

Would shorter work time reduce greenhouse gas emissions?

EU-parliament
31 August, 2010

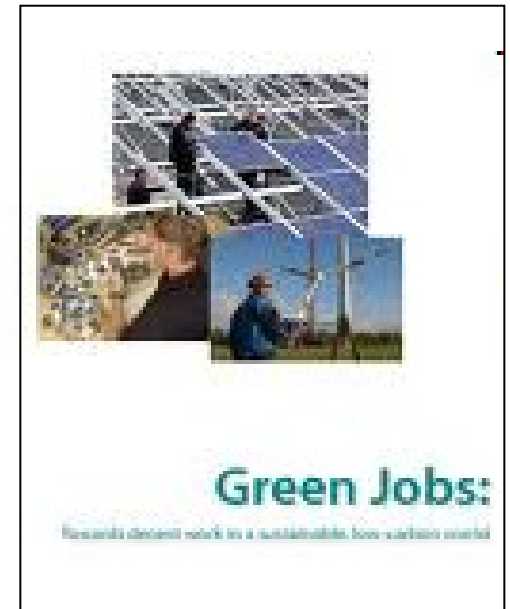


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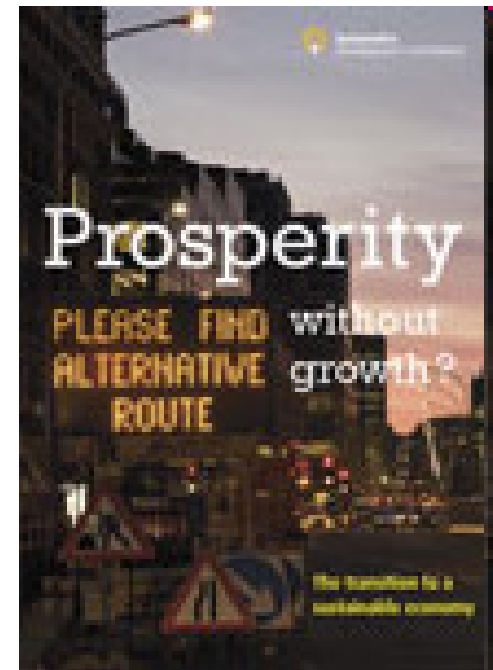
“...channelling productivity gains toward more leisure time instead of higher wages that can translate into ever rising consumption also increasingly makes sense from an ecological perspective.”



UNEP (2008). *Green Jobs. Towards Decent Work in a Sustainable, Low-Carbon World*, page 81

12 steps towards a sustainable economy:

5. Sharing the available work and improving the work-life balance



Jackson, T. (2009). *Prosperity without growth? The transition to a sustainable economy*, Sustainable Development Commission. Page 13

Previous research

Analysis comparing 48 countries:
1 percent increase in work hours
resulted in 1.3 percent increase in
energy use

Rosnick, D. and M. Weisbrot (2007). *Are Shorter Work Hours Good for the Environment? A Comparison of U.S. and European Energy Consumption*. International Journal of Health Services, Volume 37, Number 3

Our research

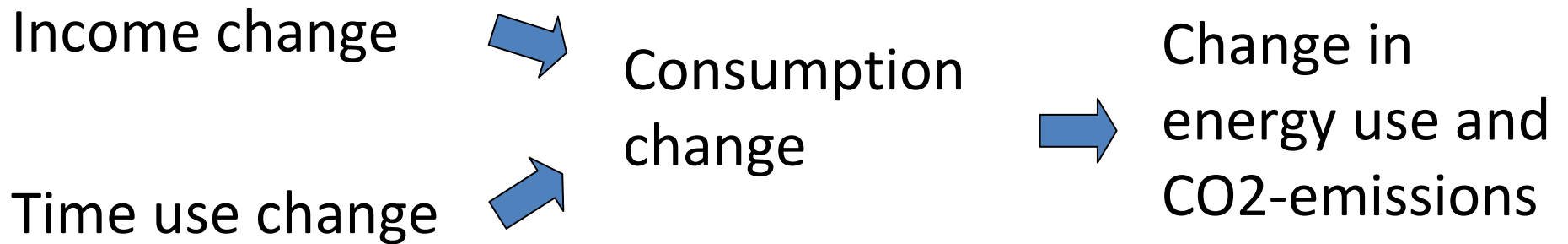
- Micro-level
- Cross-sectional
- Swedish data
- Long term effects of annual reductions

