

## **Innovative approaches to the creation of jobs in environmental protection**

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### Authors

Martin Cames  
Dr. Felix Chr. Matthes  
Odette Deuber

in co- operation with

Prof. Dr. Jürgen Blazejczak  
Daniel Becker

### **Öko-Institut e.V.**

Büro Berlin  
Novalisstr. 10  
D-10115 Berlin  
Tel. +49 (0) 30 - 28 04 86-0  
Fax +49 (0) 30 - 28 04 86-88

Geschäftsstelle Freiburg  
Postfach 6226  
D-79038 Freiburg  
Tel. +49 (0) 761 - 45 295-0  
Fax +49 (0) 761 - 47 54 37

Büro Darmstadt  
Elisabethenstr. 55-57  
D-64283 Darmstadt  
Tel. +49 (0) 6151 - 81 91-0  
Fax +49 (0) 6151 - 81 91-33



## **Summary**

The situation on the German employment market is still tense. The employment effects of environmental protection are therefore – as in the past – much discussed among researchers and politicians. The study identifies innovative approaches to the creation of jobs in environmental protection, and explains how this potential can be exploited. As starting points for an innovative employment-promoting environment policy, the debate in specialist publications on the topic of environmental protection and employment is evaluated and past developments in environmentally-induced employment described. In addition, environmental protection markets are surveyed and categorized, and qualitative aspects of the connection between environmental protection and employment presented.

### **1 Innovative environmental protection markets**

Because there has been little comprehensive reflection on potential environmental and employment effects for innovative markets, the markets to be investigated within the fields of action prioritized in the Federal Government's sustainability strategy have been selected pragmatically:

- Use energy efficiently – protect the climate effectively,
- Ensure mobility – safeguard the environment,
- Produce well – eat well.

On the basis of an initial evaluation of the submarkets mentioned, three areas have been identified as particularly relevant regarding their employment potential and their accessibility for political instrumentation. They are considered in-depth within the framework of case studies. To begin with, so-called gross potentials of direct and indirect employment effects in the markets under consideration are described. Net employment effects, adjusted for negative effects, are deduced on the basis of plausibility considerations and their magnitude estimated so far as possible. The documented em-

ployment potentials cannot, however, be added up to total potential because of possible overlapping or gaps.

## **1.1 Combined heat and power**

Combined heat and power (CHP) traditionally forms an important element of climate protection policy and efficiency-orientated energy policy. Especially in the areas of computer-supported interconnection of installations, decentralized fuel cells and the provision of refrigeration, highly innovative developments are to be expected in the future. The sale of CHP plants in Germany has greatly declined in the last few years as a result of the liberalization of the electricity market. In 2000, the Federal Government laid down in its climate protection programme the target of doubling electricity generation from CHP by the year 2010. The CHP Act has been in force since 2002 as an instrument of promotion, and German industry has also made a voluntary commitment on the construction of CHP plants. According to Öko-Institut calculations, without supplementary instruments the stated target cannot be achieved. The reasons for this include electricity prices, which in the case of many plants do not cover costs, and, in the area of decentralized CHP, insufficient reward for savings in network costs. The proposed instruments range from the further development of ecotax, to certification models, participation in emissions trading systems and obligatory payments in respect of savings in network costs. For the further development of innovative CHP concepts (virtual power plants, fuel cells etc.) considerable R & D efforts as well as market introduction programmes are necessary. Through an expansion of CHP electricity production, and in accordance with the target contained in the climate protection programme, by 2010 around 15,000 jobs (gross) could be created or preserved. By contrast, a decline in employment in condensing electricity generation is expected.

## **1.2 Car sharing**

With car sharing, several users share a car as well as the costs of its purchase and maintenance. The environmental benefit arises from reduced vehicle production; affected households often also reduce car mileage. The observed increase in the number

of car sharers is furthered, on the one hand, by every increase in fuel prices, for instance through ecotax. Furthermore, there are local promotion measures, such as the provision of parking space free-of-charge, or co-operation projects for the integration of traffic carriers with local passenger traffic operators. The greatest obstacles to strong growth in car sharing could be the failure to internalize the external costs of traffic and the absence of full costing for households. The necessary planning for the use of car sharing vehicles is frequently regarded as a restriction; the significance of car possession in social status must also not be ignored.

