to the global market shifting away from fossil fuels, particularly thermal coal for energy sources.¹⁻⁴ It is the responsibility of government to develop a policy approach that catches up with such market forces to ensure that energy supply continues to benefit consumers both in terms of supply (so as to not pollute) and demand (such that the cost of shifting renewable energy is not disproportionately borne by those least able to afford it).

Thirdly, communities and individuals whose livelihoods are connected to the energy industry are usually the least well prepared in the population to make the transition to renewable energy that the global market is demanding. These populations are also more likely to be exposed to the range of determinants that polluting industries create.^{5, 6} While transitioning away from fossil fuels may have some detriment to those people, there will also be health benefits. The detriments can be minimised if this is done proactively.

Across these three realities, a public health focus is part of the policy solution and response.

The known pathways between energy production and health are shown in Figure 1 (below).⁷

Figure 1: Energy production and human health pathways



Comments on the Terms of Reference

1. The capacity and economic opportunities of renewable energy

Energy production and use, mostly from unregulated, poorly regulated or inefficient fuel combustion, are the single most important man-made sources of air pollutant emissions: 85% of particulate matter and almost all of the sulfur oxides and nitrogen oxide.⁵ Coal mining and electricity generation industries in the Hunter Valley are responsible for 29 times the amount of health-damaging fine particulate matter from motor vehicles in the entire state of NSW.⁵

Coal is responsible for around 60% of global combustion-related sulfur dioxide emissions – a cause of respiratory illnesses and a precursor of acid rain.⁸

The Intergovernmental Panel on Climate Change report on limiting global warming to 1.5°C showed that:⁹

- reducing emissions in line with 1.5°C is 30 times cheaper than the economic damage that would result from allowing any warming above this level to 2.0°C
- limiting warming to 1.5°C is still possible – but only just. The most urgent focus must be on action to decarbonise the economy

Australia is lagging behind other high income countries, and ‘policy inaction in this regard threatens Australian lives’.¹⁰

Renewable alternatives to fossil fuels including coal, are not only available, but more cost-effective.^{4, 11} The cheapest way to produce power now is using renewables, not coal.¹² Continuing to use public funds to support coal is not justifiable from an economic, health, environmental or social perspective.

Cost reductions for renewables are set to continue for years to come, signalling a paradigm shift in the competitiveness of different power generation options.¹³ This means there are enormous economic opportunities available to build the renewable energy industry in Australia.

2. Emerging trends in energy supply and exports, including investment and other financial arrangements

Overall, Australia’s exports of energy production are increasing, with an annual growth of 5.6% from 2008-2017. According to Australian government data, recent growth has been seen in liquefied natural gas (LNG) (16.2% over the past 10 years) and refined products saw a 71.1% increase in 2016-17 despite a 5.5% decrease in the 10 year trends. Australia's LNG exports are likely to continue growing, whereas more traditional energy exports may be decreasing.¹⁴

Investment in coal capacity has decreased substantially since 2009-10, and for most years since then, coal-fired generation has been removed from the Australian energy market.¹⁰ Industry and investment bodies are reconsidering their investment in coal. Australia has the most divestment from assets involved in fossil fuels of any developed nation, on a per capita basis.

The call for ending public subsidies of fossil fuels is not limited to Australia. In the UK, a cross-party group, including members of both the Conservatives and Labour, made the same call in July this year.¹⁵ More than 1,000 divestment commitments have been made globally, by individuals, organisations, institutions and governments.¹⁶ No longer simply an ethical consideration, divestment is increasingly being recognised as a good economic decision, and fossil fuel investment as a risk.¹⁷

Similarly, insurance companies in both Australia¹⁸ and globally² are no longer supporting new coal fired power stations.

Despite this, Australia's public subsidies of fossil fuels have continued. A recent decision to continue operation of a thermal coal mine in Queensland will come with approximately \$4.4 billion of public subsidies.¹⁹ In 2015, energy subsidies represented 2.3% of GDP, or \$1,198 per person.²⁰ Fiscal support through government budgetary transfers and tax breaks represent the biggest source of financing for coal in Australia.³ Government support to coal consumption totals US\$870 million per year.³

The economic implications of the changing structure of the energy supply and export markets are complex to manage in the face of the public health implications. The underlying economic levers that are being shifted need to be acknowledged when framing recommendations.

