

# Circular land use management in cities and urban regions – a policy mix utilizing existing and newly conceived instruments to implement an innovative strategic and policy approach

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## 1 ABSTRACT

The German government's National Strategy for Sustainable Development aims at reducing land utilization from the 100 ha per day currently used today to 30 ha a day and at realizing three times as much internal development as external development by the year 2020. Circular land use management is a key policy and strategic approach for implementing the two-pronged strategy of quantity and quality management necessary to achieve these objectives. Circular land use management primarily focuses on systematically exploiting the potentials of existing structures and reusing derelict land. It allows for zoning of new land for development on a small-scale under certain conditions. Consequently, this strategy endeavours to diminish new development in "green belts" and to activate previously developed building land. Realizing a Circular land use management policy requires employment of a policy mix which pools existing and new instruments in the fields planning, information, organization and cooperation, funding and budgeting, marketing and dispositions. New instruments which provide goal-oriented incentives capable of effectively influencing current land use and zoning practices are necessary because existing instruments have limited potential with regards to achieving these aims. The German government and other important groups of stakeholders – the *Länder*, public stakeholders at the municipal and regional levels, private enterprise, institutions which own land, the real estate industry and private households and small-scale property owners – should cooperate closely to establish appropriate framework conditions for Circular land use management.

**Keywords:** Circular land use management, land use management, urban and regional planning, sustainability

## 2 CIRCULAR LAND USE MANAGEMENT: AN INNOVATIVE STRATEGIC AND GOVERNANCE APPROACH

Circular land use management represents an integrative policy and governance approach which presupposes a changed land use philosophy with regard to land utilization.<sup>1</sup> This modified land use philosophy can be expressed with the slogan “avoid – recycle – compensate”.

This paper is based on the findings of study conducted in the research field Circular Land Use Management in Cities and Urban Regions of the national research programme Experimental Housing and Urban Development (Experimenteller Wohnungs- und Städtebau), ExWoSt. The German Institute of Urban Affairs (Difu) examined this research field from 2003 to 2007 on behalf of the Federal Office for Building and Regional Planning (BBR) and the Federal Ministry of Transport, Building and Urban Affairs (BMVBS), and in cooperation with the project group Stadt + Entwicklung (City + Development), Leipzig and the special research group Society for Institutional Analysis (sofia), Göttingen/Darmstadt.

### 2.1 *The principle of reuse and phases of land use*

Similarly to the recycling-based principles which have become commonplace in recent years in areas such as waste and water management, “circular land use management” should become an established policy in sustainable land utilization. Materials cycles serve as a model for circular land use management: the constructed city is understood as a system with a structural makeup which is subject to various usage phases and where, in certain instances, entire districts and industrial areas are dismantled and made suitable for subsequent use, whereby the total area of land used should remain unchanged. Structures no longer fit for reuse are demolished or renaturalized; infill measures are implemented in areas with high settlement pressure. The idea of a “circular” of use thus seizes upon the notion of a use cycle of the allocation of building land, development, use, abandonment and reuse.

### 2.2 *Potential of circular land use management*

A strategy of this nature primarily and systematically seeks to exploit the potential to develop existing building sites and reuse derelict land. It focuses solely on internal development (recycling abandoned sites, higher density development, infill development, multiple use, etc.). The entire use cycle, from planning to utilization, disuse, dereliction, and building and land recovery form the core of the strategy. The ultimate aim is dynamic site preservation. In an ideal scenario this vision would be realized if only land which is currently in use were utilized for new settlement initiatives. Zoning small areas of new land for development is not categorically ruled out, assuming abandoned sites are being reused in other areas.

Circular land use management, therefore, aims to minimize rezoning of “green belt” land (for development) and activate existing building land, including, among other

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1 The basic theoretical principles of land recycling are expounded upon in detail in: Federal Office for Building and Regional Planning (BBR) (published by), *Perspektive Flächenkreislaufwirtschaft* special publications series for the ExWoSt research field *Fläche im Kreis*, Vol. 1. “Theoretische Grundlagen und Planspielkonzeption“, revised by Thomas Preuß et al. (German Institute of Urban Affairs et al.) and Fabian Dosch et al. (BBR), Bonn 2006.

options, derelict land, gaps between buildings and exploiting possibilities for infill development (Table 1).<sup>2</sup>