Most instruments that increase the cost of car use will lead in the medium term to an expansion of car sharing. Useful specific measures include, for instance, the adaptation of traffic regulations with the allocation of parking space similar to that for taxis, or a joint information campaign with natural allies, such as the public services union *ver.di*, with the aim of offering car sharing to members at exclusive conditions, thus enhancing its attraction. Integration with other traffic carriers and suppliers of traffic services should be improved within the framework of the commercialization of car-sharing operations, so that the target group can be extended. The gross employment effects of the systematic expansion of car sharing are estimated for the period to 2010 at around 14,000 jobs, net effects at about 8,000. Indirect effects include additional employment in local public transport. Negative effects include job losses in road vehicle manufacture, in the retail trade as well as in the insurance and oil industries.

### **1.3 Public transport with buses, trains and trams**

Public passenger transport offers noticeable environmental benefits compared with individual motorcar traffic. People employed in this sector should therefore be assigned – at least proportionately – to environmental protection. Present conditions include railway reform and the liberalization of local public transport. Competition in local public transport could, among other things, also have considerable consequences for employment, which is why supportive measures in this respect assume added importance. Ecotax is also one of the relevant instruments, since it strengthens the eco-

conomic competitiveness of public transport by internalizing the external costs of individual motorcar traffic.

A combined push-and-pull strategy could be a useful approach for the expansion of public transport. On the push-side, besides ecotax road tolls should also be mentioned. Pull-strategies include the improved linking of different traffic carriers and networks through better co-ordinated timetables and integrated tickets – which are valid from the beginning of a journey to its ultimate destination – as well as the introduction of environment tickets or zero-pricing for local public transport in appropriate municipalities. In addition, innovation efforts in local public transport and the aggressive use of telematics – for concentrating the service on existing networks, for example, or accelerating public transport and improving the standard of information through simply-accessible information on connections from the point of departure to destination as well as early information on current timetable changes – are important for the attractiveness of local public transport. The gross effect of an ecologically-orientated passenger traffic policy is estimated to be around 225,000 jobs by 2010, reduced through losses in the motor vehicle and oil areas to a net figure of at least 200,000 jobs.

## **1.4 Ecofarming**

The ecological benefits of ecofarming lie in the protection of bio- and biotope-diversity, reduced eutrophication and acidification of soils and lower greenhouse gas emissions. With the "agricultural turnaround" in January 2001, the German Federal Ministry for Consumer Protection, Food and Agriculture stated its goal of expanding ecofarming, through the simultaneous support of supply and demand, from the current level of 3.2% of available land to 10% by 2005. This reorientation is guaranteed within the framework of the so-called "modulation" of the "Joint Programme on the Improvement of agricultural structure and coastal protection", and also through the "Federal Programme for Ecofarming". At the European level, EC eco-legislation regulates ecological agriculture and the corresponding labelling of agricultural produce and foodstuffs.

Farming profits from ecological cultivation are noticeably lower than those from conventional farming. A shift in agricultural subsidies in favour of ecofarming is therefore necessary. Selective support of farming operations during the adjustment period, through consulting and information services as well as through a reduction in non-wage labour costs, can be of help in this respect, since ecological agriculture is considerably more labour-intensive. In the past, the number of ecofarms, and the land under cultivation, has continually increased. For the future, an accelerated increase is expected, whereas the number of people employed demonstrates a strong downward trend. Assuming that the agricultural turnaround target is achieved, with a further doubling to 20% by the year 2010, a gross employment effect of 52,000 secured jobs can be expected. The net effects are difficult to estimate, but will clearly be positive.