3. The status of and forecasts for energy and resource markets

Emissions of most major pollutants are already falling in many OECD countries, and this trend continues as the growth of low-carbon alternatives accelerates and increasingly stringent combustion-control regulations take effect.

4. Effects on regional communities, water security, the environment and public health

The known and large evidence of public health impacts are predominantly negative and due to non-renewable energy sources. Emerging technologies are likely to have a mix of positive and negative health impacts and require processes through which those impacts are made overt in policy decisions.

The detrimental effects of global warming upon human health are already very apparent.²¹

The World Health Organization has stated that there is no evidence of a safe level of exposure to fine particulate matter, nor any threshold below which no adverse health effects occur.²² Particulates can trigger heart attacks and strokes, cardiovascular and respiratory illness, and are carcinogenic.⁵

Other health-damaging air pollutants produced in the process of mining and burning coal include sulphur dioxide, nitrogen dioxide, nitric oxide, carbon monoxide, hydrochloric acid, volatile organic compounds and polyaromatic hydrocarbons.⁵

Health effects for miners

The processes of coal mining are themselves detrimental to the health of the people working in them. The very existence of the Coal Mine Workers' Health Scheme in Queensland²³ and the mine dust lung disease reforms²⁴ indicate the very real and serious health effects of coal mining for the workers.

Various physical health effects are associated with the processes of mining. The use of explosives to blast through rocks covering coal seams, wind erosion of large areas of overburden, unpaved roads around mine sites and the use of dragline excavators all contribute to an increase in dust and particulate matter.²⁵

Blasting also produces toxic gases.²⁶ Coal mining also provides large quantities of waste products including coal 'slurry' and coal ash waste, both of which contain toxic pollutants.⁵ Miners have been exposed to levels of dangerous gases many times higher than allowed under occupational exposure standards, sometimes resulting in hospitalisation.^{27, 28}

Even coal industry funded research has noted that miners also have higher levels of psychological distress than the general community. This distress particularly relates to lower social networks; past history of

depression, anxiety or alcohol/drug problems; recent high alcohol use; satisfaction with work; job insecurity and lower workplace support for people with mental health issues.²⁹

Health effects for communities

The mining, transport and combustion of fossil fuels, are detrimental to human health through local and regional pollution by particulates, volatile chemical exposures, and heavy metal dispersion, such as mercury.³⁰⁻³² The largest health impacts are from burning coal for electricity and from burning petroleum products for road transport. The air pollution from burning fossil fuels in road vehicles is especially damaging to human health as it is concentrated along urban roadways where many people are exposed.³³

The estimated costs of health damages associated with coal combustion for electricity in Australia are over \$2.6 billion annually.⁵ Globally, the annual health toll from coal combustion is estimated at nearly 400,000 deaths, almost 2 million serious illnesses and over 151 million minor illnesses.⁵

Local communities around coal mines have noted declining air quality, noise levels approaching twice the allowable maximum for industrial noise, and contamination of local rivers and water sources.⁵

Harms for local communities include health impacts; reduced water quality and availability; power imbalances among communities, government and industry; cost burdens from public subsidies of the industry and damages to the local community; imbalance of compensation and unequal wages; skills shortages in particular industries; reduced access to and affordability of accommodation; increases in anti-social behaviour; large and demographically unbalanced temporary population increase; and mining industry control over natural and financial resources.⁶

Health effects globally

The most recent evidence highlights the urgency of reducing fossil fuel use, particularly for Australia.^{10, 34} The effects on human health are severe, including illness, injuries, and deaths from extreme heat, extreme precipitation and flooding, worsening air pollution, the spread of infectious diseases, increases in food and water borne illnesses, reduced nutrition, and profound mental health harms.³⁵ The special IPCC report showed that 1.5°C warming will result in:⁹

- 350 million people exposed to deadly heat stress by 2050
- 530-550 million people experiencing under-nutrition
- Reduction in working hours by 6% due to heat stress
- Limiting warming to 1.5°C rather than 2.0°C could reduce the population exposed to climate-related water stress by 50%

The PHAA has a number of policy statements of use to the inquiry that provide information and evidence about the varying impacts of fossil fuels and benefits for the public's health of a shift to renewable energy sources. Excerpts and recommendations are set out below.

Climate and Health Alliance's Framework for a National Strategy on Climate Health and Wellbeing for Australia

PHAA supports the strategic framework.

