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Occasional Paper

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Circular Flow Land Use Management: New Strategic, Planning and Instrumental Approaches for Mobilisation of Brownfields

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Brownfields and her potential

There is no fixed definition for the German term Brachfläche (abandoned, derelict, vacant land or brownfields). It is frequently employed to denote land which previously served trade, industrial or military purposes and for which no new use has hitherto been found. Given the extent of urban redevelopment activity in many parts of Germany, the concept should also include abandoned housing areas, railway yards and even abandoned shopping malls and offices. Although the length of time land has remained vacant is often considered a criterion for Brachflächen, this factor is only of minor importance with regard to actual regeneration.

Besides providing open space and existing possibilities for urban renewal in town and city centres and suburbs, brownfields are potential sites for internal development in many places. In fact, they offer by far the best prospects for redevelopment. However, many regions anticipate an increase in brownfields in future.

The German Federal Environmental Agency estimates that there are around 130,000 ha of brownfields in the country today (Umweltbundesamt 2003). In 2003 municipalities recognised that around 49,000 ha of this land could be reactivated, according to a Federal Office for Building and Regional Planning (BBR) poll. Of the identified sites, 28,500 ha were limited to commercial uses (BBR 2004b). The survey suggested that a further 13,000 ha were set aside for park or nature developments and 7,500 ha for housing. According to the BBR, municipalities in former East Germany have on average over three times as much derelict land that has a regeneration potential than their western counterparts (Beckmann/Dosch 2003). The Federal Statistical Office has calculated that the total amount of derelict land within towns and cities across Germany increased by 12.7 ha per day between 1993 and 2000 (Statistisches Bundesamt 2003).

Previous practice in mobilising brownfields

In the 1980s former industrial sites in Western Germany presented a challenge to town and city planners, architects and structural policymakers. Mobilising these areas was mainly hindered by the particular nature of individual spaces, their history, their complex ownership status, the cost of preparing them for construction, their stigmatisation as superannuated locations, unrealistic land price demands and (suspected) site contamination. The involvement of politicians and planners was mostly limited to individual sites, which, at great expense and sometimes as part of model initiatives or infrastructure promotion programmes, became (exemplary) flagship projects[1]. However, each site remained exceptional. Instrumental approaches which sought to reorganise spatial structures by redeveloping vacant land, suitably integrate planning, finance, cooperation and organizational aspects were never comprehensively discussed. Despite economic growth in the 1990s in both eastern and western Germany, the absence of land management concepts meant that the huge potential of derelict land could not exploited to restructure and modernise established settlement patterns. In numerous regions the opposite is now true: the release of new sites for construction on greenfield sites resulted in a derelict land surplus in the 1990s, further damaging the redevelopment prospects of abandoned sites on today's property markets.

The role of brownfields in circular flow land use management[2]

The regeneration of brownfields is a key part of reducing greenfield use. Land recycling is thus an important part of any land use management strategy. It constitutes a cyclic process encompassing planning, utilisation, cessation of use, abandonment and finally reintroduction (BBR 2004a: 7). The reactivation of brownfields as part of this process is welcome not only from an environmental viewpoint, but also because it satisfies economic requirements (e.g. by avoiding investment in new infrastructure and optimising exploitation of existing infrastructure) and social needs (e.g. by contributing to a functional and social inclusion).

Circular flow land use management – principle, strategy and political approach

Circular flow land use management now embodies a different philosophy of use, which is expressed by the motto: "avoid – recycle – compensate". This management approach accepts the use of greenfield sites under specific conditions, but primarily and systematically seeks to utilise the potential of all existing sites.

Circular flow land use management also intends to provide an integrated political and governance approach which include the whole spectrum of policy areas and fields of activity. It is implemented at both local and regional level and combines these main two in an integrated urban and regional land development policy. The cycle relies on the interplay between strategies and instruments in different fields of activity and on a suitably comprehensive deployment of tools (instrument mix) in these areas, which includes planning, land information, cooperation, organisation and management, investment and support programmes, marketing and legislation (see figure 1, p. 5).