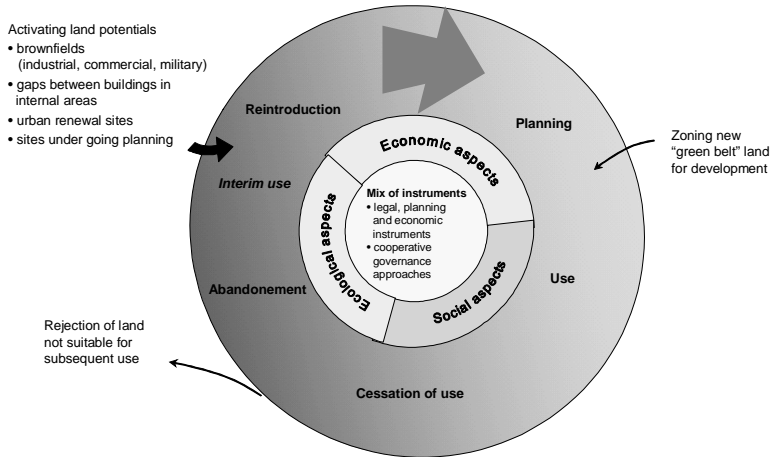


Figure 1. Phases and potentialities of circular land use management \*

\*Source: German Institute of Urban Affairs, own diagram.

- 2 The amount of brownfields currently available for construction in Germany is listed at 128,000 ha: land formerly used for industrial and commercial purposes (48 percent), real estate previously occupied by the military (41 percent), abandoned tracts of land used for transport infrastructure, railway and port facilities (twelve percent): cf. Federal Office for Building and Regional Planning (BBR): "Bauland- und Immobilienmärkte 2001. Ergebnisse der Baulandumfrage", Bonn 2001. Federal Statistical Office calculations estimate that the total amount of brownfields within towns and cities across Germany increased by 12.7 ha per day between 1993 and 2000; cf. Federal Statistical Office: "Umwelt. Umweltproduktivität, Bodennutzung, Wasser, Abfall", Wiesbaden 2003; comprehensive surveys of existing brownfields are not available.

Table 1. Expansion and internal development opportunities of land\*.

Expansion opportunities (outlying land which has yet to be developed)	Theoretical development reserves with no (specific) planning status  Regional planning reserves (anticipated building land) Preparatory land use plan reserves (building land awaiting development) Legally binding land use plan reserves which are fundamentally reclaimable (raw building land)
Internal development opportunities	Gaps between buildings (land prepared for building/building land) within the ambit of settlement-expanding legally binding land use plans  Gaps between buildings within the ambit of legally binding land use plans using pre-existing developments and unplanned interior areas. Scarcely developed lots/opportunities for infill Brownfields Vacant buildings Land which will be abandoned in the foreseeable future

\*Source: German Institute of Urban Affairs, own diagram.

### 2.3 Stakeholders involved in circular land use management

Circular land use management in urban regions cannot be driven by the actions of a single primary stakeholder but can only be achieved through the coordinated efforts of the various public and private stakeholders who, as planners, property owners and land developers, influence or govern how land is used.

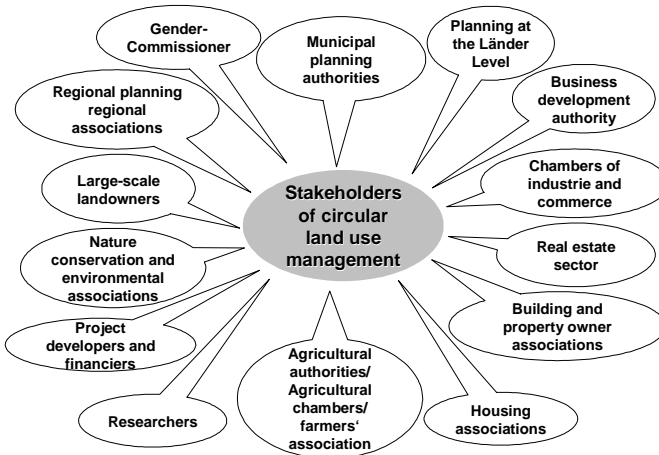


Figure 2. Stakeholders in circular land use management\*

\*Source: German Institute of Urban Affairs, own diagram.