The full policy position statement is available at <https://www.caha.org.au/national-strategy-climate-health-wellbeing>.

Ecologically Sustainable Human Society

Research shows that environmental degradation is a function of the rate of change of per capita consumption of resources and technology (e.g. land use, energy intensity and waste emissions) as well as population. Resource shortages contribute to conflict, famine, disease, mass migrations and other human tragedies. The effects are disproportionately felt by the poor.

The full Ecologically Sustainable Human Society policy position statement is available from <https://www.phaa.net.au/documents/item/1658>.

Environmental Chemical Exposures and Human Health

Chemical pollution occurs through global rise of contaminated hot-spots: cities and communities, homes and schoolyards polluted by toxic chemicals, radionuclides, and heavy metals released into air, water and soil by active and abandoned factories, smelters, mines and hazardous waste sites. In this context mining, hydraulic fracturing and the residues from coal power stations are the focus. This is also a particular concern with the coal mining in the Sydney water catchment that threatens to contaminate this supply.

People of low socioeconomic status may be more likely to be employed in occupations with higher levels of chemical exposure (e.g. mining, construction, and manufacturing) and to live in more contaminated communities.

Some chemical contaminants may be passed onto the next generation, both prenatally and during pregnancy and breastfeeding.

Children are uniquely susceptible and vulnerable to environmental hazards compared with adults

Exposure to some chemicals has been linked to a range of health conditions including asthma, allergies, autoimmune diseases, cancers, neurological impairment, birth defects and infertility

Individuals and communities are not being provided with all available information about chemical exposures they may experience, the cumulative effects of such exposures, and how to minimise harmful exposures.

The full Environmental Chemical Exposures and Human Health policy position statement is available from <https://www.phaa.net.au/documents/item/2828>.

Health Effects of Fossil Fuels

The mining, transport and combustion of fossil fuels, are detrimental to human health through local and regional pollution by particulates, volatile chemical exposures, and heavy metal dispersion, such as mercury. The largest health impacts are from burning coal for electricity and from burning petroleum products for road transport.

The use of natural gas has been put forward as a temporary, transitional, low GHG fuel, but the expanding use of unconventional gas (coal seam, shale and tight gas) bring health and environmental impacts that offset its potential benefits. These effects include air, water and soil contamination from chemicals used in drilling and hydraulic fracturing, large quantities of salts from waste fluids, and volatile gases. These potentially affect humans and livestock, and can compromise agriculture. Further, many of the chemicals used are known to have adverse health effects and most have not been fully assessed for use by the National Industrial Chemicals Notification and Assessment Scheme.

The 20 remaining coal fired power stations in Australia are not all equally polluting. Emissions of SO₂ per GWh generated vary by a factor of 5 from the cleanest to the dirtiest power station, and emissions of PM_{2.5} vary by a factor of 28 from the cleanest to the dirtiest power station. All 20 will need to close in the next decades as they become uneconomic, and these closures will bring immediate health benefits. The adverse health effects of coal fired air pollution should be a primary concern in the closure order of fossil fuel power stations.

The full Health Effects of Fossil Fuels policy position statement is available from <https://www.phaa.net.au/documents/item/2901>.

Health Effects of Wind Turbines

Health impacts of wind turbines, including “Wind Turbine Syndrome” and “Vibroacoustic Disease” have been raised as concerns in the media and some literature, however these collections of symptoms are not recognised medical conditions.

An Australian review of over 60 scientific articles on wind turbine noise and health states that “based on the findings and scientific merit of the available studies, the weight of evidence suggests that when sited properly, wind turbines are not related to adverse health.

There is evidence that audible sound from multiple sources (and so presumably wind turbines) can cause annoyance and sleep disturbance in a small proportion of the population. With wind turbines, it is the variable tonal or fluctuating swish audible component that may contribute to the annoyance in susceptible people.

The impacts of wind turbines need to be assessed in the bigger context of the health effects of all energy choices. In the broad context, the immediate, direct, local and global long term effects of fossil fuels, nuclear energy and renewable energy need to be considered. Fossil fuel and nuclear energy present a much greater threat to populations and to the environment than the effects of wind turbines.

The full Health Effects of Wind Turbines policy position statement is available from <https://www.phaa.net.au/documents/item/2517>.