Assumption

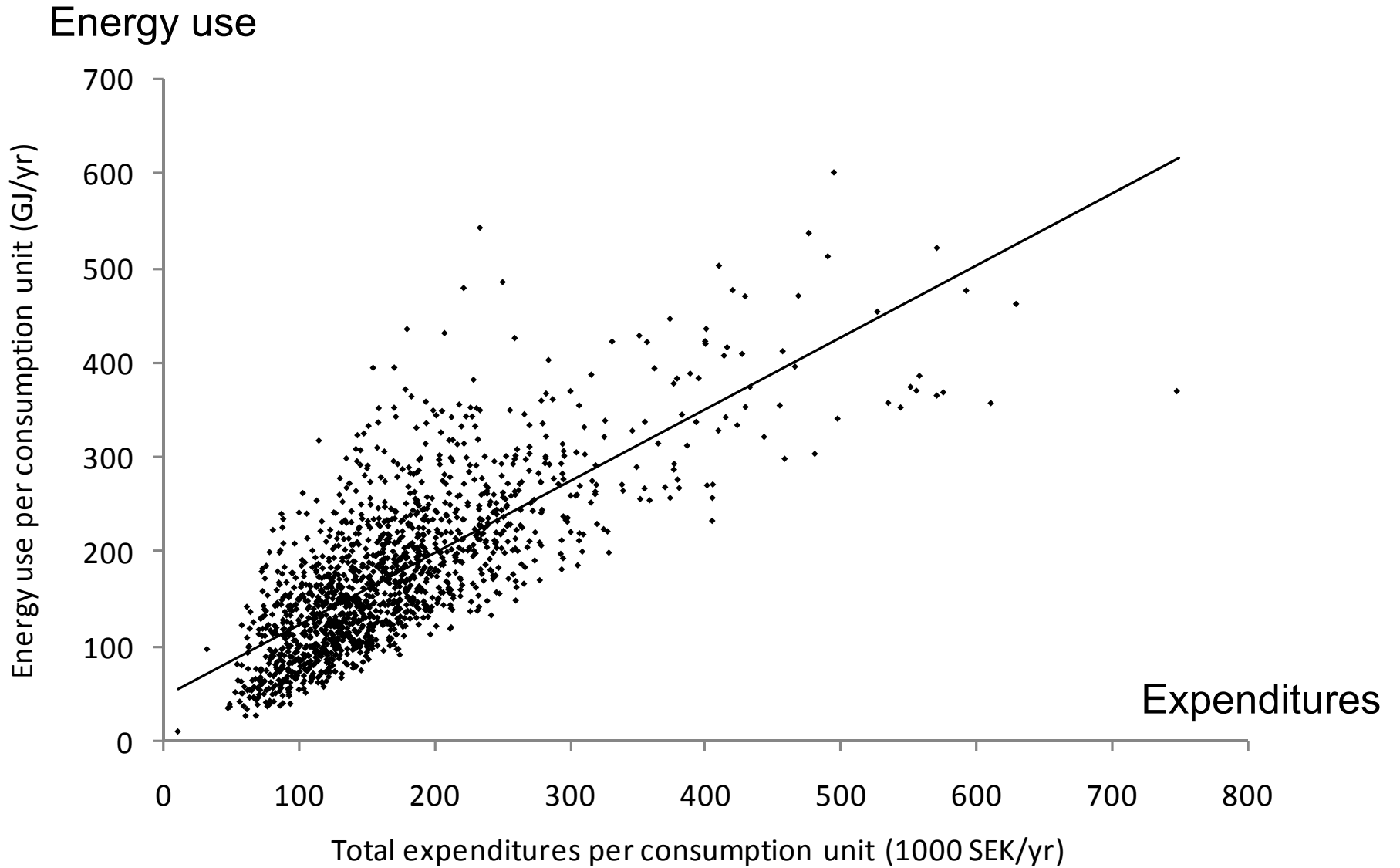
Shorter work hours is slowing down wage increases proportionately

- No extra productivity gain from work-time reduction
- No compensation from lower profits
- No compensation from the state

Two mechanisms



Income effect



Calculated from Swedish Household Budget Survey (2006) combined with input-output analysis of energy use.

How is the mix of consumption affected by a change in income?



When income changes then these types of consumption:

- are much affected: (high income elasticity)
 - Air travel
 - Cars and boats
 - TV sets
 - Summer houses
 - Sport equipment



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- are proportionally affected:

- Petrol and diesel
- Furniture
- Clothes
- Meat



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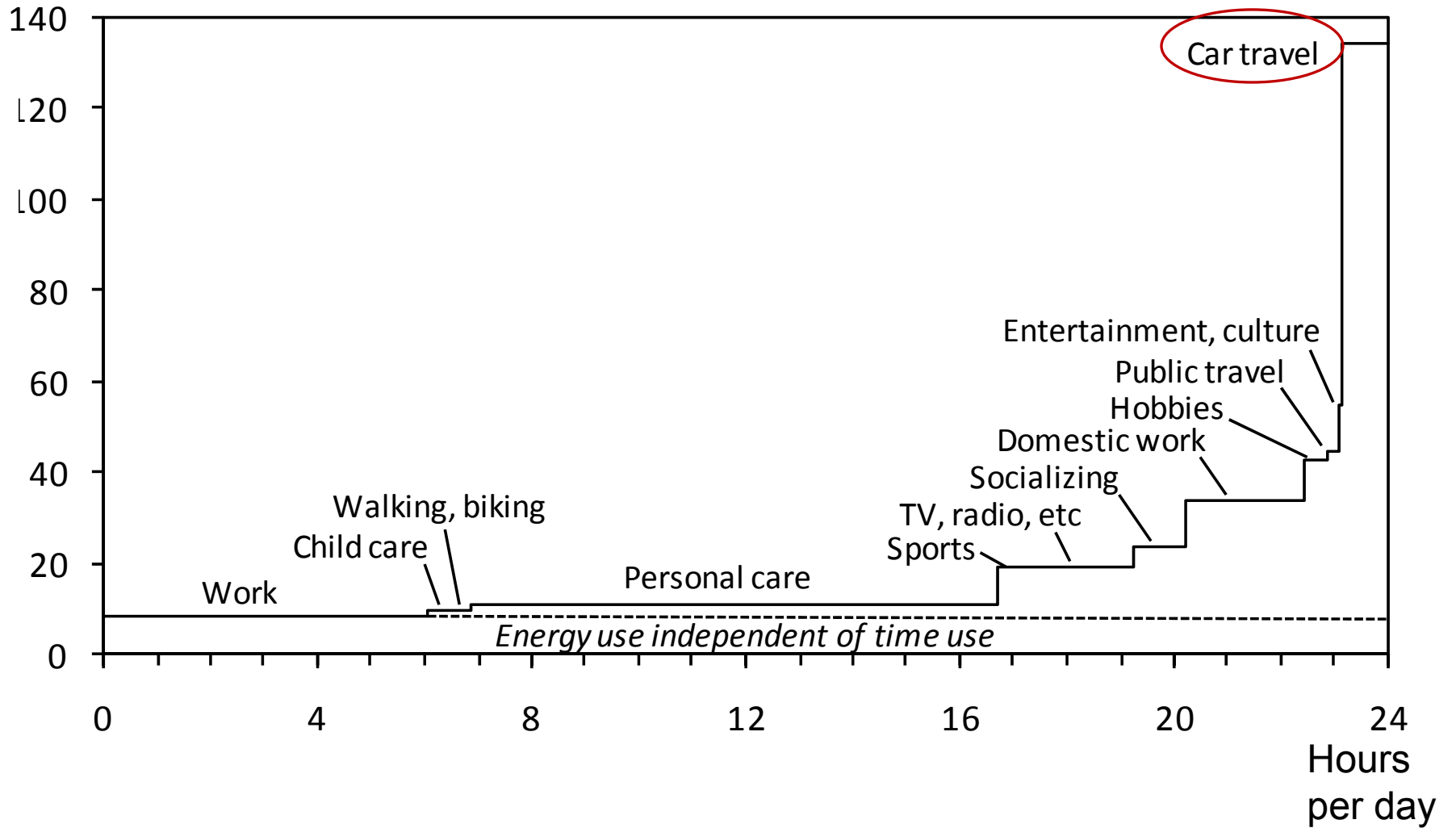
- are not so much affected:

- Electricity and heat
- Dwelling
- Train and bus travel
- Bread, cereals, milk products
- Cultural services



Energy for different activities

Energy intensity (MJ/hr)



Time use

	Time use	
	Average	Marginal
	Minutes/hour	Minutes/hour
Time at work	15.1	-60.0
Domestic work	5.5	14.1 ^{***}
Child care	1.2	4.4 ^{***}
Sleep, eating, hygiene	24.6	14.4 ^{***}
Sports and outdoor activities	1.4	3.4 ^{**}
Entertainment, culture	0.2	1.3 ^{**}
Socializing	2.4	5.2 ^{***}
TV, radio, reading	5.0	9.0 ^{***}
Hobbies	1.1	5.0 ^{***}
Travel - bicycle/foot	0.8	1.7 ^{**}
Travel - bus/train	0.5	-0.8 ^{**}
Travel - car/motorcycle	2.1	2.4 ^{**}

Significance levels: + = $p < 0.1$; * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$

Results:

1 % shorter work time reduces environmental impact by 0.8 %

Shorter work hours by 1 %		
	Energy use	CO ₂ eq.
Income effect	- 0.89 %	- 0.87 %
Time effect	+ 0.06 %	+ 0.02 %
Total effect	- 0.83 %	- 0.85 %

Scenarios for 2040

Assumptions:

	Shorter work time	Constant work time
Productivity improvement	2.0 % per year	same
Length of standard work week	-1.0 % per year	0 %
Work sharing	30 %	-
Energy efficiency improvement	0.8 % per year	0.9 % per year



Estimates for 2040

	Shorter work time	Constant work time
Standard work week	30 h	40 h
Total private consumption	+ 45 %	+ 78 %
Energy use	+ 12 %	+ 30 %

This indicates that reduced work time would limit energy use and therefore make it easier to reach climate targets.

Uncertainties which could alter the climate benefit

Regarding assumptions:

- Higher work sharing effect
- Higher wage increase due to a productivity boost
- Lower energy efficiency improvements than assumed, due to slower economic growth

Factors not accounted for:

- + more time might mean more biking or going by public transport
- + 4-day workweek might give less commuting
- 4-day workweek might mean longer weekend travel

Some welfare aspects of work time reduction

- + less human suffering due to less climate change
- + Lower unemployment?
- + More free time for well-being enhancing activities
- + More free time for unpaid care of children/elderly
- Smaller tax-base for financing the public sector and pensions



Thank you for your attention



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