This includes municipal policymakers, the various local administrative departments (urban affairs, urban planning, environment, business development, real estate, finance), regional planning departments, businesses, business development associations, developers, estate agents, large property owners, banks, planning offices, environmental and nature conservancy associations, committees made up of members of civil society et al. (Fig. 2). Conceiving tenable circular land use management strategies and taking the steps necessary for their implementation can only be achieved through constructive collaboration and consideration of these stakeholders' interests. This is of particular relevance to reusing derelict land, which is often viewed as the sole task of the municipality and all too rarely as an undertaking which must be resolved through a cooperative effort of both the public sector and private enterprise. The ability to cooperate, appropriate cooperative structures and communication, information dissemination and mediation services are therefore of the utmost importance for successful circular land use management.

### 3 INSTRUMENTS FOR CIRCULAR LAND USE MANAGEMENT

Circular land use management requires a uniform, integrated and harmonized course of action which encompasses the entire spectrum of policies and activities, is fused into a single, explicit integrative political approach and employs a correspondingly complex package of instruments (policy mix). In this instance current and potential new instruments are pooled while accounting for regional differences in framework conditions. These instruments primarily affect governance in the areas planning, information, organization and cooperation, funding and budget, marketing and arrangements.

#### *3.1 Testing of instruments using simulation games for city (urban region) circular land use management*

In order to evaluate the effectiveness of different instruments simulation games were run for the research field Fläche im Kreis (circular land use management in cities and urban regions). Examining the vast palette of possible courses of action via simulations does, however, pose special challenges. The simulation games began with a review of the various courses of action existing instruments provide to players at the regional and local levels. The review determined what these courses of action can achieve in terms of urban region circular land use management under the actual conditions in the regions. In contrast to retrospective case studies, this was geared at further developing existing methods in order to better tailor them to the circular land use management objectives set forth by the German government. As is typical of the simulation approach, although the further development of measures and strategies for urban regions was based on real conditions, the results remain those of a non-binding experiment.<sup>3</sup> The StadtRegion Stuttgart<sup>9</sup> (Baden-Württemberg), the regions Mölln (Schleswig-Holstein), Rheinessen-Nahe (Rhineland-Palatinate), the City of Duisburg (North Rhine-Westphalia) and the North Thuringia planning region (Thuringia) participated in the simulation games for circular land use management. These regions vary in their natural surroundings, sizes

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3 Arno Bunzel and Thomas Preuß: "Planspiel als Methode der Strategieentwicklung", in: Federal Office for Building and Regional Planning (BBR) (published by), ExWoSt-Informationen No. 25/2 Fläche im Kreis, Bonn 2005, pp. 26–27.

and populations, economic development dynamics and population trends. This means each faces unique challenges with regard to land utilization. The simulations included both growing (StadtRegion Stuttgart) and shrinking regions (North Thuringia planning region, the City of Duisburg) as well as others with balanced development dynamics (the Mölln region). The Rheinhessen-Nahe region is experiencing growth and shrinkage in equal measure.

A specially developed regional work programme served as the methodological basis of the simulation games for the regions examined. The research group formulated and monitored the work programme. This included introducing the selected instruments, explaining how they function and relevant incentive mechanisms. Overviews 1 and 2 show the instruments tested in simulation game phases I and II.

Table 1. Instruments tested in the “as-is” urban planning simulation\*.

Field of activity/ instrument category	Instrument
Planning	Regional schemes Intermunicipal planning Influencing land consumption when formulating preparatory land-use plans Appraisal of the land requirements Urban redevelopment concepts Additional neighbourhood and site planning Influencing land consumption when formulating legally binding land-use plans Concepts to establish resource compensation areas (land for equalization and alternative measures) resource compensation areas and compensation measure pools, Limitation on land usage possibilities Temporary use Renaturalization
Information	Informational instruments to influence property owners Informational instruments to influence municipal and administrative land use management decisions Municipal council resolution on land management policy
Organization	Organization within public administration Delegation of responsibilities for urban region circular land use management tasks
Cooperation	Project-related cooperation between public and private players Forms of public-private partnership applicable to all projects Framework agreements/coordinated strategies
Investment and funding programmes, budget	Funding programmes Appropriating financial resources from municipal budgets
Marketing	Marketing through public stakeholders Real estate marketing
Arrangements	Urban development measures Urban redevelopment measures Building orders Demolition orders Designating protected areas through nature conservation authorities
Other	Planning which links the preservation and enhancement of open spaces, protection of recreational spaces and agriculture

\*Source: German Institute of Urban Affairs, own diagram.