Requirements for new strategies to mobilise brownfields

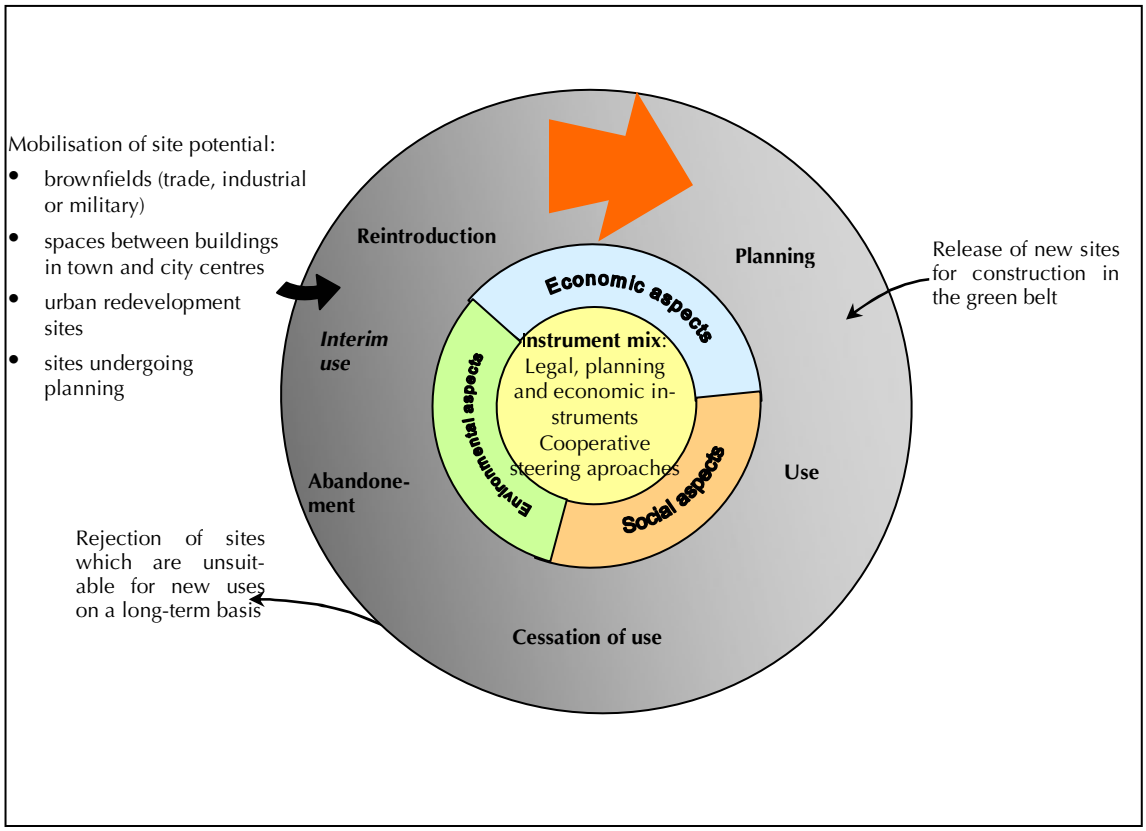
Mobilising the potential of brownfields in towns and cities depends crucially on the initiative and commitment of both public and private stakeholders, who determine events on the land market through their activities, utilization preferences and intervention.

In order to be effective, new strategies must not primarily rely on structural policy instruments (which make massive and unbalanced demands on public spending) or on highly specialised management instruments of general construction planning, as they have previously done. The issues of ever-shorter utilisation cycles, continuing abandonment of land in all regions of Germany and shrinking public budgets must be tackled differently if broad expanses of derelict land are to be mobilized in future.

Circular flow land use management should

- reduce the length of time land is vacant or underutilised, and
- develop solutions for land which is difficult to regenerate.

Figure 1: Model of phases and potential of circular flow land use management*



*Source: Research group "Fläche im Kreis" 2005.

