

Tradable Planning Permits –
Fiscal Incentives for Developing Land and the Regulation of Open
Space with a Cap-and-Trade System in Germany

Dissertation

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Note: All papers which are written with co-authors contain equal contributions from each author, except the authors labelled with ^a which have a significant lower share in work and therefore referred to as secondary authors.

**Other related articles which are not part of this dissertation /
Weitere verwandte Artikel die nicht Teil dieser Dissertation sind**

- Henger, R. (im Erscheinen): Experimenteller Testlauf handelbarer Flächenausweisungsrechte in der Region Hannover. In: Raumordnungsinstrumente zur Flächenverbrauchsreduktion – Handelbare Flächenausweisungsrechte in der räumlichen Planung. Bizer, Einig, Köck und Siedentop (Hrsg.). Baden-Baden, Nomos.
- Bovet, J., Köck, W., Henger, R. und C. Schröter-Schlaack (im Erscheinen): Planungsrechtliche Mengensteuerung und Optionen einer ökonomischen Flexibilisierung zur Erreichung des 30-ha-Ziels. In: Raumordnungsinstrumente zur Flächenverbrauchsreduktion – Handelbare Flächenausweisungsrechte in der räumlichen Planung. Bizer, Einig, Köck und Siedentop (Hrsg.). Baden-Baden, Nomos.
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Introduction

Introduction

Despite fast proceeding demographic changes and regions with a population decline, we can still observe a high conversion rate from open space to developed land in Germany. Land development for residential, commercial or traffic uses is strongly connected with urban sprawl and various negative environmental, economic and social effects (e.g., Burchell et al., 2002; Carruthers and Ulfarsson, 2003; Siedentop et al., 2006). The preservation of open space has therefore become a major focus in Germany's land-use policy. In 2002, the Federal Government emphasized its relevance in the 'National strategy of sustainable development' with the formulation of the 30-ha-target, which postulates the reduction of land development to 30 hectares per day by 2020 (Bundesregierung, 2002).

Since proclamation, however, the dynamics of land-use conversion have not subsided substantially and still lie above 100 ha per day (Statistisches Bundesamt, 2010). The Federal Government seems to be shifting responsibility towards lower political levels and to be focusing on prompting the states and municipalities to improve their already applied regional and urban planning instruments. In this respect, land-use planning was enhanced with new approaches of management, cooperation and monitoring, but the reforms did not show significant statistical effects and failed in their task to confine the strong incentives for developing land (e.g., Siedentop et al., 2009; Weith, 2009). Up to now, demand for land is still robust, as a result of economic growth, structural changes, smaller households, living preferences and regional migration. Any demand is met by a corresponding supply, since municipalities endeavour to maintain their planning strategies to attract new residents and companies to slow the pace of the demographic trend. Strong competition among the communities for residents and companies impedes them from changing their policies towards independently implementing effective planning strategies. Land development also causes environmental problems which are not confined to jurisdictional boundaries and rather observable at a higher, more aggregated level. Additionally, municipalities seem to be focussed on potential fiscal revenues and systematically underestimate the total cost of land development, especially long-term infrastructural costs (e.g., Siedentop et al., 2006).

As all planning-led attempts seem to be inappropriate in restricting the conversion of open space, ideas of integrating market-mechanisms into land-use planning have gathered momentum. Policy makers suggest the combination of the 30-ha-target with a nationwide system of 'tradable planning permits', whereby communities submit permits for developing land at the expense of open space (Rat für Nachhaltige Entwicklung, 2004; Bizer et al., 2008; Walz et al., 2009). Land-use control

with a cap-and-trade system has the potential to reduce the land development rate effectively and to stimulate high-density land use. A trading program would render redundant excessive planning obligations to attain the 30-ha-target as well as facilitate more flexibility at local levels. The latter, in turn, would enable communities to reduce land development activities at lower costs.