## **1.5 Marketing of organic food**

With the marketing of organic food, alternative sales avenues – such as health food stores, direct marketing or order and delivery services – are relevant, because, with respect to employment effects, they play a greater role than conventional retail chains. Apart from the agricultural turnaround (Section 1.4), which also leads to expansion in the marketing of organic food, it is particularly the introduction of the new ecolabel that should strengthen public confidence in produce from ecological farming. For up to now, although turnover in this sector has continually increased, an increase in the sale of organic food has been hampered not only by the low share of expenditure on food in the total expenditure of German private households, but also by the abundance of ecoproduct trademarks. Potential instruments for strengthening organic food marketing include government-supported training measures to counteract the current lack of qualified personnel, better general conditions for the setting up of new businesses in this sector and marketing strategies that, due to their significant employment effects, should particularly benefit direct marketing. Employment effects in this market segment are difficult to estimate, however, but due to the low starting figures the net effect should be comparatively low.

## **1.6 Ecotourism**

In the area of ecotourism, an appreciable contribution to the protection of biodiversity and the creation of jobs is especially to be expected through environment-friendly, sustainable tourism. A combination of climatic conditions and the interest in other cultures, but also cheap air travel offers and low price levels in many countries, presently lead to low demand for tourism in Germany. Since sustainable tourism generally demands a higher proportion of service and better quality pre-service than conventional tourism, demand in this area is additionally limited by the level of prices.

In its Tourism Report the Federal Government laid out its long-term objective of promoting the environment-compatible development of tourism in Germany. Specific starting points mentioned in the Report include the setting up of a "German National Parks" marketing organization, the promotion of cycling and hiking tours and "holidays on the farm", as well as the intensive domestic and international marketing of Germany as a tourist destination. General information campaigns for Germany as a holiday location, as well as making the umbrella label *Viabono* better known, could increase awareness of the philosophy of sustainability in tourism and, at the same time, provide additional employment in the tourism industry. The demand for sustainable holiday offers can be increased, when the customer advantage of quality tourism is better explained, through a standardized environment management system for hotel operation, for instance. On the supply side, instruments should further be employed that promote environment-compatible mobility – cycling holidays – as well as cooperation between environment, consumer protection, industry and tourism organizations as well as alliances of regional suppliers. Assuming – in an experiment with ideas – that just 1% of German foreign travel could be substituted by offers from domestic ecotourism operators, a total of 10,000 to 15,000 jobs, including the provision of pre-services, could be created.



## **1.7 Case study - Energetic refurbishment of buildings**

In the building refurbishment area, one of the most significant CO<sub>2</sub> reduction potentials in Germany – more than 50 million tonnes by the year 2020 – can be exploited. With the required investment volume, stretched over a long period of time, considerable employment effects of around 110,000 jobs by the year 2010 can be achieved. By comparison, in the year 2001 approximately 265,000 people in the construction industry were registered as unemployed. Against the background of the serious situation in the construction industry and the great multiplier effects of the building trade on income and employment, measures in this area can also contribute to stabilizing employment, especially in small and medium-sized businesses.

For these effects, different lines of strategy are necessary. Firstly, programmes offering financial incentives must be considerably expanded. The required volume is ten to fifteen times greater than the current programme. Financial support should be coupled with specific CO<sub>2</sub> reduction targets, as is presently done with the CO<sub>2</sub>-linked building refurbishment programme of the *Kreditanstalt für Wiederaufbau*, or be directly dependent on the energetic effectiveness of measures. Besides a continuation or adjustment with regard to support modalities of the current programme, efficiency effects can be exploited and marketable services developed above all through tax allowances and tendering models, for instance through an energy efficiency fund. A further measure of support for labour-intensive services in the refurbishment area is a reduction in turnover tax, as has recently been made possible in many EU countries through the 1999 EU Directive on labour-intensive services in private households. It is to be expected that, as a result, public interest in and awareness of climate protection measures in existing buildings will increase.