Classification of brownfields

The classification of brownfields according to project types in terms of cost/yield ratio is a promising approach to land use management. Different types of brownfield regeneration projects, in relation to their economic status and funding, are illustrated by the A-B-C Model. Depending on the cost of regeneration and the value of the land, sites can be classified as (Ferber 2003; CABERNET 2006):

- *Project type A "Self-sustaining land":* Projects can finance themselves, e.g. they are optimized by integrating land use and regeneration planning and by profits from planning.
- *Project type B "Development land":* These projects are characterised as being on the borderline of profitability. Projects are only made possible by public support through start-up financing and/or risk-splitting between private investors or developers and state funders, e.g. through public-private partnerships. Greater risks must be accepted when the cost/profit ratio is close to one.
- *Project type C "Reserve land":* these projects represent mainly public sector or municipality projects driven by public funding or specific legislative instruments. Short- and medium-term regeneration projects cannot be expected to succeed without sup-

port. Low land prices, extensive set-up costs and frequently high spatial concentration of derelict land are the main reasons this type of land is not profitable.

The brownfield classification described above can be an element of more comprehensive municipal or regional land management. The project types can support land use management (general construction planning etc.), help prioritise potential sites and influence the land market to the benefit of self-financing projects. The degree of necessary state intervention can be determined in advance according to the project type to which a plot of derelict land is allocated. Priority development projects can thus be selected for precise purposes and funding pooled following regional consultations. Inexpensive interim solutions may therefore be implemented on C-type land if this helps to help avoid urban planning and environmental problems.

Requirements of land use management

Land use management can take different organisational and legal forms which allow a varying intensity of cooperation between partners and degrees of liability: informal groups or task forces, planning, regional or special-purpose associations and organisational forms under private law such as Verein (association), GmbH (limited liability company) and AG (joint stock company).

A solid body of data in the form of comprehensive site information is the principal requirement for effective land use management. Due to divergent departmental stipulations, many municipalities currently track derelict land in different administrative sections simultaneously. Environmental agencies record the sites in contamination or former location registers. Business promotion departments store them in their trading site records and planning offices trace them through their construction land records. Integrated solutions must replace these sectoral approaches if solid foundations for planning and decision-making are to be created for land recycling and land use management.

Requirements of planning practice

Planning practice needs to do more to meet the specific demands of land revitalisation. This applies equally to private developers. Strategies for reactivating brownfields must penetrate the highest planning levels.

The high cost of brownfield redevelopment and the reticence of banks and insurance companies (due to supposed or actual environmental risks) must be tackled as the reasons for the lack of private initiatives. In contrast to planning on greenfield sites, the juxtaposition of living and working environments, the existing infrastucture and the uncertainties connected with potential contamination all require flexible planning approaches. One aspect of this is that municipal planners must reach agreement with investors and future users at an early stage.

It is recommended that the urban planning process for recategorizing an abandoned industrial site should be implemented in two phases:

- *Phase one – pre-planning:* The municipality sets the general strategy for the future use of an area in consultation with project sponsors. An informal urban development plan should be the outcome of this phase.
- *Phase two – binding construction planning:* The development plan takes on more precise contours and results in legally binding commitments in the form of a charter and a land use or infrastructure development plan.

The concept of project development in real-estate management should be replaced by land development. Due to its complexity, land development is not governed by definitive start and end points. This is evident from the interplay between site contamination assessments, land development measures, construction planning and project development. Contrary to traditional project development, a detailed picture of a site's potential only emerges in the course of development, under consideration of various factors such as future potential and site contamination. The site's end purpose can therefore not be fixed at the start of the development project.

