

**Senate Standing Committee on the Environment and Communications
Legislation Committee**

Budget Estimates 2013–14, May 2013

Answers to Questions on Notice

**Climate Change
Environment Portfolio**

Outcome: 4

Question: 12

Program: CCA

Division: Climate Change Authority

Topic: Coal-fired emissions

Hansard Page EC: Pages 56-57

Senator HEFFERNAN: Dr Russell, you surely would know. I asked about this earlier. It would be interesting to know what proportion is from coal-fired power stations. We hear about it all the time. It would be one of the major emitters globally, would it?

Ms Rowley: It is certainly a major source of emissions. Energy is the sector accountable for the largest single share of human induced greenhouse gas emissions. Most of the emissions from energy are from the consumption of fossil fuels. That would include both coal as well as gas and oil.

Senator HEFFERNAN: I was going to be specific about coal. With the algae technology, I understand there are MOUs in Australia—I have followed this for some years—to commercialise. There are two or three techniques to commercialise algae technology. Do we know what proportion of emissions under most models comes from coal-fired stacks? Would it be 85 per cent roughly?

Ms Rowley: Senator, I do not have that information at hand, but I could—

Senator HEFFERNAN: Is there anyone in the room? I understand that up to 85 per cent, depending on the technology, of the gross emissions can be filtered out and then, depending on what you want to grow with the algae, fed to an algae farm. I asked this question three or four years ago and got some answers. The technology is advancing, as we know. If that commercialises, would that not completely alter the global emissions debate?

Ms Penrose: Senator, the caps and targets review that the authority is currently conducting will look at potential emissions reduction technologies and solutions for the future. At this stage, I do not believe we have undertaken specific research on algae technology.

Senator HEFFERNAN: But is there not someone in the department watching that would know the proportion of coal-fired emissions?

Ms Penrose: Senator, I can take that on notice, but I am unable to answer further at this time, sorry.

Senator HEFFERNAN: Could we try to get the answers so I can come back to it?

Dr Kennedy: The proportion of global emissions related to coal?

Senator HEFFERNAN: The emissions that are coal-fired sourced. Most of that would be power generation.

Dr Kennedy: We will do our best for you, Senator, and try to come back with an answer.

Senator HEFFERNAN: I would like to model the difference in those forecasts for, as Senator Milne is pointing out, what is going to happen in our obligations to look after dear old Mother Earth. We can absolutely turn what is now a garbage disposal issue into an asset.

Ms Rowley: Senator, I would like to clarify. Are you referring to algae technologies where the algae is used as a biofuel to generate power?

Senator HEFFERNAN: There are two ways. You can use the algae without sun with that high-rise technology to do plastics or you can do it for fuel generation, which in itself, I suppose, is a second emitter. But the by-product, of course, is a food source for intensive animal farming. It is a double reward for what is at the moment a problem. It is a garbage disposal issue. I thought you would probably have your heads around that. If we can commercialise that, it is going to completely alter the debate, as far as I am concerned.

Dr Kennedy: Certainly, Senator, we will come back with a break-up of global emissions so you can get a sense of coal-fired power. I do not pretend to be an expert on the algae technologies, but we will also look for officials who might be able to talk to you about those issues as well.

Senator HEFFERNAN: Thanks.

Answer:

Coal-fired electricity generation accounted for around 17 per cent of total global emissions in 2010. This is based on CO₂ emissions intensity and coal-fired electricity generation figures from the International Energy Agency's (IEA) reports, *CO₂ Emissions from Fuel Combustion: Highlights* and *Key World Energy Statistics* and a global emissions figure from the United Nations Environment Programme's *The Emissions Gap Report 2012*.

In Australia, the share of total emissions from coal-fired electricity generation is higher than for the world as a whole, at approximately 30 per cent in 2011, according to the National Greenhouse Gas Inventory.

Technologies to capture carbon dioxide (CO₂), including from coal-fired electricity generation, for sequestration or as a feedstock for algae production are being pursued. In its *Technology Roadmap: Biofuels for Transport* the IEA notes that using algae for biofuel production requires more research and development to optimise the algae strains, improve the production process and to scale up production levels. This technology could delay but not avoid the release of CO₂ emissions from coal-fired power; it captures and postpones their release until the algae-based fuel is combusted, for example. In this way two types of energy could be produced for the same amount of emissions: electricity generation and combustion of biofuel.

