Distributional aspects of renewable energy support policies in Germany and Australia

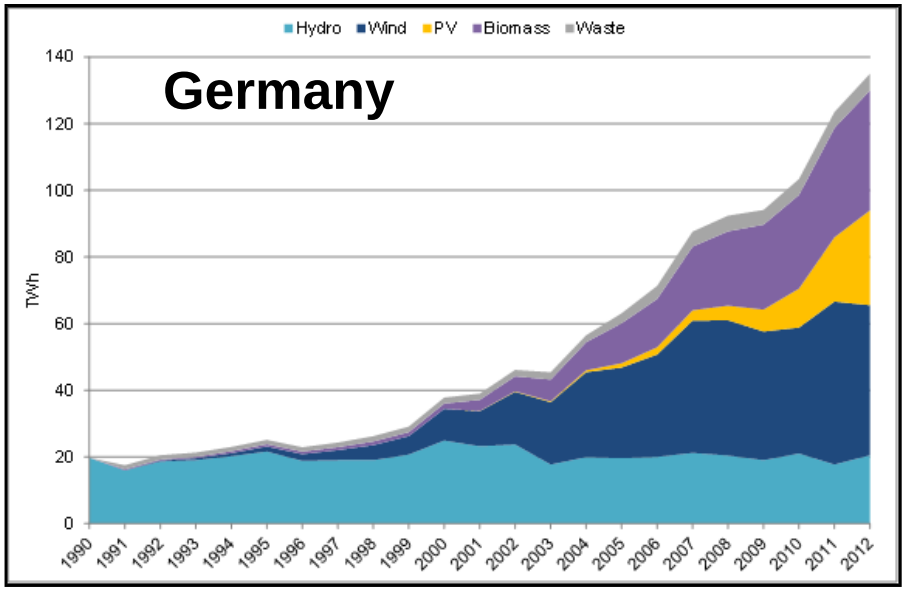
Johanna Cludius

U21 Graduate Research Conference on Energy, 19-22 June 2013, Dublin

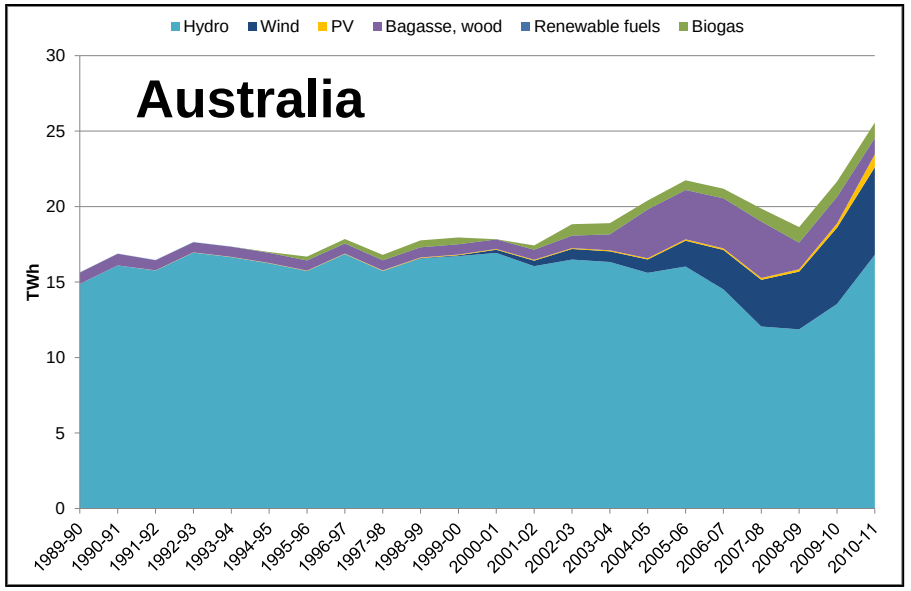
UNSW AUSTRALIA

Never Stand Still | Australian School of Business | School of Economics

Gross electricity generation by renewables



Source: AG Energiebilanzen (2013)



Source: BREE (2012)

- **Fixed feed-in tariff: "German Renewable Energy Support Act (EEG)"**
  - At least 35% renewables in 2020 (80% by 2050)
  - 2012: 22% renewables (7% wind, 5% PV)

- **Renewable quota: "Renewable Energy Target (RET)"**
  - At least 20% renewables in 2020
  - 2010-11: 10% renewables (mainly hydro (7%), wind and PV growing rapidly)

Competing effects on electricity prices

- **Wholesale prices** lower due to merit order effect ↓ **Benefit**
- **Retail prices** higher as cost of policies passed to consumers ↑ **Cost**