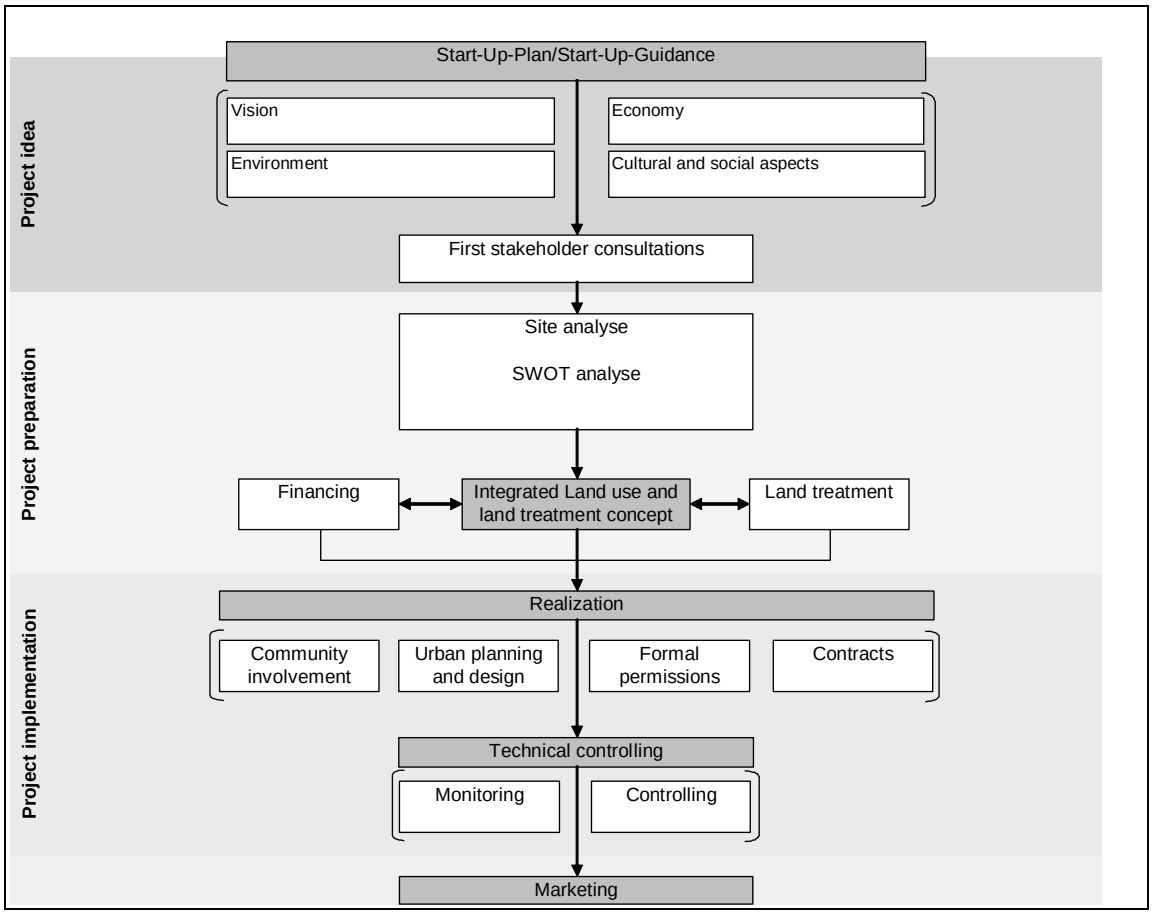
The start-up plan – an information and management instrument for pre-planning brownfield revitalization projects

The start-up plan (Ferber/Barczewski/Preuß/Schrenk et al. 2005) is a holistic project and business plan tailored to a specific vacant space[3]. It concentrates on data relating to information, communication, project planning and acquisition of funding, which are of primary importance to the target groups concerned. Drafting a start-up plan is the first step in implementing a brownfield redevelopment project. The plan acquires and structures information (provided it is available) from registers, data systems, company files, analyses, (in)formal site-related plans and appraisal reports, as well as municipal administration and local government programmes and policies.

Brownfield redevelopment projects involve urban and landscape planning and environmental issues as well as economic and social affairs. The aforementioned features of a specific project are, however, of varying importance to participants, since stakeholders involved pursues their own interests through the venture. Supporters must therefore be convinced and opponents persuaded, if a project is to succeed. For this to happen, communication with participants is essential, starting with information about the project idea.

A handbook has been produced to offer support in drafting start-up plans. This helps initiators of brownfield projects present ideas to key target groups in a clear and comprehensive manner. A start-up plan can thus provide rapid impulses for revitalizing brownfields. A plan for a specific site integrates economic, environmental, social and planning aspects of site regeneration at an early stage.

Figure 2: Start-up plan and phases of brownfield revitalisation*



*Source: Ferber/Barczewski/Preuß/Schrenk et al. 2005.

The summary representation of planning, environmental, economic and social aspects of brownfield projects can provide insight into how different target groups can be reached by suitably tailored project synopses in the form of start-up plans. This applies for example to groups such as:

- predominantly interested in financial and economic aspects, such as landowners, developers, investors and banks;
- primarily concerned with safety, such as local authorities and local residents;
- mainly interested in quality of life and the local environment, such as civic initiatives, urban planners and local residents.