The provision of considerable finance is a necessary, but by no means sufficient condition for the attainment of ecological and employment effects. The greater the extent to which annually-available refurbishment potential should be exploited the more important are measures in the area of motivation and information. So far as measures to reduce motivation deficits are concerned, an increase in market transparency regarding the energetic quality of buildings plays an important part. The complete certification

of the energy consumption of buildings – for instance through energy passes – is an objective that can be realized in the medium term. In the short and medium term, heating tables and ecological rental tables can be introduced, with the aim of establishing additional (energy) costs as a factor of competition on the housing market. Another promising medium-term approach to overcoming the user-investor dilemma is the idea of rent partially including heating, where heating costs are split into basic heating costs determined by the respective building substance, which are to be borne by the owner, and costs dependent on use, which have to be met by the tenant.

## **1.8 Case study – Environmental services in the buildings sector**

Property or facility management, in the wider sense, encompasses a multitude of different services, which are not part of the central tasks of property owners or users, but are put out to contract and undertaken by external personnel. These services include energy management by a contractor. Through energy contracting, and in particular through so-called energy-saving contracting, reductions in energy consumption and greenhouse gas emissions can be exploited to a considerable extent. Merely through the exploitation of contracting potential in public buildings, a reduction of around 3 million tonnes of CO<sub>2</sub> can be achieved each year. Furthermore, in many contracting projects water consumption is also optimized.

Obstacles to an expansion of energy contracting are to be found on the customer side primarily in an insufficient awareness of cost benefits resulting from the absence of full costing, in the absence of information on the existence and function of contracting in general, in failing resources for the conduct of tendering as well as in a frequently experienced loss of flexibility. From the supplier's point of view, there is often uncertainty regarding customer behaviour; for example, sluggish decision-making on the part of the authorities, or the possible closure of a production site before expiration of a contracting project agreement.

All environment policy instruments, which increase the costs of energy consumption, support in principle the expansion of energy contracting. The provision of additional information for decision-makers in public authorities, in industry as well as in property

management and housing co-operatives appears at the present time, however, to be more urgent. Furthermore, financially-subsidized initial consulting would be helpful as an incentive for contracting projects, as would harmonization of the currently widely differing procedures for the conclusion of contracting agreements by the authorities. Standardized contracts and assessment procedures could in many cases also cut transaction costs.

Altogether, around 1.3 million buildings in Germany could be covered within the framework of contracting. At the present time, however, only a fraction of this potential has been exploited (93,000 properties, or 7%). Through specific support of contracting about one-third of this potential could be realized by the year 2010, as a result of which around 17,000 new service jobs would arise in this sector and 13,000 additional jobs in investment goods providing sectors. Taking account job losses with buyers of contracting projects and in energy supply, a positive net employment effect of 10,000 jobs can be ascertained, which is to be explained above all by the priority given to investment in energy savings and by possible cost reduction at the buyer of contracting projects because the saved resources can be used for other productive purposes and thus generate additional employment.

## **1.9 Case study - Export of environmental protection technology and environmental services**

An ambitious environment policy in Germany tends to have a beneficial effect on the export of goods and services for environmental protection; it is not enough, however, for the expansion of these environmental protection exports. It is also important, that goals and strategies pursued in Germany are also pursued and adopted by other countries.

Instruments of export promotion for environmental technology and services include, on the demand side, analyses of potential and feasibility or pilot projects in target countries, the increased informational activities at trade fairs as well as seminars on the Internet in the respective language. With German suppliers of technology and ser-

vices for environmental protection there are also often great gaps in knowledge concerning the export potential of their goods and services. Here, clear information is called for on the worldwide demand for individual technologies, possibilities of support at the federal and *länder* level as well as from international organizations and development banks. Small and medium-sized businesses, in particular, often (still) lack know-how regarding the processing of exports, especially with regard to the initial export contract or exports to a new target country. In this connection, seminars on specific topics can provide specific support. Deficiency guarantees, such as provided by the federal *Hermes Kreditversicherungs-AG*, could in many cases considerably reduce the deficiency risk of export trade.