- **Net effect** depends… ↓↑

  … Design of policy
  - Exemptions for industry

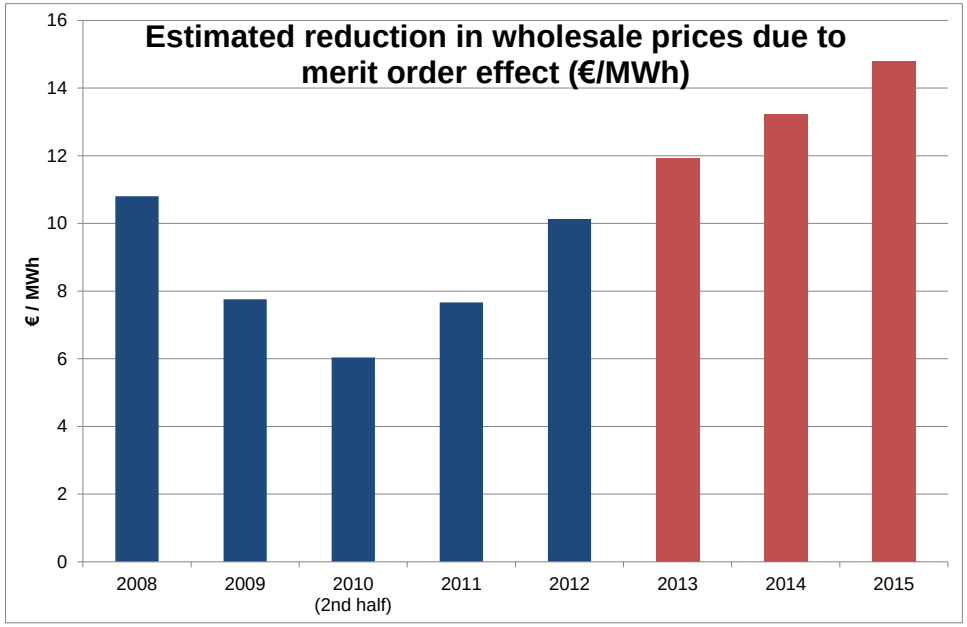
  … Design of electricity wholesale and retail markets
  - Pass-through of benefits and costs

Why bother?

"Ensure that the cost but also the benefits of the German energy transition are allocated in a fair way across the different energy sectors and stakeholder groups." (IEA, 2013)

"To date, little analysis has been publicly provided on the impact of these exemptions including the costs and benefits to other electricity customers." (IPART, 2012)

Results for Germany



Benefits and costs of EEG in 2012	Merit order effect (ct/kWh)	Surcharge (ct/kWh)
	-1.01	
Privileged group (energy-intensive companies)		0.05
Non-privileged group (households)		3.59

- Considerable reduction in wholesale prices due to merit order effects of wind and PV
- Predicted to continue to grow

- Likely overcompensates energy-intensive industry for contribution to cost of EEG
- Results for 2012 imply reduced surcharge could be set at 1 ct/kWh instead of 0.05 ct/kWh
- Surcharge for households would be reduced if surcharge for industry closer to merit order effect

Source: EEX, EPEX, entso-e, own calculations

Results for Australia

Estimated effect of Renewable Energy Target on electricity prices

2012-2013 (€/MWh)		Pass-through RET costs 100%	40%	10%
Pass-through	0%	4.41	1.76	0.44
merit order	50%	2.76	0.12	-1.21
effect	100%	1.11	-1.53	-2.85

- Effect highly dependent on assumed pass through of costs and benefits
  - Household price likely to rise
  - Exempt industry price likely to fall
- Merit order effect likely overcompensates energy-intensive industry for contribution to cost of Renewable Energy Target
- Costs for households could be reduced if exemptions less generous

"[…] exemptions result in increased costs for other RET liable entities, because they must share the RET liability for the electricity exempted." (Climate Change Authority, 2012)

Conclusions

- **Benefits and costs of renewable energy support policy could be distributed more equally**
  - Merit order effect likely overcompensates energy-intensive industry for contribution to cost of those policies
  - Surcharge for households would be reduced if surcharge for industry closer to merit order effect

- **Importance of considering distributional effects ex-ante and including review mechanism when designing renewable energy policies**

- **Limitations: Long-term effects, e.g. environmental and energy security benefits, investment in generation / network capacity**

Thank you for your attention

This presentation is based on two draft papers written in collaboration with:

Hauke Hermann, Felix Chr. Matthes and Verena Graichen, Öko-Institut e.V. (Institute for Applied Ecology)

Sam Forrest, Iain MacGill, Centre for Energy and Environmental Markets (CEEM)

References

- AG Energiebilanzen. (2013). *Bruttostromerzeugung in Deutschland von 1990 bis 2012 nach Energieträgern*. AG Energiebilanzen e.V. Retrieved from http://www.ag-energiebilanzen.de/viewpage.php?idpage=65
- BREE. (2013). *Energy in Australia*. Australian Government, Department of Resources, Energy and Tourism, Bureau of Resources and Energy Economics. Retrieved from bree.gov.au
- Climate Change Authority. (2012). *Renewable Energy Target Review* (Final Report). Commonwealth of Australia. Retrieved from www.climatechangeauthority.gov.au
- IEA. (2013). *Energy Policies of IEA Countries: Germany 2013 Review*. International Energy Agency.
- IPART. (2012). *Renewable Energy Target Review - IPART's submission to the Climate Change Authority*. Independent Pricing and Regulatory Tribunal (NSW).