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Outcome: 4

Question: 13

Program: CCA

Division: Climate Change Authority

Topic: Kyoto Protocol

Hansard Page EC: Pages 60-61

Senator BIRMINGHAM: Has the board of the Climate Change Authority considered at all the impact of Australia signing on to the second commitment period and what impact that has had on accounting rules and the like?

Ms Rowley: We have not done any specific analysis of Australia's signing on to the Kyoto protocol yet, although it is certainly an important consideration for us, as I said earlier. Our advice will hopefully inform the government's decision about what final target to lock down under the second commitment period in the Kyoto protocol. That review is coming up. The main thing for us is to come back to the core inquiry of this review, which is to determine what Australia's appropriate level of emissions reduction ambition should be. Things like the Kyoto protocol accounting rules are a consideration in that, including because they define the emissions and emission reductions that count towards our international commitments. So it is certainly something that the authority will have regard to in this review. Something that we have invited comments on with regard to this accounting issue is whether the authority ought to limit its recommendations to the kinds of emissions and emission reduction activities that are currently covered by Australia's international commitments or whether it ought to be looking more broadly at a wider set of emissions and emission reduction activities and making comments or recommendations relating to them as well.

Senator BIRMINGHAM: We heard earlier today and were discussing how essentially a redefinition of activities has shifted certain emissions from the uncovered emissions into the covered emissions framework. As a result, we now have a higher cap in place than had previously been expected to be the case. Will any aspect of this review in the setting of the cap look at appropriate coverage issues in terms of industries, emitting sectors that should be in or should be out and how they should be treated, or will it simply be looking at what the reductions are and where the cap should be set?

Ms Rowley: This review is focussed very squarely on the ambition for emission reductions and so what Australia's goals should be. We are doing our analysis on the basis of current policy settings. In pulling together its recommendations, particularly for how to translate the targets and trajectories and budgets into caps for the carbon pricing mechanism, we will be taking account of coverage as it currently stands, if you are referring to coverage of the carbon pricing mechanism. I take it you are?

Senator BIRMINGHAM: Yes.

Ms Rowley: We will be taking a very detailed look at Australia's emissions outlook under the current policy settings and assessing the likely level of emissions from covered and uncovered sectors. On the basis of that analysis and all the relevant considerations, we will be translating that national ambition reflected in the budget and target through to caps for the

emissions trading scheme. In that analysis we will be taking account of the new arrangements and what Australia plans to count towards its Kyoto protocol commitments.

Senator BIRMINGHAM: In assessing covered sectors, will you purely be assessing those sectors that are covered by current legislation, or will there will be an assessment of the policy statements of the government which project to include the on-road heavy vehicles beyond July next year?

Ms Rowley: As we flag in our issues paper, that is certainly an issue we need to have regard to. There are some policy commitments which are not yet reflected in legislation. One of the things we have flagged in our issues paper is that we will need to think about how we recommend caps given that situation. It might be resolved in the course of our review or it might not. At this stage, we have made no final decisions on how we will be recommending caps, but I think it is fair to say that our analysis will very clearly set out the basis of our reasoning for the cap recommendations. Where there are important factors and where there is a clear policy intent that is perhaps not yet reflected in legislation, it will be clear where those numbers land. If the legislation changes, it would be easy enough to be able to adjust off the back of that. But, as I say, we have not come to a landing on any of these issues yet. They are still very squarely in the process of consideration.

Senator BIRMINGHAM: Page 11 of the discussion paper has a nice little table which indicates that transport emissions account for about 15 per cent or thereabouts. Are you able to break that down further in terms of what contribution heavy on-road vehicles make?

Ms Rowley: I do not have those numbers to hand.

Ms Penrose: We can get back to you with those.

Ms Rowley: We could certainly take that on notice and get back to you.

Answer:

According to official National Greenhouse Gas Inventory data, total transport emissions were 62 MtCO₂-e in 1990, of which heavy on-road vehicles (including buses and for all fuel types) accounted for 11.4 MtCO₂-e or 18.4 per cent of total transport emissions. Total transport emissions in 2011 were 87.6 MtCO₂-e. Of this, emissions from heavy on-road vehicles accounted for 18.7 MtCO₂-e, or 21.3 per cent of total transport emissions. Over the period between 1990 and 2011, total transport emissions grew by 41.3 per cent, and heavy on-road vehicle emissions grew by 64.3 per cent.