The idea of integrating market mechanisms in land-use control comes from two different directions. The first direction stems from emissions trading programs which have emerged as a popular tool in environmental policy for controlling a variety of pollutants. The most prominent examples are the SO₂ Allowance Trading System in the USA, launched in 1995, and the European Union Emission Trading System, started in 2005, to control air pollutants such as sulphur dioxide and greenhouse gases (Tietenberg, 2006). The inspiration of using economic instruments for environmental regulation dates back to Pigou, who suggested fees or taxes as a way to internalize negative externalities of pollution into private decisions (Coase, 1960). The basic rationale of emissions trading was first outlined in 1960 by Coase and then elaborated conceptually and theoretically by Dales, 1968 and Montgomery, 1972. The experiences made with these market-based instruments indicate that given targets can be achieved faster and at lower costs than with traditional command-and-control alternatives. The established markets provide sources with flexibility to select the lowest-cost opportunities for abatement. According to the policy target, freely tradable permits (alternatively called rights or allowances) are therefore issued to companies and required for covering the amounts emitted during a specific period.

The second origin of the idea of integrating market mechanisms in land-use control can be found in incentive-based instruments already used in land-use control to compensate private property owners for abandoned building rights. These programs, called 'transferable development rights', allow local jurisdictions to redirect development away from sensitive areas, e.g., natural habitats or historic landmarks, towards areas of growth interests. They are implemented in far over 100 variations in many developed countries, especially in the USA (e.g., Pruetz, 2003). As property owners are allowed to sell a marketable development right, these programs proved to be very popular, also by displaying a politically acceptable way of preserving vulnerable areas. When designing a program addressing the issue of aggregate land development, considering both concepts renders possible a cap-and-trade system of tradable planning permits, through which municipalities and not landowners are compensated for not developing areas. Municipalities in their function as suppliers of building rights are provided with tradable permits which are necessary for establishing legally binding zoning plans.

An established planning permit system would constitute a new challenge for communities and all involved private actors in the land development process. Although tradable planning permits have been recognised as playing an important role in an achievement of the 30-ha-target, there is still a great need for studies explaining the impacts on land development patterns, community budgets and the link between existing planning instruments and tradable permits. The introduction of a price on land developed outside existing planning boundaries would change long-term decisions and development incentives. Each community would show different reactions and behaviours as a consequence of varying urban management strategies, diverse institutional characteristics and demand conditions. The participants would learn from their experience gained in the market and improve their market performance to reduce their abatement costs. As a result of the complex development process with multiple players involved, the task to assess the likely outcomes of a trading program appears very challenging. Research has to analyse the institutional framework in which development takes place in order to understand the collective actions within communities when they are faced with higher prices for building areas and tradable planning permits. Of particular relevance is the role of fiscal incentives in the development process and also the potential effects associated with shifted costs to landowners and private developers. In the end, it is important to isolate the compliance costs within the cap itself and the potential cost savings through permit trading.

Over a decade of debate has revealed a lot of scepticism regarding the use of tradable planning permits embedded in a national strategy to attain the 30-ha-target. Besides general reservations about implementing market-mechanisms into land-use planning the given reasons basically include the following: (i) the 30-ha-target lacks a scientific foundation and is therefore inappropriate to serve as a strict control target, it should be rather applied as an orientation goal that directs efforts into more sustainable development; (ii) a permit scheme is complex and thus costly in design and research is unable to capture all of the incorporated effects on community budgets, development patterns, private properties and local land markets; hence, it is not clear that a market for planning permits would achieve considerable cost reductions and outperform alternative effective planning instruments; (iii) land-use control of settlement growth with tradable planning permits cannot adequately incorporate local development facts and spatial issues.

These reservations indicate that a successful implementation of tradable planning permits strongly depends on research that explicitly addresses the particular effects of this new policy instrument and highlights rebuttal arguments with consistent research evidence. Against this background the thesis pursues the following objectives and key research questions:

- How must a tradable planning permit system be designed to reduce aggregate land development effectively and improve environmental quality at relatively low cost?
- What are the (fiscal) incentives and the abatement costs of the communities for developing land? How will communities operate with tradable planning permits?
- How can the initial allocation of planning permits be organized in a suitable and practicable way?
- What are the consequences, benefits and costs of this approach? How will development patterns be affected? Are tradable planning permits the best strategy for achieving the desired reductions in land development?

