Renewable Energy and Employment in Germany

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(1) Overview

The positive impacts of an increasing share of renewable energies on the mitigation of climate change as well as on the decrease of the dependency of energy imports are indisputable. However, one persistent problem for the German economy has been its high level of unemployment in the recent past. Therefore, any policy strategy will be measured also by its net-impact on the labor market. The paper describes the results of a study that models this impact and is novel within three respects:

(2) Methods

Firstly, an Input-Output-Vector for the renewable energy sector was developed based on the results of more than 1000 interviews with an extensive questionnaire, secondly gross and net effect of two different policy scenarios for Germany until 2030 were calculated and thirdly the approach varies from earlier studies by its explicit modeling of export and foreign trade effects. The methodology is a combination of a survey based empirically sound extension of the existing Input/Output table structure, I/O Analysis and macro-econometric modeling using the PANTA RHEI model.

(3) Results

Depending on the world market scenario assumed and the market shares, gross employment will 300.000 – 400000 jobs by 2030. Net employment stays positive for all scenarios with export activities at least as high as today.

Employment until 2030 in different scenarios (rounded to the next 100)

	2004	**2010**	**2020**	**2030**
Cautious (DCP)+ TOS	157,074	244,000	306,700	332,800
Cautious optimistic (DCP)+ TOS	157,074	263,000	353,500	415,000
Cautious (REF) + REF	157,074	161,300	170,00	180,000
Cautious optimistic (REF) + REF	157,074	170,800	181,800	197,400
TOS: Target oriented scenario, REF,: reference scenario, BMU06				

Changes of some important economic indicators in the TOS – absolute values from REF

	2010	2015	2020	2030
CO_2-emissions million t	-5.72	-9.74	-15.64	-73.99
GDP billion €95	9.88	13.01	17.04	20.93
Gross production billion €95	22.76	31.43	42.15	52.88
Private consumption billion €95	4.95	6.39	8.25	11.07
Government billion €95	1.02	1.22	1.56	2.01
Investment construction billion €95	0.60	0.78	1.05	1.12
Investment equipment billion €95	2.09	2.33	3.27	2.90
Export billion €95	4.72	7.45	9.96	13.60
Import billion €95	3.67	5.37	7.33	10.13
Public debt billion €	-8.94	-24.19	-50.91	-143.43
Average wage €	0.06	0.09	0.14	0.16
Consumer price index 1995=100	0.04	0.12	0.21	0.08
Labor 1000	55.23	64.21	73.60	84.41
Source: BMU06				

(4) Conclusions

The additional costs of renewable energy in a target-oriented scenario will increase over the next 10 years if we assume a moderate estimate of future energy prices. With this development, competitiveness will be reached around 2020. Obviously, the earlier it is reached, the more rapidly fossil fuel prices rise. The analysis described above is oriented towards a rather conservative approach in terms of framework conditions, but target oriented in terms of capacities installed, and the national targets will be reached. International markets play a very important role for the development of the domestic industry. Currently, 16% of the worldwide turnover with systems for the use of renewable energy was made in Germany in 2004. Future world markets will grow faster than the German market, as current installation plans and targets in several countries show. By 2020, domestic installation will only contribute 4% to the international market. Therefore, the increase of employment in the industry crucially depends on the development of exports. If the role of Germany as a lead market can be stabilized, employment in the RES sector could reach more than 400,000 by 2030 and net employment effects will be positive.