Outdoor Air Quality

Particular population groups may be more vulnerable to air pollution: children, pregnant women, the elderly, asthmatics, and people with chronic disease.

Air pollutants include particulate matter (PM) of different sizes (PM₁₀, PM_{2.5}), ultra-fine particles, sulphur dioxide, nitrogen oxides, carbon monoxide, benzene, formaldehyde, ground level ozone, and volatile organic compounds.

Adverse health effects of air pollutants include the following:

- a. Air pollution is well established as a key health threat in urban environments across the globe. In particular, over the last 20 years, a vast body of medical and scientific research has emerged, linking various air pollutants with health problems. The literature confirms a causal association between exposures to air pollutants, particularly PM_{2.5}, increased rates of all-cause mortality, and increased incidence of heart disease, stroke, and lung cancer. Importantly, a steep risk in mortality from cardiac disease has been found even at low levels of exposure to some vehicular pollutants. There is an increased risk for respiratory problems, with nitrogen dioxide exacerbating asthma, and long-term exposure causing impairment of lung growth in children. New research in some

populations suggests exposure may be associated with increased risks of low birth weight, foetal growth restriction, and pre-term delivery.

- b. Even short exposures to particles sized 2.5 micrometres diameter (a few hours to weeks) can trigger cardiovascular deaths and illness, while longer-term exposure (over a few years) may greatly increase the risk for cardiovascular mortality and reduce life expectancy among highly exposed groups.
- c. A European study of long-term exposure to air pollution and lung cancer found a statistically significant association between risk for lung cancer and particulate matter (PM10 and PM2.5) – a risk which increases linearly with concentration.
- d. A review of the evidence by the International Agency for Research on Cancer concluded that there is strong experimental and epidemiological evidence that real-world exposures to outdoor air pollution are associated with increased cancer risk.

The full Outdoor Air Quality policy position statement is available from <https://www.phaa.net.au/documents/item/1663>.

5. Opportunities to support sustainable economic development in regional and other communities likely to be affected by changing energy and resource markets, including the role of government policies

PHAA recognises that transition planning is at the heart of a shift to renewable energy supply and resources that is already underway globally.

Any transition planning must be both fair and equitable for the individuals and communities who will be directly affected.

Policy development and transition planning requires meaningful participatory engagement with local communities and industries, specifically to allow communities to contribute positively to new models of sustainable economic development before the shock of perceived or actual change is thrust upon them.

Incorporating public health at the centre of changing energy and resource markets is crucial as part of a shift to a new sustainable economic model that centres on the environment and employment opportunities simultaneously.

Public health arguments make clear the positive impact of shifting toward sustainable economic development models and the risks with not doing so.

6. Any other related matter

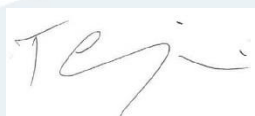
The business case planning behind infrastructure projects is known to require better evidence about externalities, including health and wellbeing impacts. This information is crucial for any project including renewables, and should be considered across the planning process, including strategic planning, options appraisal and Environmental Impact Statements.

Conclusion

PHAA makes the following recommendations:

1. For all infrastructure projects, including renewable energy projects, include public health evaluations at the early planning phases (including options appraisal), and include public health benefit/threat analysis in all business cases.
2. Environmental Assessment exercises should require inclusion of a health in all policy approach that assesses public health impacts across environmental, social, and economic (triple bottom line) matters.
3. Investigate the full and cumulative public health impacts of fossil fuel focussed energy projects, taking into account both Australian and international situations.
4. Develop public sector analysis and advisory capacity across the NSW Government regarding health impacts of infrastructure and energy options.
5. In support of the Climate and Health Alliance Framework, phase out coal and strengthen national emissions standards for vehicles to reduce air pollution and subsequent deaths.
6. Promote ecologically sustainable socio-economic policies by taking action to reduce and prevent poor ambient air quality, and chemical and toxic exposures to human populations.
7. Support the management and transition of individuals currently in occupations with high exposure to reduce their health risk
8. Support the management and transition of communities located close to hot-spots to reduce their health risk
9. The transition to renewables should prioritise the economic and social welfare of communities currently reliant on fossil fuel related industries.

The PHAA appreciates the opportunity to make this submission. Please do not hesitate to contact us should you require additional information or have any queries in relation to this submission.



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