The first paper addresses the first question and presents the economic rationale behind a tradable planning permit system. A focus is set on the issue of how trade should be organized in order to implement a permit scheme with the highest possible ecological effectiveness. The paper builds a bridge from the well-developed concepts of pollution control to the regulation of land development and expounds the differences and similarities to programs with transferable development rights. Settlement growth is identified as a ‘pollutant’, if it is accompanied with a loss of the natural and non-renewable resource open space. Land development also shows characteristics of a ‘non-uniformly mixed’ pollutant, as it is connected with dispersed spatial environmental impacts. The regulation of such pollutants is very challenging since local hot spots must be considered to attain spatial goals in local areas. The paper therefore explores regulatory options of potential systems: an undifferentiated permit system, a trading-ratio system and variations of zonal permit systems. An undifferentiated system, where permits for all land-use types can be traded on a one-to-one basis without any spatial restrictions, has been recognized as the best approach to control aggregate land development. Its main advantages stem from the little informational requirements for regulators and the low complexity of the trading procedure for the market participants. However, as widely discussed in the paper, this ‘simple’ system disregards the location of settlement growth. Hence the spatial structure of development must still be an issue of land-use planning to reduce costly external effects. The findings emphasize the supplemental nature of tradable planning permits within a comprehensive policy to reduce settlement growth down to 30 ha per day. Planning has to guarantee quality development patterns, while a trading program needs to make sure that the quantity of development is reduced sufficiently.

The second paper is concerned with the communities’ incentives for developing land and examines the costs and benefits for local governments associated with

specific development strategies. It presents the methodology of three prominent German fiscal impact studies and discusses the role of these techniques in achieving sustainable land development patterns. The presented surveys give particular emphasis to the long-term infrastructural costs of new built-up areas with their related excessive costs of providing urban infrastructure and services. Additionally, the results show that land development affects community budgets negatively in many cases. Based on these findings, fiscal impact analysis is increasingly considered as an effective policy tool for reducing the growth and spread of settlement and traffic areas, which ought to be integrated into land use community planning efforts. However, as these tools lack consideration for social and environmental factors, the paper shows that fiscal impact analysis cannot guarantee sustainable development strategies per se. More economic reasoning and more transparent procedures should not be interpreted the way that land-use decisions are only made on the basis of fiscal impacts. Sustainable development rather requires a better coordination and more stringent and efficient use of the natural resource land. The paper therefore examines the importance of fiscal impact analyses within an overall conceptual framework, which considers all implications of land use and encourage efficient and sustainable land-use decisions.

The third paper presents an analysis on fiscal impacts of new areas to community budgets in four regions (Administrative District of Düsseldorf, Hanover Region, Region Central Hesse, and Region South-West-Thuringia) and calculates all relevant revenues and costs linked to the development of new residential areas. The fiscal effects are estimated by the 'Per capita multiplier method' whereby the per-capita tax revenues of each municipality are combined with the expected changes in the tax base through migration. At this, real property and income taxes as well as their subsequent impact on payments of the municipal fiscal equalization system are taken into consideration. The associated development costs are calculated with all relevant direct and long-term investments of local governments. The paper aims at identifying the different effects of building areas with equal characteristics across communities and regions. The built-up areas are therefore differentiated with respect to density, infrastructure investments for streets and lines outside the areas and social facilities. The basic results can be summarized as follows: (i) developing areas with identical characteristics exhibit very different fiscal effects across communities, (ii) the fiscal equalisation system substantially affects the net fiscal impact on municipalities, (iii) high development and infrastructure follow-up costs often lead to non-beneficial development investments, and (iv) the fiscal impact does not support the attainment of spatial planning objectives.

The fourth paper discusses an approach to distribute the 30-ha-target to lower jurisdictional areas. The presented method uses a top-down mechanism by which a national target is subdivided according to the population and total area shares of