The new instruments were tested in view of the findings of the first phase of simulation games, which demonstrated that the existing package of instruments was not sufficient to accomplish the German government's ambitious land use policy aims. This meant testing instruments which created new (financial) incentives with regards to land consumption.

All told, the *Fläche im Kreis* planning simulation games tested nearly 50 instrumental approaches.

Table 2: Instruments tested in the “new instrument” simulation games\*

Field of activity/ instrument category	Instrument
Influencing the cost of land	Property tax reform (land value tax, land tax, land use tax)
	Land transfer tax reform
Price mechanisms for zoning undeveloped land	Cost-benefit analysis
	Levy on zoning land for building site use or apportionment for zoning
	Tradeable land-use certificates
Funding measures and subsidies	Reform of fiscal equalization scheme at municipal level
	Zoning-oriented tax codes
	Low-interest loans for businesses and municipalities to implement internal development measures
	Liability insurance for demolition
	Surplus funds for demolition
	Real estate funds
Additional economic framework conditions	Abolition of commuter allowance
	Abolition of first-home buyer allowance
Legal and planning instruments and issues	Obligation to demolish in the inner zone
	Exemption from nature protection law impact regulations for brownfield redevelopment
	Additional procedural modifications

\*Source: German Institute of Urban Affairs, internal diagram.

## 4 RESULTS FOR THE SIMULATION GAMES ON CIRCULAR LAND MANAGEMENT

### 4.1 *Circular land use management is a key policy and strategy approach.*

All political and scientific actors agreed that circular land use management is a vital strategy approach for implementing national strategy for sustainable development and is therefore adequate for achieving the federal government's sustainable development aims with a dual strategy: quality management – using internal development to spare external areas and increasing the value of settlement sites – and quantity management – restricting utilization of new land.

#### 4.2 *Established instruments as part of a circular land use management policy mix.*

Instruments already in place in Germany include:

- regional schemes and intermunicipal planning,
- appraisal of land requirements (a key component of regional planning and preparatory and legally binding land use planning),
- informational instruments to influence municipal and administrative land use management decisions,
- additional neighbourhood and site planning (e.g. test planning, framework plans, master planning),
- delegation of responsibilities for urban region circular land use management tasks,
- municipal council resolutions on land management policy,
- existing funding programmes,
- informational instruments for property owners, and private marketing activities.

With view to the protection of open space the following existing instruments should be employed:

- concepts to establish resource compensation areas (land for equalization and alternative measures, resource compensation sites and compensation measure pools),
- designation of protected areas through nature conservation authorities,
- integrated schemes to preserve and develop high-value open spaces: areas for relaxation, agriculture, public gardens, recreational areas.

To adequately counter the impacts of population loss, vacant buildings, functional deficits and site overlaps, shrinking regions and cities require supplementary instruments such as:

- urban redevelopment,
- funding programmes targeting brownfields, i.e. C Sites.

#### 4.3 *Public authorities: the driving force of circular land use management – cooperation between municipalities, Länder and the federal government are paramount.*

Public authorities act as a key player and driving force in the introduction and implementation of circular land use management by creating a framework which significantly influences the behaviour of real estate market players. The German government and other important groups of actors – the *Länder*, public players at the municipal and regional levels, private enterprise, large-scale property owners, the real estate industry, private households and small-scale property owners – should cooperate closely in future to establish appropriate framework conditions for circular land use management. This should be actively supported through a shift from initiatives and programmes with selective approaches to a comprehensive action strategy. Independent of concrete legislative competencies, the federal government should act as an initiator and role model for circular land use management.

#### 4.4 A policy mix of existing and new instruments is required.

Existing and new instruments implemented through a policy mix promoting city and urban region circular land use management should support the priority of internal development and, in addition, should promote a higher instance of recycling of brownfields, conversion, demolition and conservation of open spaces and of recreational areas in a manner commensurate to the needs of each urban region.