In addition, the export initiative on renewable energy sources, an export initiative on climate protection technology recently passed by the *Bundestag* as well as a German Flexible Mechanisms Fund (GFM Fund) that has also been proposed by a Commission of Inquiry of the *Bundestag* are, due to the now foreseeable coming into force of the Kyoto Protocol, appropriate departure points for the intensification of exports of environmental technology and services. Moreover, through the co-ordination of the activities of federal ministries, federal institutions, industrial organizations etc., it should be ensured that worldwide developments in the field of climate protection and renewable energy sources are promptly registered and German support policy appropriately adapted.

But also in the case of a noticeable increase in export demand for German environmental technology and services, the effect on employment in Germany is comparatively insignificant. Estimates based on the development of the German market for environmental goods and services, as well as on projections of the worldwide development in demand, show that in the medium term around 15,000 additional jobs can be expected. The effect of the measures, which are justifiable solely on the grounds of development and environment policy, are therefore not as strong as might be desirable considering the tense situation on the German labour market.

## 2 Conclusion

The instruments and measures identified for individual submarkets cannot exploit the expected employment potential in isolation, but only in conjunction with other measures. What is required, in most cases, is a package of various measures, through which a contribution can be made not only to easing the burden on the environment, but also to relieving the tense situation on the labour market. The employment effects expected in certain market segments can frequently only be exploited by means of segment-specific measures. They can often only be mobilized – for instance, in the energetic refurbishment of buildings or in energy contracting – when they are additionally supported by measures with an overall economic effect, such as ecotax.

In the assessment of potential, it has to be distinguished between initial positive gross employment effects and the net employment effects that arise from the expansion of a market, which take account of the negative effects that are possibly induced elsewhere (Table 1).

*Table 1: Employment effects of innovative approaches to the creation of jobs in environmental protection in the year 2010*

	<b>Gros</b>	<b>Net</b>
	- People -	
Combined heat and power	15,000	positive
Car sharing	14,000	about. 8,000
Local public transport	225,000	200,000
Ecofarming	52,000	positive
Marketing of organic food	positiv	insignificant
Ecotourism	about 12,500	about 12,500
Energetic refurbishment of buildings	positiv	about 110,000
Environmental services in the buildings sector	30,000	10,000
Export of environmentally relevant goods and services	15,000	15,000

*Source: Öko-Institut compilation*

The greatest employment potentials can clearly be mobilized through the expansion of public transport with buses, trains and trams as well as the energetic refurbishment of buildings. So far as realization is concerned, the potential in the buildings sector is more interesting, because it can basically be addressed through a large number of instruments. With the expansion of public transport with buses, trains and trams, this could be considerably more difficult, since experience shows that pull-instruments in the traffic sector have relative little effect, and push-instruments can often not – or at least not on an adequate scale – be pushed through politically.

The analysis of different innovative approaches to the creation of jobs in environmental protection has shown that they can be identified in different market segments. But the targeted employment effects differ widely. In some of the environmental protection markets that were investigated, only comparatively insignificant employment effects can be achieved through the measures in question. The net employment effect of macroeconomic instruments, on the other hand, should generally be considerably higher and, so far as relieving the strain on the employment market is concerned, more promising. Merely through the introduction of ecological tax reform in 1999, around 250,000 additional jobs have arisen. Such employment effects are generally not to be achieved with sector-specific instruments.

From the ecological point of view, all the described measures for the promotion of innovative environmental protection markets are to be assessed positively. Their realization is therefore justified solely by the ecological relief thus achieved. Justification in the form of additionally-created jobs is basically not required. Nevertheless, the preceding observations demonstrate that the proposed measures and instruments make an additional contribution – as it were, a positive side effect – to relieving the situation on the labour market. Considering the enormous scale of structural unemployment and the high unemployment rate resulting from cyclical factors, the identified employment potentials (energetic refurbishment of buildings, export promotion, ecofarming), together with the innovative approaches and measures described, should continue to receive the special attention of politicians.