At the beginning the start-up plan elaborates visions by developing or disseminating models which frequently prove decisive for projects. It also summarizes planning aspects of fundamental procedures connected with these models. The following table (Table 1) depicts key components of land treatment and other environmental issues. A clear distinction should be made between projects involving the remediation of contaminated sites under the Federal Soil Protection Act (BBodSchG) and those plans (the overwhelming ma-

jority) for which the construction, demolition works or waste may affect management costs.

Economic aspects – particularly regarding market research, the marketing of land recycling as a product and cost/yield issues – are a further crucial element of start-up plans, and should certainly be of interest to potential investors and donors. The following section therefore also discusses project financing options and financial risk management.

Cultural and social aspects of brownfield redevelopment continue to feature in start-up plans, which can also incorporate elements of monument preservation, social and urban renewal and training measures.

The handbook for drafting start-up also plans provides orientation in a host of fields relevant to brownfield redevelopment which can be addressed by this information and management instrument. For specific projects it will generally suffice to focus on the relevant topics and present them in more detail, whereas other aspects need only be discussed briefly or may be completely omitted. Project managers should decide which aspects of their initiatives deserve attention and which can be disregarded. However, presentations should always be as concise as possible.

Table 1: Possible makeup of a start-up plan*

Plan chapter	Key aspects	Details
Development vision	Project idea	Positive and realistic development visions including perspectives for use and consideration of urban planning and architectural aspects
	Development and utilisation concept	Project goals at different thematic and spatial levels, conforming to superordinate citywide development objectives Project analysis including early definition and examination of success factors, stumbling blocks and potential participants in the development process Integrated review of technical and planning-law considerations as a basis for analysing the development and utilization concept and in particular for alternative utilisation and remediation proposals to be drafted Development and utilisation concept resulting from formal planning and an initial informal development concept (flexible and step-by-step structure to reduce potential risks)
	Planning/legal aspects of brownfield recycling	Presentation of legal considerations for remediation, the state of construction planning or other planning-law protection of the land and relevant contractual rules Presentation of current or desirable formal and informal planning instruments to fulfil building-law requirements for the site in question, with a view to retaining decision-making leverage through implementation-oriented project management

Land treatment and environmental issues	Foundation/starting point objectives	Presentation of aspects of land treatment and related environmental factors; identification of potential problems and conflicts and ways to resolve them, possibly through a scoping survey
	Information and analysis	Presentation of the nature, scope and quality of available data on the state of the derelict land and (where applicable) existing information shortfall Historical examination of all available dataresulting in the proposal of measures necessary to prepare the site for construction
	Technical measures to prepare sites for construction	Pre-planning for dealing with existing buildings or industrial facilities (retention, conversion, demolition) in view of functional and economic considerations Appraisal of on-site pollutant levels if it is suspected that the building fabric is contaminated Sketch, where applicable, of essential measures to improve the subsoil/subsurface taking into account a number of aspects (e.g. foundations, pipelines, manholes and man-made fills). Listing of the investigations of a contaminated site stipulated in the Federal Soil Protection Act (BBodSchG) and the Federal Soil Protection and Contamination Regulation (BBodSchV), coordinated steps to clarify the condition of the site and initiation of any necessary hazard prevention measures
	Impact of technical measures	Summary representation of necessary worker health and safety measures arising from engineering works Presentation of anticipated impact on local residents and the surroundings of preparing a site for construction, e.g. greater traffic volume, noise and dust Risk of infringement of nature conservation laws and possible compensatory measures
	Cost of preparing sites for construction	Description of current knowledge of site-related cost-determining factors and rough estimate of the cost of preparing a site for construction Identification of measures to increase cost certainty and potential savings/synergy effects
	Project opportunities and risks	Consideration of the likelihood of achieving greater cost certainty by conducting more detailed investigations (subsurface investigations, demolition and disposal concepts, risk assessments and remediation investigations) Possible legal safeguards for remediation measures when developing sites which have been subject to harmful soil changes (e.g. by fixing rehabilitation objectives in an agreement under public law in accordance with the Federal Soil Protection Act, introducing a licensing system on the basis of a rehabilitation plan and inserting a “contamination clause” in the purchase agreement to allow investors to calculate their risks)