#### 4.5 Integrated action plans for city and urban region circular land use management must be developed.

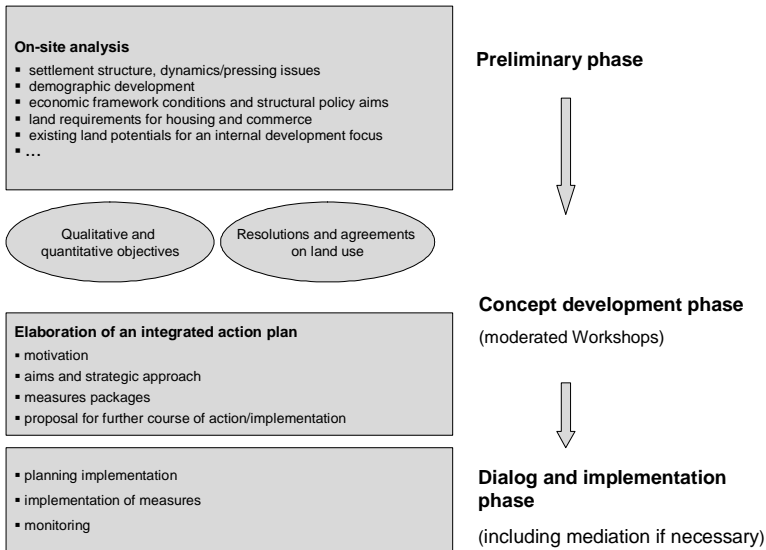


Figure 3. Compiling an integrated action plan to promote urban region circular land use management\*

\*Source: German Institute of Urban Affairs, own diagram.

Integrated action plans on circular land use management effectively aid in reaching stipulated quantity and quality aims for land utilization at the local and urban region levels.

## 5 CONCLUSION

### 5.1 New instruments which complement existing instruments are needed for circular land use management.

Current instruments and the incentives they offer are not effective in influencing the behaviour of land market players in a fashion which fosters circular land use management. To reach the German government's ambitious land use policy aims, new

instruments with aim-oriented incentives are needed which can effectively influence land use and zoning land for development. Because of the diversity of aims and parties addressed, new instruments should only be employed as part of a package. Furthermore, because the effects of these instruments have little influence on spatial allocation, they must be continually developed and implemented hand in hand with existing planning and legal instruments.

In the context of a policy mix, a variety of new circular land use management instruments could contribute to reaching the federal government's land use policy aims by offering new (economic) incentives:

- Influencing real estate prices to lessen the incentives for private and public parties who wish to use undeveloped land; e.g. by reforming the property tax system or land transfer tax reform,
- introducing price mechanisms for zoning undeveloped land to further motivate municipalities to pursue internal development; e.g. by establishing tradeable land-use certificates or apportionment for zoning in combination with cost-benefit analysis,
- introducing financing options and tailoring funding measures so they are conducive to circular land use management and significantly strengthen internal development; e.g. by reforming the fiscal equalization scheme at municipal level, low-interest loans, real estate funds, demolition liability insurance, subsidizing renaturalization.

The form and feasibility of new circular land use management instruments must be comprehensible and simply designed so they are manageable. Economic instruments, such as tax remedies, must be recognizably bound to circular land use management objectives at both the appraisal and implementation stage. It makes sense to link financial incentives to incite private parties to pursue circular land use management with planning parameters which promote development of existing structures and sites ("support and stipulate").

A variety of measures were recommended to the federal government to create appropriate instrumental framework conditions for circular land use management:

- improvement of the regulatory impacts of spatial planning,
- more support for activating internal development land potentials
- more support for private initiatives to revitalize brownfields,
- expert assistance in conceiving and for practical introduction of B-Site Funds,
- expert assistance in conceiving and for practical introduction of C-Site Funds,
- activating land potential on sites owned by the federal government,
- fostering the provision of information on sites and conscious land use,
- further elaboration of urban renewal instruments,
- creating tenable benefit-burden equalization schemes for the case of blocking development on land or zoning new land for development,
- trials for the introduction of new levies for zoning undeveloped sites,
- trials for the introduction of tradeable land-use certificates,
- trials for comprehensive property tax reform,

- testing the introduction of compulsory allocation of funds for internal development measures in the context of fiscal equalization schemes at municipal level,
- testing further development of obligations to demolish structures and unseal land, and the introduction of demolition liability insurance.

More detailed elaboration, impact research and trials are necessary to establish a final structure for, or rather before implementing, these instruments, many of which are new.

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