		Opportunities to profitably market sites with contaminated land and ground water through low acquisition costs, comparatively high potential value-added and precise and qualified treatment of contamination
Economic aspects	Market situation and marketing	Market analysis in the form of a summary evaluation of selected utilization proposals in terms of feasibility under current or expected market conditions Presentation of targeted customer groups' and future users' expectations of the derelict land, including buildings and facilities, under estimated real-estate risks; draft of marketing concept based on these findings
	Material land value	Determination of the site value by considering the current market price and making an adjustment for factors which typically influence derelict land Establishment of the site's new market price, giving due consideration to the nature and scope of potential remediation measures and possible subsequent initiatives for the area
	Economic analysis	Tracking of project costs at all stages (e.g. based on DIN 276; level of accuracy depends on the particular planning stage) Presentation of basic revenue groups (*inter alia* sales, letting/leasing, public funding, tax effects) Presentation of resources covering project costs (e.g. investor capital, loans, subsidies) and their expected availability Appraisal in a finance plan of all costs and revenue (entered on a timeline), of necessary liquid funds and of cover options for these resources Rough presentation of a project's expected yield and the method of calculating the yield
	Financial risks	Consideration of different risk factors (due to development, location, licensing, financing, site and contamination) Analysis of financial risks (likelihood of an event occurring combined with its consequences) and presentation of risk management options
Cultural and social aspects of brownfield redevelopment	Cultural and social aspects as drivers for development	Presentation of cultural and social aspects relevant to the project, beginning with the location's history and identity and the local population and including socially relevant planning decisions on future site uses
	Shaping better surroundings	Presentation of possible ways of improving a location's image, sustaining the project and involving the public

*Source: Ferber/Barczewski/Preuß/Schrenk et al. 2005.

Start-up plans are currently being tested in collaboration with Land Development Corporations (Landesentwicklungsgesellschaften) and major real-estate companies to ensure implementation of the new instrument on the broadest possible scale. The experiences

should indicate whether users favour the desired reduction and concentration of start-up plans' contents and whether they feel the plans are in their own interests.

Conclusions and outlook

The start-up plan for brownfields collate site-specific information for stakeholders which was previously only available separately from a wide variety of sources. The plan thus facilitates crucial information flow and helps stimulate interest in brownfields and overcome existing prejudices. This makes it a particularly suitable instrument for kick-starting type B or C projects, which depend on interventions from public and private stakeholders. However, this tool neither replaces general construction and remediation planning required by law, nor the wide array of successful informal planning measures.

The systematic rehabilitation of brownfields requires the integration of their potential in the land use cycle. However, until now the necessary planning, cooperation, information, management and financing incentives have not been in place. A further consideration is municipalities' virtually unbounded willingness to release land for construction, as they continually chase financial gain by tempting new residents and businesses and thus neglect the fiscal consequences of such expansion as well as demographic developments. This especially dampens the prospects of mobilizing brownfields in cities and regions with a surplus of space for housing and industrial projects in their green belts. At the same time, these cities and regions have to contend with the collapse of housing markets due to an economic downturn.

Besides the general need for greater awareness given the long-term economic, social and environmental impact of the continued expansion of residential areas and transport infrastructure, land utilization must be subject to binding quantitative and qualitative supervision. Various approaches, such as introducing binding regional and construction planning regulations, reforming the real-estate tax system or the system of municipal financial equalization and trading in land licences, are the subject of intensive debate among experts. Only a suitable mix of planning, regulative-law and fiscal approaches will guarantee long-term success in sustainable land management.

Notes

1 E.g. as part of the Emscher Park International Building Exhibition (IBA) or at national and Land garden shows.
2 The remarks on circular flow land use management base on the current research project "Circular flow land use management in city regions", processed by German Institute of Urban Affairs on behalf of Federal Office for Building an Regional Planning/Federal Ministry of Transport, Building and Urban Development in the research program for Experimental Housing and Urban Development over the 2004-2006 period.
3 The start-up plan was conceived over the 2002-2005 period as part of a brownfields redevelopment project funded by the Federal Ministry of Education and Research and run by an interdisciplinary U.S.-German bilateral working group in cooperation with the U.S. Environmental Protection Agency (EPA).

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